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UNIVERSITY OF WISCONSIN SEA GRANT INSTITUTE

Request for Proposals
2024-26

PREPROPOSALS

An informational webinar for prospective investigators will be from 10-11 a.m. CST on Friday, November 18, 2022, via
https://uwmadison.zoom.us/j/99763198737?pwd=WmppT1B0QjY4ZGUySmRzVG54SWtWdz09
(Meeting ID: 997 6319 8737, Passcode: 599170)
DUE DATE - Friday, January 13, 2023, 3 p.m. CST
SEE APPENDED GUIDELINES FOR PREPROPOSALS

FULL PROPOSALS

An informational webinar for prospective investigators will be from 3-4 p.m. CDT on Thursday, March 2, 2023, via
https://uwmadison.zoom.us/j/98492989897?pwd=ME14M3EyWDVrMUx1eCtUUGVWSG53QT09
(Meeting ID: 984 9298 9897, Passcode: 486921)
DUE DATE - Friday, April 28, 2023, 3 p.m. CDT

All Sea Grant project funds are awarded via a highly competitive process involving external peer reviews and
the recommendations of external advisory panels.
Our next two-year grant period begins on FEBRUARY 1, 2024.

seagrant.wisc.edu/rfp

To SUBSCRIBE to the RFP notification email list, send an email to: jennifer.hauxwell@aqua.wisc.edu
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Overview and Guidelines for Preproposals

UNIVERSITY OF WISCONSIN SEA GRANT COLLEGE PROGRAM

OVERVIEW

The University of Wisconsin Sea Grant College Program is inviting research and education project proposals for the next two-year grant period that begins on February 1, 2024. Proposals must be led by an investigator who is a faculty member or person with principal investigator status at their institution in the University of Wisconsin System, or other Wisconsin college or university. The application process involves two steps:

1) Prospective investigators submit a preproposal by **3 p.m. CST, Friday, January 13, 2023**, following these guidelines.

2) Prospective investigators submit a full proposal by **3 p.m. CDT, Friday, April 28, 2023**.

To be eligible to submit a full proposal, applicants MUST submit a preproposal by the preproposal deadline.

All Sea Grant project funds are awarded via a highly competitive process involving external peer reviews and the recommendations of external technical and advisory panels.

HOW TO PROCEED

Please review the 1) [Program Description](#) (appended) for information about Wisconsin Sea Grant, including its mission, vision and values and 2) [Research and Education Priorities](#) (appended) for a detailed description of research and education priorities listed below. Follow the [Instructions for Submitting a Preproposal](#) (appended). For questions related to research proposals, please contact Jennifer Hauxwell (Associate Director, jennifer.hauxwell@aqua.wisc.edu, 608-263-4756). For questions related to education proposals, please contact Anne Moser (Education Coordinator, akmoser@aqua.wisc.edu, 608-262-3069). See more information at seagrant.wisc.edu/rfp.

Wisconsin Sea Grant solicits research proposals for up to $130k/year in the following areas:

Wisconsin Targeted Focus Areas, including:
- Justice, Equity, Diversity, Inclusion, and Accessibility for Underserved or Underrepresented Communities
- Emerging Contaminants and Marine Debris
- Great Lakes Coastal Resources and Communities in a Changing Climate

Wisconsin Base Focus Areas, including:
- Healthy Coastal Ecosystems

- Sustainable Fisheries and Aquaculture
- Resilient Communities and Economies

In addition, Wisconsin Sea Grant solicits education proposals for up to $40k/year to address the following priority:

Environmental Literacy and Workforce Development (Non-research Education Projects)

We welcome original, innovative proposals, as well as proposals from new and/or underrepresented faculty and/or principal investigators and are happy to support all interested researchers in navigating the proposal process. You are encouraged to visit the Wisconsin Sea Grant website and/or download a copy of our 2022-24 Directory of Projects and People for an overview of the types of projects funded by our program.

Please note, we encourage projects that:
- Support students in becoming strong scientists and provide opportunities to practice community engagement and actionable science.
- Engage communities and partners throughout all phases of a research study, including the preproposal stage when defining the question to be addressed.
- Connect with our Sea Grant outreach and communications staff to increase relevance and exposure of the work to relevant audiences.
- Strive to promote the ideals of justice, equity, diversity, inclusion, and accessibility.

An informational webinar for prospective investigators will be provided on Friday, November 18, 2022, 10-11 am CST. Our staff will discuss our priorities and the preproposal submission process. Connect via:
https://uwmadison.zoom.us/j/99763198737?pwd=WmppT1B0QjY4ZGUySmRzVG54SWtWdz09
(Meeting ID: 997 6319 8737, Passcode: 599170)

An informational webinar for prospective investigators interested in submitting full proposals will be provided on Thursday, March 2, 2023, 3-4 p.m. CDT. Our staff will discuss the full proposal process and offer advice and options for incorporating outreach and education activities within research proposals. Connect via:
https://uwmadison.zoom.us/j/98492989897?pwd=ME14M3EyWDVrMUx1eCtUUGVWSG53QT09
(Meeting ID: 984 9298 9897, Passcode: 486921)

Webinar recordings will be available at seagrant.wisc.edu/rfp.

Thank you for your interest. We look forward to learning more about your ideas for tackling our shared Great Lakes challenges!

James P. Hurley, Director

Instructions for Submitting a Preproposal

This information is intended for faculty members or persons having principal investigator status at their institution in the University of Wisconsin System or other Wisconsin colleges or universities. Supporting information and resources are at seagrant.wisc.edu/rfp.

Investigators must submit preproposals via the UW Aquatic Sciences Center (administrative home of the University of Wisconsin Sea Grant College Program) online proposal submission system, eDrop (https://edrop.aqua.wisc.edu/), by 3 p.m. CST on Friday, January 13, 2023. Notification of preproposal status will be sent in late February 2023, along with guidance for submitting a full proposal.

EVALUATION CRITERIA

Preproposals will be reviewed by panels of experts with input by Sea Grant staff and the Wisconsin Sea Grant Advisory Council.

Research review panel(s) will address the following questions when determining whether to encourage a full research proposal:
- What is the importance of the proposed project for Wisconsin and is it relevant to the priorities listed in the RFP?
- What is the scientific merit of the proposed project?
- What are the qualifications of the investigators?
- What are the likely outcomes or impacts (environmental, educational, social, economic, etc.) that could result from the project? Did investigators identify potential users of project results (e.g., specific businesses, industries, coastal communities, underrepresented and/or underserved communities, state and federal government agencies, etc.?). Are partners, communities, and populations served by the project engaged in the process and potential outcomes associated with the proposed work?
- Does the budget estimate seem adequate, or too high/too low? Does the project seem to be a good value?

The education review panel will address the following questions when determining whether to encourage a full education proposal:
- Rationale and Methods: Is this a sound education project? Are the objectives and methods appropriate? Are the investigators qualified to execute the project/study?
- Meeting Wisconsin Sea Grant's Education Priorities: How well does the preproposal address at least one of the education priorities (numbers 48-56) identified in the Request for Proposals?
- Impact: Will this project make a significant impact on its target audiences? Are target audiences well defined? Is its scope appropriate? Have the investigators identified critical partnerships, especially ones that engage leaders of diverse community groups?
- Budget/Value: Does the budget estimate seem adequate or too high/too low? Does the project seem to be a good value?

STEP-BY-STEP INSTRUCTIONS

Detailed instructions for submitting a preproposal are outlined below.

> **Applicants should contact Tom Xiong at tomxiong@aqua.wisc.edu with any difficulties associated with the proposal submission process using eDrop.**

STEP 1
Go to seagrant.wisc.edu/rfp and download the Preproposal Description template and the CV template. These forms are needed for you to complete your preproposal.

STEP 2
Provide the required information in the Preproposal Description template, omitting the bracketed text. Once completed, save the document - you will use the information to copy and paste into various eDrop fields described in Step 6.

STEP 3
Provide the required information in the CV template by deleting the text within brackets and replacing it with investigator information. Rename file(s) using investigator name(s) in the following format: "Lastname_CV.doc" and convert to PDF(s) using the format "Lastname_CV.pdf". You are required to do this for the lead principal investigator listed on the preproposal and are encouraged to do this for all investigators. CVs for multiple investigators will result in separate PDF files. You will upload CV file(s) as described in Step 7.

STEP 4
Navigate to eDrop (https://edrop.aqua.wisc.edu/) and log in or register for a new account. Instructions on the site will assist you in entering your proposal package. Note to new users – the registration process involves a two-step verification, requiring you enter both an email address (step one) and phone number (step two) to receive two different verification codes that you must enter in order to complete the registration.

STEP 5
Once you are logged in, click on "Add Proposal" next to Request for Proposal associated with the call for "Sea Grant 2024-26 (Pre-Proposal)." Enter a title and click "Create New." If you are returning to edit your preproposal, simply click on the title you gave your submission. Click on "NEXT" in the top right to proceed to the next section.

STEP 6
Complete the SG Pre-Proposal Description form in eDrop using the Preproposal Description template you saved in Step 2 by copying and pasting sections from your document into the corresponding form fields.

You do not need to upload your entire preproposal package in a single session; however, you must click the "SAVE" button to avoid losing anything you enter AND as you navigate between pages in eDrop. Do not click the "NEXT" button until you have successfully saved your information. We encourage you to frequently SAVE your updates. If you exceed

word limits, then SAVEs will not be successful, and you can lose data. A successful SAVE is indicated by the prompt depicted here.

Your account will remain active through the submission deadline, and you may edit each section until the submission deadline.
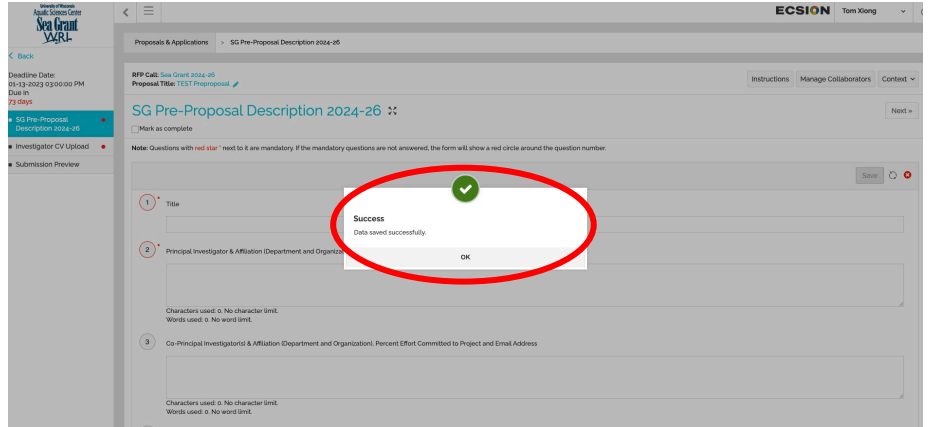
You will copy and paste information from your word processing file into form fields (text boxes) labeled:

Title
[Use uppercase only for the first word in the title and for proper nouns.]

Principal Investigator - Name, Affiliation (Department and Organization), Percent Effort Committed to Project, and Email Address

Co-Principal Investigator(s) - Name(s), Affiliation(s) (Department and Organization), Percent Effort Committed to Project, and Email Address(es)

Associate Investigator(s) - Name(s), Affiliation(s) (Department and Organization), and Email Address(es)

Begin Date
[Projects will normally begin on February 1, 2024.]

End Date
[Maximum project duration is two years.]

Name of Campus Administering Project

Focus Area
[These areas are presented as a drop-down list in eDrop. Select one Wisconsin Targeted or Base Focus Area or Non-research Education Project from the dropdown menu.]

Specific Program Priority
[Check the box(es) associated with the priority action(s) that the proposal best addresses.]

Statement of Problem or Opportunity to be Addressed
[350-word limit.]

Overall Project Goal, Objectives and/or Hypotheses to be Tested
[350-word limit.

Approach
[350-word limit.]

Potential Impacts
[350-word limit. What are the likely outcomes or impacts (environmental, educational, social, economic, etc.) that could result from the proposed project? Identify potential users of project results (e.g., specific businesses, industries, coastal communities, underrepresented communities, state and federal government agencies, etc.) and how they have been involved in defining the question and proposed approach. Are partners, communities or populations served by the project engaged in the process and potential outcomes associated with the proposed work?]

Approximate Year 1 Budget Request
[Projects will normally begin on February 1, 2024. Though funding is on a year-by-year basis, project preproposals should be written to cover the entire period of time necessary to fulfill the proposed objectives. Projects may have durations of one year to a maximum of two years.]

Approximate Year 2 Budget Request

Budget Justification
[Submitted budgets are to include lump sums as well as an estimated breakdown of costs across these categories for each year: a) salaries; b) fringe benefits; c) equipment; d) supplies; e) field travel; f) publications; g) other costs to include printing, mailing and workshops, contracts/subawards and shiptime; and h) indirect costs. Contracts and subawards must be managed at the institution of the primary principal investigator. Sea Grant does not cover costs associated with conference travel.
Research proposal budgets for funding by UW Sea Grant are limited to $130,000/year.
Education (non-research) proposals are limited to $40,000/year.]

When you are satisfied with the information you have entered in the eDrop Preproposal Description form, click the "SAVE" button and click "Mark as complete" at the top of the page.

STEP 7
Using the menu on the left, navigate to the investigator CV upload page. Upload the PDF version(s) of your CV template(s). Be sure to click the "SAVE" button after you upload the PDF files and click "Mark as complete."

STEP 8 (OPTIONAL)
Please provide the demographic information for all named collaborators on your proposal by navigating to this form provided by the National Sea Grant Office to enter the information. This information is anonymous and not tied to a name or a proposal, and providing this information is optional. (This step can be completed outside of the eDrop system. Please share the link with all named collaborators on your proposal.)

STEP 9
When ready to submit, select the "Submission Preview" tab on the left-hand menu; then choose the "**SUBMIT**" button on the right side of the screen. Until you have clicked on the "SUBMIT" button you can log back in to eDrop and make changes to your preproposal. Note: Your preproposal is not officially submitted until you click on the "SUBMIT" button in the "Submission Preview" tab.

Program Description

INTRODUCTION

Traditional and local knowledge, including Indigenous knowledge, are ways of knowing that are passed down through generations and emphasize interconnectedness between humans and their environment. Western resource management, brought by colonizers, can diverge from that approach. Throughout the generations, both ways of knowing the world have had an impact on the five Great Lakes that straddle the border between the United States and Canada.

Human habitation in the Great Lakes region began as glaciers retreated 10,000 years ago and left behind the world's largest freshwater system. In Wisconsin, the first known inhabitants were the Paleo-Indians. Throughout time, other Indigenous people made their homes in the state. Still others arrived through migration—the Ojibwe, who came from the eastern Great Lakes and were directed by a prophecy to seek out the place where food grows on water—manoomin (wild rice) on Lake Superior. This type of grass is still revered within Indigenous communities. Contemporary tribal nations now number 11, a reflection of such migration, as well as the forcible removal of others.

As Europeans colonized—establishing the French fur trade on Lake Superior—a new blended culture emerged. The first European to visit Lake Michigan, historians say, was Jean Nicolet who came ashore near what is now Green Bay, Wisconsin. Poles, Germans, Swiss, Finish and Norwegians were later arrivals from Northern Europe who also shaped the area before Wisconsin became a state. As we rocket forward in time, the 2020 Census shows Wisconsin as 80.4% White; 6.4% Black or African American; 3.0% Asian; 1,0% American Indian and Alaska Natives; 6.1% two or more races, with Hispanic or Latino ethnicity at 7.6%.

Just like their forebears in Wisconsin, these current groups have their own ways of thinking and interacting with the creatures that swim, crawl, fly and walk in and near the inland seas. Residents and visitors also draw from and rely on the waters for subsistence, ceremony, recreation and commerce with the Great Lakes now supporting an $82 billion regional economy.

As time has moved forward, Wisconsin Sea Grant through its science and service to coastal communities strives to offer relevant, respectful and effective research and initiatives to this tapestry of people and their unique experiences, abilities, orientations and identities. Relative to this, program staff members are deeply mindful to focus on the traditionally marginalized and underserved. The program also carries out its work against a backdrop complicated by the increasingly insistent effects of climate change.

It's imperative, even urgent, that this strategic plan lay out goals, actions and desired outcomes for the vital ecosystem embracing traditional and local knowledge, including Indigenous knowledge as well as Western resource management. The ecosystem remains as much a treasure now as it was

10,000 years ago when mile-thick ice sheets melted away and left behind this nearly incomprehensible sweep of salt-free seas.

ABOUT SEA GRANT

For nearly 60 years, the National Sea Grant College Program has funded cutting-edge research at the nation's leading academic institutions, forming a network of 34 programs to serve American and American territorial communities along the coasts of the Atlantic and Pacific oceans and the Great Lakes. More than 3,000 university scientists, outreach specialists, educators and students participate in the program each year. It is a program of the National Oceanic and Atmospheric Administration, U.S. Department of Commerce, and also provides information, tools and services to ensure coastal communities are sustainable.

Established in 1968, the University of Wisconsin Sea Grant College Program is one of the oldest and most vibrant programs in both the national and Great Lakes Sea Grant networks and is well equipped to meet the research, outreach and education demands posed by a state, region, Tribal Nations and country reexamining and realigning priorities to address topics through a diversity, equity and inclusion lens, while meeting the challenges born of a changing climate.

That research has formed a legacy, one in which Wisconsin Sea Grant is a national leader on the topics of toxic contaminants, aquatic invasive species, data visualization for effective resiliency planning, coastal engineering, water quality, urban aquaculture and fisheries management. As an objective, non-advocate source of science-based information and thanks to outreach and communications professionals, the program reaches across Wisconsin and the Great Lakes basin, building bridges and fostering partnerships with businesses and industries, local communities, tribal nations and management agencies.

THE FOUNDATION OF WISCONSIN SEA GRANT

Statements of mission, vision, core values and cross-cutting principles shape the strategic direction of Wisconsin Sea Grant. Together, they provide a foundation for actions, communications, organization and culture.

Wisconsin Sea Grant's **mission** is to support and enhance the sustainable use, conservation and health of Great Lakes resources and the well-being of Great Lakes communities through research, education and outreach.

Wisconsin Sea Grant strives to achieve the **vision** of a future with diverse, thriving coastal communities and ecosystems that are supported by an engaged, environmentally literate public and informed decision-makers.

The following **core values** of Wisconsin Sea Grant complement its mission and vision.
- Actionable Science. The combination of targeted research valued by interested parties coupled with effective outreach and communication built on solid relationships with the right

network and resulting conversations yields scientific information that is relevant and in a form that is understandable and actionable to guide decision-making.

- <u>Academically Grounded.</u> Wisconsin Sea Grant draws on the research, education, outreach and communications capacities of universities and delivers the science needed to address real-world coastal and aquatic issues.
- <u>Diversity, Equity, Inclusion, Justice and Accessibility.</u> Proactively engaging with the range of identities, cultures, communities and capacities present throughout our areas of work, with respect and sensitivity to each person's experiences, history and systemic challenges.
- <u>Non-advocacy.</u> Maintaining a commitment to objective research, programming and communication that avoids bias and advocacy in the development and delivery of information, tools and services.
- <u>Vision.</u> Advancing creative, innovative solutions that address emerging and chronic challenges through engagement, science and stewardship that look to the future.
- <u>Collaboration.</u> Seeking and sustaining partners with whom we leverage each other's strengths, and responsively, respectfully integrating diverse expertise and perspectives to reach shared goals.
- <u>Sustainability.</u> Advancing environmental stewardship and restoration practices and communicating the value of the services that the coastal, watershed and Great Lakes ecosystems provide to the nation.
- <u>Accountability.</u> Operating with integrity and transparency while maintaining quality and relevance in all functional areas, including program management.

Wisconsin Sea Grant embraces the following **cross-cutting principles** of the Sea Grant network.

- Cultivation of partnerships by integrating the expertise and capabilities of partners from international, federal, tribal, state and local communities as well as from academia, nongovernmental organizations and industry.
- Enhancement of diversity, equity, inclusion, justice and accessibility by seeking and integrating diverse perspectives to advance cultural understanding and enable the network to pursue its vision and mission with, and for, all audiences. We will actively create mechanisms to allow all people to participate in network activities. Bringing a range of perspectives, values and tools together to find solutions that are more innovative, creative, inclusive and responsive will help us be successful in tackling problems facing coastal and Great Lakes communities.
- Provision of trusted, science-based information of value to all audiences interested in coastal and Great Lakes issues using an inclusive, collaborative, and problem-oriented engagement process.
- Serve as an academic, neutral party and assist interested parties in making informed decisions about important, and sometimes controversial, issues in a factual and timely manner without advocating for specific positions or policies.

STRATEGIC IMPLEMENTATION

Wisconsin Sea Grant's 2024-27 Strategic Plan is structured in accordance with the National Sea Grant College Program's Strategic Plan for the same time period, which capitalizes on Sea Grant's unique capacities and strengths, and allows for flexibility and creativity on the part of state Sea Grant programs.

In order to achieve positive, measurable outcomes, the program connects researchers with the Wisconsin Sea Grant outreach and communications staff to make available and deliver research-

derived information and findings to resource managers, policy- and decision-makers and public stewards—a clear demonstration of actionable science. With regard to the principle of enhancing diversity and inclusion, the program has accelerated its implementation through targeted outreach, revised recruiting and educational opportunities.

Built on this foundation, the Wisconsin Sea Grant strategic planning approach was a bottom-up process in which program priorities underwent review. The plan was informed by a web-based survey, along with facilitated discussions with involved parties, and it benefitted from the advice of the Wisconsin Sea Grant Advisory Council. Evaluation and accountability are central to any program's credibility and success. To that end, Appendix A includes 2024-27 performance measures and metrics that Wisconsin Sea Grant intends to support.

Research and Education Priorities

On the following pages, we describe the Wisconsin targeted and base research focus areas and education priorities.

Wisconsin Sea Grant strongly encourages proposals that:
- Support students in becoming strong scientists and provide opportunities to practice community engagement and actionable science.
- Engage communities and partners throughout all phases of a research study, including the preproposal stage when defining the question to be addressed.
- Connect with our Sea Grant outreach and communications staff to increase relevance and exposure of the work to relevant audiences.
- Strive to promote the ideals of justice, equity, diversity, inclusion, and accessibility.

Wisconsin Sea Grant solicits <u>research</u> proposals for up to $130k/year in the following areas:

Wisconsin Targeted Focus Areas, including:
- Justice, Equity, Diversity, Inclusion, and Accessibility for Underserved or Underrepresented Communities
- Emerging Contaminants and Marine Debris
- Great Lakes Coastal Resources and Communities in a Changing Climate

Wisconsin Base Focus Areas, including:
- Healthy Coastal Ecosystems
- Sustainable Fisheries and Aquaculture
- Resilient Communities and Economies

In addition, Wisconsin Sea Grant solicits <u>education</u> proposals for up to $40k/year to address the following priority:

Environmental Literacy and Workforce Development (Non-research Education Projects)

Wisconsin Targeted Focus Areas

Wisconsin Sea Grant solicits proposals that address the following targeted focus areas for up to $130k/year.

Focus area: Justice, Equity, Diversity, Inclusion, and Accessibility for Underserved or Underrepresented Communities

In order for Wisconsin Sea Grant to meet its vision of having thriving coastal ecosystems and communities, it is imperative to engage and address the specific needs of underserved and underrepresented groups. According to Sea Grant, "Underserved communities are those that have experienced low levels of access to our programming, while underrepresented communities refer to persons for whom representation in our programs is smaller than that of the general population." Furthermore, it is important to recognize the barriers that prevent marginalized communities from safely and equitably accessing, enjoying and benefiting from Great Lakes coastal communities, resources and projects. **In accordance with its key principle of "enhancing diversity and inclusion," Wisconsin Sea Grant seeks proposals that aim to advance issues around environmental justice for the state's underserved and underrepresented communities.**

According to the U.S. Environmental Protection Agency, "[e]nvironmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies" and "…will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn and work."[1]

Ensuring that new research projects not only acknowledge but also directly address and mitigate the ways in which environmental issues may disproportionately affect communities of color (e.g., African American/Black, Hispanic/Latinx, Native American/First Nations) and/or economically disadvantaged communities is essential. Furthermore, individuals from these communities must be meaningfully engaged in the projects that are intended to serve them.

Potential project topics include, but are not limited to public access to coastal resources, water safety, water quality, emergency preparedness, food security in the context of fisheries and aquaculture, workforce development, disparate impacts from climate change such as flooding, use of traditional and local knowledge to advance ways of knowing and understanding coastal systems and for addressing environmental justice, etc. Preference will be given to proposals that can also help inform Wisconsin Sea Grant's outreach and education activities around issues of justice, diversity, equity, inclusion, and accessibility.

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[1] https://www.epa.gov/environmentaljustice

Focus area: Emerging Contaminants and Marine Debris

PFAS and Microplastics

The scientific and regulatory communities are continually recognizing and adapting to environmental and health impacts of technologies, products and processes. As new technologies and products are developed for commercial and consumer use, analysis for understanding and managing human health and environmental impacts must also evolve.

A wide range of products utilize per- and polyfluoroalkyl substances (PFAS), which have only recently been identified as substances with potential adverse human effects. Products containing PFAS include water-repellent or temperature-resistant textiles and cookware, fire-fighting foams and paper products. PFAS, a complex family of over 3,000 synthesized fluorinated organic chemicals, have been produced for half a century; while only in the last few years has the scientific community begun to discover their effects. Manufacturers have developed many alternatives to commonly used PFAS, but it is yet unknown whether these alternatives are more or less hazardous than the "long-chain predecessors." The U.S. EPA, which was first alerted to PFAS in drinking water in 2001, and its collaborators have been identifying PFAS contamination sites in addition to establishing safe levels of PFAS in drinking water. However, more research is needed identifying sites and establishing safe levels. Both PFAS and their alternatives have already been found in several Wisconsin waterways, yet little is known about other potential areas such as private wells, smaller water districts and other sources of drinking water. In particular, Wisconsin Sea Grant is interested in Great Lakes-connected proposals that improve knowledge related to sampling, detection, analysis and cycling in the environment.

Microplastics are also flagged as prolific environmental pollutants. Products containing microplastics include personal care products, paints, detergents and textiles, and routine washing of synthetic fabrics introduces microfibers to local waterways. Larger types of debris like plastic bags, containers and plastic-containing trash break down into microplastics. Plastics can be found in waterways ranging from nano to micro to macro sizes. Research and collaboration are needed to explore exposure and risks for biota and people, fate and transport in the environment, and to characterize effects of microplastics in organisms and systems to understand the environmental and socioeconomic impacts. In addition, there is a need for standardizing national/multi-national microplastics sampling protocols to allow for comparisons temporally and spatially and to identify areas of concern.

Wisconsin Sea Grant seeks PFAS and microplastics proposals that develop or improve methodologies, standards of procedures, models or management plans; inventory sources; evaluate transport, fate and distribution of emerging contaminants in the Great Lakes ecosystems; conduct intensive analyses in Areas of Concern or for Species of Concern; examine the interactions with fish populations and impacts on food webs; explore human health impacts; and support and improve testing capacity within the state.

Marine Debris

The National Oceanic and Atmospheric Administration Marine Debris Program (NOAA MDP) defines marine debris as any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes. While perhaps more commonly thought of as an oceanic problem, the Great Lakes Region, with its complex system of habitats, wetlands, rivers, and tributaries, is an

area that is also affected by debris. Debris in the Great Lakes ranges from microplastics to abandoned and derelict vessels, and is generally classified into two source categories: lake-based and land-based. Lake-based debris includes items that are dumped, swept, or blown from vessels or stationary platforms at sea, as well as abandoned, lost, or derelict fishing gear. Land-based debris includes debris from intentional or unintentional littering and dumping in rivers and streams, as well as from stormwater discharges and waste management practices. The [NOAA Great Lakes Marine Debris Action Plan](#) establishes a comprehensive framework for strategic action to ensure the Great Lakes and its coasts, people, and wildlife are free from the impacts of marine debris. This Action Plan encompasses work that will be undertaken in the next five years (2020 - 2025), and specific goals include:

- The research and monitoring of marine debris addresses knowledge gaps and informs action.
- A science-based, strategic approach guides marine debris policy and management decisions in the Great Lakes.
- Marine debris is prevented and reduced through an educated and involved community.
- The marine debris that reaches the Great Lakes environment is removed to minimize adverse impacts

Wisconsin Sea Grant seeks research proposals that advance any of the goals above to prevent and remove marine debris and that build connections with partners and communities.

Focus area: Great Lakes Coastal Resources and Communities in a Changing Climate

The 2021 Assessment Report of the Wisconsin Initiative on Climate Change Impacts (WICCI) identified several key findings with relevance to Great Lakes coastal resources and communities. These include:

- Warming waters in the Great Lakes are impacting lake ecology, fisheries, and water-quality based recreation. Both increasing precipitation and drought are leading to extreme lake level fluctuations in Lake Superior and Lake Michigan that impact both habitats and structures built along the lakeshore.
- Great Lakes coastal infrastructure, recreation, and homes are at risk from extreme and rapid fluctuations in lake levels and decreased stability of coastal bluffs. Warming temperatures are anticipated to decrease the ice cover extent and duration on the Great Lakes, exposing coastal areas to greater wave energy and increased erosion and flooding along the shoreline. Increasing total and frequency of extreme rain events will also reduce the stability of coastal bluffs.
- Extreme storms and flooding are the most prominent climate impacts being felt by communities across Wisconsin. These impacts extend to environmental resources and activities that are important to Native Americans and other subsistence fishers.

These findings cut across all Sea Grant focus areas. **Wisconsin Sea Grant seeks proposals that build on the findings in the 2021 WICCI Assessment Report to advance climate solutions relevant to Great Lakes coastal resources and communities. We welcome projects that: 1) fill research gaps and have a strong community engagement component or 2) apply climate research findings and utilize multidisciplinary approaches to advance climate strategies for coastal resource managers or a coastal community.**

Potential applied research topics include, but are not limited to:

- Increasing the resilience of Great Lakes fisheries to climate impacts by protecting productive populations and preserving stronghold populations of important Great Lakes species.
- Understanding the impacts of a shorter winter season with decreasing ice cover on fish spawning and migration.
- Understanding the changing nature of winter recreational uses, including impacts for ice safety.
- Development and application of robust vulnerability assessment and adaptation pathway methods in coastal communities that could serve as a catalyst for climate solutions.
- Coastal infrastructure design that accounts for future climate conditions.
- Protecting vulnerable populations and their livelihoods in response to extreme weather events affecting coastal communities.
- Understanding how toxicants/chemicals will interact with the Great Lakes ecosystems in a changing climate.
- Understanding the risk of contamination from brownfield industrial sites along the coast resulting from extreme weather events.
- Prevention of aquatic invasive species that would be well suited to conditions in the Great Lakes under future climate conditions.
- Climate-related impacts to drinking water intakes and the provision of safe drinking water.

Wisconsin Base Focus Areas

Wisconsin Sea Grant's focus areas enable the program to harness and apply its energy and resources to imminent and emerging Great Lakes needs. By addressing the following focus areas, Wisconsin Sea Grant researches and attends to the lakes' ecosystems, strives for sustainable fisheries and aquaculture operations, aims to prepare communities to address risks and build resilience, fosters a diverse and engaged workforce and sparks environmental literacy.

These focus areas of the Sea Grant network are enriched by and responsive to the needs of interested parties, which ensures the local-level input identifies and develops methods to address what is most relevant to Wisconsin and the Great Lakes.

Focus areas provide an order to the wide expanse of Wisconsin Sea Grant's topical interests and initiatives. Further, they are interrelated, and a single activity may reflect and advance the goals, actions and desired outcomes of more than one of these priorities.
The areas are: Healthy Coastal Ecosystems, Sustainable Fisheries and Aquaculture, Resilient Communities and Economies, and Environmental Literacy and Workforce Development.

Wisconsin Sea Grant solicits <u>research</u> proposals that address the following base focus areas and their associated goals and numbered priority actions for up to $130k/year.

Focus Area: Healthy Coastal Ecosystems

GOAL: Coastal and Great Lakes habitats, ecosystems and the services they provide are protected, enhanced and/or restored.

Ecosystem Protection and Restoration
1. Support research, outreach and communications to understand the environmental and socioeconomic effects of challenges facing Great Lakes ecosystem including physical processes, climate change and changes to biodiversity and ecosystem structure.
2. Help residents, resource managers, businesses, industries and the agricultural sector understand the effects of human activities and environmental changes on coastal resources.
3. Develop new or improved approaches for reducing or preventing harmful algal blooms.
4. Support research, outreach and communications to understand the important role that tributaries, coastal wetlands and nearshore habitat play for fisheries and other aquatic life.
5. Co-develop, improve and share knowledge, decision-support tools, technologies and approaches to protect, enhance and restore ecosystems.

Aquatic Invasive Species
6. Conduct research, outreach and communications that lead to a better understanding and prioritization of invasion pathways into the Great Lakes.
7. Develop innovative and effective communication approaches to reach interested parties with aquatic invasive species prevention messages.
8. Develop tools and approaches that better understand and improve aquatic invasive species prevention actions.
9. Conduct research, outreach and communications about the ecological impacts of invasive species on food webs and important species.

<u>Emerging Contaminants</u>
10. Support research, outreach and communications to understand the environmental and socioeconomic effects of current and emerging contaminants on Great Lakes ecosystem and human health including, but not limited to Per- and polyfluoroalkyl substances (PFAS), microplastics, pesticides and herbicides.

<u>Marine Debris</u>
11. Support research, outreach and communications that addresses knowledge gaps and informs action related to the prevention and removal of marine debris impacting the Great Lakes.

GOAL: Land, water, air and living resources are managed by applying science, tools and services to sustain resilient coastal and Great Lakes ecosystems.

<u>Ecosystem Management</u>
12. Support a science- and management-driven framework that integrates research, observations, monitoring and modeling and that includes community engagement and traditional and local knowledge to provide a scientific basis for informed decision-making.
13. Identify and advance successful strategies that enhance resilient ecosystems and watersheds in the context of changing conditions, including environmental variability and climate change.
14. Utilize integrated assessment methods that bridge natural sciences, social sciences, economics and policy studies to support more holistic management and restoration of Great Lakes resources, including freshwater estuaries and urban harbors.
15. Utilize ecosystem-based science and management to address the interconnections between land use and nutrient input from watersheds and impacts on receiving waters, with an emphasis on restoration of the Green Bay ecosystem.

Focus Area: Sustainable Fisheries and Aquaculture

Note - Researchers involved in funded projects with an aquaculture focus will be invited to join the Great Lakes Aquaculture Collaborative (GLAC), a working group coordinated by Minnesota Sea Grant and including the following Great Lakes Sea Grant programs: Illinois-Indiana, Michigan, New York, Ohio, Vermont, and Wisconsin. GLAC will organize member-driven activities that may include quarterly meetings, workshops, conference special sessions, mini-conferences, special issue journal proposals and coordinated communications to amplify research impacts. GLAC members will also assist researchers where appropriate by networking with producers, relaying research results on the GLAC website and providing communication opportunities among the Great Lakes Sea Grant programs.

GOAL: Wisconsin fisheries and aquaculture supply food, jobs and economic and cultural benefits.

<u>Harvest and Processing Techniques</u>
16. Promote and support harvesting, culturing and processing techniques that lead to safe, sustainable, high-quality food as well as economic, social and ecosystem benefits.
17. Collaborate in identifying Great Lakes regional aquaculture opportunities and best-management practices along with sustainable production systems such as recirculating aquaculture systems (RAS).

18. Support research, outreach and communications to develop and improve economically viable and environmentally sustainable aquaponic operations.
19. Support research to develop and improve commercially viable and environmentally sustainable aquaculture practices and techniques, including nutritional value of feeds, broodstock selection, water supply and quality, husbandry, and disease and pathogen prevention and diagnosis.
20. Support value-added product development and processing to maximize value from wild-caught and farm-raised seafood.

Fisheries and Aquaculture Workforce
21. Support development of a trained and diverse workforce and enhance technology transfer in a manner that recognizes a variety of methodologies and approaches, including those based on traditional and local knowledge.
22. Identify and better understand the barriers to expansion of the aquaculture industry in Wisconsin and implement innovative partnerships to address scientific, business, economic, policy and legal challenges.
23. Identify new sources of workforce for aquaculture and commercial fisheries, as well as develop training frameworks to build that pool.

Consumer Science/Perceptions
24. Support research that leads to a better understanding of the benefits and risks of consuming Wisconsin-produced and Great Lakes region fish, as well as how aquaculture can address food safety and security issues during times of national and global health and food supply chain concerns.
25. Support research, outreach and communications that encourages the application of behavioral and consumer sciences toward consumer perception and preferences, food safety, labeling and certifications, seafood demand studies and promotion of local seafood.

New Aquaculture Species/Markets
26. Investigate emerging species and new technologies suitable for aquaculture in Wisconsin.
27. Support development of urban aquaculture in new markets and provide knowledge resources to existing operations.

GOAL: Natural resources are sustainably managed to support coastal communities and working waterfronts, including commercial, recreational, subsistence fisheries and aquaculture.

Fisheries and Food Webs
28. Support research, outreach and communications to better understand our Great Lakes fisheries, including status and trends, measurement and modeling techniques, future scenarios, and socioeconomic costs and benefits under different management approaches and environmental conditions.
29. Support research, outreach and communications to advance an environmentally sustainable and robust recreational, commercial and subsistence Great Lakes fishery.
30. Better understand threats to Great Lakes fisheries, including, but not limited to, food web changes, invasive species, nutrient enrichment, contaminants, genetics and climate change as well as effective responses to build resilience and resist, facilitate and accept change.
31. Support research to improve understanding of the impacts of food web change, climate, and other stressors on early life history and interaction of valuable sport and commercial species and develop management actions to mitigate impacts.

Focus Area: Resilient Communities and Economies

GOAL: Great Lakes coastal communities have the capability and resources to prepare for and adapt to extreme and chronic weather and coastal hazards, climate change, economic disruptions and other threats to community health and well-being.

Coastal Processes
32. Support research, outreach and communications that will lead to a better understanding of how the sediment supply from coastal bluffs influences beach and nearshore sediment transport in order to guide sound shore protection and bluff stabilization choices and build more resilient coastal communities and economies.

Ports, Harbors and Marinas
33. Promote research, outreach and communications for sustainable and resilient ports, harbors and marinas.
34. Encourage adoption of best-management practices by marinas and boaters that keep Wisconsin's waterways clean and safe.

Nature-Based Shorelines
35. Support research, outreach and communications on nature-based shore protection along Great Lakes coasts, including suitability, performance, habitat benefits and design guidance for the various practices that are applicable to the Great Lakes.

Climate Change
36. Support research, outreach and communications to better understand the impacts that a changing climate will have on the Great Lakes.
37. Support research that evaluates the impacts of increased climate variability and change on coastal communities and work with management and regulatory agencies, tribal nations and vulnerable and at-risk communities to reduce vulnerability to fluctuating water levels and storms.

Coastal Planning
38. Work with coastal communities to advance collaborative planning, including incorporation of natural hazards resilience and climate adaptation principles into community plans.

Maritime History and Culture
39. Support research, outreach and communications that documents and preserves cultural and historical resources in coastal and marine areas.

Coastal Economy
40. Work with communities to explore and support diversification, strengthening, sustainability and social equity within coastal economic sectors and the blue economy.
41. Support research to document the socioeconomic contributions of water-dependent industries.

Sustainable Tourism and Recreation
42. Support research, outreach and communications to understand the value of and opportunities for subsistence, tourism and commercial and recreation-related activities in coastal communities.

43. Build collaborative and diverse networks to promote sustainable tourism and outdoor recreation.

GOAL: Water resources are enhanced, sustained and protected to meet existing and emerging needs of the communities and economies that depend on them.

Water Quality, Quantity and Availability
44. Support research, outreach and communications to assess and share the impacts of human activities on Great Lakes water quality and supply, as well as coastal and nearshore habitats.
45. Support environmental and socioeconomic research to protect the supply and quality of fresh water.

Water Resource Management
46. Collaborate with diverse partners and interested parties, especially the most vulnerable, to advance plans and management practices for protecting and managing water resources.
47. Support research, outreach and communications to promote the development and implementation of green stormwater infrastructure practices.

Environmental Literacy and Workforce Development

Wisconsin Sea Grant solicits non-research <u>education</u> proposals for up to $40,000 per year to address one or more of the following education goals and numbered priority actions:

GOAL: A diverse, environmentally literate public participates in lifelong formal and nonformal learning opportunities aligned to the Great Lakes literacy principles.

<u>Environmental Literacy</u>
48. Provide financial support for Great Lakes education projects that incorporate innovative practices or technologies and multicultural perspectives developed through engagement with leaders of diverse community partners.
49. Develop Pre-K-12 resources that address the Great Lakes literacy principles and support state, tribal and national educational standards.
50. Support professional learning opportunities that engage and train educators about Great Lakes literacy principles.
51. Promote place-based learning as a way to engage communities in local stewardship and commitment to preserving and protecting the environment.
52. Promote the intersection of the arts, humanities, sciences and traditional and local knowledge to inspire an environmentally literate society.

GOAL: A diverse, skilled and environmentally literate workforce that is engaged and able to build prosperous lives and livelihoods in a changing world through traditional and innovative careers.

<u>Workforce Development</u>
53. Identify, promote and expose students, working professionals and the unemployed to Great Lakes related career pathways to build a diverse and skilled Wisconsin workforce.
54. Develop and carry out programs that help people discover, create and grow within careers that support the current and future needs of coastal communities and ecosystems and to adapt and thrive in changing conditions.
55. Support a graduate student and post-graduate fellows program to provide emerging professionals with opportunities to practice community engagement and actionable science and to connect them with the full range of Sea Grant activities and Great Lakes-related employment opportunities.
56. Increase opportunities for students at all levels (P-12, undergraduate, graduate, technical and vocational) to gain knowledge and experience addressing issues that are important to the Great Lakes and its watersheds.

Appendix A. National Performance Measures and Metrics from the National Sea Grant College Program 2024-2027 Strategic Plan (9/30/22 Final Draft) Supported by Wisconsin Sea Grant. Below is a list of the performance measures and metrics that Wisconsin Sea Grant intends to support and is responsible for tracking and reporting annually to the National Sea Grant Program. We will work with funded researchers and educators to help track accomplishments associated with competed projects.

Type	2024-2027 National Performance Measure and Metrics
Healthy Coastal Ecosystems (HCE)	Number of resource managers who use ecosystem-based approaches in the management of land, water, and living resources as a result of Sea Grant activities.
Healthy Coastal Ecosystems (HCE)	Number of acres of coastal habitat protected, enhanced, or restored as a result of Sea Grant activities.
Sustainable Fisheries and Aquaculture (SFA)	Number of fishers, seafood processors, aquaculture industry personnel or seafood consumers who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities.
Resilient Communities and Economies (RCE)	Number of communities that adopt/implement sustainable economic and environmental development practices and policies as a result of Sea Grant activities.
Resilient Communities and Economies (RCE)	Annual number of communities that adopt/implement hazard resilience practices to prepare for and respond to/minimize coastal hazardous events.
Environmental Literacy and Workforce Development (ELWD)	Number of Sea Grant products that are used to advance environmental literacy and workforce development.
Environmental Literacy and Workforce Development (ELWD)	Number of people (youth and adults) engaged in Sea Grant-supported informal education programs.
Environmental Literacy and Workforce Development (ELWD)	Number of Sea Grant supported graduates who become employed in a job related to their degree within two years of graduation.
Cross-Cutting Measure	Number of Sea Grant tools, technologies and information services that are used by our partners/customers to improve ecosystem-based management.
Cross-Cutting Measure	Economic and societal impacts and benefits derived from Sea Grant activities (market and non-market; jobs and businesses created or sustained; patents/licenses).
Cross-Cutting Metric	Sea Grant Staffing: Number of individuals and full-time equivalents (FTEs) devoted to Sea Grant.
Cross-Cutting Metric	Core Funding Proposals: Number and Origination of Core Funding Pre- and Full-Proposals.
Cross-Cutting Metric	Number of Volunteer Hours.
Cross-Cutting Metric	Number of Postsecondary Students and Degrees Financially Supported by Sea Grant in Higher Education Programs (Undergraduate, Graduate).

Cross-Cutting Metric	Number of P-12 Students who participated in Sea Grant-supported formal education programs.
Cross-Cutting Metric	Number of P-12 Students Reached Through Sea Grant-Trained Educators.
Cross-Cutting Metric	Number of educators who participated in Sea Grant-supported professional development programs.
Cross-Cutting Metric	Number of Sea Grant-Sponsored/Organized Events.
Cross-Cutting Metric	Number of Attendees at Sea Grant- Sponsored/ Organized Events.
Cross-Cutting Metric	Number of Public or Professional Presentations.
Cross-Cutting Metric	Number of Attendees at Public or Professional Presentation.
Cross-Cutting Metric	Number of Marinas Certified as "Clean Marina" by the Clean Marina Program as a result of Sea Grant Activities.
Cross-Cutting Metric	Number of individuals certified or recertified in Hazard Analysis Critical Control Point (HACCP) as a result of Sea Grant activities. **[Metric not supported by Wisconsin Sea Grant. Program does not conduct HAACP training.]**
Cross-Cutting Metric	Number of peer-reviewed publications produced by Sea Grant.
Cross-Cutting Metric	Visitor Attendance: Number of people that visit museums, aquariums, and other informal education institutions hosting NOAA-supported exhibits or programs (NEW; Pilot). **[Metric not supported by Wisconsin Sea Grant. Program does not oversee these types of institutions.]**
Cross-Cutting Metric	Environmental Actions: Number of people participating in environmental actions through NOAA education programs (NEW; Pilot).