UNIVERSITY OF WISCONSIN SEA GRANT INSTITUTE




Request for Proposals 2018-20

PREPROPOSALS DUE

Tuesday, January 24, 2017, 3 p.m. CST

SEE APPENDED GUIDELINES FOR PREPROPOSALS

An informational webinar on the focus of and process associated with submitting preproposals will be provided December 16, 2016, from 3-4 p.m. CST.

FULL PROPOSAL DUE

Friday, April 28, 2017, 3 p.m. CST

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, 2018.

seagrant.wisc.edu/rfp

Sea Grant
University of Wisconsin

2018–20 Request for Proposals

UNIVERSITY OF WISCONSIN SEA GRANT COLLEGE PROGRAM

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, 2018. The process involves two steps:

1) Prospective investigators submit a preproposal by 3 p.m. CST **Tuesday, January 24, 2017.** See appended Guidelines for Preproposals.

2) Prospective investigators submit a full proposal by 3 p.m. CST **Friday, April 28, 2017**.

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. For questions related to research proposals, please contact Jennifer Hauxwell (assistant director for research and student engagement, jennifer.hauxwell@aqua.wisc.edu, 608-263-4756). Prior to submitting an education proposal, please contact Kathleen Kline (education coordinator, kkline@aqua.wisc.edu, 608-262-0645). See more information at seagrant.wisc.edu/rfp.

Wisconsin Sea Grant solicits research proposals for up to $100-120k/year[1] in the following areas:

Wisconsin Targeted Focus Areas, including:

- Green Bay Interdisciplinary Research
- Bluff, Beach and Nearshore Sediment Dynamics
- Great Lakes and Water Literacy Assessment

Wisconsin Base Focus Areas, including:

- Healthy Coastal Ecosystems
- Sustainable Fisheries and Aquaculture
- Resilient Communities and Economies

[1] All research proposals are for up to $120k/year, except the Illinois-Indiana-Wisconsin joint call at $100k/year. For joint calls with Minnesota or Illinois-Indiana Sea Grant programs, these limits are for each state, resulting in a total of $240k/year for the joint call with Minnesota Sea Grant and $200k/year for the joint call with Illinois-Indiana Sea Grant.

Special Joint Calls for Proposal with other state Sea Grant programs, including:

- MN-WI Joint Call for Proposals
- IL/IN-WI Joint Call for Proposals

In addition, Wisconsin Sea Grant solicits education proposals for up to $25k/year to address our fourth priority base focus area for:

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

We welcome original, innovative proposals on any targeted or base focus area or special call. We are also especially interested in receiving proposals from new and/or under-represented faculty. You are encouraged to visit the UW Sea Grant website and/or download a copy of our 2016–18 Directory of Projects and People for an overview of the types of projects funded by our program.

Please note, we encourage proposals that:

- Support students and connect them with our Wisconsin Sea Grant fellows program to provide opportunities to practice stakeholder engagement and actionable science
- Engage stakeholders and end users 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 diversity and inclusion

An informational webinar on the focus of and process associated with submitting preproposals will be provided December 16, 2016, from 3-4 p.m. CST.

Investigators planning to submit full proposals will be invited to an early-evening workshop in Madison on Thursday, March 16, 2017, where our staff will discuss the full proposal process and offer advice on options for incorporating outreach and education activities within research proposals.

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

Guidelines for Preproposals

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. Investigators submitting to the special joint competitions should follow the guidelines listed on pages 17 and 18 of this document. Supporting information and resources are at seagrant.wisc.edu/rfp.

Wisconsin investigators must submit preproposals via the UW Aquatic Sciences Center (administrative home of the Sea Grant College Program) online proposal submission system, iPROPOSE (aqua.wisc.edu/ipropose) by Tuesday, January 24, 2017, 3 p.m. CST. Notification of preproposal status will be sent in early March 2017.

Detailed instructions for submitting a preproposal are outlined below.

STEP 1
Download the Microsoft Word Sea Grant Preproposal Format Template from the Sea Grant website (seagrant.wisc.edu/rfp) and use it to compose your preproposal. This template will assist with efficient transfer of your preproposal information into iPROPOSE and is designed to assist you in staying within the length limit for preproposals.

Each required section of the preproposal is entered separately in an online form field (text box) in iPROPOSE. Rather than limit the text length by word counts in the individual sections (text boxes), we allow for flexibility with the caveat that the length of the combined sections following the cover page does not exceed two single-spaced pages using an 11-point type size Times New Roman font.

Please use the Word Template to compose your preproposal and then copy and paste the information into the corresponding form fields in iPROPOSE. The pages following the cover sheet are formatted in an 11-point Times New Roman font and should be used as a template to construct your preproposal. ***Delete information within brackets [ ] in the template prior to copying and pasting individual sections into the online forms.*** This information is not included in the two-page limit. Please make sure the pages following the cover page do not exceed two pages when printed. Upon completing the template, you can then copy and paste the information into individual form fields in iPROPOSE. As long as the Microsoft Word template is completed without exceeding the page limit and the information is then copied and pasted into iPROPOSE form fields, you can be assured that the preproposal will comply with the length limit. Please also see the note in the template about how to successfully transfer special symbols into the form fields in iPROPOSE.

STEP 2
Using a Web browser, navigate to iPROPOSE (aqua.wisc.edu/ipropose) and register for a new account. Accounts from previous solicitations will not work. As long as you save your progress within various sections, iPROPOSE, you may log out of the system and log back in at any time to begin where you left off.

STEP 3
Complete the online Preproposal Description form by copying the information from the Microsoft Word format template and pasting it into the corresponding form fields in iPROPOSE. You will enter information into form fields labeled: Title; Begin Date; End Date; Administered By (this is a drop-down selection box); Statement of Problem; Overall Project Goal; Focus Area (this is a drop-down selection

box); Specific Program Priority; Approach; Applications; and Approximate Annual Budgets. Be sure and save the information on the Preproposal Description form when you are finished.

Preproposal Descriptions should contain the following information:

- **PREPROPOSAL TITLE, BEGIN DATE, END DATE, NAME OF CAMPUS ADMINISTERING PROJECT**
- **STATEMENT OF PROBLEM OR OPPORTUNITY TO BE ADDRESSED** [350-word limit.]
- **OVERALL PROJECT GOAL, OBJECTIVES, AND/OR HYPOTHESIS TO BE TESTED** [350-word limit.]
- **FOCUS AREA** [These areas are presented as a drop-down list in iPROPOSE. Select one Wisconsin Targeted or Base Focus Area or Special Joint Call from the dropdown menu.]
- **SPECIFIC PROGRAM PRIORITY** [Include the priority or priorities as listed under "Priority research (or education) areas include:" within the appropriate Wisconsin Targeted or Base Focus Area or Special Joint Call included in the RFP.]
- **APPROACH** [350-word limit.]
- **APPLICATIONS** [350-word limit. How will the proposed project address the problem/opportunity? Identify potential users of project results (e.g., specific businesses, industries, coastal communities, state and federal government agencies, etc.) and how they have been involved in defining the question and proposed approach.]
- **APPROXIMATE ANNUAL BUDGETS** [Projects will normally begin on February 1, 2018 or 2019. 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. Wisconsin Sea Grant projects may have durations of one year to a maximum of two years. Submitted budgets are to include lump sums as well as an estimated breakdown of costs across these categories: 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. For joint proposals with Minnesota Sea Grant or Illinois-Indiana Sea Grant, please clearly indicate the portion of the budget associated with Wisconsin investigators and the portion associated with investigators from other states.
  Research proposal budgets for funding by UW Sea Grant are limited to:
  - Targeted and base Wisconsin focus areas - $120,000/year
  - Joint Wisconsin and Minnesota - $120,000/year for WI portion and $120,000/year for MN portion
  - Joint Wisconsin and Illinois/Indiana - $100,000/year for WI portion and $100,000/year for IL-IN portion (with match requirement for IL-IN investigators – see page 18)

  Education (non-research) proposals are limited to $25,000/year.]

STEP 4

Complete the online Investigators form in iPROPOSE for each Principal and Associate Investigator, including fields for: Role (Principal or Associate Investigator), Effort, Name and Contact Information (address, phone and email address). Be sure to save the information on the Investigator form.

STEP 5

When you are satisfied with the information you have entered in the Preproposal Description form and the Investigator form click on the **Submit Proposal** button. Until you have clicked on the Submit Proposal button you can log back in to iPROPOSE and make changes to your preproposal. **Once you have submitted your preproposal you can no longer edit it**.

Program Description

INTRODUCTION

The physical properties of the Great Lakes parallel the enormity of responsibility Wisconsin Sea Grant undertakes with its efforts to foster the sustainable use of the lakes' resources through science and outreach. We highlight our research and education priorities in this 2018-20 request for proposals.

Just as the lakes are impressive — 6 quadrillion gallons of water, 95 percent of the nation's supply of surface fresh water, according to the Great Lakes Information Network — so too is the task of ensuring that top-level actionable science is employed to safeguard and enhance the world's largest freshwater system, which supports a $62 billion economy.

The lakes are a dominant part of the history and culture of this country and remain vital to the region's nearly 35 million binational and diverse people who call the 10,900-mile coastline home, as well as the epicenter of their recreational pursuits and benefactor of their livelihood, including subsistence living for 35 federally recognized tribes living in the Midwest region. In fact, the region supports more than 1.5 million jobs in the shipping, mining, manufacturing, fishing, tourism and agricultural sectors — all driven by the bounty of inland seas. All of this takes place within a tapestry of diverse cultural and economic backgrounds, orientations, genders and races — Wisconsin Sea Grant strives to prove responsive and relevant to that diversity.

To maintain and enrich the Great Lakes region, Wisconsin Sea Grant is committed to the concept of actionable science: science that 1) is conducted with the highest standards for quality and integrity, 2) is valued by and, in fact, dependent upon a strong relationship with stakeholders, 3) is coupled with effective outreach and communication, and 4) results in information or decision-support frameworks that can inform likely outcomes of various challenges or potential decisions.

ABOUT SEA GRANT

The National Sea Grant College Program has funded cutting-edge research at the nation's leading academic institutions, forming a network of 33 programs, for more than 50 years. More than 375 Sea Grant outreach and education specialists share that research with businesses, educators, policymakers, diverse communities and citizens to enhance the practical use and conservation of Great Lakes, ocean and coastal resources to create a sustainable economy and environment. More than 3,000 university scientists, outreach specialists, educators and students participate in the program each year. Administered by the National Sea Grant Office of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce, Sea Grant's university-based programs are fundamental to the development of tomorrow's aquatic resources scientists and managers. Sea Grant thus provides integrated research, outreach and education programs that provide tangible benefits for ocean, coastal and Great Lakes environments and the communities they support.

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. Wisconsin Sea Grant's multidisciplinary research agenda has made it 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, the program reaches across Wisconsin and the Great Lakes basin, building bridges and fostering partnerships with businesses and industries, local communities, tribal entities and management agencies.

SEA GRANT MISSION, VISION AND VALUES – FROM DISCOVERY TO APPLICATION

Wisconsin Sea Grant undertakes all endeavors in pursuit of its mission to ***promote the sustainable use of Great Lakes resources through research, education and outreach***. That is done to fulfill a vision of ***thriving coastal ecosystems and communities*** and drawing on the core values of ***service, science-based discovery to application, and research and outreach that are academically grounded, collaborative, inclusive of diversity, educational and visionary***.

These concepts of mission, vision and values complement those of the National Sea Grant College Program. That program supports a future in which people live along the coasts in harmony with and in understanding of the environment and natural resources that attracted and sustain them. This is a vision of a coastal America that uses these natural resources in ways that capture the environmental, economic, social and recreational benefits they offer while preserving their quality and abundance for future generations. This vision reinforces what is articulated in NOAA's Next Generation Strategic Plan: "NOAA's mission of science, service, and stewardship is directed to a vision of the future where societies and their ecosystems are healthy and resilient in the face of sudden or prolonged change."

Both the National and Wisconsin Sea Grant College Programs advance NOAA's mission "to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our nation's economic, social and environmental needs."

These organizations support the integration of research with constituent engagement. They have been pioneers in the translation of research — from discovery to application — and going forward will continue to ensure objective, science-based information is disseminated to diverse audiences in ways that encourage actionable science.

STRATEGIC IMPLEMENTATION

Wisconsin Sea Grant's draft 2018-21 Strategic Plan is structured in accordance with the National Sea Grant College Program's draft 2018-21 Strategic Plan, which capitalizes on Sea Grant's unique capacities and strengths and allows for flexibility and creativity on the part of state Sea Grant programs. Wisconsin Sea Grant embraces the challenges and opportunities inherent in identifying goals and outcomes and deploying strategies within four focus areas critical to a viable Wisconsin future — Healthy Coastal Ecosystems, Sustainable Fisheries and Aquaculture, Resilient Communities and Economies, and Environmental Literacy and Workforce Development.

In accordance with the National Sea Grant College Program, Wisconsin Sea Grant further commits to three principles in pursuit of coastal and freshwater conservation and use. These principles are:

- Cultivating partnerships
- Enhancing diversity and inclusion
- Expanding organizational excellence

In order to achieve positive, measurable outcomes, we connect 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.

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 richly informed by surveyed stakeholder input, along with numerous facilitated discussions with involved parties, and it benefitted from the advice of a statewide advisory council. The plan is also, importantly, primed for review and any possible realignment so as to guarantee a precisely calibrated response to evolving Wisconsin needs and priorities. The research and education priorities described in the following pages were identified through this strategic planning process.

Research and Education Priorities

On the following pages we describe the Wisconsin targeted and base research focus areas and education priorities as well as our special joint calls for research proposals with other state Sea Grant programs.

Wisconsin Sea Grant strongly encourages proposals that:

- Support students and connect them with our Wisconsin Sea Grant fellows program to provide opportunities to practice stakeholder engagement and actionable science
- Engage stakeholders and end users 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 diversity and inclusion

Wisconsin Sea Grant solicits research proposals for up to $100-120k/year[2] in the following areas:

Wisconsin Targeted Focus Areas, including:

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Wisconsin Base Focus Areas, including:

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

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Wisconsin Targeted Focus Areas

Wisconsin Sea Grant solicits proposals that address the following targeted focus areas for up to $120k/year:

Priority research areas include:

1) Green Bay Interdisciplinary Research

The legacy of striving for healthy coastal ecosystems and resilient communities and economies is a strong one for Wisconsin Sea Grant. A keystone effort was two decades of comprehensive, multidisciplinary research focused on Green Bay, Lake Michigan, making it one of the most rigorously studied estuarine systems of its size in the world. That baseline data has informed, for example, the U.S. Environmental Protection Agency's landmark national Green Bay PCB Mass Balance Study, which for the first time developed an input-output model of all sources, movement and fates of a chemical contaminant in an aquatic system. That work was completed more than 20 years ago, and Wisconsin Sea Grant continues in a leadership role for the promotion of a healthy and resilient Green Bay ecosystem and surrounding community, and at other Wisconsin Great Lakes sites.

While Green Bay has been studied extensively and much is known about its ecology, questions and challenges remain. The bay is recognized as the largest freshwater estuary in the world and, as such, is a natural resource of regional and international significance. The water of Green Bay is notably different from the remainder of Lake Michigan because it is nutrient rich and high in biological productivity. This productivity and habitat richness make the bay an important area for many fish species and migratory birds. The bay is also known for high levels of phosphorus and sediment, mainly delivered from the watershed of the Lower Fox River, which cause high turbidity, eutrophication and hypoxia. Since the 1970s, improvements in water quality and habitat have been made as a result of advances in water treatment, ongoing cleanup of toxic sediments and coastal habitat restoration projects. Larger issues remain related to non-point source pollution, harmful algal blooms and the fishery. Important research questions include but are not limited to the following:

- What are the social and economic impacts of current or improved water quality conditions in the Lower Fox River and Green Bay on the region and its communities?
- What innovative and cost-effective approaches are available to meet water quality and habitat goals for Green Bay and its entire watershed?
- What social science approaches and technologies exist to engage agricultural producers in meeting the Lower Fox River Total Maximum Daily Loads for phosphorus and total suspended solids?
- How do harmful algal blooms (HABs) in Green Bay impact public health and coastal economies? What are impacts of HABs on surrounding communities and people who fish and recreate on Green Bay? How can these impacts be mitigated?
- What is the status of the predator-prey balance, food web and aquatic habitat in Green Bay? Can tools and models be developed to better understand this complex food web while also engaging angling and commercial fishing stakeholders?

Wisconsin Sea Grant seeks proposals to bridge natural sciences, social sciences and policy studies to support more holistic management and restoration of Green Bay and its watershed.

2) Bluff, Beach and Nearshore Sediment Dynamics

Coastal property owners and coastal communities in Wisconsin face difficult challenges related to coastal bluff erosion and beach and nearshore sediment dynamics. Coastal bluffs are an important part of the nearshore environment along the Great Lakes. The erosion of these bluffs can often deliver significant amounts of sediment to the beach region. Beach and nearshore processes then transport sediments along the shoreline and nearshore area. There has been a long-term trend of increasing shore protection along bluffs in Wisconsin which can have an impact on sediment supplies to beaches. Research is needed to understand how this bluff/beach sediment supply influences longshore sediment transport and cycles of beach erosion and accretion. Shore protection structures, such as revetments, groins and nearshore breakwaters, etc., can also alter the delivery of sediment to the beach and nearshore. How do these structures affect bluffs, and what role might they play in altering regional sediment budgets? Some bluffs, due to certain characteristics, may be more significant sources of beach sediment than others. Knowing the location and characteristics of these "feeder bluffs" and coastal structures are crucial for the long-term management of our Great Lakes coasts. Information about bluffs, beaches, coastal structures and sediment transport can inform decision-making about development along the coast. Development of decision tools can help key stakeholders (e.g., landowners, natural resource managers, planners and local officials) better understand how to guide coastal development and protect existing infrastructure.

Wisconsin Sea Grant seeks proposals 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.

3) Great Lakes and Water Literacy Assessment

Wisconsin is wealthy in water resources, and environmental literacy is central to understanding the economic, environmental and social consequences of decisions about water. Wisconsin Sea Grant's focus group discussions about environmental literacy in Wisconsin revealed that one primary research need is assessment, specifically, determining the current status of Great Lakes and water literacy across the diversity of Wisconsin's students. Obtaining this baseline information would enable a wide variety of water-education professionals and entities in the state — including Wisconsin Sea Grant — to target their education activities toward critical gaps in Great Lakes and water literacy, as well as aid in measuring the effectiveness of education efforts. Proposals should seek to build on previous studies in Great Lakes and water-educational needs assessments, as well as current efforts to measure ocean literacy, while targeting specific needs of Wisconsin educators.

Wisconsin Sea Grant seeks proposals that will provide robust data about the current level of Great Lakes and water literacy in Wisconsin students to serve as a foundation for future education efforts in the state.

Wisconsin Base Focus Areas

Wisconsin Sea Grant solicits research proposals that address the following base focus areas and their associated research priorities for up to $120k/year.

1) Focus Area: Healthy Coastal Ecosystems

Wisconsin has more than 800 miles of shoreline adjoining the vast ecosystems of Lake Michigan and Lake Superior, including the coastal, nearshore, and deep-water environments. In Wisconsin, our healthy coastal ecosystems, sustained by their surrounding watersheds, are the foundation of life along the coast.

Ecosystem health and associated ecosystem services[3] can directly and indirectly affect both human health and socioeconomics at both individual and community scales. Maintaining the health of coastal ecosystems is a challenge because of the diversity of stressors involved as well as the temporal and spatial scales at which systems can be affected. Responsible management of these systems requires a comprehensive way of thinking and acting, often termed ecosystem-based management[4]. Ecosystem-based approaches require coordination among federal, state and local jurisdictions and the active engagement of the people who live, work and play along our coasts. They also require understanding of the characteristics of species, landscapes and their interactions within each ecosystem.

In general, increasingly rapid coastal development, a changing climate, greater demands on fisheries resources, and other human activities have led to water-quality degradation, increased demands on water supplies, changes to fisheries stocks, wetlands loss, proliferation of aquatic invasive species and a host of other environmental, health and socioeconomic impacts. It is essential for decision-makers and Great Lakes coastal residents to understand the interconnectedness and interactions of these systems in order to maintain vital habitats and inform restoration efforts within ecosystems and watersheds.

Likewise, Wisconsin Sea Grant recognizes the challenge of ensuring that ecosystems research is shared beyond the laboratory and makes its way to the settings where it can be used to inform decision-making. The program has committed to bridging the gap between the acquisition of new scientific knowledge, or the validation of a scientific concept or model, and the actions necessary to apply those facts. This practice of actionable science encourages the sharing and use of evidence-based tools and data to inform discussions, debate and decisions for the achievement of healthy coastal ecosystems.

Priority research areas include:

1. Understanding the environmental and socioeconomic effects of current and emerging challenges on Great Lakes ecosystem and human health including, but not limited to, contaminants, aquatic invasive species, harmful algal blooms, bacterial outbreaks,

[3] Ecosystem services include provisioning (food and water), regulating (flood and disease control), cultural (spiritual, recreational and cultural benefits) and supporting (nutrient cycling).

[4] Ecosystem-based management is an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need. Ecosystem-based management differs from past approaches that focused on a single species, sector, activity or concern; it considers the cumulative impacts of different sectors.

physical processes, climate change and changes to biodiversity and ecosystem structure
2. Improving Great Lakes ecosystem health through innovations in measurement, predictive modeling and potential treatment or management approaches for current and emerging challenges
3. Developing tools and approaches for preserving and restoring Great Lakes ecosystems that can also be used for outreach to stakeholders
4. Improving and enhancing stakeholder access to and understanding of socioeconomic and environmental data, models and policy information in Wisconsin and the Great Lakes region that support ecosystem-based planning, decision-making and management approaches
5. Supporting research to develop dynamic and interoperable information systems to support adaptive management of Great Lakes ecosystems
6. Helping residents, resource managers, businesses, industries and the agricultural sector understand the effects of human activities and environmental changes on coastal resources

2) Focus Area: Sustainable Fisheries and Aquaculture [5]

The nation has witnessed the decline of many of its major fisheries while seafood consumption has increased and continues to be encouraged because of its health benefits. To fill the gap between seafood demand and domestic harvests, the U.S. imports 90 percent of what is consumed, leading to a seafood trade deficit of more than $11.2 billion per year. With global wild fisheries harvests at a plateau of around 185 million tonnes, further increases in seafood production will have to come from aquaculture. Currently, more than 50 percent of seafood consumed globally is now produced from aquaculture. Since 2013, global seafood production has surpassed global beef production. There are no projected increases in wild-capture fisheries, but global aquaculture is predicted to increase by 33 percent over the next decade. These projections create opportunities for an expanded Great Lakes basin aquaculture industry and for innovative marketing strategies for the wild fisheries industry.

The overall economic impact of the commercial, recreational and for-hire fisheries and aquaculture industries in the Great Lakes region is $7 billion annually. In Wisconsin, 1.4 million fishing licenses are issued each year, and anglers and the fishing industry deliver $2.75 billion in economic impact and 30,000 jobs annually. There are 70 commercial fishers in Wisconsin who rely on fewer than 10 species and have a combined harvest of $5 million annually.

Wisconsin's aquaculture industry contributes $21 million in annual economic activity and more than 400 jobs to the state. There is definitely room for growth in food fish aquaculture — additional opportunities exist for job creation and meeting the demand for finfish. The Midwest consumes more than 1 billion pounds of seafood products per year but less than 4 percent comes from aquaculture operations in the region.

Wisconsin Sea Grant continues to play a leadership role in developing innovative technologies for all sectors of the seafood industry. In particular, the program has fostered the growth of urban aquaculture through research and outreach in the region's metropolitan areas. It has also

[5] We use a working definition of "seafood sustainability" that is based on the NOAA Fishwatch concept. Sustainability involves "meeting today's needs without compromising the ability of future generations to meet their needs. In terms of seafood, this means catching or farming seafood responsibly, with consideration for the long-term health of the environment and the livelihoods of the people who depend upon the environment."

capitalized on educating consumers interested in the buy-local movement. Wisconsin Sea Grant's partnership with NOAA, state and tribal fisheries managers, seafood processors, fishing associations, the aquaculture industry and consumer groups will ensure safe, secure and sustainable supplies of domestic seafood, decreasing a reliance on seafood imports now and into the future.

Priority research areas include:

7. Better understanding 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
8. Advancing an environmentally sustainable and robust recreational, commercial and subsistence Great Lakes fishery
9. Understanding threats to Great Lakes fisheries, including, but not limited to, nutrient enrichment, invasive species, food web changes and climate change as well as effective responses
10. Identifying and better understanding the barriers to expansion of the aquaculture industry in Wisconsin and implementing innovative partnerships to address scientific, business, economic, policy and legal challenges
11. Collaborating in identifying Great Lakes regional aquaculture opportunities and best-management practices
12. Better understanding the benefits and risks of consuming Wisconsin-produced fish
13. Encouraging the application of behavioral and consumer sciences, consumer perception and preferences, food safety, labeling and certifications, seafood demand studies and promotion of local seafood
14. Developing and improving economically viable and environmentally sustainable aquaponics operations, with an emphasis on business planning, risks and socioeconomics
15. Developing and improving commercially viable and environmentally sustainable aquaculture practices and techniques, including nutritional value of feeds, broodstock selection, water supply and quality, husbandry and disease, and pest and pathogen prevention and diagnosis
16. Developing environmentally and economically sustainable aquaculture through workforce development and trainings, K-12 education and technical assistance
17. Expanding urban aquaculture into new markets and providing knowledge resources to existing operations
18. Investigating emerging species suitable for food fish aquaculture in Wisconsin

3) Focus Area: Resilient Communities and Economies [6]

Coastal communities provide crucial economic, subsistence, social and recreational opportunities for millions of people within the Great Lakes basin. A 2011 study completed by the University of Michigan reported that more than 1.5 million jobs, generating $62 billion in wages are tied to the inland seas. The job breakdown is 994,879 in manufacturing; 217,635 in tourism; 118,550 in shipping; 118,430 in agriculture, fishing and food production; 38,085 in science and engineering; 10,980 in utilities; and 10,003 in mining. In Wisconsin, 173,969 jobs can be linked to the Great Lakes. To accommodate more people and activity while balancing demands on

[6] Resilience is determined by the degree to which a community is capable of organizing itself to increase its capacity for learning from past economic, natural or technological disasters.

coastal resources, Wisconsin must develop innovative policies, institutional capacities and management approaches to increase community resilience.

Wisconsin Sea Grant will continue to support cutting-edge research in the areas of marine-related energy sources, climate change, coastal processes, energy efficiency, hazards mitigation, stormwater management and tourism. In Wisconsin, Sea Grant will engage diverse and shifting coastal populations in applying the best-available scientific knowledge to address increased resource demands and vulnerability. Ultimately, Wisconsin Sea Grant will bring its unique research and engagement capabilities to support the development of resilient coastal communities – both human and natural -- that sustain diverse and vibrant economies, effectively respond to and mitigate natural and technological hazards and function within the limits of their ecosystems.

Priority research areas include:

19. Promoting development and implementation of green infrastructure practices
20. Supporting research and outreach for sustainable and resilient ports, harbors and marinas, including beneficial use of dredged materials
21. Developing innovative geodesign methods to promote resilient coastal communities and understanding the consequences of alternative development scenarios
22. Working with management and regulatory agencies, tribal entities and vulnerable and at-risk communities to reduce vulnerability to fluctuating water levels, storm impacts and a changing climate
23. Understanding the value of and opportunities for subsistence, tourism and commercial and recreation-related activities in coastal communities
24. Documenting and preserving cultural and historical resources in coastal and marine areas, including those within or adjacent to the proposed marine sanctuary
25. Developing or enhancing community planning and visualization tools that demonstrate the benefits, risks and impacts of land use on the coastal environment
26. Evaluating the impacts of increased climate variability and change on coastal communities
27. Assessing and sharing the impacts of human activities on Great Lakes water quality and supply, as well as coastal and nearshore habitats
28. Protecting the supply and quality of fresh water using environmental and socioeconomic research approaches
29. Documenting the socioeconomic contributions of water-dependent industries

Environmental Literacy and Workforce Development

Wisconsin is well equipped to meet the literacy-building and workforce development demands posed by a state, region and nation transitioning to a new era of sustainability and job creation. Wisconsin has a strong K-12 public education system, as well as a wealth of institutions of higher learning — 33 public and private four-year colleges and 29 two-year colleges. Wisconsin Sea Grant, along with our complementary Wisconsin Water Resources Institute, is further well positioned to leverage the K-12 and university resources in the state through partnerships and collaborations, and research support.

An environmentally literate person is someone who has a fundamental understanding of the systems of the natural world, the relationships and interactions between the living and non-living environment and the ability to understand and use scientific evidence to make informed decisions regarding environmental issues. Moreover, a Great Lakes literate person understands the essential principles and fundamental concepts about the characteristics, functioning and value of the Great Lakes; can communicate accurately about the Great Lakes' influence on systems and people in and beyond their watershed; and is able to make informed and responsible decisions regarding the Great Lakes and the resources of their watershed. Wisconsin Sea Grant advances these literacy principles in formal and informal learning environments throughout the state to produce a diverse and skilled workforce that is engaged and able to address critical Great Lakes needs.

Wisconsin Sea Grant solicits non-research education proposals for up to $25,000 per year to address one or more of the following education priorities. As a reference, NOAA's Designing Education Projects *(http://www.oesd.noaa.gov/leadership/DEP_Manual_2ndEdt_Final.pdf)* provides a useful framework based on needs assessment and project planning, implementation and evaluation.

Priority education areas include:

30. Promoting Great Lakes literacy principles within formal and informal learning environments
31. Developing Pre-K-12 resources that address the Great Lakes literacy principles and support state and national educational standards
32. Supporting education projects that incorporate innovative technologies or practices in Great Lakes education
33. Promoting the intersection of the arts, sciences and humanities to inspire a science-informed society
34. Promoting place-based learning as a way to engage citizens in local stewardship
35. Identifying and promoting Great Lakes-related career pathways in Wisconsin

Special Joint Request for Proposals
Minnesota and Wisconsin

The Minnesota and Wisconsin Sea Grant College programs announce a special joint solicitation for research proposals. By working together, we can support larger-scale projects to tackle regional challenges and develop collaborations across state lines that can enrich the expertise of our within-state research teams. We are particularly interested in innovative proposals that integrate environmental and socioeconomic approaches toward solving problems for Lake Superior coastal communities in the states of Minnesota and Wisconsin, including communities bordering the St. Louis River Estuary. By understanding ecological and social processes, policies, practices and institutions that impact resource use, we expect to be able to improve the stewardship of our water resources and foster coastal community resilience. Our research priorities complement those of the Lake Superior National Estuarine Research Reserve, our NOAA partner.

Priority research areas include:

1. Better understanding sediment transport and storm effects, including erosion and sediment plumes, pollutant dynamics and ecological effects
2. Assessing environmental, economic and social tradeoffs and optimization of various activities to maintain balance between working waterfronts and a healthy St. Louis River Estuary and Lake Superior, including, but not limited to:
    - Spatiotemporal windows for minimizing negative effects of dredging on aquatic systems, including fisheries
    - Individual and combined effects of saline marine ballast water exchange and land-based road salt applications on estuarine and lake salinity and ecology
    - Environmental and socioeconomic approaches to assessing and communicating the values of cleaning up and restoring contaminated/degraded waters and shorelines
3. Advancing socioeconomic approaches to understand effects of emerging challenges and industries in the Lake Superior basin on water use, quality and quantity
4. Environmental, economic and social implications of petroleum product transport near or on the Great Lakes, including risk and hazard assessment and scenario planning

For this special solicitation, only projects involving both Minnesota and Wisconsin researchers will be considered. The Sea Grant programs plan to fund one or two projects for up to two years beginning February 1, 2018, with each program providing up to $120,000 per year to the investigators in their respective states (this to include the cost of graduate students) for a total of up to $240,000 annually. Our expectation is that we will receive proposals that demonstrate significant involvement by research personnel from both Minnesota and Wisconsin.

Wisconsin Sea Grant will be administering this joint RFP. All deadlines and submissions must follow Wisconsin Sea Grant standards with joint state researchers submitting one joint preproposal using the submission guidelines here. Minnesota PIs should contact Minnesota Sea Grant for budget calculation assistance.

The deadline for preproposals is January 24, 3 p.m. CST.

For more information:
Wisconsin Sea Grant: contact Jennifer Hauxwell (jennifer.hauxwell@aqua.wisc.edu, 608-262-0905)
Minnesota Sea Grant: contact Valerie Brady (vbrady@umn.edu, 218-726-8714)

Special Joint Request for Proposals
Illinois-Indiana and Wisconsin

NOAA Fisheries estimates that U.S. per capita consumption of fish and shellfish is steadily increasing, reaching 15.5 pounds in 2015 (http://www.st.nmfs.noaa.gov/commercial-fisheries/fus/fus15/). Over 74% of this consumed seafood was fresh or frozen, pointing to the opportunity for locally-sourced products. At the same time, a growing movement in the Midwest seeks to connect food producers to local consumers (i.e., within 400 miles). These trends collectively create opportunities for locally-produced or -sourced fresh fish and seafood to be sustainably produced, marketed and sold in the Midwest.

The Illinois-Indiana and Wisconsin Sea Grant College Programs issue this joint call for proposals that examine trends in the supply, demand, and policy issues relevant to sourcing locally-produced fish and seafood by individual consumers, restaurants, institutions, and markets in the Midwest. This may include aquaculture or wild-caught fish and seafood.

Priority research areas include:

1. Assessment of local food systems and the feasibility of integrating locally-produced seafood, especially in urban centers (e.g., Milwaukee and Madison, Wisconsin, greater Chicago metropolitan area, Indianapolis, Indiana, and surrounding cities)
2. Analysis of social, economic and/or policy opportunities and challenges to the development of a locally sourced seafood market into local food systems
3. Identification of policies or management actions needed to catalyze seafood market development into local food systems
4. Identification and assessment of education, outreach, and/or social initiatives needed to encourage the demand for locally-produced seafood, primarily aimed at local consumers, targeting restaurants, institutions, and permanent and seasonal markets

By working together, we can support larger-scale projects to tackle these challenges at a regional scale and aim to develop collaborations across state lines that can enrich the expertise of our within-state research teams. Preproposals must demonstrate plans for collaboration between at least one Illinois- or Indiana-based researcher and at least one Wisconsin-based researcher. Investigators should prepare one preproposal document to submit to both Sea Grant programs. Wisconsin-based partners should submit a preproposal to Wisconsin Sea Grant (guidelines here). Illinois- and Indiana-based researchers should submit an identical preproposal to Illinois-Indiana Sea Grant by emailing an attached electronic copy of the preproposal to iisgres@purdue.edu and including the PI's last name in the title of the attached file and indicate "2018 IISG-WISG Preproposal" on the subject line.

Research is to be conducted in the 2018–20 biennium. Up to $100,000 per year for two years will be available for funding each of the Illinois-Indiana and Wisconsin portions of research projects (i.e., up to $200,000 per year total). The funds requested by Illinois and Indiana researchers must be matched by at least one non-federal dollar for every two federal dollars requested.

The deadline for submission to both programs is January 24, 3 p.m. CST (4 p.m. EST).

For more information:
Wisconsin Sea Grant: contact Jennifer Hauxwell (jennifer.hauxwell@aqua.wisc.edu, 608-262-0905)
Illinois-Indiana Sea Grant: contact Carolyn Foley (cfoley@purdue.edu, 765-494-3601)