



Michigan Sea Grant 2015 Request for Proposals

Michigan Sea Grant is soliciting pre-proposals for innovative research projects for the 2016 – 2018 funding period. Michigan Sea Grant 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 \$115,000 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 \$80,000 per year.

Deadlines:

- **IA and Core Research pre-proposals are due by 5 p.m. (EST) March 6, 2015.**
 - Investigators invited to submit a full proposal for IA projects or core research projects will be notified no later than April 10.
 - **Full research proposals are due by 5 p.m. (EST) May 29.**
- **Fellowship proposals are due by 5 p.m. (EST) May 29, 2015.**
- **Questions about this RFP are due by 5 p.m. (EST) Jan. 30.**
 - Responses will be posted by Feb. 13.
- **Notification of final proposal funding decisions occurs in Sept. 2015.**
- **Funding for new projects begins Feb. 1, 2016, pending federal appropriations.**

General Information for All Proposals

Eligibility

Qualified researchers at accredited Michigan universities are eligible to be Principal Investigators on Michigan Sea Grant-funded projects. However, project team members are not limited to university researchers. PIs must submit a pre-proposal in order to be eligible to submit a full proposal. Graduate fellowships will support a graduate student enrolled at an accredited Michigan university with support of a faculty member from that institution.

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 this request for proposals (RFP), whether technical or content-related, should be submitted to the Michigan Sea Grant Research Program (MSG-RFPinfo@umich.edu) by 5 p.m. (EST) Jan. 30. Answers will be posted on the Michigan Sea Grant RFP webpage (www.miseagrant.umich.edu/research/funding-information) by Feb. 13.

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. Partners from local, state and federal management agencies identify Integrated Assessment research topics that focus on particularly challenging coastal resource management or policy issues. For example, past projects have focused on coastal wind energy development, stormwater management for a downstream community, and restoration of natural flows in the Clinton River. Researchers work closely with stakeholders and conduct a comprehensive analysis of relevant natural and social scientific information. The purpose of the assessment is to develop information, tools and partnerships that will help decision-makers better address the focal issue.

See [Appendix A](#) for the 2015 IA topics and [Appendix B](#) at the end of this document for the key elements of Integrated Assessments that will help projects be more competitive under this RFP.

Application Submission Information

Pre-proposals are due to Michigan Sea Grant by 5 p.m. (EST) Friday, March 6, 2015. 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. Applicants will be notified by April 10, 2015 if they are invited to submit a full proposal. Full proposals will be due by 5 p.m. May 29.

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) Pre-proposal Narrative: Use standard formatting - 8.5 x 11 paper, 1-inch margins and at least 11-point Times New Roman font. Not to exceed four (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, wicked problem.
 - Who is or should be involved.
 - Brief project objectives as they would appear in a full proposal.
- **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 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.
- **Project Team and Collaborators:** Identify the project team and individual responsibilities. Also, 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.
- **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.

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 percent of requested amount, at least \$1 non-federal for every \$2 federal requested. Again, Principal Investigators are not required to document the source of the project match until submitting a full proposal.

Total Amount Requested	Total Non-federal Match

4) Bio-sketches of Project Team Members: Please submit a two-page bio 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

After reviewing the pre-proposals, Michigan Sea Grant (MSG) typically invites one team to develop a full proposal about each topic to maintain a diverse and relevant research portfolio. This policy also allows policy contacts and MSG staff familiar with the focal issue to work with a single research team as the full proposal is developed.

Pre-proposals are reviewed and scored by experts familiar with the policy context of the focal issue. The goal is to identify the pre-proposal 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.

Those invited to submit a full proposal are given a brief summary of any feedback provided by reviewers and any additional recommendations from MSG staff. Based on review panel evaluations, investigators may be asked to modify objectives, work plans or budgets for the full proposals. Full proposals are due May 29, 2015 and notification of final proposal funding decisions will occur in September. Funded projects are carried out from February 2016 through 2018.

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 right context 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 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 access to data 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.

2015 Integrated Assessment Research Topics

Several topics have been identified as high priority for IA projects. The specific research priorities identified as 2015 IA topics were developed in partnership with federal, state and local government agencies, as well as the Michigan Sea Grant management team and Extension educators. Consultation with Michigan Sea Grant staff and policy contacts is not required at the pre-proposal stage, but will be encouraged as teams develop full proposals.

Topics include:

- Common Metrics for Sustainable Water Use
- Perceptions of Seafood and Seafood Safety in Michigan
- Green Infrastructure: Planning for a Sustainable Future
- Cisco Restoration
- Alternate Integrated Assessment

Please see [Appendix A](#) for a detailed list of potential IA topics and points of contact.



II. Core Research RFP

Michigan Sea Grant is accepting proposals for core research projects starting in 2016. The projects will run for two years, and the maximum annual research project budget is \$115,000 per year for a total of \$230,000, including indirect costs. 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](#).

Michigan Sea Grant is particularly interested in proposals that address connectivity in the Great Lakes, between watersheds, river mouths and the nearshore. MSG also seeks to bring together innovative research teams from Michigan universities, and where possible, leverage active research programs conducted by federal and state agencies.

Michigan Sea Grant anticipates awarding one grant for two years of funding, up to \$115,000 per year maximum including indirect costs. This does not include required matching funds provided by the Principal Investigator, which amounts to at least 50 percent of the amount requested from Michigan Sea Grant. Matching funds must be from non-federal sources and may include faculty salaries, university overhead, equipment, ship time, etc.

Application Submission Information

Pre-proposals for are due by 5 p.m. (EST) March 6, 2015. Investigators must submit their pre-proposals through [Michigan Sea Grant's RFP webpage](#), where the pre-proposal can be uploaded as a PDF. Investigators invited to submit full proposals will be notified no later than April 10. Full proposals will due by 5 p.m. (EST) May 29, 2015. Based on panel evaluations, investigators may be asked to modify objectives, work plans or budgets for their full proposals. Notification of final proposal funding decisions will occur in September and funded projects will be carried out from February 2016 through 2018.

Pre-proposal Requirements: Core Research Projects

1) **Pre-proposal cover page including:**

- a. Project title
- b. Principal Investigator
- c. Title/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 paper, 1-inch margins and at least 11-point Times New Roman font; not to exceed four (4) pages. Include the following sections:

- **Statement of Research Need:** Describe how your research is relevant to and will tie into 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 that 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 to Michigan Sea Grant's 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.

3) **Budget Justification and Total Match.** Sea Grant investigators must include a 50 percent 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:** As cited in the body of the proposal.

Pre-proposal Evaluation: Core Research Projects

A small panel of academic experts and the Michigan Sea Grant management team will review pre-proposals. Principal Investigators whose projects are scientifically sound and are aligned with the goals of the MSG program will be invited to write 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 MSG 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- to two-year fellowships from 2016 – 2018, totaling up to \$160,000 for graduate students enrolled full-time at Michigan universities who are interested in research relevant to current Great Lakes ecological, habitat or fisheries management issues. This fellowship will provide tuition and stipend support for a student's research and will enhance academic and professional development opportunities.

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 research programs at federal, tribal and state agencies. Applicants submit a short proposal for their research as part of the selection process and are expected to have letters of support from agency and faculty sponsors. Michigan Sea Grant will assist interested students in identifying an agency sponsor who conducts research in their area of interest.

About the Fellowship

- Supports exceptional graduate students (M.S. or Ph.D.) engaged in research relevant to the Great Lakes, ongoing agency research efforts, 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.
- Fellows will be provided with professional development opportunities focusing on conducting a research project, data collection and analysis, and preparation of project reports and presentation materials.
- Fellowship funding will be available in February 2016, but the fellowship can begin in either 2016 or 2017, as appropriate.
- Support: Up to \$80,000 per year for students, including tuition, stipend and benefits.
 - Requires a 50% non-federal match (e.g., faculty salary).
 - **Update: A budget is required; see below.**

Eligibility

- Students must be enrolled in or admitted to a full-time graduate or professional degree program at a Michigan academic institution.
- Students may be working toward a degree in any discipline related to Great Lakes coastal or ecosystem issues.

Application Submission Information

Proposals are due to Michigan Sea Grant by 5 p.m. (EST) May 29, 2015. Proposals not received by the deadline will not be considered. Applicants must submit their proposals as PDFs through [Michigan Sea Grant's RFP webpage](#).

Proposal Requirements: Research Fellowship

- Budget – The budget should outline proposed expenses (e.g., tuition, stipend, research expenses, travel, supplies, etc.) up to \$80,000 per year for two years. The budget should also indicate the source and allocation of the 50% non-federal match (e.g., \$40,000 non-federal match for a \$80,000 funding request from Sea Grant).
 - Use [Budget Form 90-4](#) to develop 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 – Two pages max.
- Career goal statement – One page max.
- Undergraduate and graduate transcripts (unofficial copies are acceptable).
- Letters of recommendation from primary academic advisor and an agency sponsor.

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 Part 1 and 2 of the online application (be sure to click save), you will be emailed a Fellowship Code that you will need when logging in to complete your submission.
- Complete [Budget Form 90-4](#) to describe proposed budget. Upload this as part of the online application.

Proposal Evaluation: Research Fellowships

Selection criteria include academic ability, research proposal integration with agency research, the research and career goals of the student, appropriateness of academic background, communication skills, and support from faculty and agency advisors. Applications that do not meet the requirements may be rejected without review. Notification of funding decisions will occur in September 2015, and fellowship research will be conducted within the two-year period from 2016 through 2018.

Appendix A: 2015 Integrated Assessment Topic Priorities

Topic: Common Metrics for Sustainable Water Use

MSG Contacts: Rochelle Sturtevant, Katy Hintzen

Policy Contacts: Jon Allan (Director of the MDEQ Office of the Great Lakes);
John Austin (Lecturer at University of Michigan LS&A Program in the Environment; Non-Resident Senior Fellow with Brookings Institution)

Focus Area: Resilient Communities and Economies

A set of data and metrics are used to assess water quality, quantity and use in Michigan. However, this set of information is incomplete and lacks a unifying framework, a user-friendly platform and an overall analytical logic to fully assess the sustainability of Michigan's surface water and groundwater resources. An integrated and unified approach assessing the use and stewardship of Michigan's water resources could increase accessibility to information and improve the understanding of science-based data.

A review of Michigan's current water metrics, the identification of additional metrics — especially those related to economic, social and cultural values in water — and recommendations for a integration of this data into an outcome-focused dashboard is needed. Ultimately, the State of Michigan should be able to develop and employ an integrated platform to inform sustainable water use, inform investments and communicate value and outcomes. Since individuals hold unique views of best use for water resources, a key component of such an assessment is stakeholder outreach to define user groups and their related interests and values (e.g., public access for recreation and industrial use). An integrated suite of metrics that go beyond standard environmental metrics could do several things; they could act as the unifying language among stakeholders to accelerate policy development, identify gaps to investments, and help secure a sustainable future for water resources.

Michigan Sea Grant expects an assessment in this area to complement the State of Michigan Water Strategy and the work by the Council of Great Lakes Governors related to the Great Lakes Blue Accounting initiative. See: *Great Lakes Blue Accounting: Empowering Decisions to Realize Regional Water Values* found at glc.org/category/docs/water-quantity-use/.

Topic: Perceptions of Seafood and Seafood Safety in Michigan

MSG Contacts: Ron Kinnunen, Mary Bohling

Policy Contacts: Kory Groetsch or Michelle Bruneau (Michigan Department of Community Health);
Jill Bentgen, Mackinac Straits Fish Company

Focus Area: Sustainable Fisheries and Aquaculture

Public perceptions and behaviors related to fish and seafood safety in Michigan are complex and have implications for businesses that depend on Michigan's commercial and recreational fisheries and aquaculture. Differences between State of Michigan guidelines for recreationally caught fish and U.S. Food and Drug Administration's standards for commercially sold fish add to the complexity, and may confuse consumers and anglers. State management agencies and residents are concerned with several issues, including but not limited to the following: emerging contaminants that are not part of the fish consumption guidelines; safety of seafood imported from other countries; perceptions of farm raised fish; subsistence fishing; and effectiveness of fish consumption guidelines and communication strategies.

Although the state recently revised its methods for developing and communicating fish consumption guidelines, effectively educating anglers and consumers about this complex topic will continue to be challenging.

An Integrated Assessment could focus on one or several aspects of this topic, including the risks and health benefits of eating sport caught fish and commercial seafood, consumer knowledge and habits, angler attitudes and behaviors, and evaluation of communication strategies. A project could focus statewide or consider specific locations with localized issues, such as contamination, environmental justice concerns, commercial fishing interests or existing outreach about fish guidelines. Ultimately an assessment on this topic would recommend better consumer outreach and foster dialogue between private and public sectors to help address uncertainty, protect human health and support Michigan's recreational and commercial fishing industries.

Topic: Green Infrastructure: Planning for a Sustainable Future

MSG Contacts: Mary Bohling, Mark Breederland

Policy Contact: Michele Seltzer, Michigan Department of Environmental Quality

Focus Area: Resilient Communities and Economies, Healthy Coastal Ecosystems

Many communities, both urban and rural, are managing a degrading stormwater infrastructure, as well as increasing regulatory requirements and costs to reduce flooding and address combined sewer overflow impacts to water quality. Increasingly, communities are turning to green infrastructure as an alternative to traditional gray infrastructure by using a range of natural and built systems and processes as key parts of their stormwater management programs. Green infrastructure is part of climate resiliency strategies, as communities and industries plan for the projected increases in volume and intensity of precipitation.

Many public, private and non-profit institutions have developed green infrastructure in Michigan communities — from small-scale projects like rain barrels and rain gardens to large-scale projects incorporated into existing transportation systems. However, many of these examples are new or pilot projects, making planning for the long-term sustainability of the green infrastructure a key challenge.

An Integrated Assessment on this topic would encourage local, state and regional stakeholders to identify barriers to long-term sustainability of green infrastructure, including suitability for application under current policies such as Michigan's Water Strategy, Great Lakes Water Quality Agreement and Areas of Concern delisting plans. Managing stormwater with green infrastructure is a relatively new endeavor with a number of important areas of research, such as:

- Governance and implementation of long-term maintenance, monitoring and fiscal responsibilities.
- Integration of local and regional planning and policies to encourage and coordinate jurisdiction of departments and agencies.
- Public education and outreach to ensure acceptance of green infrastructure projects.

Topic: Cisco Restoration

MSG Contacts: Ron Kinnunen, Dan O'Keefe

Policy Contact: Randy Claramunt, Michigan Department of Natural Resources – Fisheries

Focus Area: Sustainable Fisheries and Aquaculture

Cisco, also known as lake herring (*Coregonus artedii*) and the deepwater ciscoes (bloaters, *C. hoyi*; shortjaw, *C. zenithicus*; deepwater, *C. johanna*; blackfin, *C. nigripinnis*; shortnose, *C. reighardi*; and

kiyi, *C. kiyi*), were abundant throughout the Great Lakes until the 1960s when populations crashed. Historically, ciscoes supported a large commercial fishery and were prey for some of the largest lake trout populations in the world. With the decline of non-native alewives, reintroduction of these native fishes from remnant populations is possible and could aid the recovery of other fish. Traditionally, state and federal agencies have focused on stocking predator fish, such as Chinook salmon and lake trout, but declines in alewife and Chinook salmon and the recovery of lake trout provide an opportunity and incentive to refocus some resources on the rehabilitation of cisco and deepwater ciscoes in Lake Huron and Lake Michigan.

During the 1980s and 1990s, cisco increased in abundance in Lake Superior after most fisheries were curtailed, and there is growing support for initiating stocking programs for cisco in lakes Huron and Michigan. However, a number of uncertainties remain, including: the source and genetics of brood stocks; costs for retrofitting hatcheries; optimal life stage introduction; stocking locations and densities; competition and predation of stocked fish; monitoring methods; and the potential for climate change or future invasions to influence population recoveries. Habitat restoration for cisco is also a challenge because of limited knowledge of current spawning and nursery areas, and methods that will minimize invasive species while maximizing cisco and other native fish production.

Michigan Sea Grant expects an Integrated Assessment on this topic would engage fishery managers and the fishing community and would examine the opportunities, challenges and potential strategies for cisco and/or deep-water cisco rehabilitation in Lake Huron and/or Lake Michigan. A project could bolster communication, document lessons learned and complement ongoing restoration efforts, such as the recovery and management of ciscoes in Lake Superior; projects to rehabilitate bloater chubs on Lake Ontario; stocking of cisco by tribal groups; and proposals to restore key habitat for native ciscoes.

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. 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 2016.

Appendix B: 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 — 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:

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: www.miseagrant.umich.edu/research/approach.