

Environment and Natural Resources Trust Fund 2020 Request for Proposals (RFP)

Project Title:**ENRTF ID: 049-AH**

Tools for Supporting Healthy Ecosystems and Pollinators

Category: H. Proposals seeking \$200,000 or less in funding**Sub-Category:** A. Foundational Natural Resource Data and Information**Total Project Budget:** \$ 198,397**Proposed Project Time Period for the Funding Requested:** June 30, 2023 (3 yrs)**Summary:**

This project will create a pollination companion guide to MNDNR's Field Guides to Native Plant Communities for conservation practitioners to better integrate plant-pollinator interactions into natural resource planning and decision-making.

Name: Jessica Petersen**Sponsoring Organization:** MN DNR**Job Title:****Department:** Ecological and Water Resources**Address:** 500 Lafayette Road

St. Paul MN 55155

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Example of a table listing plants and attributes related to pollinators. Outcomes include a pie chart showing plant community dependence on pollinators and pollinators benefiting from host plants.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____ %



Environment and Natural Resources Trust Fund (ENRTF) 2020 Main Proposal Template

PROJECT TITLE: Tools for Supporting Healthy Ecosystems and Pollinators

I. PROJECT STATEMENT

This project will create a pollination companion guide to MNDNR's *Field Guides to Native Plant Communities* for conservation practitioners to better integrate plant-pollinator interactions into natural resource planning and decision-making.

Need. In light of recent concern over pollinator declines, Minnesotans are eager to support pollinators in the best ways possible. There is no off-the-shelf reference in Minnesota that provides information on the interdependent relationships between native plant species and pollinator communities.

Just like the Monarch butterfly needs milkweed to survive, many other pollinators need specific plants to complete their lifecycle. Similarly, many plants need specific pollinators to survive because without them the plants cannot reproduce. The details of the relationships between plants and pollinators are known only by a few subject matter experts, or the information is buried in the scientific literature and biological collections. Providing resources for Minnesotans about what plant species pollinators need to complete their lifecycle, and what plants need from pollinators to reproduce will allow conservation practitioners to make more informed decisions about how to protect pollinators and plant communities.

Existing efforts to protect, enhance, and restore pollinator habitat rely on ad hoc review of the literature and consulting experts. Information gaps in plant-pollinator interdependence result in challenges with decision-making across a variety of sectors including sourcing diverse seed for prairie restorations, understanding plant community fragility in the face of pollinator declines, and the ability of plant communities to support and enhance pollinator communities.

Goal. The *Field Guides to Native Plant Communities* were established by the MNDNR and used widely in the conservation community as a standard for describing plant communities. These guides will form the foundation upon which we will build informational tools to support pollinators. The tools will provide insight into the degree to which plant communities may become fragile in the face of pollinator declines. Data will be compiled from the literature, plant specimens housed at the Bell Museum and other collections, and experts.

The compiled data will be translated into two user-friendly tools:

1. A companion pollination handbook for the native plant community field guides (*Pollination Field Guide*). This resource is targeted at better understanding the plant community reliance on pollinators for reproduction.
2. A plant selection tool for building and enhancing more resilient restorations and native plant communities that support pollinators. This resource will allow practitioners to more efficiently conserve rare pollinator species by providing the plant resources they depend on to complete their lifecycle.

Through this project, the conservation community can better support both rare and declining pollinators and plant communities in Minnesota. By highlighting the plant and pollinator communities that may be vulnerable to loss of ecosystem function, we can focus conservation efforts of these fragile relationships more efficiently.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1 Title: Pollinator and plant community tools and outreach

Description:



Environment and Natural Resources Trust Fund (ENRTF) 2020 Main Proposal Template

We propose to add pollinator and pollination related attributes to an existing Minnesota Department of Natural Resources plant database. These data will then be compiled into products that will help Minnesotans make more informed decisions about how best to support pollinators and build healthy plant communities. The pollination handbook and plant selection tool for restorations and enhancements will be rolled out via outreach events for practitioners.

ENRTF BUDGET: \$ 198,397

Outcome	Completion Date
1. Enhance the DNR's plant database to include with plant attributes related to pollinators and pollination.	June, 2021
2. Produce the two tools described above for Minnesotans to better support pollinators and plant communities.	June, 2022
3. Develop and deploy outreach events to roll out the pollinator resources for the product end users.	June, 2022

III. PROJECT PARTNERS AND COLLABORATORS:

We will partner with the University of Minnesota Bee Lab including Dr. Dan Cariveau to help guide the creation of the database. We will collaborate with the Bell Museum to harvest data from plant specimens. We will work with partners such as NRCS, BWSR, TNC, and USFWS to build tools that land managers will utilize.

IV. LONG-TERM IMPLEMENTATION AND FUNDING:

This timeframe will produce a product that will stand alone. Ongoing improvements to the products and ongoing dissemination of the products will be achieved through standard DNR operating budgets and staffing.

V. SEE ADDITIONAL PROPOSAL COMPONENTS:

A. Proposal Budget Spreadsheet

B. Visual Component or Map

F. Project Manager Qualifications and Organization Description

Attachment A: Project Budget Spreadsheet
Environment and Natural Resources Trust Fund
M.L. 2020 Budget Spreadsheet

Legal Citation:

Project Manager: Jessica Petersen

Project Title: Tools for Supporting Healthy Ecosystems and Pollinators

Organization: Minnesota Department of Natural Resources

Project Budget: \$198,397

Project Length and Completion Date: 3 years, June 2023

Today's Date: April 12, 2019



ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET		Budget	Amount Spent	Balance
BUDGET ITEM				
Personnel (Wages and Benefits)		\$ 174,000	\$ -	\$ 174,000
Invertebrate Ecologist (unclassified), Project Lead, \$45,000 (68% salary/32% benefits), 0.2 FTE each year for 2 of 3 years.				
Ecologist (unclassified), Project Specialist, \$135,000 (68% salary/32% benefits), 1.0 FTE each year for 2 of 3 years				
Botanist (unclassified), Project consultant, \$15,000 (68% salary/32% benefits), 0.05 FTE each year for 2 of 3 years				
Data manager (unclassified), \$10,000 (68% salary/32% benefits), 0.05 FTE NR Spec for 2 of 3 years.				
Information Outreach Specialist (unclassified), \$14,000 (68% salary/32% benefits), 0.05 FTE for 2 of 3 years				
Travel expenses in Minnesota				
Travel in-state to libraries, herbaria, insect collections, meetings with subject matter experts.		\$ 5,000	\$ -	\$ 5,000
Other				
Direct and necessary costs to cover HR support (\$4138), Safety Support (\$749), Financial Support (\$2,141), Communication Support (\$1,388), IT Support (\$9,843), and Planning Support (\$1,138).		\$ 19,397	\$ -	\$ 19,397
COLUMN TOTAL		\$ 198,397	\$ -	\$ 198,397
SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT	Status (secured or pending)	Budget	Spent	Balance
State:		\$ -	\$ -	\$ -
General Fund for project supervision, subject matter expertise	Pending	\$ 12,000		\$ 12,000
Heritage Enhancement for subject matter expertise	Pending	\$ 12,000		\$ 12,000
Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS	Amount legally obligated but not yet spent	Budget	Spent	Balance
N/A		\$ -	\$ -	\$ -



Tools for Supporting Healthy Ecosystems and Pollinators

Building and enhancing more resilient native plant communities by supplying guides for plant-and-pollinator selection.

Need: Better resources for conservation practitioners to support declining pollinator populations and improve their habitat.



Solution: Pollination companion guide to the MNDNR Field Guides to Native Plant Communities detailing exactly what plants pollinators need and how much plants benefit from pollinators

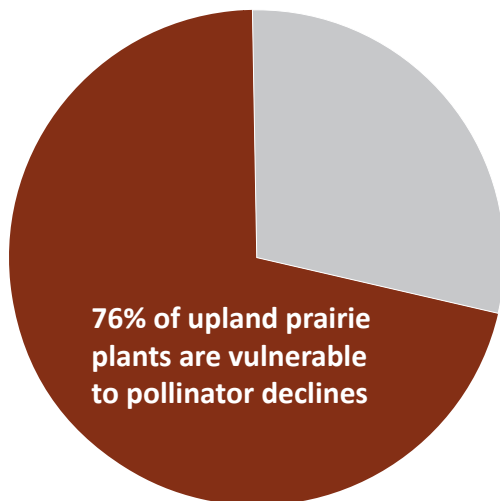
Forbs	species frequency in NPC (%)	species cover (when present)	animal pollination?	pollinator nest value	blooming period	Pollinator Host	breeding system	plant lifespan	flower structure	clonality	nectar production
Purple prairie clover (<i>Dalea purpurea</i>)	78	•	✓		Mid		self-compatible	perennial	spike	non-clonal	yes
Harebell (<i>Campanula rotundifolia</i>)	78	•	✓		Mid						
Alumroot (<i>Heuchera richardsonii</i>)	76	•	✓		Mid-Late						
Prairie loosestrife (<i>Lysimachia quadriflora</i>)	74	•	✓		Mid						
Violets (<i>Viola</i> spp)	69	••	✓		Mid-Late						



This project will supply information for these areas



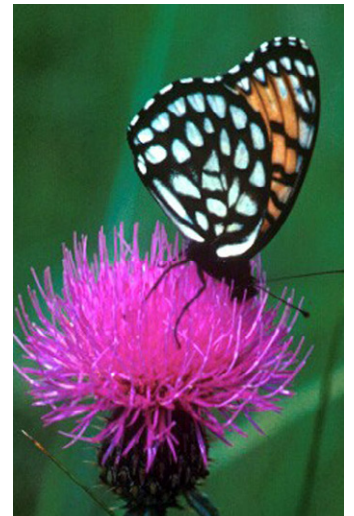
Assessment of the native plant community dependence on pollinators for survival.



Conservation of pollinators through targeted restoration and enhancements that provide the exact plants pollinators need.



A male *Tetraloniella albata* (a species of long-horned bee) visits a purple prairie clover (*Dalea purpurea*) flower.



A regal fritillary (*Speyeria idalia*). The larvae of this rare prairie butterfly feed solely on violets (*Viola* spp).

Project Manager Qualifications and Organization Description

Project Manager: Dr. Jessica Petersen, Invertebrate Ecologist

Minnesota Department of Natural Resources – Minnesota Biological Survey

Qualifications:

Jessica Petersen has been employed by the DNR for almost 3 years, and with the Minnesota Biological Survey for the past nine months. During this time she has managed teams of scientists, delivered scientific content to practitioners by hosting webinars, podcasts, and written content. She has training and experience conducting scientific research in such topics as bee and butterfly community ecology, plant-insect interaction, pollination, and prairie ecology that have resulted in 14 co-authored scientific publications, 12 invited presentations, and 14 extension and outreach publications. Dr. Petersen has taught 6 undergraduate biology courses including topics such as Geographic Information Systems (GIS), entomology, and critical thinking.

Experience:

- B.S. – University of Iowa, 2002
- M.S., Ecology and Evolutionary Biology – Iowa State University, Iowa 2003-2005
- Ph.D, Entomology, Minor – Statistics – Iowa State University, Iowa 2005-2010
- Post-doctoral Research – Cornell University, New York 2010-2014
- Adjunct Professor – Roanoke College, Virginia 2014-2016

Project Manager Responsibilities:

Jessica Petersen will lead the project coordination including assisting the ecologist and botanist in designing plant attributes related to pollinators, developing products, and delivering content to conservation practitioners. The project manager will be responsible for developing and implementing a work plan including achievable outcomes and tracking and reporting on project progress.

Organization Description: Minnesota DNR

The proposed project directly supports the following goals outlined by the MNDNR:

- 10-year Strategic Conservation Agenda, Goal 1, Minnesota's waters, natural lands, and diverse fish and wildlife habitats are conserved and enhanced.
- Goal 1 of Minnesota's Wildlife Action Plan: Ensure the long-term health and viability of Minnesota's wildlife, with a focus on species that are rare, declining, or vulnerable to decline.

The Minnesota Department of Natural Resources (DNR)'s mission is to work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.