

**The Friends of Nachusa Grasslands  
2024 Scientific Research Project Grant Report  
Due June 30, 2025**

**Name:** Christiana L. Guthrie

**Address:** 2446 Deerfield Drive, Aurora, IL, 60506

**Phone:** (630) 777-1607

christianaguthrie01@gmail.com

**Current**

**E-mail:**

**2024 grant amount:** \$4092

**Research Project Topic:** Comparing natural and experimental plant characteristics to inform prairie restoration and management practices.

**Research Project Purpose:** This purpose of this project is to explore the realism of experimental plant communities in respect to the natural plant communities that experiments are created and supposed to inform. Specifically, this project explored the difference of key plant characteristics [i.e. height, stem density, leaf size, specific leaf area (SLA), leaf dry matter content (LDMC), and leaf carbon (C) and nitrogen (N) content] for twelve common tallgrass prairie plant species found at Nachusa Grasslands and the Community Assembly in Prairie Ecosystem Restoration (CAPER) experiment at Northern Illinois University (NIU). We hope that a better understanding of how different CAPER is from Nachusa Grasslands will allow the scientific findings from CAPER to be more applicable to Nachusa Grasslands.

**Research Project Outcomes to date:** I have run some preliminary analyses that suggest experiments may not be applicable to the real world. Specifically, the experimental plants in my project exhibited more robust traits (i.e. taller, bigger leaves, more stems, etc.) than the real-world plants. I am currently working on running analyses that will be sufficient for a manuscript publication, so more conclusions and outcomes are to come!

**Describe how the grant funds you have received from the Friends of Nachusa Grasslands have been used in regard to the above topic, purpose, and/or outcomes:** About half of my grant funds were used to pay for the leaf C and N content measurements, which is one of the six plant characteristics my project is exploring. The other half of my grant funds provided me with salary support, mileage reimbursements, and supplies, which made it possible for me to conduct this research.

**Describe how your project has benefited the work and goals of Nachusa Grasslands:** The goal of CAPER is to discover how plant community changes and responses to disturbance as a whole impact ecological function. Although the CAPER experiment was designed to be broadly applicable to habitat restoration and conservation, CAPER was specifically designed with Nachusa Grasslands in mind. The plant communities at CAPER were derived from the 24 most common plants found at Nachusa Grasslands through extensive vegetation survey data collected by the

Evidence-Based Restoration Lab at NIU. My project strengthens the connection between CAPER and Nachusa Grassland, as I've been looking at the realism of the CAPER experiment when compared to Nachusa Grasslands. An understanding of the sites' similarities and differences will help us understand how applicable and realistic the CAPER experimental findings will be for Nachusa Grasslands, which will improve the capacity of Nachusa stewards to manage prairies for whole ecosystem resilience.

**Describe how your findings can be applied to challenges in management practices for restoration effectiveness and species of concern:** My findings will (and have started to) enhance our understanding of how applicable the CAPER project's findings are for Nachusa Grasslands. Scientific research doesn't always align with management needs and practices, and my project will help fill that gap for CAPER. Additionally, an unexpected finding from my project is the use of plugs may be beneficial for kickstarting plant growth and establishing populations of rarer species or species of concern. This unexpected finding stems from the fact that the CAPER plots were grown entirely with plugs. The CAPER experimental plants exhibited more robust traits than the plants found at Nachusa Grasslands, where restorations are grown using primarily seeds.

**Please list presentations/posters you have given on your research:**

1. Guthrie, C.L., K.F.E. Hogan, N.A. Barber, S.L. Berk, and H.P. Jones. The tale of the Frankenplants: Comparing plant characteristic data from an experimental prairie and Nachusa Grasslands. 2025. Poster Presentation. Nachusa Grasslands Science Symposium.

**Have you submitted manuscripts to scientific journals? If so, which ones? If not, do you anticipate doing so? (Please send digital copies of published articles to the Friends so that we can learn from your work.)** I have not yet submitted a manuscript to any scientific journals, but I am planning to! I am currently working on writing a manuscript for this research but am not quite sure when the manuscript will be completed and where I will be sending it yet. Updates to come!

**What follow-up research work related to this project do you anticipate (if any)?** At this time, no follow-up research work related to this project is anticipated.

**Optional: Suggestions for improving the application and award process for future Friends of Nachusa Grasslands Scientific Research Grants:** n/a