Environment and Natural Resources Trust Fund

2027 Request for Proposal

General Information

Proposal ID: 2027-409

Proposal Title: Invasive Carp Tagging, Tracking and Removal

Project Manager Information

Name: Brian Nerbonne

Organization: MN DNR - Fish and Wildlife Division

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Project Basic Information

Project Summary: Monitoring, tagging, tracking and removal of invasive carp will help to prevent their establishment in Minnesota. Tagging and tracking of native fish will increase our knowledge of impacts from barriers.

ENRTF Funds Requested: $1,086,000

Proposed Project Completion: June 30, 2030

LCCMR Funding Category: Fish and Wildlife (D)

Project Location

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

Region(s): Central, Metro, SE, SW,

What is the best scale to describe the area impacted by your work?

Region(s): Central, SW, SE,

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.

Early detection and response efforts are important for protecting MN resources from the negative environmental and economic impacts of invasive carp. When abundant, invasive carp can harm native fish populations and make water recreation dangerous due to leaping fish. Since 2011, 937 invasive carp have been removed from Minnesota's waters through this program, and since 2016 when tagging began we have surgically implanted 67 released invasive carp with acoustic tracking transmitters. About half the invasive carp removed were found because of tagged fish. Invasive carp continue to show up from reproducing populations downstream, but our control efforts are showing success in Minnesota waters in preventing their establishment. The DNR began its grant-funded invasive carp program in 2012, and expanded the program using 2013, 2017 and 2020 LCCMR grants. DNR is seeking additional funding to continue our invasive carp work, and build on past successes while learning more about how make our removal efforts more effective.

Native ecosystem health is ultimately why we are managing to control invasive carp, but strategies such as deterrent barriers may impact native species as well. Native fish species (also acting as mussel hosts) need to move between habitats. Better understanding of barrier impacts is needed.

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 need to learn more the habitats used by invasive carp in different reaches of the Mississippi River at different times of year so that removal efforts can be more effective. DNR has identified several locations in certain pools where invasive carp congregate during certain times of year, but for other pools that information is lacking. We also need to better understand how invasive carp are using tributary rivers to the Mississippi. Increased tagging and tracking, and use of new technology such as forward facing sonar and eDNA will be critical to identifying new locations to target for removals. This proposal includes funding for commercial fishing to remove invasive carp once those areas of congregation are found.

Because invasive carp management is ultimately intended for the benefit of native species, we have proposed tagging and tracking several important native species such as lake sturgeon and bigmouth buffalo that may be impacted by barriers on the Mississippi River. If new barriers to movement are implemented, we need to better understand not only how they deter the movement of invasive carp, but also how native species are affected. This will inform how we might minimize impacts from barriers to native fish.

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?

We will identify new locations to target invasive carp for removal, disrupting the potential for invasive carp to gather in numbers sufficient to reproduce and establish a breeding population. We will also learn more about native fish movements, especially in relation to barriers. All of this work will help to sustain a health aquatic ecosystem in the Mississippi River and its tributaries.

Activities and Milestones

Activity 1: Tagging and tracking native fish and invasive carp to enhance management

Activity Budget: $465,000

Activity Description:
Tagged bighead, silver, and grass carp have led to the removal of over 400 invasive carp in Minnesota to date. The movement patterns of these carp have influenced sampling efforts by informing us of new locations to fish and adapting sampling timing to better fit carp movement in low-density populations. They are also informing management at Mississippi River locks and dams, which serve as intermittent barriers to upstream movement. Migratory native fish are also presumably affected by locks and dams, but we are lacking data on where and when their movement is limited, and how that may relate to invasive carp movement and management. Tagging 50 each of Lake Sturgeon, Paddlefish, Bigmouth Buffalo, White Bass, Redhorse spp., and invasive carp spp. each year for the next 3 years will build a base of tagged fish large enough to inform a more comprehensive approach to fisheries management. This project will be able to leverage increased receiver coverage in the Mississippi River and tributaries, including at locks and dams, as well as in-kind assistance from state and federal partners. Tracking will help to identify new locations to target for removal of invasive carp, increasing our effectiveness in disrupting establishment.

Activity Milestones:

Description	Approximate Completion Date
Capture 300 invasive carp and native spp. for tagging via contracted commercial seining and gillnetting,	June 30, 2028
Contract Innovasea to analyze data from a localized array	June 30, 2028
Capture 300 invasive carp and native spp. for tagging via contracted commercial seining and gillnetting,	June 30, 2029
Contract Innovasea to analyze data from a localized array	June 30, 2029
Capture 300 invasive carp and native spp. for tagging via contracted commercial seining and gillnetting,	June 30, 2030
Active track tagged fish monthly throughout project period as conditions allow.	June 30, 2030
Maintain DNR's receiver array in the Mississippi River, sharing data with partners.	June 30, 2030
Contract Innovasea to analyze data from a localized array	June 30, 2030

Activity 2: Monitoring and removal of invasive carp

Activity Budget: $621,000

Activity Description:
As invasive carp move upstream, localized population density increases. Removal is the best tool currently available to reduce the risk of impacts from invasive carp, including spawning that would establish a breeding population. Commercial fishing has proven ab effective tool for removing invasive carp due to the tight schooling behavior of these species at certain times. Driving carp into areas suitable for commercial fishing requires many boats and personnel working in close coordination over large areas. Improvements in technology such as forward-facing sonar can enhance our ability to target invasive carp by locating and herding schools of large-bodied fish. Monitoring for changes in the population, such as reproduction or mass movements, is vital to tailoring management to meet current needs, and is also covered in this activity. USFWS conducts eDNA sampling to monitor for changes in detection rate, a proxy for abundance. DNR contracts with a USGS laboratory to identify fish egg samples, to screen for invasive carp reproduction. Staffing during the open water season will be important to our ability to implement removal operations and the monitoring that informs them. Utilize new technologies such eDNA can provide additional information on invasive carp presence and locaitons for potential removals.

Activity Milestones:

Description	Approximate Completion Date
Contract commercial fishers for 4 seine days and 2 gillnet days in 2027	December 31, 2027
Install forward-facing sonar units on DNR's invasive carp electrofishing boat and net boat.	June 30, 2028
Sample for invasive carp eggs during most likely conditions and locations for reproduction.	June 30, 2028
Partner with USGS for identification of larval samples	June 30, 2028
Contract commercial fishers for 5 seine days and 2 gillnet days in 2028	December 31, 2028
Sample annually for invasive carp eggs during most likely conditions and locations for reproduction.	June 30, 2029
Partner with USGS for identification of larval samples	June 30, 2029
Contract commercial fishers for 5 seine days and 2 gillnet days in 2029	December 31, 2029
Sample annually for invasive carp eggs during most likely conditions and locations for reproduction.	June 30, 2030
Partner with USGS for identification of larval samples	June 30, 2030
Partner with USFWS on eDNA monitoring for localized changes in detection rate throughout project.	June 30, 2030

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.
We will comply with ENTRF requirements for acknowledging the source of funding in all publications and news stories. Lessons learned through this project will be shared informally through regular meeting with other state and federal agencies, and through presentations and conferences so that other organizations can share in the benefits of this work.

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?
DNR currently utilizes fishing license dollars and US Fish and Wildlife grants to fund invasive carp work, in addition to ENRTF money. DNR has an ongoing commitment to managing invasive carp to benefit native species. How much work DNR does is dependent on funding. DNR will scale back invasive carp work if funding is reduced, but we will continue to use the knowledge gained during this project to be more effective in our future management work.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Expanding Youth and Family Fishing Opportunities	M.L. 2024, , Chp. 83, Art. , Sec. 2, Subd. 05t	$1,162,000
Implementing Innovative Techniques to Manage Low-Density Invasive Carp	M.L. 2024, , Chp. 83, Art. , Sec. 2, Subd. 06c	$634,000

Project Manager and Organization Qualifications

Project Manager Name: Brian Nerbonne

Job Title: Regional Fisheries Manager

Provide description of the project manager's qualifications to manage the proposed project.
I have overseen the invasive carp management team in DNR Fisheries for six years. During that time I have managed two different ENRTF appropriations (one active) for invasive carp management, totalling over $1.1 million. The previous two projects were successfully completed and final reports were submitted. I also am project manager for a $1.16 million ENRTF appropriation to expand family fishing opportunities (project # 2024-272). I am experienced in working with staff to complete status updates and final reports required from these projects. Prior to this role, I coordinated stream restoration projects for DNR Fisheries and managed five multi-million dollar Lessard Sams Outdoor Heritage Council appropriations, completing status updates and final reports as required.

Organization: MN DNR - Fish and Wildlife Division

Organization Description:
The mission of the Minnesota Department of Natural Resources (DNR) is to work with Minnesotans 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.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Fisheries specialist		Invasive carp monitoring and removals			30%	3		$270,000
Intern		Assist with fieldwork of invasive carp monitoring and removals			0%	1.5		$60,000
							Sub Total	**$330,000**
Contracts and Services								
MN DNR	Internal services or fees (uncommon)	State agency direct and necessary costs, calculated by agency formula.				0		$78,883
Adams Boat Service	Service Contract	Commercial fishing is effective at removing invasive carp, but requires specialized boats, equipment and knowledge that the DNR does not have.				0		$167,000
Innovasea	Service Contract	The DNR collects millions of data points from its receiver array in the Mississippi River and its tributaries. Processing of the data allows for more meaningful summaries that help to better interpret patterns in the data.				-		$20,000
							Sub Total	**$265,883**
Equipment, Tools, and Supplies								
	Tools and Supplies	Nets and associated ropes and floats.	Nets, buoys, rope, anchors are necessary to capture invasive carp at various life stages and in various habitats.					$15,717
	Equipment	Repairs and maintenance of existing equipment	Generators, motors, and other equipment require periodic repairs and maintenance and are needed to allow us to work on the water.					$20,000
	Tools and Supplies	Personal protective equipment	Required to keep staff safe while working.					$400

	Tools and Supplies	Larval fish sampling supplies (ethanol, sample bottles)	Sampling larval fish can identify where reproduction might be occurring.					$4,000
	Tools and Supplies	VEMCO acoustic tags	Allows tracking of invasive carp and native species					$375,000
	Equipment	Real-time receiver and stationary receiver array replacement and repairs including mounting hardware, solar panels, and batteries	Receivers allow the detection of tagged fish in real-time, allowing more rapid response.					$45,000
							Sub Total	**$460,117**
Capital Equipment								
		Forward-facing sonar units	Used to location schools of invasive carp	X				$5,000
							Sub Total	**$5,000**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	State vehicle mileage charges. Rates vary depending on vehicle driven. Covers vehicle mileage traveling between the office and sampling/removal sites.	We need to trailer boats to waterbodies to perform this work.					$25,000
							Sub Total	**$25,000**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$1,086,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Capital Equipment		Forward-facing sonar units	This technology shows significant promise as a tool to locate schools of invasive carp for removal. **Additional Explanation :** DNR will continue to use this equipment to locate and remove invasive carp beyond the life of this appropriation. Our program will not end when this project expires.

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
Cash	Game and Fish Fund (fishing license dollars and federal match)	Half of cost of one full-time specialist	Secured	$60,000
			State Sub Total	**$60,000**
Non-State				
Cash	USFWS	Field lead position, field staffing, limited amount of travel, some supplies and repairs, larval/egg ID services, some commercial fishing (~200-250K/year), real-time receiver subscriptions, sample shipping	Secured	$1,290,000
Cash	USFWS	Added 30 Nextrak receivers to Pools 5A-8	Pending	$155,000
			Non State Sub Total	**$1,445,000**
			Funds Total	**$1,505,000**

Total Project Cost: $2,591,000

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: d300646b-588.docx

Alternate Text for Visual Component

One-page handout showing a summary of MN DNR's Tagging, Tracking and Removal of Invasive Carp proposal. Outlines plans to use new technologies to identify locations being used by invasive carp, and use commercial fishing to remove them. Also describes tagging and tracking of native species around barriers....

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 Commissioner's Plan 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?

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:

Grace Loppnow and Kayla Zankle

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