Michigan Sea Grant Request for Research Proposals - Guidelines

Overview of Opportunity
Michigan Sea Grant is soliciting pre-proposals for Integrated Assessment research projects for up to two years at up to $75,000 per year. **Pre-proposals are due by 5:00 p.m. (Eastern) Monday, March 18, 2013.** Investigators invited to submit a full proposal will be notified no later than Monday, April 8 if they have been selected for submission of a full proposal, due by 5:00 p.m. (Eastern) Friday, May 3, 2013.

Michigan Sea Grant supports research teams that follow an Integrated Assessment approach. The purpose is to develop information, tools and partnerships that will help decision makers better address a particularly challenging environmental issue.

All questions related to this Request for Research Proposals, whether technical or content-related, should be submitted to the Michigan Sea Grant Research Program (MSG-RFPinfo@umich.edu). Answers will be updated and posted regularly at [http://www.miseagrant.umich.edu/research/funding-information/](http://www.miseagrant.umich.edu/research/funding-information/).

Eligibility Information
Qualified researchers at Michigan universities are eligible to be Principal Investigators on a Michigan Sea Grant-funded project. However, project teams are not limited to university researchers. PIs are required to submit a pre-proposal in order to be eligible to submit a full proposal.

**Non-federal Match**
All proposals require a 50 percent non-federal match. At the pre-proposal stage Principal Investigators are not required to document from where they will receive the project match.

Match must be documented at the full proposal stage. Those proposals that identify additional project support providing real resources to the project will be more competitive.

Application Submission Information
Pre-proposals are due to Michigan Sea Grant by 5:00 p.m. (Eastern) Monday, March 18. Pre-proposals not received by the deadline will not be considered. Investigators must submit their pre-proposals through Michigan Sea Grant’s website, at [http://www.miseagrant.umich.edu/research](http://www.miseagrant.umich.edu/research), where the pre-proposal can be uploaded as a PDF document.

Pre-proposal Requirements
  **Title Page, including:**
  1. Project Title
  2. Principal Investigator
  3. Title / Position(s)

2013 RFP at a Glance
- Pre-proposals due: March 18
- Invitations for full proposals sent: April 8
- Full proposals due: May 20

Key Points:
- Qualified researchers at Michigan universities are eligible to be Principal Investigators.
- Researchers must follow an Integrated Assessment approach for their projects.
- A 50% non-federal match will be required (to be reported during the full proposal phase).
- Researchers should address one of the IA topics outlined in this document or develop an alternate topic using the included guidelines.
- Projects run for up to 2 years with funding up to $75,000 per year.
- Projects are carried out from mid-2014 through 2016.
2) Pre-proposal Narrative (limited to 4 pages using 12-point font with 1-inch margins)

**Problem/Issue Statement:** 1-2 paragraphs if you are proposing a topic not listed below. Otherwise, you may simply use the language provided below, see: 2013 Integrated Assessment Topics.

**Background:** Provide a brief description of the IA addressed, demonstrating awareness of the main issues and identifying potential stakeholders.
- Origin of the issue
- Why the issue is a complicated, wicked problem
- Who is or should be involved
- Briefly state project objectives as they would appear in a full proposal.

**Geographic Focus:** Identify the geographic scope of your project. Explain why your geographic scope is appropriate for best evaluating the focal issue.

**Characterize the Solution Possibilities:** What are the potential options that could be considered, such as management actions, education, outreach programs, legislation, regulations or other initiatives.

**Draft IA Question:** At this point, you can draw upon information provided, see: 2013 Integrated Assessment Topics or the background developed in defining your own topic area and develop a draft question using this pattern: What are the causes, consequences and correctives of <<natural resource problem>> at <<geographic location>>?

**Project Approach:** It is not necessary to explain analytic methods in detail. Rather, provide an overview of how you intend to develop an Integrated Assessment so reviewers can determine appropriateness of the approach for achieving the stated objectives.

**Project Team and Collaborators:** Identify the project team and individual responsibilities in a table (see below). Below the project team, provide the names and affiliations of all persons and institutions you intend to recruit as collaborators. Note that it is not necessary at this time to contact or secure a commitment from these individuals and organizations.

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization/Institution</th>
<th>Role: Team Member, Collaborator or Other</th>
<th>Responsibilities</th>
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**Data and Data Sets:** Funds from Michigan Sea Grant should primarily support analysis and communication of existing data, rather than collection of new field data. Stakeholder surveys, focus groups, observations and interviews are permitted if used to support the goals of the Integrated Assessment process. Please identify any
existing data sets you plan to use, their owners and how you intend to access the data. You may also indicate your knowledge of closely related projects, briefly identifying those projects and their principal investigators.

**Estimated Budget:** Total amount requested should include all direct and indirect costs, including fringe benefits, student assistantships, etc. However, at this stage, a detailed budget is not required. Contact your Research Program Office for fringe benefit and indirect cost rates. Non-federal matching funds should be 50 percent of requested amount, at least $1 non-federal for every $2 federal requested.

<table>
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<th>Total Amount Requested</th>
<th>Total Non-federal Match</th>
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3) **Bio-sketches of Project Team Members**

Please submit a two-page bio-sketch of all project team members. These do not count toward the page limit. Include relevant project experience and publications (up to five).

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**Pre-proposal Selection Criteria**

Pre-proposals must comply with all submission instructions and guidelines in order to be considered for funding. Compliant pre-proposals will be reviewed based on the following criteria:

a) **Understanding of context and underlying issues:** Does the pre-proposal identify underlying issues; does the pre-proposal provide the right context for the underlying issues?

b) **Project approach:** Does the pre-proposal address all of the elements of an Integrated Assessment? If it does not, are exceptions and gaps acknowledged and explained? Is the explanation credible?

c) **Preliminary identification of relevant data sources:** Does the pre-proposal identify how data will be accessed? Does the pre-proposal reflect an effort to contact others working on this issue and identify team members or collaborators who bring data or access to data to the team?

d) **Competency of the proposing team:** Does the team have members who can carry out each element of the assessment? Have team members done similar work in the past? They are not required to have Integrated Assessment experience specifically, but provide some indication they are able to assess status and trends and identify causes and consequences of the issue.
Integrated Assessment Approach

The Integrated Assessment process brings together citizens, industry representatives, scientists and policy makers to define and evaluate policy or management options related to particularly difficult — or wicked — environmental problems. Wicked problems are encountered where facts may be uncertain, values are in conflict, stakes are high, decisions are urgent, and community representation is required for resolution of the relevant issues (Gough, 1998).

Integrated Assessments summarize scientific knowledge to build consensus and guide decision making. These projects are assessments because they involve expert review and analysis of existing data and information, rather than additional experimentation. Projects integrate the needs of decision makers, perspective of stakeholders and expertise from several disciplines, typically physical, biological and social sciences.

Each Integrated Assessment project will follow a unique trajectory depending on the type and scope of the focal issue; however, most projects include the following elements:

1. **Define and refine the policy-relevant question around which the assessment is to be performed.** This often begins with identification of an issue by managers or policy makers that has defied typical and routine action. The focal IA question must be refined with stakeholder input.

2. **Clarify the history, causes and consequences of the issue.** Projects should help clarify aspects of the issue that are uncertain and are impeding action. A description of current conditions and historical trends can enhance understanding and provide a foundation for further analyses. To address the issue effectively, decision makers will need to better understand the probable causes and the environmental, social and economic consequences of the issue.

3. **Identify and evaluate potential options.** Projects should identify potential options addressing the issue, including policies, management actions or new initiatives that are politically, socially and economically feasible. Integrated Assessments help stakeholders compare and evaluate a suite of options, rather than recommend a single approach.

4. **Develop tools and information that can guide decisions and help implement potential options.** If appropriate, researchers should provide an assessment of certainty levels associated with their findings to help policy makers interpret analyses or identify future research needs.

A key to success of the Integrated Assessment approach is an inclusive stakeholder process that both enables the technical teams to learn from those most affected by the issue and provides useful and accessible information for the stakeholders to learn more about the issue(s) affecting them. It is important that the stakeholder group includes multiple viewpoints and that participants perceive that the group is being convened and facilitated by a neutral party. If the issue is so contentious that it is impossible to provide a neutral assessment team, the team must be able to demonstrate that all sides of the issue are represented so the process itself will be seen as fair.

**Learn More about Integrated Assessment**

Additional material on Integrated Assessments, including a guide and example projects can be found at the Michigan Sea Grant website: [http://www.miseagrant.umich.edu/research/approach](http://www.miseagrant.umich.edu/research/approach).
2013 Integrated Assessment Topics

Integrated Assessment topics were developed in partnership with federal, state and local government agencies and Sea Grant extension educators. These partners should not be engaged during the pre-proposal development process, but they will be available to provide input to teams developing full proposals.

NOTE: All questions related to this RFP, whether technical or content-related, should be submitted to the Michigan Sea Grant Research Program (MSG-RFPinfo@umich.edu) by 5:00 p.m. Monday, January 28. Answers will be posted on the Michigan Sea Grant RFP web site on Monday, February 4.

1) MICHIGAN’S MARITIME TRANSPORTATION SYSTEM

Historically, the Great Lakes served as the region’s first highway system. Not unlike our system of interstate and state highways and local roads, Michigan’s navigation system consists of several different types of ports and harbors — federally and state authorized deep draft ports, shallow draft ports, recreational harbors and harbors of refuge — that ideally work together to form a comprehensive, cost-effective navigation system.

However, the system faces very real constraints that are physical (e.g., persistent low water levels), as well as economic and political in nature, such as challenges in increasing awareness about and securing resources to adequately address shallow harbor dredging. The result is a system in danger of crumbling, coastal communities facing economic catastrophe and a planning environment that is plagued by inconsistent, piecemeal approaches.

An Integrated Assessment in this area would bring together stakeholders from all sectors and levels of government to consider how local, state and federal policies and programs can be developed and enhanced to support a comprehensive regional maritime transportation system.

2) GRAND RIVER HIGH-GRADIENT HABITAT ENHANCEMENT

While Michigan offers more than 36,000 miles of stream and river habitat, high-gradient habitat is extremely rare in large rivers, because dams impound most high-gradient reaches. Some of these dams no longer serve their intended purpose and offer opportunities for habitat enhancement through partial or complete dam removal.

In Grand Rapids, the Grand River once flowed over bedrock rapids. Some of the rock was quarried, channels were excavated, and a series of dams was built to provide industrial, navigational and aesthetic benefits at the expense of the river’s natural character. This altered habitat is in the heart of the state’s second largest urban area and currently provides recreational opportunities that could be enhanced or diminished through restoration of rapids habitat and alteration or removal of existing dams.

The largest low-head dam provides an effective barrier to sea lamprey and may also restrict migration of Asian carp if they enter from Lake Michigan. The dam also concentrates migrating salmon and steelhead, creating one of the top urban fisheries in the country. A fish ladder provides for passage of jumping fish and attracts crowds, but does not provide passage of other native non-jumping fish, such as the state-threatened lake sturgeon.

An Integrated Assessment project in this area would bring together all stakeholders and could examine the desirability of possible habitat enhancements within the constraints of invasive species control, flood prevention and impact on current river users — in addition to the potential benefits of whitewater recreation opportunities, increased property values, improved navigability and aquatic habitat improvement.
3) WHERE ARE THE GREAT LAKES IN THE GREAT LAKES STATE’S EDUCATION?
Michigan is the Great Lakes state, but Great Lakes content is not incorporated into the state’s K-12 curriculum in a meaningful way. Many public and private entities have allocated considerable resources to develop Great Lakes curricula, professional development for teachers and educational programs for students. However, Michigan students typically learn about the water cycle and other key science, technology, engineering and math (STEM) concepts through topics that are not focused on the Great Lakes. We have the resources, effective methods and an incredible network of collaborators; why has Great Lakes content not been fully incorporated into Michigan’s curriculum?

An Integrated Assessment in this area would investigate the reasons why Great Lakes resources for teaching STEM concepts have not been comprehensively adopted into the Michigan curriculum and would identify policy options and other actions that would ensure these resources are fully utilized.

4) SMALL HARBOR SUSTAINABILITY
A 2007 study completed by the Great Lakes Commission reported direct and secondary impacts to the Michigan economy from Great Lakes boating included $2.4 million in annual sales and more than 34,000 jobs — for an added total value of $975 million.

Along Michigan’s coastline, shallow draft harbors that cater to recreational boaters and serve as harbors of refuge fill an important economic and navigational safety role for those communities. However, the decade-long trend of lower water levels combined with a challenged economy has resulted in operational dredging and harbor infrastructure maintenance being delayed or foregone entirely. Without adequate access to many of these small harbors, the loss of property values and subsequent loss in tax revenues is devastating local economies and far surpasses the spending needed to keep the harbors viable.

What are the long-term, sustainable strategies that will enable Michigan’s coastal communities to continue to reap the economic and safety benefits of this important component of the state’s commercial navigation infrastructure?

An Integrated Assessment in this area would identify the suite of management actions, local policies and initiatives — as well as relevant state and federal policies and programs that could collectively support a sustainable harbor management strategy — for Michigan’s coastal communities. A list of Michigan harbors is available for research teams, see the Michigan Sea Grant website. Research teams would identify a process for prioritizing a select number of communities or watersheds with which to work (ideally no more than 3) and outline a process that fully engages the suite of stakeholders — including recreational boaters, commercial and recreational anglers, the local business community, Tribal, local and state leadership and relevant watershed groups.

Michigan Harbors List (PDF)

5) SAGINAW BAY MUCK
Saginaw Bay has experienced periodic toxic and nuisance algal blooms for more than 40 years. Phytoplankton containing cyanobacteria have influenced drinking water quality, and during some years, decaying organic matter and benthic algae have accumulated on beaches and formed an unpleasant “muck” that impacts recreation and property values.
Fecal indicator bacteria have been found in the muck, but causes and public health risks are uncertain. A number of natural and anthropogenic factors are believed to influence the severity and type of algal problems in the bay, including nutrient inputs, zebra and quagga mussel populations, lake levels, water circulation patterns and weather conditions. Recent research efforts have examined how different factors interact and influence water quality; however, translating these interactions into management strategies to address conditions in the Bay is still a challenge.

A number of questions impede management efforts, such as:

- Which causes of muck accumulation can be most efficiently and effectively managed?
- How should specific management actions be selected and applied to have the most impact?
- Will control efforts improve both muck and hazardous algal blooms?

A variety of environmental data sources and models are available, including results from the Saginaw Bay Multiple Stressors Project (www.glerl.noaa.gov/res/projects/multi_stressors), High Impact Targeting tools (http://35.9.116.206/hit2/about.htm), monitoring at water intake pipes, and other buoy and satellite data (e.g., http://glos.us/).

An Integrated Assessment team in this area will summarize the state of knowledge on causes and consequences of algal problems, identify and evaluate socio-economically and politically feasible management actions to address them, and develop tools to guide management decisions.

6) AVIAN BOTULISM

In recent years, significant die-offs of waterfowl and other shore birds due to botulism toxin poisoning from the bacterium *Clostridium botulinum* (Type E) have been growing in frequency and spreading across the Great Lakes basin. Bird deaths began in large numbers in the late 1990s in the lower lakes, while 2006 and 2007 saw significant die-offs along the Lake Michigan shoreline.

The cause, the bacterium *Clostridium botulinum*, is endemic in upland soils and lake bottom sediments of the Great Lakes. Macro-invertebrates, crustaceans, and zebra and quagga mussels in their normal course of feeding or filtering may then ingest and accumulate the bacteria and toxins. These are then eaten by round gobies, an invasive fish. Many of these small fish succumb to the toxin's neuropathic effects by losing the ability to swim, resulting in numerous gobies bobbing at the surface prior to death. The gobies become easy prey and soon are ingested by fish-eating birds — e.g., loons, cormorants, grebes and mergansers. The highly lethal toxins cause these birds to become paralyzed and die. Maggots feeding on dead gobies and birds also become toxin-laden and are added to the washed-up gobies, insects and mussels as carriers of the toxin, which can then impact shore birds and carrion feeders, such as piping plovers and ring-billed gulls. While the ecological cause and effect of the problem is fairly well understood, the questions of where to break the chain of events with a potential human intervention, what that intervention might be, and where and how it would be implemented are still open.

An assessment that examines the causes, consequences and potential solutions to the increase in Type E botulism outbreaks in northern Lake Michigan would be a valuable addition to efforts already underway to address the issue.
DEVELOPING AN ALTERNATE INTEGRATED ASSESSMENT TOPIC

Research teams can propose an Integrated Assessment project for a topic not described in this RFP, but they should provide the following additional information:

- Explain why the issue is a wicked problem, how it relates to Michigan Sea Grant’s strategic plan (www.miseagrant.umich.edu/about/michigan-sea-grant-strategic-plan), and why it is of interest to resource management agencies at the local, state, regional, Tribal or federal level.

- Demonstrate that the topic is amenable to analysis based on existing data and information.

- Secure a letter of support from an agency sponsor who has the authority to make or influence management decisions relative to the problem identified. The sponsor does not need to provide funding for the project, but should be willing to work with the process for two or more years beginning in summer 2014.

Michigan Sea Grant College Program

Michigan Sea Grant helps to foster economic growth and protect Michigan’s coastal, Great Lakes resources through research, education and outreach. A collaborative effort of the University of Michigan and Michigan State University, Michigan Sea Grant is part of the NOAA-National Sea Grant network of 32 university-based programs in the nation. See: www.miseagrant.umich.edu