Environment and Natural Resources Trust Fund

2023 Request for Proposal

General Information

Proposal ID: 2023-044

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

Project Manager Information

Name: Alex Roth

Organization: Friends of the Mississippi River

Office Telephone: (651) 222-2193

Email: aroth@fmr.org

Project Basic Information

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.

Funds Requested: $75,000

Proposed Project Completion: June 30, 2026

LCCMR Funding Category: Small Projects (H)

Secondary Category: Foundational Natural Resource Data and Information (A)

Project Location

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

Region(s): Metro

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

Narrative

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.

Activities and Milestones

Activity 1: Vegetation and pollinator surveys, pollinator habitat assessments

Activity Budget: $60,000

Activity Description:
FMR staff will survey vegetation at both sites to document plant diversity, and will use the Xerces Society's Pollinator Habitat Assessment guide to assess sites for available pollinator resources and nesting habitat. FMR will hire a pollinator biologist to survey pollinators at all sites.

Activity Milestones:

Description	Completion Date
Vegetation surveys	October 31, 2024
Pollinator habitat assessment	October 31, 2025
Pollinator surveys	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.

Activity Milestones:

Description	Completion Date
Data entry from all veg surveys	March 31, 2025
Data entry from assessment and pollinator surveys	December 31, 2025

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

Project Manager and Organization Qualifications

Project Manager Name: Alex Roth

Job Title: Conservation Director

Provide description of the project manager's qualifications to manage the proposed project.

Friends of the Mississippi River (FMR) and Dr. Roth have managed many past LCCMR projects, including active FY20 and FY21 appropriations. FMR staff manage a network of more than 30 active restoration sites, many of which have been funded in part by LCCMR appropriations, and conduct active restoration research that has resulted in publications and reports shared with the restoration community. FMR staff hold advanced degrees in Natural Resources, Ecology, and Restoration, and this project would draw on FMR's experience with restoration, research, and monitoring to assess sites' habitat suitability for bumblebees (including the Rusty Patched Bumblebee other important pollinators). FMR is uniquely positioned to investigate this topic given our experience and connections with both restoration and research projects.

Organization: Friends of the Mississippi River

Organization Description:

Friends of the Mississippi River (FMR) is a leading citizen organization working to protect and enhance the Mississippi River and its watershed in the Twin Cities area. We believe the tremendous ecological, cultural, scenic and recreational values of the river must be carefully tended to ensure that they continue to be shared equally by all citizens and that they endure for future generations. We accomplish these goals through three inter-related programs.

- Land Conservation: We work with public and private landowners to protect, restore and manage important natural areas along the river and its key tributaries.
- Watershed Protection: Working with citizens and local governments, we strive to draw attention to the health of

local rivers, lakes and wetlands and bring citizen opinion to bear on decisions that improve water quality.

- River Corridor Stewardship: The Mississippi River cannot protect itself. We engage citizens in a variety of educational, recreational, and volunteer stewardship activities that give them the desire and the understanding to advocate on behalf of the river's public values at City Hall or the State Capitol.

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			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 or Other

Title	File
GRG letter support	ae974825-8d8.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

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

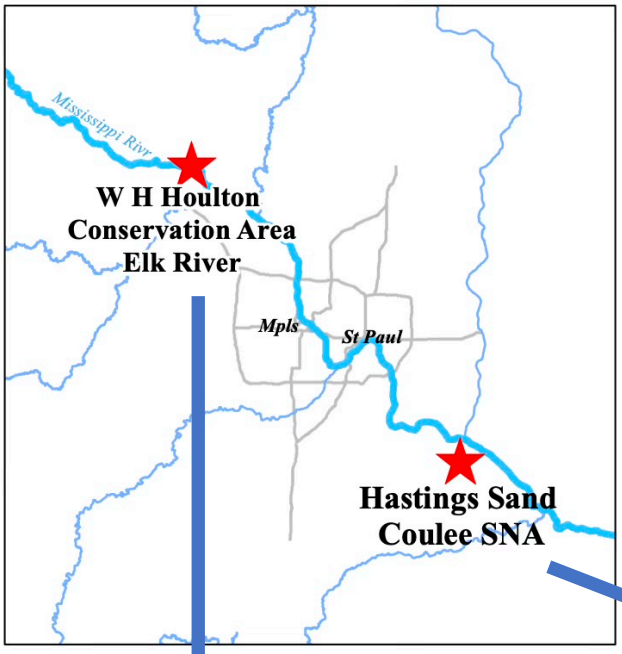
Does the organization have a fiscal agent for this project?

No

Assessing Restorations for Rusty Patched and Other Bumble Bee Habitat

Proposal to LCCMR ML23

Friends of the Mississippi River



Evaluate bumble bee forage and nesting habitat at:

- Sites with different seeding methods
- Sites with different plant species diversity
- Native vs restored prairie

Document bumble bee diversity at restored and remnant prairie.

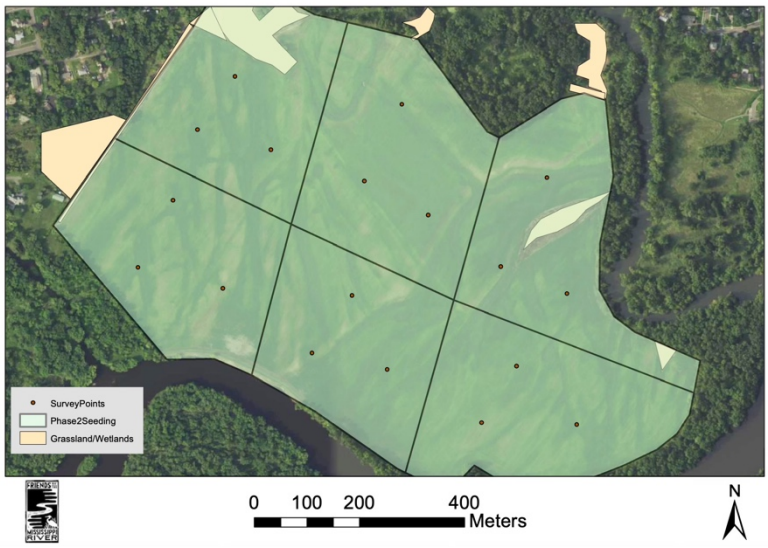


Figure 2. 180-acre restored prairie at Houlton with different species diversity and different seeding methods.

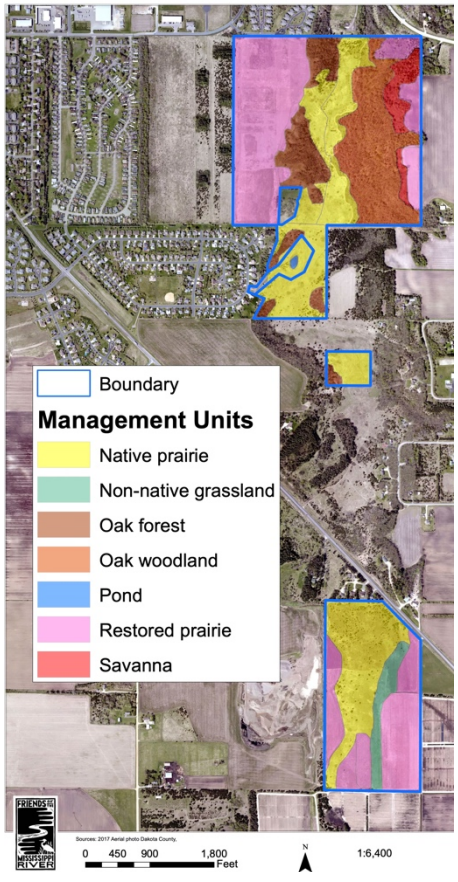


Figure 1. 90 acres of native prairie and 90 acres restored prairie at the Sand Coulee.