# NEW YORK SEA GRANT'S
# IMPLEMENTATION PLAN 2002-2003

This Implementation Plan describes research, extension, education and communication activities for both years of a biennial omnibus proposal that initiates a four-year award cycle. It identifies milestones and expected outcomes for the implementation of NYSG's Strategic Plan program goals and objectives. These milestones listed below are to be completed in fiscal years 2002 or 2003 that ends January 31, 2004.

***Special Note:*** **This Implementation is organized to coincide with NYSG's Strategic Plan. Where Objectives are skipped, it indicates that no activities are currently planned for the two-year term of the Implementation Plan.**

## Issue A. Economic Leadership Issues

### Goal 1. Increase The Viability Of Coastal-Dependent Businesses:

**Objective a: Assist water-dependent businesses in improving management, operation programs, marketing strategies and responses to regulations, and management policies to enhance business efficiency, effectiveness, cost competitiveness, and profitability.**

**Milestones**
Plan, develop, and provide overall guidance for implementation of a research effort quantifying the statewide economic impact of boating and recreational facilities.

Provide the marine industry with Sea Grant-derived or other information and/or best practices in business management and operation and best practices for responding to agency regulations (e.g., painting, point and non-point pollution control, etc.) by working with government, academia, and industry groups.

Conduct a management and business development survey of marinas in New York's Great Lakes region based on the 1972 and 1995 surveys.

Conduct a NY Great Lakes charter fishing industry survey in conjunction with other Sea Grant programs in the Great Lakes network.

**Expected Outcome**
Federal, state, and local officials, marine industry leaders, and community groups will have a better understanding of 1) the impact that recreational boating and boating facilities have on regional and state economies, 2) the status, and trends of the marine industry and the issues and problems facing it; and 3) emerging technologies in marine business management and operation and the potential for adopting them.

**Milestone**
Provide technical expertise to the seafood industry that will enable it to plan, develop, and implement at least one major marketing/education initiative.

**Expected Outcome**
New York seafood businesses will utilize technical information on specific seafood products, markets, processes, or regulations that will help them enhance profitability or create new economic opportunities by utilizing alternative resources, developing new markets or products, or managing overhead costs.

**Milestones**
Provide technical resource support and distribute timely information on seafood products, nutrition, safety, handling, storage, and preparation to Cornell Cooperative Extension food and nutrition extension educators in New York State for education of consumers.

Provide timely research-based information on seafood products, nutrition, and safety issues to food writers and other media through individual contacts, educational or marketing brochures and publications, periodic mailings, press releases, or other collaborative initiatives produced with the New York Seafood Council and other trade and professional organizations.

**Expected Outcome**
Potential New York seafood consumers will receive objective information about seafood products, nutrition, safety issues, and proper handling, storage and preparation techniques that will have a positive impact on their attitudes about seafood.

**Objective b. Design and evaluate approaches to enhance tourism and eco-tourism opportunities that help develop and/or promote environmentally sustainable, economically stable tourism markets.**

**Milestones**
Develop extension education programs with collaborating organizations (Seaway Trail Inc., Ontario Dune Coalition, Tourism Promotion Agencies, United States Fish and Wildlife Service, and the Hudson River's tour boat operators) to promote nature-based tourism by divers along the Seaway Trail, hikers in the Lake Ontario dunes area, birders along the Great Lakes coasts, and tour boaters in the Hudson River Estuary.

Create an educational and promotional guide for birdwatchers along New York's Great Lakes coasts.

Develop a tourism plan for a lakeshore ecology biking and driving tour within Cayuga and Wayne counties in the Great Lakes region.

**Expected Outcome**

Members of the diving community (including historians and archaeologists), hikers, tourist promotion agencies, lakefront business owners and resource managers who have responsibility for our underwater and coastal resources will utilize sound public policy for managing the use and protection of these resources.

**Objective c. Identify, assess, and encourage the use of innovative techniques and technologies to prevent, control, or reduce the environmental impact of marina operations, boating and other coastal-dependent businesses in a cost-effective manner.**

**Milestones**
In partnership with the NYSDEC, implement New York State's Clean Vessel Act Information and Education program and assist in the development of the Clean Marina program manual and subsequent workshop series.

Build effective outreach and education strategies for recreational boaters based on a survey and provide educational programs for best management practices at Hudson River marinas.

In collaboration with Rutgers University and the New Jersey Marine Trades Association, plan, design, implement and extend findings on marina best management practices from a NJ commercial demonstration facility.

Develop and deliver spill prevention/education kits to the Hudson River's 37 boat fueling stations.

Develop websites for National Sea Grant Marina Resources, a nationwide marina signage program and a directory of all marinas and pumpouts in New York.

Continue to disseminate and promote the publication: *Best Management Practices for Marina Operators* through our web site, publications, conferences, and exhibits. Maintain the online version of this publication on the Northeast Sea Grant web site.

**Expected Outcome**
Marina operators, boaters, government officials, and community leaders will know and apply best management practices associated with marina operations and management and boating activity.

**Objective d. Identify innovative strategies to minimize or reduce dredging impacts by reducing the need for dredging and reusing, recycling, and/or disposing of dredged material associated with recreational boating facilities.**

**Milestones**

Use case studies to characterize the critical parameters controlling the potential beneficial uses of dredged material as a disposal option from small volume operations and transmit the information to marina operators, consultants, contractors, researchers, and agency representatives.

Identify critical research information needs and questions concerning the beneficial use of material in small scale dredging projects for NYSG research follow-up.

**Expected Outcome**
Increase awareness of impediments to cost effective disposal options employing dredged material in small-scale recreational boating projects and work with industry, researchers, and agencies to identify and promote viable alternatives.

**Milestone**
Develop summary fact sheets/bulletins and a technical report that describe the results of the sediment data analysis on the Hudson River.

**Expected Outcome**
Resource agencies, marine trade organizations and other stakeholder groups will be able to make better decisions about contaminant testing of small volume dredge spoils.

**Objective g. Develop technical information on aquaculture organisms, systems, and techniques to support rehabilitation or sustainability of aquatic populations and creation of economically sound business opportunities by overcoming current technological, marketing, regulatory or policy barriers to aquaculture development.**

**Milestones**
Identify and secure individuals from the aquaculture industry, academia and state agencies to serve on the aquaculture Project Working Team (PWT).

Utilize the aquaculture PWT to plan, carry out, and evaluate a statewide aquaculture conference in 2002.

**Expected Outcomes**
Potential aquaculture developers and resource managers will be knowledgeable about the identity and priority of the barriers to aquaculture development in NY.

Facilitate the development/expansion of the aquaculture industry in New York State by educating people on the potential for aquaculture development in the state and the types of projects that are potentially viable.

## Goal 2. Facilitate Sustainable Use Of Economically Important Coastal Fisheries:

**Objective a. Develop new or use existing tools to evaluate the effects of recent ecosystem changes on current and future sport and commercial finfish and shellfish fisheries and to identify harvesting and management policy responses to overcome barriers to sustainability.**

**Milestones**
Measure the distribution of target strength (TS) expected from different fish species important to the Great Lakes region (alewife, rainbow smelt, emerald shiner, etc.) and compare these distributions to observations on fish behavior and to predictions from theoretical models of fish backscattering.

Quantify the bias and uncertainties associated with measuring *in situ* TS at different fish densities.

Investigate the application of geostatistics for estimating variance associated with surveys of patchy populations and the potential for auxiliary variables (temperature, morphometry, distance to shore) to reduce this variance.

Analyze the combined effect of uncertainty at all steps of the translation process from echo to fish to obtain measures of precision in acoustic surveys of the Great Lakes.

**Expected Outcome**
Scientists and managers will better understand the uncertainties involved in fish population estimates made using hydroacoustics and how to incorporate these uncertainties into model projections.

**Milestone**
Determine the relative survival of hatchery produced hard clam seed planted in the field at different times through the growing season using seed sizes typically available at the time of planting.

**Expected Outcome**
Scientists and managers will be able to evaluate whether stocking of large hard clam spat is more effective than stocking small ones and whether either provides a good means for recovery of the hard clam stocks in Long Island waters.

**Milestone**
Conduct workshops for fisheries managers and researchers on potential management tools such as morphometrics and hydroacoustics.

**Expected Outcome**

Fisheries managers and researchers will have the latest information on new assessment/ research tools so they can use them in their resource assessment or research programs.

**Milestones**
Conduct an integrated program to expose one fisheries user group, that does not actively participate in fisheries management planning, to seminars and special projects organized to engage their interest and increase their knowledge of resource managers, researchers, and other stakeholders in the same resource.

Work with resource managers to develop programs that will accommodate direct involvement of local anglers in fisheries management issues.

Distribute a document that serves to identify the key players involved in fisheries management planning in the Marine District to members of angler associations and other stakeholders.

**Expected Outcome:**
Anglers and other fisheries resource users will have capabilities to participate in the fisheries management planning process.

**Objective b. Identify and evaluate modifications that will maintain or restore fisheries health by reducing inadvertent fishing mortality in recreational fisheries, bycatch in commercial fisheries, and overall gear effects on habitats.**

**Milestones**
Organize two annual angling clinics for the Salmon River angling community with NYSDEC.

Organize and conduct a workshop for NYSDEC Bureau of Fisheries on development of a public participation process program addressing Lake Ontario stocking issues with funding from a New York Great Lakes Program (GLP) grant.

Develop and distribute ***Species Profile Fact Sheets*** for fish species targeted by anglers in the Marine District, prepare full color trout and salmon identification charts, distribute fisheries educational publications to NY Great Lakes and marine anglers, and promote and maintain the online version of *Proceedings from the NYSG By Catch Workshop* on the NYSG web site.

**Expected Outcome**
The angling public will be able to identify catches and will be knowledgeable about the correct tactics for returning fish safely and effectively for catch and release.

**Objective c. Develop information on how to control effort, how to identify sustainable effort, and how sanctuaries can contribute to fisheries sustainability.**

**Milestone**
Distribute results of Marine Wilderness Areas Workshop.

**Expected Outcome**
Resource managers and other stakeholders will have increased knowledge about what information is needed to help decide whether sanctuaries have a role in fisheries management in NYS.

**Objective e. Develop capabilities to predict socio-economic responses of coastal communities to changes in fishery resources or accessibility.**

**Milestones**
Complete a New York Sea Grant "quick response" applied research project, studying the social factors that influence fishing participation. Distribute a fact sheet summarizing the results of this study to NYSDEC fisheries managers, Tourism Promotion Agencies (TPAs), and chambers of commerce in New York's Great Lakes Region.

Conduct two facilitated workshops in conjunction with Great Lakes TPAs and the NYSDEC to identify strategies for increasing fishing participation and distribute the summary report.

Publish and disseminate reports identifying trends in sportfishing and boating activity to appropriate tourism promotion agencies, fishery managers, coastal businesses and the media.

**Expected Outcome**
Participation in fishing and fishing-related tourism will be maintained or increased in the Great Lakes district.

**Objective f. Examine the effects of various physiological and behavioral processes on the dynamics of fished populations and their predators**

**Milestones**
Determine the origin (hatchery vs. wild) of chinook salmon returning to Salmon River, NY, as spawning adults in 2002 for comparison with origin of out-migrating smolts from 2000 year class.

Examine the growth characteristics of returning hatchery-reared and wild chinook salmon from the 2000 year class to characterize the relative fitness of the two portions of the population.

**Expected Outcome**
Scientists and fisheries managers will be able to determine whether the increased level of wild reproduction anecdotally claimed in recent years is real and what its potential impact on fishery management decisions will be.

**Objective g. Develop a process understanding of population, system, and community-level changes in ecologically or economically important living coastal resources.**

**Milestones**
Describe better the predator-prey interactions between squid and their predators.

Develop bioenergetics models for squid and squid predators to estimate consumption rates.

Quantify the predatory demand of squid and squid predators.

Identify and evaluate value-based trade-offs between squid and finfish fisheries.

**Expected Outcome**
Mid-Atlantic fishery policy decisions will be improved based on knowledge of the predator-prey interactions of mutually dependent fished stocks and an improved understanding of the continental shelf food web.

**Milestones**
Publish ***New York's Great Lakes Angler*** quarterly and ***Sport Fishing Industry News*** and use the Angler Education Center in Babylon, Long Island.
to distribute fisheries outreach and education publications.

Organize and conduct a public workshop on the role of science in fisheries management and the basic mechanics of fisheries management.

Organize a research roundtable on cormorants in New York State.

**Expected Outcome**
The angling public and resource management community will be familiar with the latest developments in fisheries science on such topics as predator-prey dynamics, ecosystem changes, fisheries trends, and fisheries sustainability. The management community will recognize the role of the public in the management process and have the tools to effectively use public participation in that process.

**Milestone**

Conduct a workshop to review fisheries research in the Hudson River district to consolidate the present status of knowledge and develop an outline for a future research agenda.

**Expected Outcome**
A research agenda will be developed via collaborative input from a broad range of stakeholders that can be used by NYSG and other groups to organize their research.

## Issue B. Coastal Ecosystem Health and Public Safety

### Goal 3. Improve the Quality and Safety of New York State's Commercial and Sport Caught Seafood Products:

**Objective a**. **Coordinate efforts by the seafood industry and federal, state and local regulatory authorities to enhance the safety of seafood products and to successfully complete the transition to a state-of-the-art food safety control system (e.g., Hazard Analysis Critical Control Point (HACCP)).**

**Milestones**
Monitor research results and maintain program linkages with researchers at Sea Grant universities, national and regional professional and trade organizations, state and federal agencies, the National Fisheries Institute, and other state, regional, or national groups or programs.

Coordinate Seafood HACCP Alliance/Association of Food and Drug Officials training programs so that NY seafood businesses can implement food safety and sanitation plans consistent with federal and state regulations.

Participate on New York State Department of Health Food Safety Advisory Committee with industry groups and regulatory agencies to provide expert advice on appropriate revisions/updates to the NYS Sanitary Code for foodservice businesses operating in NY.

**Expected Outcome**
New York seafood businesses will comply with Federal Food and Drug Administration Seafood HACCP and Good Manufacturing Practice regulations as well as state and local food safety and sanitation regulations so they may remain in business.

**Objective b**. **Develop, test, and deliver new and innovative educational and training programs on seafood safety hazards and improved sanitation practices for consumers, the seafood industry and regulatory community as part**

**of the National Seafood Education and HACCP (or other state-of-the-art system) Alliance.**

**Milestones**
Assist the NY Seafood Council's Seafood Project Coordinator in distributing timely information to New York seafood businesses.

Keep seafood industry groups, individual businesses, and regulatory agencies up-to-date on regulations and developments that can be used to improve, enhance, or optimize their HACCP based food safety controls.

Coordinate the Seafood HACCP Alliance Internet training course and help convert it to a Spanish language version.

Maintain and expand the New York Seafood Council consumer Web site at www.nyseafood.org to ensure that accurate information on New York seafood products, nutrition, and safety is available and accessible to New York consumers.

Participate on the National Sea Grant Program's Seafood Technology and Safety Theme Team to identify research and extension priorities and communicate them to constituents.

**Expected Outcomes**
Regulatory agencies, government, public and private groups, academic programs and professional organizations will better understand seafood industry and consumer issues and make informed policy decisions that balance the need to protect public resources and consumer access to high quality, safe products, while minimizing adverse economic impacts.

Increased Numbers of seafood businesses will take advantage of the new opportunities for education and incorporate the new knowledge to comply with regulations so they can stay in business and increase profit margins.

Consumers of an increased diversity of ethnic backgrounds will have increased confidence in the advantageous benefits of seafood.

**Objective c. Identify the risks of contaminant burdens, pathogens and chemicals for seafood safety, develop cost-effective analytical techniques, and determine strategies for minimizing, eliminating or remediating potential impacts.**

**Milestones**
Characterize virulence and tissue culture cytopathology of *selected Vibrio parahaemolyticus* strains and clonal groups using different tissue culture cell lines to determine the most appropriate cell type(s) for assay development.

Develop and optimize a high throughput cytotoxicity-based screening assay for the detection of pathogenic *V. parahaemolyticus* from oyster and water samples.

Compare the newly developed cytotoxicity-based screening assay with the conventional method for detection of *Vibrio* from oyster and seawater samples.

**Expected Outcome**
Industry and government will have cytotoxicity-based assays for detection of pathogenic strains of *Vibrio parahaemolyticus* from oyster and water samples that rapidly and reliably differentiate human pathogenic forms from other non-pathogenic subtypes.

**Milestones**
Develop a three-year national project to identify, implement, and evaluate effective control strategies for *Listeria monocytogenes* for processors of ready-to-eat seafood products in the U.S. in collaboration with colleagues in Maryland, Virginia, Louisiana, Maine, Washington State and Washington, DC. In 2003, work with the National Fisheries Institute, the smoked fish industry in the U.S., and project collaborators to deliver workshops in at least four locations around the country.

Work with researchers in New York and other states to develop and conduct research needed to enhance control options and strategies for specific food safety hazards associated with seafood products.

**Expected Outcome**
Information will be available to develop more cost-effective control strategies to ensure the safety of seafood products.

## Goal 4. Prepare For And Respond To Coastal Hazards and Processes:

**Objective a: Use and demonstrate new information technologies (Geographic Information Systems (GIS), internet and web-based technologies, etc.) to help decision makers better quantify and evaluate the structural, social, and economic impact of short and long-term coastal hazards on communities and select effective potential mitigation measures.**

**Milestones**
Work with federal and state partners to design useful marine coastal processes and response monitoring programs and to complete the conceptual design for a web-based coastal processes data distribution system. With NYSDOS, develop and disseminate annual ***State of the Coast*** reports incorporating monitoring program data for government, media, and public audiences.

Conduct workshops and training sessions for local government officials on the use of Coastal View GIS software and databases and work with National Project Impact

partners to develop and demonstrate flood hazard awareness products integrating GIS-based data and computer visualization technologies.

**Expected Outcome**
Coastal decision-makers at the local, state and federal level will have information gathered together in useful databases, and will have multiple means, from low to high technology, to visualize and analyze it as a basis for decision making.

**Milestones**
Complete United States Environmental Protection Agency (USEPA)-sponsored national assessment of responses to sea level rise project.

Conduct GIS-based mapping of regional impacts of sea level rise and flooding hazards and develop an interactive web-based site.

Develop a demonstration project integrating existing regional land use and geographic data sets to provide quantitative assessments of potential sea level rise impacts.

**Expected Outcome**
Planners, managers, decision-makers, and the public will have an increased awareness of the potential impacts associated with increased sea level rise and tools to help identify and evaluate appropriate responses.

**Milestone**
Via ***New York Great Lakes Water Levels Update*** service letter, the NYSG Great Lakes Coastal Processes and Erosion web page, and direct technical assistance, aid: local, state, and federal governments in developing coastal hazard prevention or mitigation programs and projects; and coastal landowners, public and private decision-makers, and marine contractors or facility owners to respond to rapidly-developing coastal high water, flooding, and/or erosion events.

**Expected Outcome**
Decision makers on Lakes Ontario and Erie will have a better understanding of lake level fluctuations and will use that information to make better shoreline development, erosion control, and flooding control decisions.

**Objective b: Demonstrate and foster the use of new sustainable approaches for mitigating coastal erosion hazard problems that incorporate structural and habitat-enhancing techniques.**

**Milestones**

Assemble and synthesize information on the funding, design, cost effectiveness, and benefits of existing innovative breakwater projects and package and disseminate results to appropriate audiences.

Review, update and publish an educational materials package on coastal property stewardship and protection for property owners.

Assist the Natural Resource Conservation Service develop coastal protection guidelines and technical publications by providing training and assistance to field technicians.

Develop new educational materials on the use of vegetation for shoreline erosion control.

**Expected Outcomes**
Coastal property owners, managers, and businesses will better understand the technical and regulatory implications and limitations associated with new and traditional erosion control strategies.

Government officials, coastal property owners and managers, and community leaders will be able to evaluate the potential use of breakwater/marsh systems for erosion control and consider implementation.

**Objective c: Provide technical assistance and advice to local, state and federal partners in the development of large-scale and regional coastal hazard prevention or mitigation programs and projects.**

**Milestones:**
Explore development of a simple methodology to integrate coastal data and existing GIS tools and data products to evaluate the regional impacts of shore hardening structures and mitigation measures

With funding from the U.S. Corps Coastal Hydraulics Lab, continue the cooperative coastal aerial monitoring program with municipal and civil air patrol officials and make adjustments in use of data at the federal, state, and local levels.

Provide advice at the federal, state and levels to identify issue areas and research and extension needs and opportunities.

**Expected Outcome:**
Local, state, and federal decision-makers will be able to better evaluate and assess coastal conditions, hazard risks, and potential impacts of mitigation strategies in the development of long-term regional management plans.

**Objective d. Develop the capability to proactively assist coastal landowners, public decision-makers, and marine contractors to deal with coastal high or low water, flooding, and/or erosion events.**

**Milestone**
Establish a valid scientific information base to determine whether to construct a set of storm surge barriers to protect the lower Hudson estuary from flooding during large storms.

**Expected Outcome**
Scientists and managers will be able to evaluate whether storm surge barriers can protect the lower Hudson estuary region without undue adverse effects.

**Milestone**
Develop, refine, and test easy-to-use, low-cost storm surge measuring devices and if appropriate, initiate a community-based demonstration monitoring program to collect data necessary for the development of effective hazard management plans and to increase public awareness of coastal hazards.

**Expected Outcome**
Coastal decision-makers will have information to choose monitoring devices and systems to use in hazard management plans to protect the public from storm surges.

## Goal 5. Assess And Enhance Coastal Water Quality:

**Objective a: Design nonpoint source water quality education programs that will assist existing federal, state, and municipal water quality coordinating committees and water body management programs, lake associations, local governments, and estuary programs in protecting and enhancing the quality of New York's coastal waters.**

**Milestone**
Provide technical assistance and training to Ulster County Master Gardeners, plan and deliver four water quality workshops to Master Gardener program participants, and distribute NYSG ***Water Wise Gardening Guides*** to regional county extension Master Gardener.

**Expected Outcome**
Runoff from gardens will be reduced, decreasing the runoff of sediments, fertilizers and pesticides into water bodies in the Hudson River Valley and on Long Island.

**Milestones**
Continue to distribute educational materials, such as the storm drain stenciling brochures and nonpoint source posters, to concerned citizens, nonprofit groups, and municipalities and determine the effectiveness of stenciling.

Help plan and coordinate implementation of nonpoint source educational efforts by integrating work sponsored by the LISS and the NEMO program, serving as NYSG's representative to the New York State Nonpoint Source Coordinating Committee and the Education and Information Subcommittees, and serving on the Hudson River Estuary Management Advisory Committee Tributary Work Group,

Continue to conduct, evaluate, improve and expand the NYSG nonpoint education for Municipal Officials (NEMO) program. Obtain funding from the Long Island Sound Study (LISS) and the New York State Department of Environmental Conservation for a NEMO program for the North Shore of Long Island. Expand the marine district public education materials and use them as templates for efforts in new watersheds. Begin a NEMO program in Port Jefferson Harbor and Riverhead Town. Conduct basic NEMO workshops for the Manhasset Bay and Hempstead Harbor Protection committees and follow up presentations of best management practices (horticultural, erosion control, EPA Storm Water Phase II, sediment and erosion control) to protect water quality in these and other watersheds. Work with Communications to distribute NEMO Fact Sheets and present NYSG's NEMO program to the Sea Grant network

Educate representatives of state and local governments, water quality coordinating committees, lake associations, lake resource users, educators and students, the media, and the general public on the impact of introductions of nonindigenous aquatic species in Lakes Erie and Ontario, so that they will be able to make better decisions about the control/management of existing species as they relate to water quality issues.

Develop educational programs and materials that promote the use of best management practices in home and commercial landscapes working closely with the horticultural programs of Cornell Cooperative Extension and staff of the Long Island Horticultural Research and Extension Center. This effort is focused on reducing fertilizer and pesticide runoff into coastal waters.

**Expected Outcome**
Local officials in multiple Long Island watersheds, the Hudson River Valley and around the Great Lakes will understand nonpoint source issues and be able to incorporate this knowledge into programs that will reduce pollution into their harbors and bays and into Long Island Sound.

**Objective b: Design and deliver best management practices for pollution prevention programs for nonpoint sources to property owners, municipalities, industries, and businesses**.

**Milestone**
Work with the New York State Legislative Commission on Water Resources Need of Long Island and State Senator Marcellino to print and distribute public educational materials developed by Sea Grant that address best management practices to protect water quality around the home.

**Expected Outcome**
The public will be better able to prevent nonpoint pollution around at home.

**Objective c: Determine the processes and rates of transport, fate and effects of point and non-point source anthropogenic contaminants and pathogens (e.g., MTBE, fertilizer, sewage) and develop appropriate models to assess their impacts on developed coastlines.**

**Milestones**
Develop a ferry-based observing system for Long Island Sound (LIS) environmental studies based on year-round sampling along one transect in the Central Sound and one in Eastern Sound.

Assess relative contributions of local atmospheric forcing, advective transport, and tidal mixing to the evolution of density stratification and its impacts on hypoxia in the LIS.

Determine the role of synoptic forcing on development/breakdown of stratification and dissolved oxygen (DO) variability via its influence on vertical versus advective processes.

Measure spatial structure and sub-tidal fluctuations of the LIS residual exchange flow.

Refine estimates of LIS basin-wide annual cycle budgets of heat, mass and salt.

Develop multi-decade retrospective time series of *over-water* LIS surface fluxes and relate their low-frequency variations to variability in LIS stratification and bottom DO.

**Expected Outcome**
The ferry observation system and moored profiler will provide the data to incorpor*ate* fundamental processes impacting summertime density stratification and its influence on hypoxia in the LIS so that hydrodynamic/water quality models can be used to predict future conditions in LIS.

**Milestones**
Assess whether or not adult and juvenile winter flounder in Jamaica Bay are showing evidence of endocrine disruption.

Determine whether or not there are significant reproductive and pathological consequences of this exposure.

Determine whether or not nonylphenol ethoxylate metabolites present in Jamaica Bay sediment are likely to be contributing to effects observed in larval fish.

**Expected Outcome**

Resource managers will have a demonstration of whether endocrine disrupting chemicals need to be examined carefully with respect to assessment of potential effects of effluents such as those from municipal sewage treatment facilities.

**Milestones**
Investigate the disposition of BDE-47 and BDE-99 in lake trout.

Determine the metabolism of BDE-47 and BDE-99 in lake trout.

**Expected Outcome**
Basic data will be gained on the uptake, tissue distribution, excretion and, metabolism of these chemicals to achieve a better understanding of the behavior of PBDEs in fish and to predict the body burdens of these chemicals and their potential toxic metabolites in these organisms under environmental exposure conditions.

**Objective d: Design and deliver educational and outreach programs that meet the goals of the Lake Erie and Lake Ontario Lakewide Management Plans.**

**Milestones**
Work with the Binational Forum to disseminate the Lakewide Management Plan (LaMP) to stakeholders and help Pennsylvania and Ohio Sea Grant do the same for their shorelines.

Develop new education/outreach projects that will help advance the work of the LaMP.

Plan, advertise, and coordinate annual programs such as State of the Lake and Dunkirk Harbor for stakeholders.

**Expected Outcome**
Stakeholders will better understand coastal issues and the LaMPs and why they are important for future ecosystem health.

**Milestone**
Provide SGE outreach support to the Soil and Water Conservation District and the Erie County Department of Environment and Planning for upcoming rehabilitation projects on Cazenovia and Scajaquada Creeks.

**Expected Outcome**
The SWCD and the ECDEP will be able to design and implement better conservation measures and outreach programs.

**Objective e: Develop techniques to assess the effects of water quality on the alternative uses of coastal resources and provide information to coastal**

**residents so they can evaluate policies intended to prevent or reduce impacts on water quality.**

**Milestones**
Help identify specific input sources of fecal coliform bacteria in non-point source pollution in order to develop best management practices.

Verify if *E. coli* clonal differences detected by PFGE are consistent over time and geographic area on a localized basis.

Verify if *E. coli* PFGE libraries established in different parts of the US can be combined and utilized as a large source library.

Develop an estimate of a minimum number of *E. coli* isolates that are needed in a PFGE library in order to use it as an effective tool in Bacterial Source Tracking (BST).

Determine at what level PFGE can be used as an effective tool in BST: human vs. non-human; human vs. domestic animal (or livestock) vs. wild animal; individual species host level.

**Expected Outcome**
PFGE will be developed as a Bacterial Source Tracking tool to determine the sources on nonpoint fecal coliform contamination of coastal waters.

**Objective g: Provide information to assist state and municipal drinking water treaters, public health officials, and local governments in protecting and better treating public and private drinking water for bad taste and odor and cyanobacterial toxins.**

**Milestones**
Prepare polyclonal antibodies against anatoxin-a after chemically coupling the toxin to a carrier protein using different length carbon spacers.

Use these antibodies to prepare a laboratory-based ELISA assay for anatoxin-a.

Use these antibodies to prepare a dipstick style field assay for anatoxin-a.
Calibrate and validate both the ELISA and dipstick assay for anatoxin-a against existing LCMS and HPLC-FD methods using both cultured and field populations of anatoxin-a producing-cyanobacteria.

**Expected Outcome**
A tool will be developed that can be used to rapidly screen for the presence of anatoxin-a in phytoplankton samples. This tool, along with the corresponding ELISA assay, provides two key components for a tier-based monitoring system for the detection of cyanobacterial toxins.

**Milestones**
Develop a comprehensive listing of all Great Lakes public and private drinking water treatment facilities, survey them to determine the extent of taste, odor and cyanobacterial toxin problems in the region, and develop programming and materials on the causes and control of these problems.

Identify university, agency, and private sector researchers with expertise in drinking water taste and odor formation and control, and distribute a database of experts to water users.

Compile a bibliography of papers pertaining to 2-MIB, geosmin, and zebra mussel influence on drinking water quality.

**Expected Outcome**
Raw water users and coastal resource decision makers will better understand the problems and be able to choose among potential solutions for taste and odor problems, (including those related to invasive species, such as 2-MIB, geosmin, zebra mussel cyanobacteria).

## Goal 6. Protect Or Enhance Coastal Habitats:

**Objective a: Educate community groups, professionals, and agencies about the benefits of and techniques for improving the quality (structure or ecosystem function) of threatened, degraded, or compromised coastal habitats (e.g., Areas of Concern).**

**Milestones**
In the Great Lakes District, work with various governmental and non-governmental environmental management stakeholders to assist them in
a) identifying threatened, degraded, or compromised coastal habitat, or
b) implementing Remedial Action Plans (e.g., the Rochester Embayment RAP).

Collect information on the impact of Great Lakes lake level range fluctuations on coastal wetland habitat compression and prepare a fact sheet on the topic.

**Expected Outcome**
Great Lakes coastal decision-makers will have information to improve the effectiveness of management strategies designed to minimize the negative impacts of human use on coastal habitats.

**Milestone**
In the Long Island/New York Harbor area, provide leadership, Sea Grant resources, public education, and/or advice to various federal, state and private programs to help each program reach its habitat restoration goals.

**Expected Outcome**
Marine estuarine program planners will have information that will help them to restore estuarine and marine habitats.

**Milestones**
In the Hudson River area, a) conduct workshops for boating associations, elected officials, and natural resource managers on habitat restoration issues; b) create a portable Submerged Aquatic Vegetation (SAV) educational display to be used in Hudson River education programs in10 counties, and c) conduct SAV presentations at meetings of recreational fishing groups.

Co-sponsor presentations or workshops to educate private landowners, community decision-makers, and Cornell extension educators in the Hudson Valley about biodiversity and other measures of habitat condition or restoration to encourage (voluntary) conservation practices.

**Expected Outcome**
Decision-makers and other stakeholders in the Hudson River Valley will better understand the values of habitat and means to restore them.

**Milestones**
Continue implementation of the Submerged Aquatic Vegetation (SAV) Stewardship Project involving boating and community leaders by providing SAV workshops, talks, and presentations.

In partnership with Hudson Valley natural resource and aquatic agencies and organizations, plan and participate in Hudson River National Estuarine Research Reserve's (HRNERR) needs assessment and market analysis. Plan and implement the Hudson Coastal Training Initiative, guided by the needs analysis.

**Expected Outcome**
Stakeholders in the Hudson Valley will better understand the SAV and other resources associated with the River and how to protect them.

**Objective b: Develop and promulgate educational programs that estimate human carrying capacity and manage human access to coastal areas.**

**Milestone**
Provide interpretive planning assistance to nature centers, tourism businesses, tourism promotion agencies, and not-for-profit organizations throughout New York's Great Lakes Region.

**Expected Outcome**
Through interpretive planning, coastal tourism facilities, businesses and communities will be better able to deal with visitor management concerns, meet the educational needs of

visitors and provide human access to coastal areas, while reducing negative impacts on fragile coastal ecosystems.

**Objective c: Use small grants programs, endowments and public involvement to provide support for coastal habitat restoration.**

**Milestone**
Implement a yearly youth education habitat restoration project with funds made available through Sea Grant's Allan Overton Memorial Coastal Habitat Restoration and Education Endowment Fund.

**Expected Outcome**
Communities and citizens on Long Island will be more aware of the issues and solutions surrounding habitat.

**Milestones**
Use small grants programs, endowments, and public involvement to provide support for coastal habitat restoration in the Long Island Sound.

Implement a small grants program with the New York-New Jersey Harbor Estuary Program on the pattern of the Long Island Sound Study.

**Expected Outcome**
Many municipalities surrounding the Long Island sound or the Hudson River Estuary will be involved in habitat restoration and will publicize the problem and its values.

**Objective d: Develop or refine techniques to determine the ecological value of coastal habitats, to examine the effect of human activities on habitat quality and/or habitat fragmentation, to determine if or when habitats have been degraded, and to identify and evaluate the effectiveness of remediation techniques to restore those habitats.**

**Milestones**
Develop a parsimonious approach to benthic habitat identification and mapping based on multivariate environmental and biotic data.

Identify new classes of environmental variables, multivariate direct analysis techniques and sampling designs.

**Expected Outcome**
This study will help develop a new tool for benthic habitat identification and mapping by incorporating faunal and geophysical data into an integrated approach that will differentiate among benthic habitats and benefit the design and power of monitoring projects, environmental impact studies and scientific research projects.

**Objective e: Develop tools to support manipulation for long term maintenance of wetland habitats threatened by sea level rise.**

**Milestones**
Determine historical rates of accretion for several wetland systems, specifically identifying spatial and temporal variability to serve as an indicator of relative marsh stability.

Reconstruct historical changes in hydrodynamic regime, including the frequency and depth of inundation, to establish the range of environmental variation that has occurred.

Determine the role of local sediment sources and transport dynamics for marsh accretion, in order to identify potential indirect impacts arising from coastal modifications.

Determine geochemical properties of the wetlands, including sources and burial rates of organic carbon, redox conditions, and heavy metal signatures, as a proxy for sensitivity to altered hydroperiod or sediment dynamics.

Establish qualitative relationships between physical conditions and floral community characteristics, to place each system within the framework of marsh succession.

Integrate findings from the five steps immediately above with results of previous studies on Long Island salt marshes to develop an initial model(s) of regional wetland behavior.

**Expected Outcome**
Researchers will develop a detailed understanding of marsh-system controls and behavior under different physical conditions and be able to predict the best management programs to respond to dredging, shoreline hardening, and growing coastal urbanization.

## Goal 7. Control The Spread And Mitigate The Impact Of Non-Indigenous Species (NIS) And Aquatic Nuisance Species (ANS) In New York's Coastal Waters:

**Objective a: Educate the public and other stakeholders throughout North America about ANS introduction, spread, control, and impact (industry, drinking water tastes and odors, ecosystem components) mitigation via traditional methods, as well as operation of the National Aquatic Nuisance Species Clearinghouse and World Wide Web searchable database.**

**Milestones**
Expand the National Aquatic Nuisance Species Clearinghouse library and World Wide Web searchable database to include ballast water management; continue to update and

increase the Clearinghouse's publication holdings.

Oversee publication of four issues per year of the National Aquatic Nuisance Species Clearinghouse Digest, ***Aquatic Invaders.***

Plan and implement a marketing strategy to increase a) audience knowledge of the National Aquatic Nuisance Species Clearinghouse and its aquatic nuisance and invasive species resource materials and b) support responses to species information and outreach challenges.

Plan, write, and distribute up-to-date fact sheets, information bulletins, brochures, and other outreach educational materials addressing aquatic nuisance and invasive species and strategies for preventing or slowing their introduction and spread and for mitigating their impacts. Also, develop and disseminate novel educational tools to educate the public about ANS and NIS.

**Expected Outcomes**
Researchers, resource managers, government officials, water resources decision makers, educators and students, environmental special interest groups, extension agents, media representatives, and others throughout North America will have the latest information on various aspects of the invasion, impacts and control of nonindigenous, invasive aquatic species

**Milestones**
Serve as a speaker and resource for groups such as New York State Walleye Association and Southtowns Walleye to present information and research findings on ANS.

Plan and implement extension education activities on the history and impact of aquatic nuisance and invasive species introductions in the Eastern Great Lakes Basin region for lay audiences and the media.

**Expected Outcome**
Great Lakes lay audiences will have a better understanding of ANS issues and will be willing to participate in activities aimed at preventing or mitigating problems.

**Milestone**
Work with other Sea Grant programs to plan and implement ANS symposia to facilitate the formation of aquatic nuisance and invasive species task forces and working groups.

Provide technical support to 15 state and regional zebra mussel, aquatic nuisance or invasive species task forces and working groups nationwide.

**Expected Outcome**
Nonindigenous, aquatic nuisance and invasive species task forces in other states and regions will be able to perform aquatic nuisance and invasive species risk assessments, early warning monitoring programs, dispersal prevention, and control/management projects independently.

**Milestones**
Pursue external funding sources to organize an applied research project focusing on development of an interdiction protocol to minimize the spread of *Cercopagis.*

Organize an international workshop on *Cercopagi*s and *Bythrotrephes* introductions.

**Expected Outcome**
Information on newly identified aquatic nuisance or non-indigenous species will be made available in a timely fashion to decision-makers who need them.

**Milestones**
Conduct workshops and develop fact sheets on ANS for teachers and non-formal educators throughout the coastal counties of New York.

Work with Illinois/Indiana Sea Grant to improve the educational potential of the Sea Grant Non-Indigenous Species (SGNIS) Kid's Page on the Internet.

Continue to create and disseminate the "Case of Exotics," an educational trunk filled with preserved aquatic exotics and information on these invasive plants and animals.

**Expected Outcome**
Teachers and non-formal educators in coastal communities around New York will utilize Sea Grant funded products to Educate students about ANS and raise awareness around the state by using the student/teacher multiplier.

**Objective d. Determine the impacts of introduced species and harmful micro-organisms and develop effective response, detection, and control mechanisms.**

**Milestones**
Quantify and delimit the process of benthification in freshwater lakes to understand the consequences to fish communities and fish populations.

Identify the historical and current extent of submerged aquatic vegetation (SAV) for two embayments in the Lake Ontario ecosystem.

Quatify the production dynamics of benthic habitats through analysis of the interaction of light, phosphorus and substrate through controlled laboratory experiments.

Develop a spatially explicit GIS model of habitat types (e.g., light, macrophytes, substrate, invertebrate densities) to predict changes in fish communities.

**Expected Outcomes**
Fisheries managers will have long-term planning tools in the form of GIS-based habitat models to interpret and predict the response of fish populations and communities to habitat modification from the process of benthification.

**Milestones**
Determine the prevalence of *Clostridium botulinum* in apparently healthy, moribund, and dead fish in areas of confirmed outbreaks of avian botulism and unaffected areas within the Lower Great Lakes.

Quantify the amount of *C. botulinum* and toxin in carrier fish.

**Expected Outcome**
The role that fish play in mortalities of waterfoul from the causative agent of botulism, *C. botulinum* on Lake Erie will be clarified.

## Issue C. Education and Human Resources Issues

### Goal 8. Develop The Capacity Of New Yorkers To Participate As Partners In Coastal Issues:

**Objective a. Work with Marine and Great Lakes educators to integrate new technologies and Sea Grant resources into K-12 classrooms.**

**Milestones**
Hold training workshops for formal educators to update their knowledge on coastal topics and issues, acquaint them with new technologies (distance learning, Internet, multi-media), and involve them and their students in applied science projects.

Develop curricula that support the ***Sound Health*** reports for use in classrooms.

Develop educational materials related to the New York–New Jersey Harbor estuary program and train teachers in their use.

Participate in the piloting of the "Water on the Web" National Science Foundation project funded to the University of Minnesota.

Work with the Seatuck Environmental Organization to implement their web-based Wildtrek program for middle and high school students on Long Island.

Coordinate and distribute the Long Island Sound Study Public Information Education and Involvement Small Grants Program requests for proposals to educators.

Contribute integrated information to the Northeast regional web site's "Ask Sea Grant" feature, geared for teachers and students.

**Expected Outcome**
Individual K-12 teachers and students will be educated and informed on coastal issues and will utilize educational materials produced by New York Sea Grant and other Sea Grant programs, Cornell Cooperative Extension, and the National Sea Grant Educational Networks.

**Milestones**
Work with various national, state, regional, county, and private professional teacher associations, other formal educational groups, and county Cooperative Extension programs to promote and incorporate NOAA and Sea Grant resources and information into K-12 curricula.

Work with SUNY Buffalo to offer a course on tropical marine ecology and with CCE of Rockland County and City College of New York and continue the summer field course for 8-12 grade teachers.

**Expected Outcome:**
Information on marine and Great Lakes ecosystems and coastal resource issues will be incorporated into curricula and educational programs reaching many students via 'teaching the teachers'.

**Objective b. Prepare the next generation of coastal science professional and decision-makers by supporting Sea Grant Scholars, by using New York's colleges and universities to transfer Sea Grant developed information and by supporting Sea Grant Extension educators' service as adjunct faculty in selected courses and institution.**

**Milestones**
Support and administer the New York Sea Grant/Hudson River National Estuarine Research Reserve Cooperative Fellowship.

Serve as tutor and course evaluator for courses in Marine Biology, Ichthyology, Biological Conservation, Aquaculture, or Limnology at Empire State College.

Serve as adjunct faculty for the Aquarium Science course at Niagara County Community College.

Fund reprint costs and page charges for journal publications written by PIs and Scholars that result from sponsored research projects.

Interview and feature Sea Grant Scholars in *Coastlines* articles.

Work with research project assistants to send masters and doctoral theses written by Sea Grant Scholars through the National Sea Grant library.

**Expected Outcome**
Undergraduate and graduate students studying coastal sciences will have knowledge of Sea Grant and its value and will be given support in getting their professional careers underway and their degree research results distributed.

**Objective c. Develop a New York State undergraduate internship program.**

**Milestone**
Implement an undergraduate internship program at the SUNY campuses that house Sea Grant offices.

**Expected Outcome**
SUNY campuses with NYSG offices will have a demonstration of the value of hosting Sea Grant.

**Objective d. Develop and distribute educational materials to Congress, state legislators, and stakeholders on the principles and theory of resource management and uncertainties in current methods for making predictions and management decisions.**

**Milestones**
Develop marketing tools and information packets to aid NYSG Administrators and Extension staff in educating the media, state and national legislators, agency representatives and other decision makers about how NYSG is currently contributing and can contribute in the future to wise decisions on the use of the state's marine and Great Lakes coastal resources.

Produce one-pagers targeted to legislators and used by the management team to educate supporters on NYSG issues and efforts.

Design and order other products such as pins, plaques, mugs, rulers, bookmarks,etc. that promote NYSG research and extension activities.

**Expected Outcome**
NY State and Federal legislators will support maintenance and increase of the NYSG and NSGO budgets.

**Objective e. Provide non-formal education on Sea Grant issues and techniques to groups such as scouts, 4-H clubs, etc.**

**Milestones**

Serve on the newly formed New York State Department of Environmental Conservation's Hudson River Estuary Program's Education/Outreach education subcommittee and co-sponsor at least one interpretive workshop for environmental education professionals per year.

Conduct Long Island Sound Study presentations and staff community events with LISS/NYSG displays.

Develop educational programs for the Babylon Town Sport Fishing Education Center.

Develop and share an image bank that can be accessed and used by all NYSG staff and provide staff with appropriate publications and other educational materials for displays and exhibits.

**Expected Outcome**
Students and adults will learn to appreciate NYSG's value in an informal setting.

**Objective f. Develop and use new communications techniques and strategies (including publications, the Internet, and the media) to aid outreach to stakeholders and to the general public in order to foster an educated citizenry.**

**Milestones**
Bring high-quality Sea Grant information to targeted audiences by: 1) producing and distributing *Coastlines* on a regular three-per-year schedule making Sea Grant science more accessible and appealing; 2) coordinating with management and extension staff the development of publications, fact sheets, brochures, displays and other print, visual or electronic tools that highlight the value of NYSG efforts; 3) maintaining an inventory of technical and nontechnical publications; and 4) contributing to other regional or national publications.

Use CD-ROM technology with a program called Coast View to describe coastal processes along the South Shore of Long Island.

Work with elected officials in the Marine District, and have them distribute, through their channels, environmental stewardship materials developed by Sea Grant to their constituencies.

**Expected Outcome**
A broad range of stakeholder groups, including state and federal agencies, public officials, resource managers and other decision-makers will have use of scientific and technical information from universities and research laboratories to use in making policy decisions.

**Milestone**
Publicize the socioeconomic benefits of marine and Great Lakes districts research and outreach efforts by: 1) sending a NYSG promotional package to writers and producers from Great Lakes and marine district media outlets; 2) working with a consultant publicist to promote research and extension activities in the Great Lakes region; 3) periodically contacting targeted media to foster projects or special events that pertain to NYSG activities; 4) providing media contacts for NYSG meetings, conferences, or symposia; and 5) contributing to national and regional media efforts.

**Expected Outcome**
Because the media will better understand the implications and value of NYSG's research and extension activities, they will provide increased coverage, which will lead to increased contact between NYSG and its stakeholders.

**Milestones**
Expand Sea Grant's audience and deepen its impact by: 1) improving the depth and breadth of information presented on the website (including a fisheries resource center for information about fisheries management and education)
and its links to other sites; 2) developing web, audio, video or CD projects alone and collaboratively with other SG programs; 3) exploring a new online interactive interface for NYSG publication purchases and fiscal information submissions; 4) creating and maintaining a "Communications HELP!" Web site that includes downloadable publication templates, and other information of interest to NYSG staff; 5) using *WebTrends* software to measure the usage of the web site; and 6) investigating use of the website to survey users about the value of various NYSG publications.

Provide information for the Internet sites of the Long Island Sound Study and the New York–New Jersey Harbor Estuary Program.

**Expected Outcome**
NYSG's web presence will be optimized to reach the greatest potential audiences with targeted information.

## Goal 9. Develop New Partnerships:

### Objective a. Initiate a Sea Grant urban extension outreach effort in New York City.

**Milestones**
Develop and/or update outreach materials including the quarterly HEP newsletter, ***Tidal Exchange,*** slide presentations, a guide to estuary-related education resources and an interactive map of Priority Habitat Acquisition and Restoration Sites throughout the Hudson Estuary, and fact sheets on issues within the HEP and make all these materials available electronically on the website.

Write grant proposals to USEPA and submit progress reports to continue funding for the HEP outreach effort.

Implement a new HEP mini-grant program (modeled after LISS) designed to involve community groups in the HEP.

Work with the Citizens Advisory Committee (CAC) to fill positions on the Steering Committee and increase citizen involvement in the HEP.

**Expected Outcome**
There will be increased communication and cooperation between the many groups involved in the HEP and enhanced progress toward protection and restoration of the Harbor Estuary.

**Objective b. Develop a comprehensive coastal and aquatic outreach effort with New York's Native Peoples, in concert with Cornell's American Indian Program, to aid them in managing and utilizing their aquatic resources.**

**Milestones**
Work with the St. Regis Tribe Environment office and other entities at Akwesasne in the restoration of Atlantic salmon and American eel.

Develop and carry out, in partnership with the USGS biological survey and Akwesasne, a training program that will assist Native American resource managers to better manage their aquatic (riverine) habitats.

Assist in the development of a fisheries advisory board at the Seneca Nation and organize and develop an environmental task force among Native American people in Western New York that will serve as a nexus for information and training to help First Nation people better manage their natural resources.

Work in partnership with Cornell's American Indian Program to develop curricula that use Sea Grant-developed educational materials for Native American reservation schools, and other schools serving significant Native populations.

**Expected Outcome**
NYS Native American populations will be better able to manage their coastal resources to their advantage.

**Milestone**
Assist Native American farmers in the area of aquaculture providing up-to-date information about current systems and techniques. Set up demonstration projects in the production of finfish and vegetative cropping (wild rice) to investigate current techniques as to their viability for First Nation communities.

**Expected Outcome**
New York Native American farmers will use best management practices in cropping their fish and aquatic plant resources.

**Objective c. Respond to emerging coastal needs.**

**Milestones**
Complete BTRI 1999-2001 research, summarize results and present conclusions about predictive capabilities and management possibilities.

**Expected Outcome**
Resource managers on Long Island and other Northeast Coast locations will better understand brown tide bloom formation and decline and make better decisions about optimizing use of their bay resources.

**Milestone**
Complete the Hard Clam research program in the South Shore Estuary and summarize results with respect to recovery of growth rates and clam productivity.

**Expected Outcome**
Local resource managers will be able to make better decisions about their hard clam resources and how to maximize the benefit derived from their resource management programs.

**Milestones**
Coordinate management of NYSG's component of the mortality research, and outreasch program for the Long Island Sound Lobster Research Initiative with those of other members of the federal and bi-state Steering Committee and help them make decisions that will enhance collaboration and avoid duplication of effort so that the overall Initiative effectiveness will be increased.

Develop and implement a joint plan of work education and outreach programming with the Connecticut Sea Grant Program in support of the Long Island Sound Lobster Research Initiative.

Liaise with the Lobster Steering Committee executive sub-committee to obtain technical input and guidance in outreach and educational program development and publication (e.g., newsletters, information documents produced for the website, published fact sheets) production.

Develop a network panel of lobster fishery stakeholders to provide technical input and feedback on the lobster extension program and serve as an important source of stakeholder input for the Lobster Steering Committee.

**Expected Outcome**
The general public, lobster fishery stakeholders and LIS resource managers will have a better understanding of the likely causes of the 1999-2000 lobster die-off and strategies that may be helpful in preventing or mitigating future occurrences.

**Milestones**
Work with other members of the Marine Disease and Pathology Consortium to establish a program of research and outreach at the University of Stony Brook's Marine Sciences Research Center.

With new funding received from the NY Legislature, recruit a new Sea Grant extension Aquatic Animal Health Specialist to be housed at MSRC on the Stony Brook University campus and ensure that the specialist coordinates his/her work with the researchers stationed at MSRC.

**Expected Outcome**
New York State will have a center that focuses on determining when pathologies occur in native and cultured aquatic organisms and the causes of such pathologies and developing the research to help prevent or mitigate future occurrences.

**Milestones**
Work with researchers, resource managers and other interested parties in New York, Pennsylvania, Ohio and Canada to examine occurrences of avian botulism and co-occurring circumstances to identify what is known and what needs to be known to establish causalities and modes of prevention or mitigation and prepare a plan of research for gaining the needed information.

Work with local legislators and others to try to raise funds to carry out the research plan.

**Expected Outcome**
Proposals will be made to state and/or federal entities to fund the work needed for making wise management decisions to control occurrences of avian botulism.

**Objective d**. **Maintain and improve positive relationships between New York Sea Grant and existing and potential host institutions.**

**Milestones**
Use various Communications activities to work with and/or keep in contact with other entities doing communications/education/public relations work on the Cornell University and Stony Brook and other SUNY supporting campuses including SUNY Central, as well as Sea Grant Colleges and Universities throughout the Sea Grant Network.

Serve as the NYSG liaison to the Great Lakes Program (GLP) at the University at Buffalo, the Great Lakes Center (GLC) at Buffalo State College, and the Great Lakes Research Consortium (GLRC) to 1) develop a Great Lakes Campus project that would

build a research/outreach station on the Buffalo waterfront; 2) teach a summer session for undergraduate and graduate students; 3) include NYSG and GLP research and outreach initiatives for inclusion on the GLP web site and in the GLRC newsletter, the GLRC ***Report*****;** and 4) other activities.

Assist with the writing of the GLP annual report, coordination of the annual Advisory Board meeting, and editing the semi-annual ***Great Lakes Research Review***.

Prepare quarterly research updates for the Canadian-American Studies Committee newsletter and the School of Engineering Sciences newsletter, highlighting the work being done by New York Sea Grant and the Great Lakes Program at UB.

Work with the Great Lakes and Marine staff based at SUNY campuses and the office coordinators to identify and implement opportunities to further enhance the relationship between SUNY and New York Sea Grant. Examples include seminar series, guest lecturing, and serving on advisory committees.

**Expected Outcome**
Interactions and dialogue with the GLP, the GLRC, the GLC, and SUNY Brockport and Oswego will be enhanced and progress on Great Lakes resource issues will be increased.

## Issue D. NYSG ORGANIZATIONAL GOALS

### Goal 10. NYSG will examine how funding can be increased for NYSG activities.

**Objective a. Increase funds from federal sources.**

**Milestones**
Work with the Sea Grant Network to increase or maintain the yearly appropriations for the National Sea Grant budget at the authorized level by contacting NYS legislators via personal visits, letters, faxes and/or phone calls.

Work with the Sea Grant Network to successfully arrange for Reauthorization of the Sea Grant Act by contacting NYS legislators via personal visits, letters, faxes and/or phone calls and presenting information about the value of NYSG and Sea Grant Network activities.

Develop legislative NYSG 'champions' to spearhead support activities with other Representatives and Senators.

**Expected Outcome**
One or more NYSG legislative champions will take the lead in getting twenty or more of NYS's representatives and both Senators to provide signatures in support of the national appropriations and/or re-authorizations.

**Milestone**
Apply to manage federal funds, work with NYS PIs to apply for funds from non-core NSGCP federal solicitations, and leverage funding from other federal agencies for research and outreach projects.

**Expected Outcome**
Maintain a significant budget of non-core federal funds for research and outreach activities.

**Objective b. Increase NYSG funds from the state.**

**Milestones**
Contact NY State Senators and Assemblymen and the Governor's staff via personal visits, letters, faxes and/or phone calls and present information about the value of NYSG and Sea Grant Network activities.

Contact SUNY Central administrators to demonstrate the economic value of NYSG's activities for NYS.

Encourage and assist fund raising from state sources by NYSG extension specialists.

Expected Outcome
NYSG's funds from state sources will be increased.

**Objective c. Increase NYSG funds from private organizations.**

**Milestones**
Continue to encourage and assist fund raising from private industry by NYSG extension specialists.

Work with PIs doing research or outreach projects of particular relevancy to business/industry to raise matching funds for the work.

**Expected Outcome**
Half a dozen industries and/or businesses will contribute to NYSG activities each year.

**Milestone**
NYSG will mine university and other sources of information about fund raising approaches to foundations.

**Expected Outcome**
A document summarizing information that characterizes successful approaches will be prepared for internal use.

**Milestones**
A strategy for approaching foundations will be prepared including a short list of prospective targets.

Initial approaches will be made to two foundations that seem to be most appropriate.

Lessons learned will be documented.

**Expected Outcome**
A decision will be made about the benefit cost (primary cost is expected to be NYSG management effort) of approaches to foundations and whether this is a valid option for obtaining additional NYSG funds.

**Objective d. Increase funds by collaborating with others**

**Milestone**
Identify and meet with communications specialists and managers from other organizations and examine possibilities for developing mutually beneficial products.

**Expected Outcome**
NYSG will expand its resources by co-producing and cost sharing communications products with other organizations that support NYSG goals.

**Goal 11. NYSG will improve its reputation among decision-makers as a leader in generating objective, science-based information for application to coastal issues.**

**Objective a. Increase input of the best scientists toward defining the coastal resources research areas where efforts can have large impacts on scientific progress.**

**Milestone**
Determine how best to obtain such input of advice and implement it.

**Expected Outcome**
Potential scientific progress can be incorporated along with programmatic usefulness into research priority setting.

**Objective b. Increase the value of NYSG research results by optimizing the protocols for implementing the Focus Topic area.**

**Milestone**
Identify a protocol for planning for NYSG's Focus Topic area that will involve more state researchers and increase the number of submissions for the next omnibus.

**Expected Outcome**
Better proposals will be submitted, competition will be intensified and the likelihood of stepwise progress will be increased.

## Goal 12. NYSG will increase its role as a key collaborative liaison among NYS stakeholders in coastal issues

### Objective a. Identify partnerships that can be developed or enhanced by having NYSG staff serve on additional committees or boards so that the program can better serve its user groups in the state, region, and nation.

**Milestones**
The Director, Associate Director and/or Assistant Director will meet with the heads of at least six relevant NYS or federal agencies or programs or with non-governmental organizations to find areas of mutual interest related to coastal resource issues.

NYSG will initiate at least two new cooperative efforts with these organizations and arrange for new appointments of NYSG staff to advisory committees or boards of these organizations.

**Expected Outcome**
NYSG managers or staff will influence activities of at least two new state, regional or national groups involved with coastal resource issues.

**Milestones**
NYSG staff members who already serve on advisory committees or boards of coastal decision-making organizations will identify potential collaborative opportunities to be taken with those groups, even if they require NYSG resources to implement.

At least six staff members will bring ideas for potentially effective collaborations to the Management Team for discussion and approval.

**Expected Outcome**
NYSG will implement at least one new collaborative activity through this mechanism to accomplish an activity of benefit to the state of science knowledge, to our stakeholders, and/or to coastal resources directly.

## Goal 13. NYSG will develop ways to demonstrate better the success of the program.

**Objective a. NYSG staff will participate heavily in documenting accomplishments in their areas.**

**Milestone**
NYSG Management will explore how other similar groups evaluate their successes (what metrics are useful, etc.).

A list of metrics and processes used by others to document success will be compiled and considered and appropriate ideas will be evaluated for adoption by NYSG.

**Expected Outcome**
NYSG will identify common metrics to measure impacts of its components - research, outreach and education.

**Milestone**
In-service education on program evaluation will be made available to all SG staff.

**Expected Outcome**
Program evaluation will be seen as an opportunity, by SG staff, to show program accomplishments. Extension specialists will spend up to 10% of their total effort on program evaluation; other staff may devote even greater portions of their time to this.

**Objective b. Identify and implement additional techniques and processes to continuously document NY Sea Grant programmatic accomplishments.**

**Milestones**
NYSG extension will improve its NYSG Narrative database so that accomplishments are recorded by state and federal legislative district and can be distributed to legislators and other interested parties on a regular basis.

The NYSG research program will continue to evolve its process to report on results, successes and impacts of the research it has funded.

**Expected Outcome**
NYSG will significantly increase its ability to report program accomplishments to legislative districts and regions of NY State that have been impacted by SG efforts.

**Objective c. More fully utilize its statewide PAC, district PAC's and individual extension specialist PAN's to evaluate program efforts.**

**Milestone**
NYSG Management will explore how other Sea Grant programs utilize their advisory committees for evaluation, develop protocols to use its own advisory committees for effective evaluation and conduct such evaluations.

**Expected Outcomes**
NYSG will be recognized as having one of the best programmatic efforts in the network.

Program funding opportunities will increase due to NYSG's ability to evaluate and report on its program accomplishments.

**Objective d. Identify and implement effective communications evaluation practices**

**Milestones**
Through the use of a communications advisory committee made up of specialists and managers explore how other organizations evaluate publications, websites and media coverage.

Work with the Sea Grant Communications Network to assess and update systems of evaluating program efforts.

**Expected Outcomes**
NYSG communications will conduct evaluations of its efforts using techniques that are generally acceptable and effective.

Using these techniques, NYSG will demonstrate its substantial value to internal and external stakeholders.