Environment and Natural Resources Trust Fund

2025 Request for Proposal

General Information

Proposal ID: 2025-247

Proposal Title: Advancing Collaborative Wild Rice Monitoring Program Technologies

Project Manager Information

Name: Josh Knopik

Organization: MN DNR - Ecological and Water Resources Division

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Project Basic Information

Project Summary: Collaborate with tribal and Non Government Organizations in advancing wild rice monitoring tools (aerial imagery and remote sensing) to improve statewide coverage maps, and conduct trend analysis of distribution.

ENRTF Funds Requested: $900,000

Proposed Project Completion: June 30, 2028

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

Narrative

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

Minnesota supports the largest abundance of natural wild rice in the United States. Wild rice is important to the state of Minnesota, economically, ecologically, and culturally. Despite wild rice's importance to Minnesota, funding for wild rice monitoring and assessment activities with tribal and other entities is limited. Wild rice has declined in abundance. A robust suite of monitoring tools will help quantify changes in abundance across the state over time. The Collaborative State - Tribal Wild Rice Monitoring Program, funded by LCCMR in 2022, was successful in initiating coordination of field data collection across the state, holding regular meetings with tribal collaborators, and developing remote sensing methodologies estimating wild rice coverage. The collaboration identified new technologies and research (using Unoccupied Aerial Vehicles or UAVs and expanded remote sensing applications) which will increase the efficiency and efficacy of data collection moving forward.

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.

Building on the collaborative's momentum, this project aims to: Advance the remote sensing and aerial imagery analysis, model statewide wild rice coverage annually back to 2018, provide analysis on wild rice abundance trends and correlations to stressors, and expand coordination efforts on wild rice monitoring, assessment, and conservation. We are seeking funding to expand the capacity of tribes and the state to monitor wild rice abundance through the improvement of remote sensing tools and UAV imagery, continued collaboration around methods and shared learnings, and aligned commitment to assessing statewide abundance, analyzing both historic and future trends. We will do this by utilizing DNR's Resource Assessment Unit expertise, as well as supporting tribal collaborators. A full-time project Coordinator will serve as liaison to all entities as well as pursue sustainable funding for ongoing wild rice conservation partnerships. Support has been expressed by the following Tribes and NGO's: Fond du Lac, Mille Lacs, White Earth, and the Red Lake Nation, and inter-tribal organizations including the 1854 Treaty Authority, Great Lake Indian Fish and Wildlife Commission, The University of Minnesota, and The Nature Conservancy.

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?

Outcomes of the project include:

- Development of robust and consistent tools for monitoring wild rice abundance.
- Assessment of changes over time and establishment of current abundance baselines for wild rice in Minnesota.
- Increased communication and collaboration between state and tribal resource staff around wild rice monitoring.
- Establishment of an annual wild rice abundance statewide report.
- Improvement of our knowledge of statewide wild rice abundance and coverage to inform future decision making.
- Expansion of our collective understanding of cultural perspectives and approaches to conservation of wild rice.
- Establishment of funding strategies for continued collaboration around and monitoring of wild rice.

Activities and Milestones

Activity 1: Advance the collection and analysis of aerial derived imagery to enhance remote sensing tools to estimate statewide wild rice coverage

Activity Budget: $400,000

Activity Description:
Collect, analyze, and test field collected data and imagery (aircraft and UAV) to advance the accuracy of the current Google Earth Engine (GEE) model as it relates to wild rice coverage and density. Models require broad data sets to improve their effectiveness, and wild rice density is variable both across lakes and from year to year. Collaborative review of model outputs and methods will be used to refine and expand tool consistency. Quantifying the density of wild rice beds, through the use of aerial imagery, would provide an efficient and economical method of assessing wild rice abundance and variability in density from year to year on individual lakes, and support data needed for statewide density coverage. One of the constraints with the current model is accuracy in stands of wild rice that are sparse and stands which consist of mixed vegetation, especially at the regional scale. Additional data will be collected to increase the accuracy of the model in these areas. Aerial imagery will be collected and analyzed to improve the accuracy of coverage and correlated density at the lake wide scale.

Activity Milestones:

Description	Approximate Completion Date
Advance research on the correlation of density with the aerial imagery	July 31, 2026
Collect and analyze aerial imagery on representative lakes	October 31, 2027
Refine GEE model using increased stand density data and methods	January 31, 2028
Develops annual statewide map of wild rice coverage	June 30, 2028

Activity 2: Advance collaborative for comprehensive wild rice monitoring and assessment.

Activity Budget: $400,000

Activity Description:
Building trust and developing relationships are critical for creating a long-term wild rice monitoring collaborative. Due to increased interest from tribal entities, NGOs and the University of Minnesota (UMN), momentum is rising to establish a framework for long-term wild rice monitoring for conservation. Monthly collaboration calls, field season activity coordination, strategizing to address capacity issues and data concerns have all been initiated in the initial project and will continue. A wild rice workshop will be coordinated and held as a means to share results of research and continued relationship building, with a focus on arranging opportunities for shared learning around traditional ecological knowledge, monitoring, and management activities. These tasks will be supported by a Wild Rice Coordinator, whose role will be to broaden the collaboration, communicate both internally and externally on progress and activities, and strategize and search for sustainable funding frameworks.

Activity Milestones:

Description	Approximate Completion Date
Facilitate monthly meetings with tribal, state and NGO partners for discussion on Collaboration goals	June 30, 2026
Organize annual collaborators workshop to advance share knowledge on wild rice monitoring.	February 28, 2028
Arrange and implement field/learning opportunities with tribal collaborators	June 30, 2028
Identify and submit a proposed funding model for continuation of the collaboration.	June 30, 2028
Wild Rice Conservation Status Report	June 30, 2028

Activity 3: Research on wild rice coverage trends across multiple years.

Activity Budget: $100,000

Activity Description:

Conduct analysis and collaborate with others on wild rice abundance change and stress (climate change, direct or indirect human influences). Use refined Google Earth Engine (GEE) model to process archived satellite data from 2018 through 2021. This will provide an extended trend analysis of statewide wild rice abundance through the years from 2018 through 2027. Develop a correlation model to estimate potential seed production of wild rice using aerial (UAV and aircraft) derived imagery.

Activity Milestones:

Description	Approximate Completion Date
Perform correlation study estimating wild rice density and seed production using aerial imagery	June 30, 2027
Research and analysis of statewide wild rice coverage trends between 2018-2027	June 30, 2028

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Kristen Blann	The Nature Conservancy	Collaboration building, field data collection and analysis. Sub-award to be determined.	Yes
Darren Vogt	1854 Treaty Authority	Collaboration building. Governed by the Bois Forte and Grand Portage bands. Currently monitors wild rice and oversee one of the states largest wild rice abundance datasets.	No
Nancy Schuldt	Fond du Lac Band of Lake Superior Chippewa Resource Management Division	Collaboration building. Wild rice monitoring and restoration experience.	No
Dustin Roy	White Earth Nation Division of Natural Resources	Collaboration building. Explore options for monitoring wild rice. Sub-award to be determined.	Yes
Brandon Byrne	Great Lakes Indian Fish and Wildlife Commission	Conducts monitoring around Mille Lacs area and works in the 1837 treaty ceded territories. Mille Lacs Band of Ojibwe and Fond du Lac are member tribes. GLIFWC is expanding their wild rice monitoring efforts and collaborated on methods and data sharing.	No
Shane Bowe	Red Lake Nation Department of Natural Resources	Collaboration building; Currently involved in collecting drone imagery for wild rice monitoring and active collaborator. Sub-award to be determined.	Yes
Alisha Haken	US Fish and Wildlife Service - Tamarac National Wildlife Refuge	Collaboration building and data collection within the Tamarac NWR. Hosts field training days.	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?

Mapping products will be distributed through MN Natural Resources Atlas managed by UMN's Natural Resources Research Institute, and MN Geo Spatial Commons, results of wild rice trend analysis will be published in leading scientific journals, general audience periodicals, and presented at conferences.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Collaborative State and Tribal Wild Rice Monitoring Program	M.L. 2021, First Special Session, Chp. 6, Art. 6, Sec. 2, Subd. 03i	$644,000

Project Manager and Organization Qualifications

Project Manager Name: Josh Knopik

Job Title: Aquatic Ecologist

Provide description of the project manager's qualifications to manage the proposed project.
As an Aquatic Ecologist who has worked with aquatic plants, I'm knowledgeable on the ecology of wild rice. I was also the project manager for the Collaborative State-Tribal Wild Rice Monitoring Program, the LCCMR funded project that laid the groundwork for this proposal.

Organization: MN DNR - Ecological and Water Resources Division

Organization Description:
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. The department consists of seven divisions, including Fish and Wildlife, Forestry, Lands and Minerals, Parks and Trails, Enforcement, Operations Services and Ecological and Water Resources, as well as four regions.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Wild Rice Coordinator		Coordinate monitoring activities between partners			30%	3		$350,000
Field Technician		Field data collection			20%	0.99		$80,000
Interns		Field data sampling			15%	0.6		$40,000
							Sub Total	**$470,000**
Contracts and Services								
DNR Resource Assessment	Internal services or fees (uncommon)	Improve the Google Earth Engine remote sensing application, listed in Activity One, and produce statewide wild rice coverage maps., and aerial imagery analysis listed in Activity Three				0		$150,000
TBD	Sub award	Sub Awards granted to collaborative partners. Funds will be used for data gathering efforts such as hiring field staff (interns or seasonal technicians), or equipment needs.				-		$200,000
							Sub Total	**$350,000**
Equipment, Tools, and Supplies								
	Equipment	Field sampling equipment	Canoes and other sampling tools					$5,000
							Sub Total	**$5,000**
Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								

	Miles/ Meals/ Lodging	lodging and meals	lodging and meals during field sampling					$12,400
	Other	DNR Fleet Services	truck lease and mileage for sampling season					$10,000
							Sub Total	**$22,400**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
		Direct and Necessary	DNR's direct and necessary costs pay for activities that are directly related to and necessary for accomplishing appropriated projects. People Support (~$11053), Safety Support (~$1,552), Financial Support (~$4,816), Communication Support (~$3,055), IT Support (~$29,847), and Planning Support (~$2,274).					$52,600
							Sub Total	**$52,600**
							Grand Total	**$900,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
In-Kind	Natural Resources Specialist - Aquatic Ecologist, Heritage Enhancement Funded	Project Manager (0.10 FTE): Writing contracts, participating in collaborative development, budgeting, and some field sampling.	Secured	$30,000
			State Sub Total	**$30,000**
Non-State				
In-Kind	Freshwater ecologist, The Nature Conservancy in MN, ND, SD	Collaboration building, field data collection and analysis	Secured	$6,000
In-Kind	Water Projects Coordinator, Fond du Lac Band of Chippewa	Collaboration building, field monitoring development	Potential	$6,000
In-Kind	Resource Management Director, 1854 Treaty Authority	Collaboration building and field monitoring development	Potential	$5,000
In-Kind	Natural Resources specialist for Mille Lacs Band of Ojibwe, and associated staff and resources	Collaboration building, monitoring resources and staff time.	Potential	$6,000
In-Kind	Deputy Project Leader, US Fish & Wildlife Service	Collaboration building, Field data training and collection	Secured	$6,000
			Non State Sub Total	**$29,000**
			Funds Total	**$59,000**

Total Project Cost: $959,000

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: 9a942bce-d93.pdf

Alternate Text for Visual Component

Poster showing collaborators logos surrounding a photo of wild rice. A text box "A Three-part Approach: Enhance remote sensing tools to estimate statewide wild rice coverage, Advance collaborative for comprehensive wild rice monitoring, Research on statewide wild rice coverage across the past decade." Photos of monitoring, classification example, aerial imagery....

Supplemental Attachments

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

Title	File
White Earth Reservation Letter of Support	52e01d9c-855.pdf
1854 Letter of Support	1dd30535-648.pdf
GLIFWC - LCCMR Wild Rice Collaborative Letter	8264f8ad-c82.pdf
TNC Letter of Support	0a2be201-4a6.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

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?

Yes

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:

MNDNR - Jason Tidemann