

**Environment and Natural Resources Trust Fund  
2019 Request for Proposals (RFP)**

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**Project Title:**

**ENRTF ID: 028-AH**

Minnesota Restoration Mapping and Pollinator Protection

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**Category:** H. Proposals seeking \$200,000 or less in funding

**Sub-Category:** A. Foundational Natural Resource Data and Information

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**Total Project Budget: \$** 199,898

**Proposed Project Time Period for the Funding Requested:** June 30, 2022 (3 yrs)

**Summary:**

Statewide mapping using GIS layers, updated ranges of at-risk species, and action plans will provide local conservation planners with a foundation of information for targeted pollinator protection and restoration investments.

**Name:** Dan Shaw

**Sponsoring Organization:** Minnesota Board of Water and Soil Resources

**Title:** Senior Ecologist

**Department:** \_\_\_\_\_

**Address:** 520 Lafayette Rd N  
St. Paul MN 55155

**Telephone Number:** (612) 296-0644

**Email** Dan.Shaw@state.mn.us

**Web Address**

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**Location**

**Region:** Statewide

**County Name:** Statewide

**City / Township:** Duluth, Minneapolis, Moorhead, Rochester, Saint Cloud, Stillwater

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**Alternate Text for Visual:**

Pilot maps of Washington County and Minneapolis indicating high priority areas for restoration, refuge areas to protect, and ranges of at-risk species (e.g. rusty patched bumble bee).

|  |                    |                          |                   |                          |                       |                          |                            |
|--|--------------------|--------------------------|-------------------|--------------------------|-----------------------|--------------------------|----------------------------|
| <input type="checkbox"/>   | Funding Priorities | <input type="checkbox"/> | Multiple Benefits | <input type="checkbox"/> | Outcomes              | <input type="checkbox"/> | Knowledge Base             |
| <input type="checkbox"/>   | Extent of Impact   | <input type="checkbox"/> | Innovation        | <input type="checkbox"/> | Scientific/Tech Basis | <input type="checkbox"/> | Urgency                    |
| <input type="checkbox"/>   | Capacity Readiness | <input type="checkbox"/> | Leverage          | <input type="checkbox"/> |                       | TOTAL                    | <input type="checkbox"/> % |
| <input type="checkbox"/> If under \$200,000, waive presentation? |                    |                          |                   |                          |                       |                          |                            |



**PROJECT TITLE: Minnesota Restoration Mapping and Pollinator Protection**

**I. PROJECT STATEMENT**

**Strategic mapping efforts are needed in order to guide effective protection and restoration of pollinator habitat in Minnesota.** Pollinators play an essential role in our state’s agricultural production, as well as, the functioning of our natural plant communities. Creating pollinator habitat can be expensive and it is imperative that new habitat is situated in locations that yield the greatest cost:benefit ratio. Decisions for placing habitat therefore depend on knowing the location and amount of different types of land use. However, there is currently a lack of high-quality mapping information with which to make these decisions. Creating high-quality habitat maps is thus essential to develop conservation efforts as identified in the “Minnesota State Agency Pollinator Report”.

**Pollinator habitat mapping was started** in 2017 involving a wide range of conservation partners and researchers who began developing a method to effectively map pollinator habitat. As part of this initial effort, pilot maps for Washington County and Minneapolis were created that identified both pollinator refuge areas in need of protection, and high priority areas for pollinator habitat creation or enhancement. This proposal expands the pilot effort statewide to provide city/county conservation planners across the state with maps and guidance to efficiently identify areas that will yield a high return on pollinator conservation investment.

**Maps will be created for all Minnesota counties and for six Minnesota cities** (Duluth, Minneapolis, Moorhead, Rochester, Saint Cloud, and Stillwater). Existing map layers such as habitat corridors, conservation plantings, groundwater and near surface water sensitivity, wellhead protection areas and other sensitive features will be incorporated into our analysis of high priority conservation areas. The final mapping product will help local conservation staff prioritize projects for funding, aid land use planning, guide land acquisition, aid funding applications, provide visuals for public outreach, and protect at-risk pollinator species. In short, these maps will provide a foundation of information to advise results-based decision making.

**Populations of at-risk species (e.g. Rusty patched bumble bee) will be protected** by updating species ranges and habitat suitability maps through site assessments by Xerces Society and compiling new information (including LCCMR funded data) from the University of Minnesota Bee Lab, Xerces Society, and the Minnesota Zoo. This information will be overlaid onto the maps, helping to identify areas in need of restoration efforts or habitat protection (i.e. from pesticides, invasive species, or other threats.)

**Restoration projects will be kickstarted by developing Conservation Action Plans** for high priority land use classifications identified by mapping, such as urban and rural developments, conservation plantings, water quality projects, and solar habitat projects. These detailed, site-specific plans will aid future funding applications and prepare projects for implementation. Outreach will be conducted for this project by a wide range of partners including BWSR, Xerces, Blue Thumb – Planting for Clean Water®, Watershed Districts, Cities, Counties and Conservation Districts to target landowners in priority areas and engage stakeholders with the maps.

**II. PROJECT ACTIVITIES AND OUTCOMES**

**Activity 1:** Update county and city mapping protocols; conduct initial mapping; conduct map review with conservation partners; incorporate review information into final maps. Develop Pollinator Habitat Mapping Guide for directing use of mapping and building additional information into maps over time.

**ENRTF BUDGET: \$125,193**

| <b>Outcome:</b>  | <b>Completion Date</b> |
|--|------------------------|
| 1. Refined mapping methods through collaboration with researchers and conservation staff | January 2020           |
| 2. Develop draft city-scale habitat maps for six cities in Minnesota                     | January 2021           |
| 3. Develop pollinator habitat maps for all counties in Minnesota                         | January 2021           |



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|   |           |
|---|-----------|
| 4. Conduct detailed map review for three counties, six cities; work with technical experts to refine mapping methods statewide; produce and distribute final maps on partner webpages | July 2021 |
| 5. Develop Pollinator Habitat Mapping Guide with protocols and use guidance   | July 2020 |

**Activity 2:** *Protect populations of at-risk species by refining existing species-specific maps through site assessments and compiling new information (including LCCMR-funded data) from the University of Minnesota Bee Lab, Xerces Society, and the Minnesota Zoo. This information will be overlaid onto the maps to aid identification of areas for protection and restoration.*

**ENRTF BUDGET: \$59,500**

| <b>Outcome:</b>   | <b>Completion Date</b> |
|---|------------------------|
| 1. Site visits and habitat assessments by Xerces Society                | October 2020           |
| 2. Updated GIS layers with information incorporated for at-risk species | January 2021           |

**Activity 3:** *Develop Conservation Action Plans (CAPs) for high priority landscape types and sites. These plans will provide detailed steps for planning, installing and managing projects to aid future funding applications and prepare restoration projects for implementation.*

**ENRTF BUDGET: \$15,000**

| <b>Outcome:</b>   | <b>Completion Date</b> |
|---|------------------------|
| 1. Create pollinator CAP templates for six key landscape types identified through the mapping process | July 2021              |
| 2. Complete model pollinator CAPs for six priority sites  | March 2022             |
| 3. Conduct outreach to increase awareness about the pollinator maps                                   | Ongoing                |

**III. PROJECT PARTNERS:**

This proposal has been developed in partnership with the Minnesota BWSR and in consultation with the University of Minnesota Bee Lab, University of Minnesota Institute on the Environment, Xerces Society, and Blue Thumb-Planting for Clean Water®. MN BWSR will be the project manager and collaborate with the project team to fulfill, report, and accomplish the activities outlined in the proposal. UMN has received ENRTF and USDA funds to research concepts that will be reflected in this work. Staff from Blue Thumb, Xerces Society, and students from the University will develop protocols for and create components of the final maps produced for Minnesota cities and counties. Based on these maps, Xerces Society staff will be responsible for developing the Conservation Action Plans. All partners will serve a role in connecting with city and county conservation staff with this tool to advise results-based environmental decision making. Local government conservation staff have been and will continue to be consulted with during the development of this tool.

**IV. LONG-TERM IMPLEMENTATION AND FUNDING:**

*Map products and protocols as well as CAPs will be made available through BWSR’s Pollinator Initiative webpage. Guidance will be provided in the protocol document for counties and cities to determine how best to use, update, and build upon the information for making land use decisions and prioritizing projects. BWSR will continue to work with cities and counties to help them plan projects using the maps.*

**V. TIME LINE REQUIREMENTS:**

*This project will be completed within the 3 year timeframe of the LCCMR grant. Analysis for this work is based on existing map data layers. Site visits and habitat assessments may be complicated by numerous factors including weather and field conditions, but are not particularly time demanding and will not likely interfere with map development. Conservation Action Plans and outreach will occur after maps are produced.*

## 2019 Proposal Budget Spreadsheet

### Pollinator Protection and Restoration Mapping for Minnesota

#### IV. TOTAL ENRTF REQUEST BUDGET 3 years

| BUDGET ITEM  | AMOUNT           |
|--|------------------|
| <b>Personnel (Total):</b>  |                  |
| Dan Cariveau, UMN Bee Lab - Providing guidance on incorporating pollinator habitat research into our conceptual. (160 hours @ \$2970/week; 75% salary, 25% benefits)                 | \$ 11,882        |
| Eric Lonsdorf, UMN Institute on the Environment - Mapping protocol guidance and proficiency. (210 hours @ \$2750/week; 75% salary, 25% benefits)                                     | \$ 16,497        |
| BWSR Project Coordinator (200 hours @ \$2441/week; 74% salary, 26% benefits)   | \$ 12,205        |
| <b>Professional/Technical/Service Contracts:</b>   |                  |
| Blue Thumb-Planting for Clean Water®. Mapping Specialist - Updating county and city mapping protocol, developing city-scale and county-scale habitat maps and habitat mapping guide. | \$ 77,000        |
| Xerces Society. Pollinator habitat site assessments and Conservation Action Plan development   | \$ 55,500        |
| Xerces Society. Protocol development and technical assistance for mapping populations of at-risk pollinator species.   | \$ 11,000        |
| University of Minnesota: <b>Summer Research Assistant</b> (\$6,124 summer semester); and <b>Fall Research Assistant</b> (\$8,590 fall semester)                                      | \$ 14,714        |
| <b>Travel:</b> In-state travel for Blue Thumb mapping specialist for map review <b>2000 miles @ 0.55/mile</b>  | \$ 1,100         |
| <b>TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =</b>   | <b>\$199,898</b> |

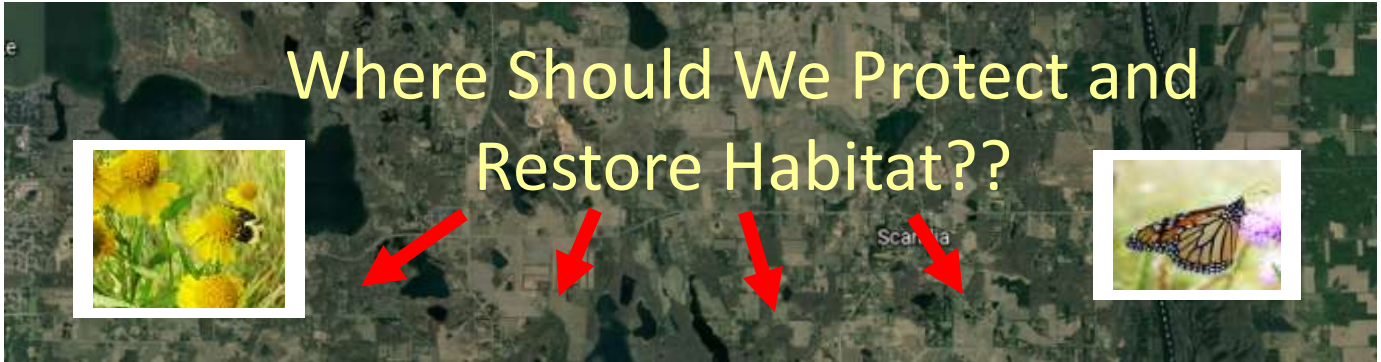
**V. OTHER FUNDS** (This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.)

| SOURCE OF FUNDS  | AMOUNT    | Status  |
|--|-----------|---------|
| <b>Other Non-State \$ To Be Applied To Project During Project Period:</b> University of Minnesota Research Assistant (\$8,340)   | \$ 8,340  | Pending |
| <b>Other State \$ To Be Applied To Project During Project Period:</b>  | \$ -      | N/A     |
| <b>In-kind Services To Be Applied To Project During Project Period:</b> Xerces Society Outreach (\$1,500), Minnesota BWSR (\$25,920), Blue Thumb-Planting for Clean Water® volunteers (\$3000) | \$ 30,420 | Secured |
| <b>Past and Current ENRTF Appropriation:</b>   | \$ -      | N/A     |
| <b>Other Funding History:</b> Minneapolis Park and Recreation Board (\$5,000)  | \$ 5,000  | Secured |



# Pollinator Protection and Restoration Mapping for Minnesota

Wild and domesticated bees pollinate around 30 percent of crops in the United States. These pollination services are worth approximately \$23 billion. Bees also pollinate around 70 to 80 percent of native plants.



**\*This project builds on pilot mapping efforts to produce maps that are urgently needed to yield a high return on pollinator conservation investments and guide upcoming initiatives for habitat implementation.**

**High Priority Areas for New Plantings**

**Refuge Areas to Protect**

**Key Data Layers:**

- Plant Communities
- Habitat Corridors
- Habitat Complexes
- Landuse
- Water Resources
- Wellhead Protection
- Water Infiltration
- Pesticide Concerns
- Pubic Lands
- Conservation Lands
- BMPs
- Solar Projects

Pilot Map for Minneapolis

Pilot Map for Washington County with range of Rusty-patched Bumblebee

**Project Manager Qualifications:**

Dan Shaw is the Minnesota Board of Water and Soil Resource's Senior Ecologist. He works on conservation partnerships, agricultural practices, pollinator conservation, invasive species management, landscape ecology, bioenergy, water quality projects and ecological restoration. Dan has managed many federal, state, foundation and local grants as a non-profit Conservation Director as well as at the State of Minnesota. Dan is the project manager for BWSR's Cooperative Weed Management Area Grant Program, Native Buffer Cost-share Grant Program, Habitat Friendly Solar Certification Program and Pollinator Initiative. Dan has also authored several publications on native vegetation establishment and management and has been an Adjunct Assistant Professor at the University of Minnesota for 16 years.

**Organization Description:**

The Minnesota Board of Water and Soil Resources consists of 20 members, including local government representatives that deliver BWSR programs, state agencies, and citizens. The board sets a policy agenda designed to enhance service delivery through the use of local government. Board members, including the board chair, are appointed by the governor to four-year terms.

The board is the state's administrative agency for 90 soil and water conservation districts, 46 watershed districts, 23 metropolitan watershed management organizations, and 80 county water managers.

The BWSR mission is to improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners. Core functions include implementing the state's soil and water conservation policy, comprehensive local water management, and the Wetland Conservation Act as it relates to the 41.7 million acres of private land in Minnesota.

Because 78 percent of the state's land is held in private ownership, BWSR's focus on private lands is critical to attaining the state's goals for clean water, clean air, and abundant fish and wildlife. Managed wisely, these working lands - Minnesota's farms, forests, and urban areas - contribute greatly to the production of environmental goods and benefits including cleaner air and water, fish and wildlife habitat, and preservation of open spaces.

Agency programs to assist landowners and local government have resulted in less sediment and nutrients entering our lakes, rivers, and streams; more fish and wildlife habitat; and the drastic slowing of wetland losses. These have been realized in spite of intensification of agriculture, greater demands for forest products, and rapid urbanization in many parts of the state.