

IMPLEMENTATION PLAN 2007-2008

This Implementation Plan documents the specific research, education, extension and communications activities that New York Sea Grant (NYSG) will undertake during the one year period from February 2007 through January 2008. The Plan is being submitted with the Omnibus proposal to the NSGO in November 2006. The Plan includes Milestones and Expected Results to be achieved in 2007 and 2008 for Objectives in the 2006-2010 Strategic Plan. This 2007-2008 Implementation Plan's second and third years of the five-year Strategic Plan that begins February 1, 2006 and will end January 31, 2011. Implementation Plans and Omnibus proposals will also be prepared for 2009-2010 which will constitute the end of the four-year award. Four-year proposals for the Extension and Communications components of the 2007-2010 award have been peer-reviewed prior to submission. Thus, the objectives in the Strategic Plan have a five year timeframe and the results of activities in this Implementation Plan will be combined with 2006 and 2009-2010 Implementation Plans to achieve the objectives of the Strategic Plan. That is why some objectives in the 2006-2010 Strategic Plan do not have planned activities in this 2007-2008 Implementation Plan.

I. Review of Program Strategic Plan in the Context of NOAA/NSGCP Strategic Plan¹

1. Mechanisms for the establishment of strategic planning

Comments in the 2000 PAT Evaluation Report stimulated the NYSG Management Team to begin think through the process of strategic planning. Internal NYSG strategic planning activities continued from the 2000 PAT, through finalization of the 2006-2010 Plan late in 2005. During the NYSG state staff meeting in fall of 2000 and subsequent years since, strategic planning issues were included on the agenda; efforts at the 2000 meeting involved a panel discussion and a five-group breakout session on program evaluation. During the 2001 staff meeting, the whole 2000 PAT evaluation report was presented, as well as a discussion of the need to respond to the PAT comments/recommendations, including those on strategic planning. In 2002, Cornell Cooperative Extension Associate Director and Strategic Planning specialist Michael Duttweiler gave a presentation on "Program Planning in a rapidly changing environment." Other presentations and discussion sessions included ones on a) regional and national planning, b) the role of regional Extension Program Advisory Committees in planning, etc., c) NYSG's integration of strategic, implementation and extension programs of work planning, and d) Sea Grant's Theme Teams – How will they impact our programming?

¹ Further details of the information presented in the section, pp 1-6, may be found in the NYSG Strategic Plan for 2006 – 2010.

Through 2002, NYSG management and staff strategic activities were focused primarily on the recommendations by the PAT for improving NYSG's strategic planning and discussion and consensus agreement on how to respond during preparation of the 2006-2010 Strategic Plan. In part, this was due to the NYSG Management Team decision to hold off on defining NYSG Goals, etc. until after the NSGCP Strategic Plan had been prepared. Another focus of activities was on how to increase stakeholder participation early in the planning process.

Once the NSGCP Strategic Plan had reached final draft stage (Sea Grant week, April 2003), NYSG strategic planning activities began to involve iterations between stakeholders and NYSG staff. The Mid-cycle Evaluation Response Report, submitted to the NSGCP in October 2003, indicated the intent to increase stakeholder participation in preparing the 2006-2010 Strategic Plan.

NYSG efforts specifically aimed at soliciting stakeholder participation in strategic planning were kicked off by the NYSG Self-Evaluation, conducted by Dr. John W. Kalas (Dr. Kalas is a past Chair of the NYSG BOG and conducted a previous Self-Evaluation early in 2000) in July 2003. The 2000-2005 Strategic Plan was distributed and members of the NYSG staff, BOG, Program Advisory Council, current researchers and selected extension stakeholders (158 total) were asked what NYSG does well, what NYSG does not do so well, and what, if any, topics NYSG should consider adding to its Strategic Plan. From the standpoint of strategic planning, the 68 individuals who responded made several suggestions for program operation (e.g., maintenance of flexibility, partnerships as a way of life, etc.), but identified only a few technical issues (biosecurity and homeland defense, overcapitalization of the fishing industry, aquaculture, watershed issues) to add to the Strategic Plan.

At the statewide staff meeting in 2003, Sessions included a) Next steps in strategic planning, b) Results of the NYSG Self-Evaluation c) Funding the NYSG program – what will the future look like?, d) Opportunities to more effectively integrate NYSG extension, communications, and research, and e) Can we do a better job of reporting our impacts?

In 2004, surveys were distributed (via e-mail or letter) to a number of stakeholder groups asking the question "What coastal resource issues in New York are of most concern to you and/or your constituents." The list of 11 NSGCP Goals was distributed to provide examples of coastal themes, but the instructions indicated that they should be used as guides and that each respondent should "please make your own list of high priority problems, issues or opportunities for New York Sea Grant to work on for the next five years." Surveys were sent to 377 scientists or research institution administrators, then to a random sample of 50 from the same list. In addition, discussions were held with 13 Great Lakes Research Consortium campus representatives at a meeting in Syracuse and with 16 marine district researchers at a meeting at Stony Brook University. A total of 45 scientists provided suggestions for issues to be considered in the NYSG Strategic Plan. Surveys were sent to all of the 212 State and Federal NYS legislators, 30 of whom provided comments. Extension Specialists each solicited up to ten members of their Program Advisory Networks (PAN) to provide their priority issues, etc. and 52 responded. In addition, Extension staff were asked to get their PAN members to identify coastal stakeholders who might have other priority coastal issues – 24 of these stakeholders provided comments. In

addition, the same three questions asked in the Self-Evaluation (see above) were included in the spring 2004 issue of *Coastlines* with a request for reader response. Unfortunately, this did not elicit any comments. Finally, members of NYSG's Program Advisory Council – the 24-person stakeholder group that provides advice to the Director and Management Team – were asked to distribute the survey to people that they knew who represented as wide a range of stakeholders as possible to increase the diversity of inputs. Twenty-four responses were received from this group. The responses to all of these solicitations were collated into a document of 61 pages of comments sorted into the eleven NSGCP Goals according to author. Only eight of the technical topic suggestions could not readily be incorporated within one of the eleven NSGCP Goals by the Management Team.

Later in 2004, strategic planning meetings in the Great Lakes District (June 22) and in the Marine District (June 23), were led by Michael Duttweiler. One goal was to update the internal (strengths and weaknesses) and external (opportunities and threats) scans that were done earlier for the 2000-2005 plan. Another goal was to consolidate the comments and technical issues identified by the 250+ stakeholders and consider them in comparison to the Objectives of the 2000-2005 NYSG Strategic Plan re-arranged into the eleven NSGCP Goals in order to draft objectives for the 2006-2010 Strategic Plan. Other discussions were oriented toward determining if the 11 goals chosen by the National Sea Grant Office, the Sea Grant National Panel and the Sea Grant Association for the NSGCP FY2003-2008 Strategic Plan were necessary and/or sufficient to define needs in NYS. NYSG staff decided that three NSGCP Goals (aquaculture, digital oceans, biotechnology) that were of lower priority for NYSG could be handled within the other eight NSGCP Goals that had been identified as high priority for NYSG. Consolidation of these objectives produced draft statements of Objectives for these eight Goals.

The meeting also included consideration of various other strategic planning issues, discussion being based on staff responses to two iterations of an e-mail survey that Duttweiler distributed and summarized. A final October 2004 statewide staff meeting included essentially a full day focused on strategic planning, again led by Michael Duttweiler. Topics of discussion included: re-evaluation of the NYSG vision, mission and values statements; trends and assumptions of the strategic plan; evaluation and selection of the Objectives under each of the eight goals from those identified earlier by staff and stakeholders; and consideration of the wording of individual objectives. Subsequent e-mail surveys of staff initiated re-consideration of the NYSG values, vision and mission.

Continued work on the Strategic Plan during the October 2004 staff meeting led to versions of NYSG's Vision, Mission and Values statements, as well as the list of draft Goals and Objectives to be included in the 2006-2010 NYSG Strategic Plan. These were presented to the PAC at the meeting November 9, 2005. PAC comments at the meeting were compiled and have been used by the Management Team to modify the draft lists from the October staff meeting. Of especial import is consideration of research objectives that were drafted by Cornelia Schlenk and Jack Mattice and included in the one-year RFP that was distributed in January 2005 for work to be started in 2006. These draft final lists were submitted to the NYSG BOG for approval in July of 2005. **Modifications suggested by the BOG were incorporated and the new list has been distributed to staff for their comments and acceptance**

as the Objectives to be attained by the end of 2010 for each of the Goals. A few modifications were made according to staff comments and the 2006-2010 Strategic Plan was complete

In summary, the 2006-2010 Strategic Plan was prepared by 26 NYSG managers and technical staff assisted by a strategic planning specialist and about 250 stakeholders (of over 750 who were asked to participate) and approved by NYSG's 14 member BOG. The contributors represented virtually all of the coastal resource stakeholders in the state – recreational users, coastal property owners, environmental and action groups, state and federal legislators, governmental agencies, secondary users such as the tourist industry, researchers, business and industrial organizations, business and industrial commercial users, educators and the general public from the Marine and Great Lakes Districts and their tributaries. The plan is heavily oriented toward NYS and regional issues, problems and opportunities, but is easy to relate to the 2003-2008 NSGCP Strategic Plan. Finally, when combined with the Milestones and Expected Outcomes in the Implementation Plans for 2006-2010 the Strategic Plan will provide ways to evaluate short term and longer term performance of the NYSG program.

2. How the program strategic plan relates to the NSGCP plan

Another assumption for the planning effort was that the NYSG plan should be guided by and contribute to reaching the goals of the plans of both the NSGCP and NOAA. The new FY2003-FY2008 NOAA Strategic Plan outlines four overarching Mission Goals:

1. Protect, restore, and manage use of coastal and ocean resources through ecosystem-based management;
2. Understand climate variability and change to enhance society's ability to plan and respond;
3. Serve society's needs for weather and water information; and
4. Support the nation's commerce with information for safe, efficient, and environmentally sound transportation.

The NSGCP strategic plan contributes to each of these NOAA mission goals except for #3 (largely monitoring), but is heavily weighted toward the first of them. NOAA also plans to use the same five strategies to reach each of the Mission Goals. These are shown in Figure 1. The legislative mandate of NOAA's NSGCP is to "increase the understanding, assessment, development, utilization, and conservation of the nation's ocean and coastal resources by providing assistance to promote a strong education base, responsive research and training activities, and broad and prompt dissemination of knowledge and techniques." In short, NSGCP's mission is to conduct research, education and outreach (extension and communication) to use and conserve coastal and marine resources for a sustainable economy and environment. Development of techniques for ecosystem-based management, responses to global climate warming and sea level rise, and contributions to safe transportation via operation of ports and harbors all fall within the NSGCP mission. The relationship of the NSGCP and NOAA missions and strategic approaches is clear.

Nationally, NSGCP has identified eleven thematic areas that integrate with one or more of the NOAA mission goals. Results from work in these theme areas will contribute to a national pool of cutting edge knowledge and capabilities. These thematic areas are: Marine and Great Lakes aquaculture; Marine and Great Lakes biotechnology; Coastal

communities and economies; Coastal natural hazards; Digital ocean and application of innovative technologies; Healthy coastal ecosystems; Fisheries sustainability; Marine and Great Lakes science literacy; Non-indigenous and aquatic nuisance species; Seafood science and technology; and the Urban coast. The matrix of NSGCP theme areas and NOAA mission goals and strategies (Figure 2) shows the strong cross-correlation between them.

As documented above, the 2006-2010 NYSG Strategic Plan is based largely on the thematic areas in the NSGCP and, thus, aligns very well with it. There are three main differences (Figure 3). NYSG is still trying to determine the role of aquaculture in NYS given the high property and energy costs in the marine district and the environmental resistance in both marine and Great Lakes districts, especially in reference to the proposed Open Ocean Aquaculture Act that is now in Congress. For the present, aquaculture effort is included primarily under Goal 1, “Coastal Communities and Economies.” NYSG has supported significant efforts in Biotechnology, but those

Intentionally Blank

Figure 1

NOAA Strategies

Each of the Mission Goals is organized on an outline of five common strategies:

1. *Monitor and Observe* the land, sea, atmosphere, and space and creating a data collection network to track Earth's changing systems.
2. *Understand and Describe* how natural systems work together through investigation and interpretation of information.
3. *Assess and Predict* the changes of natural systems and providing information about the future.
4. *Engage, Advise and Inform* individuals, partners, communities and industries to facilitate information flow, assure coordination and cooperation, and provide assistance in the use, evaluation, and application of information.
5. *Manage* coastal and ocean resources to optimize benefits to the environment, economy, and public safety.

Figure 2

Matrix of Theme Areas and NOAA Mission Goals and Strategies

Theme Area	NOAA Mission Goals				Mission Strategies				
	#1	#2	#3	#4	#1	#2	#3	#4	#5
1. Aquaculture	x					x	x	x	x
2. Biotechnology	x					x	x	x	x
3. Coastal Communities	x					x	x	x	
4. Coastal Hazards		x		x		x	x	x	
5. Digital Ocean	x	x		x	x	x	x	x	
6. Ecosystems & Habitats	x			x	x	x	x	x	
7. Fisheries	x			x		x	x	x	x
8. Invasive Species	x			x	x	x	x	x	x
9. Marine Science Literacy	(NOAA cross-cutting priority)								
10. Seafood Science & Technology	x					x	x	x	
11. Urban Coasts				x		x	x	x	x

Figure 3

Correlation of NSGCP Theme Areas and NYSG Technical Goals

NSGCP Theme Area	NYSG Technical Goals
Aquaculture	-
Biotechnology	-
Coastal Communities and Economies	Coastal Communities and Economies
Coastal Natural Hazards	Coastal Natural Hazards and Processes
Digital Oceans	-
Ecosystems and Habitats	Ecosystems and Habitats
Fisheries	Sustainable Fisheries
Invasive Species	Invasive Species
Marine and Aquatic Science Literacy	Marine and Great Lakes Science Literacy
Seafood Science and Technology	Seafood Science Safety Technology and Business Vitality
Urban Coast	Urban Developed Coasts
-	New Initiatives

efforts have been oriented toward development of analytical techniques for identifying and quantifying harmful algal blooms, seafood contamination, population sympatry, etc. Thus, rather than include the issue as a goal in its own right, it is included under the goal where it is applied. Digital Ocean is not a high NYSG priority because the engineering groups that might be capable of development of technology are unlikely to be interested in research efforts limited to around \$100,000 per year. However, the Integrated Ocean Observation System planning effort, including the efforts in the Great Lakes and Mid-Atlantic regions offers potential opportunities for NYSG outreach. NYSG is already involved in these planning efforts, but it is too early to tell what the NYSG role might be. Thus, this issue appears in Goal 9. New Initiatives. Other issues appearing in the New Initiatives Goal are Great Lakes Restoration, ports and harbors and climate applications.

3. Context of the institutional and territorial characteristics

Institutional context

The NSGCP is a partnership of academia, government, and industry and supports scientific research, education and outreach to address pragmatic coastal and marine environmental and economic resource needs. To ensure that programs respond to local as well as national concerns, the law requires that one-third of the program funds come from state or local governments, industry or other non-federal sources. Thus, the State Sea Grant programs function in a somewhat loose relationship with the NSGCP with respect to planning and evaluation. Excluding the required level of non-federal matching funds, New York Sea Grant (NYSG) receives state funds about equal to the NYSG federal core funds. Even the strong NYS legislative support for NSGCP re-authorizations and appropriations is based on the understanding of legislators of NYSG's contributions to the state's resource issues and stakeholders. Thus, the NYSG program must develop its program plans with an emphasis on state issues and constituents, as well as the broader regional and national audiences of the NSGCP.

Both Cornell University and the State University of New York (with its 30 plus campuses) sponsor NYSG. These are two of the largest and most prestigious institutions of higher learning in NYS, and both have national and international reputations. Charters of both institutions also include state service requirements.

A Board of Governors (BOG) preserves NYSG's continuity and establishes its policies. It is made up of senior academic officials from Cornell University and the State University of New York and two lay members as well as *ex officio* representatives of the NYS Departments of Environmental Conservation and Economic Development. The BOG, therefore, has knowledge of and experience with the academic community, as well as with the more pragmatic regulatory and economic development agencies, and business communities.

Coastal and human resources context

New York, with 3,400 miles of widely varied coastline, is the only Sea Grant Program in the country with coasts on both the Great Lakes and the open ocean. The result is that NYSG must deal with a multitude of issues over a quite broad geographic range.

Exceptional New York coastal water bodies, including the Hudson, St. Lawrence, and

Niagara Rivers, Lakes Ontario and Erie, Long Island Sound and inland bays, New York Harbor and the Atlantic Ocean, have provided New York with natural economic and social advantages. These coastal water bodies run the gamut from marine through estuarine to fresh water. But there are wide variations within each of these resource types because of differences in concentrations of local populations, intensities of coastal resource use and competition among coastal users. Thus, the coastal issues and their impacts on the local economy vary widely. Because of this diversity, planning is very important for NYSG to focus its limited resources.

New York State is also blessed with a diversity of human resources. These include academic research and teaching institutions, faculty and students, interested resource stakeholders and expert and experienced NYSG staff and managers. The high quality of the institutions provides a strong faculty source of researchers in a broad range of coastal resource topics. The institutions also provide a plethora of excellent students that can contribute to NYSG research and provide the next generation of coastal scientists and resource managers. NYSG managers also have been able to mobilize a cadre of expert out-of-state researchers who serve as peer reviewers for various research proposals and serve on technical advisory panels to summarize peer reviews and provide conclusions about the scientific merit of the proposals. The interest of NYS resource management and user stakeholders is also high. These stakeholders provide the human resources to leverage NYSG effort via co-funding with other entities within the state and region(s). NYSG is active in developing and participating in these collaborations. At the same time, the diversity of strongly interested and motivated stakeholders requires a wide focus of the NYSG program.

The combination of diversity of coastal resources with the diversity of human resources requires that the NYSG program be a balance between covering the full breadth of coastal resource problems and opportunities and concentrating effort on specific and narrow topics. The balance needed to respond to and meet the needs of both requires careful and innovative planning and integration of effort

Resource issue trends

New York's coastal resources and their uses have not been static and will continue to change in the future. Therefore, New York Sea Grant's program of outreach, education and research must be broad and flexible. It must respond to changes and trends in human and ecological demographics, in technologies that can potentially influence coastal zone management, and in management strategies and needs for, or communication of, scientific information. Generic changes or trends that apply to the country as a whole or to the regions surrounding New York State, as well as those which are specific to one or more coastal zones in New York State, all determine the problems important for NYSG to consider.

NYSG examined several lists of national or state trends in coastal issues. Most of the topics are included in one way or another in the NYSG Strategic Plan. Some issues raised in the lists are important to other state programs, but are not included in the NYSG strategic plan. The NYSG program is well tailored to examine the most important state

coastal resource issues and to contribute to solutions of regional and national issues as well. It is also well positioned to contribute, and already is via multi-program activities and successful National Strategic Investment funded projects, to regional and national priorities.

4. Involvement of all levels of faculty, staff, and constituents

The 2006-2010 Strategic Plan has been prepared by all 26 NYSG managers and technical staff assisted by a strategic planning specialist and more than 250 stakeholders (of over 750 who were requested to participate) and approved by NYSG's 14 member BOG. The contributors represented virtually all of the coastal resource stakeholders in the state – recreational users, coastal property owners, environmental and action groups, state and federal legislators, governmental agencies, secondary users e.g., the tourist industry, researchers, business and industrial associations, business and industrial commercial users, educators and the general public from the Marine and Great Lakes Districts and their tributaries. Academic contributors included assistant to full professors, center directors, department chairs, deans and associate deans, associate and vice provosts and vice presidents.

II. Development and Implementation of the Implementation Plan²

1. Process of selection of priorities (how, who, and when)

The Strategic Plan's thirteen goals (nine technical, four operational) and multiple objectives provide the foundation for the one-year Implementation Plan. The Strategic Plan with its five-year time frame provides a relatively stable longer-term management tool for NYSG efforts. The importance of this is that stakeholders helped determine the Objectives of the Strategic Plan based on the perceived needs of their interest groups and the state as a whole. However, other advisory groups have more direct input to the extension, research and communications Implementation Plans. Thus, there is the opportunity for more immediate shorter-term contributions to these Implementation Plans, providing flexibility to respond to shifts in needs.

Integration of the activities of the various components of the NYSG program is one of the primary jobs of the core management team (director, associate director, assistant director). The MT expands to include the Great Lakes and marine district coordinators during considerations of the research pre-proposals and full proposals and in integrating the extension and research components of the program. The MT also expands to include the Communications Manager to make up the editorial board of *Coastlines* and in other situations that involve general communications with the public or the media,

² In order to avoid duplication of information, this Section combines Sections II and III in the Implementation Plan Guidelines (Appendix B, pp. 17-18) distributed to Sea Grant Directors by NSGO Director Ronald C. Baird on September 8, 2000. Thus, Sections III and IV in this document correspond to Sections IV and V, respectively, in that memo.

continuously integrating the communications component into program planning. The management team also expands to involve the fiscal officer for budgetary, funding, and allocation issues. The management team also provides links to the NSGCP and political supporters and overall administration of the program. The management team has set up systems of operation for the program to ensure frequent interactions of NYSG staff from the different components of the program as well as exchange of results or information, particularly between researchers and extension specialists to foster program integration. These will be discussed below.

Extension input to the implementation plan

Based on the goals and objectives identified in the NYSG strategic plan, extension specialists prepare both two-year plans-of-work and annual action plans with input from their district advisory committees and their subject matter program advisory networks (PANs). These groups are comprised primarily of clientele such as landowners, recreationists, educators, government officials, coastal business owners, trade association members, entrepreneurs or other interested stakeholders depending on the particular extension educational program. In some cases existing committees are used to guide programs. Examples include the Citizens Advisory Committee of the Long Island Sound Study, the Manhasset Bay and Hempstead Harbor Protection Committees, the Board of Directors of the New York Seafood Council, and the Citizens Advisory Committee of the New York/New Jersey Harbor Estuary.

In addition to these formal PANs, extension specialists gain planning information from various other sources. The specialists also take into account the efforts sponsored or conducted by other programs in the state and region. Examples are the Great Lakes Research Consortium, the SUNY Buffalo State Great Lakes Center, the SUNY Buffalo Great Lakes Program, the Long Island Sound Study, the South Shore Estuary Reserve, the Suffolk County Vector Control program and the NOAA Hudson River National Estuarine Research Reserve. Opportunities for collaboration or cooperation can, and frequently do, influence activities aimed specific objectives.

The one-year 2006 Implementation Plan included the first work toward the 2006-2010 Strategic Plan. This Plan is for 2007-2008. Each of the specialists' annual action plans is reviewed by the appropriate district coordinator prior to forwarding to the program leader (associate director). At both of these levels, the managers compare the relative effort by the specialists against the Strategic Plan. The management team then integrates the plans into the overall Implementation Plan.

Research input to the implementation plan

The research Implementation Plan is composed of projects identified by the 2007-2008 omnibus solicitation, special NYSG-funded solicitations, and NSGCP investments and initiatives. The omnibus and special NYSG-funded solicitations are more integrated into the needs of the Strategic Plan Goals and Objectives because they are funded using federal or state core funds. However, investments and initiatives are not solicited that don't fit NYSG or NSGCP needs, so all of these other efforts integrate with the core program.

As with the Extension Implementation Plan, the research Implementation Plan is based on the Goals and Objectives in the Strategic Plan. For the 2007-2008 solicitation, NYSG decided to give equal priority to eight specific technical goals (Goal 9. “Responding to new problems or timely opportunities” was not included.) in the Strategic Plan to give the researchers the widest possible leeway in defining the most important and applicable research within the objectives of those goals. Extension staff and the PAC contribute to selection of the research projects. The management team uses these programmatic reviews as well as the results of technical reviews to choose among the proposed projects that are rated good or better by peer reviewers and a technical review panel.

Communications input to the implementation plan

As with the Extension Implementation Plan, the 2007-2008 Communications Implementation Plan has been organized to fit the new Strategic Goals and Objectives.

The Communications Implementation Plan is a combination of proactive and reactive elements. The proactive facets of the program primarily fall under Goal 6. Communication efforts toward this goal involve production of *Coastlines*, expansion and revision of the NYSG web site, and continued improvement of the media strategy to publicize NYSG.

The reactive facets of communications activities involve support of the general education function – “developing and using new communications techniques and strategies to foster an educated citizenry...” – of the extension and research programs as they work toward all the other eight NYSG Strategic Goals. Included are mandatory transfer of publications to the National Sea Grant Library, editorial services to extension staff, participation in the three companion regional and the national communication networks, preparation of brochures and information packages for transfer of information and marketing of the NYSG program, meeting support as possible and maintenance and improvement of the NYSG website. The reactive efforts are all aimed at high priority goals of the program as determined by staff and stakeholders.

Management Team input to the implementation plan

The MT provides the top down leadership for preparation of the Implementation Plan and integrates the bottom up contributions from the various components, primarily based on matching effort to the needs of the Strategic Plan. One responsibility of the MT is to keep staff and activities orientated to the Strategic Plan. Members of the core and extended MT lead each of the components; so much of this work is handled on a one-to-one basis with extension specialists, communications staff and the project coordinators. More direct MT tasks are selection of priorities to be advertised in the research RFP and of highly rated (scientific quality and programmatic value) research proposals to fund. As work on a Strategic Plan proceeds, both are more likely to involve effort to fill gaps as one consideration. Finally, the MT is responsible for deciding when changes in activities are desirable to deal with a new coastal resource problem or take advantage of an opportunity, e.g., for obtaining additional funding or for collaborating with another organization to work on an important coastal resource issue. Examples of such decisions appear elsewhere in this document.

2. Identify milestones and expected outcomes for the implementation of program goals and objectives (IMPLEMENTATION PLAN)

New York Sea Grant Implementation Plan 2007-2008

The goals and objectives listed below are taken directly from New York Sea Grant's Strategic Plan. The Expected Outcomes and Milestones were developed by the Sea Grant Staff with input from stakeholders.

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.

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.

Expected Outcome: To have 100 marine facility operators and 200 marine trade/boating association members become aware of marine business management/operational applications of emerging technologies and evaluate the potential for adopting these practices/technologies.

Milestones: Working with the Empire State Marine Trade Association (ESMTA), Boating Industry Association of Upstate NY (BIA), Rochester Area Marine Trade Association (RAMTA), and the Western New York Marine Trade Association (WNYMTA), coordinate at least one educational program regarding enhanced business operation/management (i.e. Pesticide Re-Certification/Boat Show Seminar Series) annually.

Coordinate a committee of BIA, RAMTA, and WNYMTA representatives to develop a marine trades training program in upstate NY.

In partnership with BIA, RAMTA, and the WNYMTA, regional power squadrons and coast guard auxiliaries, investigate the need for and if warranted implement a BOAT-NY electronic-news program.

Expected Outcome: 35 mid- Hudson River marina owners/ operators will continue to provide points of access for thousands of New Yorkers and visitors to the region, their businesses are part of revitalized Hudson River waterfronts.

Milestones: New York Sea Grant will continue to provide technical assistance to mid-Hudson marine trades associations, through annual collaborative educational programs with the Association's education committees. Additionally, NYSG will continue to support HVMTA members and Hudson Boat clubs as they continue to work with NYSDEC, the

Hudson River Environmental Society and other agencies and organizations on dredging and dredge disposal issues concerning the mid-Hudson Marinas.

In collaboration with the Hudson's water dependent businesses and NYSG Communications, New York Sea Grant will develop a fact sheet called the "working river" to extend information to non-coastal businesses and the general public, increasing awareness of river commerce.

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

Expected Outcome: Marina owners and governmental agency representatives will be better able to identify, evaluate and decide on the most viable and practical techniques to minimize potential adverse affects associated with boat bottom washing operations at recreational marinas.

Milestone: Using analysis of wash water samples, quantify relative concentrations and volumes of contaminant associated with different paint types in waste water; compile and disseminate results to marina industry representatives. Collect and synthesize technical and cost information on equipment and techniques available for recovering, treating and recycling boat pressure washing waste water at recreational marinas. Present findings at regional trade association meetings and using feedback from presentations disseminate finding through written or internet-based materials.

Expected Outcome: Public and private marina owners and operators will use up to date information to help them evaluate and select appropriate BMPs to minimize pollution from their facilities and meet environmental regulations.

Milestone: As part of an EPA-funded project complete, launch and publicize a national multimedia website on pollution prevention practices for recreational marinas. Using web-based technologies evaluate audience, presenting findings in a written report. Revise website as necessary based on evaluations.

Expected Outcome: New York State marina owners and workers will receive pesticide applicators recertification credits that will allow them to continue boat bottom painting activities.

Milestones: Coordinate and participate in 2 to 4 training courses for marina personnel in conjunction with regional and state marina trade associations.

Evaluate the feasibility of using marina BMP website as basis for developing an on line certification program with state agency and marina personnel and, if appropriate, identify potential funding opportunities and, if possible, begin developing program.

Serve as technical advisor to NYS DEC Marina Advisory Committee, the NYS Boating Advisory Council and the New England Marina Workgroup.

Update computer database of marine facilities for use in program development and to assist industry and government clientele.

Provide technical and educational assistance to trade associations, government and community leaders and businesses as needed.

Expected Outcome: Marina owners and local government officials will be better able to evaluate the need for the use of treated wood in marina structures and have the tools necessary to assess potential impacts of its use on a site specific basis.

Milestones: Synthesize and distribute information on materials suitable for structural elements of marina structures including treated wood and synthetic alternatives to marinas contractors, and government officials.

Investigate accepted techniques for quantitatively determining potential impacts of the use of treated wood materials on individual water ways. If appropriate, identify and pursue potential funding sources to initiate a pilot program to evaluate the feasibility of incorporating these techniques in project development at the local level.

Expected Outcome: To have 100 marine recreation facility developers/managers investigate environmentally proactive enhancements to management/design approaches to accommodate changes in user patterns and voluntary or regulatory programs.

Milestones: In partnership with the NYSDEC, implement a component of New York States Clean Vessel Act Information and Education program. Specific activities may include the re-inventory of NYS's marinas; the design and production of a Marina Guide; updating a web-based directory of all marinas and pumpouts in NY; and redesign and distribute a "Pumpout awareness" tip sheet.

Serve as Sea Grant's representative to the Marine Environmental Education Foundation. Utilizing MEEF and other national and regional resources (RBFF, NSBC) continue the development/implementation of an upstate NY Clean Marina/Boating program in partnership with BIA, RAMTA, and WNYMTA.

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.*

Expected Outcome: Waterfront businesses, agency representatives, and community leaders will better understand issues associated with dredging requirements for recreational marine facilities and use this understanding to begin addressing problems associated with implementing dredging projects.

Milestones: Work with trade association and agency representatives to assess the need for a summit on dredging permitting issues and, if appropriate, organize and conduct a meeting bringing representatives of these groups together to identify possible solutions.

As part of the Sea Grant Marina Ecosystem Initiative, assist in the implementation of a national outreach effort focused on recreational harbor dredging. Working with a NY GL's Regional Dredging Committee, facilitate a regional needs assessment and dredging implementation program for the affected communities.

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.*

Expected Outcome: Provide data and modeling that can be used by planners, tourism promotion agencies, local chambers of commerce, local businesses, and citizens for making informed development decisions to support sustainable nature-based and heritage-based tourism that results in increasing competitiveness of communities while preserving local unique character and environment.

Milestone: (*Schuster R/CHD-7*) Determine the perception, attitude and image tourists have of Hudson River Valley communities. Also provide information concerning the natural environment, nature tourism opportunities, and the values and interests of local residents with regards to maintaining local character and environment while promoting and sustaining tourism.

Expected Outcome: Riverside municipalities, Hudson River Tour boat operators, Kayaking outfitters and tour companies will better understand the ecology of the Hudson, enhancing ecotourism and promoting sustainable tourism.

Milestones: In 2007/08 NYSG will collaborate with the Hudson River National Estuarine Research Reserve and other organizations to hold a nature based tourism meeting.

Building on the Hudson River Interpretive signs project for marinas in 2006, NYSG will seek additional funds for interpretive work in collaboration with water dependent business.

In collaboration with water dependent business, and the NYSDEC Hudson Estuary program, NYSG will host 1 of 25 sites celebrating the 400th anniversary of Henry Hudson's Voyage. (08-09)

Expected Outcome: To have members of the Seaway Trail, The Ontario Dune Coalition, the diving community, and those who have management responsibility for developing, managing, and promoting our Great Lake eco-tourism resources utilize sound public policy for managing their use and protection.

Milestones: Serve as Sea Grant’s representative to the Seaway Trail (SWT) Board of Directors and provide leadership to the board and staff in the identification and implementation of trail based outreach/extension initiatives (i.e., annual conference, measurement and tracking, organizational re-development).

In partnership with SWT, continue to update and distribute the “Cross Border Travel Guide,” and update the “Driving Financial Sustainability” website.

Working with The Ontario Dune Coalition (TODC), identify the eco-tourism educational/outreach priorities from the “Dune Planning Update-2006” and develop and implement one program annually.

In partnership with SWT, continue to develop and enhance the "Diving the Seaway Trail" program, identifying new sites and communities and partner with for additional sites.
(DW)

Co-sponsor at least one regional conference on underwater cultural resource management and use issues (i.e. Great Lakes Underwater).

Working with PA SG, expand the S.T.E.A.R. (Shipwrecks Training Education Archaeology Research) project to include all of Lake Erie and investigate its expansion to Lake Ontario.

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

Expected Outcome: Industry and government representatives will have a better understanding of the relative contribution of recreational boating in regional marine water dependent economies and incorporate that information in developing programs and management decisions affecting the marine industry.

Milestones: Investigate available information and data on the economic impact of regional water dependant activities and, if feasible, develop a white paper on the relative contribution of various activities using the results of the Sea Grant sponsored recreational boater expenditure study.

Collect available data on waterfront land usage and, if possible, initiate a county-based, case study evaluating recent trends in the number of publicly available recreational marina/boatyard facilities. Compile and report findings to industry, state and local government representatives.

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]

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.*

Expected Outcome: Using the proposed modeling system, the National Weather Service and local emergency managers can predict storm surges, plan for barrier breach mitigation and predict rip tides. This will reduce property damage, aid evacuation efforts and help the public avoid coastal hazards.

Milestone: (Buonaiuto R/CCP-14) Automate and operate a coastal wave model in forecast mode that will provide wave forcing and water elevation data to the Stony Brook Storm Surge Model system.

Expected Outcome:

By forecasting water levels along Long Island's south shore, the National Weather Service and local emergency managers can help minimize the property damage from floods and decide on evacuation efforts. Details of coastal circulation patterns will allow government agencies (e.g., NYSDEC and USEPA) to better plan for infrastructure hardening and facilitate potential redesign.

Milestone: (Colle R/CCP-13) Utilize a state-of-the-art atmospheric model linked with a high-resolution ocean model to improve real-time storm surge forecasting capabilities along the south shore of Long Island, New York.

Expected Outcome: A new engineering tool for coastal managers, municipalities, and engineers that can be applied to the design of new breakwaters and the assessment of the safety of existing breakwaters. This will improve the development and renovation of protective structures and enhance protection of people and infrastructure for coastal communities from storm surge and erosion.

Milestone: (Liu R/EMS-10) Develop a computational model, which can be used as an engineering tool to design new breakwaters and assess the safety of existing breakwaters.

Expected Outcome: Public decision makers will have better information on the potential seasonal frequency of winter storms, near real time local storm surge predictions and potential impacts associated with long term sea level rise.

Milestones: If seasonal east coast winter storm prediction tools developed by the Northeast Climate Center Data researchers are found useful by local decision team, plan

and conduct workshop to disseminate information to federal, state and local coastal and emergency managers and planners.

When operational, publicize and disseminate information on high resolution storm surge forecast website developed as part of NYSG funded research projects at MSRC.

Participate in an assessment of the potential impacts and responses to sea level rise as part of a national EPA sea level rise synthesis project, if funded.

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.

Expected Outcome: Coastal planners, managers, agency officials, property owners and other decision makers will have access to the most up-to-date information and data on coastal processes and erosion hazards on the south shore and use this information to make better decisions regarding coastal erosion and hazard management plans and programs.

Milestone: With support from the NYS Department of State maintain and update contents of Atlantic Coast of New York Monitoring Program GIS-based web data viewer with new and historical data as appropriate. In conjunction with the NOAA's Coastal Service's Center evaluate the feasibility of incorporating enhanced presentation and analysis capabilities into the site. If appropriate, identify and seek to secure funding to implement improvements.

Expected Outcome: One thousand coastal resource stakeholders on Lakes Erie and Ontario will be educated on lake level fluctuations and causes of coastal erosion and flooding, utilizing the Internet and the World Wide Web. Those stakeholders use that knowledge to make better shoreline development, erosion control, and flooding control decisions.

Milestone: The NY Sea Grant Great Lakes Coastal Processes and Erosion Web page will be rebuilt to provide stakeholder access to historical lake level data, detailed graphics of lake level fluctuations, electronic versions of NY Sea Grant coastal erosion and erosion mitigation publications, and lake level/coastal hazard web site hot links.

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.

Expected Outcome: Community and environmental groups will be better able to evaluate cost and permitting requirements for innovative, environmentally compatible

shoreline erosion control measures and use that information to decide on the implementation of a demonstration projects.

Milestones: Produce written and graphical educational materials based on information plans and specifications for a demonstration marsh/breakwater project developed in conjunction with VIMs researchers and assist coastal property owners in using these materials to try to secure funding and regulatory approvals.

Work with the Nature Conservancy in identifying suitable sites for possible alternative erosion control projects to be used as educational tools. Explore possible funding sources for developing collaborative programs (workshops, website delivery) focused on addressing and resolving technical and institutional issues and impediments related to the use of these techniques. If funding is available, begin planning and implementing programs.

Coordinate with National Resource Conservation personnel to integrate information on new erosion control techniques incorporating structures and vegetation in public education materials distributed to coastal property owners.

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.

Expected Outcome: NY Sea Grant's capability to respond immediately to rapidly-developing coastal high water, flooding, and/or erosion events will be enhanced and utilized to assist coastal landowners, decision-maker, marine contractors, and marine facility owners to deal with developing hazardous situations.

Milestones: Information packets of appropriate NY Sea Grant coastal erosion and erosion control educational materials will be developed for immediate distribution in times of high or low water, flooding, and/or erosion hazard events. Work with NYSG Communications to develop a Web page to house electronic versions of these materials.

Working with a group of "key leaders" from academia and agencies, develop an implementation plan to "extend" the outcomes of the lake level study to NY's affected user groups.

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.

Expected Outcome: Stakeholders and decision makers will use information on coastal processes developed, produced and/or synthesized by NYSG in selecting erosion management and hazard mitigation strategies for the south shore of Long Island.

Milestones: Working with the NPS, complete and distribute 4000 copies of an educational primer on coastal processes on the south shore to coastal property owners, local state and federal officials and other interest groups.

Develop a synthesis and summary document on the results of the barrier breach impacts special focus area research projects and organize and hold a public informational meeting to disseminate research findings to agencies, government officials and interested parties.

Continue participation in state and federal technical advisory groups related to coastal processes and hazards.

Expected Outcome: 500 coastal landowners, decision makers, marine contractors, realtors, and marine facility operators within the region of Sodus Bay through Oswego will be educated on lake level fluctuation, shoreline erosion, and erosion control.

Milestone: Coastal process and erosion control educational programs will be developed and implemented in cooperation with the Central NY Regional Planning and Development Board (contingent upon GLPF funding).

Expected Outcome: 1,000 coastal landowners, decision makers and other stakeholders will better understand the impacts of expected International Joint Commission revisions to lake level and river flow regulations on Lake Ontario and the St. Lawrence River, and will use that understanding to make better decisions in the selection, design and development of large-scale and regional coastal hazard prevention or mitigation programs and projects.

Milestone: Outreach education materials related to the IJC management revisions based upon the results of the Lake Ontario St. Lawrence River water levels study will be developed and distributed.

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.

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

Expected Outcome: Municipalities, organizations, and citizens will restore habitats on Long Island's East End thanks to support from the Peconic Estuary Program Mini-Grants Program.

Milestone: Manage the next round of the Peconic Estuary Program Mini-Grants Program (grant period: 1/1/07-12/31/07). Approximately \$20,000 will be available for four projects; habitat restoration projects will be given priority during proposal review.

Expected Outcome: 120 youth will participate in habitat restoration and career exploration programs funded through the Allan Overton Memorial Endowment. Though such participation small-scale projects will be completed, and youth will have out of classroom hands on experiences.

Milestone: Working with Westhampton Beach Middle School and environmental agencies and organizations, each spring a program will be designed and implemented.

Expected Outcome: Additional acres of wetlands at Beaver Dam Creek will be restored and marine life will continue to return to the area.

Milestones: Sea Grant will serve on the Beaver Dam Creek Restoration Steering Committee and work to involve the public and youth in restoration efforts at this site.

Sea Grant will work with Ducks Unlimited to develop a youth *Spartina* horticulture project.

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.*

Expected Outcome: Production of a web portal that will disseminate maps of resource sheds will be useful to managers as a proactive tool for improved environmental resource management and as a reactive tool in the investigation of extreme environmental events and sources of pollution. This resource and information will help with the mitigation of environmental damage and aid in the development of coastal community or regional master plans such as mandated by recent Ecosystem Based Management legislation for New York State.

Milestone: (*Atkinson R/CE-27*) Develop a tool integrating hydrodynamic, particle tracking and runoff models with GIS to define resource sheds for managers and researchers to help improve research and management of large complex ecosystems and natural resources.

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.*

Expected Outcome: In partnership with the Peconic Estuary Program, there will be an increase in the number of fishways to restore fish passage between tributaries and the open ocean, and the costs and effectiveness of various fishway technologies will be evaluated.

Milestones: Write grant proposals and seek to secure funding for continuing fish passage projects on the Peconic River.

Provide oversight and monitor installation of a new rock ramp fishway in Grangebel Park, Riverhead in 2007.

Evaluate the effectiveness of fishway technology on the Peconic River by monitoring fishway use with an electronic fish counter.

Work with fishway engineers and project partners to design fish passage for Upper Mills Dam on Peconic River.

Work with fisheries managers and scientists to ensure that the best available science is incorporated into fish passage projects.

Monitor alewife recruitment in response to fishway installation and expanded habitat.

Seek to expand the fish passage project in the Peconic River to other tributaries in the Estuary.

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.

Expected Outcome: 50 Hudson River region professionals will understand the habitat value and ecologic functions of Submerged Aquatic Vegetation in the Hudson River and its tributaries.

Milestones: In collaboration with the Hudson River National Estuarine Research Reserve, and Cornell University Institute for Resource Information, hold two workshops for classroom teachers and non-formal educators in the Hudson Valley Region.

Present and/or Distribute SAV Project CD (due in 2007) to regional marine business associations, academics and NGO's.

Expected Outcome: 20 Hudson watershed groups will understand BMP's to protect streams and groundwater in the Hudson Estuary.

Milestone: Present/distribute pdf format "streamside stewardship guides", "water wise" guides in collaboration with Cornell Cooperative extension, and the NYSDEC Hudson Estuary Program to community based watershed groups in the region. Create a NYSG Hudson Estuary issues Web page with NYSG Communications to facilitate distribution of these publications via the Internet.

Expected Outcome: The importance of fish passage restoration will be conveyed to the public.

Milestone: Educational signage will be installed in Grangebel Park, Riverhead in concert with an observation area adjacent to the rock ramp.

Expected Outcome: In conjunction with local political leaders, provide educational workshops/seminars for 300 stakeholders throughout counties along Lake Erie and Western Lake Ontario, and other areas of the state to increase awareness of Great Lakes Ecosystem issues.

Milestones: Plan, advertise and coordinate the annual State of the Lake Erie and Dunkirk Harbor, in collaboration with Assemblymen Quinn as a means of getting the latest scientific information out to Erie County stakeholders.

Plan, advertise and coordinate the annual Dunkirk Harbor meeting, in collaboration with Assemblymen Parment, as a means of getting the latest scientific information out to Chautauqua County stakeholders.

Expected Outcome: Work with the Lake Erie and Lake Ontario Lakewide Management Plans (LaMPs) and the Lake Erie Binational Forum to educate and inform 200 stakeholders on coastal issues and make them aware of the LaMPs and what they mean towards the future ecosystem health.

Milestones: Provide technical assistance to the Buffalo and Niagara River Remedial Action Plans (RAPs) as they work towards improving the quality of these important rivers. Continue providing educational support and assist with dissemination of scientific and monitoring information to stakeholders interested in the health of these waterways.

Attend meetings/conferences and review information on the Lake Ontario Toxics Management Plan (LOTMP) and the Lake Ontario Lakewide Management Plan (LaMP). Provide information on botulism and invasive species to the LaMPs and for the State of the Lake Ecosystem Conference, Lake Erie at the Millenium group, GL Fishery Commission and other Great Lakes groups, as requested.

By involvement with the Lake Erie LaMP Binational Forum, work on education and outreach projects that will help advance the work of the LaMP and the protection of Lake Erie. Organize public meetings on the economic study on the Buffalo River that was conducted in partnership with NYSG.

Expected Outcome: To promote willing compliance with beach use guidelines by all beach visitors to assure that recreational use is carried out in a way that leads to minimal damage to the fragile Eastern Lake Ontario dune ecosystem.

Milestones: Work with local agencies (NYSDEC, NY State Parks, and The Nature Conservancy) to develop work plans for coastal public properties that will be implemented by seasonally employed Dune Stewards.

Each field season three scheduled tours/interpretive walks will be conducted for both the Eastern Lake Ontario Dune system and the Salmon River corridor.

Articles in local weekly newspapers will advertise scheduled tours/interpretive walks.

Interpretive materials will be developed for tours to promote environmentally responsible recreation along the Eastern Lake Ontario dune system.

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.

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.

Expected Outcome: Resource managers and aquaculturists could use this information to develop risk management strategies for transplant fisheries or to help choose aquaculture or restoration field sites for optimum clam growth. These results will provide valuable data to assist recovery efforts.

Milestone: (Allam R/FBM33) Use controlled laboratory experiments to monitor the progression of the hard clam pathogen, Quahog Parasite Unknown (QPX), in both naturally and experimentally QPX-infected hard clams to examine the impact of environmental factors (temperature, salinity & dissolved oxygen) on the interaction between host and pathogen. The experimental hard clams will also be used to investigate environmentally-driven changes in clam immune defense function.

Expected Outcome: Much improved disease diagnostic capabilities for VHSV by the Cornell University Fish Pathology Laboratory, which currently provides fish disease diagnostic support for fish kills in the wild fish populations in New York State. Knowledge of the health status of the muskellunge with regard to VHSV will provide the NYS DEC with the critical information needed to make informed management decisions regarding breeding programs and movement of fish stocks within the state to maintain an important sport fishery and the economic benefits it generates.

Milestone: (Bowser R/FTD-10) Develop an improved means to detect Viral Hemorrhagic Septicemia Virus (VHSV) in the Great Lakes so as to assess the impact on fish species of this emerging pathogen in the Great Lakes Basin.

Expected Outcome: Provide up to date stock structure information for state and federal fisheries managers to effectively manage this species on much finer scale. Such finer scale management will be more effective in restoration of the species to the benefit of the ecosystem and the fishing community by modifying management as necessary to each local stock characteristic.

Milestone: (Wirgin R/XG-17) Determine the stock structure of winter flounder locally in New York and New Jersey estuaries and coast wide based on sensitive modern molecular techniques. Plus provide an estimate of the gene flow among identified stocks. This will test the assumption that is used now to manage the fishery that there are three distinct winter flounder stocks present in the area.

Expected Outcome: 20% of sport fisheries stakeholders will be better informed on fisheries management principles issues that affect the health and overall status of fish species being exploited in the coastal waters surrounding New York State and 10% will make better informed recommendations to NYSDEC during public consultations.

Milestones: Coordinate and conduct a series of activities to create and establish a new reference source to improve stakeholders' understanding about important fisheries in New York (*State Of The Fisheries*).

Conduct a poll of key stakeholder groups to determine their information needs, issues, etc., and use the responses as guidance to identify fisheries topics of interest.

A desk study will be conducted to review research that have benefited from multiple-year funding from NYSG and other funding sources as appropriate, and summarize the available knowledge in order to describe the exploitation status of key species of interest to recreational and commercial fishers. Alternative sources for information will be obtained from the federal and state resource managers, and it will include (however not limited to) a historical review of fish allocation (in New York), impact of emergent diseases, recovery status of fisheries that were subject to heavy exploitation or disease outbreak, and other ecological issues that are directly relevant in marine waters and the Hudson River.

A similar undertaking (i.e., poll survey and desk study) will be completed every 6 months to help identify new priority issues that may have arisen during the period.

Expected Outcome: 75% of fish assessment biologists will be better informed on fish sampling techniques and operation and 50% of them will incorporate this new information into their sampling programs to improve the accuracy and precision estimates of fish abundance and ultimately be used to make better, more informed decisions by fisheries managers.

Milestone: NY Sea Grant will collaborate with New Hampshire Sea Grant to organize a bottom trawling workshop for Great Lakes fisheries assessment biologists, to be held at the Marine Institute of the Memorial University in Newfoundland during 2007. External funding for this initiative will be solicited from GLFC and GLFT.

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.

Expected Outcomes: 30% of fishers will better be able to identify the fish that they catch and understand the value of fishing ethics to help avoid inadvertent mortality i.e. catch and release) to be more successful in fishing to stimulate additional fishing trips; 20% of fishing clinic participants will be able to find fishing resources, interpret and access fishing regulations, and practice sustainable fishing practices.

Milestones: For inexperienced anglers, the following programs will be developed:

Four annual fishing clinics, reaching approximately 160 constituents that teach fish identification, fishing regulations, and catch-and-release fishing.

At least three annual freshwater fishing festivals, reaching approximately 4000 people to introduce the sport of fishing and its opportunities on Long Island. Festivals will include educational seminars and exhibits for participants.

At least one annual freshwater fishing clinic and at least two saltwater fishing clinics, reaching approximately 100 constituents each that teach fisheries biology and ecology, fisheries management and angling responsibilities, and fishing techniques and tackle.

Collaborate with national fishing industries such as Sports Authority and New York Fishing Tackle and Trade Association (NYFTTA) to provide fishing equipment for clinics and festivals and to provide an opportunity for the industry for increased business.

Visit 3rd-12th grade classes in all five boroughs, reaching at least 1200 students to teach fish identification, fish regulations, and catch-and-release fishing, accompanied by a fishing trip.

Visits to 2nd-12th grade classes in Nassau and Western Suffolk counties, reaching at least 1000 students to teach fisheries biology and ecology and fisheries management ideas, accompanied by a fishing trip.

Distribute existing brochures and produce additional educational material to help potential and existing anglers identify fish and access fishing regulations.

Secure technical expertise to create an online electronic *Sportfishing Directory* where the non-anglers can locate contact information for the authorities that are responsible for fishing access, bait & tackle retail store locations, and vessels that are available for hire. This tool will make it easier and more convenient for non-anglers to locate information, and allow Sea Grant staff to conduct routine maintenance such as removing listing for vessels/stores that are no longer operational, adding new businesses, etc.

Build upon activities that began in FY 2005 to increase sport fishing awareness and participation, by working with sport fishing industry representatives and fisheries managers to coordinate and publish a second edition of *New York Sportfishing Guide*. Three thousand guides will be distributed at fishing clinics, from bait & tackle retail stores, visitor information kiosks around Long Island, etc. Use bait and tackle store locations to intercept end users of the guides (i.e., new anglers) to evaluate their perceptions.

Continue to build upon the website, www.longislandsportfishing.org that was created at the request of the sportfishing industry, as part of a continuing effort to increase sportfishing awareness and participation. With help from NYSG Communications, at least four comprehensive revisions and upgrading will be performed at the website to offer new topics in support of ongoing efforts for fish conservation, successful release of catch, ethical angling, and stewardship. A poll will be conducted from the website to evaluate its usefulness and needs of the audience being targeted.

Full-color artwork of Lake Ontario salmonines developed by NY Sea Grant will be incorporated into useable brochures and posters in 2006 and will inform large numbers of anglers fishing in Lake Ontario open waters and tributaries on proper guidelines for fish identification. Artwork will be incorporated into NYSDEC signage along Lake Ontario tributary corridors and access sites.

NY Sea Grant Fisheries Team will develop PowerPoint presentations on catch and release for bass, walleye and salmonines and deliver them to appropriate audiences as needed i.e. angling clubs, youth groups and county fisheries advisory boards.

NY Sea Grant Fisheries Team will develop a revised catch and release fact sheets in collaboration with Mark Malchoff, Vermont Sea Grant.

Expected Outcome: By disseminating information on fish consumption advisories, anglers can make more informed decisions about consuming local fish. Conversely, potential anglers who are dissuaded from engaging in recreational fishing because they believe that all local fish are inedible, will better understand the relative risks of consuming locally caught fish.

Milestone: For the NYC metropolitan area, I FISH NY will work with the NYS Department of Health to adapt their consumption advisories into a more easily interpreted card/brochure, which will be distributed at public clinics and participating organizations.

Expected Outcome: Observe a change in the marketing strategies being used to attract and retain new anglers in at least 10% of businesses that operate fishing vessels “for hire”.

Milestone: Develop programs to educate 100 “for hire” operators about strategies that may be used to market sportfishing to new groups, including short term visitors to Long Island and the marine district. A collaborative exercise featuring assistance from human-resources specialists and staff in small business development and tourism agencies will be used to organize two educational meetings where “for hire” operators can acquire ideas to attract new anglers and increase the flow of repeat customers to their business.

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.*

Expected Outcomes: 75 % of fisheries managers and 20% of anglers, representatives of the fishing industry and trades will have a better understanding about various tools and options used to manage coastal fishery resources and will have a better understanding of ecosystem and fisheries interactions; will better understand how different management decisions can affect fish populations and how to make better decisions and work more closely with each other during decision-making.

Milestones: Use the Marine Resource Advisory Council as a venue to develop a series of presentations that discusses a suite of management tools that are being identified as alternative options to manage and conserve marine fisheries. These topics could include ecosystem-based approaches (EBA), dedicated access privileges (DAP), etc., and Sea Grant will look to the federal (NMFS/regional fisheries councils/commission) and state agencies (NYS DEC) for assistance to develop these information resources. This information will be shared with anglers that attend other gatherings such as association meetings, fishermen forum, etc., and this activity will also serve as the impetus to create new web-based reference materials for non-technicians who are being asked to comment and participate in discussions about different types of fisheries management strategies. As an example, other supplemental reference materials that will be offered in conjunction with the PowerPoint presentation on ecosystem-based approach to management include a list of publications, essays, and white papers (and users would have the option to request reprints from the staff).

NYSG with colleagues in the Atlantic Sea Grant Network will organize a workshop on risk assessment and decision-making for marine fisheries and a companion project will be developed for Great Lakes counterparts, with the participation of Sea Grant colleagues in the Great Lakes Network within the next two years.

Complete work that was initiated in 2006 with colleagues in the Northeast Sea Grant District Region to coordinate and publish a handbook to educate non-technicians about the benefits of incorporating risk analysis in decision making. Make arrangements to distribute 500 handbooks to resource managers and fisheries association leaders throughout the northeast.

Expected Outcomes: 10% of fisheries biologists will adapt information from NY Sea Grant research into management policies and more successfully manage fisheries.

Milestone: Two collaborative research programs be developed that will generate information that can be integrated into extension outreach to benefit fisheries managers in developing improved resource management strategies and to public stakeholders.

Expected Outcome: 10% of sport fishing stakeholders will be able to communicate their concerns to fisheries managers and 20% will better understand how fisheries management policies are developed; 50% of fisheries managers will better engage stakeholders in the decision-making process.

Milestones: NYSG will organize a conflict resolution workshop for tributary and lake angling stakeholders in 2006 or 2007.

As invited, actively participate in statewide hunting and fishing taskforce coordinated by NYS Assemblyman Will Barclay and facilitate communication of sport fishing stakeholders concerns through this forum.

NYSG will begin to develop a workshop with researchers in human dimensions, public communication and policy development to develop a decision-making template for fisheries stakeholders.

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.*

Expected Outcome: Agency personnel (e.g., NYSDEC and NYSG extension staff) can convey this information to stakeholders, who can use it to focus marketing and tourism strategies.

Milestone: (*Brown R/FHD-11*) Through synthesis and modeling of the past 30 years of Lake Ontario fisheries angler (human and biological) data, gain the best possible understanding of the factors that have most strongly influenced the fisheries in the past and model those factors into the near-term future (3-5 years).

Expected Outcome: 30% of coastal business owners (including those related to sport fishing) and sport fishing promotion/tourism professionals will be better informed on

tools for marketing their businesses and sport fishing resources and 15% of this audience will implement these tools and will make better decisions.

Milestones: Oswego County, with assistance from NYSG will organize a fisheries advisory board in 2007.

Organize a follow-up workshop to the economic uncertainty program for coastal business owners in 2008.

Work with NYSG Communications to complete carp fishing fact sheet (in progress) in 2008 to increase awareness of the economic potential for this developing fishery.

Work with NY/PA Bass Federations to organize annual seminars 2006, 2007 and 2008 to help market and promote bass fishing in the Great Lakes.

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.*

Expected Outcome: 80% of researchers and fisheries managers and 20% of sport fishing stakeholders will have a better understanding of the Lake Ontario ecosystem (biological, chemical) indicators and their use for evaluating the health of the fisheries.

Milestone: As part of a Hatch Grant through Cornell University, NYSG will organize two workshops with Dr. Ed Mills, Cornell University, to present long-term zooplankton data from Lake Ontario as it related to fisheries sustainability to fisheries managers and the sport fishing community (2007-2008)

Expected Outcome: 40% of fisheries managers and 5% of sport fishing stakeholders will be able to make informed decisions on how Lake Ontario fisheries should be best managed using ecosystem indicators.

Milestone: NYSG will develop the communication plan for NYSDEC and OMNR as part of a Lake Ontario “Warning Flags” model, based on ecosystem indicators, as adapted from Michigan DNR for Lakes Michigan and Huron.

GOAL 5: New Yorkers 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).

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.

Expected Outcome: Provide information about the physical, hydrodynamic and biological (physiology, and anatomy) factors that influence round goby ability to scale small barriers that they encounter as they spread their range. This information will be essential in developing plans to slow or block the spread of round gobies to protect native fish species and benthic communities.

Milestone: (Pennuto R/FBF-20) Investigate the ability of round gobies, a recent invasive benthic fish species in the Great Lakes, to scale small dams or natural barriers and spread to tributary streams.

Expected Outcome: To educate 30 bait and tackle retailers and 500 anglers about the types of non-indigenous and invasive fish being used as bait that are sources for concerns in marine waters, and to teach them about responsible disposal and handling techniques that may be practiced to minimize the spread of these non-indigenous fish in local waters. This will help these groups to identify non-indigenous bait fish being used in New York, understand the negative impacts on local ecology, convey information about existing rules regulating the trade of bait fish, and offer suggestions to help reduce the spread of these species and provide native alternatives to exotic bait.

Milestones: Review literature about non-indigenous and invasive fish being used as bait and locate outreach publications that have been prepared by Sea Grant and other agencies.

Develop a PowerPoint presentation and brochure to educate anglers and bait and tackle retailers about the potential threats involved in the use of non-indigenous bait.

Seek assistance from the bait and tackle industry to use retail outlets and gatherings as a forum to educate the members and the angling community to disseminate information developed regarding this issue.

Conduct a survey with bait and tackle retailers to determine the changes, if any, in the demand for exotic bait fish after this education program.

Expected Outcome: To have 100 stakeholders gain a better understanding of invasive species control through an attempt to eradicate a new invasive, *Ludwigia peploides*, from the Peconic River.

Milestones: Manually remove (*i.e.*, hand-pull) *Ludwigia peploides* from the Peconic River in two large-scale volunteer events and several isolated removals of sparse infestations over the next four years.

Map Ludwigia beds using GPS prior to each hand-pulling event to monitor effectiveness of the eradication effort.

Expected Outcome: To educate 500 stakeholders on how the biology of AIS and ANS influence introduction and spread of such organisms and enable them to use that information to prevent such introductions and control range expansion of existing species.

Milestone: Identify and add appropriate papers related to this topic to the National Aquatic Nuisance Species Clearinghouse library and World Wide Web searchable bibliography.

Objective b: *Work with appropriate researchers and agencies to determine the environmental, ecological, economic, and synergistic impacts and effects of AIS and ANS, and their causal mechanisms and develop outreach programs and educational materials to assist stakeholders in developing effective response, detection, and control mechanisms.*

Expected Outcome: To educate 400 representatives of municipal and private drinking water treatment facilities, public health officials, local government agencies and lake associations on the causes of cyanobacterial blooms and toxins, their potential impacts, and use that information to protect drinking water, recreators, livestock and pets from such toxins.

Milestone: Develop and deliver outreach programs and educational materials on the causes and control of cyanobacterial blooms and toxins as part of Great Lakes MERHAB project.

Expected Outcome: To educate 300 representatives of conservation groups, fishing clubs, environmental organizations, community groups and other interested stakeholders on aquatic exotics species and avian botulism. These groups will then be better equipped to practice effective mitigation techniques to prevent or minimize the spread of AIS.

Milestones: Continue efforts for AIS HACCP and conduct workshops to fishery biologists, researchers and other stakeholders as part of the Great Lakes Protection Fund grant.

Serve as a speaker and resource for groups such as New York State Walleye Association, and Southtowns Walleye and other groups to present information and research findings on exotic species and botulism in the Lower Great Lakes.

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 aquatic invasive and nuisance species via traditional outreach methods and the National Aquatic Nuisance Species Clearinghouse, Web-based searchable AIS database and Northeast water chestnut outreach Web site.*

Expected Outcomes: To educate 5,000 researchers, resource managers, government officials, water resources decision makers, educators and students, environmental special interest group representatives, extension agents, representatives of the pet and water gardening trades, media representatives, and others on how (and why) to prevent or slow the introduction and spread of aquatic invasive and nuisance species and how to mitigate their impacts by enhancing access to the body of knowledge pertaining to such issues.

Milestones: In coordination with Cornell Cooperative Extension and the NYS Invasive Species Task Force, develop a statewide invasive species outreach education program and educational materials. The first step in this process will be to establish a CCE statewide Program Work Team on invasive species (co-chaired by C. O'Neill and Dr. Ed Mills). The second step will be to implement a series of invasive species teleconference trainings for cooperative extension agents in coordination with Deb Grantham (contingent upon funding).

Work with NYSG Communications to develop extension education materials on the history and impact (particularly economic impact), prevention, control and management of aquatic invasive and nuisance species. CON

Expand the use of the World Wide Web as a means of implementing NY Sea Grant aquatic invasive and nuisance species outreach education and technology transfer programming through the development of a new NYSG invasive species Web site to be hosted on NYSG's newly redesigned www.nyseagrant.org.

Enhance the National Aquatic Nuisance Species Clearinghouse library and Web-based bibliographic database; begin the process of adding a parallel-tracked NY Invasive Species Clearinghouse and Web site. On average, 50 to 75 publications will be added to the Clearinghouse library and Web site each month.

Undertake an on-line evaluation survey of the effectiveness and outreach impact of the Clearinghouse to determine ways in which audiences have used Clearinghouse information, what information they're using, what additional information they'd like, how they are accessing the Clearinghouse, and how the Clearinghouse operation might best be improved.

Publish four issues of the Clearinghouse Digest, *Aquatic Invaders*, per year while improving the technical content and types of features presented. This will include preparation of annotations, writing feature articles as needed, assisting in efforts to

increase distribution of this publication, and overseeing the transition of *Aquatic Invaders* from a print to an electronic delivery format.

Expected Outcome: Four state, regional and national invasive species working groups, task forces and panels will be provided with technical support.

Milestones: Serve on the Northeast and Mid-Atlantic Panels on Aquatic Nuisance Species, the national Invasive Species Advisory Committee and the NYS Invasive Species Task Force.

Expected Outcome: To educate 500 teachers and students throughout NYS about the impacts of AIS and ANS so that they can become more involved in preventing new introductions, preventing the spread of existing populations, and helping to control and mitigate existing populations of AIS and ANS.

Milestones: Develop and implement outreach programs and products to educate students about how the release of aquatic pets or plants into the wild can spread AIS, and how they can help prevent such introductions.

Develop a high school lesson plan on New York State invasive species where students learn specific case studies and vectors for spreading AIS.

Conduct a summer teachers' workshop program entitled "Educators and the Erie Canal", in partnership with USFWS – Lower Great Lakes Fisheries Resources Office. The workshops will take place along the Erie Canal, throughout New York.

Implement 10 teachers' workshops for approximately 300 teachers throughout the coastal counties of New York for teachers and non-formal educators related to aquatic invasive and nuisance species. These workshops will utilize materials developed through Sea Grant funded projects on aquatic exotic species.

Develop educational materials, fact-sheets, and classroom activities based on aquatic invasive species for use by formal and non-formal educators and their students, including the continued dissemination of the "Case of Exotics," an educational trunk filled with preserved aquatic exotics and a manual of information on these invasive plants and animals.

Expected Outcome: To educate 1,000 Peconic Estuary residents on their potential role in introducing and spreading invasive species and how to prevent such introductions.

Milestones: Develop contacts and work with area pet shops to expand NYSG's participation in the Habitattitude™ campaign to educate pet owners about proper disposal of unwanted aquatic pets and plants.

Develop and implement a Web site and print educational materials to foster willingness among estuary citizens to prevent further planting of aquatic invasive species in home

gardens and water gardens, to remove existing AIS, and to instead plant native or non-invasive alternatives.

Expected Outcome: To educate 1,000 teachers and students throughout the Great Lakes (and elsewhere) through the continuation of our partnership with other Great Lakes Sea Grant Network programs to develop new and innovative educational projects on aquatic exotics species.

Milestone: Work with Illinois/Indiana Sea Grant to improve the SGNIS Nab the Aquatic Invaders site on the Internet to improve its educational potential and provide information for teachers.

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.

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.

Expected Outcome: To have 400 K-12 educators in the NYC metropolitan area incorporate information about the NY-NJ Harbor Estuary into their curricula, classroom activities and field trips in order to enhance the marine and aquatic science literacy of their students.

Milestone: Compile or adapt existing resources, identify gaps and develop new materials for educators to use with K-12 students. Pilot new materials with teachers and educators, gather feedback and incorporate improvements and correlate materials with National, State and NYC education standards. Distribute materials to teachers and educators conducting K-12 field trips and in-school programs and then conduct training workshops for teachers and educators to strengthen effective use of these materials.

Expected Outcome: To provide at least 400 formal and informal marine science educators with NYSG and LISS materials with the goal of increasing ocean literacy.

Milestones: Work with the New York State Marine Education Association, to support their efforts in marine science education. Conduct presentations at July annual conference to inform marine educators of NYSG, LISS and its educational and science research efforts. Provide association members with NYSG and LISS materials.

Provide appropriate NYSG and LISS publications and posters to teachers and students as requested throughout the school year.

Expected Outcome: 60 NYS k-12 teachers will learn about and integrate knowledge of the Hudson River Estuary into their classrooms (2007-2010).

Milestones: Through the Rockland Teachers Institute (RTI) NYSG serves as an adjunct instructor for at least one RTI's affiliated universities to teach a Hudson River Field course for teachers who are enrolled in the graduate programs.

In 2006, NYSG Marine District staff working on estuary issues began meeting as an Issue Team. The SGE staff will seek grant funding for outreach projects.

Expected Outcome: To educate 200 teachers on Great Lakes coastal issues and also encourage them to utilize education materials produced by New York Sea Grant, Cornell Cooperative Extension, and Great Lakes Sea Grant Network in their classrooms.

Milestones: Hold training workshops for formal and non-formal educators and teachers in training on a variety of marine and Great Lakes science topics to update their knowledge and bring to them the latest scientific findings, and to involve them and their students in applied science projects.

Continue efforts on a National Sea Grant Program funded project entitled "Nab the Aquatic Invader" which provides for 2 teachers' workshops per year as well as the development of new activities.

Expected Outcome: To teach over 200 teachers about the Great Lakes and ocean literacy through programs of the NSF – NOAA funded Center for Ocean Science Education Excellence.

Milestones: Coordinate New York Sea Grant's efforts on COSEE GL efforts such as annual "Teachable Moment" workshops and the State of the Lake meetings.

Teach a summer course for teachers and scientists aboard the USEPA Lake Guardian on Lake Ontario during the summer of 2007.

Work on national efforts for COSEE GL as part of the management team for this NSF sponsored project, including presentations at regional and national conferences representing COSEE GL efforts and projects.

Expected Outcome: With the broader goal of fostering ocean literacy, science education will be improved by providing K-12 educators hands-on curriculum materials and activities concerning the coastal zone, as well as providing students with practical opportunities to utilize science.

Milestones: NYC and Long Island: Create pre- and post-class visit activities for teachers to use in conjunction with I FISH NY fishing trips that introduce or reinforce knowledge of local fish and fishing. Post lesson plans and additional pre and post class visit activities on the I FISH NY website.

Assist marine educators with finding suitable curriculum materials related to LISS and produce new educational materials as deemed appropriate and necessary.

Work with the National Marine Educators Association, Science Teachers of New York State, Niagara Frontier Science Supervisors and other teachers' associations to support their efforts in aquatic science education. Conduct presentations at conferences to inform teachers of NY Sea Grant and its educational efforts.

Provide information and support to 75 individual teachers or students who request information on marine and Great Lakes ecosystem topics, Sea Grant extension programs, or marine-related careers.

Expected Outcome: To have teachers integrate more Peconic Estuary stewardship and science information in their classrooms.

Milestone: Develop, distribute, and evaluate five (5) curriculum modules on the Peconic Estuary for use in classrooms.

Expected Outcome: To have at least 200 students; especially females, minorities and students with disabilities, learn about career possibilities in the field of aquatic/marine sciences. These activities are designed to improve the diversity of future scientists and technicians.

Milestone: Work to enhance the involvement of minority students in science and environmental careers. To facilitate this goal, serve on the Coordinating Committee for Science Exploration Day at the University of Buffalo, to provide exposure to scientific careers and research for more than 1,000 high school students from more than 25 local school districts.

Expected Outcome: To provide NYSG Marine and Great Lakes educators appropriate communications support for their programs involving experiential teacher training, K-12 classrooms and informal teaching venues.

Milestones: Provide communications, editorial and media support as needed to NYSG extension educators selected to host Estuary LIVE Web casts (such as those in Jamaica Bay and Shelter Island, NY in Fall 2006) and work with educators to maximize usage and distribution of Web cast footage after the events.

Provide planning and technical expertise in the creation of long-term integrated Estuary Education project materials with NYSG estuary education staff, including a project needs assessment.

Provide editorial, media, or Web support as requested by NYSG's Great Lakes COSEE educator.

Provide appropriate Web, poster or print materials to classroom teachers and informal educator groups as requested by extension specialists, management team, stakeholders or regional/national Sea Grant networks.

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.*

Expected Outcomes: To support the education of at least 200 college student at the undergraduate and graduate level through instructional, internship and committee efforts at various SUNY institutions throughout the state.

Milestones: Serve as an adjunct instructor for the SUNY College of Environmental Science and Forestry. The primary focus will be on graduate student committee participation. Participate as a guest lecturer for SUNY Oswego GL focused classes, and assist them in identifying new opportunities through a campus based GL Studies Committee.

To serve as adjunct faculty for the Aquarium Science course at Niagara County Community College, as part of their Animal Management Program. Work with SUNY Buffalo to offer an undergraduate course on Great Lakes Ecology. Serve as a tutor and course evaluator through Empire State College for courses in Marine Biology, Ichthyology, Biological Conservation, Aquaculture, Limnology, and other aquatic science related courses.

Recruit and train up to 5 Lake Ontario college level dune steward interns and 6 Salmon River stewards. Provide initial (pre-field season) and continuing (season-long) training of these steward interns and coordinate daily steward activities.

Provide assistance to any Sea Grant Scholars doing research along the Eastern Lake Ontario Dunes and/or Salmon River Corridor.

Expected Outcomes: Public awareness of NYSG's Sea Grant Scholars and the dissemination of their work will increase.

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

Interview and feature Sea Grant Scholars in *Coastlines* articles, Web articles and press releases where appropriate.

Work with research program coordinators to send masters and doctoral theses written by Sea Grant Scholars to the National Sea Grant Library on a timely basis.

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.*

Expected Outcome: To provide at least 50 educational presentations on a variety of environmental topics to non-formal education groups and support efforts of other non-formal education partners.

Milestones: Present lesson plans covering marine and freshwater fish biology at professional training workshops in the NYS area in coordination with governmental (ex. NYC Department of Education) and non-governmental organizations (ex. New York Restoration Project).

Collaborate with other Long Island organizations such as the Babylon Sportfishing Center and New York State Parks and Recreation to offer educational programs accompanied by an opportunity to go fishing.

Present lesson plans covering marine and freshwater fish biology at professional training workshops in coordination with governmental (ex. Board of Cooperative Services) and non-governmental organizations.

With funding from the CUBFS at Shackelton Point, provide guidance and direction for the development of a new outreach initiative “Oneida Lake Education Initiative” to include: website design and development; educational program development and delivery; and, baseline fact sheet development.

Develop and strengthen professional relationships with environmental educational partners in the Salmon River and Lake Ontario Dune area to promote hands-on scientific based educational opportunities for children.

Schedule public education programs at the NYSDEC Salmon River, Salmon River Falls Unique Area, and the Eastern Lake Ontario Dune monitoring sites.

Work with, provide assistance and support marine education efforts of ERIE II and Niagara/Orleans BOCES, the Aquarium of Niagara, NYSDEC Nature Centers, Erie County Environmental Education Institute, and other educational entities in counties along Lake Erie and Lake Ontario.

Work on planning the 7th Great Lakes Student Summit (2008) in conjunction with other Western New York educational organizations which is designed to bring 200 students and their teachers together in Buffalo to learn about the Great Lakes.

Periodically feature the achievements of participating students and stewards in NYSG’s *Coastlines* newsletter and online at www.nyseagrant.org.

Expected Outcome: NYSG and Cornell Cooperative Extension youth educators (4-H) will work together to develop and implement a Hudson Estuary project in 4 counties bordering the estuary.

Milestone: Building on a successful summer pilot project in Ulster County, 2006 NYSG and CCE southeast district educators will seek funds to replicate the project.

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.*

Expected Outcome: At least 400 public stakeholders in the Long Island Sound watershed will be exposed to educational materials and programs about the estuary to facilitate their participation in stewardship activities and increase ocean literacy.

Milestones: Provide presentations, staff table exhibits, produce informative materials and newsletters for the LISS to keep the public aware of research findings, projects, and progress the program is making to reach the goals, as well as information to increase general public understanding of the marine environment.

Through LISS grants programs, involve the public in stewardship and educational programs related to estuary issues.

Produce fact sheets and technical reports related to the LISS science and issues.

Assist the LISS with using and distributing the public perception survey results.

Expected Outcomes: NYSG Management and extension specialists will have appropriate publications, fact sheets, brochures, displays and other print, visual or electronic tools that highlight the value of NYSG research or outreach efforts with which to educate stakeholders.

Milestones: Provide a unifying design for and continually update the format for impact statements, fact sheets, brochures and other publications that showcase the benefits and outcomes of NYSG extension and research programs.

Provide editorial and production assistance on new or existing publications produced by NYSG staff via the Communications office or freelance consultants. *Note: More specific publications are found under content area goals and objectives.*

Expected Outcome: Reach approximately 8,000 readers per issue of NYSG's flagship publication *Coastlines* with integrated feature stories that combine extension, education and research projects efforts within NY's Great Lakes and marine districts.

Milestones: Produce and distribute *Coastlines* on a regular two-per-year schedule of (spring and fall): meet with the editorial board to plan each issue; request in advance any material to be contributed by Extension staff, research project coordinators or researchers for upcoming issues; supervise editorial and design of each issue and track its progress through production, printing and distribution.

Continue to identify key audiences and update mailing list.

Post each issue of *Coastlines* to the Web site in a timely fashion and break out by individual stories listed in the table of contents.

Consider doing a follow-up readership survey to capture the perceptions of subscribers who did not return the Fall '04 readership survey.

Expected Outcome: An up-to-date inventory of technical and nontechnical publications produced by NYSG will be maintained.

Milestones: Fulfill publication requests that come to NYSG via mail, telephone or email; continually update technology for ordering publications via www.nyseagrant.org.

Distribute mandatory publications, including theses, to the University of Rhode Island's National Sea Grant Library in a timely fashion.

Work with the research program coordinator to update a database of technical and nontechnical publications at least twice yearly and post to NYSG's website.

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

Expected Outcome: To reach more than 2,500 students and stakeholders through the development of education websites and the use of distance learning programs, NYSG educators will utilize new technologies to enhance educational outreach programs.

Milestones: Maintain the Eastern Lake Ontario Dunes and Wetlands web site.

Develop new content for the Peconic Estuary Program website, and serve as program webmaster.

Provide information for the LISS and NYSG Web sites, which the public often turns to as a source of information.

Use/bring new technologies to educators such as distance learning, Internet, and multi-media through workshops. Work with the Buffalo Museum of Science and their Authentic Learning Communities to provide distance learning programs on invasive species and the Great Lakes.

Continue efforts on a National Sea Grant Program funded project entitled "Nab the Aquatic Invader" which is a web-based educational site designed to teach young people about invasive species.

Expected Outcome: NYSG's Web site, www.nyseagrant.org, will fully integrate the parts of the NYSG program and continue to draw hundreds of thousands of users to the user-friendly site annually.

Milestones: Complete the redesign of NYSG’s Web site, updating content, bringing in user-friendly navigation, creating new sub sites to integrate research, extension and educational activities. Work with the Great Lakes extension offices to streamline and coordinate their Web sites currently on the Cornell server and integrate them onto one NYSG server; train or request training for those extension specialists who will be submitting materials for their Web site to NYSG’s Web developer.

Continually upgrade new online interactive interfaces for NYSG researchers, publication purchases and fiscal information submissions.

Working with NYSG’s research program coordinators, create new Web pages for current and previously funded research projects.

Continue using *WebTrends* software to measure the usage of the web site and report out quarterly rather than monthly.

Explore the development of Web video, Web audio, or other electronic products in conjunction with extension specialists, researchers or collaboratively with other Sea Grant programs.

Expected Outcome: Improve visibility in the mass media in both the marine and Great Lakes districts.

Milestones: Send a NYSG promotional package of pertinent materials to at least ten newly-identified potential writers and producers annually, especially any suggested by extension specialists.

Schedule periodic calls or e-mails to targeted media with whom we have already worked to update them about upcoming NYSG research, extension projects or special events.

Supervise consultant publicist/writer in the Great Lakes region (such as Kara Dunn) to promote research and extension activities particular to the Great Lakes region. Review and approve draft press releases, track media hits from Great Lakes media sent by these consultants. Provide consultants with pertinent NYSG publications.

Proactively contact potential publicists/writers in the marine district using as a primary resource the Fair Media Council and attending their “Media Savvy” events and Connection Day.

Partner with Marine Sciences Research Center, CORE, National Ocean Sciences Bowl and other sponsors to provide media coordination for the 2007 Bay Scallop Bowl and National Ocean Sciences Bowl Final to be held in Spring 2007 at Stony Brook University.

Collaborate on media campaigns when feasible with communications/ public affairs officers from NOAA, NYS DEC and other partnering agencies. Coordinate publicity in the NY metro area as asked by the NSGO.

Actively participate in the Stony Brook Public Relations Team and maintain contacts with Communications' offices on other SUNY supporting campuses including SUNY Central as well as Cornell Media Services and Cornell News Services.

Explore new online media markets, list servs, digital radio, podcasts, and other newer technologies as potential outlets for NYSG news.

Explore the possibilities of setting up a Communications internship with Stony Brook University's new Journalism program.

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.

Expected Outcome: Public stakeholders in the three National Estuary Program (NEP) areas (Long Island Sound, the New York – New Jersey Harbor and the Peconic Estuary) will have educational materials and programs about the estuaries to facilitate their participation in stewardship activities.

Milestones: Produce public education/information newsletters for the three NEPs to keep the public aware of research findings, projects of the estuary programs, and progress the estuary programs are making to reach their goals, as well as information to increase general public understanding of the marine environment.

Through stewardship grants and other small grants programs, involve the public in stewardship and educational programs related to estuary issues.

Produce fact sheets, technical reports, and stewardship materials related to the NEP programs' science and issues.

Continue to participate in Stony Brook University's annual Earthstock event with a relevant display or through other creative media.

Expected Outcome: Public stakeholders in the NYC metropolitan area will make use of information, materials and programs to facilitate their participation in stewardship of the NY-NJ Harbor Estuary.

Milestones: As Chair of the NY-NJ Harbor Estuary Program (HEP) Education and Outreach Work Group, coordinate the development of a strategy and work plan to increase stewardship of the Estuary.

Manage the HEP Stewardship Program to develop, fund, implement and evaluate region-wide, multi-partner projects to promote stewardship of the Harbor Estuary resulting in measurable change.

Produce and distribute print and electronic newsletters, reports, fact sheets and other publications outlining the goals, activities and accomplishments of the NY-NJ Harbor Estuary Program.

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

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

Expected Outcome: Seafood businesses will have increased opportunities for wise growth and development.

Milestones: Serve as Technical Advisor to the New York Seafood Council Board of Directors, and manage the 2006-07 joint project agreement and a 2007-08 agreement to house the Council's Project Assistant at the NY Sea Grant Extension program office at Stony Brook.

Serve as co-editor of the New York Seafood Council newsletter, Nibbles, to distribute current information on industry issues, meetings and other developments to at least 150 New York Seafood businesses on a bi-weekly basis.

Provide assistance to the NY Seafood Council on at least one seafood marketing initiative in 2007 and/or 2008 conducted on behalf of the state's seafood industry.

Provide direct technical assistance on food processing technologies and marketing to at least 25 seafood businesses in New York per year to help them capitalize on new products or markets that will ensure their economic well being and maximize their contribution to the state's economy.

Work with appropriate elected officials, government agencies, industry groups and other decision makers to evaluate, plan and implement appropriate development projects to ensure the economic well being and sustainability of the seafood industry in New York.

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.

Expected Outcome: Commercial and recreational fishermen and seafood distributors and retailers will have the knowledge to handle their catches more safely.

Milestones: Provide assistance to New York Sea Grant and other professionals who conduct fishing education programs to help them incorporate information on proper handling, storage, and preparation techniques for sport caught fish into their programs.

Participate in state, regional or national outreach activities to distribute educational materials and conduct appropriate outreach programs to improve fishermen's on board handling techniques to prevent scombroid (histamine) poisoning incidents and improve overall quality.

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.*

Expected Outcome: New York consumers will have access to objective and current information on seafood products that they can use to manage personal risk and maximize benefits.

Milestones: Assist with the management of the NY Seafood Council consumer Website at www.nyseafood.org, and develop new content on industry or product issues as needed and update and edit existing information at this site on various sectors of NY's seafood industry, species profiles, and other relevant consumer information.

Continue to maintain and track www.nyseagrant.org/seafoodtechnology on the NYSG Web site with assistance from NYSG Communications. Subject to approval from KG

Provide information to the print media, professional organizations, and the seafood industry to ensure that consumers have access to objective information on seafood products, quality and safety issues such as microbiological hazards, chemical hazards such as mercury and environmental pollutants, sustainability and other issues that influence consumer choices.

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).*

Expected Outcome: Seafood regulatory groups and businesses will adopt scientific systems to ensure seafood safety.

Milestones: Plan, develop and deliver at least 4 one-day Segment Two HACCP training programs in NY per year to ensure that the seafood industry has access to the training needed to comply with current FDA food safety regulations and that federal and state regulatory agency staff have the expertise to ensure compliance.

Manage the national Seafood HACCP Alliance Seafood HACCP Internet training course, which will be used by at least 400 individuals per year from the seafood industry and regulatory agencies across the U.S. and in foreign countries. Provide technical and program assistance as needed to students and qualified trainers across the U.S.

Provide technical assistance to at least 25 seafood businesses per year in the U.S. regarding FDA seafood HACCP regulations, FDA food safety control guidance, and training.

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.

Expected Outcome: Seafood businesses will be more efficiently educated and better informed on strategies for increasing seafood safety.

Milestones: Serve as Principle Investigator for USDA/CSREES national food safety initiative project to develop a national Internet training course on Sanitation and Good Manufacturing Practices. Coordinate the management, sub-contracts and project activities for this \$445,000 three-year project, and work with co-investigators from Cornell University, the Universities of Rhode Island, Delaware and Florida, Virginia Tech, North Carolina State University and FDA to develop the course content and format. Coordinate at least 2 project team meetings per year.

Write and develop 10 course Modules for the new GMP Internet course and work with designer Steve Kern at Cornell to convert them into a final XHTML format. Negotiate agreements with an appropriate host for this course. Conduct a national pilot test of the English language version of this course and modify course content as necessary prior to launching this new course in 2007.

Work with the University of Florida to produce and pilot test a Spanish language version of the new GMP Internet course in 2007-08.

Continue to provide leadership for the national Seafood HACCP Alliance by participating on the Steering Committee and attending at least one national meeting per year. Continue to participate on appropriate subcommittees involved in national educational initiatives to provide training when the FDA releases a new edition in 2006 or 2007 of their guidance on appropriate science-based HACCP controls for seafood products.

Provide technical assistance to at least 10 individual seafood businesses, industry and consumer groups, or individual consumers to ensure that they develop and implement effective controls to prevent food borne illness caused by seafood products.

Distribute current information on specific seafood safety issues on a timely basis to seafood businesses and the public utilizing appropriate tools such as the Internet, media, and written educational materials to help stakeholders make informed decisions about how to minimize risks associated with seafood consumption and maximize benefits.

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.*

Expected Outcome: Seafood businesses and recreational anglers will adopt science-based strategies designed to minimize risks associated with biological or chemical food safety hazards.

Milestones: Complete research and outreach project activities as a project collaborator for the USDA/CSREES funded project to “develop and implement science-based environmental testing and control strategies to minimize *Listeria* contamination in ready-to-eat foods with Dr. Martin Wiedmann at Cornell University and other project collaborators from Cornell University, Pennsylvania State University and the University of Vermont.

Work with and provide assistance to the industry based Smoked Seafood Working Group (SSWG) of the National Fisheries Institute and Food Products Association to evaluate and comment on FDA’s risk assessment for *Listeria* contamination of smoked seafood products and coordinate appropriate educational activities for the smoked seafood industry in NY and the rest of the U.S.

Serve as an invited member of the Technical Committee for an International Smoked Seafood Conference that is being planned by the Alaska and California Sea Grant Programs for 2007.

Coordinate and help deliver workshops and/or other education materials on *Listeria* Controls for processors of ready-to-eat seafood products like smoked fish as needed or requested.

Assist New York Sea Grant and researchers in identifying important seafood safety issues and develop strategies to ensure that researchers address important issues and that outreach activities reach stakeholders in a timely and useful fashion.

Expected Outcome: Participants will be able to access and interpret health advisories.

Milestones: Distribute existing and develop new literature that cover consumption advisories for New York City water bodies in conjunction with New York State Department of Health to distribute to recreational anglers and potential anglers at public fishing clinics.

Create a lesson plan for 3rd to 12th grade school children teaching the principles of bioaccumulation and bio-magnification of pathogens, toxins, or chemical contaminants relevant to fin and shell fish caught in New York City water bodies.

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.

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.

Expected Outcome: Agency and regulatory personnel (e.g., NYSDEC and EPA) can use this modeling tool to predict the estuarine depositional evolution and guide future contaminated sediment clean up. This will aid resource managers to keep fishery resources safe for public consumption. Emergency managers can increase consumer safety by modeling storm related watershed erosion and dredge materials helping to minimize the impacts of contaminants such as PCBs.

Milestone: (*Riemer R/CCP-15*) Improve the traditional sediment modeling approach by taking into account the size distribution of the sediment particles as well as microphysical processes such as flocculation and breakup. A size-resolved sediment module will be developed for the Regional Ocean Model System (ROMS).

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

Expected Outcome: Local government officials in at least 4 communities will utilize Sea Grant educational materials or participate in Sea Grant sponsored programs to learn and implement land use planning tools that be used to protect water quality.

Milestones: Sea Grant extension and Cornell University extension staff will work together to plan and implement educational programs and work with extension educators at the county level to deliver programs.

Sea Grant extension staff will work closely with the Sea Grant research team of Kleppel/Daniels/Salkin in their project on urban sprawl (if funded).

Sea Grant extension staff will work closely with Cornell University researchers on a project entitled Long Island Sound coastal conservation: location and priority of land parcels (if funded).

Expected Outcome: NYSG NEMO will provide educational support concerning nonpoint source pollution control and stormwater management to municipal officials throughout Long Island.

Milestones: The NYSG NEMO Program Manager will assist in recruiting and will train a Water Quality Educator regarding Long Island's estuary programs, local government structure, the EPA PH II stormwater regulations, NYSG Extension, and the National NEMO model.

The NYSG NEMO Program Manager will consult with a Program Advisory Committee regarding NYSG NEMO Program content, implementation, resources, and management.

NYSG NEMO will develop recommendations for effective stormwater management strategies, deliver presentations for municipal officials and staff at regional and local meetings, create printed materials, and provide consultations and follow-up.

The NYSG NEMO Program Manager will act as the NYSG NEMO Program representative to the National NEMO Network to access innovative strategies, research, and resources.

NEMO's Water Quality educator will work with NYSG Communications to update and enhance the NY NEMO Web site.

Expected Outcome: 100 Long Island municipalities will implement EPA Phase II stormwater management programs that meet New York State regulatory requirements.

Milestones: NYSG NEMO will provide written guidance to nearly all Long Island municipalities concerning their progress in meeting New York State PH II requirements annually.

Municipal PH II reports will be reviewed, gaps and weaknesses in meeting New York requirements will be identified, and municipalities will be assisted in making necessary improvements to their programs.

NYSG NEMO will provide presentations, individual consultations, and follow-up to assist municipalities in understanding PH II requirements and in planning, implementing, evaluating, and reporting on their programs.

Expected Outcome: The effectiveness of municipal stormwater management on Long Island will be improved as the result of increased watershed-based intermunicipal coordination and cooperation.

Milestone: NYSG NEMO will provide targeted presentations to multiple municipalities within priority drainage areas to increase understanding of watershed management concepts and the consistency of management practices, and to help ensure the realization of cost-effective economies of scale in implementing stormwater management programs.

Expected Outcome: Long Island's Counties, Towns, Cities, and Villages will prioritize their stormwater management objectives in accord with Long Island Sound, Peconic Estuary, and South Shore Estuary Reserve comprehensive management plans' recommendations.

Milestones: NYSG NEMO will continue to integrate Long Island Sound, Peconic Estuary, and South Shore Estuary Reserve comprehensive management plans' recommendations into presentations and printed materials. The benefits of municipal linkages to estuary program management will be stressed.

NYSG NEMO will serve on the South Shore Estuary Reserve Workgroup, the Nassau County Water Quality Coordinating Committee, the Nissequogue River Watershed Management Technical Advisory Committee and the North Shore Embayment Study Steering Committee.

Expected Outcome: Long Island local governments will update their construction and post-construction water quality protection laws and they will require consistent implementing procedures.

Milestone: NYSG NEMO will deliver presentations, materials, and consultations to increase recognition of the ways in which local authority can be used as a tool for resource protection and to facilitate municipal enactment and implementation of local laws designed to improve erosion and sediment controls and post-construction water quality.

Expected Outcome: Long Island municipalities will increase their application of structural and non-structural pathogen control management practices.

Milestone: NYSG NEMO will deliver presentations, materials, and consultations regarding pathogen control strategies including animal waste control, septic system management, and elimination of illicit waste connections to the municipal separate storm sewer system.

Expected Outcome: Municipalities will reduce illicit connections and dumping to their separate storm sewer systems, which will result in a decrease in the amount of toxic substances, sediment, pathogens, and nutrients reaching Long Island's waterways.

Milestone: NYSG NEMO will deliver presentations, materials, and consultations regarding detection and elimination of illicit connections and dumping to the storm sewer system. These presentations will be based on New York State and EPA guidance materials and will cover such topics as mapping discharge points, identifying system components, conducting field surveys and water quality testing.

Expected Outcome: Local governments throughout Long Island will augment procedures designed to reduce the pollutants generated by such facilities as parks, roads, buildings, and transportation yards.

Milestone: NYSG NEMO will deliver presentations, materials, and consultations regarding municipal pollution prevention. Presentations will cover such topics as sanding and de-icing, transportation and highway maintenance facilities, turf management/landscaping, roadway resurfacing and repair, storm sewer system maintenance, hazardous waste disposal, evaluating program effectiveness and reporting.

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.

Objective a. Participate in the Great Lakes Observing System (GLOS) and in planning the Mid-Atlantic Coastal Ocean Observing Regional Association (MACOORA) to identify a NYSG (and regional Sea Grant network) role in outreach and research funding.

Expected Outcome: Stakeholders will contribute to GLOS design, implementation and product delivery.

Milestones: NYSG will form a GLOS education and outreach coordinating committee for NYS and contribute to formation of a committee for the GL Region.

NYSG will help develop a "What is GLOS?" campaign for the GL and modify same for use in NYS.

NYSG will contribute to development of GLOS education and outreach strategic plans for the GL and NYS.

Expected Outcome: NYSG will identify its role in the MACOORA regional program.

Milestone: NYSG will participate in planning, etc. for the MACOORA effort.

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.*

Expected Outcome: The Great Lakes Restoration Regional Association will allocate percentages of the funds included in Great Lakes Restoration bills to fund extension positions, research at academic institutions in the region, and state-managed efforts in research and outreach.

Milestones: NYSG will mobilize state interest by continuing to stimulate interactions of the NYS GL Leaders Group.

NYSG will provide reviews of the GL Restoration plans.

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

Expected Outcome: Coastal Communities in NY will be better prepared to deal with future changes in coastal climate as well as being able to more effectively and economically deal with current coastal hazards.

Milestones: Current research and outreach efforts now taking place in NY will allow Long Island communities to better predict and respond to Nor'easters.

With increased Sea Grant Extension outreach efforts in the application of climate sciences, NY's coastal communities will more effectively deal with coastal hazards and climate change.

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.*

Expected Outcome: The NY/NJ Port, as well as other ports in the northeast US will be better prepared to deal with security and other issues facing ports today.

Milestone: A Sea Grant Extension Specialist will be hired to deal with the major northeast port educational issues, if funding is received for a Sea Grant Extension partnership position in ports. A portion of these funds, for the position, are expected to come from the NY/NJ Port Authority.

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

Expected Outcome: Income from NY's aquaculture industry will increase by 10% per year over a five year period.

Milestone: A statewide Aquaculture Extension Specialist will be hired (creating this position is dependant on receiving additional resources from the National Sea Grant Office and NY State).

Objective g. *NYSG will play a major role in the NYS response to the NY Ocean and Great Lakes Ecosystem Conservation Act effort to incorporate ecosystem-based management (EBM) into resource management decisions.*

Expected Outcome: The NY Ocean and Great Lakes Council will have a prioritized list of short-term research projects from which to make decisions regarding allocation of funds to improve ecosystem-based management in NYS.

Milestones: NYSG will prepare a draft short-term priority research plan for improving ecosystem-based management at two demonstrations sites and submit it to the NYS Department of State. After review, this draft will be modified into a final report.

NYSG will use results from the short-term priority research plan to propose a process for developing longer term and more generic projects to improve EBM across the State.

Objective h. *NYSG will have an instrumental role in addressing the problem of diminished seagrass beds in NY's south shore, Peconic, and Long Island Sound bays.*

Expected Outcome: New research will be identified and funded that will provide information useful to managers and others interested in restoration and protection of seagrass beds.

Milestones: Working with researchers and other groups including the Nature Conservancy, NYS Department of Environmental Conservation, and others, NYSG will help organize a seagrass workshop to identify research needs and to produce a proceedings.

NYSG will manage a new research initiative on seagrasses, if federal funds are available.

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.

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.

Expected Outcome: Federal legislators will have a more complete understanding of NYSG activities and programs within their district as well as throughout the state and region

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

Sea Grant staff will visit one-third of the "home" offices of the federal legislators in NY to discuss SG activities in their district.

NYSG will be successful in obtaining federal legislative funding for a portion of their program efforts because of increased communication efforts with federal legislators.

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.

Expected Outcome: SUNY Administration, Budget Office staff and State legislators will be aware of NYSG current and potential contributions to resource decision making on the use of the state's marine and Great Lakes coastal resources.

Milestones: NYS State Senators and Assemblymen and the Governor's staff will be contacted via personal visits, letters, faxes and/or phone calls to present information about the value of NYSG and Sea Grant Network activities. Extension and research staff will be encouraged to develop contacts with state legislative district staffers.

SUNY Central administrators and Budget Office personnel will be educated to increase the NYSG budget line in the SUNY budget.

NYSG extension specialists will be encouraged to raise funds from state sources.

Periodic one-pagers targeted to state legislators will be used by the management team to educate supporters on NYSG issues and efforts.

All NYSG products will continue to be designed with the NYSG “brand” to facilitate such education efforts.

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.

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

Expected Outcome: Four or more extension positions will be supported by funding secured from federal and state sources outside of the traditional funding sources of NOAA and the NY State allocation for NY Sea Grant including such programs as I FISH NY.

Milestones: Grant proposal and contracts will be developed with EPA, DEC, and other agencies as deemed appropriate for NY Sea Grant.

Communications will continue to partner with EPA for funding to create and maintain Web sites for the NY/NJ Harbor Estuary Program and to continue to enhance and maintain the I FISH NY Web site.

Objective b. Influence the goals and funding allocations of federal, state and local government agencies and Non-Government 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.

Expected Outcome: NYSG will be able to co-sponsor research, outreach and education initiatives that would not otherwise be possible.

Milestones: NYSG will work with The Nature Conservancy and other local and state groups to provide the impetus for an eelgrass initiative by co-sponsoring a research planning workshop.

NYSG will work with the Ocean and Great Lakes Council to initiate a research initiative on Ecosystem-Based Management.

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

Expected Outcome: Regional research and outreach projects will provide funds for NYSG efforts.

Milestones: NYSG will receive funds to participate in the Great Lakes Regional Research and Information Network, at both the regional and local levels (Lakes Erie and Ontario) and will lead the Lake Ontario effort. Increasing Ecosystem-Based Management of coastal resources is one of the goals.

NYSG will participate in the Northeast Regional Ecosystem-Based Management initiative.

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

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.

Expected Outcome: The planning process and program advisory committees will be more robust and complete for the Program Teams, compared to current programming efforts, which will better serve the constituents of these programming efforts.

Milestones: In addition to the two program teams that have already formed, two additional teams will be formed.

Communications will provide editorial support to Program Teams (for example, the Fisheries Program Team), in projects such as the planned Risk Assessment publication and media support for any planned workshops.

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.

Expected Outcome: Targeted stakeholder groups and the general public will better understand what NYSG is, what it does, and why its mission is important.

Milestones: User-friendly research highlights and impacts will be posted and easily accessible on NYSG's web site.

The potential use of email list serves to notify stakeholder groups when new, relevant information is posted to NYSG's web site will be explored.

Expected Outcome: Targeted stakeholders will become more familiar with newest NYSG's research results, with suggestions regarding their importance and potentially how they might be used.

Milestones: NYSG-funded researchers will be strongly encouraged to publish their results in a timely manner.

Concerted efforts to distribute peer reviewed publications and extend research results will be undertaken.

A system for technical backstopping from the researchers for NYSG's extension efforts will be developed.

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

Expected Outcome: NYSG successes will be highlighted in media stories and awards.

Milestone: NYSG staff will continue to identify and document impacts from NYSG's research and extension efforts.

3. Identify program elements and their context, as well as personnel needed

The major program elements involved in implementation of the NYSG program are Management, Research, Extension and Communications. [The graduate education function of NYSG – preparation of “a new generation of motivated, highly educated scientists and environmentally aware and informed decision-makers and citizens” – is included under the research element, while the K-12 and informal education function are included under the extension element.] Physically, the program is spread throughout the state. The Management element of the program involves the director supported by one full time administrative assistant, the associate director supported by one and one-quarter administrative assistants, the assistant director, the fiscal officer, the communications manager (35%), and the Marine district and Great Lakes program coordinators (40% each). Two-thirds of the core management team, the director and assistant director, are located at the main administrative offices on the Stony Brook University (SBU) campus; the associate director is located at the Cornell University campus in Ithaca. Of the members of the extended management team, the fiscal officer and communications manager are both located at the main administrative offices, while the Great Lakes District coordinator is located on the SUNY Brockport campus and the marine district coordinator is located at the Cornell Cooperative offices in Riverhead. Coordination is maintained via e-mail, phone, conference calls and video-conferencing on a regular basis and, infrequent, usually opportunistic, face-to-face meetings. The research and graduate education element involves effort by the assistant director, two full-time research coordinators, a full time administrative assistant and the fiscal officer. The research management staff is all located together at SBU, where facilities such as libraries, etc. are excellent and convenient. The extension element involves efforts of the associate director, two outreach coordinators, four senior extension specialists, five extension support specialists, seven extension associates and six and one-half administrative assistants. Extension staff is located around the state, primarily at SUNY campuses. This gives them ready contact with both stakeholders and faculty resources. Again, e-mail, phone, conference calls, video-conferencing and occasional meetings maintain communications among staff and management. The communications element involves a full time communications manager and technical writer/web developer supported by one full time administrative assistant and a half time publications assistant. Communications staff is also located at SBU, but is supplemented by consultant support to increase media services to the Great Lakes district. Frequent upstate trips by communications staff also facilitate continuous communication with extension specialists.

4. Time frame for implementation

This Implementation Plan is scheduled for completion by January 31, 2009. However, the common practice is for Principal Investigators on research projects to request no-cost extensions to complete data analyses and write-up of results. NYSG practice is to limit this to about one-third of the project length, so a realistic estimate is that the work will be completed between June and September of 2009. Incorporation of the research into stakeholder activities will come some time later even under the NYSG system that encourages and facilitates research-extension-stakeholder coordination, in part by

providing progress reports and final reports to appropriate extension specialists. The other elements of the Implementation Plan are expected to be completed on schedule (January 31, 2009).

5. Integration of program elements toward implementation

Although NYSG is a two-institution consortium, it is an integrated program whose value exceeds the sum of its parts. We manage the program components in somewhat different hierarchies and refer to them as components for convenience, but all of our employees are referred to as NYSG staff, we strive for integration of the components and we believe that we are most effective when we bring the focus of the whole program to bear on a problem or opportunity. The core Management Team format was derived for that purpose and extending it to include the Communications Manager, Fiscal Officer and District Extension Coordinators, as appropriate, strengthens that integration.

A major theme of discussions of NYSG staff during re-evaluation of the strategic plan in 1998, shortly after the current management team was completed, was the need for additional collaboration, integration and partnering among the different program elements to better accomplish the goal of serving clients. NYSG staff expressed the need for researchers to be induced, both formally and informally, to contribute more to the outreach of their results. Extension staff also expressed the desire to complement this researcher effort and play a greater teaming role in extending the research.

Since that time, extension specialists have contributed (along with stakeholders including the Program Advisory Council, researchers and NYSG research managers) to identification of research topics and (along with peer reviewers and technical panels, the Program Advisory Council and the Management Team) to selection of proposals to fund. Extension staff and PAC stakeholders also participate in the choice of research topics for the omnibus Special Focus Area solicitation (see below).

Special efforts also have been made to ensure a dialog between appropriate extension specialists and principal investigators (PIs) prior to the submission of pre-proposals and/or completion of full proposals. Lists of staff with contact information and areas of expertise were attached to the Calls, and the PIs were encouraged to call them. Quoting from the call,

“Because the Sea Grant mission includes extension of research and other results to clients, discussions with New York Sea Grant extension staff (see attached list) may help hone the focus of research projects towards particularly useful information. Researchers are strongly encouraged to contact New York Sea Grant staff with their ideas to make sure they are addressing the most critical questions and to improve their understanding of what information and products will be most useful to New York Sea Grant’s clients. The value of this is reflected in the description of evaluation criteria.”

Over time, this process has become more successful in educating PIs about the most useful aspects of, and/or the stakeholders who would be interested in, their developing thoughts. Pre-proposals and full proposals increasingly reflect such connections. This early linkage also serves to introduce new investigators to the extension component of New York Sea Grant's program, enhancing new interactions.

We believe that the best evidence of the success of increasing this early interaction of researchers and extension specialists is indicated by the increase in the quality of proposals that we have received. Since 1997, when NYSG funded virtually all of the proposals that were judged "Good" or better by the peer reviewers and technical panels, proposal quality has improved to the point that most of the proposals submitted now pass the research quality screen. NYSG funds about 50% of those. This competition cannot help but increase the overall quality of NYSG's research portfolio.

But continued information transfer from the projects to the specialists and input from the specialists, regarding what audiences need, to the projects would be desirable. The need to develop mechanisms for more interaction of specialists in the work while avoiding conflict of interest or the appearance of it was recognized as a challenge that NYSG needed to meet. Of course this interaction would require an increased commitment (and responsibility) of the specialists to keep up with the research as it is being conducted. As a result of these discussions, processes to facilitate this integration have been implemented. However, further commitment and action are needed. Mechanisms continue to be discussed by the Management Team.

The management team has established several other operational strategies to enhance program element integration in the Implementation Plan. The communications Implementation Plan emphasizes element integration via stories that are included in *Coastlines*. Participation of the management team on the editorial board of the newsletter ensures that stories emphasize program element and geographical integration (e.g., combining marine and fresh water quality issues) where possible. In addition, supplements to the web page and copies of press releases are circulated to the management team prior to release.

Beginning in 2000, NYSG solicited proposals targeted at a Special Focus Area. Because most environmental problems are interdisciplinary in nature, cross-disciplinary approaches may provide a better chance, or be required, for success. However, it is difficult to make more than incremental progress on such complex challenges in proposals with a \$240,000 cap over two years (the maximum for typical projects solicited under omnibus calls in New York). With a cap of \$600,000 over two years, the Special Focus Area makes available 20 to 30 percent of New York Sea Grant's omnibus research budget for a single, integrated project. The concept of the Special Focus Area is to make a larger amount of funding available through New York Sea Grant's omnibus calls in order to promote stepwise (faster) progress and substantive contributions to comprehensive questions. In addition, substantial NYSG extension effort would be built into the project so that the overall project impact would be increased even further. No Special Focus Area proposal was successful during the 2002-2003 solicitation. Two SFAs were offered for this 2004-2005 proposal and proposals submitted in each of the

areas were successful. In 2006 and for 2007-2008 NYSG did not offer a Special Focus Area option.

The Special Focus Area topics for 2000-2001, 2002-2003 and 2004-2005 were based on New York Sea Grant staff suggestions, as well as stakeholder input, mainly from members of New York Sea Grant's Program Advisory Council. Selection of the SFA topics for the 2004-2005 Omnibus was among those for which NYSG was involved in preparing a written research plan with other outside experts. Two topics were needed to meet the criterion of broad state coverage and state balance. Other criteria used to choose topics are significance of the problem for the NYS economy, available expertise within the state, and roles for extension, education and communications staff as well as researchers in the outcomes. Before the RFP solicitation is distributed, extension and research staffs from NYSG meet with researchers around the state in two broadly announced meetings, one upstate and one downstate. This gives an opportunity for the research community to offer feedback and get a head start in thinking/coordinating before the call is released.

For the 2004-2005 Special Focus Area solicitation, NYSG chose two topics: avian botulism for the Great Lakes District and impacts of barrier island breaches for the marine district. Criteria and funding limitations for each SFA were as before. However, researchers were given the opportunity to combine efforts and submit an integrated proposal for the entire amount or to just submit an individual proposal with the understanding that NYSG would choose among the proposals specifically to put together projects that, when integrated, would be likely to produce stepwise rather than incremental progress. NYSG is providing the integration for the two and four projects that were chosen for the avian botulism and impacts of barrier island breaches SFA's, respectively.

For 2006, NYSG has chosen not to have a SFA because the omnibus solicitation is only for one year; for 2007-2008 there are no SFA because of budget uncertainties. However, we have opened the RFP to proposals for analysis of existing data or for integrating information in a field of research specifically to summarize the state of the science, both integratory focuses.

6. How will you move toward implementation?

Moving toward implementation involves activities with the NSGCP, researchers and internally. Once the research projects have been chosen, the NYSG director describes the process in a letter to the NSGCP, indicating the inclusiveness of the statewide solicitation and the unbiased, technically sound process of selection in a letter to the NSGCP program officer. Once that process has been approved, we notify researchers of the likely approval of funding to start in February. Announcements are sent to PIs as soon as we are notified by the NSGCP that the proposal has been approved by NOAA Grants. When notification from the NSGCP is delayed past February 1, we frequently give PIs permission to initiate projects before receiving the final notice. From then on, fiscal and scientific progress is monitored by the research leader, research program coordinators and

the fiscal officer at monthly Project Status meetings. Extension and communications activities can, and do, begin on the February planned start-date for the omnibus according to the plans in the omnibus proposal.

The extension component of the Implementation Plan is made up of the sum of the two-year plan of work and one-year action plans of the individual extension specialists. They focus on the Issues, Goals and Objectives in the Strategic Plan. The priority of the activities has been set based on the recommendations of the specialist's PANs filtered upward through the experience, expertise and familiarity with the Strategic Plan of the district coordinators and the associate director and extension program leader. Thus, the plans as they are submitted in the omnibus proposal are already set up for implementation.

The communications part of the Implementation Plan is a mix of pro-action and reaction. Work on *Coastlines* and some of the other activities are on an annual schedule. Other work is on a "first come, first served" basis and is dependent on needs expressed by the research, education or extension staff as prioritized by communications and the management team in reference to the Strategic Plan. Work on the NYSG presence on the Internet is continuous.

All of the above activities are reported to the NSGCP in the Annual Reports.

Although the foundation of New York Sea Grant's overall program is described in the proposal for core funding to the NSGCP, other research, extension and communications activities and projects are not specifically described. New York Sea Grant often leads and/or supports workshops to identify information gaps and develop research agendas or to report progress. New York Sea Grant also is responsive to small out-of-cycle (OOC) requests for research and outreach support. Finally, about half of the NYSG research and extension program is funded outside of the NYSG core funds. Sources for these funds are NSGCP Investments, non-NSGCP Initiatives and non-federal sources. All of these non-core research programs are subject to the same administrative guidelines as the biennial omnibus projects. Their timing in terms of project initiation, reporting of results and cycle of subsequent funding may differ, but the general process is the same. All of these components must be responsive to the Strategic Plan, although they may not reflect its priorities.

7. Describe your evaluation process and how you will measure success or lack thereof

The Implementation Plan includes milestones and expected outcomes for the activities. Both provide measures against which progress can be judged. However, documentation of outcomes is much more difficult, time consuming and expensive and the numbers based on outcomes are much lower than those based on the old strategy of counting outputs.

NYSG has been shifting philosophically toward evaluating progress on the basis of outcomes. Research and extension impact statements are being prepared based on follow-up with stakeholders to ensure focus on outcomes. Extension specialists are expected to produce one-page Impact Statements or Accomplishments on a yearly basis, the possibility of Accomplishments indicating that we have not been able to completely convert to an Outcome focus. Research program project coordinators also are focused on preparation of research Impact Statements – about 50 have been prepared. The impact statements have been well received by many categories of stakeholders, including state and Federal legislators. In fact, two of the One-pagers that NYSG used in soliciting a) federal legislators to sign “Dear Colleague” letters in support of the 2006 NSGCP appropriation and b) state legislators to award NYSG extra Member Item or Delegation Item funds for the 2005-2006 state budget focused on the economic value of the industries that NYSG is helping. The NYSG emphasis on integration of the various components of the program is aiding this transition.

One Action Item in every NYSG Strategic Plan is to identify techniques and processes to continuously evaluate and document NYSG programmatic accomplishments. NYSG has included efforts toward this goal in the current Implementation Plan and will continue to work to improve methods to evaluate program success. These efforts will be heavily influenced by the NSGCP “Indicators of Performance for Program Evaluation” report.

8. Degree of interaction and integration with other programs (both outside and inside the network)

Above, NYSG referred to the recognition by New York Sea Grant staff and management that integration is important within New York Sea Grant. However, integration is also important with other organizations, especially those within the Sea Grant network. NYSG is strongly integrated into two regions of Sea Grant programs, is working to increase those with a third and has developed much collaboration outside the network. As the only program that abuts on both the Great Lakes and fully marine coasts, New York Sea Grant is a member of three regions, the Northeast (NE), the Great Lakes (GL) and the Mid-Atlantic (MA). Liaisons are most extensive with the GL, involving sponsorship of two joint fellowships with the Great Lakes Commission, a Great Lakes Sea Grant-Great Lakes Environmental Research Laboratory extension position, joint planning projects with the GLC and GL academic institutions on GL Restoration, a Great Lakes Regional Research and Information Network, annual outreach meetings, multiple outreach committees, and a director’s regional group. The NE regional directors convene two or more times per year and the outreach components of the programs hold biennial meetings. The seven NE Directors also are involved in the Gulf of Maine regional project. Multi-program research projects have been conducted with both the NE and GL. Long Island lobster mortalities have recently been the focus of the New York and Connecticut Sea Grant programs and other state and federal agencies in the NE. Other activities have included participation on the ASMFC Lobster Steering Committee and formative interactions with the Integrated Ocean Observation System via the Mid-Atlantic Coastal Ocean Observation Regional Association. The latter interaction also

includes the Mid-Atlantic Region. Other interactions have involved members of the management team and technical interactions e.g., on coastal processes, wetlands, seafood safety and recreational fishing. The NYSG associate director was the Mid-Atlantic assembly leader so activities with this region should increase. Meetings and topical conferences have been jointly sponsored with programs in each of the three member regions as well as with other Sea Grant programs.

NYSG is also collaborating with a large number of organizations outside the Sea Grant network. NYSG is represented (member or chair) on over 60 state advisory committees, 20 regional committees and 30 national committees. A few of the most prominent examples are outlined below. The NYSG director is chair of the TAC for the Suffolk County Vector Control and Long-term Marsh Management program, chair of the ASMFC Lobster Control Board's Lobster Steering Committee and chair of the Oceans and Great Lakes Ecosystem Conservation Council Technical Advisory Committee. The associate director is a member of the boards of the Great Lakes Research Consortium, the Great Lakes Program and the Northeast Regional Aquaculture Center. The assistant director is chair of both the Technical Advisory Committee of the South Shore Estuary Reserve Council and Department of Environmental Conservation's Shellfish Advisory Board and a member of The Nature Conservancy's Blue Points Bottomlands Advisory Council and the Suffolk County Aquaculture Advisory Committee.

There are also many programmatic collaborations. The Brown Tide Research Initiative was a collaboration with the NOAA Coastal Ocean Program and federal, state and local interests. Researchers involved in the work have come from various institutions along the east coast from Maine to Maryland. The Hard Clam Initiative is a collaboration with NOAA's National Marine Fisheries Service (NMFS), the NY-NJ Port Authority, various LI towns, Suffolk County and industry. The LIS Lobster Research Initiative is a collaboration with NOAA's NMFS, USEPA, CT DEP, the NY DEC, CT Sea Grant and lobstermen's associations in New York and Connecticut. The Marine Animal Pathology Center is a collaboration (consortium) with Stony Brook University's Marine Science Research Center, Cornell University, the New York Departments of Agriculture and Markets (A&M), Health, and State, and representatives of the lobster industry. The NYSG project on the economic value of the fishing and seafood industries in NYS involved DEC, DOS, A&M, the NY DED, and representatives of the sport and commercial fishing and seafood industries. The NYSG project on the economical value of recreational boating involved representatives of the boating industry as well as NYS DEC and NYS DED. The avian botulism effort is a collaboration with PASG, OHSG, NYS Department of Health, the Canadian Department of fisheries and Oceans, and the Ontario Department of the Environment.

A more complete list of 2006 collaborating organizations is included in New York Sea Grant's Annual Report.

III. Review, Revision and Results

1. Describe the timing and mechanisms of review of your program's progress and results

Formal review of the overall program's progress and results is conducted on an annual schedule; informal reviews are intermittent, but continuous. The research team (assistant director, two research program coordinators, fiscal officer), using techniques developed over a long period of refinement, hold Project Status meetings on a monthly basis to consider grant activities and monitor progress of the research projects. Annual reports of progress are evaluated against proposed scientific milestones and budget schedules to determine continued funding. Extension management evaluates the progress of extension specialists against the annual plans of work. The Great Lakes and marine district coordinators handle the responsibility of assessing staff performance and reporting to the program leader. The NYSG management team monitors progress in these and the other program components. Individual education and communications projects or activities are evaluated approximately on an annual basis. However, the monthly narratives that the extension management and staff, the research team, the communications manager and the director distribute also provide the opportunity for shorter-term comparison with the timing of some of the activities as they are described in the Implementation Plan.

An Annual Report on progress is produced for the NYSG Board of Governors. Since 2003, this report has shown progress in direct comparison to the Goals and Objectives of the current NYSG Strategic Plan. This is valuable because it helps keep all of NYSG oriented toward the Strategic Plan and highlights both areas that need increased effort as well as those that have been achieved and/or can be de-emphasized. It also helps identify efforts that are not aimed at achieving a planned Objective or Goal. Thus, it focuses attention on un-planned activities and places the onus on the individual involved to justify the effort.

The PAC (stakeholders) plays a role in evaluation as well as planning of the NYSG program. The PAC meets in each year prior to submission of the omnibus proposal to the NSGCP to consider the programmatic value of the research proposals. This is a good time to get their participation in overall program evaluation and/or strategic planning, because NYSG staff will just have completed preparing the Annual Progress Report and so summaries will be up to date. Some assessment of progress has been included in each PAC meeting and PAC members contributed to the mid-cycle self-evaluation.

The mid-cycle self-evaluation of NYSG is conducted with input from the PAC, current, as well as senior researchers, NYSG staff, the Board of Governors and a broad spectrum of stakeholders. All are solicited for comment using the NSGCP criteria for program evaluation as well as direct requests for comment on program elements that are over-emphasized or that have been omitted. For the 2003 Self-Evaluation, more than 150 people were solicited for comments on NYSG activities and the focus of the program.

2. Mechanisms for revising the program during the implementation phase

Additions to the NYSG program during the implementation phase have been accounted for by some flexibility in the Strategic Plan, but large changes would require shifting effort; deleting a program element is more difficult because of staffing implications. The New Initiatives Goal in the Strategic Plan is specifically designed to respond to new issues. The Objectives in this Goal indicate issues on which NYSG management and staff are currently involved with other organizations in preliminary planning of some kind. These include the Integrated Ocean Observation System and its Great Lakes and Mid-Atlantic Regions, Great Lakes Restoration, climate applications, ports and harbors and aquaculture. All of these issues fall within the NYSG and NSGCP missions and are consistent with their Strategic Plans. Taking on new issues would require changes in effort within an Implementation Plan, but it is premature to try to estimate what NYSG's role could be in any of these efforts. Once the potential role is defined, decisions regarding whether to go forward would depend on comparison with existing issues and activities using criteria such as: How important is the issue to NYSG stakeholders?; Can NYSG make important contributions to the effort?; and Do NYSG and NYS have the talent to contribute to and benefit from NYSG involvement? Any new issue would clearly have to be substantially better than existing issues in the comparison to warrant a change.

Current initiatives provide good examples of how NYSG has handled additional efforts during the current strategic/implementation plan. The first is the Hard Clam Initiative. NMFS, NY/NJ Port Authority, NYS Department of State and NYSG monies are involved. The NYSG assistant director and one of the research program coordinators work together with an ad hoc advisory committee of technical experts, industry and representatives of local municipalities to program outreach as there was no NYSG specialist with this expertise. A second example is the LIS Lobster Disease Mortality Initiative. NYSG worked with many other state (CT and NY) and federal organizations, as well as industry representatives to obtain funds for, plan and conduct the research and outreach. In this case, NYS outreach was accomplished by shifting effort of the existing recreational fisheries specialist to this largely commercial fisheries issue. NYSG is currently involved with multiple federal and state organizations in western NY on the issue of Type E or Avian Botulism. NYSG and PASG are leading a coalition aimed at investigating the causes, influences of environmental parameters and mitigation of this epidemic. In this case, NYSG is providing the primary funds for research via the 2004-2005 Special Focus Area; one other group is sponsoring a related research project and NYS Department of Health is supporting a modest monitoring effort.

Mechanisms do exist for ending a research project that is in default either fiscally or scientifically, but this is an extreme measure. Research projects have passed scientific and programmatic muster and received support from stakeholders. Thus, a project would only be terminated prematurely if the PI were extremely behind schedule and recalcitrant or uncommunicative. During the last eight years NYSG has had one example where a

research project was truncated. Ending a research project under less than extreme conditions would negatively affect NYSG's researcher pool and is avoided if possible.

Should conditions cause the research management group to conclude that this should be done, such a recommendation would be brought to the management team for final decision.

Changes in the communications plan are relatively easy. The publication of Coastlines is not mutable, but we have already cut the annual issues from three to two to allow more program support to Extension Specialists, etc. However, work on Internet visibility can be put off and most of the rest of the communications program is reactive and thus flexible. Communications efforts can also be opportunistic if time allows.

If they are not huge with respect to time, extension efforts can accommodate shifts in priorities or additions of new efforts (see examples above). This could result from top-down or bottom-up efforts; either would be appropriate. If more than a minor shift in effort would be required, the associate director would present a bottom-up recommendation from the extension program for endorsement by the management team. The management team would discuss top-down recommendations. The associate director would bring the consensus recommendation for a change of effort to the extension specialist. The same process could be used to shift emphasis in the communications program.

3. How will you synthesize, package and disseminate results?

NYSG has a long history of packaging results to meet the needs of target audiences. NYSG has produced impact statements for both research and extension products. These impact statements have been focused on stakeholders. Because some of the projects are focused on subjects that industry/business recognize as important, they provide immediately useable information or tools. Results of such projects usually are presented in publications such as brochures, fact sheets or best management practice manuals. Other products, such as proceedings documents, are aimed more at researchers and agency managers. Their wording is more formal and their ideas aimed at summarizing existing information and focusing additional effort toward important scientific hypotheses. Additional publications are focused on making the efforts of NYSG more understandable to legislative sponsors of the program. They are comprised of lay person summaries of NYSG successes to foster raising of additional funds. NYSG also sponsors summaries of the larger initiatives such as those on brown tide and lobster disease. The intent of these publications is to pull together the results of the multiple projects and present management-oriented summaries, conclusions and implications so that the information is understandable to lay audiences. All of these types of summarization are included in the NYSG artillery. NYSG staff working in concert with communications staff accomplishes preparation of the individual impact statements, whether research or extension. Both have standard templates so that they easily can be combined into attractive and effective packages.

NYSG publications are broad ranging. *Coastlines* is the flagship and it is aimed at general audiences. The recently initiated Program Guide is a documentation of the NYSG Implementation Plan. It has been received with enthusiasm. Other publications are aimed at stakeholders. One-pagers are useful in marketing to government supporters; journal publications supported by NYSG are aimed at the scientific community; and all are audiences for NYSG.

The Internet is becoming a larger and larger part of the communication effort of NYSG. NYSG has improved its presence on the Internet several times and is currently embarked on a website re-design to see if a format can be chosen that will meet the needs of the whole program, including the Great Lakes extension specialists. Webpage hits are exploding as are downloads of information! NYSG has supported education of one of its communications staff members in internet development and has been a leader in the Sea Grant network in converting to the internet for information transfer, including availability of RFPs and fiscal forms for proposals. NYSG now has electronic submission of proposals, distribution to peer and programmatic reviewers, and submission of reviews and is working toward making the whole process electronic.

IV. Nationalization of the Implementation Plan

1. Identify those elements that have national and regional application

The NYSG program has a number of elements that have direct national application. The most prominent ones are Goals 2, Coastal hazards and processes; 5, Invasive species (IS); and 7, Seafood science, safety, technology and business vitality.

Immediate applications of the coastal hazards work are aimed at Long Island or Great Lakes shores. This includes impacts of the barrier island breaches Special Focus Area that was initiated in February 2004. Monitoring and experimental programs designed for local conditions and aimed at decisions about effective preventative or mitigation measures are based on site-specific information. However, although the actual values may differ from site to site, the general processes that cause impacts, and which must be considered in decisions about prevention or mitigation measures to be taken, are similar mechanistically, from site to site. For example, contributions of the NYSG specialist have influenced the US Army Corps of Engineers' monitoring program for the Atlantic Coast. Thus, the work is applicable to regional and national problems. As another example, considerations for selection of hard or soft techniques for erosion control on the South Shore of Long Island will apply to other Atlantic coastlines and, perhaps, have even broader usefulness. One of NYSG's coastal processes specialists uses these types of generalities to contribute to one of the Sea Grant Theme Teams. The work also has been highlighted in newspaper articles documenting the effects of sea level rise resulting from global climate warming.

NYSG has for almost a decade been one of the lead Sea Grant programs at the national level for IS. In the late 1980s one of the NYSG extension specialists recognized the need

for information transfer with respect to invasion of fresh water bodies by zebra mussels. This led to collaborative efforts aimed at publication of the newsletter *Dreissena*. Over the years, this newsletter, a corresponding data base and a literature collection have been expanded to include, first, other fresh water IS and, then, marine invasive species as well. Services related to IS have been internationally as well as nationally focused and recognized. The educational and literature services conducted by the ANS Clearinghouse have been taken over by the NOAA. These activities have been supplemented by research conducted by faculty using NYS and other state Sea Grant program funds and NSGCP Investments moneys. NYSG efforts have identified new ANS, helped to slow their spread and begun to identify some potential control methods. Several methods that focused on identification of larvae or control under various conditions of water flow and volume have been investigated. One current effort has tentatively identified a zebra-mussel specific pathogen. However, it is still unclear that it will be allowed to be used in natural environments. The NYSG specialist also advises the National NIS program via participation on the National Panel and serves on several regional and state advisory groups.

The NYSG extension seafood specialist is active on the national Seafood Education and Hazard Analysis Critical Control Point Alliance which organizes the educational component of the Sea Grant response to the recent national seafood safety guidelines; he has been instrumental in the teaching of HACCP courses throughout New York and the Northeast. He has conducted and published, with the help of NYSG communications, the only analysis of the costs of the HACCP regulations to the seafood industry; he is increasing the geographical scope of these analyses. He has helped develop an internet version of the HACCP courses so that they are available for individualized learning without requiring instructors. This exit strategy has let NYSG concentrate on other new activities. Finally, he served as project manager for an economic assessment of the commercial and sport fishing and seafood industries in NYS that documented the \$7.8 billion (in 1999 dollars) economic contribution of this industry to NYS. Other research and outreach projects being sponsored by NYSG are focused on developing rapid inexpensive analytical tests for *Listeria monocytogenes*, paralytic shellfish poisoning and histamine. These tests will make seafood safer across the Sea Grant network.

Other NYSG elements have regional if not national applications. 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. However, the information, processes and trophic dependencies likely apply more broadly to Lake Erie as well as the Upper Great Lakes. Some information in Goal 1 "Coastal communities and economies, specifically the Objective dealing with marinas and methods for them to handle wastes also apply at least regionally. Under Goal 8, Urban Coasts, the Long Island Sound Study activities to improve water quality in the Sound include both Connecticut and New York and contribute to the USEPA's overall efforts to restore and maintain estuaries around the country.

2. Relate your implementation plan to national needs and show how it reaches users

NYSG's Implementation Plan is aimed at several increasingly problematic issues. The incidence of Invasive Species (IS) invasions is increasing as international water quality improves and as boats/ships become capable of higher speeds. The ANS Clearing House responds directly to information needs for a wide variety of IS. This fact is recognized by NOAA which now provides the funding to the Clearinghouse. Internet availability of IS information provides researchers and citizens with the wherewithal to avoid duplication of effort and contributes to their abilities to deal with various IS issues. Hard copy brochures, fact sheets, etc. also provide information to stakeholders. In addition, NYSG expects that it will require the best minds combined with experience in the issue to develop optimal protocols for preventing, controlling and mitigating the effects of IS. NYSG will be sponsoring increased activities of its extension staff to planning and advisory activities at state, regional and national levels and to research that will help advance the field so that national responses to IS will be as cost-effective as possible.

NYSG has sponsored an analysis of the economics of boating that documented the \$1.8 billion contribution to the NYS economy. Boating is also a heavy contributor to the overall economy of the Great Lakes region as well as other coastal areas nationally. It is important to educate boaters to avoid or reduce the direct physical impacts of their activities and to reduce the contaminants that they release into the environment. NYSG has been trying various methods to do so. In addition, NYSG has been developing marina effluent treatment options to reduce contaminant release. These are available via a Best Management Practices Manual and a slide show with accompanying text. This package has been used in Florida and a demonstration site was set up and used in New Jersey. The BMP manual will be distributed to other Sea Grant programs. Finally, work will be conducted to reduce the need for marina dredging and/or to make dredging and the contaminant analyses that accompany it more palatable and less costly. All these will help boating to attract more participants and contribute more to the national economy.

The new seafood safety guidelines require compliance in order for processors and distributors to remain in business. NYSG helps provide the internet courses that foster availability of seafood to the public in a way that brings the values of seafood and its products to the public without exposing them to the potential hazards. NYSG researchers are also working directly with NYS Agriculture and Markets and national Food and Drug Administration staff to protect the public and help avoid overly conservative regulations. Courses are taught directly by NYSG staff or made available over the internet. Research project results are communicated to the research community via scientific journals and to the seafood community and the lay public via internet as well as hard copy publications.

Coastal property is a strong component of the local tax base in many coastal counties. Coastal hazard assessments and mitigations are important in promoting public safety and maintaining the tax base. Information is made available directly via the activities of the coastal specialist working with various levels of government. For example, information transferred to the US Army Corps of Engineers is incorporated into programs that they develop for other regions. Meeting proceedings, etc. also form a strong component of information transfer. Research on the impacts of barrier island breaches will be

communicated to the research as well as the management communities via federal agency activities and the internet.

3. Suggest national or regional efforts to implement results

The internet provides one of the cheapest and most effective ways to make results available to regional or national or international stakeholders. The most recent data on international NYSG webpage hits include 18 countries that over the period of a year had more than 100 hits. NYSG is conscientious about making our information available for electronic access. All of the common search engines peruse our website.

National efforts for most of the issues discussed above already exist. They are quite effective. National task forces such as the Theme Teams are probably the best way to transfer information, but specifics are related to each issue. NYSG has been involved in the development of about half of the Theme Team write-ups.