Environment and Natural Resources Trust Fund

2026 Request for Proposal

General Information

Proposal ID: 2026-532

Proposal Title: Regarding Native Fish: Outreach, Engagement, and Citizen Science

Project Manager Information

Name: Solomon David

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

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Project Basic Information

Project Summary: This study will directly address native fish knowledge gaps in combination with implementing native fish educational, outreach, and citizen scientist activities as prioritized by MNDNR and LCCMR.

ENRTF Funds Requested: $270,000

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?

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.

Native rough fish play crucial roles in Minnesota waters by maintaining ecological balance as predators and prey, serving as hosts to freshwater mussels, and as environmental indicators. Unfortunately, these 23 Minnesota native species are understudied by researchers and underappreciated by anglers relative to their more popular game fish counterparts (e.g. Walleye, Largemouth Bass). Over the past decade, however, attitudes toward native rough fish have been shifting, with these species garnering more interest from recreational anglers and researchers. Progress was made in 2024 when Minnesota passed comprehensive legislation for native rough fish, including restitution values and separating them from invasive species (e.g. Common Carp); the first state in the country to do so. Significant knowledge gaps, however, still exist. The Minnesota Department of Natural Resources Native Fish Report (2023) identified "implement native fish educational and outreach initiatives" as a high priority alongside research efforts on native rough fish ecology and population dynamics. Anglers and hunters are key drivers of conservation in Minnesota and nationwide, and public perception of wildlife management can also be a powerful force. Therefore, engaging recreational anglers and a diverse public is an investment in future conservation of freshwater biodiversity (See Attachment: Reference Literature).

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.

To address the need for more education and outreach on native rough fish, we propose three integrated activities: (1) scientific field data collection, (2) engaging recreational anglers as citizen scientists, and (3) public outreach to diverse audiences. Knowledge gaps for native fish ecology will be addressed by fish collection from Minnesota rivers and lakes, generating datasets (age, growth, ecology) for Activities 2 and 3. Working with Native Fish for Tomorrow (non-profit native fish conservation group), we will engage recreational anglers as citizen scientists, leading fishing events at five field sites. Participating anglers will learn how to collect data on native fish they catch (e.g. species ID, measurements, fin tissue clips, photographs), contributing to the dataset from Activity 1. To expand outreach efforts on native fish, we will engage the public through "native fish day" events at cultural institutions (e.g. Bell Museum), community groups, Minnesota State Fair, K-12 schools, and online social media campaigns. Results from data collected in Activities 1 and 2 will be shared with the public at these events by in-person presentations, video, infographics, 3D models, and live fish displays. Through these activities, our results will be shared with collaborators, state agencies, and the diverse public.

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?

1: We will develop a citizen scientist angler network to collect data and collaborate with scientists on native fish conservation for this project and the future (e.g. distribution maps, timing of spawning).
2: Outreach activities aimed at diverse public audiences from K-12 schools to museum-goers will inform and engage members of the public on the importance of native fish, and conserving Minnesota's wildlife overall. Metrics (e.g. attendance, feedback) inform future efforts for public engagement on native fish.
3: Age, growth, and ecological data will contribute to population models directly informing conservation and management of Minnesota native fish resources.

Activities and Milestones

Activity 1: Field data collection, age-growth and ecological analyses for citizen scientist and outreach activities

Activity Budget: $108,000

Activity Description:
We will develop datasets for age, growth, and ecology (e.g. habitat use, food web position) of native rough fish from Minnesota rivers and lakes that will be used for all three project activities. To accomplish this objective, we will collaborate with MNDNR to collect native fish species (e.g. gars, suckers) from two river systems (Minnesota River, Mississippi River), and three inland lakes (Gorman, Long, South Center Lakes). We will use a combination of electrofishing and nearshore netting to collect native rough fish samples from spring through fall for two years (approximately 10 field trips/year). We will collect up to 50 native rough fish from each site, with 10 samples of baseline organisms (snails, mussels) and forage fish (baitfish, minnows, shad) to calibrate food web analyses, resulting in up to 60 samples per site. Each fish collected will be measured, photographed, tissue-sampled, and dissected (gut contents, ID sex, otoliths). Fish collected will be aged, and food web position and habitat use will be determined for all samples from stable isotope analysis of fin or muscle tissues. These data will be compared to citizen science angler data collected in Activity 2 and shared with the public in Activity 3.

Activity Milestones:

Description	Approximate Completion Date
Summer-Fall 2026 Fieldwork (Jul-Sept), Spring-Summer-Fall 2027 Fieldwork (Apr-Oct)	October 31, 2027
Measure, dissect, extract otoliths, process fin tissues from seasons 2026-27 - ship DEC each year.	December 31, 2027
Build age-growth & ecological models based on otoliths, SIA results (2026-2028)	March 31, 2028
Analyze data, write manuscripts, submit findings to scientific journals	June 30, 2028

Activity 2: Engaging native rough fish anglers as citizen scientists

Activity Budget: $73,000

Activity Description:
We will engage recreational native rough fish anglers as citizen scientists to collect data and share information with fellow anglers. We will coordinate five native rough fish angling trips per year (10 trips total) with Native Fish for Tomorrow (NF4T) to train recreational anglers on field data collection and inform other anglers on the value of Minnesota's native rough fish. Members from the research team will join NF4T and interested anglers on shore-angling visits to sites established in Activity 1 during summer-fall 2026-2028. When a native rough fish is caught, researchers will show anglers how to identify, measure, photograph, and fin-clip the fish. A sub-sample of fish caught (up to 30 per site) will be kept for analyses listed in Activity 1, other fish will be released. Information collected with citizen scientist anglers will both enhance existing native rough fish datasets and provide comparisons between scientific field collection and recreational angling. For example, what size/age fish are anglers catching versus what researchers are collecting by electrofishing? An additional objective is for anglers to collect these data on their own in the future and contribute to native fish conservation by identifying species distributions, size range, and timing of spawning.

Activity Milestones:

Description	Approximate Completion Date
Year 1 Recreational angler citizen scientist events (5 events, August 2026-June 2027)	June 30, 2027
Analyze angler 2026-27 data and submit samples (COIL, Lackmann-UMD)	July 31, 2027
Year 2 Recreational angler citizen scientist events (5 events, August 2027-May 2028)	May 31, 2028

Analyze angler 2027-28 data and submit samples, complete angler & Activity 1 reporting	June 30, 2028

Activity 3: Outreach activities and engaging the public regarding native rough fish

Activity Budget: $89,000

Activity Description:

To engage members of the public on the importance of native rough fish, we will organize five activities per year aimed at diverse audiences. We will produce 3D models of select native fish, live fish exhibits, stickers (and other give-away materials), and create a web page to share project information. Results from Activities 1 and 2 will be shared, providing a snapshot of food webs, ages of fishes, and recreational angler contributions. Activities include a native fish "expedition" at the Bell Museum, where attendees learn about native fish through the museum's extensive fish collection, and a "passport" scavenger hunt for kids through the exhibits. In coordination with MNDNR's native fish specialist, we will share results at the Minnesota State Fair. As part of this project, we will expand our team's efforts presenting to preschool through K-12 groups. We will further connect to the public through social media. Our team co-organizes "Gar Week" with partners at U.S. Fish & Wildlife Service, reaching hundreds of thousands of people annually. Metrics for Activity 3 success will be based on activity attendance and online engagement statistics. These activities will inform future native rough fish outreach efforts that will hopefully continue beyond the project timeline.

Activity Milestones:

Description	Approximate Completion Date
Minnesota State Fair 2026-27 Native Fish activity	September 30, 2027
Communicate project updates through social & popular media (continuously) over project timeline	June 30, 2028
Present at meetings (public and professional) continuously over project timeline	June 30, 2028
Native Fish Day outreach events 2026-2028 (Bell Museum, K-12 Outreach activities)	June 30, 2028
Social Media campaigns – Gar Week, ongoing 2026-28 (with federal, state, non-profit partners)	June 30, 2028

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Mark Hove	UMN Twin Cities	Mark Hove is a research scientist in the Department of Fisheries, Wildlife, and Conservation Biology with extensive experience in field data collection in Minnesota lakes and rivers. He will assist with boat operations and fish sampling for the project.	Yes
Dr. Alec Lackmann	UMN Duluth	Dr. Lackmann is one of the world's foremost authorities in aging techniques for freshwater fishes, particularly native rough fishes (e.g. gars, bowfins, buffalo). He has been a longtime collaborator with PI David. Dr Lackmann will age fishes for the project and train students in aging techniques.	Yes
Dr. Kassandra Ford	UMN Twin Cities	Co-PI. Dr. Ford is an assistant professor in the Dept of Fisheries, Wildlife, and Conservation Biology, and Curator of Fishes at the Bell Museum with knowledge and experience with fieldwork and fish identifications and active collaborations with state agencies.	Yes
Brett Nagle	Minnesota Department of Natural Resources	Native Rough Fish Specialist	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?

Our findings will be shared directly with the public through outreach activities and citizen science angling events. Research data will be shared with managers (e.g. MNDNR) and local stakeholders through reports and updates. Results will be shared with the broader scientific community through peer-reviewed publications and scientific presentations. The public will have access to findings through reports, publications, presentations, and popular media (e.g. social media, news coverage). If additional work is needed, we will submit another proposal for continued research and outreach.

Project Manager and Organization Qualifications

Project Manager Name: Solomon David

Job Title: Assistant Professor of Aquatic Ecology

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

Dr. Solomon David is an assistant professor in the Department of Fisheries, Wildlife, and Conservation Biology at the University of Minnesota, and an aquatic ecologist with training in conservation of native fish biodiversity, science communication, and 25 years of experience studying gars and bowfins. Dr. David works at the intersection of ecology, conservation, and genomics, with a focus on non-game native fishes. He is considered a leading authority on these species both nationally and internationally, and his work has been featured by diverse media including NPR, National Geographic, Science, Ranger Rick Magazine, Discover, and Science Friday. He has contributed to Minnesota state legislation efforts for conservation and management of native rough fish and continues to build collaborative relationships with state and federal management agencies.

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

Organization Description:

The Department of Fisheries, Wildlife, and Conservation Biology at the University of Minnesota Twin Cities provides world-class training and expertise to contribute to the management, conservation, and sustainable use of fisheries and

wildlife resources. Our goal is to use innovative teaching, research, and outreach to respond to societal needs for information and education pertaining to natural resources.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Solomon David		PI, lead and conduct research/outreach activities; involved in all aspects of project. Summer Salary for 2 months, both years of project			36.6%	2		$59,000
Mark Hove		Fieldwork, specifically boat operations for field trips and outreach participation over the course of the study.			36.6%	2		$10,000
Graduate Student		Graduate research assistant, lead and conduct research and outreach activities; 2 semesters at $11,442 per semester (23.2% fringe = $2500 benefits per semester + $9000 tuition per semester) + 1 summer ($8065 + $1871 fringe) totaling $51,000			23.2%	2		$51,000
Alec Lackmann		Analysis of otoliths for age-growth models. Alec is one of the foremost experts on native rough fish otolith analysis.			36.6%	2		$26,000
Kassandra Ford		Co-PI, conduct research/outreach activities; involved in all aspects of project. Summer Salary for two months, both years of project			36.6%	2		$57,000
							Sub Total	**$203,000**
Contracts and Services								
Cornell Isotope Lab (COIL)	Service Contract	COIL is a stable isotope analysis lab that will process our samples for carbon and nitrogen. We have worked with them for these analyses for over 6 years. Clarification: They know our work and are best-suited to carry out these analyses.				0		$5,000
Native Fish for Tomorrow	Service Contract	Native rough fish conservation non-profit made up of expert native rough fish anglers and outreach personnel. Co-host native fish angling events and associated expertise needed. Five events per year for two years. NF4T will provide equipment and expertise needed for citizen scientist anglers to collect and contribute data to project.				2		$10,000
							Sub Total	**$15,000**

Equipment, Tools, and Supplies								
	Tools and Supplies	Field & Labwork supplies: nets, buckets, gloves, consumable field equipment, specimen vials, ziplock bags	Expendable items for sample storage & processing.					$4,000
	Tools and Supplies	Outreach materials: 3D fish models, stickers, hats, infographic posters, signage, promotional materials, data sheets for anglers (10 outreach events, 10 citizen scientist angling events over two year project).	Visual aids for outreach events, give-away and promotional materials to generate interest in events, supporting materials for event-hosting groups.					$30,000
							Sub Total	**$34,000**
Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	MN Standard lodging is $165/ng. Mileage is $0.70/mi. MN Standard meals are $51/1st & last day of travel and $68/ full travel day. 20 site visits + 10 citizen science angling trips + 10 outreach events (venues TBD) over course of study.	Trips to field sites (approximately 20 site visits to project-designated rivers and lakes) to collect fish, citizen scientist angling events (5 trips/year for two years), outreach events (5 events/year for two years).					$15,000
	Conference Registration Miles/ Meals/ Lodging	Minnesota American Fisheries Society annual meeting, 2 years (registration fee, lodging, meals, mileage) for PI or Co-PI and graduate student to present findings; estimated cost per year $1500 MN Standard lodging is $165/ng. Mileage is $0.70/mi. MN Standard meals are $51/1st & last day of travel and $68/ full travel day	PI and graduate student to present findings at state chapter meeting of American Fisheries Society					$3,000
							Sub Total	**$18,000**
Travel Outside Minnesota								

							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$270,000**

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				
			State Sub Total	**-**
Non-State				
In-Kind	University of Minnesota unrecovered indirect cost return (54% MDTC, updated beginning July 2024)	$270,000 direct total - $18094 tuition (exempt category) = $251906 x .54 = $136,029 unrecovered IDC	Secured	$136,029
			Non State Sub Total	**$136,029**
			Funds Total	**$136,029**

Total Project Cost: $406,029

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: 2488e4aa-748.pdf

Alternate Text for Visual Component

Visual Component shows three integrated activities through images and text, Research: scientific field data collection, Citizen Science: engaging anglers as citizen scientists, and Outreach to diverse audiences, focused on native rough fish....

Supplemental Attachments

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

Title	File
Support Letter - Minnesota Conservation Federation	f23eba44-e8e.pdf
Reference Literature - Supplemental	0b9acf0b-42a.pdf
David UMN Board Resolution Letter	8655170e-b95.pdf
Support Letter - Native Fish for Tomorrow	5d3706db-66a.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?

Yes, I understand the UMN Policy on travel applies.

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:

Riana Fletcher, University of Minnesota

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