



# Environment and Natural Resources Trust Fund

M.L. 2024 Approved Work Plan

## General Information

**ID Number:** 2024-192

**Staff Lead:** Mike Campana

**Date this document submitted to LCCMR:** June 9, 2024

**Project Title:** Assessing Prairie Health to Inform Pollinator Conservation

**Project Budget:** \$297,000

## Project Manager Information

**Name:** Erik Runquist

**Organization:** Minnesota Zoological Garden

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## Project Reporting

**Date Work Plan Approved by LCCMR:** June 20, 2024

**Reporting Schedule:** June 1 / December 1 of each year.

**Project Completion:** June 30, 2027

**Final Report Due Date:** August 14, 2027

## Legal Information

**Legal Citation:** M.L. 2024, Chp. 83, Sec. 2, Subd. 03r

**Appropriation Language:** \$297,000 the second year is from the trust fund to the Minnesota Zoological Society to assess habitat quality and pesticide occurrence in Minnesota prairies to help inform management actions, endangered species recovery plans, and pollinator reintroduction efforts for endangered and threatened butterflies and other wildlife.

**Appropriation End Date:** June 30, 2027

## Narrative

**Project Summary:** We will assess the environmental quality of prairies across Minnesota. On-the-ground surveys and contaminant risk assessments will help inform partner management actions, endangered species recovery plans, and pollinator reintroduction efforts.

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

Minnesota's fragmented prairies are important legacies of one of the world's most endangered ecosystems. The recovery of two U.S. and Minnesota Threatened and Endangered prairie butterflies will depend on the re-establishment of dozens of lost populations into fragmented prairie remnants across their range, including in Minnesota, via reintroductions. The Minnesota Zoo has established large foundational propagation programs for these globally imperiled butterflies and has begun reintroductions of Dakota skippers with prior ENRTF support. Since 2014, Minnesota Zoo scientists have also been annually documenting widespread and predictable annual presence of dozens of pesticides within several Minnesota prairies that are designated Critical Habitat for these protected species. To improve the likelihood of success for future additional reintroductions, we need a better understanding of the suitability of candidate sites, including the extent of risks from non-target pesticides, invasive species, and other stressors. For example, it is not known if there are locations where non-target pesticide occurrence is lower. Beyond these flagship endangered pollinators, the health of Minnesota's prairie remnants are vital to broad swaths of grassland-dependent wildlife like songbirds and bison, many of which are also imperiled, as well as to the environmental legacy cherished by Minnesotans.

**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.**

We propose to conduct habitat quality inventories of more than a dozen prairies across Minnesota. In collaboration with all partners, we will leverage and expand upon existing resources and databases to refine the sites of interest, spanning federal, tribal, state, regional, and private management. The sites will likely include both protected remnants as well as restored prairies. We will conduct on-the-ground assessments at selected sites, scoring them based on a series of variables related to ecological conditions that we will develop in consultation with partners. A key filter for these assessments will be the habitat characteristics associated with endangered skipper butterflies. Variables may include the distribution and composition of preferred adult and larval host plants and other resources for the listed butterflies, the prevalence of invasive species, suitable hydrology, the extent of potentially suitable habitat, landscape context, and the likelihood for compatible management. We will also expand our sampling of non-target pesticide occurrence from the current three prairie preserves that the Minnesota Zoo has been annually studying to more than a dozen sites. We will collect samples multiple times per year from selected prairies to screen for the quantities of more than 200 pesticides at a nationally respected lab.

**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?**

We will provide an update on the quality and ecological condition of prairies across Minnesota. This inventory will help advance conservation goals and management planning for not only federally and state protected butterflies with the eventual goal of helping to meet formal federal recovery thresholds, but also for broad swaths of wildlife that also depend on our grasslands. Identifying areas where non-target pesticide occurrences are low could be further considered for endangered butterfly reintroductions, and strategies can be developed to reduce risk in areas of relatively high pesticide occurrence. This project will facilitate communication across a wide range of partners.

## Project Location

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

Region(s): Central, Metro, SE, SW, NW,

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

Region(s): Central, Metro, NW, SE, SW,

**When will the work impact occur?**

During the Project and In the Future

## Activities and Milestones

### Activity 1: Prairie Quality Inventories

**Activity Budget:** \$119,700

**Activity Description:**

In collaboration with partners, we will develop metrics to assess the ecological conditions of prairies across Minnesota. These will be centered around the vegetative characteristics suitable for federally listed prairie butterflies to refine the list of candidate sites for future reintroductions but the assessments should also be broadly informative for many prairie species. We will refine the list of sites to be studied, leveraging existing partner knowledge and relevant databases, and then conduct on-the-ground surveys as needed to characterize site conditions. We expect that at least a dozen sites will likely be ultimately selected. Habitat quality surveys by Zoo staff will generally coincide with the biannual collection of samples for pesticide residue analysis (Activity 2), but may be opportunistically conducted in other seasons as well. We expect each site to receive at least one habitat quality inventory; sites that are obviously of low quality (e.g. high invasive species occurrence, etc.) may only be surveyed once to allow for more significant inventories in other more promising locations. We will annually secure any necessary access and research permits. The results of these surveys will be compiled and shared with partners in both seasonal summaries and in a final summary report.

**Activity Milestones:**

Description	Approximate Completion Date
Develop metrics for ecological condition assessments in collaboration with partners	December 31, 2024
Refine list of sites for on-the-ground surveys.	April 30, 2025
Complete site surveys	May 31, 2027
Complete site survey data compilation and summarization	June 30, 2027

### Activity 2: Pesticide risk assessment

**Activity Budget:** \$177,300

**Activity Description:**

We will collect samples of the putative host plants of federally- and State-listed prairie butterflies and potentially other matrices (soil, duff, etc.) and have them analyzed for pesticide composition and quantities. We expect to collect samples from at least a dozen prairies multiple times in a growing season (such as late spring and late summer) over multiple years to improve our understanding of the variation in compound types and quantities that may be present at a site. We will collect multiple samples from throughout each site per season. The laboratory will provide data on the precise quantities of 175+ pesticides and some of their residues for each sample. We will annually revise as needed the list of prairies for collections and will secure all necessary access, research, and collection permits before proceeding with collections. We will share all results with partners in seasonal meetings and required annual permitting reports. We anticipate that the data and associated findings will form the core of a manuscript that will be submitted for peer reviewed publication at the conclusion of the project.

**Activity Milestones:**

Description	Approximate Completion Date
Refine list of sites for sample collections, secure permits, and collect Year 1 Summer samples	September 30, 2024
Secure annual permits and collect Year 1 of Spring samples; submit for pesticide analysis	June 30, 2025
Collect Year 2 of Summer samples and submit for pesticide analysis	September 30, 2025
Secure annual permits and collect Year 2 of Spring samples; submit for pesticide analysis	June 30, 2026
Collect Year 3 of Summer samples and submit for pesticide analysis	September 30, 2026

Secure annual permits and collect Year 3 of Spring samples; submit for pesticide analysis	May 31, 2027
Compile results of pesticides analyses and prepare summary report	June 30, 2027

## Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Marissa Ahlering, PhD	The Nature Conservancy	Coordination of site visits and research facilitation with The Nature Conservancy's preserves.	No
Brandon Semel, PhD	US Fish and Wildlife Service	Facilitate site visits and planning in and near Big Stone National Wildlife Refuge.	No
Cindy Lueth	Minnesota Department of Natural Resources, Division of Parks and Trails	Coordination of site selection, visits, and planning with Minnesota State Parks.	No
Tamara Smith	US Fish and Wildlife Service	Coordination of US Endangered Species related regulations and recovery planning for Poweshiek skipperling	No
Araceli Morales Santos	US Fish and Wildlife Service	Coordination of US Endangered Species related regulations and recovery planning for Dakota skipper	No
Sarah Warner	US Fish and Wildlife Service	Coordination of contaminants risk analysis for Poweshiek skipperling and other federally listed prairie species.	No
Ferin Davis Anderson	Shakopee Mdewakanton Sioux Community	Coordination of site visits and planning on SMSC lands.	No
Sara Vacek	US Fish and Wildlife Service	Coordination of site visits, selection, and planning within the Morris Wetland Management District.	No
Mike Budd	US Fish and Wildlife Service	Coordination of site visits, selection, and planning within Northern Tallgrass Prairie National Wildlife Refuge.	No
John Moriarity	Three Rivers Park District	Coordination of site visits and planning within Three Rivers Park District Reserves.	No
Tom Lewanski	Dakota County Parks	Coordination of site visits and planning within Dakota County Parks.	No
Judy Schulte	Minnesota Department of Natural Resources, Ecological and Water Resources	Coordination of site visits, selection, and planning within Scientific and Natural Areas.	No
Theresa Cira, PhD	Minnesota Department of Agriculture	Consultation on pesticides occurrence monitoring data.	No

## 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.** Successful implementation of this project will fundamentally depend on interactions with and between a wide range of

federal, state, tribal, regional, local, and non-profit partners. Minnesota Zoo staff will implement periodic meetings between collaborating institutions to develop survey protocols, share data, and discuss action plans. Results will be shared with additional agencies/partners as appropriate to advance their operations and management activities, including possibly through peer-reviewed scientific literature. Elements of the work may be shared through various external media sources, including the Minnesota Zoo's social media platforms. The Environment and Natural Resources Trust Fund will be acknowledged in project print and electronic media, publications, signage, and other communications per the ENRTF Acknowledgement Guidelines through the use of the trust fund logo and/or attribution language.

### 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 information resulting from this monitoring and inventory will help project partners develop tailored management plans. The goal of this project is to provide a snapshot of the ecological condition of studied prairies and does not necessarily trigger additional long-term monitoring or actions. Given the breadth of sites that we hope to study, any additional steps will likely be done on an individual basis by project partners, although there may be some resulting management recommendations that are shared across partner sites.

### Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Saving Endangered Pollinators through Data-Driven Prairie Restoration	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 08a	\$800,000

## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Project Manager and Conservation Scientist		Coordination of all activities, collection of field data, and communications among all partners.			29%	0.45	X	\$68,000
Biologist		Collection of field data and support for assessments and decision making processes			22%	0.45	X	\$45,000
							<b>Sub Total</b>	<b>\$113,000</b>
<b>Contracts and Services</b>								
TBD	Professional or Technical Service Contract	Laboratory analysis to precisely quantify the presence of about 200 possible pesticides and their derivatives from all field collected samples.				0.15		\$162,000
							<b>Sub Total</b>	<b>\$162,000</b>
<b>Equipment, Tools, and Supplies</b>								
	Tools and Supplies	Dry ice. Averaging 1 block per 2 pesticide samples; \$20/block	Field preservation of samples collected for pesticide analysis					\$3,600
	Tools and Supplies	Boxes and shipping	Secure packaging and shipping of samples to the laboratory for pesticides analysis					\$600
	Tools and Supplies	Consumables for pesticides sample collections	Bags, gloves, disinfecting materials, and other consumables for pesticide collections					\$500
	Equipment	GPS Units - 2	Geolocation of sample collection points and other key sites of interest for condition assessments. Two are needed to allow for simultaneous work at different sites.					\$1,300
	Tools and Supplies	Coolers for field collections - 2	High quality coolers are needed to maintain cold conditions to preserve samples over potentially multiple days in the field					\$600



	Equipment	Battery charger	To maintain charge of field electronics, such as tablets, drones, etc., during field work					\$400
							<b>Sub Total</b>	<b>\$7,000</b>
<b>Capital Expenditures</b>								
							<b>Sub Total</b>	-
<b>Acquisitions and Stewardship</b>								
							<b>Sub Total</b>	-
<b>Travel In Minnesota</b>								
	Miles/ Meals/ Lodging	An average of 30 days of field work per year over three years = 90 field days. \$120/day for hotel, \$36/day for food. \$1000 for fuel.	Lodging, travel, and food costs to conduct all field work associated with this project					\$15,000
							<b>Sub Total</b>	<b>\$15,000</b>
<b>Travel Outside Minnesota</b>								
							<b>Sub Total</b>	-
<b>Printing and Publication</b>								
							<b>Sub Total</b>	-
<b>Other Expenses</b>								
							<b>Sub Total</b>	-
							<b>Grand Total</b>	<b>\$297,000</b>

## Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Personnel - Project Manager and Conservation Scientist		Coordination of all activities, collection of field data, and communications among all partners.	<b>Classified</b> : A classified staff position will be partially supported by these ENRTF funds. This staff member will have the necessary expertise required to successfully implement all Activities. The ENRTF funding will make it possible for the staff member to work on this project for the percentage of time indicated in the budget. Without this funding they would not be able to support this project with their time. Further, the nature of the success of this project necessitates some level of expertise coming from the Zoo, which this staff member will be instrumental in providing. Responsibilities for the classified staff will be reprioritized and reallocated as necessary to support this project.
Personnel - Biologist		Collection of field data and support for assessments and decision making processes	<b>Classified</b> : A classified staff position will be partially supported by these ENRTF funds. This staff member will have the necessary expertise required to successfully execute all Activities, particularly in the field. The ENRTF funding will make it possible for the staff member to work on this project for the percentage of time indicated in the budget. Without this funding they would not be able to support this project with their time. Further, the nature of the success of this project necessitates some level of expertise coming from the Zoo, which this staff member will be instrumental in providing. Responsibilities for the classified staff will be reprioritized and reallocated as necessary to support this project.

Non ENRTF Funds

Category	Specific Source	Use	Status	\$ Amount
State				
			State Sub Total	-
Non-State				
			Non State Sub Total	-
			Funds Total	-

## Attachments

### Required Attachments

#### *Visual Component*

File: [69fe6162-e50.pdf](#)

#### *Alternate Text for Visual Component*

The graphic includes pictures of two prairies, one in good quality with a diversity of native species and the other that is degraded and bordering a crop field. The endangered Poweshiek skipperling and Dakota skipper butterflies are pictured. The graphic also describes goals to inventory prairie health and pesticides occurrences....

### Difference between Proposal and Work Plan

#### *Describe changes from Proposal to Work Plan Stage*

Activities, timelines, and budget items are essentially unchanged from the draft work plan. One deliverable was added to the end Activity 1 to reflect the additional work at the end of the project to compile and summarize our findings. Additional specifics and clarifications have also been provided following December 2023 comments and revision requests from LCCMR staff.

## 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, 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?**

No

**Does the organization have a fiscal agent for this project?**

No

**Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing \$10,000 or more or large-scale stream or wetland restoration?**

No

**Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care, treatment, education, training, instruction, or recreation to children")?**

No