Environment and Natural Resources Trust Fund

2026 Request for Proposal

General Information

Proposal ID: 2026-247

Proposal Title: Exploring Minnesota's Insect Pollinator Diversity: Beyond the Bees

Project Manager Information

Name: Robin Thomson

Organization: U of MN - College of Food, Agricultural and Natural Resource Sciences

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Project Basic Information

Project Summary: We propose to expand the digital records of insect specimens housed in the University of Minnesota Insect Collection, focusing on non-bee pollinators to support future research on Minnesota pollinator biology.

ENRTF Funds Requested: $200,000

Proposed Project Completion: June 30, 2028

LCCMR Funding Category: Small Projects (G)

Secondary Category: Fish and Wildlife (D)

Project Location

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

Region(s): Metro

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

Narrative

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

The importance of pollination services provided by bees is widely recognized, and there are on-going efforts to document Minnesota's native bees. However, other insects aside from bees, such as flies and beetles, are also emerging as important pollinators in both managed and natural landscapes. Non-bee insects may be active during times of the day when bees are not, may be able to manage in weather conditions that leaves bees inactive or inefficient, and can potentially carry some types of pollen more efficiently or over longer distances than bees. Unfortunately, our understanding of their distribution and ecology at the species level is limited by the lack of easily accessible records and specimen-level data. While the specimens themselves are the physical embodiment of data, when the specimen records (locality, date, host-plant associations) are made broadly available in a digital database, they allow researchers to perform a wide variety of ecological studies. These include documenting change in species' distribution over time, exploring the dynamics of plant-insect relationships, and tracking long-term trends in abundance. The University of Minnesota Insect Collection (UMSP) has been working to create digital specimen-level records of Minnesota's native bees, but has yet to expand into non-bee pollinators.

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 will digitize select groups of non-bee pollinator specimens housed within UMSP in order to build an open-access dataset for the state of Minnesota that will support future research. We will transcribe the information associated with these specimens and their labels (e.g., locality, dates of activity, host plant, species identification). Approximately 60,000 digital records from select flies and beetles representing locations across the state of Minnesota and dates over the past 100 years, anchored by physical specimens vouchered in the collection, will be produced and made available to the public through the Minnesota Biodiversity Atlas. Having this information available and accessible, rather than locked up in physical specimens, will allow researchers to study potential shifts in the historic ranges of species, track changes in long-term abundance, and explore the relationships between insect pollinators and their host plants. It will also allow organizations such as the MN-DNR to access current and up-to-date data when working on future iterations of their published assessment of species of endangered, threatened, and special concern status.

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?

The value of this project comes from the sheer amount of high-quality data that will be unlocked from the specimens housed in UMSP and made available for use. This project would provide the resources needed to better explore basic native pollinator biology and allow researchers to ask questions regarding changes over time or in a given geographic region of Minnesota. Digitizing non-bee pollinators currently housed in UMSP will allow us to serve this data to the public, and set us up to continue making this type of data available as future specimens continue to be vouchered here.

Activities and Milestones

Activity 1: Digitize select groups of non-bee pollinator insects

Activity Budget: $200,000

Activity Description:
Obtaining specimen-level data on Minnesota non-bee pollinator species and producing a public dataset including information such as locality and plant host is essential for supporting future pollinator research. UMSP contains over 4.2 million insect specimens; we aim to capture 60,000 records from six fly (Diptera) and four beetle (Coleoptera) groups containing pollinators commonly found in Minnesota. We propose to digitize 41,500 fly records covering flower flies (Syrphidae), bluebottle flies (Calliphoridae), tachinid flies (Tachinidae), dance flies (Empididae), bee flies (Bombyliidae), and thick-headed flies (Conopidae). Additionally, we propose to digitize 18,500 beetle records covering tumbling flower beetles (Mordellidae), soldier beetles (Cantharidae), blister beetles (Meloidae), and checkered beetles (Cleridae). This activity will entail transcribing existing label, specimen, and taxonomic data and adding a new unique identifier (UID) barcode label to each specimen. All data will be uploaded to and managed in the UMSP in-house Specify database. Records will be shared directly from Specify to the Minnesota Biodiversity Atlas, hosted by the Bell Museum. A workflow for capturing specimen data and making it publicly available has already been established under a separate project focused on digitizing native Minnesota bee specimens, which will allow this project to progress quickly and efficiently.

Activity Milestones:

Description	Approximate Completion Date
Update taxonomic classification and physical organization of targeted insect groups	August 31, 2026
Release 18,500 newly digitized records of pollinating beetle groups	March 31, 2027
Release 41,500 newly digitized records of pollinating fly groups	June 30, 2028

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 digitization of the University of Minnesota Insect Collection is necessary to fill gaps in our knowledge of Minnesota insect fauna, and will be of immediate use to university researchers, government agencies, and the general public. Workflow for capturing data has been established and will allow digitization of non-bee pollinators to progress efficiently. All specimen data will be uploaded and managed in the UMSP in-house Specify database and then made publicly accessible through incorporation into both the Minnesota Biodiversity Atlas, which is hosted by the Bell Museum and archived with the the Digital Repository at the University of Minnesota (DRUM).

Project Manager and Organization Qualifications

Project Manager Name: Robin Thomson

Job Title: Curator

Provide description of the project manager's qualifications to manage the proposed project.

Dr. Robin Thomson is the current Curator of the University of Minnesota Insect Collection within the Department of Entomology, and has held this position since 2015. Her curatorial responsibilities include preparing and accessioning new specimens into the Collection acquired through collecting, gift, or donation; overseeing the ongoing digitization of specimens and making the data available to both the research community and the general public; protecting the Collection from damage and unauthorized use; reorganizing the Collection to accommodate new accessions, improve efficiency, and conform with current taxonomic knowledge; providing assistance to members of the Department, the University, and business and government agencies in insect identification; and maintaining the Collection's accession and loan database and administer loan requests. Additionally, she also offers tours of the Collection for school groups, University classes, and special interest groups; mentors, trains, and supervises graduate students, undergraduate student workers, collection associates, and volunteers; and conducts and publishes independent research in insect taxonomy and systematics.

Organization: U of MN - College of Food, Agricultural and Natural Resource Sciences

Organization Description:

This project will be conducted within the Department of Entomology, a department within the College of Food, Agriculture and Natural Resource Sciences at the University of Minnesota. Entomology houses the University of Minnesota Insect Collection, which is one of the largest university-affiliated insect collections in North America and functions as the depository and state record for the insect fauna of Minnesota. Contributions to the collection began in 1879 with specimens of insects and spiders from the North Shore of Lake Superior. Current holdings include over 4.2 million specimens, representing over 53,000 described species. The collection is an invaluable resource for students and researchers at the University, numerous metropolitan and state agencies, and citizens across Minnesota.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Digitization Coordinator		Responsible for overseeing student workers, ensuring quality control, label data interpretation, data upload, and general database coordination			32.3%	2		$142,000
Undergraduate student workers		Insect data and associated label transcription			0%	1.5		$50,000
							Sub Total	**$192,000**
Contracts and Services								
Specify software consortium	Service Contract	Technical support for Insect Collection database ($1,000/year)				0.2		$2,000
							Sub Total	**$2,000**
Equipment, Tools, and Supplies								
	Tools and Supplies	Archival materials, pins, forceps, storage containers	Materials for specimen digitization, repair, storage					$1,500
	Tools and Supplies	Barcode labels	Pre-printed labels for tracking specimens and records of 60,000 specimens					$3,000
							Sub Total	**$4,500**
Capital Expenditures								
		Digitization station	Dedicated laptop for digitizing insect specimens	X				$1,500
							Sub Total	**$1,500**
Acquisitions and Stewardship								
							Sub Total	**-**

Travel In Minnesota								
							Sub Total	**-**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$200,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Capital Expenditures		Digitization station	All other lab computers are dedicated to other uses and unavailable for this project. A dedicated digitization station is necessary to ensure consistent and efficient progress throughout the life of this project. **Additional Explanation :** This laptop will be dedicated for digitizing insect specimens, primarily by undergraduate student workers, and will not be used for any other purpose.

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	**-**
Non-State				
In-Kind	University of Minnesota	Unrecovered indirect costs (54% of $200,000 UMN direct costs)	Pending	$108,000
Cash	CFANS Pollinator Research Funds	Grant for digitizing bees	Secured	$191,387
			Non State Sub Total	**$299,387**
			Funds Total	**$299,387**

Total Project Cost: $499,387

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: a2419eef-5b2.pdf

Alternate Text for Visual Component

Written summary of project opportunity, solution and outcome, paired with photos of non-bee insect pollinators and icons depicting the flow of specimens to digital database to supported MN pollinator ecology research....

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
UMN Board Letter of Approval	43fd0e75-365.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

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?

N/A

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

Provide the name(s) and organization(s) of additional individuals assisting in the completion of this proposal:

Andrea Little

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

Yes, I understand