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Request for Preliminary Proposals for Research Spanning 2022 to 2024

The University of Minnesota Sea Grant College Program is soliciting preliminary proposals for research projects to begin on or after February 1, 2022. Projects should be based in Minnesota and focus on Lake Superior, its coast, tributaries, or watershed and/or Minnesota’s inland waters where projects provide relevant information that could be applied to Lake Superior and the other Great Lakes. The resulting science should have the potential to promote the sustainable use of these important resources (examples of past projects: www.seagrant.umn.edu/projects). Projects will be funded for up to two years. Non-federal researchers based in Minnesota are invited to apply.

Informational webinar

On December 16 from 1:00 – 2:30 pm CST Minnesota Sea Grant will host an informational webinar and question-and-answer session tailored for first-time applicants; register here: https://umn.zoom.us/meeting/register/tJckf--vzIrGdFKsNDNaiNQjjuGwcXGUAm_u. The webinar will be recorded and available for later viewing.

Deadlines

Preproposal due by 4 p.m. CST, January 22, 2021.
Preproposal submission will be through our online grants management system, eSeaGrant. The lead investigator should email Valerie Brady (vbrady@umn.edu) to request access; it may take up to 7 days to process your request. Preproposals will be evaluated and recommendations communicated to principal investigators before mid-February, 2021.

Full proposal due by 4 p.m. CST, March 26, 2021.
Preparation guidelines for full proposals will be provided to those who submit preproposals AFTER the preproposal submission deadline has passed. Full proposals are limited to 12 pages and must include background; hypotheses and/or objectives; methods; expected results; usefulness; economic benefits; and outreach. Proposals should be written to withstand full scientific peer review by reviewers unfamiliar with the Great Lakes.

Projects will be funded for up to two years, typically for $40,000 - $55,000 per year in direct costs plus a graduate research assistant whose cost does not count against the project budget (see details in the preproposal specifications section below).

For more information, contact Minnesota Sea Grant Associate Director for Research Dr. Valerie Brady (vbrady@umn.edu).
About Minnesota Sea Grant

Minnesota Sea Grant is part of the National Oceanic and Atmospheric Administration and the NOAA National Sea Grant College Program and our structure and direction are derived from NOAA Sea Grant’s founding legislation that calls for education, training, and research in all fields of marine study. The Minnesota Sea Grant 2018-2023 Strategic Plan was developed within the framework of the NOAA and NOAA Sea Grant strategic plans and with input from our advisory board, staff, and partners, and forms the basis for this RFP.

Minnesota Sea Grant is the only Sea Grant program focused primarily on Lake Superior, its watershed and human communities. We seek to maintain and enhance Minnesota’s coastal environment and coastal economy through high-quality research, education, and outreach. We support science that produces tools and technologies for responsible management and sound policy decisions regarding Lake Superior and Minnesota’s inland aquatic economies and resources.

Lake Superior plays a significant and leading role as a natural laboratory in which to discover solutions to 21st-century coastal problems. As the cleanest, clearest, coldest, and least urbanized of the Great Lakes, Lake Superior is unique as a high-quality reference waterbody for the Great Lakes region. However, Lake Superior faces many of the same problems that affect other Great Lakes, inland lakes, and marine coastal areas. Lake Superior is an ideal testing ground for the scientific inquiry of interdisciplinary problems, and is a sought-after natural model for the development and application of sound science to inform policy and management decisions.

Decisions about which research topics are most critical to pursue are driven by Great Lakes needs and concerns. However, the usefulness and relevance of Minnesota Sea Grant research, education, and outreach often extends beyond the Great Lakes watershed. We encourage applicants to identify potential broader applications of their research and outreach that may arise from research outcomes. We strongly encourage university and college research scientists to partner with federal, state, local, and tribal agencies and industry toward studying the multidisciplinary problems facing our state’s water resources and helping to develop innovative solutions. See the Minnesota Sea Grant website for previously funded projects.

2022 - 2024 Research Priorities

Minnesota Sea Grant’s vision is, in part, to foster among Minnesotans the will to use a science-based understanding of the environment to address issues concerning Lake Superior and Minnesota’s inland aquatic resources and associated economies.

Our mission is to facilitate interaction among the public and scientists to enhance communities, the environment, and economies along Lake Superior and Minnesota's inland waters by identifying information needs, fostering research, and communicating results.
Our research priorities fit within the strategic plans of Minnesota Sea Grant and the National Sea Grant College Program and reflect requests of specific interest or need from our advisory board, staff, and other stakeholders. We encourage researchers to think broadly and creatively about research that will address and help solve the issues facing Minnesota’s aquatic resources. We are particularly interested in receiving proposals that address issues related to aquaculture or that address social and/or economic research on human community services (i.e., benefits) from Minnesota’s aquatic resources and on the sustainability of these coastal ecosystems.

Below are topics of specific interest, organized within the context of the National Sea Grant College Program strategic focus areas. While proposal ideas are not limited to the topics of specific interest, they must fit within one of the focus areas and address at least one of the strategic goals listed below.

**Focus: HEALTHY COASTAL ECOSYSTEMS**

**Outreach Contacts:**
- Doug Jensen: djensen1@umn.edu
- Don Schreiner: schr0941@d.umn.edu
- Dr. John Downing: downing@d.umn.edu

**Strategic Goals:**
1) Habitat, ecosystems and the services they provide are protected, enhanced or restored. 2) Land, water and living resources are managed by applying sound science, tools and services to sustain ecosystems that support communities and economies.

**Topics and research needs of specific interest to stakeholders**
- Draw together all existing available data on fish habitat use, habitat, spawning and movement to summarize the locations and times most critical to sustaining healthy fish stocks in the Duluth-Superior harbor and the estuary. This knowledge is meant to inform when and where we should and should not be dredging for shipping (the idea of “windows” in time and space for dredging that minimize damage to the fishery). Identify data and knowledge gaps.

- Research invasive mystery snails:
  - Conduct a study of the life history, biology, physiology, and seasonal distribution and behavior of mystery snails in lakes that might make them responsive to control.
  - Determine the effects of mystery snail infestations on lake ecology, food webs, and water quality.
Focus: SUSTAINABLE FISHERIES AND AQUACULTURE

Outreach Contact:  Dr. Amy Schrank  aschrank@umn.edu
                    Don Schreiner  schr0941@d.umn.edu
                    Dr. John Downing  downing@d.umn.edu

Strategic Goals: 1) Fisheries, aquaculture, and marine and freshwater resources provide food, jobs, and economic and cultural value. 2) Marine and freshwater resources are sustained to support fishing communities and industries, including aquaculture, and recreational and subsistence fisheries.

Topics and research needs of specific interest to stakeholders

• Investigate use of aquaponics and recirculating aquaculture systems (RAS) in the baitfish and/or food fish industry in Minnesota, with emphasis on fish disease, sustainable feed supply, early life stage development, and/or domestication.

• Determine the abiotic and/or biotic factors affecting cisco recruitment in Lake Superior.

Focus: RESILIENT COMMUNITIES AND ECONOMIES

Outreach Contacts:  Madison Rodman  mrodman@umn.edu
                    Tiffany Sprague  tsprague@d.umn.edu
                    Jesse Schomberg  jschombe@d.umn.edu

Strategic Goals: 1) Vulnerable and at-risk coastal communities are aware of changing conditions and can improve their resilience, economy, and community well-being. 2) Water resources are sustained and protected to meet emerging needs of the communities, economies and ecosystems that depend on them.

Topics and research needs of specific interest to stakeholders

• Conduct research on green infrastructure. For example:
  o Investigate the effectiveness of green infrastructure and other shoreline practices along Lake Superior at mitigating shoreline erosion and the effect on natural shoreline ecosystems.
  o Develop true cost/benefit analysis methods for green infrastructure and determine return on investment (ROI) for green infrastructure projects: Are legacy projects still effective? Is the ROI shorter or longer for “next generation” installations?
• Research the intersections between climate change/climate resilience work and recovery from the COVID-19 pandemic. For example:
  o Determine how COVID-19 has changed recreation and tourism in Northern Minnesota. Specifically: Is this increased use more damaging to the resource? If so, what could be done to mitigate this damage? Are higher levels of use likely to continue post-COVID? Are these high use levels desirable, and if so, what can be done to foster them?
  o Explore ways tourism and other businesses and industries can adapt to these changes.

• Research the potential economic cost of various types of environmental and societal impacts of oil spills around the Great Lakes region to be used in shipping risk-minimization analyses.

• Determine the rate of erosion of Park Point. Determine options for long-term sustainability of Park Point for human use and options for resilience.

Focus: ENVIRONMENTAL LITERACY AND WORKFORCE DEVELOPMENT
Outreach Contacts: Marte Kitson mkitson@d.umn.edu

Strategic Goals: 1) An environmentally literate public is informed by a continuum of lifelong formal and informal engagement opportunities that reflect the range of diversity of our communities. 2) A diverse and skilled workforce is engaged and enabled to address critical local, regional and national needs.

Topics and research needs of specific interest to stakeholders
• Evaluate and explore ways to use aquaculture/aquaponics to 1) increase science knowledge in K-12 students, 2) draw underrepresented groups into natural resource careers, and 3) educate the public on the potential benefits of sustainable aquaculture.

• Determine the gaps in coastal workforce development that can lead to social and economic gain for coastal communities along Lake Superior and in Minnesota coastal areas. Which gaps are the most crucial to fill to provide the greatest economic and social gains?
Special Topic: DIVERSITY, EQUITY, JUSTICE, AND INCLUSION

Outreach Contacts: Madison Rodman mrodman@umn.edu
Marte Kitson mkitson@d.umn.edu

Strategic Goals: 1) Research and scholarship are stimulated to address topics of value to diverse communities. 2) Communities have equal access to relevant scientific information via extension programming that facilitates sound, science-based decision-making. 3) An environmentally literate and informed citizenry is reflective of diverse populations.

Topics and research needs of specific interest to stakeholders

- Determine the best avenues, methods, approaches and tools for meaningful engagement with marginalized and underrepresented communities, particularly in northern MN, on coastal resilience and disaster recovery.
- Investigate structural and systemic bias in public engagement on coastal policy-making and suggest solutions.

Developing a Preproposal

Eligibility
Non-federal researchers based in Minnesota are invited to apply. We encourage collaborations that include scientists from colleges and universities; state, federal, tribal, and private agencies; and industry and non-governmental organizations. Sea Grant employees may be part of the project team but their salaries cannot be included in the budget.

The National Sea Grant College Program champions diversity, equity, justice, accessibility and inclusion by recruiting, retaining and preparing a diverse workforce, and proactively engaging and serving the diverse populations of coastal communities, including the indigenous peoples on whose ancestral, traditional, and contemporary land we live and work. Sea Grant is committed to building inclusive research, extension, communication and education programs that serve people with unique backgrounds, circumstances, needs, perspectives and ways of thinking. We encourage applicants of all ages, races, ethnicities, national origins, gender identities, sexual orientations, disabilities, cultures, religions, citizenship, job classifications, veteran status, and socioeconomic status to apply for this competitive research opportunity.

Application of research results and outreach to clientele
Minnesota Sea Grant seeks to address resource management issues with multidisciplinary, integrated solutions based on science, and with respect to economic, societal and political concerns. We are particularly interested in funding proposals that involve graduate students; that engage stakeholders throughout the entire project period; and that have a strong outreach component that includes Minnesota Sea Grant extension and communication staff.
We also seek to ensure that research results reach and are accessible to all audiences. We will prioritize proposals that both address the research needs listed in this RFP and have outreach components that clearly identify the audiences who need the data and deliverables and that clearly indicate mechanisms to provide these in an accessible manner. We encourage proposals that consider and are relevant to diverse, underserved, and marginalized populations. This includes strategies to attract and retain students representing the diversity of races, ethnicities, national origins, gender identities, sexual orientations, disabilities, cultures, religions, citizenship, veteran status, and socioeconomic status on projects. We realize that researchers may not have experience developing an outreach plan or engaging external, community, or business/industry partners. Researchers are strongly encouraged to contact the extension educators listed below (outreach contacts) during the preproposal development phase for assistance in developing a strong outreach component.

**Financial request**
Research project awards typically range in annual direct cost from $40,000 to $55,000, including costs for things such as research vessel time. Additionally, we will provide for each project to have one graduate student research assistant at no direct cost to the project. This is a value of about $50,000, which includes salary, fringe benefits, and tuition.

Proposals requesting larger or smaller amounts than those listed here will be considered. While small subcontracts outside Minnesota are allowed, the majority of funds should go to entities within Minnesota. Matching funds of 30% of the research project direct costs are requested; contact Valerie Brady (vbrady@d.umn.edu) if this will cause extreme hardship. Do not include the costs of a graduate student when calculating the value needed for match. Note that use of the R/V Blue Heron may come with match from the University of Minnesota Duluth Large Lakes Observatory (LLO); contact Dr. Robert Sterner (stern007@d.umn.edu) to discuss matching funds.

**Preproposal Specifications**

The online submission system will request the following information:

*Note: It may take up to 7 days to provide access to our online system; please plan accordingly. It is recommended that submitters use a text editing program (e.g., MS Word) to create sections 9-15 and copy-paste the text into the online forms. Save your work often. Note that the 'save' function will not work if text exceeds the limits.*

1. Plain language title [limit 8 words, understandable by any educated person]
2. Scientific subtitle [normal scientific title for proposal, limit 15 words]
3. Lead investigator’s full first and last name, complete title and affiliation (no abbreviations), physical address, phone number, and email address.
4. Co-investigators’ full names, titles, affiliations (no abbreviations), physical addresses and email addresses.
5. Project start date [projects can start anytime between Feb. 1 and June 1, 2022]
6. Project duration in months [projects must have an end date no later than January 31, 2024]
7. Estimated total direct cost of research.
8. Estimated ship costs, if applicable, must be included in direct costs. To use UMD Large Lakes Observatory (LLO) vessels, please contact LLO about availability. The R/V Blue Heron costs $4,400-$8,800/24-hr day or $2,200-$4,400 for a single 10-hr day. Contact LLO for exact costs and to discuss the possibility for match assistance: Dr. Robert Sterner (stern007@d.umn.edu). The R/V Kingfisher costs $750/day. See the UMD LLO website (http://scse.d.umn.edu/large-lakes-observatory/vessels-facilities) for details.
9. Estimated total indirect costs are needed ONLY for researchers outside of the University of Minnesota system; contact Minnesota Sea Grant Fiscal Officer Peter Thibault (thiba026@d.umn.edu) with questions.
10. A graduate student is typically funded at 50% effort for 12 months for each of the two years. For our planning purposes, please provide the estimated hourly cost of your graduate student, excluding tuition and fringe. Do NOT include this cost in your direct-cost budget estimate.
11. Rationale, including fit to Sea Grant mission, vision, and RFP priorities [Limit 200 words]
12. Objectives and hypotheses [limit 75 words]
13. Approach/methodology [limit 200 words]
14. Expected results [limit 200 words]
15. Outreach: Identify your outreach audience - the people, organizations, companies, etc., who you anticipate would want to know and use your research results/products/tools. Identify the communication methods you intend to use to reach these audiences and identify the Sea Grant extension educator(s) you want to work with to develop your outreach plan for your full proposal. Ensure that your budget includes support for the outreach component of your proposal. [Limit 150 words]
16. Economic benefits: Briefly describe how your proposed research could provide economic benefits now and/or in the future for specific communities and/or user groups in Minnesota. [Limit 100 words]
17. Collaborations. List anticipated and/or likely collaborators, such as other universities, state or tribal agencies, industries, etc. Cooperative research is viewed favorably. [Limit 75 words]

The Review Process
The Minnesota Sea Grant four-part review procedure for research proposals

1) Preproposals are reviewed by Minnesota Sea Grant staff for consistency with this RFP and the Minnesota Sea Grant mission. Proposed projects must have the potential to lead to application (<10 yrs between obtaining research results and those results being used by stakeholders), but must also address scientific research questions or topics as listed in this RFP. Preproposals will be categorized by staff as strongly meeting, meeting or not meeting these criteria. If a preproposal falls into the “not meeting criteria” category, researchers will be
informed that their chances of securing funding with a full proposal are low, but that they may still submit a full proposal. All who submit preproposals are eligible to submit full proposals.

2) Three peer-reviewers from outside Minnesota, and sometimes from outside the U.S., will review full proposals for scientific merit. Effort is made to match proposals with reviewers with the appropriate expertise. Additional details will be provided in the full proposal guidance.

3) A Minnesota Sea Grant technical review panel reviews the full proposals and all peer reviews. Panel members are ad hoc, from outside Minnesota, and may be from outside the Great Lakes area. Panel members will rank the proposals according to scientific merit and consistency with the Minnesota Sea Grant mission.

4) Proposals ranked as scientifically sound by the technical review panel are forwarded to the Minnesota Sea Grant advisory board who reviews the proposals with respect to relevancy to the MNSG program and clientele. The advisory board membership reflects our constituencies.

Funding decisions are made by the Minnesota Sea Grant senior leadership team and incorporate all reviews and rankings; input from Sea Grant staff on the outreach component; availability of funding; prior award performance of applicants; balance across institutions, focus areas (with special emphasis this year on fisheries and aquaculture), and applicant diversity; and programmatic needs, objectives, and priorities as articulated in the request for proposals. Applicants can expect notification in September 2021 as to whether their proposal will be included in the 2022-2024 Minnesota Sea Grant omnibus proposal submission to the National Sea Grant Office.

Questions
Questions should be directed to Associate Director for Research Valerie Brady (vbrady@d.umn.edu)

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