

**Environment and Natural Resources Trust Fund  
2017 Request for Proposals (RFP)**

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**Project Title:**

**ENRTF ID: 114-D**

Continuation of Invasive Carp and Native Fish Evaluation

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**Category:** D. Aquatic and Terrestrial Invasive Species

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**Total Project Budget:** \$ 739,064

**Proposed Project Time Period for the Funding Requested:** 3 years, July 2017 - June 2020

**Summary:**

Minnesota DNR will continue Invasive Carp monitoring in the Mississippi River and tributaries, employ advanced acoustic telemetry, and assess food chains to determine how native species prevent Invasive Carp establishment.

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**Sponsoring Organization:** MN DNR

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**Location**

**Region:** Central, Metro, Southwest, Southeast

**County Name:** Anoka, Big Stone, Blue Earth, Brown, Carver, Chippewa, Chisago, Dakota, Goodhue, Hennepin, Houston, Lac qui Parle, Le Sueur, Nicollet, Ramsey, Redwood, Renville, Scott, Sibley, Swift, Wabasha, Washington, Winona, Yellow Medicine

**City / Township:** Multiple

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**Alternate Text for Visual:**

Invasive Carp, also known as Asian Carp, are continuing their advance in Minnesota and the state plans to continue monitoring and removal efforts as well as increasing our knowledge of potential impacts to native species, their movements, and ecology.

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



**PROJECT TITLE: Continuation of Invasive Carp and Native Fish Evaluation**

**I. PROJECT STATEMENT**

Invasive Carp, especially Bighead Carp and Silver Carp, pose an imminent and serious threat to Minnesota’s aquatic ecosystems. The Minnesota Department of Natural Resources will continue Invasive Carp monitoring in the Mississippi River and tributaries employing complex sampling protocols using traditional fisheries techniques and targeted commercial fishing. These efforts are used to determine the distribution and abundance of Invasive Carp in Minnesota waters, including the leading edge of Invasive Carp reproductive success, and this information will be used to inform rapid response efforts. Advanced acoustic telemetry will be used to determine habitat use and movement patterns of native species, and potentially Invasive Carp, including how they approach and pass locks and dams and occupy key locations in Minnesota rivers in three-dimensions. Diet and stable isotope samples will also be taken from native species to determine their position in the food chain and provide baseline data prior to Invasive Carp establishment to better inform managers regarding native species’ resiliency and determine how native fish populations can be managed to prevent Invasive Carp establishment.

Invasive Carp have caused severe ecological damage to the Illinois, Missouri, and lower Mississippi River ecosystems. Recognizing the potential environmental harm, the Federal Government has spent hundreds of millions of dollars to keep them from reaching the Great Lakes. With increased monitoring, the MN DNR has found an increase in numbers and distribution of Invasive Carp in Minnesota. During 2014, three Invasive Carps were captured in Pool 2 of the Mississippi River, at that time that was the furthest upstream Invasive Carps had been captured in Minnesota. In 2015, six Bighead Carp were captured further upstream in the St. Croix River than ever recorded, and during 2015 and 2016 the first Grass Carp and Bighead Carp ever were captured in the Minnesota River near New Ulm. Many of these fish were mature females carrying large numbers of eggs.

In the last three years, most of the Invasive Carp caught in Minnesota have been the direct result of work previously funded by the ENRTF (Legal Citation: M.L. 2013, Chp. 52, Sec. 2, Subd. 06b). The Minnesota DNR Division of Fish and Wildlife, Section of Fisheries continues to conduct surveys and sampling of our major rivers. However, enhancing this effort to detect Invasive Carp is impossible at current staffing and funding levels.

**II. PROJECT ACTIVITIES AND OUTCOMES**

**Activity 1:** Enhanced Invasive Carp Monitoring to Evaluate Abundance and Removal Efforts **Budget:** \$456,386  
 Invasive Carp are a real and serious concern to the state of Minnesota. Minnesota DNR will enhance monitoring efforts to estimate abundance and distribution, determine preferred habitats, and inform removal efforts in all Minnesota waters to minimize the risk of populations becoming established. MN DNR has established an extensive Invasive Carp sampling protocol including standard fisheries sampling and deployment of directed commercial fishing. Using these techniques, the MN DNR has increased efficiency of monitoring and removal efforts and is better able to inform managers regarding their distribution and spread. In addition, it is critical that we determine if and where Invasive Carp are spawning and successfully reproducing in Minnesota waters. Prior MN DNR research and information from other states has provided vital information regarding what gears and habitats are most likely to confirm the presence of viable eggs, larvae, and juveniles. Larval samples will be sent to Dr. Thomas Simon, the country’s leading expert on larval fish identification for expert analysis. MN DNR experience collecting larval native fishes has informed the best timing and locations for sampling. This efficiency will allow this method to expand from current sampling locations to the St. Croix River from Hastings to Taylors Falls, the Mississippi River from Minneapolis to the Iowa border, and Minnesota River from St. Paul to Granite Falls.

<b>Outcome</b>	<b>Completion Date</b>
1. Direct and monitor commercial fishermen in likely Invasive Carp habitats	June 30, 2020
2. Employ traditional fisheries sampling targeted to monitor Invasive Carp	June 30, 2020
3. Collect larval fish samples identified by larval fish expert Dr. Thomas Simon	June 30, 2020



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

**2017 Main Proposal**

**Project Title: Continuation of Invasive Carp and Native Fish Evaluation**

**Activity 2:** 2D/3D Acoustic Monitoring of Lock and Dam Passage and Critical Locations **Budget:** \$153,125

Funding will supplement an existing VEMCO fish telemetry project, adding a three-dimensional component to better understand how tagged fish occupy important locations in the Mississippi River and tributaries. MN DNR currently maintains a network of 70 acoustic receivers, tracking a total of 201 tagged fish representing eleven species. Numerous fish have been observed passing locks and dams in the Mississippi River. Upgrading the acoustic receiver network to provide 2D and 3D location data will greatly enhance our knowledge of fish passage at locks and dams, how fish respond to commercial fishing and movement between the Mississippi and St. Croix rivers near Prescott, WI (a popular commercial fishing site where several Bighead Carp have been captured), and how the warmwater discharge attracts fish at the Allen S. King Plant in Bayport, MN (a location where six Bighead Carp were captured in 2015). Data will be sent to VEMCO for processing, as they are the only company able to analyze these complex results. Silver Carp and Bighead Carp are already being implanted with transmitters outside the state of Minnesota by other agencies and universities. Should a tagged Invasive Carp travel into Minnesota waters, it will be tracked and targeted to remove larger numbers of individuals.

Outcome	Completion Date
1. Deploy acoustic receivers around locks and dams and retrieve data	June 30, 2019
2. Contract VEMCO to analyze the 3D acoustic telemetry data	December 1, 2019
3. Analyze 2D and 3D data to determine how fish occupy these areas	June 30, 2020

**Activity 3:** Native Fish Diet and Food Web Analysis **Budget:** \$129,553

One of the best options to prevent the expansion of Invasive Carp populations in the Mississippi River and its tributaries is to support healthy native fish communities. This project will collect stable isotope samples and stomach contents from native predators and prey species to determine their position in the food chain and provide baseline data on our native species prior to Invasive Carp establishment to better understand native species resiliency. Stable isotope samples will be sent to an experienced stable isotope analysis laboratory for analysis. From this project, MN DNR can better evaluate and make recommendations on how native aquatic communities can be used to slow the expansion and growth of Invasive Carp populations in Minnesota’s unique riverine habitats.

Outcome	Completion Date
1. Collect diets and stable isotope samples of native fish species	October 31, 2018
2. Contract to analyze stable isotope data	January 1, 2019
3. Compile results and analyze diet and stable isotope data	June 30, 2019

**III. PROJECT STRATEGY**

**A. Project Team/Partners**

This project requires the hiring of an Unclassified Fisheries Specialist to assist in monitoring and removal efforts, an Unclassified Fisheries Specialist to analyze stomach contents and compile stable isotope results, and 2 interns per year to assist with project activities. This project will leverage and enhance ongoing Invasive Carp monitoring efforts. Several state and federal agencies are involved in Invasive Carp monitoring, including the state of Iowa, U.S. Geologic Survey, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers. Facility space, indirect costs, and fleet trucks will be provided in-kind, as well as in-kind labor to assist the Mississippi River Team.

**B. Project Impact and Long-Term Strategy**

This proposal will enhance Minnesota waters by removing a highly invasive species and will further the state’s knowledge of native fish populations. Through sampling, MN DNR is increasing effectiveness to successfully capture these species and is providing vital information regarding these species’ invasion and populations. This proposal will coordinate and enhance all current efforts that are available to monitor the invasion front and inform the state’s response to it into the future to ensure populations do not become established.

**C. Timeline Requirements**

3 years, July 2017 through June 2020

## 2017 Detailed Project Budget

**Project Title:** Continuation of Invasive Carp and Native Fish Evaluation

### IV. TOTAL ENRTF REQUEST BUDGET 3 years

BUDGET ITEM	AMOUNT
<b>Personnel:</b>	\$ 315,167
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	\$ 201,000
NR Diet and Isotope Fisheries Specialist (1 Unclassified position) - to analyze diet samples over 2 winters, prepare isotope samples for analysis, and compile, analyze, and report findings (70% salary 30% benefits); 60% FTE for 2 years	\$ 78,167
Student Interns (2 positions) - field data collection activities in support of project objectives 25% FTE for 3 years	\$ 36,000
<b>Professional/Technical/Service Contracts:</b>	\$ 211,000
Commercial Fishing: Contracted directed commercial seines and large mesh gill nets. Licensed commercial fishermen will be hired to set 11 gill net days and 5 seine days per year or 33 gill net days total and 15 seine days total over 3 years.	\$ 90,000
Larval Fish Identification: Technical contract to provide expert identification of 200 larval fish samples per year for 3 years by Dr. Thomas Simon, Indiana University. Through extensive research, Dr. Simon is the only larval fish expert to offer these services and is required to maintain data consistency from previous years samples.	\$ 60,000
Stable Isotope Analysis: Dual 13C and 15N natural abundance sample processing. 20 species will be sampled with a total of 2,200 samples analyzed over 3 years .	\$ 25,000
Acoustic 3D Analysis: VEMCO Data Processing Fee for 3 years. VEMCO is the only company able to analyze this data due to the VEMCO acoustic array already in place. No other company is able to analyze this data.	\$ 36,000
<b>Equipment/Tools/Supplies:</b>	\$ 140,740
Monitoring: Replacement nets, preservatives, sample bottles to support capture and collection of fishes.	\$ 20,000
Diet and Isotope Analysis: Preservatives, sample bottles, external anchor tags, dehydrator, ziplock Bags.	\$ 15,000
Acoustic Telemetry: 36 receivers, 36 deployment cages, 23 sync tags, 273 batteries, 1 VR100.	\$ 105,740
<b>Travel:</b>	\$ 38,000
Fleet Transportation: DNR fleet charges (for operation of trucks, cars, & special fieldwork equipment) & instate travel costs (as per state contracts) over 3 years.	\$ 30,400
In-state Travel Expenses: Meals and lodging for distant and overnight status	\$ 7,600
<b>Additional Budget Items:</b>	\$ 34,157
*Direct and Necessary expenses: HR Support (~\$8,385), Safety Support (~\$2,348), Financial Support (~\$8,525), Communication Support (~\$1,316), IT Support (~\$12,474), Planning Support (~\$912), and Procurement Support (~\$197) necessary to accomplishing funded programs/projects.	
<b>TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =</b>	<b>\$ 739,064</b>

\*Direct and Necessary expenses include both Department Support Services (Human Resources, IT Support, Safety, Financial Support, Communications Support, Planning Support, and Procurement Support) and Division Support Services. Department Support Services are described in the agency Service Level Agreement, and billed internally to divisions based on rates that have been developed for each area of service. These services are directly related to and necessary for the appropriation. Department leadership services (Commissioner's Office and Regional Directors) are not assessed. Division Support Services include costs associated with Division business offices and clerical support. Those elements of individual projects that put little or no demand on support services such as large single-source contracts, large land acquisitions, and funds that are passed-thru to other entities are not assessed Direct and Necessary costs for those activities.

### V. OTHER FUNDS (This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.)

SOURCE OF FUNDS	AMOUNT	Status
<b>Other Non-State \$ To Be Applied To Project During Project Period:</b> United States Fish and Wildlife Service funding to support and maintain field work for detection and monitoring of Invasive Carp populations.	\$ 200,000	Secured
<b>Other State \$ To Be Applied To Project During Project Period:</b> DNR Division of Fish and Wildlife in-kind match, funding Fisheries Section employees assisting with field work and project oversight (\$40,000). Existing DNR equipment: trucks, boats, sampling equipment (fyke nets, gill nets, trawls, seines), acoustic receivers, microscopes, lab supplies, etc. (\$12,000)	\$ 52,000	Secured
<b>In-kind Services To Be Applied To Project During Project Period:</b> DNR facilities & services (office space, office overhead, technical & field support), existing DNR equipment (boats, sampling equipment, lab supplies, etc.), DNR fisheries staff (70% salary, 30% fringe) for John Waters (Invasive Carp Fisheries Specialist) and Joel Stiras (Fisheries Specialist).	\$ 80,000	Secured
<b>Funding History:</b> M.L. 2013, Chp. 52 Sec. 2, Subd. 06b, Detection and Monitoring of Asian Carp Populations and Movements	\$ 540,000	Secured
<b>Remaining \$ From Current ENRTF Appropriation:</b> as of January 12, 2016	\$ 3,000	Legally Obligated

# Invasive Carp (a.k.a. Asian Carp) are coming!



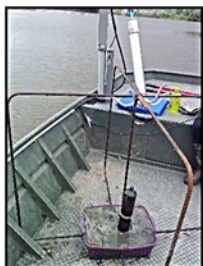
They are moving further upstream and are found more frequently.



The state of Minnesota will:



continue monitoring and removal efforts;



better understand how fish pass locks and dams and occupy key locations;



and analyze native fish species' ecology before we start to lose them.

## **Continuation of Invasive Carp and Native Fish Evaluation**

### **Project Manager Qualifications**

Project Manager: Bradford Parsons, Central Region Fisheries Manager  
Affiliation: Department of Natural Resources, Division of Fisheries  
Mailing Address: 1200 Warner Road, St. Paul, MN 55106  
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Bradford Parsons is the Central Region Fisheries Manager in St. Paul. He has been in this position for 5 years and with DNR for 29 years. The Central Region encompasses 24 counties, from Todd in the Northwest to Houston in the Southeast, and covers over 75% of the state's population. As the Regional Manager, Brad oversees seven area fisheries offices including the lakes areas of Little Falls, Hinckley, and Montrose, an outstanding metro fishing area, the Mississippi and St. Croix Rivers, and the trout streams of the Driftless area. Prior to moving to St. Paul in 2010, Brad spent 24 years as a Fisheries Research Scientist in Glenwood. His research focused primarily on walleye stocking evaluations, panfish recruitment and exploitation, and fish/wetland interactions. Brad was the project manager for the 2012-2015 Environmental and Natural Resources Trust Fund project monitoring Invasive Carp.

#### Project Responsibilities

Bradford Parsons will provide overall project direction. In his capacity as Central Region Fisheries Manager, he has demonstrated his ability to manage budgets, direct staff and volunteers, coordinate with partners, and prepare project work plans, updates, and reports.

#### Organizational Description

The Minnesota Department of Natural Resources works with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and provide for commercial uses of natural resources in a way that creates a sustainable quality of life. This mission requires sharing stewardship with citizens and partners, working together to address often-competing interests.