

**Friends of Nachusa Grasslands
2020 Scientific Research Project Grant Report
Due June 30, 2021**

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Current

E-mail:

2020 grant amount: \$2790

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

Research Project Topic: Impacts on belowground microbial communities with herbicidal control of the invasive *Lonicera maackii* (Amur Honeysuckle)

Research Project Purpose: It is largely unknown how herbicidal plant removal impacts soil microbial communities, and if there is an ecological legacy of herbicide treatments that may have lasting impacts in soils which may impact restoration success. This project seeks to quantify this impact and provide recommendations for land managers to control honeysuckle whilst minimally impacting below ground microbial community.

Research Project Outcomes to date:

All molecular and field work has been completed and analyses and manuscript writing is underway. Control options do not impact fungal, bacterial, or oomycotan communities in soil which suggests that herbicidal control of honeysuckle does not negatively impact soil communities. This should provide increased control options for this invasive plant without the concern of impacting soil health.

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:

These grant funds have made this possible. We have used these funds to primarily pay for illumina sequencing of these below ground communities, whose costs were supplemented by other funds. All funds have been spent.

Describe how your project has benefited the work and goals of Nachusa Grasslands:

This work provides important background to inform management decisions on how to control invasive plants at Nachusa. There is a current lack of understanding as to what ecological impacts using an herbicide-based approach to control honeysuckles has on the soil microbial communities. This work fills in this knowledge gap.

Describe how your findings can be applied to challenges in management practices for restoration effectiveness and species of concern:

These findings are useful as they indicate that herbicidal control of the invasive Amur honeysuckle does not negatively impact soil communities. Thus land managers should take comfort that control of this invasive plant, will have few ecological impacts.

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

James JJ, Bach EM, Baker K, Barber NA, Shahrtash M, Brown SP. Herbicidal removal of Amur Honeysuckle only minimally affects soil borne microorganisms with no apparent functional deficits. Nachusa Grasslands Science Symposium. Franklin Grove, IL. April 24, 2021 (Virtual).

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.)

We anticipate submission of this work to a peer-reviewed journal in November 2021.

What follow-up research work related to this project do you anticipate (if any)?

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