



Request for Research Proposals

For New Lines of Research

The [Minnesota Aquatic Invasive Species Research Center \(MAISRC\)](#) at the University of Minnesota is seeking proposals for research studies to advance control and management, prevention of establishment and spread, risk assessment, and early detection of aquatic invasive species (AIS) in Minnesota.

Through this competitive proposal process, MAISRC will administer an estimated \$2,000,000 to fund high-priority research needs focused on new lines of research and continuation of existing projects. MAISRC conducted a thorough and systematic needs assessment in 2022 that included AIS managers, researchers, and the public, to identify and prioritize research needs that will develop science-based solutions to Minnesota's AIS problems. This RFP is focused on 18 research priorities that were identified in this process and considered for new lines of research. For information on the proposal submission process for continuation projects, see separate RFP.

Proposals are invited from investigators at any Minnesota-based academic, governmental (federal, tribal, state, local), or non-profit research institution or organization with demonstrated capacity to conduct rigorous, scientific research. Proposed work should build capacity in and benefit the state of Minnesota. Research collaborations and multi-investigator projects are strongly encouraged. Research teams may include expertise outside of Minnesota if needed, but please note that some restrictions apply for use of grant funds out of state.

Projects are expected to use state-of-the-art techniques and approaches and must produce both peer-reviewed publications in high-quality journals as well as technical publications. Resources within the [MAISRC Containment Laboratory](#) may be available for use in association with funded projects. In addition, MAISRC communication and research-outreach staff can assist with the development and implementation of stakeholder engagement activities. Anticipated funding availability is January 1, 2024 through December 31, 2025.

Pre-proposal instructions and selection process

The funds to support research solicited in this announcement primarily originate from the Environment and Natural Resource Trust Fund (ENRTF), administered by the Legislative-Citizen Commission on Minnesota Resources (LCCMR). Therefore, [eligible expenses](#) for pre-proposals are the same as LCCMR's.

Pre-proposals will be reviewed by a committee consisting of MAISRC's Director, two members of MAISRC's Advisory Board, and two technical reviewers. Evaluation will be based on the degree to which the pre-proposal fits research priorities, likelihood the research project will result in important new information useful for solving AIS problems in Minnesota and demonstrated capacity of the collaboration to perform the proposed research. Demonstrated support from end users of the research and ability to leverage additional funding will also be considered.

Investigators invited to submit full proposals will provide detailed research plans that will undergo scientific peer-review. Funding is available upon final approval of a work plan and budget, following peer-review and revisions.

For UMN proposals: Please do not submit through SPA. We recommend, however, that you discuss your pre-proposal with your finance team, department head, and others who would eventually need to approve your proposal so that we can avoid problems down the road if you are invited to submit a full proposal.

Pre-Proposal Components:

1. Project proposal – *submit in one PDF; [template available for download](#)*
 - Cover Sheet – *1 page limit; included in template*
 - Pre-proposal Narrative – *3-page limit; included in template*
 - Researcher Qualifications – *provide a CV for all primary investigators; 2-page limit each*
 - Project Manager’s Organization Description – *1 page limit*
 - Citations
2. Project Budget – *submit in MS Excel; [template available for download](#)*
3. Optional Attachments – *letters of support, etc.*

The deadline for pre-proposals is March 1, 2023 at 11:59 PM. Submit all documents to maisrc@umn.edu. Please contact MAISRC Associate Director, Cori Mattke, with questions about research priorities and the proposal process, or discuss research ideas – cmattke@umn.edu or 612-624-7785.

Research Priorities

Proposals for research on the following topics will be considered for funding. Like AIS problems in general, these problems are complex. To be effectively addressed, many of these topics will benefit from innovative research approaches, research scope spanning fundamental and applied, and/or multidisciplinary expertise. The topics are not listed in priority order. If not specifically addressed below, the species studied must be included on the [MAISRC 2022 species priority list](#). Research not focused on addressing one of the following priorities will not be considered for funding.

A: Early detection and preventing the establishment of priority species

1. Evaluate the effectiveness and feasibility of implementing invasive carp deterrents (e.g., electric, acoustic, etc.) in field settings, such as at spillway gates, to reduce risk of carp spread during open-water conditions.
2. Develop high throughput/multiplex molecular screening tools to rapidly assess multiple high priority invasive microorganisms and AIS eDNA.
3. Refine AIS containment and/or shielding priorities by developing interactive models that inform asset-based water resource protection at multiple spatial scales (local to regional), for example, by overlaying introduction risk, habitat suitability, and assets.
4. Survey inland lakes to improve understanding of current and potential future distribution of *Corbicula* and associated environmental conditions (e.g., water chemistry, sediment composition, temperature, etc.) to develop risk assessments.
5. Assess whether zander can successfully hybridize with walleye and sauger to inform risk assessment and prioritize prevention strategies.

6. Investigate the values and motives that prompt the release of invasive fishes such as goldfish, aquarium fishes/pets, and baitfish into the environment and develop alternatives to release that are accessible and acceptable to the public.

B: Creating and improving options for control of priority species

1. Develop innovative and environmentally safe control technologies for priority AIS populations, with an emphasis on novel and cost-effective biochemical products, genetic approaches, or delivery methods.
2. Evaluate native plant recovery in lakes that have been managed for aquatic invasive plants and develop improved methods for post-treatment restoration of native submerged aquatic vegetation to help prevent reinvasion and promote resilience.
3. Quantify short- and long-term benefits and impacts of copper-based aquatic pesticides on non-target organisms through synthesis, experiments, and/or modeling. Address benefits and non-target impacts across spatial and temporal scales to guide management.
4. Develop methods to prevent production of starry stonewort bulbils (reproductive structures) and/or reduce their viability. Research should further address how long reservoirs of bulbils in lake sediments remain viable to inform control efforts seeking to exhaust their supply.
5. Evaluate environmental conditions that contribute to blooms of didymo, assess impacts of didymo mats, and develop feasible strategies to control didymo spread and reduce its impacts.
6. Compare waterbodies that have vs. have not been managed for AIS over longer time scales to set realistic expectations of management outcomes and no-action alternatives.

C: Understanding impacts to prioritize management actions

1. Evaluate the effects of high-priority AIS and management of AIS on wild rice under current conditions and/or future climate scenarios to help guide management responses.
2. Evaluate environmental, ecological, economic, provisioning, subsistence, or cultural impacts of AIS on lakes and rivers in Minnesota under current and future climate scenarios. Results should be used to inform cost-benefit analyses, risk assessment, and management decision-making.
3. Determine the non-target water-quality and ecological impacts of aquatic herbicides being applied repeatedly over time and across large areas to inform adaptive management (e.g. treatment strategies, permitting, policy).
4. Investigate density-dependent responses of waterfowl species to *Bithynia* (faucet snails) serving as intermediate hosts of intestinal trematodes. Determine if mortality occurs at certain thresholds of faucet snail abundance and assess feasibility of faucet snail control to reduce impacts to waterfowl.
5. Evaluate associations between zebra mussel infestation and mercury concentrations in fish tissues to inform fish-consumption advisories for zebra-mussel invaded lakes.
6. Evaluate the threat posed by largemouth bass virus (LMBV) on largemouth and smallmouth bass populations to support management responses.