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One of the pleasures of my job is that I get to spend time visiting and thinking about the coastal resources in New York State. This has been a lifelong activity. Much of my youth seems to have been spent on, in or around the water. Fishing for anything that would bite in one of Lake Ontario’s many tributaries, boating on the Hudson, crabbing on Long Island and walleye fishing on Oneida Lake all provided pleasurable, and at times exciting recreation. These days, I lean more toward hiking along beaches, wetlands and tidal creeks watching people and wildlife.

If you’ve shared any of these experiences, you know that we in New York are blessed with a huge diversity of coastal resources. This diversity stems from the different aquatic habitats that we find when we travel from Montauk Point to Buffalo. For New York Sea Grant, this diversity is important. Our authorizing legislation, the National Sea Grant College and Program Act of 1966, defined coastal as inshore marine environments as well as all of the Great Lakes. Accordingly, New York is responsible for coastal resources in both the ocean and the Great Lakes. But besides pristine coastal areas, New York’s coasts also support heavy industrial and community development, adding to the diversity of decision-making about coastal resources.

Although New York Sea Grant must help develop and protect some of the most diverse systems in the network, we also have the advantage of an equally diverse pool of high quality talent to help. Internationally recognized research and extension faculty from a wealth of excellent universities, as well as our own management, extension, education and communications staff, help achieve our goals successfully and cost-effectively. New York Sea Grant has been “Bringing Science to the Shore” since 1971. Our strategy is to bring objective, pragmatic scientific information to all coastal decision-makers and citizens to help them make wise coastal resource decisions.

This Program Guide documents the two-year Implementation Plan for 2002-2003 at about the midpoint of the biennium. It is organized around the issues, goals and objectives in NYSG’s 2000-2005 Strategic Plan listed in the early pages of this book. The primary research, outreach and education activities underway are presented against the backdrop of these goals in the second section with an emphasis on the target of the work. The final section of the guide lists NYSG outreach and management staff, currently-funded researchers, and the other collaborators with parallel interests in developing and protecting coastal resources who assist New York Sea Grant in achieving its goals.

I hope that this Program Guide will help you better understand how New York Sea Grant is contributing to wise ecological and economical decisions about New York’s coastal resources.
New York Sea Grant is the only program that is fully bi-coastal in the National Sea Grant network. About 85 percent of New York’s population lives within a short distance of the State’s 3400 miles of Great Lakes, estuarine and marine coastline. Prominent New York State coastal water bodies include the Hudson, St. Lawrence and Niagara Rivers, Lakes Ontario, Erie and Champlain, Long Island Sound and inland bays, New York Harbor and the Atlantic Ocean.

With so much of the State’s economy and population located near the State’s coastline, there is a strong need for New Yorkers to carefully manage the interplay of people and environment in those areas. As a university-based program committed to objectivity and science rather than advocacy, New York Sea Grant (NYS) is well-positioned to assist all levels of government and private entities in “Bringing Science to the Shore.”

New York Sea Grant has carefully developed its Vision, Mission and Value statements. NYS has also set its course and goals in a Strategic Plan for 2000-2005. The Plan outlines specific ways in which NYS’s research and outreach will be applied to help provide science to inform coastal resource decision-makers.

**VISION**

To be a leader in formulating and funding scientific research and in disseminating science-based information for coastal decision-making and education, as well as a key collaborative force for wise management, economic development and conservation of New York’s and the Nation’s coastal assets.

To achieve this vision, New York Sea Grant will continue to:

- Focus efforts on New York State’s most critical coastal resource issues
- Conduct a competitive, high quality research program to objectively fill information gaps
- Disseminate the latest science-based information to all parties for resource decisions
- Increase its role as a liaison among coastal decision-makers
- Support a responsive, knowledgeable staff
- Educate the public and the next generation of coastal scientists

**VALUES**

- First quality scientific research to provide information for wise coastal resource decisions
- Activities to extend unbiased science and technology to New York’s coastal users
- Input from stakeholders to maximize program applicability and usefulness

**STRUCTURE**

NYS has conducted a multi-faceted program of research, outreach, and education for New York’s coastal resources for over thirty years. NYS is funded by the National Sea Grant College Program (part of NOAA and the U.S. Department of Commerce) and New York State. Within New York, NYS is a joint program of Cornell University and the State University of New York. A Board of Governors establishes NYS policy and oversees its operations and budget. NYS uses stakeholder advisory groups to obtain input and feedback on programmatic value and priorities. The program’s main administrative offices are at Stony Brook University; extension administration is located at the Cornell University campus in Ithaca. Research proposals are solicited from campuses throughout NYS and beyond. The proposals are rigorously reviewed to select high quality research that addresses the region’s most pressing coastal issues and opportunities. Extension professionals are all specialists in one or more technical fields related to coastal resources and are located near their audiences at offices across the state. They work with these stakeholders to provide science-based information about coastal matters. Thus, the organizational structure and operations of NYS are designed to enhance its effectiveness.
Core financial resources for New York Sea Grant include the annual federal allocation from the National Sea Grant Office (NSGO) and an annual state allocation from New York State through the State University of New York (SUNY). New York Sea Grant also receives and administers many funds from additional resources, including special state legislative appropriations, research and extension project funds resulting from NSGO National Strategic Investments, funds awarded directly to the Extension Program at Cornell University for specific outreach projects (such as the Long Island Sound Study and the National Aquatic Nuisance Species Clearinghouse), and funds awarded for specific large-scale research activities. The latter group includes the Brown Tide Research Initiative, the Hard Clam Research Initiative, and the Long Island Sound Lobster Research Initiative, all of which are funded by a variety of federal, state, and private sponsors.

New York Sea Grant’s total program funding has significantly increased over the past decade. An average of $2.4 million in funding was administered by NYSG in the 1980’s, increasing to an average of $3.7 million during the 1990’s, and so far in the new millennium, the average is $5.6 million. The primary increase in NYSG funding is derived from sources other than core funding. Though there are variations in the levels of funding in any given year, in general, the core federal support for the program from the NSGO has increased only 24% since 1990, compared to an increase of 554% in funds from other than core resources. Over the same period, NYSG’s financial support from its core state allocation has essentially not had any permanent growth, averaging approximately $420,000 per year.

The amounts shown in Figure 1 depict when the funds were received by NYSG, however, they are often allocated and distributed to the five program elements (research, extension, administration, communications, and additional activities) over the course of several years. For example, all funds for the Long Island Sound Lobster Research Initiative were received in 2001, but are distributed and used over a four-year period 2001 through 2004. Figure 2 shows an average allocation of funds among the program elements over a five-year period.
ECONOMIC LEADERSHIP ISSUES

GOAL 1: Increase the Viability of Coastal-Dependent Businesses
- Search for economically viable niches for aquaculture in New York State
- Help water-dependent businesses improve their response to public policies and regulations
- Design and evaluate approaches to enhance coastal tourism and eco-tourism
- Identify and assess techniques or strategies to predict/mitigate environmental impacts of coastal businesses and activities
- Provide balanced seafood product information to consumers.

GOAL 2: Facilitate Sustainable Use of Economically Important Coastal Fisheries
- Develop methods to assess the impact of ecosystem and policy changes on fishery sustainability

COASTAL ECOSYSTEM HEALTH AND PUBLIC SAFETY ISSUES

GOAL 3: Improve the Quality and Safety of Seafood Products
- Examine the effects of fishing activities on fisheries
- Identify factors involved in disease, physiology and behavior in fish and shellfish
- Increase understanding of socio-economic responses of communities to fishery changes
- Improve fish population and ecosystem process models
- Develop models to predict point and non-point contaminant impacts
- Design innovative outreach programs to support lake-wide management plans
- Develop techniques to evaluate water quality impacts of alternate resource uses
- Develop techniques to evaluate costs and effectiveness of water quality improvement strategies

GOAL 4: Prepare for and Respond to Coastal Hazards and Processes
- Demonstrate new technologies to assess impacts of coastal hazards
- Develop techniques to predict, prevent or mitigate coastal hazards
- Assist coastal stakeholders with water level and erosion problems
- Develop models to predict effects of sedimentation and dredging in harbors and waterways
- Develop techniques for and educate society about introduction, control and mitigation of ANS
- Examine the causes and dynamics of harmful algal blooms to develop mitigation strategies
- Determine how selected human activities can affect distribution and impacts of ANS

GOAL 5: Assess and Enhance Coastal Water Quality
- Design and deliver non-point source pollution best management practices
- Design innovative communications strategies and methods to foster an educated citizenry
- Help legislators understand resource management and its uncertainties

EDUCATION AND HUMAN RESOURCES ISSUES

GOAL 6: Protect or Enhance Coastal Habitats
- Develop techniques for habitat assessment
- Develop and conduct educational programs on the value and methods for habitat improvement
- Develop techniques for managing critical coastal habitat, e.g., wetlands and essential fish habitat
- Develop future professionals by supporting graduate and undergraduate scholars
- Develop innovative communications strategies and methods to foster an educated citizenry
- Help legislators understand resource management and its uncertainties

GOAL 7: Control the Spread and Mitigate the Impact of Non-Indigenous (NIS) and Aquatic Nuisance Species (ANS) in New York's Coastal Waters
- Develop techniques for and educate society about introduction, control and mitigation of ANS
- Examine the causes and dynamics of harmful algal blooms to develop mitigation strategies
- Determine how selected human activities can affect distribution and impacts of ANS

GOAL 8: Enable New Yorkers to Participate as Partners in Coastal Issues
- Help educators apply new technologies to employ Sea Grant information in K-12 classes
- Develop innovative communications strategies and methods to foster an educated citizenry
- Help legislators understand resource management and its uncertainties

GOAL 9: Develop New Partnerships
- Initiate an urban outreach effort in New York City
- Provide information to help New York’s Native Peoples manage their aquatic resources
- Respond to emerging coastal resource needs
Sea Grant’s university-based research is of high quality and chosen to take an unbiased look at priority questions. It has the scientific rigor of work funded by the National Science Foundation with the additional requirement of real-world stakeholder review. New York Sea Grant’s research is expected to “make a difference” by providing useful results to the public, businesses, and managers. Given the variety of marine, aquatic, and coastal topics covered by our grants to top-notch physical oceanographers, food scientists, benthic ecologists, aquatic toxicologists, fisheries modelers, geochemists, and others, NYSG serves as an important resource for New Yorkers with many different interests and information needs. NYSG research also sets benchmarks within the scientific community, advancing the state of knowledge in many fields.

With more than $1 million of core funds per year dedicated to it, research is the single largest component of NYSG’s state and federal base budget.

Competition for grant funds is high, and the selection of projects for NYSG’s portfolio is a science in itself. It includes programmatic screening of preproposals submitted in response to a priority-driven Call for Proposals, peer review and Technical Review Panel evaluation of full proposals, and input from stakeholders. Final selection depends on technical soundness and anticipated usefulness of the results. Even if a proposal addresses a crucially important topic, if the science or methods are questionable or subpar, New York Sea Grant will not fund it. The rigor of our technical review process is highly praised and provides the foundation for NYSG’s scientific credibility.

New York has tremendous research talent in its many universities and research-capable institutions. NYSG’s Calls are sent to more than 300 individuals in nearly 100 institutions, usually attracting about four times as many applications as can be funded. New faculty names are continually being added to our mailing list and roster of funded investigators. Occasionally we must look beyond New York’s borders to find expertise for certain topics, but funding NY faculty helps to reinforce and build their interests in addressing the state’s coastal problems and opportunities.

The cost/benefit ratio and the non-federal match requirement of Sea Grant research make it a very wise investment. A typical core research project will run about $80K per year for two years and include the hands-on training of at least one graduate student. More than twenty such efforts can be underway at any one time. Counting research funded under other initiatives in addition to NYSG’s core program, that number usually climbs close to fifty. Research accountability is key, being evaluated regularly via required progress reporting. Presentations at scientific conferences and peer-reviewed publications validate the work’s technical quality and academic interest in the results. But, that’s just the first step.

Just as important to Sea Grant is practical use of the proven, new information. This takes the research a vital step beyond the mandate of other funding organizations. And, that’s where the extension program staff comes in. With skills in technology transfer and outreach, extension specialists know who the concerned stakeholders are and can convey the results to them in ways most effective for application conducting business and making decisions. It is truly a unique, effective, and highly-appreciated model.

The Sea Grant extension specialists form advisory committees from the regions they serve. Once issues are identified, a wide variety of techniques are used to tackle them. Extension specialists may work with individuals, collaborate with others to organize workshops, or consult with experts to get needed information from other available sources. This may also involve suggesting new research topics and the research process starts anew.

New York Sea Grant Extension has one of the largest and most respected extension programs in the Sea Grant network. Eighteen extension professionals are located in nine different offices in the downstate marine and upstate Great Lakes regions of New York. These specialists have expertise chosen to meet specific responsibilities assigned to them and take on statewide, regional, and in some cases national responsibilities.

This program guide provides a brief synopsis of the current research and outreach efforts that New York Sea Grant has underway. The projects are organized according to New York Sea Grant’s strategic goals and objectives as stated on the previous pages. Research, extension and communications projects receive much of their funding from the National Sea Grant College Program and the State of New York. Noted, too, are some of the specific funding partners on many individual extension projects. The number of partnerships established by extension is great; a list of many participating partners is found at the end of this book.

With its partners, New York Sea Grant is finely-tuned to develop and deliver the science that New Yorkers need to wisely utilize, conserve, develop, and enjoy our coastal resources.
GOAL 1. Increase The Viability Of Coastal-Dependent Businesses

Sustainable Integrated Finfish/Nori Aquaculture for Bioremediation and Production of Food and Biochemicals: Culture and Mesocosm Studies
(Kraemer/Yarish/Neeffus)
R/A-28(CT) 2/1/2000-1/31/2003

This project is developing a polyculture system that integrates finfish and macroalgae (nori) aquaculture. Developing such a system provides added income to aquaculture businesses and bioremediation of nutrient wastes. The project, co-funded by CT Sea Grant, has so far identified a potential algal species that can be used in conjunction with finfish aquaculture in the northeast.

Sea Grant Extension Program
(Baker/Kent/White)
A/EEP-20 2/1/2002-1/31/2004

The New York Sea Grant Extension Program uses its core funding to develop and disseminate problem-solving educational programs and activities in each of NYSG’s issue areas: economic leadership, coastal ecosystem health and public safety, and education and community well-being.

Throughout this guide, extension activities funded under this omnibus (core) award will be described first, followed by additional activities funded by NYSG’s partners.

New York Sea Grant assists water-dependent businesses statewide in improving their management, operation, marketing, and responses to regulations to enhance business efficiency, effectiveness, cost competitiveness, and profitability. NYSG specialists (Holochuck/Kuehn/White) work with federal, state, and local officials, marine industry leaders, and community groups to increase their understanding of the impact that recreational boating and boating facilities have on regional and state economies. Other topics covered in educational programming efforts include the status, trends and issues facing the marine industry, emerging technologies in marine business management and operation and the potential for adopting them.

Throughout coastal New York, communities and their recreational and tourism businesses also need tools to design and evaluate approaches that enhance tourism and eco-tourism opportunities while developing and/or promoting environmentally sustainable, economically-stable tourism markets. NYSG extension specialists (Holochuck/Kuehn/White) are working with members of the diving community (including historians and archaeologists), hikers, tourist promotion agencies, lakefront business owners and resource managers who have responsibility for our coastal resources to utilize sound public policy for managing the use and protection of these resources.

New York State Department of Environmental Conservation (NYS DEC) 2002-2003

New York State Clean Vessel Act Education/Information Program
(White)

Part of a statewide effort, NYSG extension is developing an education/information program targeted at marina operators, boaters, government officials, and community leaders. Through Sea Grant presentations, workshops, web programs, and signage, these stakeholders are being instructed in ways they can improve the quality of NY’s coastal waters, especially through the use of environmentally safe pumpout facilities.

New Jersey Department of Environmental Protection 2001-2004

Storm Water and Nonpoint Source Pollution Prevention Best Management Practices Demonstration Project for Marinas (Tanski)

Based on a successful NY model, the goal of this project, a joint effort of Rutgers University and the NJ Marine Trades Association funded by the NJDEP, is to increase awareness and encourage implementation of innovative pollution control measures by marinas through a demonstration project highlighting the use of a variety of nonpoint source pollution pre-
NYSG extension provides New York seafood businesses with technical information on specific seafood products, markets, processes, and regulations that helps them enhance profitability or create new economic opportunities by utilizing alternative resources, developing new markets or products, or managing overhead costs. NYSG also provides potential seafood consumers with objective information about seafood products, nutrition, safety issues, and proper handling, storage and preparation techniques with a goal of positively impacting their attitudes about seafood.

New York Sea Grant extension (Baker) is part of a statewide 18-member work team addressing aquaculture development in New York. The goal is to assist potential aquaculture developers and resource managers in identifying and prioritizing the current technological, marketing, regulatory and policy barriers to aquaculture, and to facilitate the development and expansion of the state’s aquaculture industry through education.

Predicting Dissolved Oxygen Trends in the Tidal, Freshwater Hudson River: The Unrecognized Role of Introduced Species (Cole/Caraco/Findlay)
This research is focusing on dissolved oxygen (DO) dynamics in the tidal, freshwater Hudson River. Through intensive temporal and spatial DO measurements; synthesis of existing DO data, and analysis of freshwater flow and wind speed the project will generate a model of DO dynamics. Combined with modeling of zebra mussel populations, forecasts of future DO levels can be made.

Changes in Stock Composition of Chinook Salmon Under Changing Management Regimes (Sullivan/Rudstam)
The results of this project will help scientists and managers evaluate the anecdotal claims of increased Chinook salmon from wild reproduction and the effects of controlled changes in the Salmon River’s water flow.

GOAL 2. Facilitate Sustainable Use of Economically Important Coastal Fisheries

FINFISH

Since the 1970s, Sea Grant research has been advancing the science of fisheries biology and management in New York’s waters. NYSG researchers improve the understanding of both marine coastal and Great Lakes food webs and the biology of valuable fishery species.

Multi-Species Fisheries in an Ecosystem Context: Evaluating the Ecological Effects of Cephalopod Fisheries (Essington)
R/FBM-27 2/1/2002-1/31/2004
By developing a better understanding of the role of squids in the mid-Atlantic food web, this examination of predator-prey interactions will shed new light on the management of fished stocks that may be mutually dependent.

From Echo to Fish: Analysis of Bias and Uncertainty Associated with Hydroacoustic Populations Estimates (Rudstam/Sullivan/Horne)
R/FTD-8 5/1/2002-4/30/2003
This project will help scientists and managers better understand the limitations involved in fish population estimates made using hydroacoustics and how to incorporate these uncertainties into projections based on models.
GOALS 1 AND 2

ECONOMIC LEADERSHIP

Factors Affecting Early Survival and Management of Lake Ontario Salmonine Populations (Sullivan/Kraft/Mills/Rudstam/Paterson/Stewart)  
R/FBF-12 2/1/2000 - 5/30/2002

This project is using analysis of long-term historical data in addition to new field data to examine ecological factors affecting the Lake Ontario salmonine fishery. Important early results have shown a linkage between body growth and age at first reproduction. This has important management implications involving what size classes are harvested and the long-term viability of the fishery.

Ecological Constraints on Establishment of a Freshwater-Resident Population of Blueback Herring in the Mohawk/Hudson Drainage (Limburg)  
R/FBF-13 2/1/2000 - 9/30/2002

A population of blueback herring (Alosa aestivalis) is expanding westward into the Mohawk River. This project is examining key parameters of this population compared to the anadromous Hudson River population to understand the ecological constraints involved with the process of a fish population becoming landlocked.

Effects of Size-Selective Mortality on the Evolution of Growth Rate in Fishes: Continued Empirical Simulation (Conover)  

This project is studying the impacts of size selective harvesting on fishery populations. Laboratory studies so far have shown that size based harvesting may lead to evolutionary changes in population characteristics that could impact long term sustainability of coastal fisheries.

The lack of spatial information on the distribution of mobile and passive fishing activity is hampering the development of optimal management measures. As part of a northeast regional Sea Grant project, NYSG is working with industry, regulatory agencies, and fishers to identify the boundaries of fishing areas that are effectively allocated to industry sectors including closed management areas, state and federally-enforced restricted areas, industry negotiated gear demarcations, and other traditionally unfished areas. Close regional project coordination will allow for greater information transfer and capacity building.

Both at the state and regional level, uses a common curriculum and draws on partner agency experts to serve as instructors. The initial cohort will provide the foundation for a long-term, sustained fisheries extension, as through a teach-the-teacher model, to raise the level of constituent understanding, involvement and action in their home organizations and local communities.

ISSUES (INCLUDES LOBSTER, HARD CLAM AND BOTULISM PROJECTS)

Fisheries Extension Enhancement: Great Lakes Fisheries Leadership Institute (Baker/White)  

NYSG extension staff (MacNeill) and partners are selecting and training a cadre of 60 emerging Great Lakes fishery leaders, providing them the leadership skills necessary to make them more effective advisors on Great Lakes fishery issues. This project, through a teach-the-teacher model, teaches them the leadership skills necessary to make them more effective advisors on Great Lakes fishery issues. This project, through a teach-the-teacher model, teaches them the leadership skills necessary to make them more effective advisors on Great Lakes fishery issues.
There is a strong need for the development of new (or enhanced use of 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. NYSG will work to provide fisheries managers and researchers with the latest information on new assessment/research tools so they can use them in their resource assessment or research programs.

**GOALS 1 AND 2**

**ECONOMIC LEADERSHIP**

**LOBSTER**

With funds from NOAA's National Marine Fisheries Service (NMFS), NYSG initiated work on six research projects and one NYSG outreach effort as part of the total effort (19 projects) coordinated with other members of the Long Island Sound Lobster Steering Committee to try to determine causes of the 1999-2000 lobster mortalities in Long Island Sound. Total funds managed by NYSG will be just over $1.4 million for a 3-year period.

**Relationship Between American Lobster Mortality in Long Island Sound and Prevailing Water Column Conditions**

(Wilson/Waliser/Swanson)


Research from this project is analyzing long term Long Island Sound water quality data to test the hypothesis that a period of abnormally warm bottom temperatures contributed to increased lobster mortality rates. Results from this work will establish statistical relationships between water column anomalies and lobster mortality rate anomalies.

**Effects of Pesticides on Lobster Health: Trace Level Measurements and Toxicological Assessment at Environmentally Realistic Concentrations**

(McElroy/Brownawell)


This project is examining the link between pesticide use and lobster mortality. The researchers are measuring acute mortality and chronic immune system response in larval and juvenile lobsters exposed to Malathion, selected pyrethroids, and Methoprene at levels that could be encountered in the environment. The project is also developing methods to measure these pesticides and their metabolites in seawater, sediment and lobster tissue samples.

**Bacterial Assemblages Involved in the Development and Progression of Shell Disease in the American Lobster, Homarus americanus**

(Chistoserdov/Smalowitz)

R/FTD-7 6/1/2001 - 5/31/2003

This project is studying the bacteria involved with the development of shell disease in lobsters. The causes of shell disease are not clear and a specific infectious agent has not been identified. This project will use molecular techniques as well as classic culture techniques to characterize the bacteria associated with shell disease.

**Effects of Temperature and Body Size on Metabolic Stress in Long Island Sound Lobsters**

(Lopez/Cerrato)


Abnormally high average monthly bottom water temperatures in late summer/fall of 1998 and 1999 could have played an important role in 1999 lobster die offs in Long Island Sound. This study is examining among other things the relationship between body size, temperature and stress proteins. A field study examining the distribution pattern of stress proteins in Long Island Sound lobsters will show regions of temperature stress in lobsters.

**Immunological Health of Lobsters: Assays and Applications**

(Anderson)


Considering the economic importance of the American lobster (Homarus americanus), there is relatively little known about their immune system compared to other crustaceans. This research project aims to fill in the gaps. The plan is to develop a means to accurately assess the immune health of lobsters through development of assays and quantifying immune activity.

**ISSUES (INCLUDES LOBSTER, HARD CLAM AND BOTULISM PROJECTS)**

**Development of an Assay for Phagocytic Activity in the Immune System of Lobsters**

(Parker/Daly)

R/FTD-7 6/1/2001 - 5/31/2003

This research is developing an assay to assess the ability of stressed lobsters to protect themselves from disease. This approach will assess the ability of a stressed lobster’s immune system to remove foreign particles from the blood.

**LONG ISLAND SOUND LOBSTER RESEARCH INITIATIVE 2002-2003**

Community Outreach, Education, and Extension Programming (Clemetson)

A/EEP-17

Through its planning process, Sea Grant develops an educational plan that addresses identified critical needs. Although it is...
not always possible to anticipate every new coastal environmental issue, NYSG needs to be prepared to respond to critical emerging issues with educational programs. One such important issue in New York State is the massive die-off of lobsters in Long Island Sound. New York Sea Grant has responded with programs including workshops and websites, designed to provide linkages among researchers, stakeholders and the public.

HARD CLAM
The Hard Clam Research Initiative is supported by funding from NOAA's National Marine Fisheries Service (NMFS), the Port Authority of NY & NJ, the South Shore Estuary Program (SSER) and NYSG. A Hard Clam Initiative Advisory Committee was established to help oversee the selection and conduct of the projects. The first three projects listed below are funded through the Initiative, with core NYSG monies funding the last investigation.

ISSUES
(INCLUDES LOBSTER, HARD CLAM AND BOTULISM PROJECTS)

Epizootiology of Atlantic Salmon Swim Bladder Sarcoma (Bowser/Cassey)
R/ABF-2 2/1/2000 - 4/30/2002
Basic and vital information about a potentially devastating virus, salmon swim bladder sarcoma, that has infected Atlantic salmon, is unknown. Managers of sport fishery resources and commercial aquaculturists have little information for decision-making regarding disease distribution, modes of transmission and risk of infection. Utilizing the latest genetic techniques, this team will verify the retroviral etiology and determine any seasonality of viral production.

BOTULISM
Since 2001, avian botulism has become a major issue in eastern Lake Erie along the coastal region of New York, Pennsylvania and Ontario, Canada. New York Sea Grant extension took leadership in getting state and federal agencies together with researchers to develop a research and outreach agenda.

Prevalence of Botulism in Fish in the Lower Great Lakes (Bowser/Getchell)
R/SHH-12 1/1/2002-1/31/2004
This team will investigate the role that fish play in mortalities of waterfowl on Lake Erie from the causative agent of botulism, C. botulinum. This project fills a critical research gap and will provide government agencies with information essential for managing natural resources and protecting human health.

Relationships between the Timing of Reproduction, Fecundity, and Egg Composition to Declines in Hard Clam Recruitment
(Newell/Tettelbach/Grizzle)
R/FBM-22 9/1/2000 - 4/30/2003
Hard clams do not build a nutrient reserve during the previous fall for their spring reproductive cycle; instead, they rely on immediately acquired nutrients to sustain reproduction. To help resource managers with short- and long-term goals, this project is studying the reproductive cycles of adult hard clams in Long Island’s south shore bays to determine if they are synchronized to normal patterns of primary production.

The Trophic Interaction Between Hard Clams and Natural Assemblages of Phytoplankton
(Cerrato/Lopez/Lonsdale/Flood/Armstrong/Levinton)
R/FBM-23 9/1/2000 - 7/31/2003
Due to reduced abundance, hard clam grazing may no longer exert a controlling influence on phytoplankton; consequently, phytoplankton population dynamics may have changed considerably. This project will determine whether hard clams can improve their own food quality by intense grazing on a diverse phytoplankton assemblage.

Modeling Hard Clam Growth, Survival and Environmental Interactions: What are the Controlling Factors?
(Hofmann/Klinck/Kraeutner/Powell/Grizzle/Bricelj/Buckner)
This project will develop a population growth model for hard clams that will permit evaluation of the potential effects of changes in biological (brown tide and harvesting) and environmental components (temperature and salinity) of the Great South Bay system on the resident hard clam population levels and production.

Analysis of Field Plantings of Young Cultured Hard Clams, Mercenaria mercenaria (Linne), in Long Island, NY
(Rivara/Cerrato/Barnes/Aldred)
R/ATD-10 2/1/2002 - 1/31/2004
This project will help scientists and managers evaluate aspects of young hard clam stocking into various Long Island waters. This research team is evaluating stock recovery trade-offs between growth, survivorship and the effects on productivity to determine whether more small-sized seed planted earlier in the year can be as effective as less, larger seed planted later.

GOALS 1 AND 2
ECONOMIC LEADERSHIP

ECONOMIC LEADERSHIP

Anita Kusick

Prevalence of Botulism in Fish in the Lower Great Lakes Program 2002-2003 Botulism Outbreaks and the Lake Erie Fishery (Domske)
With the emergence of botulism as a threat to the bird and fish populations of the Great Lakes, New York Sea Grant has responded with programs including workshops and websites, designed to provide linkages among researchers, stakeholders and the public.

 Bordoides tramosoma - C. botulinum. This project fills a critical research gap and will provide government agencies with information essential for managing natural resources and protecting human health. 

 SONY RESEARCH FOUNDATION, UNIVERSITY AT BUFFALO GREAT LAKES PROGRAM 2002-2003 Botulism Outbreaks and the Lake Erie Fishery (Domske)
GOAL 3. Improve the Quality and Safety of New York State’s Commercial and Sport Caught Seafood Products

Inter-laboratory Validation of the HPLC-ECOS Method for PSP Toxin Analysis (Boyer)
R/SHH-11 10/1/2001-9/30/2003
A state-of-the-art and cost-effective technique for paralytic shellfish poisoning detection and monitoring using a modified High Performance Liquid Chromatography coupled with electrochemical oxidation and fluorescent detection system is being developed and will undergo international interlaboratory validation needed for acceptance as a standard method. Funding is through the Sea Grant Technology Program.

Rapid Detection of Pathogenic Vibrio parahaemolyticus (Boor/Wiedmann)
R/SHH-13 2/1/2002 - 1/31/2004
New and novel tissue culture-based assays for screening and detection of Vibrio parahaemolyticus in oysters and seawater will detect and distinguish between pathogenic strains of this bacteria from the more common strains that do not cause illness. This expert team of researchers will develop this new tool for industry and government use to help protect human health and to provide a better means to evaluate target water sources.

USDA/CSREES 9/15/00 – 9/14/2003
Control Strategies for Listeria monocytogenes in Food Processing Environments (Wiedmann/Gall)
Researchers are using molecular DNA fingerprinting techniques to track contamination patterns for the food borne pathogen Listeria monocytogenes in processing plants that produce ready-to-eat (RTE) seafood products. Contamination patterns have already been analyzed in ten seafood processing plants across the country and specific Listeria control strategies developed, implemented, and evaluated at each of those participating plants. A spring 2003 series of five workshops will be conducted from coast to coast to help processors of RTE seafood products develop and implement effective Listeria control plans in their operations. Collaborators include Sea Grant seafood specialists in DE, MD, VA and LA and two national industry trade associations.

USDA/CSREES 9/30/99 – 9/01 (WITH CONTINUING PROJECT MANAGEMENT)
An Internet Based Distance Education Program for Seafood HACCP Training (Gall)
NYSG has taken leadership for delivering seafood HACCP training for the seafood industry and federal and state regulators in New York and the nation. Working with the national Seafood HACCP Alliance, NYSG developed and implemented an innovative 12-module Hazard Analysis Critical Control Point training program that is available on the Internet. This distance education program is designed to be equivalent to the first two days of the standardized three-day “live” HACCP training course. Of the hundreds of national and international course enrollees, most are from the seafood industry or are government employees charged with safety inspections in seafood processing operations.

USDA/CSREES 9/1/00 – 8/31/2003
Fisheries Extension Enhancement Training and Education in Support of Effective Controls for Scombroid (Histamine) Poisoning (Gall)
NYSG is part of a national team educating commercial fisheries and charter boat operators about histamine poisoning, a common cause of illness that results from consuming improperly stored species of fish like tuna, mackerel, mahi-mahi and bluefish. Sea Grant is facilitating workshops and conferences and producing publications to help operators implement effective controls to prevent histamine formation in susceptible species. Funding for NYSG’s activities in this national initiative is through the NSGO Fisheries Extension Enhancement Program.

GOAL 4. Prepare for and Respond to Coastal Hazards and Processes

Native American Coastal Hazards and Environmental Management
R/CCP-7 2/1/2000-1/31/2003
This project is investigating the sediment changes at a manipulated tidal inlet. The goal is to understand the relative importance of continuous and discontinuous processes for sediment bypassing at such inlets. In addition, the project will refine a recent model for coastal sediment transport thus providing knowledge for effective management of shoreline erosion.

USDA/CSREES 9/1/00 – 8/28/2005
Numerical Modeling of Flow and Scour at the Vicinity of a Coastal Structure (Liu/Alsaffar)
R/CCP-9 4/1/2003-3/30/2005
This research is developing a numerical model that can be used by engineers to estimate the potential scour near a coastal structure caused by flowing water. Work from this research will improve understanding of the sediment transport process in the coastal environment.
Funding is through the Sea Grant Technology Program.

**Monitoring of Bottom Water and Sediment Conditions at Critical Stations in Western Long Island Sound (Cuomo)**

R/CMC-7 6/1/2002-5/31/2003

Data collected this year on water chemistry, sediment chemistry and bottom organisms in western Long Island Sound is being analyzed in conjunction with similar data collected in previous years. The analysis will reveal changes in important environmental parameters over time and provide much needed information to help evaluate the role of hypoxia in lobster mortality. Co-funded by CT Sea Grant, EPA, and CT DEP.

**Hydrologic Feasibility of Storm Surge Barriers to Protect the Metropolitan New York-New Jersey Region (Bowman/Flood)**

R/EPH-1 2/1/2002-1/31/2004

This team is studying the feasibility of placing storm surge barriers at The Narrows, the eastern mouth of the East River, and potentially the mouth of the Arthur Kill to protect low lying areas of New York City and adjacent New Jersey from storm surge flooding. The researchers will use maps, models of flooding and hydrology, and several data sources to determine the possible effectiveness of the barriers in these areas. Co-funded by the DEP of the City of New York.

**A Ferry-Based Observing System for Long Island Sound: Application to Physical Influences on Hypoxia (Waliser/Wilson)**


This project’s novel use of public transportation ferries to collect real time physical data for input to water quality models will greatly enhance scientific understanding of Long Island Sound in order to predict future conditions of stratification and hypoxia relative to regional weather and other variables. A companion project funded by CT Sea Grant is focused on the eastern end of Long Island Sound.

**Trace Metals, Organic Carbon, and Inorganic Nutrients in Surface Waters of the Long Island Sound: Sources, Cycling and Effects on Phytoplankton Growth (Sañudo-Wilhelmy/Gobler)**


Surface levels of dissolved toxic metals, inorganic nutrients, and organic...
Estrogenicity of Municipal Sewage Treatment Plant Effluents: Vitellogenic and Estrogen Receptor Responses in Striped Bass (McElroy/Elskus)  

There is laboratory and field evidence that estrogenic compounds in sewage effluent or other sources can cause estrogen disruption. There is very little information regarding levels or organismal effects for estrogenic compounds in U.S. waters. This project will for the first time provide a combination of chemical and toxicological data from New York City area municipal sewage treatment plants.

Endocrine Disruption in Jamaica Bay: Are Winter Flounder Being Affected? (McElroy/Schraibman)  
R/CTP-28 2/1/2002-1/31/2004

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

Bioaccumulation and Trophic Transfer of Thallium in Great Lakes Plankton Communities (Fisher)  

This research is assessing the bioaccumulation of the toxic heavy metal thallium in plankton in order to produce a predictive model of contaminant bioaccumulation. It will also identify the key factors responsible for biogeochemical cycling of thallium and the related New York State ambient water quality standards for this element in the Great Lakes ecosystem.

New Approaches for Assessing Mutagenic Risk of Contaminants in the Long Island Sound Environment (McElroy/Mendelman/Setlow)  
R/CTP-30 8/1/2002 - 12/31/2003

Polycyclic aromatic hydrocarbon contamination in sediments can bioaccumulate in aquatic species and cause chronic population-wide impacts. This work is evaluating the mutagenic potential of sediment from Long Island Sound.

Co-funded by the EPA.

Disposition and Metabolism of Polybrominated Diphenyl Ethers in Fish (Sikka/Kumar)  
R/SHH-14 2/1/2002-1/31/2004

Filling a critical data gap, this research team will examine the uptake, tissue distribution, excretion and metabolism of a gasoline additive, PBDE, in a model fish species. This vital information will advance the state of knowledge on PBDEs in fish and allow the prediction of these chemicals and their metabolite body burdens under environmental exposure conditions.

Identification of E. coli Sources for Effective Mitigation of Nonpoint Source Pollution (Hasbrouck/Hagedorn)  
R/CTP-29 2/1/2002-1/31/2004

This project is developing a crucial bacterial source-tracking tool by modifying novel molecular methodologies that could possibly identify coliform pollution sources with animal species or groups. Bacterial libraries will be established and validated to aid in best management practice development.

Preparation and Calibration of a Rapid Assay for the Cyanobacterial Toxin Anatoxin-a (Boyer/LaLonde)  
R/SHH-14 2/1/2002-1/31/2004

A new and novel tool is being developed that can be used to rapidly screen for the presence of anatoxin-a in water and tissue samples. This tool, along with the corresponding ELISA assay, could provide two key components for a tier-based monitoring system for the detection of Paralytic Shellfish Poisoning toxins.

Coastal Communities Development Program 2002-2003 (Kent/White)

New York Sea Grant NEMO Program GIS Enhancement Program (Keenan)

NYSG extension specialists work with their partners to design nonpoint source water quality education programs that 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. These specialists help plan and coordinate implementation of nonpoint source educational efforts (including EPA Storm Water Phase II and sediment and erosion control) by integrating work sponsored by the NEMO program (Keenan), Long Island Sound Study (Zimmer), Cornell’s LEAPE program (Thompson) and Hudson River groups (Holochuck). Through Sea Grant workshops, presentations and publications, local officials in multiple Long Island watersheds, the Hudson River Valley and around the Great Lakes are being
informed about nonpoint source issues and can incorporate this knowledge into programs that will reduce pollution into their harbors and bays. New York Sea Grant staff (Domske) also provides leadership to the Lake Erie Bi-national Forum education and outreach team by disseminating educational brochures and making presentations that keep the public informed of the status of the Lake Erie Lakewide Management Plans (LaMPs).

NYSG staff is helping plan annual training workshops on the identification of cyanobacteria bloom toxins that have been found in NY’s lakes. In a stakeholder advisory capacity, Sea Grant is preparing workshop proceedings, fact sheets, and recommendations to health officials regarding their response to potential toxic blooms. Funding is through NOAA’s Monitoring and Event Response for Harmful Algal Blooms (MERHAB) project.

GOAL 3 THROUGH 7

COASTAL ECOSYSTEM HEALTH

GOAL 6. Protect Or Enhance Coastal Habitats

Response of Long Island’s Coastal Wetlands to Environmental Change (Goodbread/Cochran)
R/CCP-8 2/1/2002-1/31/2004
This project is reconstructing high-resolution histories of three Long Island marsh systems by examining accretion rates, sediment character, geochemistry, and paleohydrology. Results from this work will aid in successful management of Long Island’s wetland resources.

Zooplankton as Ecological Indicators of Functional Integrity of Freshwater Lake Ecosystems (Mills/Johannsson/Patterson/Nicholls)
Great Lakes and other freshwater bodies in North America are undergoing significant ecological changes including declining productivity, changing fish communities, establishment of exotic species, and changes in water quality. This project will develop measures of ecological functionality providing an applied basis for assessing ecological change.

Development of a New Approach for Benthic Habitat Identification and Mapping (Cerrato)
R/CO-6 11/1/2002-10/31/2004
Methods of mapping underwater habitat still utilize a decades-old approach. This study will help develop a new tool for benthic habitat identification by incorporating faunal and geophysical data into an integrated approach that differentiates among benthic habitats. This new and exciting tool will benefit the design and power of scientific research, monitoring projects, and environmental impact studies that are vitally important to resource managers.

ZEBRA MUSSELS AND OTHER ANS

DOZENS OF INVASIVE SPECIES COMPETE WITH NY’S NATIVE SPECIES FOR FOOD AND HABITAT, CREATING NEGATIVE IMPACTS TO THE STATE’S ECOSYSTEMS. THE ZEBRA MUSSEL IS THE INVADER OF GREATEST CONCERN, COSTING BILLIONS OF DOLLARS IN IMPACTS ON THE GREAT LAKES FISHERIES AND INDUSTRIES SUCH AS DRINKING WATER FACILITIES AND ELECTRIC POWER GENERATION. THE FIRST FOUR OF THE FOLLOWING PROJECTS ARE FUNDED THROUGH A NATIONAL STRATEGIC INITIATIVE (NSI) ON ANS.

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

U.S. EPA 2001-2003
Assessing the Effects of Habitat Protection Efforts on the Eastern Lake Ontario Dune and Wetland Area Management Strategies (Thompson)

NYS DEC 2001-2003
Shoreline Stewardship Practices for Private Landowners (Thompson)

NYS DEC 2001-2003
Hudson River Stewardship (Holochuck)

Allan Overton Memorial Coastal Habitat and Restoration Endowment (Kent)

Working with partners throughout New York’s Marine and Great Lakes districts, NYSG extension specialists (Holochuck/Kent/Thompson) are developing public education programs targeted toward the realization of coastal habitat awareness, improvement, and restoration of specific sites. For example, the Hudson River Mariner program educates marina operators and boaters on best management practices and the necessity of protecting the river’s submerged aquatic vegetation. Along Lake Ontario’s eastern basin, a successful summer intern program aimed at educating the public and protecting the shore’s fragile dune ecosystem will continue. On Long Island’s south shore, the Allan Overton Memorial Coastal Habitat and Restoration Endowment funds a Sea Grant Extension coordinated coastal restoration project for youth.
Aquatic Nuisance Species: Metapopulation Dynamics and Control of the Zebra Mussel in Freshwater and Estuarine Systems: The Effects of Hydrodynamics, Larval Supply, and Embayments (Padilla)
R/CE-18 1/1/2002-12/31/2003

Extending current work to evaluate the applicability of a zebra mussel control strategy based on the manipulation of larval dispersal, this research will help identify the relationships among population structure, regulation and physical conditions.

Research and Outreach to Prevent and Control Aquatic Nuisance Species Invasions: The Role of Larval Growth, Mortality, and Transport in Metapopulation Dynamics and Control of the Zebra Mussel in Freshwater and Estuarine Systems (Padilla)

Zebra mussel population dynamics are controlled by factors affecting larval recruitment such as larval growth, survival and transport. Combining regional field and laboratory experiments, this project will evaluate dispersal barriers for controlling zebra mussels in flowing water systems by manipulating larval dispersal and abundance.

Aquatic Nuisance Species: Effect of Zebra Mussel Colonization of Soft Sediments on Foraging Success and Habitat Choice by Benthic Fish (Marsden/Beekey/McCabe)
R/CMB-29 1/1/2002-12/31/2003

This project is investigating how zebra mussel colonization of soft sediments affects the feeding success of benthic fishes such as sturgeons, sculpins and suckers. This in turn will lead to impacts on the food chain through piscivorous species that feed on benthic fishes.

Aquatic Nuisance Species Research and Outreach: Use of Bacteria for the Biological Control of Zebra Mussels (Molloy)
R/XG-12 10/1/1999-3/31/2002

This project has been testing a promising bacterial strain, CL0145A of *Pseudomonas fluorescens*. This microbe has been demonstrated in the laboratory to be an effective control agent for zebra mussels. This strain produces a biotoxin that is lethal to zebra mussels but not to non-target species. This research holds the promise of developing an effective, environmentally safe and non-toxic biological control of zebra mussels.

Ballast Water Treatment and Management: Testing Biofilm Monitoring Systems for Risk Assessment of Harmful Introductions by Ships from European to North American Waters (Baier)

An important source of nonindigenous species transfer can be from ballast biofilms maturing upon, and sloughing from, ballast water compartment walls. This source of potential exotics is being assessed with regard to current structural materials and new nontoxic, nonpolluting coatings that can foster easy-release of biofouling deposits. Funded by a National Strategic Initiative on ballast water.

Benthification of Great Lakes Ecosystems: A Synergism Between Nutrient Reduction and Dosiens? (Mills/Mayer/Fitzgerald)
R/CE-20 2/1/2002-1/31/2004

Fisheries managers will gain long-term planning tools in the form of habitat models to interpret and predict the response of fish populations and other communities to the environmental benthification changes in the Great Lakes caused by zebra mussels and nutrient abatement.

CERCOPAGIS

Also known as “the fishhook water flea,” this late ’90s Great Lakes invader is native to the Caspian and Aral Seas. NYSG’s cutting edge research on this exotic has led to further funding to learn more about what it eats, how it behaves and reproduces, and its potential impacts on the Lake Ontario food web. The following three projects are funded through the NSI on ANS.

Cercopagis - A New Exotic Cladoceran to the Great Lakes (Makarewicz/Mills/Rudstam/MacIsaac)

This research team is studying the population dynamics, genetic identity, vertical migration, environmental tolerances, life history, and impact on the Lake Ontario food web of the exotic cladoceran *Cercopagis pengoi*. Depending upon the interactions and energy flow, and to identify whether these species are beneficial or detrimental to juvenile fish.

R/CMB-28 10/1/2001-9/30/2003

This project is testing a variety of physical means (temperature, agitation, desiccation), impacts this invader has on the food web, the results will have implications on salmonine stocking policy.

Aquatic Nuisance Species: Effects of Invasive Invertebrate Predators on the Food Webs of the Great Lakes (Schulz)

It is likely that the invasions of *Bythotrephes* and *Cercopagis*, two exotic zooplankton species, have affected Great Lakes food webs since both have roles as prey and predator relative to other species near the bottom of the food chain. Several tools including stable isotope analysis will be used to get a better picture of trophic
BROWN TIDE INITIATIVE
A brown tide research initiative spearheaded by NYSG and funded through NOAA’s Coastal Ocean Program followed brown tide summit in the mid-1990s. With a steering committee providing insight, research focused on the ecology of the brown tide alga, its culture in the laboratory and triggers for its bloom. A synthesis of research findings is being developed in 2003. The first three projects below are funded through the initiative, with core NYSG monies funding the last two.

Benthic-Pelagic Coupling and LI Brown Tide
(Kana/MacIntyre/Cornwell/Lomas)
R/CMB-21 9/1/1999-8/31/2002
To gain insight into the regional differences in the occurrence of brown tide across Long Island bays, this group is examining several hypotheses regarding the control of brown tide by nutrients and the coupling between the sediment and benthos as mediators of nutrient exchange with the water column.

The Effects of Microbial Food Web Dynamics on the Initiation of Brown Tide Blooms
(Sieracki/Keller/O’Kelly)
This project is examining the growth and grazing of brown tide within the context of the microbial plankton community including phototrophic and heterotrophic components such as bacteria and protozoan grazers. A central hypothesis is that a picoalgal niche is typically occupied by a non-brown tide alga and when it is selectively removed or reduced, the niche becomes available to brown tide.

Causes and Prevention of Long Island Brown Tides
(Lonsdale/Caron/Cerrato)
This project continues efforts utilizing mesocosms to study and understand the factors leading to brown tide outbreaks and possible bloom prevention or mitigation. Plankton community structure, pelagic food web perturbations and the role of suspension-feeding bivalves are being examined as factors affecting brown tide initiation and bloom magnitude.

Reconstruction of the Effects of Brown Tide Blooms on the Growth of Hard Clams Using Shell Microgrowth Analysis
(Cerrato/Mak)
One factor that has potentially contributed to the hard clam decline in Great South Bay is frequent blooms of the brown tide. Laboratory studies and an extensive 20-year archived shell collection will be used to test specific predictions concerning brown tide impacts on hard clam growth.

Investigation of the Past Occurrence of Brown Tides by Sediment Analysis for Specific Sterol Biomarkers
(Giner/Zhao)
R/XBP-8 2/1/2000-9/30/2002
Exploring a rare and unique temporally stable sterol, (2)-24-propylidenecholesterol, as a chemotaxonomic biomarker, a chronology of brown tide in Long Island’s Peconic Estuary over the past 500 years will be developed from analysis of sediment cores.

Brown Tide Outreach
(Dooley)
Since 1997, the Brown Tide outreach effort has been characterized by four public symposia and series of seven reports. A fifth symposium and an eighth report will summarize and synthesize the conclusions of the brown tide research projects. With assistance from NYSG communications, reports, articles, interviews as well as research results are posted to the NYSG web site.
GOAL 8. Develop the Capacity of New Yorkers to Participate as Partners in Coastal Issues

Communications (Branca/Focazio)
C/PC-7 2/1/2002 - 1/31/2004

Communications is an integral part of New York Sea Grant, using strategies such as publications, the Internet, and the media to reach out to stakeholders and the general public in order to foster an educated citizenry. Increasing awareness about the value of coastal resources and Sea Grant-funded marine and Great Lakes research is an essential mission for our communications team. The public’s understanding and appreciation of our coastal assets is necessary to sustain, develop and safely utilize them.

Sea Grant publications, like Coastlines, which is published three times a year, help raise interest in the value of our nation’s coastal resources and enterprises. They also illustrate the need for sound science in the formulation of environmental policy decisions by business, government, and educators.

How NYSG’s research, extension, and education programs promote better understanding, conservation, and use of New York’s coastal resources is also demonstrated through NYSG’s web site, www.nyseagrant.org where visitors learn more about critical issue areas, download numerous publications, and read up on the latest outreach activities and research findings.

All media releases and electronic news articles will continue to be archived in the “In the News” portion of NYSG’s web site. Communications writes and distrib-
habitat restoration. Communications also maintains web sites on NYSG’s special research initiatives: the hard clam declines off Long Island’s south shore, lobster die-offs in Long Island Sound, bird and fish deaths in Lakes Ontario and Erie linked to the bacterial disease botulism, and the prevalence of brown tide in the Island’s bays. Sea Grant Scholars (Schlenk/Massucci/Dooley) E/PS-3 2/1/2002 - 1/31/2004 New York Sea Grant continues to give high priority to the support of graduate students, recognizing their importance to the conduct of university research in marine or related sciences. Our support helps optimize the students’ educational experiences and provides an introduction to the philosophy of the Sea Grant program. Student theses often impart very useful results and information that may not appear in the published literature. We also recognize that these students constitute one of Sea Grant’s most important products. Many of NYSG’s former scholars (approximately 350) have gone on to highly successful careers in government, industry, and academia. It is anticipated that the currently-supported scholars working on this biennium’s research projects will find relevant roles as decision-makers, managers, administrators, business-people, researchers, extension specialists, and teachers who are critical to the future of our marine and Great Lakes resources. NSF through Minnesota Sea Grant 2002-2003 Water on the Web (Holochuck) NSG Aquatic Nuisance Species 2002-2003 ESCAPE from Exotics: Break Out of Your Classroom Routine by Exploring the Interesting World of Exotic Aquatic Species (Domske) A/EEP-19 Increasing the scientific knowledge and literacy of educators helps develop environmentally aware students, some of whom will become tomorrow’s coastal scientists and managers. NYSG extension staff works with marine district and Great Lakes educators to integrate Sea Grant resources into K-12 classrooms. Such resources include national and regional Sea Grant curriculum materials, web sites and effective, hands-on teacher training sessions. NYS DEC 2001-2003 Enhancement to Long Island Sound Study Public Participation and Education Small Grants Program (Zimmer) U.S. EPA 2003-2004 Long Island Sound Study Public Outreach (Zimmer) GREAT LAKES RESEARCH CONSORTIUM 2002-2003 GLRC/NYGLP/Outreach Task Force (Thompson) THE NATURE CONSERVANCY 2003 Dune Internship Coordination (Thompson) In addition to working with educators in formal settings such as schools, NYSG extension specialists work with non-formal educators in nature centers, aquariums, and with youth groups such as 4-H.
GOAL 9. Develop New Partnerships

HUDSON RIVER FOUNDATION 2001-2003
New York-New Jersey Harbor Estuary Program Mini Grants Program (Bartovics)

U.S. EPA 2002-2004
Coordinating the Public Outreach Program Year Four for the New York-New Jersey Harbor Estuary Program (Bartovics)

Following a goal of Sea Grant nationally to increase programming in urban areas, New York Sea Grant’s goal is to increase programming in New York City. Following its success partnering with the Long Island Sound Study, NYSG formed a partnership with the New York – New Jersey Harbor Estuary Program resulting in the hiring of Sea Grant staff to conduct that program’s public participation component from EPA headquarters in Manhattan. This extension effort includes coordinating the Mini-grant Program and Estuaries Day Celebrations, publishing a quarterly newsletter for stakeholders, updating the website, and working with the Citizens Advisory Committee.

USDA-CSREES 2002-2003
American Indian Program Work Team; Implementation of Innovation Fund Project for Extension Indian Reservation Project (Greene)

NYS COLLEGE OF AGRICULTURE AND LIFE SCIENCES AT CORNELL UNIVERSITY 2002-2003
Native American Natural Resources Development Extension Program (Greene)

New York State is home to more than 65,000 Native Americans, some interspersed within the larger population, and others living on numerous sovereign territories. In an attempt to increase the diversity of audiences reached and because much of this audience lives on or near the water, Sea Grant developed a program with Cornell University’s American Indian Program. The goal is to reach this audience with targeted information to help them better manage their resources and to become more involved in coastal zone management.

SUNY RESEARCH FOUNDATION, PLATTSBURGH STATE COLLEGE 2002-2003
Lake Champlain Sea Grant A/EEP-12 4/23/2002 – 01/31/2003 (Baker/White)

The relatively new Lake Champlain Sea Grant Outreach Program is developing an effective, collegial relationship among SUNY Plattsburgh, the University of Vermont and the NYSG Program so that a high quality outreach program can be carried out in the Lake Champlain region. A Sea Grant specialist (Malchoff) is providing communities with much needed information about issue areas pertinent to the economic and ecosystem health of the region such as fisheries and aquatic nuisance species.
Dr. Kraig Adler  
Vice Provost for Life Sciences  
Cornell University

Dr. David O. Conover *  
Dean and Director  
Marine Sciences  
Research Center  
Stony Brook University

Mr. R. Wayne Diesel  
Vice Chancellor for Business and Industry Relations  
State University of New York

Dr. Helene Dillard *  
Director, Cornell Cooperative Extension  
Cornell University

Dr. Susan A. Henry  
Dean of College of Agriculture and Life Sciences  
Cornell University

Dr. Jack Y. Narayan  
Dean of Graduate Studies & Research  
SUNY College at Oswego

Dr. H. Lorraine Oak  
Associate Dean for Research Administration  
SUNY at Buffalo

Dr. Max J. Pfeffer  
Chair of Board of Governors;  
Professor and Associate Director  
Cornell University Agricultural Experiment Station  
Cornell University

Mr. John Spagnoli *  
Orchard Park, NY

Dr. William Tully  
Vice President for Academic Affairs  
SUNY College of Environmental Science and Forestry

Mr. Michael E. White, Esq.  
Vice Chair of Board of Governors;  
Jaspan Schlesinger Hoffman LLP  
Garden City, NY

Vacant: Additional senior administrative appointee of Cornell University

Ex Officio Members

Mr. Gordon Colvin  
Representing Erin Crotty, Commissioner  
NYS Dept. of Environmental Conservation

Mr. Robert Crowder  
Representing Charles Gargano, Commissioner  
NYS Department of Economic Development

* pending official appointment
For the following three lists, participants are considered those institutions or organizations that either cofund projects with NYSG or whose representatives provide effort with respect to an individual project.

**GOVERNMENTAL ORGANIZATIONS**

- Akwesasne Task Force on the Environment
- Brookhaven National Laboratory
- Commonwealth of Massachusetts Division of Marine Fisheries
- Connecticut Department of Environmental Protection
- East Hampton Town Shellfish Hatchery
- Erie County Environmental Education Institute
- Federal Emergency Management Agency
- Fisheries and Oceans Canada
- Great Lakes Commission
- Great Lakes Fishery Commission
- Hempstead Harbor Protection Committee
- Hudson River National Estuarine Research Reserve
- Interstate Environmental Commission
- Joint Village Coastal Commission
- Manhasset Bay Protection Committee
- Monroe County Department of Environmental Health
- National Biologic Survey
- National Fisheries Institute
- National Park Service
- New Jersey Department of Environmental Protection
- New York City Department of Environmental Protection
- New York City Department of Parks and Recreation
- New York City Mayor's Office of Emergency Management
- New York City Soil and Water Conservation District
- New York State Department of Agriculture and Markets
- New York State Department of Economic Development
- New York State Department of Education
- New York State Department of Environmental Conservation
- New York State Department of Health
- New York State Department of Historic Preservation
- New York State Department of State
- New York State Emergency Management Office
- New York Office of General Services
- New York State Office of Parks and Recreation Historic Preservation
- New York State Museum
- Oneida Indian Nation
- Ontario Ministry of Natural Resources
- Oswego County
- Pittsford National Fish Hatchery
- Port Authority of New York and New Jersey
- Seneca Nation of Indians
- St. Regis Mohawk Tribe
- Town of Babylon
- Town of Brookhaven
- Town of Hempstead
- Town of Huntington
- Town of Islip
- Town of Southampton
- Town of Smithtown
- Ulster County
- U.S. Army Corps of Engineers
- U.S. Corps Coastal Hydraulics Lab
- U.S. Department of Agriculture Cooperative State Research, Education & Extension Service
- U.S. Department of Agriculture Natural Resource Conservation Service
- U.S. Department of Health and Human Services
- U.S. Environmental Protection Agency
- Long Island Sound Study Office
- U.S. Environmental Protection Agency New York-New Jersey Harbor Estuary Program
- U.S. Fish and Wildlife Service
- U.S. Food and Drug Administration
- U.S. Geological Survey
- Village of Quogue
- Wayne County Office of Tourism
- Westchester County Planning Department
- U.S. Department of Agriculture Cooperative State Research, Education & Extension Service
- U.S. Department of Health and Human Services
- U.S. Environmental Protection Agency
- Long Island Sound Study Office
- U.S. Environmental Protection Agency New York-New Jersey Harbor Estuary Program
- U.S. Fish and Wildlife Service
- U.S. Food and Drug Administration
- U.S. Geological Survey
- Village of Quogue
- Wayne County Office of Tourism
- Westchester County Planning Department

**ACADEMIC INSTITUTIONS**

- Adelphi University
- Brooklyn College of CUNY
- Buffalo State College
- C.W. Post of Long Island University
- City College of New York
- Cornell University
- Dartmouth College
- Empire State College
- Institute for Ecosystem Studies
- Kingsborough Community College
- Louisiana State University
- Massachusetts Institute of Technology
- Nassau County BOCES
- New Jersey Marine Sciences Consortium
- New York city Department of Environmental Protection
- New York City Department of Parks and Recreation
- New York City Mayor's Office of Emergency Management
- New York State Department of Agriculture and Markets
- New York State Department of Economic Development
- New York State Department of Education
- New York State Department of Environmental Conservation
- New York State Department of Health
- New York State Department of Historic Preservation
- State University of New York College of Environmental Science and Forestry
- State University of New York at Plattsburgh
- Stony Brook University
- Suffolk County BOCES
- Syracuse University
- University of Alaska Fairbanks
- University of Connecticut
- University of Delaware
- University of Florida
- University of Georgia
- University of Illinois Urbana-Champaign
- University of Kentucky
- University of Louisiana, Lafayette
- University of Maryland Center for Environmental Science
- University of Maine
- University of Michigan
- University of Minnesota
- University of New Hampshire
- University of Rhode Island
- University of the State of New York
- University of Vermont
- University of Virginia
- University of Washington
- University of Windsor
- University of Wisconsin
- Virginia Tech
- Virginia Polytechnic Institute
- Woods Hole Oceanographic Institute
- Yale School of Forestry
- Yale University Peabody Museum
PARTICIPANTS

- Alley Pond Environmental Center
- American Littoral Society
- Aquarium of Niagara
- Atlantis Marine World
- Audubon New York
- Babylon Angler Education Center
- Babylon Town Sport Fishing Education Center
- Braun Seafood Company
- Bridgeport & Port Jefferson Steamboat Co.
- Brookhaven Science Associates
- Center for Great Lakes
- Environmental Education
- Citizens Campaign for the Environment
- Coastal Business and Technology Learning Center
- Coalition for the Bight
- Coalition to Save Hempstead Harbor
- Connecticut River Estuary Regional Planning Agency
- Cornell Cooperative Extension
- Cornell Cooperative Extension of Suffolk County
- Cornell Cooperative Extension of Ulster County
- Cross Sound Ferry Services
- Discovery Museum
- Ducks Unlimited
- ESA, Inc.
- Earthplace
- Fishers Island Conservancy
- Genessee Valley Land Trust
- Great Lakes Research Consortium
- Great Swamp Conservancy
- Hackensack Riverkeeper
- Hudson River Estuary Program
- Hudson River Foundation
- Hydroqu, Inc.
- Institute of Food Technologists
- JBE Associates
- Lake Ontario Charter Boat Association
- Lake Ontario Sportfishing Promotion Council
- Long Island Aquarium/ New York State MFA
- Long Island Seaport and Ecocenter
- Marine Biological Laboratory
- Marine Environmental Education Foundation
- Mariners Marsh Conservancy
- Maritime Aquarium at Norwalk
- Metropolitan Waterfront Alliance
- National Fisheries Institute
- National Food Processors Association
- National Marine Education Association
- New England Aquarium
- New Jersey Audubon Society
- New Jersey Project WET
- New York Aquarium
- New York Seafood Council
- New York State Marine Education Association
- Niagara County Fisheries Board
- Orantegown Historical Museum & Archives
- Oswego Maritime Foundation
- Passaic River Coalition
- Peconic Estuary Program
- Post-Morrow Foundation
- Rahway River Association
- Randall’s Island Sports Foundation
- Research Foundation of SUNY
- Seatuck Environmental Organization
- Seaway Trail, Inc.
- Southeastern Massachusetts Aquaculture Center
- The Nature Conservancy
- The River Project
- Wayne County Office of Tourism

INDUSTRIAL (AND NOT-FOR-PROFIT)

- Wayne County Office of Tourism
- Aquaculture Center
- Southeastern Massachusetts Seatuck Environmental Organization
- Research Foundation of SUNY
- Randall’s Island Sports Foundation
- New York City’s Natural Resources Institute
- National Food Processors Association
- National Marine Education Association
- New England Aquarium
- New Jersey Audubon Society
- New Jersey Project WET
- New York Aquarium
- New York Seafood Council
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ACKNOWLEDGMENTS

New York Sea Grant’s Program Guide 2002-2003 is a collaborative effort with introductions and the strategic plan written by the management team of Jack Mattice, Dale Baker and Cornelia Schlenk; funding history by Stefanie Massucci; research project descriptions written/edited by Cornelia Schlenk, Patrick Dooley and Lane Smith; extension project descriptions written/edited with input from extension staff by Dale Baker, Dave White, and Bob Kent. Project coordinator and editor, Barbara Branca; photo researcher, Sharon O’Donovan; editorial assistance, Paul Focazio and Sue Hamill of NYSG Communications. Design and layout, Anita Kusick, Ground Floor Graphics; printing, Glaser Graphics.