

New York Sea Grant Strategic Plan

Background

In the National Sea Grant College Program, New York is the only state program bordering two Great Lakes and the open ocean. 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 and Erie, Long Island Sound and inland bays, New York Harbor, the New York Bight and the Atlantic Ocean.

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

NYSG has developed the following Values, Vision, and Mission statements and set its course and goals in a Strategic Plan for 2006-2010. The Plan outlines specific ways in which NYSG's research and outreach will be applied to help provide science to inform coastal resource decision-makers.

NYSG Values

1. **Excellence, Objectivity, Integrity and Responsiveness:** NYSG values excellence, objectivity, integrity and responsiveness in basic and applied science research, outreach and education to inform New York's coastal stakeholders.
2. **Stewardship and Sustainable Development:** NYSG values science-based decision-making that supports stewardship and sustainable development of New York's and the Nation's coastal resources.
3. **Collaboration and Partnership:** NYSG values liaisons and partnerships with and among coastal stakeholders to ensure inclusion of diverse perspectives for coastal problem solving.
4. **Education and Continuous Learning for Positive Change:** NYSG values formal and informal education of elementary, secondary, undergraduate, and graduate students and the general public to create the informed citizenry needed for wise coastal resource decision-making.
5. **Professional Competence:** NYSG values a well-educated and experienced staff whose desire for life-long education helps NYSG respond to high priority and emerging coastal resource needs with integrative, innovative, relevant and timely activities.

NYSG Vision

Coastal decision-making will be influenced by science-based information and educated stakeholders.

NYSG Mission

Developing and bringing science to the shore to protect and enhance the economies, ecosystems and resources of New York State's coasts.

Strategic Plan Focus

NYSG will support research, outreach, and education efforts to contribute to a variety of goals and objectives. Some are focused on technical issues and others on organizational issues.

Technical goals and objectives

Goal 1. New York State coastal businesses will be better able to respond to increasing environmental regulation, to take advantage of new opportunities, and to contribute to the economic health of coastal communities.

Rationale - Although the overall annual economic contribution of resource-related businesses to coastal communities is enormous (e.g., the seafood industry exceeds \$7.5 billion, boating exceeds \$1.8 billion, Great Lakes sustainable tourism employs 35,000), many of these businesses are small, low margin and extremely competitive. NYSG can make critical contributions to the NYS economy by developing the information to support these businesses with best management practices (BMPs) for control of environmental impacts and strategies for marketing of high quality experiences and products.

Objective a. Assist water-dependent businesses in all areas of management and operations, so they can be more competitive in the state's changing coastal economy.

Objective b. Develop, evaluate and extend effective technologies to minimize the environmental impact of marina operations, boating and other coastal-dependent businesses.

Objective c. Identify/develop a planning process and effective strategies to reduce the need for dredging and to reuse, recycle, and/or dispose of dredged material associated with boating facilities.

Objective d. Evaluate approaches to increase public access and to enhance tourism and eco-tourism opportunities intended to develop and/or promote environmentally sustainable, economically stable tourism markets.

Objective e. Develop methods to overcome technological, marketing, regulatory or policy barriers to, and evaluate the environmental and economic impacts of, aquaculture and its further development.

Objective f. Conduct research on how coastal management institutions change and evolve in response to changing conditions and what makes this possible.

Objective g. Develop and extend predictive models that can evaluate conflicts in the coastal zone to define tradeoffs of alternative management scenarios.

Objective h. Estimate the economic value of coastal resources and/or their uses.

Goal 2: New Yorkers will be able to prepare better for, and respond to, Coastal Hazards by understanding the processes involved and the impacts these hazards* can have on natural and built environments.

[* winds, waves, and water level changes leading to changes in circulation, sediment transport, and erosion, including influences of climate change and water withdrawals]

Rationale - Coastlines along the Great Lakes, the Hudson River and the marine district are vulnerable to erosion, flooding and wind damage; the estimated value of structures along Great South Bay alone is more than \$8 billion. It is no wonder that millions of dollars each year are spent by private individuals, municipalities, NYS and the Federal government to protect these valuable assets. NYSG can make invaluable contributions to these entities by developing an understanding of the impacts of coastal hazards as well as advising stakeholders about the efficacy of planned prevention and/or mitigation.

Objective a. Develop new or improve existing technologies, sensors and systems, models, and risk assessment methods to identify, understand, predict and reduce the impacts of coastal hazards and processes on the environment, natural resources, property, structures, infrastructure, economies, and public safety.

Objective b. Use and demonstrate new information technologies (e.g., Geographic Information Systems (GIS), internet and web-based technologies, etc. to help decision makers quantify the risks of structural, social, and economic impacts of coastal hazards on beaches, bluffs and communities and select effective potential mitigation measures.

Objective c. Develop and/or evaluate new approaches for mitigating coastal erosion hazards that incorporate structural and non-structural control measures to minimize environmental impacts while enhancing habitats and allowing for public access.

Objective d. Assist marine and Great Lakes coastal landowners, public decision-makers, and contractors to deal with high or low water, flooding, and/or erosion events.

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

Objective f. Develop forecasting, planning and legal strategies to deal with Great Lakes Basin water withdrawals to equip communities to assess the impacts and make decisions about tradeoffs among water rights, domestic and international fresh water export, and commercialization or privatization of water treatment and supply and water uses within the basin, e.g., to prevent erosion, for navigation, boating, fishing, energy generation, etc.

Goal 3: New Yorkers will be able to understand, evaluate, reduce and mitigate anthropogenic impacts on, and restore structure and function of, coastal ecosystems and habitats.

Rationale - Development of the marine, Hudson River and Great Lakes coasts has put tremendous pressure on wetlands and other coastal habitats and, as a result, on coastal biological resources. It is important to gain a scientific understanding of the processes involved in habitat degradation and to educate coastal decision makers, particularly in estuarine areas such as the Peconics, NY Harbor and the Long Island Sound, about how such processes can be influenced by restoration activities to support sustainable coastal development.

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

Objective b. Develop, refine or extend techniques and indicators to examine the effect of human activities on coastal habitat quality, to determine if habitats have been degraded or fragmented, to estimate human carrying capacity in coastal areas and to manage human access to these habitats.

Objective c. Develop and extend techniques to determine the ecological processes and functions of coastal or underwater areas and ecosystems as well as how they may link to their watersheds.

Objective d. Evaluate the costs, benefits, and effectiveness of implemented, proposed, and developing techniques (including marine protected areas) to protect or restore coastal and underwater habitats and ecosystems and extend the results.

Objective e. Develop methods to predict whether or what habitat or ecosystem effects may result from new coastal structures (e.g., wind farms, gas terminals,

replacement of aging infrastructure), different management strategies (e.g., for mosquito control), and other changes (e.g., in water level, modernized transportation).

Objective f. Participate and involve professionals (agencies, academics) in educating the public about the contributions and value of coastal habitats to the structure and function of ecosystems, ways to sustainably use coastal habitats, and the benefits and costs of habitat restoration with particular reference to specific threatened, degraded or compromised habitats and/or Great Lakes Areas of Concern.

Goal 4: New York's resource managers and fishers will work together to sustainably use, protect, maintain and restore New York's recreational and commercial fisheries.

Rationale - Fisheries in the Great Lakes (smallmouth bass, various salmon spp.), Hudson River (sturgeon, striped bass) and marine district (shellfish, bluefish, porgy) provide the basis for recreational or commercial industries that contribute over \$3.7 billion per year to the NYS economy. However, each of these fisheries is threatened, putting these economic contributions at risk. By understanding the controls on these fisheries and how to restore them, as well as educating resource managers and users to participate together in developing innovative management approaches (e.g., ecosystem-based management strategies), NYSG can provide a critical service to the state.

Objective a. Develop new or use existing stock assessment and other tools to evaluate and potentially mitigate the effects of historical, recent, current and future stressors (including environmental changes, pathogens, pollutants, other biota, the fishery itself and mitigation techniques, as well as their combined effects) on recreational and commercial fisheries and transfer the information to decision-makers.

Objective b: Identify and evaluate techniques that will maintain or restore fisheries health by reducing inadvertent mortality and sublethal effects of fishing. Identify new harvesting techniques to diminish impediments to economic and ecological sustainability in fisheries. Develop techniques to inform fisheries stakeholders about the proper use of these techniques.

Objective c: Develop techniques to identify sustainable effort and determine how management practices/strategies affect fisheries sustainability, especially in the face of ecosystem changes. Engage and empower stakeholders in decision-making processes by helping them use these expanded abilities to forecast the impacts of management actions.

Objective d: Improve capabilities to predict socioeconomic responses of coastal communities to changes in fisheries resources or accessibility, and develop

economic information to assist these communities to make more informed decisions.

Objective e. Develop models that link abiotic and biotic ecosystem processes to fish or shellfish abundance, biomass, recruitment, production, and harvest, and educate fisheries managers and stakeholders on their value in fisheries management.

Objective f. Develop and/or evaluate the feasibility and efficacy of techniques for the identification, maintenance, restoration, and enhancement of critical habitat for important aquatic species

Goal 5: New Yorker's will reduce the spread of Aquatic Invasive Species (AIS) and predict and minimize the ecological and economic impacts of AIS and Aquatic Nuisance Species (ANS)

Rationale - Invasive species (IS) are costing municipal drinking water treatment and industrial plants (e.g., electric power plants) in the State millions of dollars each year in control or cleanup costs. IS are also affecting aquatic ecosystem structure and function, in some cases incurring economic losses via effects on recreational fishery-related tourism, etc. Understanding the biotic, abiotic, and anthropogenic processes and conditions that influence introduction, population dynamics and distributions of AIS and ANS, and fostering communication among scientists and industries will speed development of effective prevention and control measures and prevent wasteful application of ineffective strategies or policies.

Objective a. Determine the biotic, abiotic, and anthropogenic processes and conditions that influence introduction, population dynamics and distributions of AIS and ANS, including animals, plants, harmful algal blooms, diseases, and parasites, in order to develop strategies for prevention or mitigation. Extend these results to stakeholders.

Objective b. Determine the environmental, ecological, economic, and synergistic impacts and effects of AIS and ANS, and their causal mechanisms and develop effective response, detection, and control mechanisms.

Objective c. Educate the general public, other stakeholders, and the next generation of stakeholders (K-12) throughout North America about prediction, prevention, introduction and distribution vectors, management, control, impact and mitigation of AIS and ANS via traditional outreach methods, as well as operation of the National Aquatic Nuisance Species Clearinghouse and World Wide Web searchable database and Northeast water chestnut outreach website.

Objective d. Improve our understanding of the biology of AIS and ANS especially as it relates to monitoring for prevention of introduction and spread, response to potential control methods, and predicting and assessing potential threats to and impacts on infrastructure, ecosystems and human health.

Objective e. Develop risk assessment techniques to predict future AIS introductions and ANS and AIS proliferation and methods to enhance early detection, response, control and mitigation.

Goal 6: Coastal resource development and protection will be supported by a new generation of motivated, highly educated scientists and environmentally aware and informed decision-makers and citizens.

Rationale - Knowledge is a necessary component of sustainable coastal resource decision-making. Coastal scientists generate the understanding of the interaction of anthropogenic activities and the environment that informs wise decision-making. An informed public, be they environmental activists, agency employees or the general citizenry, can support politicians that make astute, effective and efficient choices among alternative resource decisions. Life cycle education in both formal and informal venues fosters an informed public.

Objective a. Work with Marine and Great Lakes educators to integrate new technologies and Sea Grant resources into experiential teacher training, K-12 classrooms and informal teaching venues.

Objective b. Prepare the next generation of coastal science professionals and decision-makers by supporting Sea Grant Scholars and by providing coastal information to New York's college and university students.

Objective c. Partner with nature centers, museums, aquaria and other environmental entities to provide science-based, non-formal education on Sea Grant issues and techniques to groups such as scouts, 4-H clubs, etc.

Objective d. Develop and distribute educational materials relevant to coastal issues to Congress, state legislators, and stakeholders in an effort to aid these groups in making predictions and decisions.

Objective e. Develop and use new communications techniques and strategies to foster an educated citizenry by reaching out to stakeholders and the general public.

Objective f. Utilizing educational programs and materials, provide information to local school, youth and environmental groups to support their conservation and restoration efforts toward coastal stewardship.

Goal 7: NYS seafood processors will effectively and profitably market safe, high quality seafood products to knowledgeable consumers.

Rationale – The seafood industry contributes almost \$7.8 billion annually to the NYS economy via products that are largely consumed within the state. Changing federal and state regulations, rising overhead costs and fluctuations in resources threaten the economic viability of the industry. By focusing research, industry and public education efforts on seafood safety, NYSG can make critical contributions to the state by providing consumers with safe seafood and keeping seafood companies in business.

Objective a. Assist seafood businesses in improving their operations, management, marketing strategies and responses to regulations to enhance business efficiency, cost competitiveness and profitability.

Objective b. Develop new or identify existing technologies to maintain or increase seafood quality and safety from catch to consumption and assist seafood businesses in applying them.

Objective c. Help to develop and initiate, in partnership with industry groups and federal, state and local regulatory or consumer agencies, effective consumer outreach and education strategies so consumers can make informed decisions about seafood products.

Objective d. Coordinate efforts by the seafood industry and federal, state, and local regulatory authorities to enhance the safety of seafood products using science-based systems such as HACCP (Hazard Analysis Critical Control Point).

Objective e. Develop, test, and deliver innovative outreach and training programs on seafood safety, sanitation, Good Manufacturing Practices, food security, traceability, and sustainability to the seafood industry, regulatory community and consumers in collaboration with regional and national partners such as the National Seafood HACCP Alliance.

Objective f. Identify and/or characterize the relative risks (safety hazards such as pathogens, toxins, or chemical contaminants, including trophic transfer and combined effects) associated with consuming marine and Great Lakes seafood and develop and evaluate strategies/methods to detect, minimize, eliminate, or remediate these potential impacts.

Goal 8: Local governments and citizens will be able to make wise choices about alternative coastal resource uses based on the comparative impacts of anthropogenic structures, operations and activities on water quality.

Rationale - Urban and developed coasts provide foci for magnification of anthropogenic influences on water quality such as chemical and biological contaminants, nutrients and sediments from dredging. Long Island Sound, the Great South Bay and the New York and Buffalo Harbors epitomize such coasts. Decision makers need development of fate,

transport and effects information for contaminants, including those that effect drinking water quality, and education on Best Management Practices for handling of non-point source pollution.

Objective a. Develop and/or evaluate strategies to reduce the need for dredging or innovative techniques to reuse, recycle and/or dispose of dredged material and extend the information to decision-makers in a costs-benefits framework.

Objective b. Develop, evaluate and/or extend coastal construction materials and techniques that are effective and have acceptable economic/societal and environmental costs and benefits.

Objective c. Evaluate the effectiveness of and improve and deliver best management practices for non-point source pollution prevention and mitigation (including Remedial Action Plans and Lakewide Management Plans) targeted to property owners, municipalities, industries, and businesses.

Goal 9: Coastal residents in NYS and adjacent coastal regions will greatly benefit from expansion of NYSG's programming to respond to new problems or timely opportunities.

Rationale - NYSG has given thought to new and innovative programming it would like to initiate during the next 5 years. New regional and national opportunities currently exist to serve a broader coastal clientele with innovative efforts supported by NOAA or other agencies and organizations. If they are carried out, these new research and outreach efforts will mean that NYSG will have to identify new funding sources or redirect existing funding. For these reasons these activities are considered higher risk, although they may have potentially large payoffs for the NYSG Program.

Objective a. Participate in planning for the Great Lakes Observing System (GLOS) and the Mid-Atlantic Coastal Ocean Observing Regional Association (MACOORA) to identify a NYSG (and regional Sea Grant network) role in outreach and research funding, then, to market that role to establish NYSG as an integral player in the two programs.

Objective b. Partner with the Great Lakes Sea Grant Network, NYS resource agencies and other interested NYS coastal decision makers to establish a role in the Great Lakes Restoration initiative to ensure that the Great Lakes coastal region of NY can benefit from this opportunity.

Objective c. Expand climate applications research and outreach to assist coastal communities and businesses.

Objective d. Initiate a regional ports and harbors program in partnership with the NY/NJ Port Authority. This programming effort will be focused on shipping and port issues throughout the Northeast US.

Objective e. Aquaculture outreach and research efforts will be expanded to include offshore aquaculture issues as well as an increased effort with finfish aquaculture.

Organizational goals and objectives

Goal 10. New York's coastal problems and opportunities will receive expanded attention because of increases in NYSG funding necessary to maintain and add staff and support additional research.

Rationale – NYSG has had relatively flat core federal and state budgets for the last two decades. NYSG must continue to work closely with its federal Congressional delegation to increase NSGCP funding authorizations and appropriations, increase its core state funding, and obtain other federal, state and private funds in order to make up for losses in spending power due to inflation, etc.

Objective a. Increase funds from federal sources by obtaining 'Dear Colleague' signature support for the NSGCP appropriations re-authorizations, and staying up-to-date with NOAA and NSGCP strategic thinking and planning in order to support applications for NSGCP's National Strategic Initiatives and NOAA's project solicitations.

Objective b. Increase NYSG funds from state sources by aggressively working with SUNY to increase the core award, the legislature to obtain delegation and member item funds, and state agencies to obtain special use funds.

Objective c. Increase NYSG funds by proactively approaching private foundations and organizations with goals that coincide with those of the NYSG program.

Goal 11. NYSG will improve its capabilities to serve coastal decision makers by increased partnering with agencies and organizations within the state, region and nation.

Rationale - Partnerships have been, and will continue to be extremely important mechanisms for NYSG to most effectively use scarce financial resources to respond to problems and opportunities for its large coastal constituency.

Objective a. Continue and improve federal and state partnerships that support NYSG extension positions and research aimed at important NYS coastal resource issues.

Objective b. Influence the goals and funding allocations of federal, state and local government agencies and Non-Governmental Organizations toward NYSG-relevant coastal resources issues by having NYSG staff serve on committees or boards to build better relationships with these other funding sources.

Objective c. Increase NYSG-relevant funds by interacting with Sea Grant programs in the Great Lakes, Northeast and Mid-Atlantic regions, and by leveraging NYSG funds via partnerships with other collaborators.

Goal 12. NYSG will be better able to facilitate and demonstrate programmatic outcomes and impacts because of better integration and organization of program components.

Rationale - Demonstration of impacts or outcomes of research, education and outreach activities is important for demonstrating the value of the NYSG program. Using impacts as a focus of programmatic planning and conduct will help maximize the contributions of NYSG to coastal issues stakeholders.

Objective a. NYSG will continue to examine a new paradigm, Program Teams, for its extension staff that integrates topical areas across both Great Lakes and marine district activities to improve transfer of information and products to stakeholders.

Objective b. NYSG will continue to examine alternative strategies for use by NSYG staff to ensure maximum communication and utilization of research results and extension efforts by its clientele groups.

Objective c. Additional techniques, processes and partnerships will be identified and implemented to continuously document NY Sea Grant programmatic accomplishments.

Future Use of NYSG's Strategic Plan

NYSG's detailed Strategic Plan forms the basis for three Implementation Plans that will be submitted to the National Sea Grant College Program for the periods 2006, 2007-2008, and 2009-2010. The Goals and Objectives listed here will be used for NYSG research, outreach and education planning and to describe to New York's coastal decision makers the major focuses of its integrated program. The bulleted Objectives above and the components in the implementation plans provide the metrics for measuring the extent of NYSG's success.

NYSG Structure

NYSG has conducted a multi-faceted program of research, outreach, and education for New York's coastal resources for 35 years. NYSG 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 State, NYSG is a joint program of Cornell University and the State University of New York. A Board of Governors establishes NYSG policy and oversees its operations and budget. NYSG uses researchers in NY and other states to provide information on states of science and research needs and 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. NYSG extension agents are all specialists in one or more technical fields related to coastal resources and are located near their audience at offices across the state. They work with these stakeholders to provide unbiased information about coastal matters. Thus, by design, the organizational structure and operations of NYSG enhance its effectiveness.