Environment and Natural Resources Trust Fund

M.L. 2020 Approved Work Plan

General Information

ID Number: 2020-002

Staff Lead: Corrie Layfield

Date this document submitted to LCCMR: August 13, 2021

Project Title: Applying New Tools And Techniques Against Invasive Carp

Project Budget: $478,000

Project Manager Information

Name: Brian Nerbonne

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Project Reporting

Date Work Plan Approved by LCCMR: August 13, 2021

Reporting Schedule: July 1 / January 1 of each year.

Project Completion: June 30, 2024

Final Report Due Date: August 14, 2024

Legal Information

Legal Citation: M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 06d

Appropriation Language: $478,000 the second year is from the trust fund to the commissioner of natural resources to apply new monitoring, outreach, and removal techniques and to continue work with commercial anglers to protect Minnesota waters from invasive carp.

Appropriation End Date: June 30, 2024

Narrative

Project Summary: This project will enhance the current MN DNR Invasive Carp program by integrating new control and detection methods to manage invasive carp expansion in Minnesota waterways.

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. With the capture in Minnesota of three bighead carp in 2018, 18 combined invasive carp in 2019, and over 50 invasive carp already in pool 8 of the Mississippi river in 2020, it is apparent that invasive carp are at our doorstep but that control efforts are showing success in the upper reaches of Minnesota waters. The Minnesota Department of Natural Resources (DNR) began its grant-funded invasive carp program in 2012, and expanded the program using 2013, 2017, and (2020 tentatively approved) LCCMR grants. DNR is seeking additional funding to continue our invasive carp work, and implement promising new techniques.

What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.

The Minnesota 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. Specifically, the implementation of using food attractants, completing one Modified-Unified method and increasing public knowledge by distributing flyers and fact sheets about invasive carp will enhance in the removal of invasive carp in Minnesota waters. 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. Work will also be done throughout the Mississippi River to the Iowa border.

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?

Invasive carp, especially Bighead Carp and Silver Carp, are a real and serious threat to Minnesota's aquatic ecosystems. The Minnesota DNR Division of Fish and Wildlife, Section of Fisheries, continues to conduct surveys and sampling of our major rivers. Enhancing this effort to detect and remove Invasive Carp is important to Minnesota's Invasive Carp management strategy. This project will continue improving MN DNR Invasive Carp field activities to determine the distribution and abundance of any Invasive Carp in Minnesota waters, remove carp, and inform other management efforts. It will also delineate the leading edge of Invasive Carp reproduction.

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

Activities and Milestones

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

Activity Budget: $376,000

Activity Description:

The MN DNR has found that using underwater speakers, elecrofishers, block nets, and gill nets they can herd and capture invasive carp. This is a modification from the USGS adapted Modified Unified Method which MN DNR staff will learn during the spring of 2021 in Pool 8 of the Mississippi River. These are large-scale events and would be conducted twice yearly in order to disrupt pre-spawning activities. 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 in low-density waters of Minnesota.

The public has limited knowledge of invasive carp. Using printed and online material, we will encourage public participation in detection of these species and increase the amount of fish removed due to more eyes on the water. These citizen scientists have helped increase the number of invasive carp captures and sightings in the past.

Activity Milestones:

Description	Completion Date
Add one Modified-Unified method exercise to disrupt pre-spawn invasive carp activites.	June 30, 2024
Detect and remove invasive carp via 25 netting and 25 electrofishing days per year.	June 30, 2024
Build and deploy a mechanism to deliver food attractant twice yearly, over a 3-week period.	June 30, 2024
Print and distribute 1,000 flyers/brochures to the public to increase awareness and input	June 30, 2024

Activity 2: Invasive carp tracking

Activity Budget: $17,000

Activity 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.

Activity Milestones:

Description	Completion Date
Year round tracking and analysis of data to monitor for overwinter and potential spawning locations.	June 30, 2024
Use Traitor fish to identify opportunistic locations and attempt 4 full-scale netting efforts	June 30, 2024
Maintain 50-70 tracking receivers and annually contract for professional data analysis	June 30, 2024

Activity 3: Contracted commercial fishing and incorporating deep water sampling

Activity Budget: $85,000

Activity 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.

Activity Milestones:

Description	Completion Date
Contract commercial fishermen to deploy 14 seine and 32 gill net days over 3 years	June 30, 2024
Employ deep water sampling gears 3 times per year to target invasive carp habitat	June 30, 2024

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.
Information regarding sites sampled, effort expended, Invasive Carp caught, and native species associated with sampling sites will be compiled. This information will also be shared with other state and federal agencies including the University of Minnesota, U.S. Fish and Wildlife Service, National Park Service, U.S. Geological Survey, U.S. Army Corps of Engineers, Upper Mississippi River Conservation Committee, and others. Results will be presented at appropriate conferences, and, if appropriate, compiled and written for publication in peer reviewed journals. In addition, MN DNR annual reports will be written synthesizing the year's sampling activities and results and updates will be provided on the MN DNR website's Invasive Carp webpage.
Invasive Carp collected will be processed by MN DNR staff, information will be relayed to the U.S. Geological Survey's Nonindigenous Aquatic Species online database (http://nas.er.usgs.gov/) and representatives from other state and federal agencies. Samples from Invasive Carp will be sent to collaborating agencies for age validation, determination of sex and reproductive maturity, microchemistry, genetics, and other purposes as they arise following established protocols. DNR recognizes LCCMR's acknowledgement requirements for dissemination of information related to this grant and plans to follow them fully.

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 be funded?
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, the DNR's Game and Fish fund, 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. These additional funding sources will continue to add to the program that is already in place and continue to work on using new techniques to remove invasive carp.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Invasive Bighead Carp and Silver Carp and Native Fish Evaluation – Phase II	M.L. 2017, Chp. 96, Sec. 2, Subd. 06c	$500,000

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Invasive Carp Specialist		Specialist will conduct at least 200 field sampling days annually, oversee commercial fishing operations, and compile, analyze, and report findings			30%	3		$200,000
Student Interns		Interns will assist with field data collection activities in support of project objectives			0%	0.75		$35,000
							Sub Total	**$235,000**
Contracts and Services								
TBD	Professional or Technical Service Contract	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.				0		$85,000
Creative Services	Internal services or fees (uncommon)	Using printed and online material, we will encourage public participation in detection of these species. Outreach using Creative Services to create 1,000 fliers/brochures to be distributed to the public. DNR is obligated to use in-house Creative Services Unit if they are capable of completing the work.				0		$15,000
VEMCO	Professional or Technical Service Contract	VEMCO data processing fee for 2 locations for 3 years as well as receiver maintenance. VEMCO will assist in analyzing tagging data to identify seasons and locations where invasive carp congregate, allowing planning for future removal. VEMCO units are used as part of a network with other state/federal agencies.		X		0		$17,000
							Sub Total	**$117,000**
Equipment, Tools, and Supplies								
	Tools and Supplies	Replacement nets, specialized nets including large mesh gill nets (4 @ $300 = $1,200), trammel nets (4	Nets, buoys, rope, anchors are necessary to capture invasive carp at					$30,972

		@ $400 = $1,600), and mini-fyke nets (6 @ $600 = $3,600); associated supplies to deploy nets such as rope, anchors, floats (Quantity depends on needs as they arise, approx. $2,500); miscellaneous supplies such as personal protective equipment, repairs, replacements, etc. (Quantity depends on needs $21,000)(No single piece of equipment will exceed $5,000). Costs are based on expected bids and may vary.	various life stages and in various habitats. All other equipment such as PPE's, repairs, and replacements are essential in continuing our operations and completing our objectives.					
							Sub Total	**$30,972**
Capital Expenditures								
		Attractant Station	The purpose is to disperse bait attractants into to the water in order to congregate schools of invasive carp so we can remove them.	X				$30,000
							Sub Total	**$30,000**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	Meals and lodging for distant and overnight status up to 25 nights per year for 3 years	Travel allows staff to sample various locations throughout the state as needed to capture invasive carp.					$8,000
	Other	Fleet transportation expense for 3 years; base of operation will be Warner Road, St. Paul Fisheries office.	Fleet costs allow staff to use state vehicles in order to better meet goals and objectives.					$25,000
							Sub Total	**$33,000**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								

							Sub Total	**-**
Other Expenses								
		DNR's Direct and Necessary Costs- Direct and necessary costs cover HR Support ($6,897), Safety Support ($1,248), Financial Support ($4953), Communication Support ($1,388), IT Support ($16,404), Planning Support ($1,138).	Direct and necessary costs reflect the amounts directly related to an necessary for the accomplishing the project outcomes that would not exist but for the receipt of the appropriation. It is standard DNR policy to recoup these costs incurred when we receive external grant funding.					$32,028
							Sub Total	**$32,028**
							Grand Total	**$478,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Contracts and Services - VEMCO	Professional or Technical Service Contract	VEMCO data processing fee for 2 locations for 3 years as well as receiver maintenance. VEMCO will assist in analyzing tagging data to identify seasons and locations where invasive carp congregate, allowing planning for future removal. VEMCO units are used as part of a network with other state/federal agencies.	VEMCO equipment is used as a standard by other agencies tracking carp movement on the Mississippi River, allowing us to have those agencies track our tagged fish and vice-versa. Contracting with them to process our data allows us to get more understandable results than from the raw data. **This is a single source contract.**
Capital Expenditures		Attractant Station	Purchasing materials and assembling the attractant station will allow DNR to test this method of congregating invasive carp. There is no ability to rent or borrow such equipment. If we were not able to buy this equipment, we would need to remove this activity from our work plan. **Additional Explanation :** The attractant station is a sole purpose item which can only be used as an attractant station once put together. It will be used on a yearly basis to congregate invasive carp for removal, and will continue to serve this same purpose once the grant period is over. DNR does not intend, nor would we be able to sell this station once assembled and used.

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	**-**
Non-State				
Cash	FY 2021 USFWS Invasive Carp Grant	Funding to support and maintain fieldwork for detection and monitoring of invasive carp populations.	Secured	$100,000
Cash	FY 2021 USFWS Grant	Funding to support and maintain fieldwork for detection and monitoring of invasive carp population.	Pending	$312,000
Cash	FY 2022- FY 2025 Invasive Carp Grant	Funding to support and maintain fieldwork for detection and monitoring of invasive carp population. (Total grant varies)	Potential	$70,000
Cash	FY 2022- FY 2025 USFWS State/Interstate ANS Grant	Funding to supplement existing invasive carp program for fieldwork monitoring and detection of invasive carp. (Total grant varies)	Potential	$20,000
			Non State Sub Total	**$502,000**
			Funds Total	**$502,000**

Attachments

Required Attachments

Visual Component

File: ed8d82ca-e3e.pdf

Alternate Text for Visual Component

The one-pager has a few pictures that show some of the work we do as well as some of the technology and invasive carp. It also highlights the issues with invasive carp and highlights some of our major goals that we look to accomplish in our proposal....

Optional Attachments

Support Letter or Other

Title	File
Background Check Certification Form	d8305a39-600.pdf

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

The budget loaded into the system needed to be updated in order to reflect the tentatively approved $478K. I made those adjustments and also addressed comments left by LCCMR staff. In addition, I requested a change to the reporting period. The work plan was then edited to reflect comments from LCCMR staff.

Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?

Yes

Do you agree travel expenses must 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 agree to the Commissioner's Plan.

Does your project have potential for royalties, copyrights, patents, or sale of products and assets?

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?

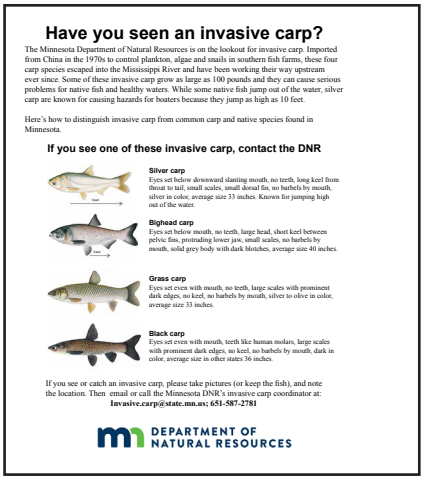
No

Does the organization have a fiscal agent for this project?

No

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.

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.