



STRATEGIC PLAN

Fiscal Year 2014-2017



MICHIGAN SEA GRANT COLLEGE PROGRAM



Michigan Sea Grant Strategic Plan 2014-2017
Michigan Sea Grant College Program, MICHU-12-102

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University of Michigan and Michigan State University

Michigan Sea Grant is a cooperative program of University of Michigan and Michigan State University. It is part of the National Sea Grant College Program, a network of 33 university-based programs in coastal states across the country. See: www.miseagrant.umich.edu

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National Oceanic Atmospheric Administration

Michigan Sea Grant is part of the National Oceanic Atmospheric Administration National Sea Grant network of 33 university-based programs. The National Sea Grant College Program envisions a future where people live, work and play along our coasts in harmony with the natural resources that attract and sustain them. This is a vision of coastal America where we use our natural resources in ways that capture the economic, environmental and cultural benefits they offer, while preserving their quality and abundance for future generations.

This vision complements the vision articulated in NOAA's Strategic Plan: "Healthy ecosystems, communities and economies that are resilient in the face of change." Sea Grant's mission is to provide integrated research, communication, education, extension and legal programs to coastal communities that lead to the responsible use of the nation's ocean, coastal and Great Lakes resources through informed personal, policy and management decisions. With its strong research capabilities, local knowledge and on-the-ground workforce, Sea Grant provides an effective national network of unmatched ability to rapidly identify and capitalize on opportunities and to generate timely, practical solutions to real problems in real places.

About Michigan Sea Grant

Cooperative Program

Michigan Sea Grant is a cooperative program of University of Michigan and Michigan State University. It is part of the National Sea Grant College Program, a network of 33 university-based programs in coastal states across the country.

Mission and Vision

Mission: Michigan Sea Grant supports research, outreach and education to enhance the sustainable use of Great Lakes resources that benefit the Michigan, Great Lakes and national economy; the environment; and the quality of life.

Vision: Our vision is healthy and sustainable Great Lakes resources achieved through an integrated program that engages universities, as well as public and private sectors.

Support

The Michigan Sea Grant College Program (Sea Grant) receives core funding from National Sea Grant within the National Oceanic and Atmospheric Administration (NOAA). Matching funds come from the University of Michigan, Michigan State University, other Michigan universities and other non-federal sources.

Program Administration and Management

Management and Oversight

Management Team: Day-to-day operational decisions are made by a five-person management team, which consists of representatives from the University of Michigan, including the Director, Assistant Director and Communications Director; and Michigan State University, including the Associate Director and Extension Program Leader. The Sea Grant management team receives guidance from the following primary sources: the staff, the Advisory Committee, the Executive Committee and Sea Grant constituents.

Michigan Sea Grant Advisory Committee: Michigan Sea Grant enlists an Advisory Committee to leverage strong constituent support. The Advisory Committee is composed of key stakeholders and senior university administrators. The Committee provides strategic advice, guidance and feedback on existing and future programs and specific feedback on our Strategic Plan. Committee members serve as program advocates by identifying opportunities for collaboration and support, both internal to the members' organizations and external to them, particularly with state and federal agencies and legislators. The Committee is co-chaired by the Vice Presidents for Research of the University of Michigan and Michigan State University.

Michigan Sea Grant Executive Committee: The Executive Committee is a subset of the Advisory Committee, composed primarily of university administrators and constituent representatives. The Executive Committee is able to act in lieu of the full Committee when necessary. The Executive Committee provides tactical and operational guidance to the Michigan Sea Grant Management Team.

Program Integration and Innovation

Sea Grant-sponsored research often leads to the development of new products, tools or other discoveries used by stakeholders and Sea Grant outreach specialists. Sea Grant promotes science in

action to effectively integrate research, education, extension, communications and other areas of the program more effectively.

Program Evaluation and Assessment

Michigan Sea Grant interacts with a wide variety of individuals and organizations that work, live and play on Michigan's coasts. Ranging from business owners to local, state, Tribal and federal government officials, these constituents are the people with whom Sea Grant extension educators, communicators and management team work on a daily basis. Sea Grant's primary mission is to meet the needs of these coastal constituents. Consistent and frequent engagement ensures that Sea Grant efforts are on target. Additionally, the program seeks periodic, formal input to confirm that we continue to meet the needs of coastal communities, businesses, industries and key stakeholders. The program is formally reviewed every four years through the National Sea Grant College Program.

This strategic plan was developed in consultation with technical and scientific experts, managers and policy makers. These groups provided input about priority issues for which Michigan Sea Grant has particular capabilities. Sea Grant Advisory Committee members also reviewed and commented on the strategic plan. Finally, members of the Sea Grant management team and staff provided specific strategies and objectives to reach program goals that are aligned with the National Sea Grant strategic plan.

Development of This Plan

Four years ago, Michigan Sea Grant began allocating more resources to support coastal economies. Programs that facilitate community planning to improve quality of life, business best practices for marinas and commercial fishing operations, and projects that support a healthy and prosperous sport fishery are strategic initiatives that will continue over the next four years. Sea Grant recognizes that a healthy environment is essential to a healthy economy.

In consultation with members of the Advisory Committee, members of the Management Team began working on this plan in January 2012. The Management Team facilitated a program-wide retreat in August 2012. At the retreat, staff members discussed a number of initiatives related to the national focus areas and how these initiatives will address the needs of our Michigan constituents. Input from the constituent survey (see below), Advisory Committee, Management Team and program staff was considered and aligned to the planning guidelines from the National Sea Grant College Program to develop this plan. Sea Grant staff members provided input by developing logic models that connect actions to outcomes to performance measures and national metrics.

Constituent Survey - Michigan Sea Grant Is Making A Difference

Constituents are the ultimate beneficiaries of Sea Grant work. As a result, we periodically ask them to assess the value of our programs and to identify future important issues we should be addressing. What we learn from this assessment is essential to developing a robust strategic plan and critical for program improvement.

Michigan Sea Grant sent an email message to 1,578 constituents on February 2012. Members of Sea Grant Management Team and staff identified constituents. The email included a link to the online

questionnaire. The survey included 20 questions and was designed to take no longer than 10 minutes to complete. We mailed out an additional 105 hard copies of the survey with pre-paid postage envelopes, in order to facilitate survey participation for those stakeholders who did not have electronic access. Two reminder email messages were sent. Survey response was closed on March 15, 2012. Within the 48-day period during which the survey was open, 602 electronic responses and 30 paper responses were received, resulting in a combined response rate of 38 percent. This response rate was almost double our 2009 constituent survey response rate of 21 percent.

As in the previous survey, constituents reaffirmed the importance of Michigan Sea Grant work in all the National Sea Grant focus areas. Respondents were asked to provide their opinion on how Michigan Sea Grant should target future programs by rating a series of nine statements describing major programming on a scale of 1 (very important) to 4 (not very important). Respondents indicated that all nine areas were “important” to “very important.” Average ratings ranged from 1.38 for invasive species to 1.91 for climate change.

What follows are some of the more pertinent findings of the survey (also see Table 1 for the complete summary of results):

- **Of the constituents surveyed, more than 14 percent reported that they changed practices in their business or community**, while 18 percent indicated that they have economically benefited from Sea Grant programs.
- **When asked about how constituents have benefited, 91 percent indicated increased awareness of coastal issues**, 66 percent indicated enhanced networking and 46 percent indicated knowledge change.
- **Michigan Sea Grant continues to reach a broad spectrum of constituents, which is reflective of the diversity and variety of projects and programs that reach many different sectors** (e.g., coastal-dependent businesses, communities, natural resource managers, legislators and K-12 educators). When asked to indicate affiliation respondents most often characterized themselves as K-12 educators (20 percent). Responses from other important target groups were as follows, NGOs (15 percent), research/university (13 percent), natural resource agencies (12 percent), coastal businesses (9 percent) and public officials (7 percent).
- **Respondents interact with the program and personnel in a variety of ways.** Sea Grant communication resources (64 percent) and participation in a Sea Grant-sponsored events (63 percent) were most often mentioned as a means of contact. Worthy of mention and likely due to our shift to an Integrated Assessment research portfolio, 18 percent of the respondents indicated that they have interacted with Sea Grant research teams.
- **Stakeholders reported that, on average, they access multiple (more than three) Sea Grant resources.** Constituents most often access webpages (65 percent) and publications (61 percent). There continues to be widespread satisfaction with program performance.
- **Survey respondents overwhelmingly agreed or strongly agreed that Sea Grant was responsive**, accessible, unbiased, institutionally connected, proactive, targeted and committed. Responses to these questions averaged from 1.37 to 1.56 on a scale of 1 (strongly agree) to 4 (strongly disagree).
- **When asked to rank three topics of the highest priority**, Invasive Species (60 percent), Communication among Stakeholders (49 percent), and Great Lakes Literacy (48 percent) were most often mentioned.

Table 1
MICHIGAN SEA GRANT CONSTITUENT SURVEY RESULTS

SURVEY QUESTION	FOCUS AREA	AVERAGE RESPONSE	PERCENT RANK (TOP 3)
Help solve coastal and Great Lakes problems by promoting communication among decision-makers and stakeholders that may have competing interests.	Cross-cutting	1.40	49.4%
Improve Great Lakes literacy by developing K-12 educational programs, supporting teachers and raising awareness about Great Lakes and coastal topics.	Great Lakes Literacy	1.51	48.6%
Support integrated research projects that promote collaboration and develop information to guide decisions about complicated environmental issues.	Cross-cutting	1.55	33.0%
Help reduce the spread and minimize the negative impacts of invasive species through education and outreach.	Healthy Ecosystems	1.35	60.8%
Promote the health of coastal habitats including nearshore lake habitats, watersheds and dunes through education, conservation and restoration.	Healthy Ecosystems	1.38	35.7%
Assist businesses, coastal communities and homeowners in adopting sustainable development practices that support vibrant economies, enhance quality of life and protect the environment.	Sustainable Communities	1.61	30.7%
Assist sport and commercial fishery stakeholders by providing technical support to diversify markets for Great Lakes fish and educating consumers about healthy seafood choices.	Safe Seafood	1.88	14.6%
Educate the public and work with public safety specialists to minimize the risks associated with coastal hazards such as rip currents, fishing nets and harmful algal blooms.	Hazard Resiliency	1.83	8.4%
Help decision-makers anticipate the likely impacts of climate change and ensure that climate issues are incorporated into coastal community planning.	Cross-cutting	1.91	13.9%

MICHIGAN SEA GRANT STRATEGIC PLAN

2014-2017

This plan describes how Michigan Sea Grant will achieve the measures, goals and outcomes in four strategic focus areas from 2014-2017. The following strategic focus areas reflect the most urgent needs along our coasts in Michigan and throughout the nation:

- Healthy Coastal Ecosystems;
- Sustainable Fisheries and Aquaculture;
- Resilient Communities and Economies; and
- Environmental Literacy and Workforce Development.

Collectively, the four focus areas above include 12 performance measures, 11 goals and 91 outcomes. This plan is aligned to the strategic priorities of the NOAA National Sea Grant goals and objectives, as articulated in NOAA's Next Generation Strategic Plan. This plan capitalizes on Michigan Sea Grant's unique capabilities and strengths and provides the flexibility and creativity required to adapt to Michigan's emerging needs.

Each focus area has performance measures, goals and outcomes. Performance measures help determine how well we have achieved our anticipated outcomes. Measures are a quantitative (numerical) evaluation tool. Information from constituent surveys (see p. 5-7) provides qualitative comments about issues relevant to our stakeholders. Both quantitative and qualitative information is used to improve programs and help direct future efforts, such as the goals and outcomes outlined in this plan.

There are two types of performance measures identified in this plan:

1. Performance measures that are most closely linked to a single focus area.
2. Cross-cutting performance measures of progress toward goals for all four focus areas.

Goals and Outcomes

Goals: Each goal represents the desired future condition for Michigan, the region and the nation. The goals describe the desired long-term direction related to each focus area for Michigan Sea Grant.

Outcomes: These are benchmarks from which Sea Grant can track progress toward achieving each goal. *This plan includes three types of outcomes:*

1. Learning (short-term)
2. Action (medium-term)
3. Consequence (long-term)

Progress toward a goal starts with a short-term, achievable and measurable learning outcome. Learning outcomes are followed by medium- and long-term (action and consequence) outcomes until the goal is met.

- *Learning outcomes* lead to increased awareness, knowledge, skills, changes in attitudes, opinions, aspirations or motivations through research and/or constituent engagement.
- *Action outcomes* lead to behavior change, social action, adoption of information, changes in practices, improved decision-making or changes in policies.
- *Consequence outcomes* are long-term, and in most cases, require focused efforts over multiple strategic planning cycles. Consequence outcomes in a four-year strategic plan serve as reference points toward reaching focus area goals between the current and future strategic plans.

Cross-cutting Performance Measures

Michigan Sea Grant employs an integrated approach to our research, education and outreach programs to achieve outcomes. Our research and outreach programs promote better understanding, conservation and use of Michigan's coastal resources. Michigan Sea Grant currently funds scientific research, education and extension projects designed to foster science-based decisions about the use and conservation of Great Lakes resources. Sea Grant also provides access to science-based information about Michigan's coasts and the Great Lakes.

Water is huge draw for people in Michigan — coastal trails, clean beaches and waterfront businesses add tremendous value to both metropolitan and semi-rural areas. In this new economic era, growth will be less linked to traditional manufacturing and more focused on quality of life and quality of the region's natural resources. Unless we protect and restore our best environmental asset — the Great Lakes — we will not be able to retain and attract strong new businesses and great human resources.

The following measures are directly relevant to Michigan's economy and the availability of information accessible by the public about Michigan's coasts and the Great Lakes:

- 11. Economic (market and non-market; jobs and businesses created or retained) benefits derived from Sea Grant activities.
 - Market Benefits: \$2 million
 - Non-market Benefits: \$2 million
 - Businesses Created: 4
 - Businesses Retained: 20
 - Jobs Created: 100
 - Jobs Retained: 100
- 12. Number of peer-reviewed publications produced by Sea Grant staff and researchers, and number of citations for all peer-reviewed publications from the last four years.
 - Peer-reviewed publications produced by Sea Grant staff and researchers: 25
 - Number of citations for all peer-reviewed publications from the last four years: 25

STRATEGIC FOCUS AREAS, PERFORMANCE MEASURES, GOALS AND OUTCOMES

Healthy Coastal Ecosystems

Performance Measures:

- Sea Grant tools, technologies and information services will be used by our partners/customers to improve ecosystem-based management: 40 over four years
- Ecosystem-based approaches will be used to manage land, water and living resources in coastal areas as a result of Sea Grant activities: 20 over four years
- Acres of coastal habitat will be protected, enhanced or restored as a result of Sea Grant activities: 100 over four years

GOAL 1: Ecosystem services are improved by enhanced health, diversity and abundance of fish, wildlife and plants.

OUTCOMES

Learning

- 1.1. Develop and calibrate new standards, measures and indicators of ecosystem sustainability.
- 1.2. Identify critical uncertainties that impede progress toward achieving sustainability of ecosystems and the goods and services they provide.

Action

- 1.3. Resource managers, policy- and decision-makers working with Michigan Sea Grant use standards and indicators to support ecosystem-based management.

Consequence

- 1.4. Dynamic ecological systems provide a wide range of ecological, economic and societal services and are more resilient to change.
- 1.5. Greater public stewardship leads to participatory decision-making and collaborative ecosystem based management decisions.

GOAL 2: Ecosystem-based approaches are used to manage land, water and living resources.

OUTCOMES

Learning

- 2.1. Stakeholders have access to data, models, policy information and training that support ecosystem based planning, decision-making and management approaches.
- 2.2. Baseline data, standards, methodologies and indicators are developed to assess the health of ecosystems and watersheds.
- 2.3. Residents, resource managers, businesses and industries understand the effects of human activities and environmental changes on coastal resources.
- 2.4. Resource managers have an understanding of the policies that apply to coastal protected species.

Action

- 2.5. Methodologies are used to evaluate a range of practical ecosystem-based management approaches for planning and adapt to future management needs.
- 2.6. Resource managers apply ecosystem-based management principles when making decisions.
- 2.7. Resource managers incorporate laws and policies to facilitate and implement ecosystem-based management.
- 2.8. Residents, resource managers and businesses integrate social, natural and physical science when managing resources and work with all sectors in the decision-making process.

Consequence

- 2.9. Land, water and living resources are managed using ecosystem-based approaches.

GOAL 3: Ecosystems and their habitats are protected, enhanced or restored.

OUTCOMES

Learning

- 3.1 Residents, resource managers and businesses understand the importance of the benefits provided by preserving non-degraded ecosystems.
- 3.2 Residents, resource managers and businesses understand the threats to ecosystems and the consequences of degraded ecosystems.
- 3.3 Scientists develop technologies and approaches to restore degraded ecosystems.

Action

- 3.4. Resource managers set realistic and prioritized goals to protect, enhance and restore habitats by incorporating scientific information and public input.
- 3.5. Resource managers, businesses and residents adopt innovative approaches and technologies to maintain or improve the function of ecosystems.

Consequence

- 3.6. Habitats are protected, enhanced or restored.
- 3.7. Degraded ecosystem function and productivity are restored.

Sustainable Fisheries and Aquaculture

Performance Measures

- Fishers, seafood processors and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities: 160 over four years
- Seafood consumers who modify their purchases using knowledge gained in fisheries sustainability, seafood safety and the health benefits of seafood as a result of Sea Grant activities: 4,000 over four years

GOAL 4: A safe, secure and sustainable supply of seafood to meet public demand.

OUTCOMES

Learning

- 4.1. Fishery managers and fishers understand the dynamics of wild fish populations.
- 4.2. The seafood industry is knowledgeable about innovative technologies, approaches and policies.
- 4.3. Commercial and recreational fishers are knowledgeable about efficient and responsible fishing techniques.
- 4.4. The commercial fishing industry is aware of innovative marketing strategies to add value to its product.
- 4.5. The seafood processing industry learns and understands economically viable techniques

Action

- 4.6. Fishers employ efficient fishing techniques, including bycatch reduction.
- 4.7. Fishers apply techniques to reduce negative impacts on depleted, threatened or endangered species.
- 4.8. The seafood industry adopts innovative technologies and approaches to supply safe and sustainable seafood.
- 4.9. The commercial fishing and aquaculture industries adopt innovative marketing strategies to add value to their products.
- 4.10. The seafood industry adopts techniques and approaches to minimize the environmental impact of their sectors.
- 4.11. Resource managers establish policies and regulations that achieve a better balance between economic benefit and conservation goals.
- 4.12. The seafood processing industry implements innovative techniques and processes to create new product forms and ensure the delivery of safe and healthy seafood.

Consequence

- 4.13. Michigan's seafood supply is sustainable and safe.
- 4.14. There is an expansion of the sustainable domestic fishing and aquaculture industries.

Goal 5: Informed consumers who understand the health benefits of seafood consumption and how to evaluate the safety and sustainability of the seafood they buy.

OUTCOMES

Learning

- 5.1. The seafood industry is aware of the standards for safe seafood.
- 5.2. The seafood industry is knowledgeable about consumer trends regarding seafood sustainability and safety and how to adjust operations to meet emerging demands.
- 5.3. Michigan's seafood consumers have the knowledge to evaluate sustainable seafood choices.
- 5.4. Michigan's seafood consumers have an increased knowledge of the nutritional benefits of seafood products and know how to judge seafood safety and quality.

Action

- 5.5. The seafood industry adopts standards for safe seafood.
- 5.6. The seafood industry adopts technologies and techniques to ensure seafood safety.

- 5.7. Michigan's seafood consumers preferentially purchase sustainable seafood products.

Consequence

- 5.8. Consumers improve their health through increased consumption of safe and sustainable seafood products.
- 5.9. The Michigan seafood industry operates sustainably and is economically viable.

Resilient Communities and Economies

Performance Measures

- Communities that implemented sustainable economic and environmental development practices and policies (e.g., land-use planning, working waterfronts, energy efficiency, climate change planning, smart growth measures, green infrastructure) as a result of Sea Grant activities: 60 over four years
- Communities that implemented hazard resiliency practices to prepare for, respond to or minimize coastal hazardous events as a result of Sea Grant activities: 40 over four years

GOAL 6: Development of vibrant and resilient coastal economies.

OUTCOMES

Learning

- 6.1. Communities are aware of the interdependence between the health of the economy and the health of the natural and cultural systems.
- 6.2. Communities have access to information needed to understand the value of waterfront- and tourism-related economic activities.
- 6.3. Communities understand the strengths and weaknesses of alternative development scenarios on resource consumption and local economies.
- 6.4. Communities are aware of regulatory regimes affecting economic sustainability.
- 6.5. Communities are knowledgeable about economic savings from energy planning and conservation.

Action

- 6.6. Citizens are actively engaged in management and regulatory decisions.
- 6.7. Communities engage in economic development initiatives that capitalize on the value of their natural and cultural resources while balancing resource conservation and economic growth.

Consequence

- 6.8. Communities have diverse, healthy economies and industries without displacing traditional working waterfronts.

GOAL 7: Communities use comprehensive planning to make informed strategic decisions.

OUTCOMES

Learning

- 7.1. Communities understand the connection between planning and natural resource management issues and make management decisions that minimize conflicts, improve resource conservation efforts and identify potential opportunities.

Action

- 7.2. Communities make use of tools and information to explore the different patterns of coastal development, including community visioning exercises, resource inventories and coastal planning.
- 7.3. Communities adopt coastal plans.
- 7.4. The public, leaders and businesses work together to implement plans for the future and to balance multiple uses of coastal areas.

Consequence

- 7.5. Quality of life in communities, as measured by economic and social well-being, improves without adversely affecting environmental conditions.

GOAL 8: Improvements in coastal water resources sustain human health and ecosystem services.

OUTCOMES

Learning

- 8.1. Communities are aware of the impact of human activities on water quality and supply.
- 8.2. Communities understand the value of clean water, adequate supplies and healthy watersheds.
- 8.3. Communities understand water laws and policies affecting the use and allocation of water resources.

Action

- 8.4. Communities engage in planning efforts to protect water supplies and improve water quality.
- 8.5. Communities adopt mitigation measures, best management practices and improved site designs in local policies and ordinances to address water supplies and water quality.

Consequence

- 8.6. Water supplies are sustained.
- 8.7. Water quality improves.

GOAL 9: Resilient coastal communities adapt to the impacts of hazards and climate change.

OUTCOMES

Learning

- 9.1. Residents and decision-makers are aware of and understand the processes that produce hazards and climate change and the implications of those processes for them and their communities.
- 9.2. Decision-makers are aware of existing and available hazard- and climate-related data and resources and have access to information and skills to assess local risk vulnerability.
- 9.3. Communities have access to data and innovative and adaptive tools and techniques to minimize the potential negative impact from hazards.

- 9.4. Decision-makers understand the legal and regulatory regimes affecting adaptation to climate change, including coastal and riparian property rights, disaster relief and insurance issues.

Action

- 9.5. Communities apply best available hazards and climate change information, tools and technologies in the planning process.
- 9.6. Decision-makers apply data, guidance, policies and regulations to hazard planning and recovery efforts.
- 9.7. Communities develop and adopt comprehensive hazard mitigation and adaptation strategies suited to local needs.
- 9.8. Residents take action to reduce the impact of coastal hazards on their life and property.
- 9.9. Communities adopt a comprehensive risk communications strategy for hazardous events.

Consequence

- 9.10. Communities effectively prepare for hazardous events and climate change.
- 9.11. Communities are resilient and experience minimum disruption to life and economy following hazard events.

Environmental Literacy and Workforce Development

Performance Measures

- Sea Grant-facilitated curricula adopted by formal and informal educators: 644 over four years
- People will participate in Sea Grant-supported informal education programs: 80,000 over four years
- Sea Grant-supported graduates will become employed in a career related to their degree within two years of graduation: 12 over four years

GOAL 10: An environmentally literate public supported and informed by a continuum of lifelong formal and informal engagement opportunities.

OUTCOMES

Learning

- 10.1. Formal and informal educators are knowledgeable of the best available science on the effectiveness of environmental science education.
- 10.2. Formal and informal educators understand environmental literacy principles.
- 10.3. Lifelong learners are able to engage in informal science education opportunities focused on coastal topics.

Action

- 10.4. Engagement professionals use environmental literacy principles in their programs.
- 10.5. Engagement programs are developed and refined using the best available research on the effectiveness of environmental and science education.
- 10.6. Formal and informal education programs incorporate environmental literacy components.

- 10.7. Formal and informal education programs take advantage of the knowledge of Sea Grant-supported scientists and engagement professionals.
- 10.8. Formal and informal educators, students and/or the public collect and use coastal weather data in inquiry and evidence-based activities.
- 10.9. Lifelong learners make choices and decisions based on information they learned through informal science education opportunities.
- 10.10. Educators work cooperatively to leverage federal, state and local investments in coastal environmental education.

Consequence

- 10.11. Members of the public incorporate broad understandings of their actions on the environment into personal decisions.

GOAL 11: A future workforce reflecting the diversity of Sea Grant programs, skilled in science, technology, engineering, mathematics and other disciplines critical to local, regional and national needs.

OUTCOMES

Learning

- 11.1. Students and teachers are aware of opportunities to participate in science, technology, engineering, mathematics and active stewardship programs.

Action

- 11.2. A diverse and qualified pool of applicants pursues professional opportunities for career development in natural, physical and social sciences and engineering.
- 11.3. Graduate students are trained in research and engagement methodologies.
- 11.4. Research projects support undergraduate and graduate training in fields related to understanding and managing our coastal resources.

Consequence

- 11.5. A diverse workforce trained in science, technology, engineering, mathematics, law, policy or other job-related fields is employed and have high job satisfaction.

CONCLUSION

Michigan Sea Grant will use logic models to guide the implementation of this plan. The program's annual report includes information about performance measures related to each of the focus areas outlined in this plan. In addition, the program develops case studies, which demonstrate the impacts of program implementation. This information is collected and submitted to the National Sea Grant Program Office and archived in a database. Publications are submitted to the National Sea Grant Library and are accessible to the public.

The next planning cycle will begin in 2016.