

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

Please answer the following questions with clearly written summaries to give Nachusa Friends' science committee members, officers, and board members a good idea of what you accomplished using your grant money. Unless you object to the Friends doing so, your report will be uploaded into the science section of the Friends' website: nachusagrasslands.org.

1. Please save this form to your desktop with a unique file name that includes "Friends 2023 Science Grant Report" and your last name.
2. Complete the form using the headings in **bold** as your guide.
3. Save the file as a Word document or a PDF.
4. Attach the file to an e-mail, and send it to: nachusafriendsscience@gmail.com no later than June 30, 2025.
5. The subject of the e-mail should be "2024 Scientific Research Grant Report" and your last name.
6. If you have not completed your work, please submit this form anyway by the June 30 deadline and plan to contact Friends after your project is complete so that we may learn from and publicize the outcomes as appropriate.

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2024 grant amount: \$5,000

Research Project Topic:

Our study will investigate the efficacy of raccoon removal through predator control and use camera traps to monitor spatial distribution of raccoons before, during, and after removal. Our study will also assess the prevalence and distribution of zoonotic pathogens in raccoons.

Research Project Purpose:

Our study has two primary objectives: (1) to determine the intensity of trapping effort needed to reduce a raccoon population and estimate pre-removal abundance and density of raccoons, and (2) to assess the prevalence and distribution of zoonotic pathogens in raccoons.

Research Project Outcomes to date:

Raccoon removal efforts were conducted across five northern Illinois field sites each April-July, with 771 raccoons captured in 2022-2024 during 14,742 trap nights. From 2022-2024, Nachusa Grasslands captured 109 raccoons in 1,646 trap nights. We

collected 11,886 photos of raccoons during the past three field seasons; 3,389 were from Nachusa Grasslands. Given the pre-removal abundance estimates, Nachusa Grasslands removed 79-88% of the raccoon population each year. Single-season occupancy probabilities were highest before removal and decreased after removal for the following 2 to 3 months each study year. Colonization decreased and extinction increased at removal sites, while the control site had nearly 0% extinction and up to 80% colonization. Abundance estimates indicated decreased populations in the short term (i.e. 2-3 months) but increased back to estimates seen prior to removal the following year (i.e. 10-12 months). These results suggest that with trapping effort observed at the levels in our study, continuous removal or multiple trapping seasons per year may be a successful management method for reducing and maintaining lower raccoon densities.

Raccoon carcasses were collected from project collaborators and necropsied according to standard procedures. We collected approximately 20 raccoons from each site per year (n = 280 total raccoons). Raccoon carcasses were necropsied, and tissue samples collected from the liver, spleen, and heart. Intestinal tracts were also collected for examination for intestinal parasites. We have completed all intestinal examinations and have detected the presence of raccoon roundworm in 106 individuals (38%), with a raccoon roundworm prevalence of 25% at Nachusa Grasslands. We have also detected intestinal parasites in 229 individuals (99%) including hook worms, tapeworms, trematodes, and acanthocephalans. Tissue analysis has also been completed. The prevalence of *Borrelia burgdorferi* was 0.7% across all sites and 0% at Nachusa Grasslands. The prevalence of *Rickettsia rickettsii* was 0.4% across all sites and 1.7% at Nachusa Grasslands. The prevalence of *Anaplasma phagocytophilum* was 35.4% across all sites and 55% at Nachusa Grasslands. The prevalence of *Babesia microti*-like was 98.6% across all sites and 100% at Nachusa Grasslands. Finally, the prevalence of *Ehrlichia chaffeensis* was 0% across all sites.

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:

The grant funds we received from the Friends of Nachusa Grasslands were used for camera and necropsy supplies, laboratory supplies, and travel between field sites.

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

Nachusa Grasslands has put much effort into the head start program for Blanding's turtles and our study on the efficacy of predator control can help decrease the population of a known predator of Blanding's turtles and help to better understand the intensity and duration of trapping needed for an efficient removal program that helps increase nest success and survival of vulnerable species.

Our goal of decreasing the abundant raccoon population aids in Nachusa Grasslands head starting efforts for the Blanding's turtles. While Nachusa Grasslands head starts the nests that they can find, the turtles not tracked are still vulnerable to predation. Our

predator control efforts will help decrease the population of a known species that commonly predated on Blanding's turtle nests, hatchlings, and other nesting species.

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

Due to raccoons' opportunistic nature and adaptability, they negatively impact several avian and reptilian species. Raccoons are major predators of many ground-nesting species, contributing to the extirpation of some species in areas where raccoon predation goes unchecked. Our project will provide valuable information on the long-term feasibility and efficacy of raccoon removal. Our project will decrease a known predator of Blanding's turtles and we will gain information on the abundance and density of raccoons in forest preserves that have Blanding's turtle populations.

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

McDonald, A.G., J.R. Schultze, C.K. Nielsen, and F.A. Jimenez. 2025. Influence of raccoon (*Procyon lotor*) abundance on prevalence of raccoon roundworm (*Baylisascaris procyonis*) in northern Illinois. 11th Annual Nachusa Grasslands Science Symposium. Franklin Grove, IL. Poster Presentation.

Schultze, J.R., A.G. McDonald, and C.K. Nielsen. 2025. Efficacy of raccoon removal as a management method for northern Illinois raccoons. 11th Annual Nachusa Grasslands Science Symposium. Franklin Grove, IL. Poster Presentation.

McDonald, A.G., J.R. Schultze, C.K. Nielsen, and F.A. Jimenez. 2025. Influence of raccoon (*Procyon lotor*) abundance on prevalence of raccoon roundworm (*Baylisascaris procyonis*) in northern Illinois. 85th Annual Midwest Fish and Wildlife Conference. St. Louis, MO. Oral Presentation.

Schultze, J.R., A.G. McDonald, and C.K. Nielsen. 2025. Efficacy of trapping programs to control raccoon populations. 85th Annual Midwest Fish and Wildlife Conference. St. Louis, MO. Poster Presentation.

McDonald, A.G., J.R. Schultze, C.K. Nielsen, and F.A. Jimenez. 2024. Prevalence and distribution of zoonotic pathogens and parasites in raccoons (*Procyon lotor*) of northern Illinois. 99th Annual American Society of Parasitologists Meeting. Denver, CO. Poster Presentation.

Schultze, J.R., A.G. McDonald, and C.K. Nielsen. 2024. Efficacy of raccoon removal as a wildlife management method for northern Illinois raccoons. 10th Annual Nachusa Grasslands Science Symposium. Franklin Grove, IL. Oral Presentation.

McDonald, A.G., J.R. Schultze, C.K. Nielsen, and F.A. Jimenez. 2024. Prevalence and distribution of zoonotic pathogens and parasites in raccoons (*Procyon lotor*) of northern

Illinois. 10th Annual Nachusa Grasslands Science Symposium. Franklin Grove, IL. Poster Presentation.

McDonald, A. G., Schultze, J.R., and C.K. Nielsen. 2023. Efficacy of predator control and prevalence of zoonotic pathogens in northern Illinois raccoons. 29th Annual Meeting of The Wildlife Society. Louisville, KY. Poster Presentation.

Schultze, J.R., A.G. McDonald, and C.K. Nielsen. 2023. Efficacy of predator control and prevalence of zoonotic pathogens in northern Illinois raccoons. 9th Annual Nachusa Grasslands Science Symposium. Franklin Grove, IL. Poster Presentation.

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 have not, but we do plan to do so once the project has been completed.

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: