MINNESOTA AQUATIC INVASIVE SPECIES RESEARCH CENTER
UNIVERSITY OF MINNESOTA
Driven to Discover℠

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 $1,900,000 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 17 research priorities that were identified in this process and considered for new lines of research. MAISRC may provide funding for future phases of ongoing research as part of this RFP, pending review of progress and proposed activities (see process for continuation project proposals).

Anticipated funding availability is January 1, 2025 through December 31, 2026. There is no budget limit for each proposal or a set number of proposals that will be funded.

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 with diverse skillsets and specialties and multi-investigator projects are strongly encouraged. Research teams may include expertise outside of Minnesota, but please note that some restrictions apply for use of grant funds out of state. To discuss opportunities for collaboration and networking, please contact MAISRC staff at maisrc@umn.edu.

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.

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 in the short or long-term, and demonstrated capacity of the team to

perform the proposed research. Demonstrated engagement with 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; download template*
    - 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; download template*
3. Optional Attachments – *letters of support, etc.*

The deadline for pre-proposals is March 1, 2024 at 11:59 PM. Submit all documents to maisrc@umn.edu. Please contact MAISRC (maisrc@umn.edu), with questions about research priorities, opportunities for collaboration or coordination, MAISRC lab and outreach resources, the proposal process, or to discuss research ideas.

Research Priorities

Proposals for research on the following topics will be considered for funding. The topics are not listed in priority order; however, MAISRC has particular interest in initiating and supporting long-term research to develop innovative and environmentally safe control technologies to suppress populations of priority AIS. If not specifically addressed below, the species studied must be included on the MAISRC 2024 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. Assess the cost-effectiveness of various methods to reduce the risk of spreading high-priority AIS through the movement of infested waters for water level management or dewatering purposes.
2. 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.
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 motivations that prompt the release of invasive fishes such as aquarium/pond fishes (goldfish, koi, etc.) 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. In comparison to single method strategies, evaluate the efficacy of integrated pest management strategies for controlling high priority AIS.
2. Develop innovative and environmentally safe control technologies for priority AIS populations, with an emphasis on novel and cost-effective biochemical products or genetic approaches.
3. 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.
4. 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.
5. 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.
6. Compare water bodies 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, economic, provisioning, and 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 to determine if mortality occurs at certain thresholds of faucet snail abundance and assess the feasibility of control of faucet snails to reduce impacts to waterfowl.
5. Evaluate the impacts of largemouth bass virus (LMBV) on largemouth and smallmouth bass populations to support management responses.