

New York Sea Grant Strategic Plan 2010-2013

Implementation Plan Outcomes and Performance Measures

DESCRIPTION OF THE IMPLEMENTATION PLANNING PROCESS

The New York Sea Grant (NYSG) Implementation Plan was developed relatively quickly following a much longer process for the development of the NYSG Strategic Plan. Outcomes and performance measures were selected based on current research, communications, and extension activities that we need to continue, as well as some new focus areas that we need to expand (e.g., climate change) or begin (e.g., marine spatial planning) during the next four years. During this process we relied on the guidance from the National Sea Grant Office as well as the National Sea Grant Implementation Plan. Since the National Implementation Plan does not contain Measureable Objectives (Template II) but emphasizes Outcomes and Performance Measures, we have done the same. During the planning process the management team has had considerable discussion with the NYSG staff in order to make sure that the stated outcomes are important and that the performance measures can be achieved. We believe that this is an ambitious implementation plan that strongly addresses both our Program and Focus Area Goals.

Implementation Plan Outcomes and Performance Measures

Focus Area A: <i>Healthy New York Coastal Ecosystems</i>			
GOAL	STRATEGY	SHORT/MID-TERM OUTCOMES	LONG-TERM OUTCOMES
i. Reduced or mitigated impacts of aquatic invasive species	<ol style="list-style-type: none"> 1. Support research and research syntheses on the biology, introduction, effects, prediction, management, and control of important invasive species in order to reduce or mitigate their impacts. 2. Educate and motivate stakeholders to adopt practices that will limit the 	<ol style="list-style-type: none"> 1. Complete research projects a and b, listed below. 2. New information will be available to help set or confirm methods or directions for possible reduction or mitigation of aquatic nuisance species. 3. State, regional and national invasive species 	<ol style="list-style-type: none"> 1. Scientific advances conveyed to the research community will lay the foundation or set directions for new understandings and further scientific developments. 2. By supporting graduate student Sea Grant Scholars, members of the next generation of professionals and

	introduction and spread of invasive species through a variety of outreach efforts.	working groups, task forces and panels will be provided with technical support.	decision-makers will gain knowledge, interest, and training in issues related to New York’s coastal ecosystems.
ii. Improved coastal water quality	<p>1. Support research and research syntheses on water quality problems such as nutrients and contaminants (including new and emerging contaminants), as well as the impacts of these problems including harmful algal blooms, hypoxia, and fish consumption advisories. Help to develop methods to improve water quality and thus minimize these adverse impacts.</p> <p>2. Demonstrate the impact of everyday individual actions on New York State’s coastal water quality to help motivate the public to implement stewardship activities. Provide the information needed to show the scale of impact that various mitigation measures could have.</p> <p>3. Educate representatives of municipal and private drinking water treatment facilities, public health officials, local government agencies, and lake associations about water quality issues including nutrients and cyanobacterial blooms. Assist with mitigation strategies to limit impacts on drinking water supplies and in coastal waters.</p> <p>4. Extend science and research to educators and youth to increase knowledge of coastal water quality</p>	<p>1. Complete research projects c-l, listed below.</p> <p>2. New information will be available to help set, confirm, and/or prioritize methods or directions for improving water quality.</p> <p>3. Long Island residents will be better informed about protection and restoration efforts for Long Island Sound (LIS) and actions they can take to decrease nitrogen inputs and other harmful inputs to the Sound through watershed and other inputs.</p> <p>4. Teachers within the Long Island Sound (LIS) watershed will learn about LIS watershed concepts and how they relate to water quality and integrate this knowledge into their curriculum. Formal and informal marine science educators will utilize NYSG and Long Island Sound Study’s (LISS) materials to increase ocean literacy.</p> <p>5. Representatives of municipal and private drinking water treatment facilities, public health officials, local government agencies and lake associations will be educated in the causes of cyanobacterial blooms. They will also learn about the cyanobacterial toxins, their potential impacts, and how to protect drinking water, recreational users, livestock, and pets.</p> <p>6. Marine and Great Lakes educators will integrate new technologies (including distance learning) and Sea Grant resources into experiential teacher training, K-12 classrooms, and informal teaching venues in order to prepare</p>	<p>3. Agencies, industries, managers, other stakeholders will use NYSG information in defining and implementing methods for AIS management, reduction and mitigation.</p> <p>4. Agencies, industries, residents, municipalities, and other stakeholders will use NYSG information in defining and implementing methods for improving water quality and thereby minimize its adverse impacts.</p> <p>5. Agencies, industries, residents, and other stakeholders will use NYSG information to make habitat restoration and habitat management plans and efforts more effective, and to be informed about better ways to sustainably use coastal habitats.</p> <p>6. Coastal decision makers will have a greatly increased understanding of ecosystem-based management, its uses and benefits, and its implementation methods.</p> <p>7. Adults, educators, and youth will have an increased understanding of New York coastal ecosystems and resources, as well a problems which threaten these ecosystems and resources and individual actions that they can take to help protect them.</p>

	<p>issues and to increase coastal and ocean literacy.</p>	<p>students with the research-based information they need to understand, make decisions, and take action as coastal citizens.</p> <p>7. New York Urban Coast kindergarten through eighth grade students will better understand The Hudson River Estuary Ecosystem through receiving and using the Project Wet Hudson River Activity Booklet. The booklet is designed to be used in conjunction with Project Wet curriculum teachers.</p> <p>8. Teachers within the Long Island Sound (LIS) watershed will learn about LIS coastal habitats and the concept of stewardship and integrate this knowledge into their curriculum. Formal and informal marine science educators will utilize NYSG and Long Island Sound Study's (LISS) materials to increase coastal and ocean literacy.</p>	<p>8. Teachers and kindergarten through twelfth grade (K-12) students will have greater understanding of the scientific process and how scientific research information can inform environmental understanding and decision-making.</p>
<p>iii. Restored and well-managed habitat</p>	<p>1. Support research and research syntheses in habitat management and restoration to develop new techniques, assess sustainability, and determine the effectiveness of current approaches.</p> <p>2. Support research on and the application of ecosystem-based management methods to best respond to current and future uses and needs.</p> <p>3. Extend science and research to adults, educators, and youth to increase knowledge of coastal habitat issues and to increase coastal and ocean literacy.</p>	<p>1. Complete research project m, listed below.</p> <p>2. New information will be available to improve and better guide habitat restoration and management approaches.</p> <p>3. Great Lakes and marine researchers, managers, and other stakeholders will have an improved understanding of both ecosystem-based management and the tools used to model ecosystem dynamics and will be better prepared to help develop and implement ecosystem-based management at the regional and state level.</p> <p>4. Stakeholders and the public will be educated about the contributions and value of marine and Great Lakes coastal habitats to the structure and</p>	

		<p>function of ecosystems, ways to sustainably use coastal habitats, and the benefits and costs of habitat restoration with particular reference to specific threatened, degraded or compromised habitats and/or Great Lakes Areas of Concern.</p> <p>5. Public understanding of the value and importance of LIS and its coastal habitats will increase based on social marketing campaigns and other informational efforts conducted with local partners.</p> <p>6. The arts community will work with Sea Grant to develop programs and projects aimed at increasing public concern for the marine environment with the goal of greater public stewardship.</p> <p>7. Sea Grant will partner with nature centers, museums, aquaria and other environmental entities to provide science-based, non-formal education and educational materials on Sea Grant issues and techniques to groups such as schools, Scouts, and 4-H clubs. New communications techniques will be developed and used as well as strategies to foster and educate the citizenry.</p> <p>8. New York City and Hudson Estuary kindergarten through twelfth grade teachers and environmental educators will understand how to obtain and use low- or no- cost digital data and maps to teach students about NY watersheds, estuaries, estuarine ecology, and marsh and wetlands habitats.</p> <p>9. NYSG will provide coastal habitat information to New York's college and university students.</p>	
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Performance Measures to be accomplished by 2013:

1. 10 models, methods, or scientific results will have been developed by NYSG research and extension to improve the health of New York’s coastal ecosystems.
2. 20 ecosystem or coastal improvement / restoration efforts that use NYSG information, support, or assistance will have been planned or undertaken.
3. 10,000 stakeholders will have improved abilities to manage and/or mitigate invasive species.
4. 400 local communities and officials will have improved their abilities to manage and mitigate the impacts of cyanobacterial toxins.
5. 500 K-12 teachers and 33,000 students will have been trained in the most effective current methods of coastal and ocean literacy education, including new technologies, experiential learning, and the use of scientific research information.
6. 3 marine industry associations (representing numerous businesses) will participate in the development of state regional ecosystem based management (EBM) programs and use EBM derived information to assess and address boating related impacts.

Research Projects Already Scheduled to be Underway:

- a. R/CMB-33 Nelson/Blossey “Regulation of *Phragmites australis* invasions by seedling-associated microbes”
- b. R/CE-28 Rudstam/Schaner/Walsh/Lantry “Forecasting ecosystem effects of a new invader, *Hemimysis anomala*, in Lake Ontario”
- c. R/CTP-43 DeVoogd/Dhondt “Birdsong as an indicator of sublethal polychlorinated biphenyl (PCB) bioavailability in the environment”
- d. R/CCP-16 Cochran/Bokuniewicz “Natural tracers of submarine groundwater discharge into Long Island Sound”
- e. R/CMC-8 Aller/Gobler “The role of sediments in nitrogen cycling and eutrophication in the Peconic estuary”
- f. R/CMC-9-CTNY Altabet “Geochemical budgeting of dissolved gases for understanding Long Island Sound hypoxia”
- g. R/CE-30-NYCT Wilson/Colle/Codiga “Summer synoptic weather variability as the control of the seasonal evolution of hypoxia in Long Island Sound”
- h. R/CMB-35-NYCT Lwiza/Taylor “Interaction of biological and physical factors controlling bottom dissolved oxygen”
- i. R/CE-29 Twiss/Wilhelm “Winter assessment of microbial biomass and metabolism: Testing the importance of winter productivity to summer hypoxia in Lake Erie”
- j. R/CMB-36-NYCT Lonsdale/Gobler “Impacts of climate change on the export of the spring bloom in Long Island Sound”
- k. R/CMB-32 Collier/Gobler “Managing brown tide: nitrogen physiology of *Aureococcus anophagefferens* within the plankton community context”
- l. R/CMB-37-NYCT Gobler “The distribution, causes, and impacts of *Alexandrium fundyense* blooms in coves, near shore, and open water regions of Long Island Sound”
- m. R/CMB-34 Peterson/Gobler “Cumulative impacts of multiple stressors on eelgrass populations in New York estuaries”

Focus Area B: <i>Sustainable New York Coastal Development</i>			
GOAL	STRATEGY	SHORT/MID-TERM OUTCOMES	LONG-TERM OUTCOMES
i. Robust coastal business development	1. Support research on improved understanding and implementation of sustainable and cost effective environmental best management practices (BMPs), especially as they	1. New information will be developed and made available about BMPs, including techniques and their cost-effectiveness and environmental benefits, for waterfront and other coastal businesses.	1. Scientific advances conveyed to the research community will lay the foundation or set directions for new understandings and further scientific developments.

	<p>relate to the design and operation of marinas and other waterfront businesses. Work with waterfront businesses, agencies, and communities to better identify, evaluate, and implement such practices.</p> <p>2. Assist marine industry and local and state decision makers to better identify and assess impediments to meeting dredging needs for recreational boating, and use NYSG information and assistance to start developing sustainable regional dredging and dredged material management plans and programs.</p> <p>3. Provide information to coastal tourism industries and businesses to help them maintain and build their economic viability in an environmentally sustainable manner.</p>	<p>2. Waterfront businesses, agency representatives, and community leaders will better understand issues associated with dredging requirements for recreational marine facilities and use this understanding to begin addressing problems associated with implementing dredging projects.</p> <p>3. New York State marina owners and workers will receive pesticide applicators recertification credits that will allow them to continue boat bottom painting activities in an environmentally safe manner.</p> <p>4. Coastal tourism-related businesses in NY will become more aware of nature-based opportunities, eco-tourism resources, marketing tools, and the value of their industries, and will become more informed about coastal issues and the policies and agencies for managing coastal resources.</p>	<p>2. By supporting graduate student Sea Grant Scholars, members of the next generation of professionals and decision-makers will gain knowledge, interest, and training in issues related to sustainable development in New York's coastal zone.</p> <p>3. Industries and businesses will use NYSG information in defining and implementing BMPs to ensure economic viability and environmental sustainability of their coastal activities.</p> <p>4. Marinas and other waterfront businesses will have improved information and training for sustainable development and environmental management of their businesses.</p>
<p>ii. Effective community land use planning which integrates watershed issues</p>	<p>1. Educate municipalities, organizations, and citizens to help reduce nonpoint source and stormwater pollution and limit their effects on coastal habitats and water quality.</p>	<p>1. Coastal municipalities will identify strategies that will result in the implementation of effective Phase II storm water management programs, the advancement of New York State's Coastal Zone Management Program objectives, and Quality Communities Initiative goals to reduce the impacts of nonpoint pollution and to improve water quality.</p> <p>2. Effective social marketing campaigns and outreach programs will increase citizens' knowledge about watershed issues and allow them to take pro-active steps to reduce the impacts of nonpoint pollution and eventually improve water quality in Long Island Sound.</p>	<p>5 Eco-tourism, recreational fishing, boating, and other coastal tourism businesses will be better recognized for their economic benefits and will have decreased impediments to sustainable business operations.</p> <p>6. Municipalities, organizations, and citizens statewide will be educated about nonpoint source pollution and its effects on coastal habitats.</p> <p>7. Agencies, industries, and other</p>

iii. Effective coastal spatial planning and utilization of coastal waters for commerce and conservation	1. Support research to develop tools for State and local communities to use in planning for diverse but compatible uses of submerged lands.	1. Tools and new information will be developed and made available to help resolve controversies that may arise in marine spatial planning efforts.	stakeholders will use NYSG information in their efforts to move forward with marine spatial planning. 8. For hire boat businesses will observe an increase in angling visitors to Long Island.
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Performance Measures to be accomplished by 2013:

1. 2 models, methods, or scientific results will have been developed by NYSG research and extension to improve New York coastal businesses' use of best management practices (BMPs).
2. 2 tools or scientific results will have been developed for use in marine spatial planning efforts.
3. 130 marinas and other waterfront businesses will have been informed about and be capable of implementing environmentally sustainable management practices.
4. 25 coastal businesses will have adjusted their use of BMPs based on NYSG information.
5. 45 tourism and recreational fishing operations will have benefited from NYSG information and assistance.
6. 160 municipalities will have been informed about and be capable of implementing stormwater management programs.
7. 17 municipalities will have implemented new stormwater management programs.
8. 25 marine trades leaders will use information provided by NYSG to develop sustainable dredging programs with local and entities.
9. 100 vessels at 3 ports will benefit from a marketing program that matches international travelers with recreational fishing opportunities.

Research Projects Already Scheduled to be Underway:

None

Focus Area C: <i>Safe and Sustainable New York Seafood Supply</i>			
GOAL	STRATEGY	SHORT/MID-TERM OUTCOMES	LONG-TERM OUTCOMES
i. Sustainable coastal fisheries for New York commercial and recreational fishers	1. Identify and address causes and remedies for the declines of finfish and shellfish of economic importance in New York estuaries and coastal waters through research and outreach. Increase awareness in fisheries-dependent coastal communities about additional threats to fisheries health and economic stability, and facilitate appropriate steps to help reduce	1. Complete research projects a-f, listed below. 2. New information will be developed and made available to help understand, prevent, or mitigate declines in coastal fisheries of economic importance. 3. Fisheries stakeholders will gain a better understanding of fisheries assessment methods and abundance information used in making	1. Scientific advances conveyed to the research community will lay the foundation or set directions for new understandings and further scientific developments. 2. By supporting graduate student Sea Grant Scholars, members of the next generation of professionals and decision-makers will gain knowledge,

	<p>them.</p> <p>2. Inform recreational fishing communities about new and alternative tools being applied in other regions to successfully manage coastal fisheries.</p> <p>3. Educate children about the recreational value of fishing, sustainable fishing practices, and the coastal ecosystems.</p>	<p>fisheries management decisions; and sport fishing stakeholders will have more confidence in quality of decision-making abilities and will be more prone to participate in the decision-making processes.</p> <p>4. The Stony Brook University Marine Animal Disease Laboratory (MADL) will be recognized by non-technicians (commercial fishers and the angling public) and managers as a source for obtaining assistance to address marine fish disease epidemic.</p> <p>5. Young adults will be empowered to demonstrate stewardship practices in relation to fishing.</p>	<p>interest, and training in issues related to sustainable fisheries and safe seafood.</p> <p>3. Stakeholders, educators, school children, researchers, residents, resource managers, businesses, and industries have timely access to sound scientific information about fisheries and safe and sustainable seafood.</p> <p>4. Agencies, industries, businesses, and other stakeholders will use NYSG information to help sustain coastal fisheries of economic importance.</p> <p>5. More stakeholders participate in fisheries management issues and are engaged in the process leading to better management.</p>
<p>ii. Safe, high quality, seafood products from profitable New York seafood businesses</p>	<p>1. Assist businesses, decision makers and other interested parties to use information on current issues, policies, regulations, or other conditions that could affect the productivity and profitability of their individual seafood business or the seafood industry in New York. Support additional research in these areas as needed.</p> <p>2. Educate individuals from seafood businesses to obtain the knowledge and skills that they need to build and manage an effective Hazard Analysis Critical Control Point (HACCP) based food safety plan and comply with the requirements of the Food and Drug Administration's (FDA) Seafood (HACCP) regulation. In addition, aid the training of state or federal food safety inspectors in HACCP principles and the FDA Seafood HACCP</p>	<p>1. Complete research project g, listed below.</p> <p>2. New information will be developed and made available to help maintain and enhance the productivity, profitability, and product quality of seafood businesses.</p> <p>3. Businesses, decision makers and other interested parties will use information on current issues, policies, regulations or other conditions that could affect the productivity and profitability of their individual business or the seafood industry in NY.</p> <p>4. Individuals from seafood businesses will obtain the knowledge and skills that they need to build and manage an effective HACCP based food safety plan and comply with the requirements of the FDA Seafood HACCP regulation. State or federal food safety inspectors will be trained in HACCP principles and the FDA Seafood HACCP regulation.</p>	<p>6. Disease outbreaks in marine fisheries are reported more quickly and managed more effectively as a result of Sea Grant's efforts to link stakeholders to the MADL.</p> <p>7. Effective stewardship practices of anglers lead to proper utilization of fisheries resources.</p> <p>8. Agencies, industries, and other stakeholders will use NYSG information to maintain and enhance NY's seafood businesses.</p> <p>9. The seafood industry and coastal fisheries in New York remains viable and contributes significantly to New</p>

	<p>regulations.</p> <p>3. Support research to facilitate the potential expansion of sustainable aquaculture in New York State to increase seafood products for New York and U.S. consumers.</p>	<p>5. Employees from food processing, distribution or warehouse firms in the U.S. will receive training on basic Good Manufacturing Practices or effective strategies to control product specific hazards such as <i>Listeria monocytogenes</i>, natural toxins or food allergens.</p> <p>6. New York consumers will have access to objective and current science based information on seafood products that they can use to manage personal risk and maximize benefits.</p> <p>7. New information will be developed and made available regarding aquaculture methods, products, and policies.</p>	<p>York's economy.</p> <p>10. Seafood sold in New York and nationally is safer than if New York Sea Grant had not done training programs.</p> <p>11. Agencies, industries, and other stakeholders will use NYSG information to potentially enhance the seafood aquaculture industry.</p>
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Performance Measures to be accomplished by 2013:

1. 5 models, methods, or scientific results will have been developed by NYSG research and extension to improve the sustainability of New York's economically important coastal fisheries.
2. 2 models, methods, or scientific results will have been developed by NYSG research and extension to improve safe, high quality, and profitable seafood products, including those from aquaculture.
3. 200 Great Lakes fisheries stakeholders increase their participation in fisheries management and use the best available science for their input.
4. 24,300 youth become aware of stewardship procedures learned from Sea Grant while fishing.
5. 1,000 members of the seafood industry adopts HACCP practices they learned from Sea Grant leading to a safer supply of seafood, and 240 seafood inspectors enforce HACCP principles they learned from Sea Grant.
6. 200 food processing, distribution or warehouse firms adopt good manufacturing practices they learned from Sea Grant and food supplies become safer.
7. 600 members of the angling community, aquaculturists, and hatchery operators become familiar with diseases that are of immediate concern in NY coastal fisheries, and are better equipped to recognize symptoms that are precursory to disease outbreak and report such incidents to university animal disease professionals, if necessary. In the event of the next disease outbreak, fisheries managers use reports from anglers and commercial fishers to generate data more expeditiously and use the information to make a conclusive diagnosis.
8. 500 anglers use safer techniques when handling fish that may have pathogens potentially harmful them.
9. For the first time, NY State will create a system to monitor fish handling related illnesses in anglers.

Research Projects Already Scheduled to be Underway:

- n. R/PS-5 Schlenk "Characterization of the exoskeletal microbial communities and host immune response associated with epizootic shell disease in lobsters: Sea Grant Scholars"

- o. R/XG-19 Allam/Collier/Fast/Tanguy “Functional genomics investigations of hard clam immune response and resistance against QPX infection”
- p. R/ATD-11 Bowser/Casey/Getchell “Assessment of Viral Hemorrhagic Septicemia Virus egg transmission”
- q. R/XG-20 Wirgin “Vulnerability of Hudson River Atlantic sturgeon to coastal bycatches”
- r. R/FBF-21 Snyder “Improved predictions of condition and growth in alewives: Effects of dietary fatty acids, temperature, and ration”
- s. R/FHD-12 Kuehn/Luzadis “Constraints and motivations related to bass fishing along the Lake Ontario coast”
- t. R/SHH-15 Wiedmann/Bergholz “Development of genomics-based methods to determine effective combinations of growth inhibitors for *Listeria monocytogenes* on cold smoked salmon”

Focus Area D: Hazard Resilience in New York Coastal Communities			
GOAL	STRATEGY	SHORT/MID-TERM OUTCOMES	LONG-TERM OUTCOMES
i. Improved response to coastal hazards	<p>1. Support research to better predict and respond to coastal hazards and their potential impacts in the New York coastal zone. These hazards include hurricanes and nor’easters, and their associated storm surges, flooding, and erosion.</p> <p>2. Enhance New York Sea Grant’s capabilities to enable timely responses to rapid-developing coastal high water, flooding, and/or erosion events and to assist coastal landowners, decision-makers, marine contractors, and marine facility owners to deal with developing hazardous situations</p> <p>3. Educate coastal landowners, decision makers, marine contractors, realtors, and marine facility operators about shoreline erosion, erosion control, and in the Great Lakes region, lake level fluctuations as well.</p>	<p>1. Complete research project a, listed below.</p> <p>2. Models, methods, and new information will be available to help New Yorkers plan for and respond to potential and actual hazard-related events and situations.</p> <p>3. Stakeholders’ ability to respond to immediately to rapidly-developing coastal high water, flooding, and/or erosion events will be enhanced by NYSG information, which will be utilized to assist coastal landowners, decision-maker, marine contractors, and marine facility owners to deal with developing hazardous situations.</p> <p>4. Coastal decision makers will better understand the benefits and limitations of new hazard mitigation techniques and approaches, such as “living shorelines”, and use this information to develop and select effective hazard mitigation strategies and projects.</p> <p>5. Great Lakes coastal stakeholders will have access to NYSG’s web-based Great Lakes Water Level Update and will use that information to make better shoreline use decisions.</p>	<p>1. Scientific advances conveyed to the research community will provide the foundation or set directions for new understandings and further scientific developments.</p> <p>2. By supporting graduate student Sea Grant Scholars, members of the next generation of professionals and decision-makers will gain knowledge, interest, and training in issues related to hazard resilience in coastal communities.</p> <p>3. Stakeholders, researchers, residents, resource managers, businesses, and industries will have timely access to sound scientific information about the prediction and response to coastal hazards and flooding; climate change and sea level rise.</p> <p>4. Coastal decision makers, agencies, and other stakeholders will use NYSG information to help understand the processes that create coastal hazards</p>

<p>ii. Adaptive responses to climate change and sea level rise impacts</p>	<p>1. Assist coastal communities and decision makers to better understand and be more aware of existing and potential future coastal flooding hazards related to climate change so that they can better plan for the future.</p> <p>2. Assist Federal, State and local agencies and governments to have better information on regional coastal natural processes and resources and access to new tools that can be used to help identify and evaluate appropriate long term strategies for addressing coastal hazards and climate related impacts.</p>	<p>1. Coastal communities and decision makers will better understand and be more aware of existing and potential future coastal flooding hazards related to climate change.</p> <p>2. Federal, state and local agencies and governments will have better information on regional coastal natural processes and resources and new tools that can be used to help identify and evaluate appropriate long term strategies for addressing coastal hazards and climate related impacts.</p> <p>3. Hudson River Estuary shoreline property owners and community decision makers will receive and understand research based information regarding Hudson River shoreline habitats, ecological functions and ecosystem services and will use this information to make decisions regarding river shorelines, coastal erosion, and anticipated shoreline changes due to coastal hazard management issues related to climate change.</p>	<p>and possible response or mitigation measures.</p> <p>5. Marine District communities will implement new hazard mitigation strategies based in part on information they received from Sea Grant.</p> <p>6. Great Lakes coastal communities will implement plans to deal with lake-water level changes based upon sound scientific information and educational assistance from NYSG.</p> <p>7. Marine District communities will implement plans to deal with sea level rise.</p>
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Performance Measures to be accomplished by 2013:

1. 5 models, methods, or scientific results will have been developed by NYSG research and extension to understand or respond to New York’s coastal hazards.
2. 16 New York coastal communities will have used Sea Grant information to better manage coastal areas and protect communities and businesses from hazards related to climate change.
3. 2 communities will use information and products developed by NYSG to increase awareness of 2,000 coastal residents of existing and potential flooding hazards related to climate change.
4. Federal, state, and local governments will begin developing regional sediment management plan or plans for the south shore of Long Island using a framework developed by NYSG and its partners.
5. State sea level rise and climate change planning efforts will incorporate coastal processes and hazards data and information provided by NYSG.
6. 200 coastal property owners and 3 communities will use information developed by NYSG to evaluate the potential use of living shorelines as an erosion control option.

Research Project Already Scheduled to be Underway:

- u. R/EMS-10 Liu “New Design Methods for Breakwater and Safety Evaluation”