Today's Date: August 6, 2019

Date of Next Status Update Report: July 31, 2021

Date of Work Plan Approval:

Project Completion Date: June 30, 2023

Does this submission include an amendment request? No

PROJECT TITLE: Tools for Supporting Healthy Ecosystems and Pollinators

Project Manager: Jessica Petersen

Organization: Minnesota Department of Natural Resources

College, Department, or Division: Ecological and Water Resources

Mailing Address: 500 Lafayette Rd., Box 25

City, State, Zip Code: St. Paul, MN 55155

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Web Address: https://www.dnr.state.mn.us/eco/mcbs/plant_lists.html

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Location: Statewide

Total Project Budget: $198,000

Amount Spent: $0

Balance: $198,000

Legal Citation: M.L. 2020, Chp. xx, Sec. xx, Subd. xx

Appropriation Language:

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. OVERALL PROJECT STATUS UPDATES:

First Update January 31, 2021

Second Update July 31, 2021

Third Update January 31, 2022

Fourth Update July 31, 2022

Fifth Update January 31, 2023

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III. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1 Title: Pollinator and plant community tools and outreach
Description: *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.*

ACTIVITY 1 ENRTF BUDGET: $198,000

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*

First Update January 31, 2021

Second Update July 31, 2021

Third Update January 31, 2022

Fourth Update July 31, 2022

Fifth Update January 31, 2023

Final Report between project end (June 30) and August 15, 2023

IV. DISSEMINATION:

Description:
The resources created through this project will be included for use by practitioners and the public on the Minnesota DNR webpage. We will work with partners (e.g., TNC, BWSR, NRCS, USFWS, Bell Museum, and U of M Bee Lab) to disseminate products to a wide audience of potential users. We will work through existing channels (e.g., regional and statewide meetings) to roll out and disseminate the handbook and plant selection tool to conservation practitioners after the products are completed.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the ENRTF Acknowledgement Guidelines.

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First Update January 31, 2021

Second Update July 31, 2021

Third Update January 31, 2022

Fourth Update July 31, 2022

Fifth Update January 31, 2023

Final Report between project end (June 30) and August 15, 2023

V. ADDITIONAL BUDGET INFORMATION:

A. Personnel and Capital Expenditures

Explanation of Capital Expenditures Greater Than $5,000: N/A

Explanation of Use of Classified Staff: N/A

Total Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation:

Enter Total Estimated Personnel Hours for entire duration of project: 5616	Divide total personnel hours by 2,080 hours in 1 yr = TOTAL FTE: 2.7

Total Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation:

Enter Total Estimated Contract Personnel Hours for entire duration of project: 0	Divide total contract hours by 2,080 hours in 1 yr = TOTAL FTE: 0

VI. PROJECT PARTNERS:
   A. Partners outside of project manager's organization receiving ENRTF funding: N/A
   B. Partners outside of project manager's organization NOT receiving ENRTF funding
      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.

VII. 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.

VIII. REPORTING REQUIREMENTS:
   • Project status update reports will be submitted April 1 and October 1 each year of the project
   • A final report and associated products will be submitted between June 30 and August 15, 2023

IX. SEE ADDITIONAL WORK PLAN COMPONENTS:
   A. Budget Spreadsheet

   B. Visual Component or Map

   C. Parcel List Spreadsheet N/A

   D. Acquisition, Easements, and Restoration Requirements N/A

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E. Research Addendum N/A

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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: $198,000
Project Length and Completion Date: 3 years, June 2023
Today's Date: August 14, 2019

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Budget	Amount Spent	Balance
BUDGET ITEM			
Personnel (Wages and Benefits)	$ 173,603	$ -	$ 173,603
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	$ 198,000	$ -	$ 198,000

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 (*Dalea purpurea*)	78	•	✔		Mid	🐝	self-compatible	perennial	spike	non-clonal	yes
Harebell (*Campanula rotundifolia*)	78	•	✔		Mid						
Alumroot (*Heuchera richardsonii*)	76	•	✔		Mid-Late						
Prairie loosestrife (*Lysimachia quadriflora*)	74	•	✔		Mid						
Violets (*Viola* spp)	69	••	✔		Mid-Late	🦋					

*This project will supply information for these areas*

Assessment of the native plant community dependence on pollinators for survival.
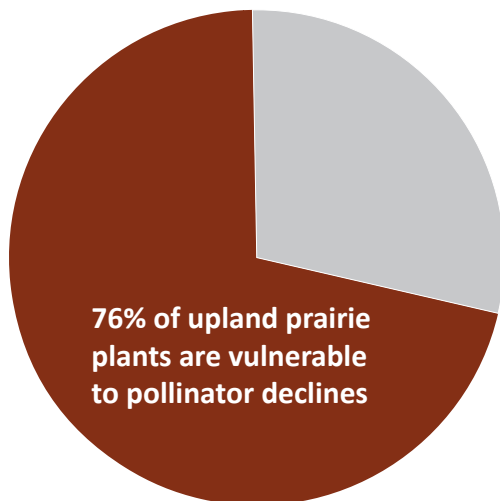
Conservation of pollinators through targeted restoration and enhancements that provide the exact plants pollinators need.

76% of upland prairie plants are vulnerable to pollinator declines
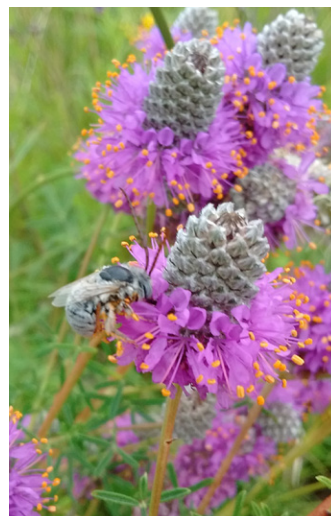
A male *Tetraloniella albata* (a species of long-horned bee) visits a purple prairie clover (*Dalea purpurea*) flower.
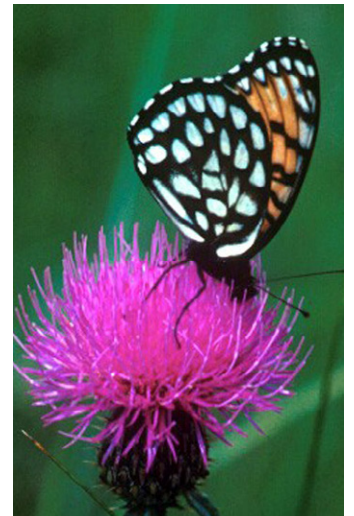
A regal fritillary (*Speyeria idalia*). The larvae of this rare prairie butterfly feed solely on violets (*Viola* species).