

Michigan Sea Grant 2019 Request for Proposals

Michigan Sea Grant College Program (MISG) is inviting proposals for innovative research projects and graduate research fellowships for the 2020-2022 funding period that begins on February 1, 2020. All MISG research project funds are awarded via a highly competitive process involving external peer reviews and the recommendations of external advisory panels.

MISG will support three types of research during this funding cycle:

(Click title to see specific details of each RFP)

- I. [Integrated Assessment \(IA\) Research Projects](#) — Research that uses Integrated Assessment methods to address important social and ecological issues affecting the Great Lakes, up to \$75,000 per year.
- II. [Core Research Projects](#) — Basic core research on issues currently affecting the Great Lakes ecosystem, up to \$100,000 per year.
- III. [Michigan Sea Grant Graduate Student Research Fellowships](#) — Graduate student (M.S. or Ph.D.) research fellowships for one or two years, up to \$50,000 total per fellowship.

General Information for Integrated Assessment and Core Research Proposals

Eligibility

Qualified researchers at universities and colleges, including tribal colleges, located in Michigan are eligible to be Principal Investigators on MISG-funded projects. However, project team members are not limited to researchers at these organizations. PIs are required to submit a pre-proposal in order to be eligible to submit a full proposal. This is a new MISG policy starting with the 2019 RFP. Pre-proposals not received by the deadline will not be considered. Investigators must submit their pre-proposals through [Michigan Sea Grant's RFP webpage](#), where the pre-proposal can be uploaded as a PDF. Funded projects are conducted out from February 1, 2020, through January 31, 2022.

Non-federal Match

All proposals require a 50 percent non-federal match. Principal Investigators are not required to document the source of the project match until submitting a full proposal. Those proposals that identify additional project support committing specific resources to the project (e.g., funding) will be more competitive.

Questions

Questions related to integrated assessment and core research pre-proposals and full proposals for this RFP, whether technical or content-related, should be submitted to the Michigan Sea Grant Research Program (MSG-RFPinfo@umich.edu) by the respective deadlines listed below. Responses to both sets of questions will be posted on the Michigan Sea Grant RFP webpage (www.miseagrant.umich.edu/research/funding-information).

Deadlines:

- **IA and core research pre-proposals are due by 5 p.m. (EST) March 11, 2019.**
 - Questions about the research RFP pre-proposals are due by 5 p.m. (EST) Jan. 30, 2019.
 - Responses will be posted by Feb. 13, 2019.
 - Investigators encouraged to submit a full proposal for IA projects or core research projects will be notified no later than April 15, 2019.

- Guidelines for full proposals will be posted on the [Funding Information](#) webpage on March 22, 2019.
- **Full research proposals are due by 5 p.m. (EST) May 24, 2019.**
 - Questions about the research RFP full proposals are due by 5 p.m. (EST) May 3, 2019.
 - Responses will be posted by May 8, 2019.
- **Notification of final proposal funding decisions occurs in early Sept. 2019.**
- **Funding for new projects begins Feb. 1, 2020, pending federal appropriations.**

See [below](#) for further details about Integrated Assessment proposals.

See [below](#) for further details about core research proposals.

General Information for Graduate Fellowship

Eligibility

Graduate fellowships will support a graduate student at an accredited Michigan university with support of a faculty member from that institution. Students must be enrolled in or admitted to a full-time graduate or professional degree program at an accredited Michigan academic institution. Students may be working toward a degree in any discipline related to Great Lakes coastal or ecosystem issues.

Non-federal Match

All proposals require a 50 percent non-federal match. Principal Investigators are not required to document the source of the project match until submitting a full proposal. Those proposals that identify additional project support committing specific resources to the project (e.g., funding) will be more competitive. Fellowship match may be identified through the fellow's home institution with assistance of the advising faculty, or by match from cooperating agencies involved in the project.

Questions

Questions related to the Graduate Fellowship should be submitted to the Michigan Sea Grant Research Program (MSG-RFPinfo@umich.edu) by the deadline listed below. Responses will be posted on the Michigan Sea Grant RFP webpage (www.miseagrant.umich.edu/research/funding-information).

Deadlines:

- **Graduate Research Fellowship proposals are due by 5 p.m. (EST) May 24, 2019.**
 - Questions about the Graduate Research Fellowships are due May 3, 2019.
 - Responses will be posted by May 8, 2019.
- **Notification of final proposal funding decisions occurs in early Sept. 2019.**
- **Funding for new projects begins Feb. 1, 2020, pending federal appropriations.**

See [below](#) for further details about Graduate Research Fellowship proposals.

I. Integrated Assessment Research RFP

Michigan Sea Grant will support Integrated Assessment research projects that tackle important ecological and social Great Lakes issues and that inform planning, policy, and natural resource management. Topics identified for the 2020-2022 funding cycle reflect challenging issues identified by the MISG Advisory Board, state and federal agencies, and local communities. For example, past projects have focused on

barriers to green infrastructure implementation; causes, consequences, and possible management options for muck accumulation at beaches in Saginaw Bay; and strategies for small harbor sustainability. Integrated Assessment researchers conduct a comprehensive analysis of relevant natural and social scientific information, working closely with stakeholders and MISG Extension educators. The purpose of the assessment is to develop information, tools, and partnerships that will help decision makers better address the focal issue.

See [above](#) for details about eligibility, match, submission instructions, and deadlines. See [Appendix A](#) for the key elements of Integrated Assessments that will help projects be more competitive under this RFP.

Application Submission Information

Pre-proposal Requirements: Integrated Assessment Projects

1) Title Page that includes:

- a) Project title
- b) Principal Investigator
- c) Title and position(s)
- d) Institution
- e) Postal mailing address
- f) E-mail address
- g) Telephone number(s)
- h) Co-investigators and institutions

2) **Project Narrative:** Use standard formatting: 8.5 x 11-inch paper, 1-inch margins, and at least 11-point Times New Roman font; not to exceed 4 pages. Include the following sections:

- **Problem/Issue Statement:** 1-2 paragraphs.
- **Background:** Provide a brief description of the IA topic to be addressed, demonstrating awareness of the main issues and identifying potential stakeholders. This should include:
 - Origin of the issue
 - Why the issue is a complicated, challenging problem
 - Who is or should be involved
 - Brief project objectives as they would appear in a full proposal
- **Project Approach:** Provide an overview of how you intend to develop the project, so reviewers can determine appropriateness of the approach for achieving the stated objectives. It is not necessary to explain analytic methods in detail.
- **Characterize the Solution Possibilities:** Address the potential options that could be considered, such as management actions, education, outreach programs, legislation, regulations, or other initiatives.
- **Project Team and Collaborators:** Identify the project team and individual responsibilities. Also, provide 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.
- **Data and Data Sets:** Funds for Integrated Assessments 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 PIs. If you will generate new data, please suggest a data archiving and sharing plan as required by NOAA regulations:

http://www.miseagrant.umich.edu/wp-content/blogs.dir/1/files/2018/12/MISeaGrantDataManagementForm_042617-fields.pdf

3) **Estimated Budget:** Total amount requested should include all direct and indirect costs, such as fringe benefits, student assistantships, etc. However, at this stage, a detailed budget is not required. Contact your University Research Program Office for fringe benefit and indirect cost rates. Non-federal matching funds should be 50% of requested amount, at least \$1 non-federal for every \$2 federal requested; however, Principal Investigators are not required to document the source of the project match until submitting a full proposal.

4) **Project Team Member Bio-sketches:** Please submit a two-page bio-sketch per project team member. These pages do not count toward the page limit. Include relevant project experience and up to five publications.

Pre-proposal Evaluation: Integrated Assessment Projects

Pre-proposals are reviewed and scored by experts familiar with the policy context of the focal issue. The goal is to identify one pre-proposal per topic that reflects the best understanding of the issue and has the most potential to impact policy and management. Pre-proposal reviewers typically include state or local government personnel, scholars, and one Sea Grant specialist familiar with the topic, as well as stakeholders affected by the issue.

Pre-proposals are 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 appropriate setting for those issues?
- b) **Project Approach:** Is the pre-proposal in line with the goals of an Integrated Assessment, and is it likely to have a long-term impact (e.g., policy or management change)?
- c) **Preliminary Identification of Relevant Data Sources:** Does the pre-proposal identify how data will be accessed? Does it reflect an effort to contact others working on this issue and identify team members or collaborators who bring data or data access to the team?
- d) **Competency of Proposing Team:** Does the team have members who can carry out each element of the assessment? Have team members conducted similar work in the past? Teams are not required to have experience with Integrated Assessment. However, teams must indicate their ability to assess status and trends and to identify causes and consequences of the issue.

After reviewing the pre-proposals, MISG typically encourages one team per topic to develop a full proposal to maintain a diverse and relevant research portfolio. This allows policy contacts and MISG staff familiar with the focal issue to work with a single research team as the full proposal is developed. Those encouraged to submit a full proposal are given a brief summary of all feedback provided by reviewers and any additional recommendations from MISG staff. Note that all pre-proposal applicants are eligible to submit to the full proposal process. **PIs must submit a pre-proposal to be eligible to submit a full proposal.**

2019 Integrated Assessment Research Topics

Several topics have been identified as high priority for IA projects. These align with the focus areas of the MISG Strategic Plan ([Michigan Sea Grant Strategic Plan](#)). The specific research priorities identified as 2019 IA topics were developed in partnership with federal, state, and local government agencies, as well as the MISG Management Team and Extension educators. Each topic identifies a MISG Extension education staff and a policy contact; consultation with these contacts is not required at the pre-proposal stage, but will be encouraged as teams develop full proposals. Research investigators are also invited to develop their own unique Integrated Assessment research proposal that fits within one of our 2018-2021 Strategic Plan Focus Areas for consideration ([Michigan Sea Grant's Strategic Plan](#)). See [Appendix A](#) for the key elements of Integrated Assessments that will help projects be more competitive under this RFP. The suggested focus area topics are summarized below.

Healthy Coastal Ecosystems

Topic: Strategies to develop best community engagement approaches around coastal resilience

Contact: Ronda Wuycheck, Michigan Department of Natural Resources – Office of the Great Lakes

MISG Contact: Mary Bohling

What are innovative or non-traditional methods of public engagement that will be meaningful to communities and promote decision making around coastal community resilience? Innovative approaches could help transcend more traditional approaches to emphasize community involvement and facilitate adoption of sustainable strategies, plans and practices due to the inclusion of diverse perspectives. This Integrated Assessment could evaluate current research on public engagement approaches and identify techniques that match engagement strategies with issues or situations relating to coastal resiliency in the face of changes to ecosystem services. Case study communities could be used to evaluate the effectiveness of alternative approaches for civic engagement on selected issues related to coastal resilience and sustainability. An Integrated Assessment could potentially inform recommendations for sustainable practices that will ensure coastal resiliency, and could include environmental quality goals, and municipal and regional zoning and planning efforts.

Sustainable Fisheries and Aquaculture

Topic: An organized analysis approach to multispecies salmonine management in Lake Michigan

Contact: Jay Wesley, Michigan Department of Natural Resources

MISG contact: Dan O'Keefe

Fishery management policies in the upper Great Lakes are informed by models that provide information on predator-prey ratios developed from stock assessment models. Since the most recent Lake Michigan models developed in 2012 that focused on the dominant pelagic predator (Chinook salmon) and prey (Alewife) taxa, the abundance, diets, and migration patterns of fish populations in Lake Michigan and Lake Huron have changed resulting in a multispecies predator-prey dynamic. This new multispecies paradigm requires a more extensive ecosystem approach to assessing the status of the upper Great lakes fish stocks. A new multispecies stock assessment model for either Lake Huron or Lake Michigan would have ecological, social and economic implications for future management of the fishery including for harvest regulation and stocking recommendations for predator species. What is needed is a new multispecies predator-prey model that can be used to estimate abundance of multiple predators within changing prey scenarios and in accordance with stakeholder values. Key to this process will be including researchers, managers, and the public to: 1) identify all existing information and analyses including past

and ongoing work on predator-prey relationships and single species stock assessment models as well as data gaps; and 2) engage stakeholders in determining desirable outcomes from the modeling process. Once models have been developed, the results should be communicated to managers and the public so that they are better informed about and have input to future stocking and regulation decisions.

Topic: Whitefish decline in lakes Huron and Michigan

Contact: Jory Jonas, Michigan Department of Natural Resources

MISG Contacts: Dan O'Keefe, Elliot Nelson

Since the early 2000's, lake whitefish populations in northern Lake Michigan and Lake Huron have declined in abundance resulting in impacts to tribal, state-licensed, and Canadian commercial whitefish fisheries. In the upper Great Lakes, recruitment varies spatially. Reduced recruitment has been documented throughout much of the northern areas of Lake Michigan and the main basin of Lake Huron, whereas mostly stable lake whitefish populations remain along the North Channel and western Georgian Bay, Lake Huron, and in Lake Superior. Lake Superior lake whitefish spawning stocks and recruitment have been stable since the 2000s, mortality has been relatively low, and commercial yields have been steady. Lake Superior could serve as a model system where dreissenids and round gobies have not colonized to any meaningful extent, nutrients have been consistent over time, and lake trout, cisco and lake whitefish co-exist. What are the physical and biological causes of lake whitefish declines in lakes Huron and Michigan, and what conditions account for the marked spatial variability? An Integrated Assessment could assemble and synthesize existing data sets needed to identify potential mechanisms that explain declines and drivers of recruitment and geospatial variability in lake whitefish populations within the context of the dramatically changed ecosystems of lakes Huron and Michigan. This research could identify and assess the feasibility and effectiveness of future lake whitefish management options from stocking to habitat protection and restoration. An Integrated Assessment could also identify key information gaps and communication strategies for sharing information and management options with stakeholders.

Resilient Communities and Economies

Topic: Economic Impact of Aquatic Invasive Species

Contact: Ashley Elgin, NOAA Great Lakes Environmental Research Laboratory

MISG Contact: Rochelle Sturtevant

Aquatic invasive species (AIS) in the Great Lakes basin are one of the key causes of environmental change such as alterations of the food web, loss of keystone species, and benthification. AIS also result in economic impacts to coastal communities in various ways, from damage to industries that rely on a healthy fish population to clean-up of beach muck related to benthification in nearshore zones of the lower four lakes. There is a need for a rigorous analysis of the economic impacts of AIS, both individually and in aggregate, at the scales of the Great Lakes basin and most specifically the lake Huron-Michigan ecosystem. Understanding the real costs of AIS will help to prioritize budgets for control and prevention. Defensible estimates of the economic impacts of multiple AIS could also provide baseline information to measure how successful control programs are at a lake or regional scale. A comprehensive analysis would incorporate both market (clogging of water intake pipes, reductions in commercial and recreational fisheries) and non-market (aesthetics, property values) valuations of AIS impact on ecosystem services.

Environmental Literacy and Workforce Development

Topic: Mechanisms to advance traditional knowledge to inform community resiliency planning

Contact: Robert Croll, Policy Analyst/Climate Change Program Coordinator, Great Lakes Indian Fish and Wildlife Commission

MISG Contact: Rhett Register

Michigan Sea Grant supports integrated research projects that advance adaptation and mitigation strategies and promote coastal community resilience. Tribes, tribally affiliated entities, and indigenous communities across the country are developing climate strategies that integrate traditional knowledge (TK) with existing technologies and research approaches to help their communities be more resilient to a changing climate. While federally recognized tribes have sovereign authority over reservation lands and waters, and certain tribes share co-management authority over off-reservation resources, tribal lands and waters are also part of a broader natural and political context. What are the best approaches for tribes and non-tribal entities to incorporate TK into joint or mutually beneficial community resiliency planning, especially around climate change in Michigan? For example, the Michigan Tribal Climate Change Vulnerability Assessment and Adaptation Planning Project, conducted by the Inter-Tribal Council of Michigan, Inc., includes a tribal assessment of the impacts of climate change in Michigan, an assessment of tribal vulnerability, and presentation of adaptation strategies. Nationally, the U.S. Climate Resilience Toolkit provides a set of methods to address climate change in a culturally appropriate community context. How can these and similar approaches to adaptation based on TK be better incorporated into tribal, local, regional, and state planning? Research projects should focus on establishing mutually beneficial partnerships with tribal communities to share knowledge, technologies, and research approaches and develop strategies for incorporating TK more broadly into community resiliency and adaptation planning. Additionally, successful proposals will provide a detailed plan showing how traditional knowledge will be gathered, protected, and used.

Topic: Developing an Alternate Integrated Assessment

Research teams can propose an Integrated Assessment project for a topic not described in this RFP. When doing so, provide the following additional information:

- Explain why the issue is a wicked or challenging problem, how it relates to [Michigan Sea Grant's 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 a policy sponsor who has the authority to make or influence management decisions relative to the problem identified. It is not necessary for sponsors to provide funding for the project, but they should be willing to work with the process for two or more years beginning in winter 2020.

II. Core Research RFP

Michigan Sea Grant is accepting proposals for core research projects for the 2020-2022 funding cycle. The projects will run for two years, and the maximum annual research project budget is \$100,000 per year, for a total of \$200,000, including indirect costs. This does not include required matching funds provided by the Principal Investigator, which should be at least 50% of the amount requested from MISG. Matching funds must be from non-federal sources and may include faculty salaries, university overhead,

equipment, ship time, etc. Lead scientists must have Principal Investigator standing at an accredited Michigan institution to be eligible for funding.

This is an open Request for Pre-Proposals (RFP), and university-based researchers are encouraged to submit research projects that fulfill critical research needs for the Great Lakes and coastal ecosystems — and that fit within the focus areas of the [Michigan Sea Grant Strategic Plan](#). MISG seeks to bring together innovative research teams from Michigan universities and, where possible, leverage active research programs conducted by federal and state agencies. MISG is particularly interested in proposals that address: 1) whitefish declines in the context of changes to the food web and ecosystem function in lakes Michigan and Huron (see Integrated Assessment topic above); 2) aquaculture; and 3) source tracking and transport models of the influence of septic field in the Saginaw Bay watershed on drinking and surface waters.

See [above](#) for details about eligibility, match, submission instructions, and deadlines.

Application Submission Information

Pre-proposal Requirements: Core Research Projects

1) Pre-proposal cover page including:

- a) Project title
- b) Principal Investigator
- c) Title and position(s)
- d) Institution
- e) Postal mailing address
- f) E-mail address
- g) Telephone number(s)
- h) Co-investigators and institutions

2) Project Narrative: Use standard formatting: 8.5 x 11-inch paper, 1-inch margins, and at least 11-point Times New Roman font; not to exceed 4 pages. Include the following sections:

- **Statement of Research Need:** Describe how your research is relevant to and will build upon previous and concurrent studies and how it advances the body of knowledge or addresses an important problem for Michigan's Great Lakes.
- **Project Goals and Objectives:** Clearly state the hypotheses and objectives of your research, or the focus and objectives of your assessment. Do not describe how you will conduct the research or assessment; rather, convey what you will attempt to accomplish in the project.
- **Research Methods:** Identify how you will go about achieving the objectives set forth above. Provide ample information about the starting point for new methods and indicate the experimental design and statistical models you expect to use to achieve your objectives.
- **Research Relevance:** Provide a summary of the relevance of the project to Michigan's Great Lakes and the [Michigan Sea Grant Strategic Plan](#) and include any other state, federal, or private organizations involved in this proposal, including level of participation and funding.
- **Data Management Plan:** New NOAA regulations require a data management plan to make data available within two years of award completion. Describe your data management plan.
http://www.miseagrant.umich.edu/wp-content/blogs.dir/1/files/2018/12/MISeaGrantDataManagementForm_042617-fields.pdf

3) Budget Justification and Total Match: Sea Grant investigators must include a 50% non-federal contribution in the budget, showing a match of at least \$1 for every \$2 of federal support requested. The

total budget amount must be distributed nearly equally over the two years (i.e., no front loading). Principal Investigators are not required to document the source of the project match until submitting a full proposal.

4) **Curriculum Vitae:** Not to exceed two pages per investigator. These pages do not count toward the page limit. Include relevant project experience and publications.

5) **References:** Include only those cited in the body of the proposal.

Pre-proposal Evaluation: Core Research Projects

A small panel of academic experts and the MISG Management Team will review pre-proposals. Principal Investigators whose projects are scientifically sound and aligned with the goals of the MISG program will be encouraged to write a full proposal. Those encouraged to submit a full proposal are given a brief summary of all feedback provided by reviewers and any additional recommendations from MISG staff.

PIs must submit a pre-proposal to be eligible to submit a full proposal.

Pre-proposals will be evaluated on the five criteria identified below:

- a) **Rationale:** Does the proposal identify the need, goals, and objectives of the proposed research?
- b) **Scientific Merit and Innovativeness:** Will the proposed research plan achieve the goals and objectives identified? Will the proposed research advance the state of science or discipline through use of state-of-the-art methods?
- c) **Professional Qualifications of the Investigators:** Are the qualifications (e.g., education, training, and experience of the investigators) and the record of achievement with previous funding adequate for the proposed research?
- d) **Relevance to MISG Research Priorities and Strategic Plan:** Is the proposed research relevant to current issues identified by state, regional, tribal, or federal agencies for Michigan's Great Lakes and priorities described in the [Michigan Sea Grant Strategic Plan](#)?
- e) **Budget:** Is the budget reasonable and adequate to meet project objectives?

III. Graduate Student Research Fellowship RFP

Michigan Sea Grant is offering one-or two-year fellowships from 2020-2022 for graduate students enrolled full-time at Michigan universities and colleges who are interested in research relevant to current Great Lakes ecological, habitat, or fisheries management issues. This fellowship will provide support for a student's research up to \$50,000 total per fellowship that could include tuition, stipend, travel, and research expenses.

Research fellows will work with an agency sponsor and faculty member at an accredited institution in Michigan to conduct a research project that supports existing Great Lakes agency research (see below). Applicants submit a brief proposal for their research as part of the selection process and are expected to have letters of support from agency and faculty sponsors. Interactions with agency and MISG professionals are expected to enhance academic and professional development opportunities.

About the Fellowship

- Supports exceptional graduate students (M.S. or Ph.D.) engaged in research relevant to the Great Lakes, ongoing agency research, and to the [Michigan Sea Grant Strategic Plan](#).
- Fellows will work with an agency mentor to ensure results are useful and contribute to ongoing Great Lakes research.
- Agencies include federal, state, and tribal agencies, NGOs, and local governments that conduct research on Great Lakes coastal issues. This could include natural or social science research.
- Fellowship funding will be available in February 2020, but the fellowship can begin in either 2020 or 2021, as appropriate, concluding by January 31, 2022.
- Support: Up to \$50,000 total for students, including tuition, stipend, and benefits.
 - Requires a 50% non-federal match (e.g., faculty salary).
 - A budget is required; see below.

See [above](#) for details about eligibility, match, and deadlines.

Application Submission Information

Online Submission Process:

- Please allow sufficient time for all application materials to be received before the deadline. Late applications will not be accepted. We suggest that fellowship applicants access the Fellowship Application Submission Form to complete Parts 1 and 2 at least two weeks before the deadline. This step will initiate a system-generated request for recommendation letters and allow enough time for those letters to be received by the deadline.
- After completing Part 2 of the online application form, the academic advisor and agency sponsor will receive a system-generated request for the letter of recommendation with instructions on how to log in and upload the letter as a PDF.
- After completing Parts 1 and 2 of the online application (be sure to click "save"), applicants will be emailed a Fellowship Code that is required for logging in to complete the online submission.
- Complete [Budget Form 90-4](#) (XLS) to describe the proposed budget. Upload this as part of the online application.

Proposal Requirements: Research Fellowship

- **Budget:** The budget should outline proposed expenses (e.g., tuition, stipend, research expenses, travel, supplies, etc.) up to \$50,000 total and a timeline for up to 2 years. The budget should also

indicate the source and allocation of the 50% non-federal match (e.g., \$25,000 non-federal match for a \$50,000 funding request from Sea Grant).

- Use [Budget Form 90-4](#) (XLS) to develop the proposed budget.
- **Curriculum Vitae (CV):** Two pages maximum and must include contact information for the graduate student applicant and primary advisor(s).
- **Research project narrative:** 1-2 pages.
- **Career goal statement:** 1 page maximum.
- **Undergraduate and graduate transcripts:** Unofficial copies are acceptable.
- **Letters of recommendation:** One from primary academic advisor and one from an agency sponsor.

Proposal Evaluation: Research Fellowships

Selection criteria include academic ability, research proposal integration with agency research, the research and career goals of the student, relevancy of academic background, communication skills, and support from faculty and agency advisors. Applications that do not meet the requirements may be rejected without review.

All qualified applicants for the Graduate Research Fellowships will be: 1) reviewed by two external reviewers: one from a Great Lakes agency (state or federal), and one from academia; and 2) interviewed by the MISG Management Team and two external reviewers in mid-to-late summer 2019. Notification of funding decisions will occur in September 2019, and fellowship research will be conducted within the 2-year period from February 1, 2020 through January 31, 2022.

Appendix A: Key Points of Integrated Assessment

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 — *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 or new data collection. Projects integrate the needs of decision makers, perspectives 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:

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 must 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 for addressing the issue, including policies, management actions, or new initiatives that are politically, socially, and economically feasible. Integrated Assessments help stakeholders compare and evaluate the benefits and costs of 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: www.miseagrant.umich.edu/research/approach.