

**Environment and Natural Resources Trust Fund
2020 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 158-D

Applying New Tools and Techniques against Invasive Carp

Category: D. Aquatic and Terrestrial Invasive Species

Sub-Category:

Total Project Budget: \$ 578,000

Proposed Project Time Period for the Funding Requested: June 30, 2023 (3 yrs)

Summary:

Invasive carp pose a major threat to Minnesota's rivers and lakes. The Minnesota DNR will apply cutting edge techniques to keep these aquatic pests at bay.

Name: Brian Nerbonne

Sponsoring Organization: MN DNR

Job Title: Regional Fisheries Manager

Department: Fish and Wildlife Division

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St. Paul MN 55155

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Web Address: mndnr.gov

Location:

Region: Central, Southwest

County Name: Blue Earth, Brown, Carver, Chisago, Dakota, Goodhue, Hennepin, Houston, Le Sueur, Nicollet, Ramsey, Redwood, Renville, Scott, Sibley, Washington, Winona

City / Township:

Alternate Text for Visual:

DNR will detect and remove invasive carp to disrupt establishment of those species using a combination of innovative techniques, including netting, electrofishing, and tracking of tagged fish.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____ %



**Environment and Natural Resources Trust Fund (ENRTF)
Applying New Tools and Techniques Against Invasive Carp- 2020 Proposal**

PROJECT TITLE: Applying New Tools and Techniques against Invasive Carp

I. PROJECT STATEMENT

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. With the capture in Minnesota of three bighead carp in 2018 and one silver carp so far in 2019, it is apparent that invasive carp are at our doorstep but that control efforts are showing success. The Minnesota Department of Natural Resources (DNR) began its grant-funded invasive carp program in 2012, and expanded the program using 2013 and 2017 LCCMR grants. DNR is seeking additional funding to continue our invasive carp work, and implement promising new techniques.

DNR regularly communicates with researchers and similar programs in other states to improve our effectiveness. Several new advancements show promise to increase our effectiveness to disrupt invasive carp before they become established in Minnesota. This proposal builds on the previous successes from LCCMR-funded work, expanding effective techniques while adding others. Improving fish tracking capability, investment in specialized nets, incorporating new technologies, and implementing new capture methods outlined in the proposal will increase our ability to disrupt invasive carp before they become established. We have chosen to focus our efforts on the St. Croix, Minnesota, and Mississippi Rivers near the Twin Cities to detect invasive carp and remove early invaders. These are locations where our other effective detection and removal tool, commercial angling, is not as common as further south on the Mississippi. Our program targets the leading edge of the invasion, and protects waters further upstream.

The public knows relatively little about invasive carp in MN, creating an opportunity to increase credible sightings by “citizen scientists” through enhanced outreach included in this grant. Credible sightings can increase our understanding of when and where invasive carp can be effectively be targeted for removal.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1 Title: Integrate new techniques and outreach into detection and removal of invasive carp

Description: New techniques are proposed to be added to our current netting and electrofishing to detect and remove invasive carp. We plan to target Mississippi tributary streams that are similar to locations frequented by invasive carp in other states. The United States Geologic Survey (USGS), in partnership with Illinois and Missouri, has tested an intensive method utilized in China to capture invasive carp. The technique, known as the “unified method”, uses a large amount of net tended by several fishing crews to surround and then herd fish into a smaller area where they can be captured. This method has only been tested at locations in Illinois and Missouri where a large number of invasive carp were present. DNR fisheries staff, in collaboration with USGS Researchers, would use this method in conjunction with tagged invasive carp to learn about the ability to capture fish in locations with low densities found in Minnesota. By disrupting pre-spawn activities in this way, the DNR may be able to reduce the potential for invasive carp to spawn successfully.

A second promising area of research we propose to implement is food attractants. USGS and the University of Minnesota (U of MN) have found attractants can concentrate invasive carp, but have only tested them in high-density locations. We plan to test the effectiveness of attractants in low-density waters of Minnesota in conjunction with our detection and removal netting to see if they can be effective here.

The public has limited knowledge of invasive carp. Using printed and online material, we will encourage public participation in detection of these species. DNR social media accounts on Twitter and Facebook will post invasive carp-related information to better inform the public of the threats of invasive carp, and aid in identification and reporting. DNR will also share successful control and detection techniques with other states.

ENRTF BUDGET: \$471,000

Outcome	Completion Date
1. Add one unified method exercise to disrupt pre-spawn invasive carp activities. Detect and remove carp via 25 netting days and 25 days of electrofishing per year.	June 30, 2023
2. Work with USGS to build and deploy a mechanism to deliver food attractant over a 3-week period, twice yearly, in conjunction with targeted netting efforts.	June 30, 2023



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3. Work with creative services to print and distribute 1,000 flyers/brochures, update the DNR’s web page, and post 10 or more social media messages to increase public awareness. Incorporate public sightings into our dataset. Present control methods at a national meeting attended by control programs from other states.	June 30, 2023
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Activity 2 Title: Invasive carp tracking

Description: The DNR, in partnership with the US Fish and Wildlife Service (USFWS) and other upper Mississippi River states, built a receiver network in the Mississippi River to track tagged fish including invasive carp. Minnesota law was changed in 2017 to allow DNR to tag and track invasive carp; DNR tagged and began tracking a captured bighead carp in July 2017. Tracking has provided DNR staff with previously unknown information about preferred habitats and seasonal movements in Minnesota waters. Netting in a location frequented by this fish led to the capture and removal of two additional bighead carp in the spring of 2018. These captures would not have occurred without the ability to track a tagged carp. Funding will be used to tag additional carp, track them, target removal in habitats being used by tagged carp, and analyze tagging data to identify seasons and locations where invasive carp congregate, allowing planning for future removal efforts.

ENRTF BUDGET: \$22,000

Outcome	Completion Date
1. Year round tracking and annual analysis of data over 3 years to monitor for overwintering locations, potential spawning habitat/behavior and environmental cues.	June 30, 2023
2. Use tagged carp as “traitor” (aka “Judas fish”) fish to identify opportunistic locations and attempt 4 full-scale netting efforts in such locations.	June 30, 2023
3. Maintain 50-70 tracking receivers and annually contract for professional data analysis	June 30, 2023

Activity 3 Title: Contracted commercial fishing and incorporating deep water sampling

Description: Funding to contract with commercial anglers is vital to MN DNR detection and removal efforts because of their ability to deploy large-scale and specialized gears, as evidenced by past success of commercial anglers in capturing >70% of invasive carp found to date in Minnesota. Without new funding, there is currently no alternative funding to contract for commercial fishing in the waters targeted by our program.

Tracking data indicates that invasive carp spend a large portion of time in the deeper waters of Lake St. Croix. To improve capture probability in deep areas, the DNR purchased a large seine that is more commonly used in deep reservoir and marine habitats. The 2,000-foot purse seine requires specialized boats and equipment to deploy and retrieve. The MN DNR does not own this equipment but contracts with a commercial angler who has this capability.

ENRTF BUDGET: \$85,000

Outcome	Completion Date
1. Contract commercial fishermen to deploy 14 seine days and 32 gill nets days in probable invasive carp habitats to remove invasive carp	June 30, 2023
2. Employ deep water sampling gears 3 times per year to sample habitats used by carp but where standard gear is ineffective	June 30, 2023

III. PROJECT PARTNERS AND COLLABORATORS: USGS, USFWS, U of MN, and National Park Service (NPS)

IV. LONG-TERM IMPLEMENTATION AND FUNDING: The DNR invasive carp field program is grant supported. It has been and is funded by a variety of sources that include: Minnesota Environment and Natural Resource Trust Fund, DNR Fisheries operation funds, Minnesota Outdoor Heritage Fund, and USFWS grants. NPS and USFWS field crews have provided additional field support. DNR will continue seeking additional grants and partnerships.

Years, agency and grant: FY 13/FY 15 Lessard Sams Outdoor Heritage Council \$109K, FY 16 USFWS Invasive Carp Grant \$60K, FY 17 USFWS Invasive Carp Grant \$142.2K, FY 18 USFWS Invasive Carp Grant \$72K, FY 19 USFWS Invasive Carp Grant \$85K, FY 18 USFWS/Interstate ANS Grant \$20K, FY 19 USFWS/Interstate ANS Grant \$20K

V. SEE ADDITIONAL PROPOSAL COMPONENTS: A. Project Budget Spreadsheet, E. Project Manager Qualifications and Organization Description

Attachment A: Project Budget Spreadsheet
 Environment and Natural Resources Trust Fund

M.L. 2020 Budget Spreadsheet

Legal Citation:

Project Manager: Brian A Nerbonne

Project Title: Applying New Tools and Techniques Against Invasive Carp

Organization: Minnesota Department of Natural Resources

Project Budget: \$578,000

Project Length and Completion Date: 3 years (July 1, 2020 - June 20, 2023)

Today's Date: 4/10/2019



ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Activity 1 Budget	Amount Spent	Activity 1 Balance
BUDGET ITEM			
Personnel (Wages and Benefits)	\$ 260,000	\$ -	\$ 260,000
Activity 1: NR Monitoring Fisheries Specialist (1 Unclassified position)- to conduct at least 200 field sampling days annually, oversee commercial fishing operations, and compile, analyze, and report findings (70% salary 30% benefits); 100% FTE for 3 years. ~(\$210,000)			
Activity 1: Student Interns (2 positions)- field data collection activities in support of project objectives (100% salary) 25% FTE for 3 years. ~(\$50,000)			
Professional/Technical/Service Contracts			
Activity 3: Commercial Fishing including deep water sampling: Contracted directed commercial seines and large mesh gill nets. Licensed commercial fisherman will be hired to set 11 gill net days and 5 seine days per year or 32 gill net days total and 14 seine days total over 3 years. Contractor selected through competitive bid process.	\$ 85,000	\$ -	\$ 85,000
Activity 1: Unified Method (cost based on estimate from USGS for one Unified Method exercise including: additional nets, boats, people, time, and effort). Single-source contract through USGS.	\$ 70,000		\$ 70,000
Activity 1: Outreach using Creative Services to create 1,000 fliers/brochures to be distributed to the public. Single-source contract through Creative Services	\$ 15,000	\$ -	\$ 15,000
Activity 2: Increase invasive carp tracking: VEMCO data processing fee for 2 locations for 3 years as well as receiver maintenance. VEMCO is the only company able to analyze this data due to VEMCO acoustic array already in place. Single-source contract- no other company is able to analyze this data.	\$ 22,000	\$ -	\$ 22,000
Equipment/Tools/Supplies			
Activity 1: Monitoring- replacement nets, specialized nets including large mesh gill nets (4 @ \$300 = \$1,200), trammel nets (4 @ \$400 = \$1,600), and mini-fyke nets (6 @ \$600 = \$3,600), necessary to capture invasive carp at various life stages and in various habitats; associated supplies to deploy nets such as rope, anchors, floats (\$2,500); miscellaneous supplies such as personal protective equipment, repairs, replacements, etc. (\$21,000)(No single piece of equipment will exceed \$5,000). Costs are based on expected bids and may vary. Attractant station (\$30,000) Note: \$10,000 of Attractant Station is services provided by USGS.	\$ 60,000	\$ -	\$ 60,000
Travel expenses in Minnesota			
Fleet transportation expense for 3 years; base of operation will be Warner Road, St. Paul Fisheries office	\$ 25,000	\$ -	\$ 25,000
In-state Travel Expenses: Meals (\$3,100) and lodging (\$4,500) for distant and overnight status up to 25 nights per year for 3 years.	\$ 8,000	\$ -	\$ 8,000
Other			
DNR's direct and necessary costs (~\$32,191) pay for activities that are directly related to and necessary for accomplishing appropriated programs/projects. Direct and necessary costs cover HR Support (\$6,897), Safety Support (\$1,248), Financial Support (\$5,116), Communication Support (\$1,388), IT Support (\$16,404), Planning Support (\$1,138).	\$ 33,000	\$ -	\$ 33,000
COLUMN TOTAL	\$ 578,000	\$ -	\$ 578,000

SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT	Status (secured or pending)	Budget	Spent	Balance
Non-State: FY 2021 USFWS Invasive Carp Grant- Funding to support and maintain fieldwork for detection and monitoring of invasive carp populations	Tentatively App	\$ 100,000	\$ -	\$ 100,000
Non-State: FY 2021- FY 2024 USFWS Invasive Carp Grant- Funding to supplement existing invasive carp program for fieldwork monitoring and detection of invasive carp. (Total grant varies)	Pending	\$ 70,000	\$ -	\$ 70,000
Non-State: FY 2021- FY 2024 USFWS State/Interstate ANS Grant- Funding to supplement existing invasive carp program for fieldwork monitoring and detection of invasive carp. (Total grant varies)	Pending	\$ 20,000	\$ -	\$ 20,000
State: Opportunities will be explored for supplemental funding (unknown at this time)		\$ -	\$ -	\$ -
In kind: DNR office facilities, supervisor-manager time and other support will be provided (contributions are unknown and vary)		\$ -	\$ -	\$ -
Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS	Amount legally obligated but not yet spent	Budget	Spent	Balance
M.L. 2013, Chp. 52, Sec. 2, Subd. 06b Detection and Monitoring of Asian Carp Populations		\$ 540,000	\$ 540,000	\$ -
M.L. 2017, Chp. 96, Sec. 2, Subd. 06c Invasive Bighead Carp and Silver Carp and Native Fish Evaluation - Phase II		\$ 500,000	\$ 298,320	\$ 201,680
		\$ 201,680		

Applying new tools and techniques against invasive carp

Invasive carp pose a major threat to Minnesota's rivers and lakes, and to the multimillion dollar recreational economies our waters support in communities across the state. The Minnesota DNR is applying cutting edge techniques to keep these aquatic pests at bay. Without further funding, though, much of the field work necessary to keep invasive carp out of our waters will grind to a halt.

Find & remove

DNR is using new methods for surveillance, early detection and removal of invasive carp, including:

- Applying a new intensive capture method to herd fish into areas where they can be caught and removed.
- Using fish attractants to increase capture probability.
- Deploying new, specialized equipment to sample in deep water where invasive carp sometimes shelter.

Knowing where to look for invasives

DNR has built a network of in-river receivers to track tagged fish so we know where to look for invasives. Our ability to follow tagged carp provides valuable data on the species' behavior and has led to the capture and removal of other invasive carp. Expanding our tracking capacity will:

- Provide more useful data to follow fish and capture invasives.
- Let us track fish in real time facilitating quicker response and removal.
- Help us know where to set nets to find and capture invasive carp.

Engaging citizens in our efforts

Public awareness and engagement is critical to keeping invasive carp under control. We need anglers and boaters to report sightings. Our outreach and educational efforts will include:

- Creation of 1,000 fliers, brochures and online materials.
- Distribution of invasive carp educational materials to at least 50 bait shops, outdoors retailers and other venues related to water sports.
- A social media campaign to enhance public awareness of invasive carp and the threats they pose.

Leveraging funds from collaborators

The Minnesota DNR works with numerous partners, and its invasive carp field program is funded from a variety of sources including, the Minnesota Environment and Natural Resource Trust Fund, DNR base funding, the Minnesota Outdoor Heritage Fund, and USFWS grants totalling more than \$314,000. DNR continues to explore additional partnerships and funding opportunities on an ongoing basis. Without LCCMR funding, we would lack capacity to make use of these other funding sources.



Have you seen an invasive carp?

The Minnesota Department of Natural Resources is on the lookout for invasive carp. Imported from China in the 1970s to control plankton, algae and snails in southern fish farms, these four carp species escaped into the Mississippi River and have been working their way upstream ever since. Some of these invasive carp grow as large as 100 pounds and they can cause serious problems for native fish and healthy waters. While some native fish jump out of the water, silver carp are known for causing hazards for boaters because they jump as high as 10 feet.

Here's how to distinguish invasive carp from common carp and native species found in Minnesota.

If you see one of these invasive carp, contact the DNR

Silver carp
Eyes set below downward slanting mouth, no teeth, long keel from throat to tail, small scales, small dorsal fin, no barbels by mouth, silver in color, average size 33 inches. Known for jumping high out of the water.

Bighead carp
Eyes set below mouth, no teeth, large head, short keel between pelvic fins, protruding lower jaw, small scales, no barbels by mouth, solid grey body with dark blotches, average size 40 inches.

Grass carp
Eyes set even with mouth, no teeth, large scales with prominent dark edges, no keel, no barbels by mouth, silver to olive in color, average size in other states 36 inches.

Black carp
Eyes set even with mouth, teeth like human molars, large scales with prominent dark edges, no keel, no barbels by mouth, dark in color, average size in other states 36 inches.

If you see or catch an invasive carp, please take pictures (or keep the fish), and note the location. Then email or call the Minnesota DNR's invasive carp coordinator at: invasive.carp@state.mn.us; 651-587-2781

DEPARTMENT OF NATURAL RESOURCES



**Environment and Natural Resources Trust Fund (ENRTF)
2020 Proposal**

PROJECT TITLE: Applying New Tools and Techniques against Invasive Carp

Project Manager Qualifications and Organization Description

Project Manager: Brian Nerbonne

Affiliation: Department of Natural Resources, Division of Fish and Wildlife

Telephone Number: 651-259-5789

Title: Regional Fisheries Manager

Education

B.S. in Natural Resources, University of Michigan

M.S. in Fisheries Science, University of Minnesota

Experience

Brian Nerbonne is a regional fisheries manager at the Minnesota Department of Natural Resources (DNR), with 20 years of experience in fisheries management. His current responsibilities include fisheries management decisions on the lakes and rivers of central and southeast Minnesota, including fisheries regulations, surveys and monitoring, stocking, and habitat restoration. His regional annual budget is \$1.2 million. Brian supervises eight area offices with the region, including offices responsible for the St. Croix, Mississippi, and Minnesota River from the Twin Cities south to the Iowa border. Brian has past grant administration experience as project manager for eight Lessard Sams Outdoor Heritage Fund appropriations and two US Fish and Wildlife Service grants, totaling over \$27 million.

Project Responsibilities

The project manager will be responsible for providing overall project management and technical direction for the project, supervising staff, coordinating with project partners, contracting for professional services in support of the project, directing the development of project reports and any other deliverables, and preparing and submitting project work plans, updates and final reports.

Organization Description

The mission of DNR is to work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for the commercial uses of natural resources in a way that creates a sustainable quality of life. DNR is organized both by divisions based on portions of the agency's mission, and regionally by dividing the state into four parts. DNR has extensive experience administering and coordinating projects funded by the Environment and Natural Resources Trust Fund.