

Ohio Sea Grant College Program

Strategic Plan 2010-2013

FOCUS AREA – Healthy Coastal Ecosystems

Within the focus area of **Healthy Coastal Ecosystems**, the following long-term visions create the basis of the *Ohio Sea Grant Strategic Plan*:

Ohio's coastal residents, resource managers, policy makers, businesses, and industries have access to sound scientific information to support ecosystem-based approaches to managing the coastal environment and restoration of degraded ecosystems.

Ohio's coastal residents, resource managers, policy makers, businesses, and industries use ecosystem-based approaches in the management of land, water, and living resources in the Lake Erie area.

Ohio's coastal residents, resource managers, policy makers, businesses, and industries balance social, natural, and physical science in managing resources and work with all sectors in making decisions.

Ohio Sea Grant works with managers within the Lake Erie area to assist them in obtaining the resources and capability to undertake restoration projects, do so, and evaluate and adapt as needed.

The function, values, and productivity of Lake Erie's degraded ecosystems are restored.

To evaluate our progress toward these visions, the following represent the ways Ohio Sea Grant will measure our achievements. These performance measures are aligned with the National Sea Grant Program Strategic Plan:

Stakeholders who have used ecosystem-based approaches in the management of land, water, and living resources of the Lake Erie watershed as a result of Ohio Sea Grant research, communication, extension, education, and partnership activities with the Ohio Coastal Management Program, the Ohio Lake Erie Commission, the Lake Erie Lakewide Management Plan (LaMP), Ohio Department of Natural Resources (ODNR), the Old Woman Creek National Estuarine Research Reserve, Ohio Environmental Protection Agency (EPA) and others.

Acres of degraded ecosystems restored with significant Ohio Sea Grant facilitation, research, or other support.

Communities who have restored degraded ecosystems with significant Ohio Sea Grant facilitation, research, or other support.

Goals for Healthy Coastal Ecosystems

Within the **Healthy Coastal Ecosystems** focus area, three goals guide Ohio Sea Grant's future activities. These goals include the following:

- Sound scientific information to support ecosystem-based approaches to managing the Lake Erie and Great Lakes coastal environment.
- Widespread use of ecosystem-based approaches to managing land, water, and living resources in the Lake Erie and Great Lakes coastal area.
- Restored function, value, and productivity of Lake Erie and Great Lakes degraded ecosystems.

Each of these goals has a series of short/mid-term outcomes with measurable objectives that will be used to determine progress in reaching these desired states. These outcomes and measurable objectives are identified following each goal statement.

HCE 1: Goal:

Sound scientific information to support ecosystem-based approaches to managing the Lake Erie coastal environment.

The following reflect the short/mid-term outcomes desired by Ohio Sea Grant:

Baseline data, standards, and indicators developed by Ohio Sea Grant and its partners are used to support ecosystem-based approaches.

HCE 1.1: Ohio Sea Grant will actively solicit applied ecosystem research and seek to annually support at least one research project to assist ecosystem managers.

Methodologies are developed and used to evaluate ecosystem-based management approaches and guide future management efforts.

HCE 1.2: Ohio Sea Grant will annually facilitate at least one effort to identify research priorities for the Binational Executive Committee.

Planners and decision-makers know how to minimize impacts of land use, resource extraction, and other human activities on the ecosystem.

HCE 1.3: Ohio Sea Grant will annually facilitate at least one effort to identify the information and training needs of community planners and other decision makers.

HCE 1.4: By 2013, in partnership with the Ohio Coastal Training Program and other partners, 10 land use planners and decision makers will receive technical training to increase their abilities to implement best land use practices and balanced growth principles.

September 2009

HCE 1.5: By 2013, in partnership with the Ohio Coastal Training Program and other partners, 50 land use planners and other decision makers are trained annually to use geospatial analysis tools for strategic conservation planning and assessing the potential impacts of land use patterns on water quality and natural resources.

Strategy:

Support research to improve our ability to understand and forecast ecosystem changes in Lake Erie caused by stresses to the system and reduce the impact of these stresses, with particular emphasis on fisheries, harmful algal blooms, nutrient and contaminant loading, sewage outflows, invasive species, and the Central Basin Dead Zone.

Development of Biosensors to Monitor Health

Develop accurate means to predict the impacts of stressors on aquatic organisms and strengthen indices of coastal ecosystem health through the development of biosensors for biological and chemical monitoring.

Improved Fishery Forecasts and Management Strategies

Develop improved fishery forecasts and management strategies in collaboration with management agencies.

Better Understanding of Lake Erie's Ecosystem

Learn and teach others more about the Lake Erie food web and the trophic pathways of nutrients and contaminants in the system.

Understand the role and value of wetlands as critical habitat and in nutrient and contaminant removal by supporting research.

Monitor and assess origins and impacts of emerging stressors as they impact the Lake Erie ecosystem.

Identify strategies for sustaining healthy coastal wetland ecosystems by mitigating and adapting to the impacts of stressors such as land use decisions, invasive species, and climate change by co-funding research with Old Woman Creek National Estuarine Research Reserve.

In partnership with the Ohio Department of Natural Resources, continue to assess the impacts of aquatic invasive species on the Lake Erie ecosystem, methods to reduce introduction of new aquatic invasive species, and control measures to prevent the spread of those invasive species already present.

Detection of Contaminants

Develop and evaluate new technologies to detect contaminants by supporting and soliciting research proposals.

September 2009

Evaluation of Dredging Options and Risks

Assess the risks of contaminants in dredged materials, assist in the identification of disposal options, and evaluate water quality of major urban ports and Areas of Concern to determine cumulative effects, preserve coastal resources, and improve infrastructure.

Aquatic Invasive Species Research

Support research to understand the biology, ecology, and socio-economic impacts of aquatic invasive species.

Reduce the possibility of future aquatic invasive species introductions by supporting research on new technologies to eliminate aquatic invasive species from ballast water.

Water Quality Research

Support research to better understand point source and nonpoint source water quality issues including but not limited to phosphorus and other nutrients, toxic substances, pharmaceuticals, and microbial contaminants leading to harmful algal blooms (HABs), anoxic dead zones, and safe drinking water problems.

Strategy:

Contribute to the development of baseline data, standards, and indicators to support ecosystem-based approaches to land use, water, fisheries, and other resource management within Ohio and Lake Erie, working with programs such as NOAA'S Great Lakes Environmental Research Laboratory (GLERL), the International Joint Commission (IJC), the U.S. Environmental Protection Agency (USEPA), the Great Lakes Observing System (GLOS), and others.

Fisheries Data

Develop new tools to characterize economically important fisheries at the molecular-genetic level by promoting research to provide fine-scale delineation of key stocks.

Citizen Data on Restoration

Support research to conduct applied socio-economic studies on citizen (votes) willingness to pay for environmental amenities and environmental improvements such as green space preservation, Lake Erie natural resources including fisheries resources, recycling programs, and environmental cleanups.

Data to Support Observation Programs

Support research to develop new technologies to remotely measure and forecast biological and physical variables within the Great Lakes and to transmit this information to shoreline facilities, develop a regional repository for the data that is part of a national network, and develop the ability to transmit raw data and data products rapidly to users.

September 2009

Participate in the Great Lakes Observing System (GLOS) to ensure that fishery forecasts are incorporated as part of the observation project.

Provide data and support research to assist the Lake Erie Lakewide Management Plan (LaMP), the Great Lakes Regional Research Information Network (GLRRIN), the International Joint Commission (IJC), Areas of Concern and others.

Coastal Wetland Quality Indicators

Support research to define the desired characteristics of functional coastal wetlands to provide standards for natural and mitigated wetland restoration.

Strategy:

Develop methodologies that can be used to evaluate ecosystem-based management approaches to assess their effectiveness once they are in place, and to guide future management efforts, working with the Great Lakes Fishery Commission, the International Joint Commission (IJC), and other international, federal, state, and local partners.

Evaluations of Balanced Growth

Work with partners to develop programmatic land use and water quality indicators to measure the effectiveness of the Lake Erie Balanced Growth Initiative.

Evaluations of Restoration Methods

Evaluate the ecological and economic impact of artificial reefs and near-shore construction.

Evaluate the impacts of placing fish concentrations and spawning habitat when constructing Lake Erie wind turbines.

Support and encourage research to evaluate the impacts of dams, weirs, and other man-made modifications and the effects of their removal or maintenance on fish spawning habitat, sea lamprey populations, and stream quality.

Evaluations of Fish Management Strategies

Support cooperative research to evaluate a variety of fish management strategies.

HCE 2: Goal:

Widespread use of ecosystem-based approaches to managing land, water, and living resources in the Lake Erie coastal area.

The following reflect the short/mid-term outcomes desired by Ohio Sea Grant:

September 2009

Constituencies have access to data, models, and training that support ecosystem-based planning and management approaches.

HCE 2.1: Ohio Sea Grant implements five workshops, training modules, and educational products each year.

HCE 2.2: Ohio Sea Grant reaches 5,000 coastal stakeholders with education and outreach activities annually.

Lake Erie coastal residents, resource managers, businesses, and industries have the capability to predict the effects of human activities and environmental change on coastal resources.

HCE 2.3: As a result of Ohio Sea Grant educational programs, 75 people are trained annually to recognize the potential impacts and effects of human activities and environmental change on coastal resources.

People of all ages understand coastal, ocean and Great Lakes environments and the need for stewardship of healthy ecosystems.

HCE 2.4: Ohio Sea Grant will annually reach 5,000 grade 4 thru adult learners at Stone Laboratory, 2,000 on the Ohio Sea Grant Lake Erie Discussion Board, and 50,000 on the Ohio Sea Grant web site with information about the coastal, ocean and Great Lake environments and the need for stewardship of healthy ecosystems.

HCE 2.5: Annually, Ohio Sea Grant will lead collaboration with educators and partners to adapt ocean literacy principles to Lake Erie and help formal and informal educators use Lake Erie literacy principles and concepts to develop educational curricula.

Strategy:

Work with partners within and outside of NOAA to develop data, models, and training activities that support ecosystem-based planning and management approaches and share these with a wide variety of constituents in the Lake Erie watershed.

Clean and Healthy Watersheds

Develop proactive strategies for wetland preservation, riparian stream buffer acquisition, conservation easements, and other programs for improving water quality in coastal watersheds and Lake Erie in collaboration with local watershed action groups and Remedial Action Plan/Areas of Concern committees.

Assist local groups, agencies, and organizations to develop endorsable watershed development plans in the Lake Erie watershed.

September 2009

Train citizens, coastal officials, extension educators, and planners on balanced growth, best land use practices, and geospatial tools to evaluate watershed land use options for impacts on water quality through the Ohio Coastal Training Program and other partnership efforts.

A Great Lakes that Works Together

Support and participate in regional efforts through the Great Lakes Commission, the U.S. Environmental Protection Agency (USEPA), and the Council of Great Lakes Governors to bring about restoration and recovery of the Great Lakes ecosystem.

Participate in the Great Lakes Sea Grant Network research, education, communication and outreach efforts.

Facilitate the coordination and networking of multi agency /multi organization partnerships to develop and implement research, education and outreach in Lake Erie and /or the Great Lakes.

Education and Outreach to Restore Lake Erie

Support education and outreach to control and reduce the impact of aquatic invasive species.

Support education and outreach to build public understanding and support for science-based fishery management.

Science-based Information to Support Ecosystem Management

Lead efforts within the International Joint Commission (IJC) and other regional and state agencies and organizations to understand and model the Lake Erie ecosystem to enhance management of the system.

Support efforts of the International Association for Great Lakes Research to encourage scientists to conduct education and outreach to citizens, officials, key leaders and managers in the Great Lakes community.

Strategy:

Support the development of the Great Lakes Observing System (GLOS), the Great Lakes Sea Grant Network, NOAA Climate Service, Great Lakes Regional Research Information Network (GLRRIN), and other collaborative efforts that advance our capability to predict the effects of human activities and environmental changes on coastal resources in order to take steps to mitigate impacts, best manage a changing environment, and adapt to their effects.

Real-time Observation Systems

Provide leadership to develop coastal observation systems with Global Earth Observation System of Systems (GEOSS), the Global Ocean Observing System (GOOS), the Integrated Ocean

September 2009

Observing System (IOOS), the Great Lakes Observing System (GLOS), and the National Federation of Regional Associations for Coastal and Ocean Observing (NFRA).

Help implement the Integrated Ocean Observing System (IOOS) as a national program funded by Congress and the Great Lakes Observing System (GLOS) as the federally-funded Great Lakes program within IOOS, and seek appropriate roles for Sea Grant research, education, and outreach within these coastal observation systems.

Strategy:

Provide life-long learning programs for people of all ages that enhance understanding of Lake Erie, coastal, and Great Lakes environments and promote stewardship of healthy ecosystems.

Reaching those who Live, Work, and Play along Lake Erie:

Helping Ohio's Lake Erie residents and visitors understand more about Lake Erie and its watershed. By understanding the competing forces for use of Lake Erie and the impacts of choice, Lake Erie residents and visitors have the opportunity to take action to enhance the lake and its watershed through stewardship and engagement in local and regional decisions impacting the lake.

The following strategic actions were developed in partnership with Ohio Sea Grant, ODNR Office of Coastal Management, Old Woman Creek National Estuarine Research Reserve, and the Ohio Lake Erie Commission within the Lake Erie Partnership Education and Outreach Strategic Plan, developed collaboratively to align with NOAA's education and outreach plan.

Science as a Foundation

Develop education and outreach programs and activities based on social science research.

Measure the effectiveness of education and outreach activities and programs by achievement of environmental, economic, and social, as well as educational outcomes.

Increased Awareness about Lake Erie and its Issues

Improve inter-agency education and communications so all staff members are aware of what resources are available at other programs, allowing those seeking assistance to find accurate resources quickly.

Develop, adopt, and disseminate Lake Erie environmental literacy principles and concepts in consultation with educators, scientist, and partners.

Partnerships Built to Share Information

Partner with museums, natural areas, and nontraditional partners to incorporate messages about Lake Erie and the Great Lakes.

Establish a network of informal educators (such as interpreters at natural areas) to identify best practices and learning needs.

September 2009

Reaching Local Officials and Decision Makers

The following strategic actions were developed for the Ohio Coastal Training Program, a partnership of Ohio Sea Grant, ODNR Office of Coastal Management, Old Woman Creek National Estuarine Research Reserve, and the Ohio Lake Erie Commission within the Ohio Coastal Training Program and are aligned with NOAA's national education and outreach strategic plan.

Informed Decision-Makers who Act to Sustain Lake Erie and Coastal Communities

Partner with NOAA and local groups to develop new training programs for educating decision makers by implementing the strategies identified through the Ohio Coastal Training Program strategic plan.

Assist decision-makers in understanding the impact of their decisions on Lake Erie and its watershed.

Assist decision-makers in acquiring the science-based knowledge and skills necessary to make informed decisions regarding Lake Erie and watershed issues.

Build the Ohio Coastal Training Program as a resource for science-based training and technical assistance.

Provide technical training and assistance to provide decision-makers with the knowledge and skills needed to protect and conserve Lake Erie and its watershed.

Enhance the communications between all Ohio Coastal Training Partners regarding training priorities and plans.

Programs that Meet the Needs of Decision-Makers

Collaborate as partners in assessing needs and developing training programs and products.

Coordinate efforts to address priority training needs across the Lake Erie watershed.

Creating an Educated Workforce, Now and in the Future

The following strategies represent Ohio Sea Grant's additional education and outreach strategies, beyond those strategies identified through the Lake Erie Coastal Partnership and the Ohio Coastal Training Program.

Stone Laboratory Credit and Field Experience for Undergraduate and Graduate Students

Provide educational and training opportunities for undergraduate and graduate students that address real-world problems, opportunities, and management needs.

Emphasize and reward undergraduate and graduate training on research projects.

Increase minority participation in Stone Laboratory activities.

September 2009

Increase scholarship support for students and teachers.

Education for Adults

Enhance technical and management skills and overall knowledge among agency and institution managers by developing education and outreach products and programs in the aquatic and social sciences and emerging coastal issues.

Coordinate the Great Lakes Fisheries Leadership Institute to educate emerging leaders in fisheries management, Great Lakes issues and aquatic science.

Coordinate adult opportunities to learn more about the Great Lakes through F.T. Stone Laboratory.

Stone Laboratory Field Experience for K-12

Create opportunities for exceptional students to participate in real-world aquatic research and educational experiences.

Coordinate science-based workshops with hands-on laboratory and field experiences for middle school and high school students at Stone Laboratory, the Lake Erie Aquatic Education Visitors Center, and Gibraltar Island as a way to promote the study of STEM by youth.

Educator Training

Provide teacher education and development activities and programs to prepare them to better teach aquatic sciences and meet accountability requirements.

Provide education and outreach to place-based educators enabling them to better communicate Lake Erie science and stewardship.

Improved Education and Visitor Facilities

Improve the facilities and capabilities of Stone Laboratory, including expanding capabilities for distance-learning.

Through a cooperative management agreement with the ODNR Division of Wildlife, manage the Aquatic Visitors Center at Put-in-Bay to provide hands-on training for youth and adults in fishing methods, public fishing access, educational displays in fishery-related sciences, and public lectures by researchers and other experts.

Improve the facilities and capabilities of the Aquatic Visitors Center, Gibraltar Island, and the South Bass Island Lighthouse to serve as place-based learning venues.

Renovate Jay Cooke's Castle at Stone Laboratory for use as a conference center for Ohio Sea Grant's outreach and education programs.

Enhance development and delivery of Lake Erie-related information through programs, exhibit assistance, and presence at the Lake Erie Nature and Science Center.

An Informed Lake Erie Public

Increase public knowledge and understanding about Lake Erie, the Great Lakes, the oceans, the aquatic sciences, and the mission of Sea Grant and our research, education, and outreach efforts.

Provide programming and opportunities specifically targeted toward local constituencies who have been historically underrepresented in the aquatic sciences.

Increase understanding of science-based fisheries management and the sometimes controversial fisheries harvest and management practices needed to ensure sustainability of fisheries resources by providing education and outreach to fisheries resource users and management agencies.

Strong Network of Sea Grant Extension Agents and Stakeholders

Strengthen coordination of Ohio Sea Grant Extension.

Increase communications between Ohio Sea Grant agents, their advisory committees, and researchers.

Maintain high-quality and active advisory committees.

HCE – 3: Goal:

Restored function and productivity of Lake Erie degraded ecosystems

The following reflect the short/mid-term outcomes desired by Ohio Sea Grant:

Coastal residents, resource managers, businesses, and industries have access to new approaches and technologies developed to improve the effectiveness of restoring coastal ecosystems.

HCE – 3.1: Annually Ohio Sea Grant reaches 5,000 coastal residents, resource managers, business representatives and industry representatives with information about new approaches and technologies to improve ecosystem management.

Coastal residents, resource managers, businesses, and industries learn more about Lake Erie, the natural resources, issues, and opportunities.

HCE – 3.2: Annually Ohio Sea Grant helps 5,000 coastal residents and visitors learn more about Lake Erie natural resource, issues, recreation (fishing) and tourism opportunities.

Managers draw on both scientific information and the public to prioritize which ecosystem to restore and to set realistic restoration goals.

September 2009

HCE – 3.3: Ohio Sea Grant facilitates the development and dissemination of scientific information within Ohio Remedial Action Plan (RAP) Committees for Ohio's Areas of Concern.

Strategy:

Support research to improve the effectiveness of ecosystem restoration and identify promising new restoration approaches and technologies.

New Methods for Removing Contaminants

Develop and evaluate new technologies to remove and detoxify contaminants by supporting and soliciting research.

Strategy:

Invest in the development and dissemination of new information, policies, technologies, and methods to address water quality degradation, prevent the introduction and spread of aquatic non-native species, and minimize the negative impacts of these on coastal, ocean, and Great Lakes food webs.

Reduced Non-Point Pollution

Improve Lake Erie water quality by reducing non-point source run-off and erosion through dissemination of best management practices.

Elimination of Contaminants

Disseminate information about new technologies that are safe and capable of detecting, removing, and/or detoxifying contaminants in a cost-effective manner.

Fewer Aquatic Invasive Species

Provide educational information to elected officials and decision makers considering aquatic invasive species legislation to allow them to make informed decisions.

Strategy:

Provide technical support for citizens, organizations, and businesses that need help with specific mitigation/restoration problems, giving them access to the latest information and techniques.

Preservation Assistance to Communities, and Local and Regional Organizations

Provide technical support including socio-economic information to coastal advisory councils, resource managers, and organizations working to protect Lake Erie.

Reduction of Pollution

September 2009

Reduce non-point pollution by developing and implementing pollution control programs in cooperation with federal, state, and local governments and organizations, including OSU Extension agricultural and horticultural educators.

Reduce pollution from marinas and boaters through coordination, education programming and delivery of resources through the Ohio Clean Marinas program.

FOCUS AREA --Sustainable Coastal Development

Within the focus area of **Sustainable Coastal Development**, the following long-term visions create the basis of the Ohio Sea Grant strategic plan:

Ohio's coastal communities and industries have healthy economies that include working waterfronts, an abundance of recreation and tourism opportunities, and coastal access for all citizens.

Ohio's coastal communities make efficient use of land, energy, and water resources and protect the resources needed to sustain coastal ecosystems and quality of life.

Alternative energy technologies (wave, thermal, current, wind, solar) are evaluated for their environmental and economic impacts and adopted.

Coastal community designs are implemented that improve energy efficiency and reduce carbon emissions

Ohio's coastal citizens, leaders and industries work together to balance multiple land uses and optimize environmental sustainability.

To evaluate our progress toward these visions, the following represent the ways Ohio Sea Grant will measure our achievements. These performance measures are aligned with the National Sea Grant Program Strategic Plan:

Coastal communities engaged in activities (i.e. visioning, resource inventories, analysis of development policies) or making informed development decisions that address the sustainability of economic and environmental resources as a result of Ohio Sea Grant's capacity building, tools, data, technologies, and/or education of community leaders.

Coastal communities adopting or implementing sustainable economic and environmental development practices (i.e., energy efficiency, climate change planning, land use planning, community visioning, balanced growth principles, recreation, tourism) as a result of Ohio Sea Grant activities.

Economic impacts derived from sustainable coastal policies and practices.

Goals for Sustainable Coastal Development

Within the **Sustainable Coastal Development** focus area, three goals guide Ohio Sea Grant's future activities. These goals include the following:

- Healthy coastal economies that include working waterfronts, an abundance of recreation and tourism opportunities, and coastal access for all citizens.

- Coastal communities that make efficient use of land, energy, and water resources and protect the resources needed to sustain coastal ecosystems and quality of life.
- Coastal citizens, community leaders, and industries that recognize the complex inter-relationships between social, economic, and environmental values in coastal areas and work together to balance multiple uses and optimize environmental sustainability.

Each of these goals has a series of short/mid-term outcomes with measurable objectives that will be used to determine progress in reaching these desired states. These outcomes and measurable objectives are identified following each goal statement.

SCD-1: Goal:

Healthy coastal economies that include working waterfronts, an abundance of recreation and tourism opportunities, and coastal access for all citizens.

The following reflect the short/mid-term outcomes desired by Ohio Sea Grant:

Local communities have the information and techniques to enhance waterfront-related economic activities and protect the health of the Lake Erie coastal environment.

SCD – 1.1: By 2013, all Sea Grant-funded research proposals address stakeholder education and/or outreach components.

SCD – 1.2: By 2013, 30% of the approximately 150 charter captains participating annually in charter captain conferences and training report greater profitability due to Sea Grant related programs and activities.

SCD – 1.3: By 2012, 50 key statewide tourism industry leaders and agency officials will have participated in training provided by Ohio Sea Grant to create better understanding of the relationship between resource health and economic potential.

SCD – 1.4: By 2013, 60 marinas within the coastal Ohio area are certified as Clean Marinas.

Public access to Lake Erie's beaches and waterfronts is enhanced, preserved or increased.

SCD 1.5: By 2013, a tool is developed to measure the effectiveness and implementation rate of Ohio Sea Grant research, education, and outreach with community and land-use planners participating in programs.

SCD 1.6: By 2013, Ohio Sea Grant has assisted 5 public access projects along Lake Erie, resulting in 20 additional acres added or maintained for recreational use.

Lake Erie community leaders are able to identify and pursue sustainable economic development policies and programs.

SCD 1.7: By 2013, a needs assessment has been conducted to identify and prioritize the sustainable development research, training, and information needs of local, state, and federal policymakers.

SCD 1.8: By 2013, written policy analysis of at least one emerging issue impacting Lake Erie waterfront development has been completed.

SCD 1.9: By 2013, participant evaluations from legislative events measure increases in understanding and their intent to apply information to future decisions, and Ohio Sea Grant is gathering further information from participants on specific implementation challenges

Lake Erie watershed communities engage in visioning, resource inventories, analysis of development policies and education of community leaders and citizens.

SCD 1.10: By 2013, a plan will have been developed for increasing coastal community awareness and participation in the Ohio Business Retention and Expansion program, as well as other applicable planning products available through OSU.

SCD 1.11: By 2013, 10 communities have been involved in visioning, resource inventories, analysis of development policies and education of community leaders and citizens with the assistance of Ohio Sea Grant.

Lake Erie watershed communities are able to analyze the impacts and benefits of balanced growth practices and alternative development scenarios on coastal resources and economies.

SCD 1.12: By 2013, 3 case studies related to implementation of balanced growth have been developed.

SCD 1.13: By 2013, training and technical resources related to sustainable development practices such as balanced or smart growth will have been provided to 150 officials in coastal communities.

Ohio Sea Grant will obtain these outcomes through the following strategies:

Strategy:

Support research, education, and outreach activities that provide Ohio's coastal communities and is elected officials with the information, training, and tools to help them enhance working waterfront-related economic activities such as commercial and recreational fishing, tourism, outdoor

recreation, renewable energy strategies, port development, and marine trades, without diminishing the long-term health of Lake Erie and its coastal resources.

Sustainable Development Research and Science

Determine research priorities related to sustainable waterfront development using regional decision-maker needs assessments, indices of ecosystem qualities, and evaluations of the economic impact potential of projects, such as commercial and recreation fishing, aquaculture, local government development projects, energy development, tourism, and port development.

Ensure Sea Grant research is able to be applied by stakeholders to achieve sustainable waterfront development.

With core partners, develop a searchable, easy-to-use method for stakeholders to acquire translated, easy-to-read research findings sorted by topic.

Anticipate future information needs and conduct research to inform local, state and federal policy decisions impacting Lake Erie.

Support efforts to document the socio-economic values and contributions of Lake Erie and Great Lakes resources on the management and use of Lake Erie and Great Lakes resources.

Educated Lake Erie Community Leaders

Increase the awareness and knowledge level of elected officials about coastal Great Lakes and Lake Erie sustainable development issues, research-based solutions, and Ohio Sea Grant's role in meeting these challenges.

Provide sustainable development and leadership training and information for existing and emerging local community leaders.

An Economy on the Rise

Conduct new or enhance existing Ohio business retention and expansion programs within coastal counties.

Sea Grant will work with coastal communities and businesses in an effort to inform and educate about the benefits of adaptive re-use of former brownfield sites

More Lake Erie Anglers

Increase Lake Erie fishing efforts, and subsequently the economic impact of anglers, through statewide and regional education and outreach focused on topics such as locations and methods for popular fish species, opportunities for underutilized sport fish species, and other topics.

Develop, coordinate, and conduct education and outreach focused on increasing the public's understanding of fisheries science to increase fishing participation and to increase proficiency among resource users.

September 2009

Develop, coordinate, and conduct education and outreach focused on increasing fishing among underrepresented audiences such as women and youth anglers.

Support an emerging tributary steelhead fishery through research, education, and outreach.

Help develop the next generation of fisheries professionals and anglers through educational programming and activities at F.T. Stone Laboratory and Ohio State University.

Conduct research to improve the Lake Erie fish habitats and populations in coastal Lake Erie marinas through placement of various structures promoting both fish concentration and spawning habitat.

Charter Captains Making a Profit

Increase profitability and sustainability in the charter fishing industry through business and technology development and education.

Support research to define economic impact of charter fishing industry.

Diversified and Healthy Tourism Economy

Support education and outreach to tourism industry leaders and agency officials in the State of Ohio to enhance their understanding and ability to implement resource-based sustainable tourism strategies.

Explore developing a Great Lakes tourism initiative to promote sustainable tourism in the Great Lakes and enhances the Great Lakes image and long-term economic vitality.

Develop new regional products to enhance the demand and quality of resource-based experiences.

Provide education, information and training to Ohio's coastal tourism businesses and visitors bureaus.

Provide the education, information, and training needed by coastal resource managers to enhance the visitor experience, protect environmental quality faced with increased use, and better connect with the tourism industry.

Enhance existing and develop new programs and products that reflect and motivate coastal Ohio's tourism industry's commitment to sustainability, including Ohio Clean Marinas and Clean Boaters programs.

Thriving Lake Erie Ports and Harbors

Increase profitability and sustainability of coastal Ohio's ports and harbors.

A Boating Industry Full of Promise

Increase profitability and sustainability of the Lake Erie marine trades industry through business and technology research, education, and outreach.

September 2009

Support research to enhance our understanding of bioluminescence, biofouling, biocorrosion, biofilm function, and symbiosis in order to develop antifouling and anticorrosion products and net work with other Great Lakes Sea Grant programs to develop and disseminate new information.

Collaboration with other Experts

Use specialists and editors from all program areas in Ohio State University Extension to create a comprehensive and functioning sustainable development outreach team.

Strategy:

Support efforts to preserve and increase public access to Lake Erie beaches and waterfronts through assessments of access needs, analysis of legal issues, technical assistance, and assistance in reducing the number of beach advisories.

Increased Public Access

Identify existing and proposed public access areas to Lake Erie, as well as the challenges and issues related to increased access.

Identify economic impact of beach visitation along the Lake Erie shoreline.

Develop a “Lake Erie Coastal Community Guide to Waterfront Access” incorporating best practices, key issues, and solutions and tools for increasing access.

Identify potential expansion of beach areas resulting from lower lake levels and assist communities and managers in increasing awareness and use of these areas.

Increase participation in beach activities, thus increasing economic impacts.

Link economic and quality of life benefits of beaches and public access to land-use decision-making education and outreach efforts.

Clean and Healthy Beaches

Identify needs and facilitate delivery of research, education, and outreach to beach managers along Lake Erie.

Assist coastal communities with planning to enhance coastal parks, beaches, and marina facilities.

Strategy:

Engage Lake Erie coastal communities in planning processes that support the efforts of community leaders to identify and pursue sustainable economic development policies and programs.

Choices Based on the Environment and the Economy

Increase understanding of the economic and environmental consequences of land, energy, and water use decisions and coastal building design choices among government leaders and business owners.

Increase understanding and ability to implement balanced growth practices among local officials to achieve sustainable waterfront development.

Plans for the Future

Identify and network with appropriate existing OSU Extension programs that deal with community development and help communities make decisions, such as the Exurban Change program.

Develop a Lake Erie Coastal Ohio Trail Phase II implementation plan for the Lake Erie coast.

Upgrade agent educator group facilitation skills.

Provide training and technical support to assist communities with development of watershed balanced growth plans that protect Lake Erie and maximize economic vitality and quality of life with Ohio Coastal Training Program Partners, .

Collaborate /lead efforts with the Ohio Department of Natural Resources (ODNR), the Ohio Environmental Protection Agency (OEPA), Ohio Lake Erie Commission, OSU Extension, and local communities to develop watershed management plans for every Lake Erie watershed in Ohio.

SCD 2--Goal:

Coastal communities that make efficient use of land, energy, and water resources and protect the resources needed to sustain coastal ecosystems and quality of life.

The following reflect the short/mid-term outcomes desired by Ohio Sea Grant:

Lake Erie coastal communities determine the sustainable carrying capacity of their land, water, and other resources.

SCD 2.1: By 2013, a tool, or collection of tools, has been identified to assist communities in measuring the carrying capacity of their resources

Lake Erie coastal communities use a variety of tools and technologies to adopt policies to protect the sustainable ecosystem footprint needed to sustain coastal, marine, and Great Lakes ecosystems and implement

community designs that are compatible with carrying capacity of coastal ecosystem and water resources

SCD 2.2: By 2013, Ohio Sea Grant has evaluated the development of a tool to measure a community's ecosystem footprint.

Lake Erie communities adopt practices that increase their energy efficiency and decrease use of fossil fuels (i.e. increase in walkability, increase in public transit, decrease in vehicle miles traveled, energy efficient building codes adopted).

SCD 2.3: By 2013, 3 communities have implemented sustainable practices due to information, training, or assistance provided by Ohio Sea Grant and its partners.

Ohio Sea Grant will obtain these outcomes through the following strategies:

Strategy:

Strengthen Ohio Sea Grant's research activities and extension capacity to help coastal communities determine the sustainable carrying capacity of their land, water, and other resources through resource assessments, cost-benefit analysis, scenario building, modeling, and other techniques.

Ability to Understand Sustainability

Explore development of a way to determine sustainable carrying capacity of our resources in cooperation with the Ohio Coastal Training Program, Old Woman Creek National Estuarine Research Reserve, ODNR Office of Coastal Management, the NOAA Coastal Services Center, and the Ohio Lake Erie Commission.

Develop or access education and outreach materials to encourage sustainable waterfront development through determining sustainable carrying capacity.

Strategy:

Support innovative research on land-use practices and building designs that promote energy and water conservation, coastal Lake Erie related renewable energy technologies, and the creation of other tools to help communities grow in sustainable ways.

Renewable Energy

Seek support to use Stone Laboratory as an experimental and demonstration facility for green building technologies, including the potential impacts of wind energy on migratory birds and solar energy.

Use Ohio Sea Grant's RFP cycle to focus academic research on land-use practices and building designs that promote energy and water conservation, coastal Lake Erie related renewable energy technologies, and the creation of other tools to help communities grow in sustainable ways.

Disseminate information, provide training, and participate in discussions regarding new technologies for energy production and assist communities in making decisions regarding these technologies (i.e. solar, wind energy).

Strategy:

Help Lake Erie communities evaluate their ecological footprints and grow in environmentally sustainable ways, focusing on products developed in cooperation with NOAA's Climate Change Program Office, Lake Erie coastal programs, and other partners.

Measurements of Community Ecological Footprints

Determine the carbon footprint of Stone Lab and publicize our efforts and progress to reduce it.

Adopt or develop a methodology to measure the ecological footprints of coastal communities.

Explore development of an online Lake Erie Sustainability presence to communicate findings of ecological footprints of communities, to link to approved ecological footprint calculators for individual use, to provide links to related sustainability partners within the coastal region, and to provide recommendations for reducing individual and community footprints.

Develop education and outreach support for communities with recommendations for reducing ecological footprints.

SCD 3--Goal:

Lake Erie coastal citizens, community leaders, and industries that recognize the complex inter-relationships between social, economic, and environmental values in coastal areas and who work together to balance multiple uses and optimize environmental sustainability.

The following reflect the short/mid-term outcomes desired by Ohio Sea Grant:

Lake Erie coastal communities adopt mitigation measures, best management practices, and improved site designs (low impact development, green building design, natural area planning, wild habitat corridors, bio retention areas, vegetative swales) in local policies and ordinances.

SCD 3.1: By 2013, 50 coastal communities have been provided information by Ohio Sea Grant and its partners related to mitigation measures, best management practices, and improved site designs, as well as examples of how these efforts have been integrated into other policies and ordinances.

Lake Erie coastal communities are able to evaluate cost-benefit trade-off in the coastal area.

SCD 3.2: By 2013, at least two new research projects focus on socio-economic research/outreach cost-benefits for local communities.

Growth plans, policies and strategies are developed and adopted to protect local and regional natural resources to serve future generations.

SCD 3.3: By 2013, 10 coastal communities have involved Ohio Sea Grant in their discussions regarding sustainable planning.

Lake Erie coastal communities adopt and employ comprehensive land use planning and community design techniques that protect valuable coastal resources and minimize the impact of the built environment and sustain coastal environments.

SCD 3.4: By 2013, 5 coastal communities are involved in the Balanced Growth Program or are otherwise incorporating sustainable development principles such as smart growth into their comprehensive planning efforts.

Strategy

Work with NOAA's Office of Ocean and Coastal Resource Management, NOAA's Coastal Services Center, Environmental Protection Agency Offices of Smart Growth and regional and local partners to disseminate assessment tools, model plans and ordinances, best management practices, alternative development approaches, and other techniques that will enable the citizens of Lake Erie to develop their coastal economies in environmentally-sound ways.

Best Management Practices

Support or fund research, education, and outreach on performances of sustainable coastal development best management practices and distribute results.

Support or fund projects that look at product life-cycle costs and full cost analysis of environmental functions.

Sustainable Model Ordinances

Develop or adopt model ordinances and sample plans and provide education and outreach to community stakeholders for implementing.

Strategy:

Build Ohio Sea Grant capacity to evaluate cost-benefit trade-offs in the coastal zone through a greater emphasis on socio-economic research, impact studies, benefit/cost research, and other methods of evaluating alternative future scenarios for coastal communities.

Economic Research to Identify Impacts and Values

Enhance delivery of socioeconomic research to address needs of coastal communities.

Update previous estimates of the values of Lake Erie natural resources, such as fisheries, beaches, natural areas, public access to Lake Erie, amenities desired by coastal residents and visitors, etc.

Network with Ohio State University College of Food, Agriculture, and Environmental Science economic professors to provide real-life issues and applied research questions that could benefit from benefits/cost analysis.

Seek projects that enhance the economic value of Lake Erie and projects that enable improved management of Lake Erie, including projects that can create jobs and enhance economic activity through improved practices, product creation, and specialized training are encouraged, along with human dimension studies and proposal documenting the economic value of Lake Erie natural resources and the impact of cleanups to Lake Erie Areas of Concern.

Cost-Benefit Analysis to Help Make Decisions

Increase Ohio Sea Grant's capabilities to provide accurate benefits/cost analysis estimates for local issues.

Identification of Barriers to Sustainable Development

Network with other agencies (such as EPA, the Ohio Lake Erie Commission, Old Woman Creek National Estuarine Research Reserve, etc) interested in balanced growth to identify issues and impediments to implementing balanced growth in the Lake Erie coastal zone.

Strategy

Foster regional cooperation and partnerships among local government officials, community stakeholders, and regional planning organizations to promote sustainable growth plans and strategies that protect local and regional natural resources to ensure an abundance of these resources are available for future generations.

Collaborative Research

Foster and coordinate research that will identify and solve basic ecological questions relevant to the Lake Erie Ecosystem through collaborative networks such as the Lake Erie Millennium Network and the Great Lakes Regional Research Information Network (GLRRIN).

Sustainable Development Education

September 2009

Host special educational days for coastal county mayors, decision makers, and county commissioners every year at Stone Laboratory and incorporate sustainable growth information into the curriculum.

Incorporate sustainable growth principles in course curriculum at Stone Laboratory.

Promote regional cooperation among Great Lakes Sea Grant Programs through the Great Lakes Research and Outreach Consortium.

Collaborative Strategies to Strengthen Education and Outreach

Develop a joint education and outreach strategic plan for the "Lake Erie Partnership," representing Ohio Sea Grant, Old Woman Creek National Estuarine Research Reserve, ODNR's Coastal Management Program, and the Ohio Lake Erie Commission.

Collaborate with coastal partners in implementing the decision-maker education and outreach strategies identified by the Ohio Coastal Training Program.

FOCUS AREA – Safe and Sustainable Seafood Supply

Within the focus area of **Safe and Sustainable Seafood Supply**, the following long-term visions create the basis of the Ohio Sea Grant strategic plan:

Ohio's sport and commercial fisheries harvest and produce fish responsibly and efficiently.

Lake Erie's fisheries and Ohio's aquaculture industry are sustainable and safe.

Consumers make choices in seafood purchases that support a safe, valuable, and sustainable fishery.

To evaluate our progress toward these visions, the following represent the ways Ohio Sea Grant will measure our achievements.

Anglers and citizens reached through education and outreach related to and promoting the Lake Erie fishery.

Reduction of threats to Lake Erie's fishery, such as aquatic invasive species and emerging issues such as viruses and disease.

Goals for Safe and Sustainable Seafood Supply

Within the **Safe and Sustainable Seafood Supply** focus area, three goals have been created to guide Ohio Sea Grant's future activities. These goals include the following:

- Sustainable fisheries to meet public demand.
- A healthy Lake Erie fisheries that harvests, produces, processes, and/or markets fish products responsibly and efficiently.
- Informed consumers who understand the importance of ecosystem health and sustainable harvesting practices to the future of our Lake Erie fisheries, who appreciate the health benefits of fish consumption, and who understand how to evaluate the safety of the fish they catch.

Each of these goals has a series of short/mid-term outcomes with measurable objectives that will be used to determine progress in reaching these desired states. These outcomes and measurable objectives are identified following each goal statement.

SSF 1--Goal:

Sustainable fisheries to meet public demand.

The following reflect the short/mid-term outcomes desired by Ohio Sea Grant:

Natural and human threats to the long-term viability of Lake Erie's fish populations are minimized.

SSF 1.1: By 2013, 1,000 stakeholders attended education programs that identify causes and control measures for minimizing the stresses to Lake Erie fisheries.

SSF 1.2: By 2013, ODNR will have an updated Ohio Aquatic Invasive Species Management Plan.

A viable domestic aquaculture industry with acceptable environmental impacts is supported.

SSF 1.3: By 2013, Ohio Sea Grant will assist in the development of a comprehensive education and outreach strategy with the aquaculture industry.

Strategy:

Use Ohio Sea Grant's research, extension, education, and communication capabilities to develop and disseminate essential knowledge about natural and human threats to the long-term viability Lake Erie and Great Lakes fisheries, to identify ways to minimize these threats, and to use ecosystem-based fisheries management and other innovative approaches to accomplish this.

Mitigation of Aquatic Invasive Species

Reduce aquatic invasive species in live fish shipments by educating haulers, including aquaculturists and bait dealers.

Ensure the new Ohio aquatic invasive species management plan includes management objectives for aquaculture and pond fish procurement from states outside of Ohio.

Reduce possibility of future aquatic invasive introductions through educating marinas and boaters involved in the Clean Marinas program.

Participate on state and regional aquatic invasive species committees to develop a new Ohio Rapid Response Plan and re-write current Ohio Aquatic Invasive Species Management Plan.

Enhanced, Healthy Wild Fishery

Support research, education, and outreach activities related to Viral Hemorrhagic Septicemia (VHS) and emerging diseases and their impacts on the Lake Erie fishery, including partnering with the Ohio Department of Agriculture to raise angler and boater awareness of the disease, transportation restrictions, implications to the fishery, and the public's role in containing this disease.

Identify new techniques and/or research to identify and manage Lake Erie fish stocks.

September 2009

Encourage the addition of fish concentrations and spawning habitat as a mitigation procedures when constructing wind turbines in the nearshore waters of Lake Erie.

New Ways to Reach Visitors with Fishery Information

Incorporate exhibits and educational programming relating to the health of the fisheries within the Aquatic Visitors Center at Put-in-Bay.

Strategy:

Conduct integrated research, education, and outreach activities to support a viable domestic aquaculture industry with acceptable environmental impacts, in ways that are consistent with national objectives, building on the leadership role Ohio Sea Grant plays in this area.

New Products and Markets

Seek external partnerships to support the development of new products and markets using underutilized Lake Erie species.

Provide technical information and assistance to new aquaculturists.

Improved Productivity of Aquaculture

Support research projects to advance aquaculture in Ohio.

Strategy:

Work with Great Lakes Fishery Commission, the Ohio Division of Wildlife, the National Sea Grant Office, other international, federal, provincial, and state partners, and fishing industries to enhance the management and productivity of Lake Erie's fisheries.

Leadership for Lake Erie's Fishery

Transition the Fisheries Extension Education effort from a temporary program into a main stream priority effort within the Ohio Sea Grant Extension Program and make the fisheries extension effort a part of future Ohio Sea Grant omnibus grant proposals.

Continue to provide leadership and/or support to GLRRIN, the IJC Council of Great Lakes Research managers, Binational Executive Committee, Great Lakes Commission, the Lake Erie Technical Committee, and the Lake Erie LaMP to accomplish this strategy.

SSF 2--Goal:

A healthy Lake Erie fisheries that harvest, produce, process, and/or market fish products responsibly and efficiently.

The following reflect the short/mid-term outcomes desired by Ohio Sea Grant:

Fishermen are knowledgeable, employ efficient fishing techniques, and understand the rationale behind fishing regulations.

SSF 2.1: By 2013, 1,000 have participated in hand-on training to learn more about efficient fishing techniques.

Lake Erie and Ohio fish availability and fisheries profitability increase.

SSF 2.2: By 2013, Ohio Sea Grant will investigate the feasibility of developing at least two new Lake Erie or aquaculture fish products.

Strategy:

Engage harvesters, recreational fishermen, aquaculturists, and managers in the development of research and management innovations related to the condition, use, and conservation of the Lake Erie and Great Lakes natural resources they depend on.

Input from Stakeholders

Use Ohio Sea Grant advisory committees and Fisheries Extension Advisory Committee to identify research, education and outreach priorities related to Lake Erie and Ohio fisheries.

Monitor Lake Erie Discussion Board for questions and issues related to the Lake Erie fishery and use of Lake Erie.

Collaborate with the ODNR Division of Wildlife on projects and programs related to the Lake Erie fishery.

Train emerging leaders with fisheries organizations in new fishery management techniques.

Strategy:

Support research, development, and transfer of new technologies to keep Lake Erie and Ohio fisheries financially competitive and environmentally responsible.

New Technologies to Improve Aquaculture Industry

Enhance production of cultured species through research, education and outreach.

SSF 3--Goal:

Informed consumers who understand the importance of ecosystem health and sustainable harvesting practices to the future of our Lake Erie fisheries, who

appreciate the health benefits of fish consumption, and who understand how to evaluate the safety of the fish they catch.

The following reflects the short/mid-term outcome desired by Ohio Sea Grant:

Lake Erie fish consumers have an increased knowledge of the nutritional benefits of seafood products, know how to judge seafood safety and quality, and can apply this knowledge to make better choices why they purchase fish.

SSF 3.1: By 2013, 1,500 have been reached with information on preserving and preparing freshly caught Lake Erie fish.

Information portals are available for information related to Lake Erie fish safety and benefits, nutrition, and sustainability.

SSF 3.2: By 2013, the Ohio Lake Erie Discussion Board has informed 90,000 individuals reading posts and has 400 registered users.

Strategy:

Enhance training and technical assistance programs related to the application of standards for safe handling, preservation, and preparation of Lake Erie fish.

Increased Knowledge of Proper Fish Preparation and Preservation

Education and outreach will occur to provide information on preserving and preparing fresh-caught fish.

Strategy:

Develop educational programs and materials that enhance the American public's understanding of what is required to maintain a sustainable Lake Erie fishery and to build the public's awareness of differences in the quality, safety, and nutritional benefits of sport caught fish so they will be informed advocates and consumers.

Balanced Messages

Provide a balanced message about the consumption of Lake Erie fish, including health benefits and safety.

Strategy:

Work in close coordination with the Great Lakes Fish Commission, ODNR's Division of Wildlife, and other partners to develop information portals that give access to factual information on the Lake Erie's fishery.

September 2009

Increased Communication with Consumers.

Continue to maintain the Lake Erie Discussion Board.

FOCUS AREA – Hazard Resilience in Coastal Communities

Within the focus area of **Hazard Resilience in Coastal Communities**, the following long-term visions create the basis of the Ohio Sea Grant strategic plan:

Lake Erie residents are aware of and understand the physical processes that produce hazards and climate change and the implications of those events for their communities.

Lake Erie communities address social and environmental barriers to improve the community's ability to mitigate and respond to natural hazards.

Lake Erie communities are able to effectively respond to coastal catastrophes.

To evaluate our progress toward these visions, the following represent the ways Ohio Sea Grant will measure our achievements. These performance measures are aligned with the National Sea Grant Program Strategic Plan:

Coastal communities and citizens who have been provided with information and/or trained in local hazard resiliency and hazard mitigation tools, techniques, and best practices.

Coastal communities and citizens who have adopted and/or implemented hazard resiliency practices to prepare for and respond to/minimize coastal hazardous events.

Beach managers who use Ohio Sea Grant information regarding rip currents for training lifeguards and beach personnel.

Goals for Hazard Resilience in Coastal Communities

Within the **Hazard Resilience in Coastal Communities** focus area, three goals have been created to guide Ohio Sea Grant's future activities. These goals include the following:

- Widespread understanding of the risks associated with living, working, and doing business along the Lake Erie coast.
- Community capacity to prepare for and respond to hazardous events.
- Effective response to coastal catastrophes.

Each of these goals has a series of short/mid-term outcomes with measurable objectives that will be used to determine progress in reaching these desired states. These outcomes and measurable objectives are identified following each goal statement.

HR 1--Goal:

Widespread understanding of the risks associated with living, working, and doing business along the Lake Erie coast.

The following reflect the short/mid-term outcomes desired by Ohio Sea Grant:

Lake Erie decision-makers benefit from improved risk communication (i.e. better understanding of emergency forecasting, evacuation plans, rip current hazards, etc) and understand the benefits of coastal hazard risk planning.

HR 1.1: By 2013, 100 decision makers have received information and training regarding coastal hazard risk planning (i.e. better understanding of emergency forecasting, evacuation plans, rip current hazards, climate change, etc.).

Lake Erie decision-makers are aware of existing and available hazard-related data and resources (i.e. wave gauge, water level gauge, weather station data, etc.)

HR 1.2: By 2013, a tool is developed to measure knowledge growth of decision makers to assessing risk vulnerability and their ability to apply knowledge obtained through education/outreach of Ohio Sea Grant and its partners.

Strategy:

Conduct research to assess Lake Erie and Great Lakes hazard-related risks and increase the availability and usefulness of hazard-related information and forecasting for citizens, industries, and decision-makers in coastal communities.

Research to Assess Risks

Support research to create new technologies for disaster remediation and prevention and develop techniques for risk assessment and cost benefit analysis.

Improve the ability of state and local governments to identify and remove coastal navigation hazards and to understand the impact of water-level fluctuations.

Safety Education

Increase safety for recreational and scientific divers through education and outreach.

Enhance the safety of ice fishermen through education and outreach.

Forecasts for the Future

Partner with agencies to develop techniques to detect and forecast climate and ecosystem changes that occur over decades to examine how these changes may affect individuals and communities.

Education

September 2009

Incorporate hazard resiliency information, including climate change and its impacts, into Stone Laboratory programming.

Strategy:

Work with marine commercial enterprises to assess the risks associated with doing business in the Lake Erie and Great Lakes area in the context of coastal storms, lake effect storms, shore erosion, climate-related changes, lake level changes, tributary flooding, ice damage, and dramatic changes in port and international trade activities.

Identification of Economic Impacts of Coastal Hazards

Work with public agencies, private industry, individuals, and groups to increase the awareness and action on threats and opportunities to economic activity in the coastal zone.

Strategy:

Work with the NOAA Climate Change Program, NOAA's National Weather Service, the Sea Grant Climate Network, the Great Lakes Sea Grant Network, the Ohio State University Extension Climate Team, scientific organizations, and other public and private sector partners to develop comprehensive education/literacy programs on the immediate and long-term effects of climate-related changes and other hazardous events on human safety and property along the coast and how to prepare for and survive them.

Education to Respond to Change

Assist with outreach and education on climate change mitigation and adaptation in Lake Erie and the Great Lakes region.

Collaborate with Ohio Coastal Training Program partners to train communities on climate change adaptation planning and mitigation.

HR 2--Goal:

Community capacity to prepare for and respond to hazardous events.

The following reflect the short/mid-term outcomes desired by Ohio Sea Grant:

Lake Erie communities have access to and the ability to utilize data and innovative and adaptive tools and techniques to minimize hazard risks (i.e. planning and construction BMPs, standards, resiliency index, retrofits, flood-zone maps, and freeboard).

HR 2.1: By 2013, a comprehensive inventory of tools and techniques available for coastal communities will be developed.

Lake Erie decision-makers have the capacity to apply data and resources to hazard planning and response.

HR 2.2: By 2013, at least three trainings will be conducted for Lake Erie decision makers that provide the information needed to apply data, tools and resources (i.e. GIS application, land-use planning)

Lake Erie decision-makers have the knowledge and skills to assess local risk vulnerability and respond with appropriate policies and regulations.

HR 2.3: By 2013, a tool is developed to measure knowledge growth of decision makers to assessing risk vulnerability and their ability to apply knowledge obtained through education/outreach of Ohio Sea Grant and its partners.

Lake Erie opinion leaders and decision-makers take proactive measures to ensure that hazards, risks, and vulnerabilities are communicated to property owners and perspective purchasers.

HR 2.4: Where appropriate, training for Lake Erie opinion leaders and decision-makers includes audience-appropriate information for them to communicate to property owners and perspective purchasers.

Strategy:

Help public and private decision-makers and local Emergency Management Agencies create and adopt policies, plans, and ordinances to reduce risks, manage catastrophic events, and speed recovery.

Technical Assistance and Expertise

Upon emerging policy decisions, Ohio Sea Grant will participate in local community efforts to lend expertise.

Enhance public knowledge of new policies and potential implications through education and outreach activity.

Strategy:

Create and disseminate, in partnership with NOAA's National Weather Service and other entities, integrated demographic and coastal hazard information databases that help measure human vulnerability in specific coastal regions, support hazard-related planning activities, and facilitate disaster relief efforts.

Assistance in Protecting Property

Through the Lake Erie Partnership and the Ohio Coastal Training Program, assist the Ohio Coastal Management Program and Ohio Department of Natural Resources with training and dissemination of information on shore erosion best management practices, as well as coastal and floodplain hazards.

HR 3: Goal:

Effective response to coastal catastrophes.

The following reflect the short/mid-term outcomes desired by Ohio Sea Grant:

Lake Erie communities and non-governmental organizations apply best available hazards and climate change information, tools, and technologies to maximize community resiliency to natural hazards.

HR 3.1: By 2013, needs assessments are conducted with at least three stakeholder groups on their needs for climate change information and tools.

Strategy:

Work with NOAA’s National Weather Service, the Great Lakes Observing System (GLOS), Coastwatch and other partners to make hazard-related data and data-derived products available and relevant to support decision-making during crisis events.

Information Needed to React

Upon request, assist local governments and emergency management agencies to alert citizens and businesses to threats stemming from storms and fluctuating water levels by providing news releases, alerts, web pages, and personal assistance on critical storm and water level information, including data from the Great Lakes Forecasting System.

Conduct needs assessments of appropriate stakeholders on their decision-making needs during crisis events and climate changing conditions.

Strategy:

Contribute to the nation’s rapid response capability by developing ways to mobilize Sea Grant’s national network of scientific and technical expertise to inform response strategies and activities on Lake Erie and the Great Lakes.

Partnership to Adapt to a Changing World

Participate, support and provide leadership for the Great Lakes Sea Grant Network and the Sea Grant Program Leaders Assembly.

Participate, support and provide leadership for Great Lakes Centers of Ocean Science Education Excellence (COSEE.)

September 2009

Participate, support and provide leadership for Great Lakes Region Research and Information Network (GLRRIN.)

Strategy:

Make Ohio Sea Grant's local knowledge and contacts available to work with federal, state, regional, and local agencies, non-governmental organizations, and international partners on Lake Erie and in the Great Lakes that have hazardous event responsibilities, to facilitate the speed and quality of response to these crises.

Partnerships to Enhance Reach and Effectiveness

Coordinate and lead the collaborative Lake Erie Partnership to unify and leverage efforts among a minimum of four Lake Erie related organizations and agencies.