

**The Friends of Nachusa Grasslands
2015 Scientific Research Project Grant Report
Due June 30, 2016**

Name: Elizabeth Bach

Address: Illinois Natural History Survey, 1816 S. Oak St., Champaign, IL 61820

2015 grant amount: \$2200

Please answer the following questions with 1- to 2- sentence summaries:

Research Project Topic: I investigated seasonal shifts in soil microbial communities and activities. I sequenced soil fungi and bacteria and measured microbial activity at five key plant growth phases across the 2015 growing season.

Research Project Purpose: Tallgrass prairie restoration has the potential to provide several ecosystem services including soil carbon and nutrient storage. Microbes perform these ecosystem services and in order to accurately quantify the potential for restored soils to store carbon and nutrients, we must understand seasonal fluctuations in microbial activity that lead to net retention of carbon and nutrients.

Research Project Outcomes to date: All field work and laboratory analysis have been completed. Data analysis is in progress and preliminary results will be shared at the Midwest-Great Lakes Chapter of the Society for Ecological Restoration meeting (April 1-3, 2016) and the Ecological Society of America Annual Meeting (Aug. 7-12, 2016).

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: Grant funds enabled me to sequence *both* fungal and bacterial communities from soil. Without this funding, I could only have sequenced one aspect of the soil community.

Describe how your project has benefited the work and goals of Nachusa Grasslands: My work is generating lists of soil fungi and bacteria in the soil at Nachusa, provide a very detailed description of this previously unknown diversity.

Describe how your findings can be applied to challenges in management practices for restoration effectiveness and species of concern: My work may inform management decisions as it highlights differences in communities and activities, which may be leveraged to improve plant biodiversity.

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

Forthcoming:

Bach, E.M., Miller, A.N. 2016 Linking microbial community and function across time in restored and remnant tallgrass prairie. Annual Meeting of the Ecological Society of America, Aug. 7-12, 2016. Fort Lauderdale, FL.

Bach, E.M., Miller, A.N. 2016 Linking above- and belowground phenology: Temporal shifts in microbial communities and activity in restored and remnant prairies. Midwest-Great Lakes Regional Chapter of the Society for Ecological Restoration, April 1-3, 2016. Bloomington, IN

Presented:

Bach, E.M. Microbes Matter: Soil microbial communities and activity in tallgrass prairie. Illinois Natural History Survey Seminar Series. March 29, 2016

Bach, E.M. Belowground seasons: Soil microbial communities and activities change temporally in tallgrass prairie. Grand Prairie Friends Winter Meeting. February 24, 2016

Bach, E.M. Seasonal shifts in soil microbial communities. Friends of Nachusa Grasslands Science Symposium. October 26, 2015

Have you submitted manuscripts to scientific journals? If so, which ones? If not, do you anticipate doing so? (Please keep us informed on publications.) Yes, I intend to submit data for publication in the next year. I will keep Friends of Nachusa informed of any publications.