

Final Abstract

Final Report Approved on September 21, 2026

M.L. 2023 Project Abstract

For the Period Ending June 30, 2026

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

Project Manager: Alex Roth

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Funding Source:

Fiscal Year:

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

Appropriation Amount: \$75,000

Amount Spent: \$68,418

Amount Remaining: \$6,582

Sound bite of Project Outcomes and Results

Through analysis of two seasons of pollinator and vegetation surveys at 18 study units, FMR created a set of recommendations to improve current and future restorations for bumble bee habitat. FMR completed extensive dissemination of project results, sharing project outputs with over 100 contacts at over 40 organizations and networks.

Summary of Project and Outcomes

Conservation organizations in Minnesota spend millions of dollars on land protection and habitat restoration each year, with a common goal of protecting and creating habitat for pollinators. At the same time, native pollinators continue to experience population declines. 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 and other pollinators. Moreover, it is unclear whether restorations differ from remnant prairie communities in their ability to provide habitat for these species. To improve habitat management for bumble bees, we conducted a multi-year study of restoration seeding methods and restored versus remnant prairie habitats in Minnesota, USA. We surveyed bumble bee abundance and diversity and assessed floral resource availability and habitat quality in 18 study units across two growing seasons. Restored prairies had three times more bumble bees than remnant prairies, and restorations with

greater flowering species richness and more diverse seed mixes supported greater bumble bee abundance and species richness. We compared habitat scores obtained from the Xerces Society's habitat assessment tool with bumble bee data collected in the field. Seeding method and habitat assessment scores were not associated with bumble bee abundance or diversity, pointing to flexibility for managers when it comes to seeding prairie species. These results, disseminated in a practitioner guide, report, and a recently-submitted scientific journal manuscript, provide practical guidance for pollinator habitat managers and inform prioritization for land protection and conservation.

Project Results Use and Dissemination

With LCCMR funding, FMR created a set of recommendations to improve current and future restorations. We have disseminated these recommendations through a 2-page practitioner guide and white paper report distributed to statewide conservation partners, including the MN DNR, BWSR, cities, counties, the Monarch Joint Venture Partner Network, the Rusty Patch bumble bee research collaboration, the Metro Conservation Network, universities, Master Naturalists, and on FMR's own website. We presented preliminary findings from this project at the 2025 Entomology Society of America annual meeting, and Bee Con 2025, and we have submitted a manuscript to the peer-reviewed journal *Prairie Naturalist*.



Environment and Natural Resources Trust Fund

M.L. 2023 Approved Final Report

General Information

Date: October 5, 2026

ID Number: 2023-044

Staff Lead: Tiffany Schaufler

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

Final Report Approved: September 21, 2026

Reporting Status: Project Completed

Date of Last Action: September 21, 2026

Project Completion: June 30, 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 ENRTF 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	\$ Amount Spent	\$ Amount Remaining
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	\$63,484	\$6,516
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	\$1,435	\$65
	Tools and Supplies	Post, ping flags, flagging, data sheets	Plot set-up, marking, and survey supplies					\$800	\$800	-
							Sub Total	\$2,300	\$2,235	\$65
Capital Equipment										
							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	\$1,899	\$1

							Sub Total	\$1,900	\$1,899	\$1
Travel Outside Minnesota										
							Sub Total	-	-	-
Printing and Publication										
	Publication	Fee for peer-reviewed journal article submission/publication (Prairie Naturalist @ \$60 per page; current draft at 17pgs). Additional cost will be covered by FMR match.	Cost of publication to disseminate project findings to a broader management community					\$800	\$800	-
							Sub Total	\$800	\$800	-
Other Expenses										
							Sub Total	-	-	-
							Grand Total	\$75,000	\$68,418	\$6,582

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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Non ENRTF Funds

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

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, 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
FMR Practitioner Guide	e86481ce-186.pdf
FMR Bumble bee Report	8d0572c4-c91.pdf

Media Links

Title	Link
FMR's Mississippi Messages newsletter	https://fmr.org/updates/conservation/fmr-becoming-powerhouse-pollinator-protection
Dr. Julia Leone also presented preliminary results from our first field season at a national conference: "BeeCon 2024"	https://fmr.org/updates/conservation/watch-fmrs-dr-julia-leone-presents-beecon-2024
FMR final project results via Newsletter and website	https://fmr.org/updates/conservation/results-multi-year-bumble-bee-research-study

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 understand that travel expenses are only approved if they 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 understand the Commissioner's Plan applies.

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

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

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

N/A

Work Plan Amendments

Amendment ID	Request Type	Changes made on the following pages	Justification For Amendment Request (word limit 75)	Date Submitted	Approved	Date of LCCMR Action
1	Amendment Request	Budget - Printing and Publication	Move \$800 from printing to publication costs. FMR will submit research findings for publication in a peer-reviewed journal such as the Prairie Naturalist (estimated cost at \$60 per page). This will increase the audience and overall dissemination of this work both in Minnesota and beyond. Any overage in cost will be paid for with matching funds from FMR, and FMR will also provide funding to print copies of our research report and practitioner guide.	May 27, 2026	Yes	May 27, 2026

Status Update Reporting

Final Status Update August 14, 2026

Date Submitted: July 14, 2026

Date Approved: August 7, 2026

Overall Update

FMR has completed all stated outcomes and milestones associated with both Activities 1 and 2. Work during this reporting period focused on Activity 2 (Activity 1 was completed during the previous reporting period), and included the creation of a practitioner guide, a more detailed report, and the preparation and submission of a manuscript to a peer-reviewed scientific journal. FMR completed extensive and intentional dissemination of project results, sharing these outputs with over 100 contacts at over 40 organizations and networks.

Activity 1

This activity was previously marked complete.

(This activity marked as complete as of this status update)

Activity 2

The first three milestones (data entry and analysis) were completed in fall 2025, and milestone #4 was completed at the end of June 2026. Outputs include a short practitioner guide, a longer, more detailed report, and a manuscript submitted for publication in the peer-reviewed journal The Prairie Naturalist.

(This activity marked as complete as of this status update)

Dissemination

After review by LCCMR staff, FMR has disseminated project findings and management recommendations through a 2-page practitioner guide and white paper report distributed to statewide conservation partners, including: the MN DNR SNA, AMA, and WMA programs, BWSR, cities, counties, the Monarch Joint Venture Partner Network, the Rusty Patch bumble bee research collaboration, the Metro Conservation Network, universities, Master Naturalists, and on FMR's own website. We also presented preliminary findings from this project at the 2025 Entomology Society of America annual meeting, and Bee Con 2025 to broaden the reach past Minnesota practitioners. We have submitted a manuscript to the peer-reviewed journal Prairie Naturalist for consideration for publication. The Environment and Natural Resources Trust Fund was acknowledged through the use of the trust fund logo on FMR's website and in all conference presentations, and through attribution language in project print and electronic media, manuscripts, and other project-specific communications, per the ENTRF Acknowledgment Guidelines.

Status Update Reporting

Status Update February 1, 2026

Date Submitted: January 19, 2026

Date Approved: January 30, 2026

Overall Update

As of October 2025, FMR has finished the second full season of data collection, completing all milestones in Activity 1. Data from the 2025 field season have been entered and cleaned, completing milestones 1 and 2 in Activity 2, with initial summary analyses conducted and presented at a national conference in November. These presentations have helped create the initial framework for our final reports. Data analysis will continue through the spring, with goals of creating a field guide, a white paper, and a potential journal article all still on track. This keeps us on track to achieve all stated outcomes and milestones.

Activity 1

FMR has completed the remaining milestones - #2, #3, and #7 - in Activity 1, bringing work on that activity to a close. In October 2025 we completed the our second year of bumble bee and vegetation surveys in 6 units, each 30 acres, at the William H. Houlton Conservation Area in Elk River, and the second year of bumble bee and vegetation surveys in 12 paired (remnant and restored) prairie units at the Hastings Sand Coulee SNA, 3M Cottage Grove, and Flint Hills Pine Bend Bluffs. Habitat assessments for each unit are complete, as are the comprehensive annual vegetation surveys, conducted in July 2025. Activity 1 is now fully complete, and aside from normal scheduling difficulties due to weather, went according to plan.

(This activity marked as complete as of this status update)

Activity 2

Data were entered and cleaned in October and November 2025, and analyses commenced in November and December 2025. We observed over 2,000 bumblebees of fourteen species across various sites and survey dates. Preliminary analyses indicate that bees are more abundant in units seeded with a higher overall number of plant species. Preliminary results also suggest that restored prairies provide important habitat for bumble bees. We observed five times as many bumble bees in restored compared to remnant prairie units, and found no difference in bumble bee species richness. Initial reports for these results were prepared in presentation form for Analyses, interpretation, and writing will continue in spring 2026.

Dissemination

No additional written dissemination has occurred during this reporting period. Dr. Julia Leone presented initial research results at the Entomological Society of America annual conference in Portland Oregon. Her talk, "Habitat assessments for bumble bees in Minnesota restored and remnant prairie" generated immense interest in our work, with a number of requests to collaborate from various colleagues in the Midwest and beyond. ENRTF was acknowledged as the primary funding source for this work.

Status Update Reporting

Status Update August 1, 2025

Date Submitted: July 28, 2025

Date Approved: August 5, 2025

Overall Update

FMR has begun our second full season of data collection, and is making progress on the three remaining milestones in Activity 1. Data from the 2024 field season have been entered and cleaned, with summary analyses conducted and presented at a national conference. Analyses will continue following the completion of our second season of data collection in fall 2025. Once complete, all data will be entered and analyzed, and we will begin final analysis and report writing. This keeps us on track to achieve all stated outcomes and milestones.

Activity 1

FMR continues to meet all listed milestones, and is currently making progress toward milestones #2, 3, and 7. In June 2025 we completed the first round of our second year of bumble bee and vegetation surveys in 6 units, each 30 acres, at the William H. Houlton Conservation Area in Elk River. In June 2025 we also completed the first round of our second year of bumble bee and vegetation surveys in 12 paired (remnant and restored) prairie units at the Hastings Sand Coulee SNA, 3M Cottage Grove, and Flint Hills Pine Bend Bluffs. Bumble bee surveys began in early June 2025 and will continue through September 2025. Available floral resources have been and will continue to be evaluated concurrently. Habitat assessments for each unit are ongoing, beginning with an assessment of Spring forage. Complete vegetation surveys will take place within each unit in July 2025. We are on track to complete these three activities by fall 2025, which will complete Activity 1.

Activity 2

Analysis of data collected throughout summer 2025 will occur in late summer and early fall 2025, and will be combined with 2024 data to provide more robust insights into the statistical validity of the trends reported on in the last reporting period.

Dissemination

No additional dissemination has occurred during this reporting period. Dr. Julia Leone has submitted abstracts to two conferences set to take place in fall 2025 where she hopes to present results from the first two seasons of fieldwork.

Status Update Reporting

Status Update February 1, 2025

Date Submitted: January 27, 2025

Date Approved: February 5, 2025

Overall Update

FMR has completed our first full season of data collection. After completing plot selection and schedule generation objectives for LCCMR23 in 2023, the first rounds of both pollinator and vegetation surveys at the various sites have been fully completed. Most data from the field season have been entered and cleaned, and we have begun summary analyses; analyses will continue following a second season of data collection in 2025. This keeps us on track to achieve all stated outcomes and milestones.

Activity 1

FMR continues to meet all listed milestones. We have now completed the site selection and plot set-up milestone (#4), the first round of pollinator surveys (#6), the first round of vegetation surveys (#1), and the first round of pollinator habitat assessments (#5). To explore our seeding method and seed mix diversity question, pollinator and vegetation surveys took place in 6 previously established plots, each 30 acres, at the William H. Houlton Conservation Area in Elk River. To explore our restoration versus remnant question, surveys took place in 12 paired (remnant and restoration) plots at the Hastings Sand Coulee SNA, 3M Cottage Grove, and Flint Hills Pine Bend Bluffs. Bumble bee surveys began in mid-May and continued through September. Available floral resources were evaluated concurrently. Habitat assessments for each unit and site and complete vegetation surveys of the units occurred in July and August 2024.

Activity 2

Analysis of data collected throughout summer 2024 has just begun, with some summary stats now available. We observed over 800 bumble bees representing twelve species, including a single rusty-patched bumble bee. Bumble bee abundance was higher in units seeded with a higher plant species diversity. Bumble bee abundance was higher in drill-seeded units compared to units where seed was broadcast. We found nearly three times as many bumble bees in restored compared to remnant prairie, and species richness was also higher in restored prairies. These results are not yet analyzed for statistical significance, but demonstrate important initial trends from our first year of data collection. Analysis will continue as more data is collected in 2025.

Dissemination

We wrote about the overall goals of our research in an August piece in FMR's Mississippi Messages newsletter:

<https://fmr.org/updates/conservation/fmr-becoming-powerhouse-pollinator-protection>

Dr. Julia Leone also presented preliminary results from our first field season at a national conference: "BeeCon 2024" and acknowledged LCCMR and ENRTF as funders during her talk. A recording of her talk can be found at the following link:

<https://fmr.org/updates/conservation/watch-fmrs-dr-julia-leone-presents-beecon-2024>

Status Update Reporting

Status Update August 1, 2024

Date Submitted: July 29, 2024

Date Approved: August 26, 2024

Overall Update

Research and data collection is now well underway. The plot selection and schedule generation objectives for LCCMR23 field research have been completed, and the first rounds of both pollinator and vegetation surveys at the various sites are underway, keeping us on track to achieve our stated outcomes and milestones.

Activity 1

FMR is on track to meet all listed milestones, and we have completed out site selection and plot set-up milestone. Toward objective one, the first round of pollinator and vegetation surveys took place in 6 previously established plots, each 30 acres, at the William H. Houlton Conservation Area in Elk River. Toward objective two, the first round and a partial second round of surveys took place in 12 paired (remnant and restoration) plots at the Hastings Sand Coulee SNA, 3M Cottage Grove, and Flint Hills Pine Bend Bluffs. Bumble bee surveys began in mid-May and will continue through September. Available floral resources have been and will continue to be evaluated concurrently. Habitat assessments for each unit are on-going, beginning with an assessment of Spring forage. Complete vegetation surveys will take place within each unit in August.

Activity 2

No work towards Activity 2 has been completed since data collection is not yet complete for 2024.

Dissemination

We wrote about this ENRTF-funded pollinator research, going into detail about the goals and importance of the study, in a 2023 newsletter piece (audience of roughly 10k).

<https://fmr.org/updates/conservation/more-3000-pollinators-and-other-interesting-findings-our-2023-monitoring>

FMR will be writing additional pieces about this work, including a wrap-up of the first field season, later in 2024.

Status Update Reporting

Status Update February 1, 2024

Date Submitted: January 31, 2024

Date Approved: February 21, 2024

Overall Update

Plot selection and schedule generation for LCCMR23 field research have been completed.

Activity 1

FMR has selected sites and general plot locations and firmed up a monitoring schedule for the summer 2024 field season. FMR pollinator biologists will evaluate bumble bee forage, nesting habitat, and diversity at a site with different seeding methods and different seeded plant species diversity. Surveys will take place in 6 previously established plots, each 30 acres, at the William H. Houlton Conservation Area in Elk River. For the objective of evaluating bumble bee forage, nesting habitat, and diversity at restored vs remnant prairie, surveys will take place in 12 paired (remnant and restoration) plots at the Hastings Sand Coulee SNA, 3M Cottage Grove, and Flint Hills Pine Bend Bluffs. Bumble bee surveys will take place in each plot in May – September. Available floral resources will be evaluated concurrently. Additional vegetation surveys and habitat assessments will take place 1-3 times throughout the growing season, depending on phenology.

Activity 2

No work towards Activity 2 has been completed since data collection has not yet begun.

Dissemination

In a 2023 year-end monitoring wrap-up piece, FMR mentions that we are embarking on ENRTF-funded pollinator research, going into detail about the goals and importance of the study:

<https://fmr.org/updates/conservation/more-3000-pollinators-and-other-interesting-findings-our-2023-monitoring>

Status Update Reporting

Status Update August 1, 2023

Date Submitted: July 7, 2023

Date Approved: July 10, 2023

Overall Update

LCCMR waived reporting for this period per email on July 6, 2023.

Activity 1

LCCMR waived reporting for this period per email on July 6, 2023.

Activity 2

LCCMR waived reporting for this period per email on July 6, 2023.

Dissemination

LCCMR waived reporting for this period per email on July 6, 2023.