



Environment and Natural Resources Trust Fund (ENRTF)

M.L. 2019 ENRTF Work Plan

Today's Date: June 14, 2019

Date of Next Status Update Report: March 1, 2020

Date of Work Plan Approval: June 17, 2019

Project Completion Date: June 30, 2023

Does this submission include an amendment request? No

PROJECT TITLE: Building Knowledge and Capacity to Solve AIS Problems

Project Manager: Nicholas Phelps

Organization: University of Minnesota

College/Department/Division: Minnesota Aquatic Invasive Species Research Center

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Location: Statewide

Total Project Budget: \$4,000,000

Amount Spent: \$0

Balance: \$4,000,000

Legal Citation: M.L. 2019, 1st Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 6(a)

Appropriation Language:

\$4,000,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to support the Minnesota Aquatic Invasive Species Research Center in developing solutions to Minnesota's aquatic invasive species problems through research, control, prevention, outreach, and early detection of existing and emerging aquatic invasive species threats. This appropriation is available until June 30, 2023, by which time the project must be completed and final products delivered.

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. In the short life of MAISRC, significant progress has already been made and research investments are leading towards solutions. However, the reality remains that the threats posed by AIS to our cherished lakes, rivers, and wetlands are real and growing. It is imperative that we remain focused on a long-term vision for research that can support effective and efficient management actions.

Support for solutions-oriented research at MAISRC has been generously provided by ENRTF in the past and has brought together 18 project managers (from UMN, UMD/NRRI, MN DNR, and USGS) and their teams pursuing 28 research projects on a range of high priority species and strategies for AIS prevention, control, and management. Previous ENRTF support also created the operational capacity to prioritize, coordinate, and support innovative research teams, as well as the outreach capacity to translate the science into management actions. As a result, MAISRC has become a national leader in the field and has advanced the science and management of AIS.

During the course of this project, we will build on ongoing success by launching 7-8 new projects through a competitive RFP process, informed by our research needs assessment and stakeholder consultation. In addition, we will provide competitive continuation support for 5-6 existing projects that are moving in promising directions. Each new project will develop an externally peer-reviewed research proposal, workplan and budget in coordination with LCCMR staff prior to launch. MAISRC staff will provide leadership on the core organizational function of the research prioritization, request for proposals, research communication, infrastructure and capacity building.

II. OVERALL PROJECT STATUS UPDATES:

First Update March 1, 2020

Second Update September 1, 2020

Third Update March 1, 2021

Fourth Update September 1, 2021

Fifth Update March 1, 2022

Sixth Update September 1, 2022

Seventh Update March 1, 2023

Final Report between project end (June 30) and August 15, 2023

III. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1: Addressing high priority AIS threats by advancing new research

Description: Developing solutions to Minnesota's AIS threats must remain responsive to emerging issues and requires coordination of research efforts. In Activity 1, we will launch 7-8 new projects (approximately \$200k-

\$250k each, with 2-year durations) addressing the State’s highest priority research needs on emerging and existing AIS threats, such as zebra mussels, starry stonewort and invasive carp. This will be accomplished through a competitive RFP process and projects will be informed by an inclusive and comprehensive biannual Research Needs Assessment, which has become a national model for research prioritization. The list of prioritized research needs will be available to the LCCMR and other AIS stakeholders on the MASIRC website or by request.

Selection of projects will be informed by an internal and external review process with scientists and AIS managers familiar with current science and need. Each proposal will be evaluated based on relevance to priorities, potential impact, scientific approach, researcher experience, funding and effort requested, and support from AIS stakeholders. This process insures that the projects selected are high priority topics for the state of Minnesota that are both scientifically rigorous and have a high likelihood of contributing to effective, actionable, solutions. For high quality proposals that do not get selected for funding, the MAISRC Director will discuss the feedback with investigators with the intent of building Minnesota’s capacity and the potential for future collaborations.

ACTIVITY 1 ENRTF BUDGET: \$1,775,000

Outcome	Completion Date
1. 7-8 new lines of research launched on high priority research needs (e.g. Economic impact assessment, prevention strategies for AIS not currently in Minnesota, rapid response tools, innovative control strategies, etc.)	RFP #1: July 2020 RFP #2: July 2021
2. Research complete, solutions or next steps identified, recommendations shared	June 2023

First Update March 1, 2020

Second Update September 1, 2020

Third Update March 1, 2021

Fourth Update September 1, 2021

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ACTIVITY 2: Continuation of promising research to advance AIS solutions

Description: 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. To that end, in Activity 2 MAISRC will launch 5-6 “continuation projects” (approximately \$200k- \$250k each, with 2-year durations). Continuation projects will provide next-phase support for promising MAISRC research that is making progress towards real-world solutions. 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.

Selection and support of continuation projects will be done through an annual 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 by AIS managers. For high quality proposals that do not get selected for funding, the MAISRC Director will discuss the feedback with investigators with the intent of identifying alternative sources of funding to continue to make progress.

ACTIVITY 2 ENRTF BUDGET: \$1,300,000

Outcome	Completion Date
1. 5-6 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

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ACTIVITY 3: Leadership to facilitate AIS research and collaboration

Description: MAISRC was formed to strengthen the state’s capacity for solving AIS problems and to do so in a collaborative, coordinated, and stable environment that allowed for long term visions to be achieved. This is being achieved through the development and implementation of a strategic plan, annual Research Showcase, biennial research needs assessments, high faculty engagement, and a supportive culture for creativity and innovation. This could not be done without the core functions of the Center. The Center is an effective and efficient way to support research on AIS for many reasons. Activity 3 will enable us to continue to provide:

Leadership and direction, critical for establishing priorities and coordinating effective response:

MAISRC staff oversee the organization’s fulfillment of its strategic plan, including designing and implementing the biennial Research Needs Assessment and competitive grant processes, recruiting and positioning researchers for optimal response to emerging AIS threats, coordinating scientific peer review or research proposals, financial and administrative support, and working with the Center’s Advisory Board, multi-agency Technical Committee, and Center’s Fellows Group.

Physical infrastructure and shared equipment and lab staffing needed to enable the research:

MAISRC operates a newly renovated 10,000 square foot state of the art lab facility and will provide staffing to maintain and repair the facility, assist researchers with experiment set up and organismal husbandry, and be on call to respond to emergencies that may threaten experimental organisms and research investments.

Additionally, MAISRC staff will provide financial oversight and essential financial and grant reporting assistance to individual PIs. A portion of these costs will also be covered through individual research projects per the University’s Internal Service Organization policy.

Communication of research progress and implementation of science-based outreach programs to ensure results are translated into management action:

MAISRC makes results of research available and translates findings in a way that is not always possible for individual researchers to do on their own. In addition to traditional research communication (i.e. peer-reviewed manuscripts), MAISRC researchers provide opportunities to engage with stakeholders, such as at the annual MAISRC Research and Management Showcase event and stakeholder organized meetings held throughout Minnesota. MAISRC communications staff also amplify these efforts and make research progress and results accessible to the public and AIS managers through the web, newsletters, social media, seminars, webinars, brochures, and white papers. MAISRC also manages the AIS Extension program, including development of training programs and curriculum. Through this work, as well as through our technical committees and coordination teams, we ensure translation of the latest science in ways that build statewide capacity to respond to Minnesota’s AIS problems.

Opportunities for state-wide cross-disciplinary research collaboration on and off campus:

MAISRC creates a central focus for AIS research and has become well known for its efforts in prioritization and research productivity. This has resulted in new cross-disciplinary collaborations across the University, bringing together fields such as natural resource management, veterinary medicine, molecular biosciences, social science, genetics, and public health. Likewise, new collaborations have developed across the state and country with academic (i.e. UMD), government (i.e. USGS, watershed districts, counties), and stakeholder organizations (i.e. lake associations, AIS professionals) working together to address Minnesota’s AIS problems. International scholars are also seeking opportunities to collaborate with MAISRC and visitors have come from around the world to work with our researchers (i.e. Chinese Academy of Sciences, Australia’s CSIRO). Creating an environment that supports and cultivates collaboration, and in turn builds cost-effective capacity, is a major focus of MAISRC and will be continued with this project.

MAISRC’s core operations are supported through June of 2021 from 2017 ENRTF. In Activity 3 of this 2019 ENRTF funding, these critical Center functions will be extended for two more years (July 2021– June 2023) and will be leveraged by University of Minnesota contributions to base salaries for tenure track faculty, space & utilities, HR functions, payroll etc. valued in excess of \$1M.

ACTIVITY 3 ENRTF BUDGET: \$925,000

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

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IV. DISSEMINATION:

Description: The Minnesota Aquatic Invasive Species Research Center provides a platform for information and new research findings about AIS to be widely disseminated. This is accomplished through the annual public Research and Management Showcase event, reports, brochures, website, Facebook and Twitter, Extension programming, Advisory Board, Technical Committee, seminars, talks, and via peer reviewed publications and student theses. Additionally, MAISRC organizes a publicly available and indefinite data repository (“MAISRC-DRUM”) in partnership with the UM Libraries for data related to ongoing and completed MAISRC projects.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the [ENRTF Acknowledgement Guidelines](#).

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V. ADDITIONAL BUDGET INFORMATION:

A. Personnel and Capital Expenditures

Explanation of Capital Expenditures Greater Than \$5,000: Included in the workplan budget is \$35,000 to contribute to the overall cost of an electrofishing boat (estimated total cost: \$70,000). MAISRC plans to leverage this allocation to secure matching funds from other sources of funding, such as private donations, UMN, or other state funds. The current electrofishing boat used by MAISRC researchers is available through the UMN Department of Fisheries, Wildlife and Conservation Biology - the boat is unsafe, beyond repair and in need of replacement. Despite the need, the UMN does not have the funding to replace the boat.

Additional detail will be provided as 12-14 specific research projects are proposed that include any project-specific capital expenditures. Any equipment purchased with ENRTF funds will be retained and used for MAISRC projects in the future.

Explanation of Use of Classified Staff: N/A

Total Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation:

Enter Total Estimated Personnel Hours for entire duration of project: 17,680	Divide total personnel hours by 2,080 hours in 1 yr = = TOTAL FTE: 8.5
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Total Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation: More detail to be provided as 8-12 specific research projects are proposed.

Enter Total Estimated Contract Personnel Hours for entire duration of project: TBD	Divide total contract hours by 2,080 hours in 1 yr = TOTAL FTE: TBD
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VI. PROJECT PARTNERS:

A. Partners outside of project manager’s organization receiving ENRTF funding

No partners outside of MAISRC are currently slated to received funds from this project. However, some partners may respond to the requests for proposals.

B. Partners outside of project manager’s organization NOT receiving ENRTF funding

- The MAISRC Center Advisory Board (majority external membership) provides guidance and input to the Director and Associate Director.
- MAISRC scientists and leadership coordinate with DNR in multiple ways as formalized in a memorandum of understanding (signed in 2013).
- As part of their research, MAISRC scientists collaborate with managers and scientists of USGS, USFWS, NPS, DNR and local government units (e.g., Minnehaha Creek Watershed District, Itasca County), and specific lakeshore associations. No partners are currently slated to receive funds from this request, although some may respond to the calls for proposals.

VII. 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.

VIII. REPORTING REQUIREMENTS:

- Project status update reports will be submitted March 1 and September 1 each year of the project
- A final report and associated products will be submitted between June 30 and August 15, 2023

IX. SEE ADDITIONAL WORK PLAN COMPONENTS:

- A. Budget Spreadsheet:** Submitted.
- B. Visual Component or Map:** Submitted.
- C. Research Addendum:** N/A

**Environment and Natural Resources Trust Fund
M.L. 2019 Project Budget**



Project Title: Building Knowledge and Capacity to Solve AIS Problems
Legal Citation: M.L. 2019, First Special Session, Art. 4, Chp. 2, Sec. 2, Subd. 06a
Project Manager: Nicholas Phelps
Organization: Minnesota Aquatic Invasive Species Research Center, University of Minnesota
Project Budget: \$3,000,000
Project Length and Completion Date: 4 Years, June 30, 2023
Date of Report: June 14, 2019

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET BUDGET ITEM	ACTIVITY 1: Addressing high priority AIS threats by advancing new research			ACTIVITY 2: Continuation of promising research to advance AIS solutions			ACTIVITY 3: Leadership to facilitate AIS research and collaboration			TOTAL BUDGET	TOTAL SPENT	TOTAL BALANCE
	Activity 1 Budget	Amount Spent	Activity 1 Balance	Activity 2 Budget	Amount Spent	Activity 2 Balance	Activity 3 Budget	Amount Spent	Activity 3 Balance			
Personnel (Wages and Benefits) - Total	\$0	\$0	\$0	\$0	\$0	\$0	\$764,757	\$0	\$764,757	\$764,757	\$0	\$764,757
PI/Project Manager- Phelps: \$150,387 salary, \$47,850 benefits (35% fringe rate) 50% FTE x 2 years FTE TOTAL: 1												
Co-Project Manager- Matke: \$159,935 salary, \$55,977 benefits (35% fringe rate) 100% FTE x 2 years FTE TOTAL: 2												
Comm. & Admin Assistant: \$112,488 salary, \$32,622 benefits (29% fringe rate) 100% FTE x 2 years FTE TOTAL 2												
Aquatic Laboratory Tech: \$95,381 salary, \$27,660 benefits (29% fringe rate) 75% FTE x 2 years, FTE TOTAL: 1.5												
1 Grad Student: \$45,791 salary, \$21,063 benefits (37% tuition, 9% fringe) 50% FTE x 2 years, FTE TOTAL: 1												
2 Undergraduate Students: \$15,600 salary (0% fringe rate) 25% FTE x 2 years each, FTE TOTAL: 1												
Professional/Technical Services and Contracts - Total	\$0	\$0	\$0	\$0	\$0	\$0	\$74,393	\$0	\$74,393	\$74,393	\$0	\$74,393
Services-Office & Gen Oper -- printing/duplication, mailing, printer repairs, audio visual associated with seminars & conferences, conf. calls, surveys, insurance for shared equipment (pontoon, trailer) etc.	\$0		\$0	\$0		\$0	\$8,000		\$8,000	\$8,000	\$0	\$8,000
Services-Lab & Medical -- reserve funds for support of MAISRC Containment Lab ISO; well permits, discharge licences and fees, preventative maintenance and maintenance of shared lab facilities.	\$0		\$0	\$0		\$0	\$40,243		\$40,243	\$40,243	\$0	\$40,243
Professional Services & Contracts -- fees or honoraria for guest lecturer and speakers, etc.	\$0		\$0	\$0		\$0	\$1,150		\$1,150	\$1,150	\$0	\$1,150
Repairs-Lab & Field -- shared equipment; boats, transmitters, receivers, PCR machines, etc.	\$0		\$0	\$0		\$0	\$15,000		\$15,000	\$15,000	\$0	\$15,000
Showcase)	\$0		\$0	\$0		\$0	\$10,000		\$10,000	\$10,000	\$0	\$10,000
Equipment/Tools/Supplies - Total	\$0	\$0	\$0	\$0	\$0	\$0	\$34,500	\$0	\$34,500	\$34,500	\$0	\$34,500
Supplies-Office & Gen Oper -- paper, toner, folders, brochures, displays	\$0		\$0	\$0		\$0	\$6,500		\$6,500	\$6,500	\$0	\$6,500
Supplies-Lab & Field -- piping, glue, gas, hoses for shared washdown and laboratory facilities; anesthesia, fish, fish food, gas for boats, replacement helio & LED bulbs for experiments; tanks, reagents, sampling supplies, and other consumables.	\$0		\$0	\$0		\$0	\$20,000		\$20,000	\$20,000	\$0	\$20,000
Equipment-Non Capital Lab & Field -- storage containers; computer, software; trap nets, seine nets, dip nets.	\$0		\$0	\$0		\$0	\$8,000		\$8,000	\$8,000	\$0	\$8,000
Capital Expenditures Over \$5,000 - Total	\$0	\$0	\$0	\$0	\$0	\$0	\$35,000	\$0	\$35,000	\$35,000	\$0	\$35,000
Capital expenditures over \$5,000 -- portion of new electrofishing boat to be matched by additional funds - est \$35,000	\$0		\$0	\$0		\$0	\$35,000		\$35,000	\$35,000	\$0	\$35,000
Travel - Total	\$0	\$0	\$0	\$0	\$0	\$0	\$16,000	\$0	\$16,000	\$16,000	\$0	\$16,000
Mileage, lodging, registration and meals for: investigator travel to one conference a year to present findings; research needs assessment participants; consulting researchers; meetings and field work.	\$0		\$0	\$0		\$0	\$16,000		\$16,000	\$16,000	\$0	\$16,000
Other - Total	\$0	\$0	\$0	\$0	\$0	\$0	\$350	\$0	\$350	\$350	\$0	\$350
Telecommunications: voicemail service for MAISRC researchers and staff	\$0		\$0	\$0		\$0	\$350		\$350	\$350	\$0	\$350
Budget Reserve - Total	\$1,775,000	\$0	\$1,775,000	\$1,300,000	\$0	\$1,300,000	\$0	\$0	\$0	\$3,075,000	\$0	\$3,075,000
Budget reserve pending MAISRC prioritization, PRF, peer review, and approval. Each project will develop its own workplan and budget to be submitted separately to LCCMR following MAISRC approval	\$1,775,000		\$1,775,000	\$1,300,000		\$1,300,000	\$0		\$0	\$3,075,000	\$0	\$3,075,000
COLUMN TOTAL	\$1,775,000	\$0	\$1,775,000	\$1,300,000	\$0	\$1,300,000	\$925,000	\$0	\$925,000	\$4,000,000	\$0	\$4,000,000