



Environment and Natural Resources Trust Fund

2023 Request for Proposal

General Information

Proposal ID: 2023-093

Proposal Title: Lake Biodiversity Conservation: Connecting Data to Action

Project Manager Information

Name: Holly Bernardo

Organization: MN DNR - Ecological and Water Resources Division

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Project Basic Information

Project Summary: Supporting lake and shoreline conservation through data collection and targeted outreach to lake and shoreline stakeholders

Funds Requested: \$394,000

Proposed Project Completion: June 30, 2026

LCCMR Funding Category: Foundational Natural Resource Data and Information (A)

Project Location

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

Statewide

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.

There is a critical, ongoing need to conserve lakes and lake shorelines. Our enjoyment of lakes and shorelines is closely tied to their quality and health. The health of these systems is under increasing threat (e.g. increasing development, loss of natural habitat, reduced water quality and filtration, and spread of aquatic invasive species). Aquatic plants are important indicators of a lake's quality, health and function. Thus, aquatic plant biodiversity data can help inform conservation and management actions addressing issues in Minnesota lake systems. With ENRTF support, MBS's aquatic plant surveys started in the 1995, covering 2,100 unique lakes to-date (through ML21 and previous appropriations) yet substantial gaps remain in knowledge about aquatic and shoreline plant species throughout Minnesota. This proposal will continue progress on MBS's aquatic plant field surveys into the southern half of the state. Also, many lakeshore owners want to maintain and enhance the quality of their lake, but they lack the information or tools needed to support meaningful stewardship action. This proposal will also pilot targeted, lake specific outreach to riparian stakeholders to directly deliver MBS data and create connections for enhanced stewardship and conservation.

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.

The Minnesota Biological Survey (MBS) collects, interprets, and delivers data on native plant and animal communities and functional landscapes. These data help to evaluate and prioritize actions to protect, conserve, manage and restore Minnesota's biodiversity. Aquatic plant surveys have been systematically conducted in 2,100 lakes across the northern portion of Minnesota. This project proposes three actions:

- 1) complete aquatic surveys in approximately 125 lakes in southern Minnesota, collecting baseline data on underrepresented aquatic and shoreline native and rare plant species,
- 2) continue to develop a statewide reference collection of aquatic plant specimens and disseminate that information through existing avenues (e.g.'s State of MN Geospatial Commons, DNR Lake Finder, DNR Rare Species Guide, Natural Heritage Information System) and technical guidance, and
- 3) conduct a pilot program to create lake specific outreach materials for at least three lakes of exceptional or unique quality.

This pilot will disseminate MBS data in a new way, along with additional resources, directly to Minnesotans with the most influence on the conservation and management of their neighboring natural resource. Our goal is to create tools to support well-informed and well-connected local stewards for lake conservation and management.

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?

Results from this project and previous MBS ENRTF appropriations have broad use and applicability throughout the state. Recent applications of MBS data and information include:

- 1) Minnesota's list of endangered, threatened and special concern species,
- 2) rare species databases and the DNR's Rare Species Guide used by aquatic plant and invasive aquatic plant managers,
- 3) the Lakes of Biological Significance,
- 4) site selection and seed mix development for cover crop, buffer and clean water initiatives,
- 5) biological specimens available via the Minnesota Bell Museum Herbarium, and
- 6) technical support tools for a variety of purposes (e.g. groundwater management).

Activities and Milestones

Activity 1: Aquatic Plant Data Collection, Dissemination & Technical Guidance

Activity Budget: \$275,800

Activity Description:

MBS will continue the aquatic plant survey portion of ML21 (and previous) Minnesota Biological Survey appropriations. The focus of this work plan will be on lakes in Southern Minnesota. Previous ENRTF appropriations to MBS have provided plant data for 2,100 lakes to-date and the discovery of species not previously documented in the state. Technical guidance delivered on lake and shoreline systems will address foundational needs and priorities in Minnesota land and water plans and issues faced by decision-makers and scientists in accessible, public formats (e.g. LakeFinder).

Activity Milestones:

Description	Completion Date
Surveys for native and rare aquatic plants in approximately 125 lakes or rivers in southern Minnesota.	October 31, 2025
Biological specimens prepared and accessioned to the Bell Museum	June 30, 2026
Aquatic plant survey data, field notes, photos entered into DNR databases.	June 30, 2026
Technical guidance (e.g.'s biological reports, presentations) delivered.	June 30, 2026

Activity 2: Targeted Outreach to Lake and Lakeshore Stakeholders

Activity Budget: \$118,200

Activity Description:

Develop and deliver outreach materials to lake and lakeshore stakeholders (e.g.'s shoreline landowners, lakeshore associations, watershed districts, and/or local units of government) for three lakes with exceptional quality or unique natural features. These materials will highlight MBS data documenting the lake's quality or unique features and key stewardship activities that riparian stakeholders can do to maintain lake health. Outreach materials will provide riparian stakeholders with the resource connections necessary to guide conservation and management actions for aquatic systems. These materials will provide a foundation for lake and lakeshore stakeholders to become well-informed and well-connected local stewards for lake conservation and management.

Activity Milestones:

Description	Completion Date
Develop plain language outreach materials on native and rare aquatic plants and lake ecosystems	April 30, 2025
Deliver targeted outreach to riparian stakeholders associated with three high quality lakes	June 30, 2026

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Dr. George Weiblen	UMN Bell Museum	Biological specimen curation and delivery of related project outcomes through the online MN Biodiversity Atlas.	No

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?

MBS data, products, and technical guidance have proven critical and foundational to societal and scientific applications. MBS receives operational funding from General Fund, Heritage Enhancement Fund, Federal State Wildlife Grants and project funding from ENRTF, Fish & Game Fund, and federal funds. DNR is developing strategies to sustainably fund MBS, recently completing a 10-year strategic plan for the program. MBS will continue to address relevant needs and add value to existing ENRTF investments through statewide baseline biological surveys; biodiversity monitoring; outreach and product delivery; targeted field surveys to inform conservation planning and decisions; and surveys for under-surveyed taxa and ecological systems.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Minnesota Biological Survey - Continuation	M.L. 2017, Chp. 96, Sec. 2, Subd. 03d	\$2,900,000
Minnesota Biological Survey	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 03a	\$1,500,000
Minnesota Biological Survey	M.L. 2021, First Special Session, Chp. 6, Art. 6, Sec. 2, Subd. 03e	\$1,500,000

Project Manager and Organization Qualifications

Project Manager Name: Holly Bernardo

Job Title: MBS Plant Survey Supervisor

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

Dr. Holly Bernardo has been with MN DNR since 2019, recently beginning as the MN Biological Survey's (MBS) Plant Survey Supervisor in January 2022. She assists in managing MBS budgets and priorities and supervises the plant focused staff on their work to survey, monitor, analyze, and disseminate information on Minnesota native biodiversity and ecological systems. Her background and professional experience includes:

- extensive work in rare plant ecology and conservation,
- applied and research based natural resource management,
- experimental ecological research including design, analysis, statistical modeling and peer-reviewed publication,
- project management, and
- collaborative natural resource and conservation planning.

Holly will provide overall project direction, budget management, staff supervision, work plans, and activity updates. In her capacity as MBS Plant Survey Supervisor and previous work experience, Holly has demonstrated the ability to manage budgets, direct staff, coordinate with partners, and efficiently and effectively deliver project outcomes.

Work Experience:

2022 – present Plant Survey Supervisor, MBS, DNR, Division of Ecological & Water Resources
2019 – 2022 Central Regional Scientific and Natural Areas Supervisor, DNR, Division of Ecological & Water Resources
2018 – 2019 Post-Doctoral Research Biologist and Contractor, U.S. Geological Survey’s Northern Prairie Wildlife Research Station
2015 – 2018 Doctoral Candidate, Washington University in Saint Louis, St. Louis, MO
2010 – 2014 Senior Research Technician, Tyson Research Center, Eureka, MO

Education:

2018 Doctor of Philosophy, Ecology, Evolution and Population Biology, Washington University in Saint Louis
2010 Master of Science, Organismic and Evolutionary Biology, University of Massachusetts
2007 Bachelor of Science, Botany/Biology, Ball State University

Organization: MN DNR - Ecological and Water Resources Division

Organization Description:

The DNR Minnesota Biological Survey Unit systematically collects, interprets, and delivers baseline data on the distribution and ecology of native animals, plants, plant communities, and native landscapes. Delivery of these data helps guide management, conservation, and monitoring of critical habitat and ecological functions.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Plant Ecologist/Botanists		Aquatic plant surveys, data and specimen processing, data synthesis, analysis, mapping.			28%	2.5		\$220,000
Aquatic Biologist		Design and conduct outreach materials and events.			33%	0.5	X	\$60,000
Data Specialist		Assist with specimen preparation and other data entry and submission.			28%	0.2		\$20,000
Information Officer		Digital and print media and information design, management, and dissemination.			30%	0.2		\$25,000
							Sub Total	\$325,000
Contracts and Services								
							Sub Total	-
Equipment, Tools, and Supplies								
	Tools and Supplies	Field equipment will be reused from previous projects to the extent possible. Additional supplies needed include boat parts and repair, waterproof notebooks, insect/tick repellent, watercraft safety supplies; measuring tools such as calipers; GPS unit; plant, specimen collecting and preservation supplies.	Supplies needed to conduct field work, collect data and specimens.					\$6,500
							Sub Total	\$6,500
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								

	Miles/ Meals/ Lodging	Travel for one 1-2-person crew for 2 field seasons to sample 250 sites, one site per day; and for 1-2 person team to present outreach materials, 15,000 miles. Vehicles (\$7,057), lodging (\$20,025), and meals (\$2,475) in accordance with the Commissioner's Plan.	This will require one vehicle and one boat for the summer to access sites across the state; the team will need access to lodging/hotels while in transit during the week; and reimbursement for meals while in transit.					\$29,557
							Sub Total	\$29,557
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								
	Printing	Printing and mailing outreach materials such as brochure, maps, posters, pocket cards, and other educational materials	To deliver outreach materials					\$1,000
							Sub Total	\$1,000
Other Expenses								
		Direct and necessary costs to cover HR support (\$6,198), Safety Support (\$1,249), Financial Support (\$4,858), Communication Support (\$3,622), IT Support (\$13,977), and Planning Support (\$2,040).	These funds are needed to pay other DNR personnel for things like HR and IT.					\$31,943
							Sub Total	\$31,943
							Grand Total	\$394,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Personnel - Aquatic Biologist		Design and conduct outreach materials and events.	Classified : Clean Water Funding for this position is no longer available and the work lake work associated with it was eliminated. Much of this position's work is now supported by Fisheries (75% time). This would be an opportunity would support this position 25% of the time for the new pilot program developing aquatic plant outreach. Fisheries will backfill the reduced time.

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
Cash	Heritage Enhancement	Senior ecologists who lead and provide oversight to field survey efforts and associated analysis. Associated operations budget.	Pending	\$75,000
Cash	General Fund	A portion of MBS program management and supervision; office space; program operations.	Pending	\$15,000
			State Sub Total	\$90,000
Non-State				
			Non State Sub Total	-
			Funds Total	\$90,000

Attachments

Required Attachments

Visual Component

File: [32c5424a-be3.pdf](#)

Alternate Text for Visual Component

A one-page graphic highlighting Activity 1 and showing past progress and future goals for MBS aquatic plant surveys....

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Does your project have potential for royalties, copyrights, patents, or sale of products and assets?

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

Lake biodiversity conservation: *connecting data to action*

MBS Proposal, Activity 1: Aquatic Plant Data Collection, Dissemination & Technical Guidance

Aquatic lake plant surveys proposed to continue

Systematic lake surveys for rare aquatic and shoreline plants were initiated in 1995 to increase the understanding of the distribution of this understudied group of plants in the state. Since then, approximately 2,100 lakes have been surveyed and >44 rare species have been documented at >1,094 locations.

This project will...

- continue native and rare aquatic plant survey progress into the southern half of the state.
- continue to collect foundational data and deliver survey results on Minnesota’s aquatic plant biodiversity. Avenues include aquatic lake plant reports via the DNR’s popular LakeFinder web application, workshops.
- continue to acquire baseline data on underrepresented aquatic native and rare plant species and communities.
- connect the entire body on MBS aquatic plant surveys to Activity 2: developing a foundation of targeted outreach for lake and lakeshore stakeholders to become well-informed and well-connected local stewards for lake conservation and management.



