

**Environment and Natural Resources Trust Fund
2019 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 160-D

Building Knowledge and Capacity to Solve AIS Problems

Category: D. Aquatic and Terrestrial Invasive Species

Sub-Category:

Total Project Budget: \$ 5,000,000

Proposed Project Time Period for the Funding Requested: June 30, 2023 (4 yrs)

Summary:

MAISRC will launch 12-16 new or continuation projects aimed at solving Minnesota's AIS problems using a competitive RFP process, informed by an annual research needs assessment and stakeholder consultation.

Name: Nicholas Phelps

Sponsoring Organization: U of MN

Title: Director/Assistant Professor

Department: _____

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Location

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

The infographic includes highlights of MAISRCs statewide impact and research achievements, as well as the longterm research approach to solving Minnesotas AIS problems.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____ %
_____ If under \$200,000, waive presentation?			



PROJECT TITLE: Building knowledge and capacity to solve AIS problems

I. PROJECT STATEMENT

The Minnesota Aquatic Invasive Species Research Center (MAISRC) is working with researchers, managers, and citizen stakeholders across the state to coordinate, conduct, and implement critical research that will solve the State’s aquatic invasive species (AIS) problems.

Support for solutions-oriented research at MAISRC has been generously provided by ENRTF in the past and has brought together 14 project managers (from UMN, UMD/NRRI, MN DNR, and USGS) and their teams pursuing 21 research projects on a range of high priority species and strategies for AIS prevention, control, and management.

- Mapping the pathways of spread to inform strategic prevention of Eurasian watermilfoil, starry stonewort, and zebra mussels
• Identification of high risk activities to target intervention for invasive pathogens, spiny waterflea, starry stonewort, and zebra mussels
• Evaluation and optimization of control methods for bigheaded carp, common carp, curlyleaf pondweed, Eurasian watermilfoil, starry stonewort, and zebra mussels
• Risk assessment of environmental suitability and/or ecosystem impacts to inform management decision making on bigheaded carp, Eurasian watermilfoil, invasive pathogens, starry stonewort, and zebra mussels

We plan to build on this success by launching additional projects through a competitive RFP process, informed by our research needs assessment and stakeholder consultation. Creative and innovative research to solve the problems of existing and emerging AIS is needed, as is the continuation of ongoing research that is moving in promising directions.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Addressing high priority AIS threats by advancing new research ENRTF Budget: \$2,750,000

We will launch 7-9 new projects (approximately \$200k- \$250k each, with 2-year durations) addressing the State’s highest priority research needs on emerging and existing AIS threats. This will be accomplished through a competitive RFP process. Research priorities will continue to be established through MAISRC’s comprehensive and inclusive research needs assessment, which has become a national model for research prioritization.

Table with 2 columns: Outcome, Completion Date. Row 1: 1. 7-9 new lines of research launched on high priority research needs... RFP #1: July 2020, RFP #2: July 2021. Row 2: 2. Research complete, solutions or next steps identified... June 2023



**Environment and Natural Resources Trust Fund (ENRTF)
2019 Main Proposal Template**

Activity 2: Continuation of promising research to advance AIS solutions ENRTF Budget: \$1,750,000

We will launch 5-7 “continuation projects” (approximately \$200k- \$250k each, with 2-year durations). Continuation projects will provide next-phase support for promising research that is making progress towards real-world solutions. Selection and support of continuation projects will be done through a competitive process, including thorough evaluation of progress and deliverables in the current project, internal and external peer-review of proposed research direction, and assessment of current need for AIS managers. Building on research successes will be essential to solving Minnesota’s AIS problems and is a critical aspect of MAISRC’s long-term research strategy. As one example, MAISRC researchers have made significant progress towards understanding the biology, ecology, and dispersal risk of starry stonewort – all major gaps with immediate management implications; however, testing the efficacy and selectivity of algaecides is still in the early stages and deserves attention. Without a dedicated long-term approach to move promising research forward, we risk orphaning priority needs and not fully realizing the potential of previous research investments.

Outcome	Completion Date
1. 5-7 continuation projects launched building on ongoing promising lines of research (e.g. genetic control of zebra mussels, optimizing prevention efforts, non-target impacts of existing control options, etc.)	RFP #1: July 2020 RFP #2: July 2021
2. Research complete, solutions or next steps identified, recommendations shared	June 2023

Activity 3: Leadership to facilitate AIS research and collaboration ENRTF Budget: \$ 500,000

MAISRC provides Minnesota with an effective and efficient way to support research on AIS and is now recognized as a national leader in the field. For example, MAISRC provides 1) Leadership and direction, critical for establishing priorities, evaluating research progress, and coordinating effective response, 2) Communication of research progress and implementation of science-based outreach programs to ensure results are translated into management action, 3) Physical infrastructure and shared equipment and lab staffing needs to enable high-quality research, and 4) Opportunities for collaboration of interdisciplinary research teams.

With 2019 ENRTF funding, these essential functions will be extended for two more years (July 2021 - June 2023) and will be leveraged by UMN contributions of \$3M+ to base salaries for faculty, space & utilities, HR functions, payroll etc.

Outcome	Completion Date
1. Annual research needs assessments completed; competitive RFPs issued; peer reviews conducted; research results shared; research, trainings, and outreach performed; shared equipment procured and maintained; etc.	June 2023

III. PROJECT PARTNERS: MAISRC Director (Dr. Nick Phelps, UMN/MAISRC) and Associate Director (Cori Mattke, MAISRC) will provide leadership and coordination for all aspects of this project. The Center Advisory Board, Technical Advisory Committee and the MAISRC Fellows Group provide guidance and input. MAISRC leadership and researchers coordinate with DNR in multiple ways (as formalized in a memorandum of understanding) and many other managers, scientists, and citizens from the local to global levels.

IV. LONG-TERM IMPLEMENTATION AND FUNDING: MAISRC was established to build long-term research capacity with support from the ENRTF. We have been able to leverage the initial financial support, most notably through the UMN (faculty positions, ICR) and external grant support. However, to ensure MAISRC continues to focus on the state’s priorities and solutions-oriented research, additional ENRTF support is crucial.

V. TIME LINE REQUIREMENTS: The timeline for this project is 4 years (July 2019 – June 2023).

2019 Proposal Budget Spreadsheet

Project Title: Building knowledge and capacity to solve AIS problems

IV. TOTAL ENRTF REQUEST BUDGET: 4 years

BUDGET ITEM	AMOUNT
Personnel: <i>More detail provided as specific research projects are proposed.</i>	\$ 4,065,000
12 Post-doctoral associates (21.4% fringe): 100% FTE for two years each; Est. Total = \$1,500,000	
12 Graduate Students (37% tuition, 9% fringe): 50% FTE for two years each; Est. Total = \$875,000	
Contract faculty (33.7% fringe rate): 50% FTE for two years, 100% FTE for two years each; Est. Total = \$750,000	
16 Co-PI's (33.7% fringe): 4% FTE for two years each; Est. Total = \$210,000	
Project Manager (33.7% fringe): 50% FTE for two years; Est. Total = \$175,000	
Co-Project Manager (33.7% fringe): 100% FTE for two years; Est. Total = \$165,000	
12 Undergraduate Students (0% fringe): 25% FTE for two years each; Est. Total = \$150,000	
Communication specialist (27.4% fringe): 100% FTE for two years; Est. Total = \$125,000	
Aquatic laboratory technician (27.4% fringe): 75% FTE for two years; Est. Total = \$115,000	
Professional/Technical/Service Contracts: <i>More detail provided as specific research projects are proposed.</i>	\$ 350,000
UMN contract research services, equipment repairs, printing, mailing, publication, etc.	
Equipment/Tools/Supplies: <i>More detail provided as specific research projects are proposed.</i>	\$ 435,000
Lab and field tools, nets, pumps, software, pipettes, gas, fish, paper, etc.	
Acquisition (Fee Title or Permanent Easements): N/A	
Travel: <i>More detail provided as specific research projects are proposed.</i>	\$ 150,000
Investigator travel to one conference a year to present findings and conduct research; travel for consulting researchers. All travel subject to UMN travel reimbursement policy.	
Additional Budget Items: N/A	
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 5,000,000

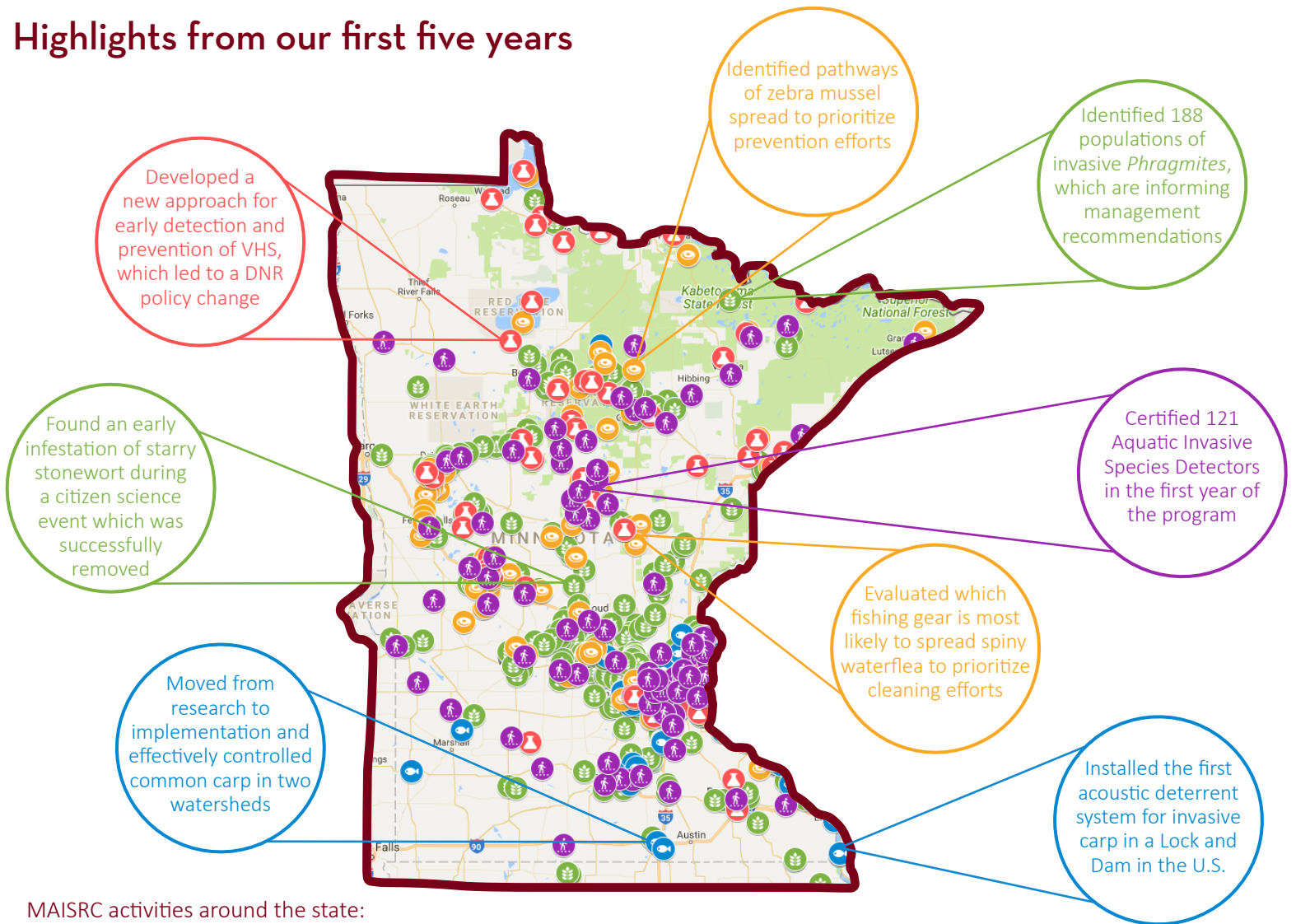
V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ To Be Applied To Project During Project Period: N/A		
Other State \$ To Be Applied To Project During Project Period: N/A		
In-kind Services To Be Applied To Project During Project Period:		
UMN foregone indirect costs	\$ 2,500,000	Secured
Past and Current ENRTF Appropriation:		
2012 ENRTF; M.L. 2012, Chp. 264, Art.4, Sec. 3; ends 6/30/18	\$ 2,000,000	Obligated
2013 ENRTF; M.L. 2013, Chp. 52, Sec. 2, Subd. 6a; ends 6/30/19	\$ 8,700,000	Obligated
2014 ENRTF; M.L. 2014, Chp. 226, Sec. 2, Subd. 4a; ended 6/30/17	\$ 854,000	Complete
2017 ENRTF; M.L. 2017, Chp. 96, Sec. 2, Subd. 06a; ends 6/30/21	\$ 2,700,000	Obligated
Other Funding History:		
Clean Water Fund; M.L. 2012, Chp. 264, Article 2, Sec. 4; ends 6/30/19	\$ 2,000,000	Obligated
2014 Bonding Bill; Chp. 294, Article 1, Sec. 2, Subd. 5, H.F.No. 2490; split with UMN Bee Lab	\$ 8,667,000	Complete
2017 Direct Appropriation from State Legislature; Chp. 96, Sec. 2, Subd. 6a, S.F.No. 550; ends 6/30/19	\$ 820,000	Obligated

Minnesota Aquatic Invasive Species Research Center: building knowledge and capacity to solve AIS problems

The Minnesota Aquatic Invasive Species Research Center (MAISRC) is working with researchers, managers, and stakeholders across the state to coordinate, conduct, and implement critical research that will solve the state's aquatic invasive species (AIS) problems. For a full list of projects and descriptions, visit www.MAISRC.umn.edu.

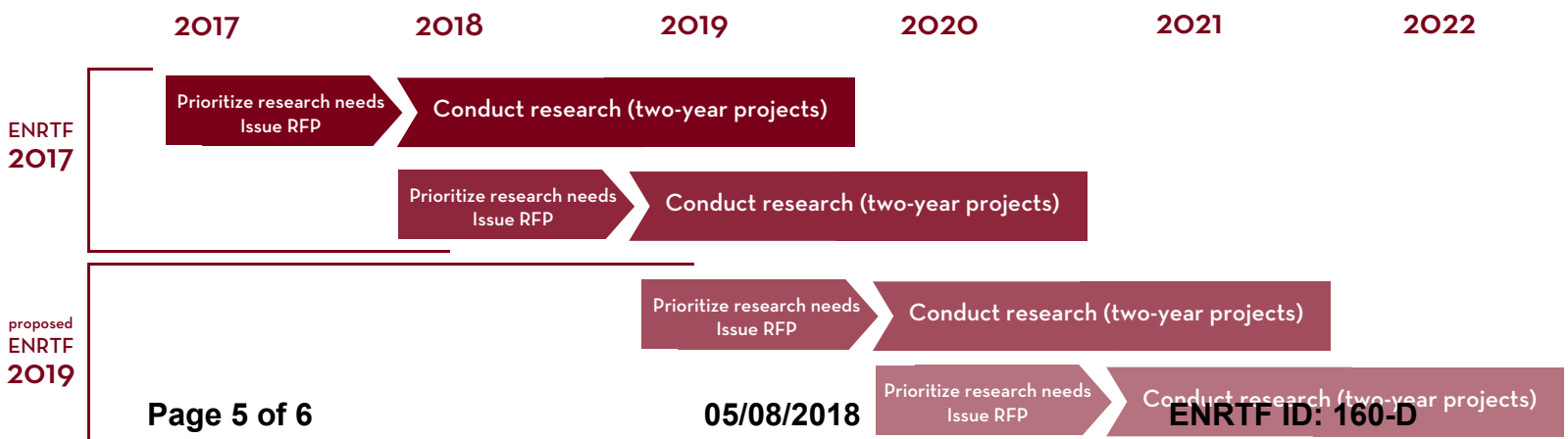
Highlights from our first five years



MAISRC activities around the state:

- Invasive plants
- Invasive fish
- Invasive invertebrates
- Pathogens and harmful microbes
- Citizen scientists

Our roadmap for the future: annual RFPs and biannual requests to LCCMR





**Environment and Natural Resources Trust Fund (ENRTF)
2019 Main Proposal**

PROJECT TITLE: Building knowledge and capacity to solve AIS problems

Project Manager Qualifications:

Dr. Nick Phelps has been the Director of the Minnesota Aquatic Invasive Species Research Center since 2016 and an original MAISRC faculty member when the Center was created in 2012. In addition, Nick is an Assistant Professor in the Department of Fisheries, Wildlife and Conservation Biology at the University of Minnesota. His research focuses on emerging threats to the health and sustainability of aquatic ecosystems, which lie at the intersection of humans, animals and the environment. This has included discovery and diagnostic development for emerging pathogens, environmental suitability and network modeling to predict invasions, risk assessment to prioritize management efforts, provided workshops and evaluation of AIS-HACCP strategies to mitigate AIS introductions via baitfish and aquaculture pathways, etc. Nick has earned a BS in Aquatic Biology, an MS in Aquaculture/Fisheries and a PhD in Veterinary Medicine.

Organization Description:

The Minnesota Aquatic Invasive Species Research Center (MAISRC) uses innovative science to identify solutions to Minnesota's AIS problems. Our mission is to develop research-based solutions that can reduce the impacts of aquatic invasive species in Minnesota by preventing spread, controlling populations, and managing ecosystems; and to advance knowledge of AIS to inspire action by others. MAISRC was founded in 2012 with funding by the Minnesota Legislature from the Environment and Natural Resources Trust Fund and the Clean Water Fund.