



Environment and Natural Resources Trust Fund

M.L. 2023 Approved Work Plan

General Information

ID Number: 2023-044

Staff Lead: Mike Campana

Date this document submitted to LCCMR: May 22, 2023

Project Title: Assessing Restorations for Rusty-Patched and Other Bumblebee Habitat

Project Budget: \$75,000

Project Manager Information

Name: Alex Roth

Organization: Friends of the Mississippi River

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Project Reporting

Date Work Plan Approved by LCCMR: June 22, 2023

Reporting Schedule: February 1 / August 1 of each year.

Project Completion: June 30, 2026

Final Report Due Date: August 14, 2026

Legal Information

Legal Citation: M.L. 2023, Chp. 60, Art. 2, Sec. 2, Subd. 03a

Appropriation Language: \$75,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with the Friends of the Mississippi River to assess how prairie restoration and different restoration seeding methods affect bumblebee abundance, diversity, and habitat and make recommendations to improve restoration outcomes.

Appropriation End Date: June 30, 2026

Narrative

Project Summary: Using two prairie restorations, we will investigate how common restoration variables affect bumblebee habitat suitability by conducting bumblebee surveys and assessing nesting and foraging habitat in restored and remnant prairies.

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

Minnesota organizations spend millions of dollars on statewide land protection and habitat restoration each year, with a common goal being to provide habitat for pollinators. At the same time, native pollinators are experiencing population declines, as evidenced by the recent Federal listing of the Rusty Patched bumble bee. Currently, not enough is known about specific prairie restoration techniques or plant diversity levels needed to provide suitable habitat and encourage the greatest diversity of bumble bees, including important species like the Rusty Patched bumble bee. Moreover, it is unclear whether restorations differ from remnant prairie communities in their ability to provide nesting and foraging habitat for these species, or whether these two habitats differ in their realized pollinator diversity and abundance. Collecting this information will give managers insights necessary to help enhance past restorations and ensure that future restorations provide the greatest benefits for bumble bees and other native bees, with special attention to the needs of some of Minnesota's Species of Greatest Conservation Need (SGCNs).

What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.

This project will use two unique restoration sites to investigate two main questions: First, we will utilize an existing 180-acre experimental restoration site to assess how native seed mix diversity (30, 50, and 70 species) and seeding method (broadcast vs. drill seeding) contribute to the success of restorations in providing forage and nesting habitat used by bumblebees. We will also compare current bumble bee diversity and abundance within these treatments. At a second site with both remnant and restored prairies, we will assess how a typical restoration differs from a remnant site in terms of provision of suitable nesting and forage habitat, and will document whether restorations and remnants are used at the same levels of bumble bee diversity and abundance. FMR Ecologists will survey the current plant communities at each site, while pollinator biologists will survey current pollinator communities for two growing seasons. Data will be analyzed to compare pollinator abundance and diversity between treatments, and the Xerces Habitat Assessment tool will be used to score each treatment and to understand how restorations compare to remnant communities. These results will be incorporated into recommendations shared with Minnesota's restoration community to improve overall prairie restoration outcomes for bumble bees and other

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

This project will analyze the effects of typical prairie restoration methods and seed mix diversity on viable bumble bee habitat, and whether treatments affect realized bumble bee diversity and abundance. Moreover, this project will assess how restorations compare to remnants in providing suitable habitat, and in their realized bumblebee diversity and abundance. Results will identify desired plant diversity levels, seeding methods, and habitat characteristics necessary to improve past and future restorations for imperiled pollinators like the Rusty Patched bumble bee. Results will increase the return on future restoration funding and will contrast restorations versus remnant sites, influencing future land protection decisions.

Project Location

What is the best scale for describing where your work will take place?

County(s): Dakota, Sherburne,

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: Vegetation and pollinator surveys, pollinator habitat assessments

Activity Budget: \$60,000

Activity Description:

This project will use two unique restoration sites to investigate our two main questions. We will use an existing 180-acre experimental restoration site in Elk River to assess how native seed mix diversity and seeding method contribute to the success of restorations in providing high-quality forage and nesting habitat used by bumble bees. The site has six 30-acre blocks seeded with each combination of seed mix and seeding method. The second question will be addressed at a site in Hastings with both remnant and restored prairies, where we will establish multiple plots within each prairie type. FMR ecologists will survey the current plant communities at each site and within each treatment using the Grassland Monitoring Team’s Standardized Monitoring Protocol (2016) and will use the Xerces Society’s Pollinator Habitat Assessment guide to assess sites for available pollinator resources and nesting habitat. In order to capture flowering species throughout the growing season, these surveys will occur three times in each of the two years. Pollinator biologists will use timed meander surveys to document current bumble bee communities monthly for two growing seasons (with two surveys each in July and August), resulting in seven surveys between May and September each year.

Activity Milestones:

| Description | Approximate Completion Date |
|--|-----------------------------|
| Plot selection and set-up | March 31, 2024 |
| Vegetation surveys - year 1 | October 31, 2024 |
| Pollinator Habitat Assessment - year 1 | October 31, 2024 |
| Pollinator surveys - year 1 | October 31, 2024 |
| Pollinator habitat assessment - year 2 | October 31, 2025 |
| Pollinator surveys - year 2 | October 31, 2025 |
| Vegetation surveys - year 2 | October 31, 2025 |

Activity 2: Analysis and report writing

Activity Budget: \$15,000

Activity Description:

FMR staff will analyze data and create recommendations in the form of a report. ANOVA tests will compare mean bumble bee abundance and diversity between treatments, and multiple linear regressions will be used to determine the existence of correlation between specific treatment variables and bumble bee abundance and diversity. The Xerces Habitat Assessment tool will be used both to score each treatment and to understand how restorations compare to remnant communities in habitat suitability. Resulting scores will be compared across treatments and between restorations and remnants. The results of these analyses will be incorporated into recommendations shared with Minnesota’s restoration community to improve overall prairie restoration outcomes for bumble bees and other pollinators and to inform protection and restoration efforts.

Activity Milestones:

| Description | Approximate Completion Date |
|---|-----------------------------|
| Data entry from all veg surveys | October 31, 2025 |
| Data entry from assessment and pollinator surveys | December 31, 2025 |
| Data analysis complete | March 31, 2026 |
| Report writing complete | June 30, 2026 |

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.

The results of our study will be used to create a set of recommendations to improve current and future restorations. Recommendations will be disseminated through written reports distributed to statewide conservation partners including the MN DNR, BWSR, cities, counties, and nonprofits. Reports will be shared through organizations like the Metro Conservation Network, and hosted on websites including BWSR's "What's Working for Conservation" page and FMR's own website. Results of this study will also be presented at relevant conferences, including Pollinator Friendly Alliance's Best Practices for Pollinators, MCN's yearly meetings, and others. Depending on the study's outcomes, results may also be published in scientific journals. The Environment and Natural Resources Trust Fund will be acknowledged through the use of the trust fund logo on FMR's website and through attribution language on project print and electronic media, publications, signage, and other communications per the ENTRF Acknowledgment Guidelines.

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?

The results of our study will be used to create a set of recommendations to improve current and future restorations. Recommendations will be disseminated through written reports distributed to statewide conservation partners including the MN DNR, BWSR, cities, counties, and nonprofits. Reports will be shared through organizations like the Metro Conservation Network, and hosted on websites including BWSR's "What's Working for Conservation" page and FMR's own website. Results of this study will also be presented at relevant conferences, including Pollinator Friendly Alliance's Best Practices for Pollinators, MCN's yearly meetings, and others.

Other ENRTF Appropriations Awarded in the Last Six Years

| Name | Appropriation | Amount Awarded |
|---|---|----------------|
| Metro Conservation Corridors Phase VIII - Prairie, Forest, and Savanna Restoration in Greater Metropolitan Area | M.L. 2015, Chp. 76, Sec. 2, Subd. 08e | \$276,000 |
| Mississippi and Vermillion River Restoration of Prairie, Savanna, and Forest Habitat - Phase Ten | M.L. 2017, Chp. 96, Sec. 2, Subd. 08h | \$213,000 |
| Pollinator Habitat Creation Along The Urban Mississippi River | M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 08j | \$129,000 |
| Urban Pollinator And Native American Cultural Site Restoration | M.L. 2021, First Special Session, Chp. 6, Art. 6, Sec. 2, Subd. 08l | \$213,000 |

Budget Summary

| Category / Name | Subcategory or Type | Description | Purpose | Gen. Ineligible | % Benefits | # FTE | Classified Staff? | \$ Amount |
|---------------------------------------|-----------------------|---|--|-----------------|------------|-------|-------------------|-----------------|
| Personnel | | | | | | | | |
| Ecologist | | Survey & research | | | 25% | 0.36 | | \$37,500 |
| Entomologist | | Pollinator surveys | | | 25% | 0.24 | | \$22,800 |
| Project Manager | | Project oversight | | | 25% | 0.06 | | \$5,400 |
| Accountant | | Accounting expenses related to project invoicing and grant tracking | | | 25% | 0.03 | | \$4,300 |
| | | | | | | | Sub Total | \$70,000 |
| Contracts and Services | | | | | | | | |
| | | | | | | | Sub Total | - |
| Equipment, Tools, and Supplies | | | | | | | | |
| | Tools and Supplies | Sweep nets, hand lenses, photography jars | Equipment to assist in non-lethal pollinator surveys. | | | | | \$1,500 |
| | Tools and Supplies | Post, ping flags, flagging, data sheets | Plot set-up, marking, and survey supplies | | | | | \$800 |
| | | | | | | | Sub Total | \$2,300 |
| Capital Expenditures | | | | | | | | |
| | | | | | | | Sub Total | - |
| Acquisitions and Stewardship | | | | | | | | |
| | | | | | | | Sub Total | - |
| Travel In Minnesota | | | | | | | | |
| | Miles/ Meals/ Lodging | 28 trips to two sites at \$0.585/mile | Mileage for twice-monthly pollinator surveys, habitat assessments, and other site visits | | | | | \$1,900 |

| | | | | | | | | |
|---------------------------------|----------|--|--|--|--|--|--------------------|-----------------|
| | | | | | | | Sub Total | \$1,900 |
| Travel Outside Minnesota | | | | | | | | |
| | | | | | | | Sub Total | - |
| Printing and Publication | | | | | | | | |
| | Printing | In-house or contracted printing of 250+ project reports for partners | Printing to disseminate report of project's findings | | | | | \$800 |
| | | | | | | | Sub Total | \$800 |
| Other Expenses | | | | | | | | |
| | | | | | | | Sub Total | - |
| | | | | | | | Grand Total | \$75,000 |

Classified Staff or Generally Ineligible Expenses

| Category/Name | Subcategory or Type | Description | Justification Ineligible Expense or Classified Staff Request |
|---------------|---------------------|-------------|--|
|---------------|---------------------|-------------|--|

Non ENRTF Funds

| Category | Specific Source | Use | Status | \$ Amount |
|------------------|-----------------|------------|----------------------------|-----------------|
| State | | | | |
| | | | State Sub Total | - |
| Non-State | | | | |
| In-Kind | Private donors | Staff time | Potential | \$10,000 |
| | | | Non State Sub Total | \$10,000 |
| | | | Funds Total | \$10,000 |

Attachments

Required Attachments

Visual Component

File: [acb6afb7-067.pdf](#)

Alternate Text for Visual Component

Site Maps - Houlton and Hastings Sand Coulee SNA...

Financial Capacity

File: [d4f8574e-dbe.pdf](#)

Board Resolution or Letter

| Title | File |
|---------------------------------|----------------------------------|
| FMR board resolution LCCMR ML23 | f5e5a93a-1fc.pdf |

Optional Attachments

Support Letter, Photos, Media, Other

| Title | File |
|----------------------------|----------------------------------|
| GRG letter support | ae974825-8d8.pdf |
| Background Check form | a4e90d2c-0a7.pdf |
| Approved Research Addendum | 9b68a1c9-f11.pdf |

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

FMR staff made small edits to include additional contact information, change the geographical extent of the project from "Metro" to "County (Dakota/Sherburne)" since Sherburne is often not considered part of the true "Metro" (though we're happy to change this back to Metro if that's more accurate), correct grammatical errors in the narrative section, change the reporting periods to 2/1 and 8/1, and add a section on dissemination.

Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?

N/A

Do you agree travel expenses must follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

Yes, I agree to the Commissioner's Plan.

Does your project have potential for royalties, copyrights, patents, or sale of products and assets?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

Yes

Does the organization have a fiscal agent for this project?

No