



New York Sea Grant Implementation Plan Table of Contents

	Page
I. Review of Program Strategic Plan in the Context of NOAA/NSGCP Strategic Plan	1
1. Mechanisms for the establishment of strategic planning	
2. How the program strategic plan relates to the NSGCP plan	
3. Context of the institutional and territorial characteristics	
4. Involvement of all levels of faculty, staff, and constituents	
II. Development and Implementation of the Implementation Plan	11
1. Process of selection of priorities (how, who, and when)	
2. Identify milestones and expected outcomes for the implementation of program goals and objectives (Implementation Plan 2006)	
3. Identify program elements and their context, as well as personnel needed	
4. Time frame for implementation	
5. Integration of program elements toward implementation	
6. How will you move toward implementation?	
7. Describe your evaluation process and how you will measure success or lack thereof	
8. Degree of interaction and integration with other programs (both outside and inside the network)	
III. Review, Revision and Results	57
1. Describe the timing and mechanisms of review of your program's progress and results	
2. Mechanisms for revising the program during the implementation phase	
3. How will you synthesize, package and disseminate results?	
IV. Nationalization of the Implementation Plan	61
1. Identify those elements that have national and regional application	
2. Relate your implementation plan to national needs and show how it reaches users	
3. Suggest national or regional efforts to implement results	

IMPLEMENTATION PLAN 2006

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 2006 through January 2007. The Plan will be submitted with the Omnibus proposal to the NSGO in November. The Plan includes Milestones and Expected Results to be achieved in 2006 for each of the Objectives in the 2006-2010 Strategic Plan. NYSG has received approval from the National Sea Grant College Program Office to include Extension and Communications work plans for 2006 as addenda (fifth years) to the 2002-2005 peer-reviewed four-year awards. Thus, this 2006 Implementation Plan fiscally will be added to the 2002-2005 four-year omnibus award. However, 2006 will represent the first year 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 2007-2008 and 2009-2010 which will constitute the next four-year award. Four-year proposals for the Extension and Communications components of the 2007-2010 award will be peer-reviewed prior to submission to the NSGCP in the fall of 2006. Thus, the objectives in the new Strategic Plan have a five year timeframe and the results of activities in this Implementation Plan will be combined with those of the next two 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 2006 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 by the 2000 PAT, even before the draft 2000 PAT Evaluation Report was received by NYSG in December 2000, stimulated the NYSG Management Team to begin think through the process of strategic planning. NYSG submitted a draft Implementation Plan, prepared according to NSGO guidelines, with the October omnibus proposal for 2001. The NYSG Management Team response to the PAT evaluation report, submitted to the National Sea Grant College Program (NSGCP) on February 5, 2001, also indicated the tenor of future responses to most of the PAT comments regarding strategic planning.

Internal NYSG strategic planning activities have continued since the 2000 PAT, although the level of these activities has fluctuated. During the NYSG state staff meeting in fall of 2000 and each year since, strategic planning issues have been included on the agenda;

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

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 presentation 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?

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 staff 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 (see attachment a), 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 have been incorporated and the new list (see attachment b) 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. We expect that it will take at least two iterations to ensure that all the Objectives will be accepted by at least one staff member. Ones that receive no buy-in by staff will be re-considered by the Management Team and either assigned, negotiated with staff or eliminated.**

In summary, the 2006-2010 Strategic Plan will have been 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 Plan (see below) 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." Given the opportunity likely afforded if the Aquaculture Act is passed, it also appears in the Goal "New Initiatives." NYSG has supported significant efforts in Biotechnology, but those

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 Costs				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.

For 2006, because of the agreement with the NSGCP to include the Extension work plan for 2006 as an addendum (fifth year) to the 2002-2005 peer-reviewed four-year awards, this Implementation Plan is only for one year, 2006. However, the year is the first of five years included in the new Strategic Plan, so the work has been organized to fit the new Strategic Goals and Objectives. Still, 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 annual (2006) 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 2006 solicitation, NYSG decided to give equal priority to eight specific technical goals (Goal 9. New Initiatives 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, for 2006, because of the agreement with the NSGCP to include the communications work plan for 2006 as an addendum (fifth year) to the 2002-2005 peer-reviewed four-year awards, this Implementation Plan is only for one year, 2006. However, the year is the first of five years included in the new Strategic Plan, so the work 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 – Marine and Great Lakes scientific literacy. 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)

Technical Goals

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 (AC)

A noticeable or measurable increase in sportfishing participation and diversity via creation of outreach programs for youths and adults. **Performance Measure #1³**

Milestones

Finalize the list of priority activities that will assist the sportfishing industry to connect with new markets, based upon consultation and feedback from the major groups that constitute the recreational fishing industry.

Work with recreational fishing industry representatives to develop a formal presentation to convey the industry's needs (resources and strategies) to increase sportfishing promotion in the marine district. This presentation will be a useful communications tool for the industry representatives to convey information to legislators and other sources for obtaining funding.

³ Performance Measures indicated are meant to conform to the desire of the National Sea Grant Office to indicate the measures developed within the Ecological Research Program. Performance Measure titles are: Measure 1. Return on investment from the discovery and application of new sustainable coastal, ocean, and Great Lakes products.

Measure 2. Cumulative number of coastal, marine, and Great Lakes issue-based forecast capabilities developed and used for management.

Measure 3. Percentage/number of tools, technologies, and information services that are used by NOAA partners/customers to improve ecosystem-based management.

Several Expected Outcomes are indicated as Performance Measure #? We believe that those do not match the descriptions for Performance Measures #1, 2 or 3.

Through consultation with stakeholders, develop and implement a prioritized list of activities to address the decline in sportfishing participation or to serve as a basis for funding solicitations.

Create communications tools to help convey the industries needs to increase sportfishing participation and diversity in the marine district.

Working with angler groups, coordinate one NYSG-hosted event to educate at least one under-represented group (e.g., senior citizens) about fishing opportunities in the marine district.

Help to create new programs, opportunities and initiatives for the sportfishing industry to collaborate with the agencies and the private sector (including chambers of commerce, tourism agencies, etc.) for tourism and marketing promotion.

Expected Outcomes (DW)

To have marine facility operators become aware of marine business management/operational applications of emerging technologies and evaluate the potential for adopting these practices/technologies. **Performance Measure #1**

To have marine industry leaders, local government officials, planners and community leaders become more informed regarding the nature, status and trends of the marine industry and the issues and problems facing this industry. **Performance Measure #2**

Milestones

Working with the Empire State Marine Trade Association (ESMTA), Boating Industry Association of Upstate NY (BIA), and The Western New York MTA (WNYMTA), coordinate at least one educational program regarding enhanced business operation/management (i.e. Pesticide Re-Certification).

Investigate the need for, and the opportunity to develop, a marine trades training initiative in partnership with BIA.

In partnership with BIA, ESMTA, the US Power Squadron, and the US Coast Guard Auxiliary, convene a “Boater Summit II”.

In partnership with the upstate marine trade organizations, power squadrons and coast guard auxiliaries, develop a BOAT-NY E-news program.

In partnership with Seaway Trail, continue to update and distribute the “Cross Border Travel Guide”.

Serve on the International Joint Commission, Lake Ontario-St. Lawrence River Study Board, Recreational Boating/Tourism Technical Work Group (TWG) (final year of study). Assist the TWG in the technology transfer of the group’s study results. Convene a

NYS working group focused on developing a plan to “extend” the outcome of the study to NY’s effected user groups.

Expected Outcome (MT)

Tourists will have more access to information about the Seaway Trail and will incorporate travel on it in their recreation plans. **Performance Measure #1**

Milestone

Develop a byway sustainability CD/web site for Seaway Trail, Inc.

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

Expected Outcomes (DW)

To have marina operators, government officials, and community leaders develop an implementation plan for best management practices and techniques associated with marina operations/management and boating activity. **Performance Measure #3**

To have marine recreation facility developers/managers investigate environmentally proactive enhancements to design approaches to accommodate changes in user patterns and regulatory requirements.

Milestones

In partnership with the NYSDEC, implement New York States Clean Vessel Act Information and Education program. Specific activities 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. (Funded by NYSDEC).

Serve as Sea Grants representative to the Marine Environmental Education Foundation (MEEF).

Co-Chair MEEF's Marina Education and Research Committee (MERC).

In partnership with MEEF, investigate the need and funding for a National Clean Marina Workshop #2 to be held in conjunction with the National Marina Conference.

Expected Outcomes (JT)

Marina operators will use information developed and disseminated by NYSG to evaluate and implement pollution reduction measures and practices in their facilities.

Performance Measure #3

Milestones

With funding from EPA, NYSG working with state and regional trade associations, environmental organizations and state and local officials will develop an interactive

website that will serve as a clearing house for information on marina pollution control practices, products, technologies and regulations.

As part of an ongoing effort, NYSG will hold two pesticide recertification courses for boat bottom painting in association with state and local marine trades associations.

Expected Outcomes (NH)

Marina owners will understand the dredge permitting process and be more successful in making acceptable proposals. **Performance Measure #1**

Milestones

Distribute electronic and hard copies of the *Hudson River Marina Dredging Guide*, a stepwise guide to permit processes for maintenance dredging at Hudson River marinas. Over 80 regional marinas and boat clubs will receive a copy of the guide, produced in partnership with NYSDEC.

Work with Communications to create a Hudson Valley issues Web site to post the dredging guide and other related materials (BAB).

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

Expected Outcome (DW)

Marina owners will better be able to evaluate the benefits and costs and options for dredging recreational harbors. **Performance Measure #2**

Milestones

As part of the Sea Grant Marina Ecosystem Initiative, assist in the implementation of a national outreach effort focused on recreational harbor dredging. Facilitate a regional needs assessment program in the Great Lakes.

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 Outcomes (DW)

To have members of the diving community (including historians and archaeologists), and those who have management responsibility for our underwater resources utilize sound public policy for managing the use and protection of this resource. **Performance Measure #3**

To have member organizations of The Ontario Dune Coalition and lakefront business owners utilize timely resource management information in determining the opportunity for enhanced eco-tourism market development **Performance Measure #1**

Milestones

In partnership with Seaway Trail Inc., complete a system-wide "Diving the Seaway Trail" diving guide, and a series of 4 site-specific guides.

Co-sponsor at least one regional conference on underwater cultural resource management and use issues (i.e. Great Lakes Underwater 10).

Working with SG's GL Fisheries Specialist, develop a series of business management workshops for stakeholders, geared at uncertainty planning.

Expected Outcome (NH)

Boating tourists on the Hudson River will enjoy the experience more and avoid activities that would inhibit future use of the resource. **Performance Measure #3**

Milestones

Design and install marina interpretive signs at six Hudson River marinas. Sign content will reflect the unique ecological, historic and cultural aspects of the location, providing education and information to visitors accessing the Hudson River through these marinas.

Work with regional Hudson River National Estuarine Research Reserve (NERR) to develop an educational program for kayak tour leaders, produce one workshop on Hudson River Stewardship for these coastal tour business.

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

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

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

Expected Outcome (LS)

Improve modeling efforts and the decision-making process and interaction between the two and provide criteria to assess whether or not modeling/decision-making interaction is improving the quality of policy deliberations and Great Lakes decisions. **Performance Measure #2**

Milestone

(Manno R/CHD-6)

Provide a synthesis of practices associated with the use of models in support of New York Great Lakes management decisions.

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

Expected Outcome (JT)

State and local officials will better understand the regional and sub-regional economic impact of recreational boating. **Performance Measure #2**

Milestone

Using tools and fine resolution data from the statewide economic study on assessment of boating impact by vessel size will be conducted for a selected waterway and presented to industry leaders and state and locals officials.

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.

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 (PD)

National Weather Service, emergency management, recreational and commercial boaters will be able to better forecast breach mitigation and erosion hazards, have a more accurate description of the nearshore wave fields, enable lifeguard associations to anticipate days with severe rip current activity, and improve accuracy of storm surge predictions for New York City and Long Island. **Performance Measure #2**

Milestone

(Buonaiuto R/CCP-12)

Develop a model of nearshore wave characteristics for the New York metropolitan region including Long Island Sound and Great South Bay.

Expected Outcome (LS)

A model system (Stony Brook Storm Surge Version II model) that can help evaluate the impacts on water quality from the use of storm surge barriers located at the Narrows, Perth Amboy and the East River. **Performance Measure #2**

Milestone

(Bowman R/CTP-41)

Investigate the consequences to water quality of the New York Harbor area of deploying storm surge barriers to protect the Metropolitan New York region from catastrophic flooding during extreme storm events.

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

Expected Outcome (CO)

Educate 1,500 coastal resource stakeholders on Lakes Ontario and Erie on lake level fluctuations and causes of coastal erosion and flooding, utilizing the Internet and the World Wide Web, and have those stakeholders use that knowledge to make better shoreline development, erosion control, and flooding control decisions. **Performance Measure #3**

Milestone

Maintain and enhance the New York Sea Grant Extension Program Great Lakes Coastal Processes and Erosion web page, including detailed graphics of lake level fluctuations, relevant meeting notices, and lake level/coastal hazard web site hot links.

Expected Outcome (JT)

Stakeholders will have easy access to high resolution, site specific data and information on coastal processes and hazards along NY's Atlantic coast to make more informed decisions about the most appropriate strategies for coastal protection and resource management. **Performance Measure #3**

Milestones

NYSG will launch and refine a GIS-based website serving photos, data and information derived from a regional monitoring program and other sources.

With funding from NYNOS, NYSG will create and distribute awareness and educational materials to promote use of the website.

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. 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 (CO)

Enhance and utilize New York Sea Grant's capability to respond immediately to rapidly-developing coastal high water, flooding, and/or erosion events to assist our coastal landowner, public and private decision-maker, marine contractor, and marine facility owner audiences to deal with such hazardous situations. **Performance Measure #3**

Milestone

Continue providing advice to local officials and coastal erosion stakeholders on the coastal erosion control educational resources available from New York Sea Grant.

Expected Outcome (CO)

Continue to utilize traditional extension education techniques to provide education to diverse audiences on lake level and coastal hazard issues. *Performance Measure #3*

Milestones

Offer educational opportunities for coastal audiences on lake level fluctuation, shoreline erosion, and erosion control as the situation requires, based upon short- and long-term lake levels and storm events.

Maintain the NYSGE Great Lakes Coastal Processes web site.

Distribute updated erosion control educational materials packet in response to routine erosion cause and/or control information requests.

Expected Outcome (JT)

Governmental officials, community leaders and coastal property owners will become more aware of and consider the use of new, innovative, environmentally enhanced protection strategies to mitigate local shore erosion problems. *Performance Measure #1*

Milestone

Work with VIMs researchers and local community leaders in developing plans, specifications and cost estimates for an innovative erosion control demonstration project incorporating structures and vegetation. This information will be used by community groups and local government to obtain funding for project construction.

Objective d. 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 (CO/JT)

Information developed, synthesized and disseminated by NYSG will help local, state, and federal partners better understand and evaluate the impacts of coastal processes and hazards and will be used in the selection, design and development of large-scale and regional coastal hazard prevention or mitigation programs and projects. *Performance Measure #2*

Milestones (JT)

In conjunction with a NPS-funded project, develop and distribute a 16 to 20 page brochure on the coastal processes affecting the south shore of Long Island for coastal communities and decision makers.

Work with researchers and other NYSG staff to disseminate results of the Impacts of Barrier Island Breaches SFA to coastal stakeholders through informational meetings and publications.

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

Milestone (CO)

Implement outreach education activities related to the International Joint Commission's anticipated decision on the results of the Lake Ontario St. Lawrence River water levels study (anticipated decision due by end of 2005).

Expected Outcome (JT)

Researchers will better understand and incorporate the informational needs of state and local decision-makers into tools being developed to provide seasonal forecasts of northeast storms. **Performance Measure #2**

Milestone

In conjunction with the multi-year NOAA seasonal, northeast storm prediction project, NYSG will coordinate a workshop bringing researchers and local officials together to identify and refine the type of information required by local entities to make them better prepared to respond to and mitigate the impacts of storms.

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

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

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

Expected Outcome (RK)

Using funding from Sea Grant's Allan Overton Endowment, involve one school group per year in a habitat restoration project. **Performance Measure #3**

Milestone

Work with the Westhampton Beach Middle School to involve one group of students in a habitat restoration project using funds from the Allan Overton Endowment.

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

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

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

Expected Outcome (CO)

Educate stakeholders about the benefits of improving the quality of threatened, degraded or compromised coastal habitats. **Performance Measure #3**

Milestone

Assist Lake Erie and Lake Ontario stakeholders in utilizing appropriate management strategies to minimize the negative impacts of human use on coastal habitats and resources and restore the quality of degraded coastal habitats by attending appropriate workshops and conferences to learn current technologies for habitat protection and restoration and meeting with federal, state and local government and non-government organizations to assist them in identifying threatened, degraded or compromised coastal habitats.

Expected Outcome (RK)

In partnership with the Peconic Estuary Program, increase the number of fish passageways so that fish can get up into tributaries, and return to the open waters.

Performance Measure #3

Milestones

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

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

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

Objective e. Develop methods to predict whether or what habitat or ecosystem effects may result from new coastal structures (e.g., wind farms, gas terminals, replacement of aging infrastructure), different management strategies (e.g., for mosquito control), and other changes (e.g., in water level, modernized transportation).

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

Expected Outcome (RK)

In partnership with the Beaver Dam Creek Restoration Steering Committee, implement a wetlands and watershed restoration project. *Performance Measure #3*

Milestone

Produce public education materials related to the Beaver Dam Creek Restoration Project, involve the public in hands on restoration activities, and involve scientists in the project to ensure that the best available restoration science is incorporated into the project.

Expected Outcome (NH)

Community groups, professionals and agencies will understand the benefits of improving the quality of coastal habitats. *Performance Measure #3*

Milestone

In partnership with submerged aquatic vegetation (SAV) team members we will conduct 2 workshops to introduce the SAV project to K-12 teachers in coordination with NYSDEC Project WET, in the Hudson Valley during 2005

Expected Outcome (MT)

Foster willing compliance with beach use guidelines by all beach visitors to assure that recreational use is carried out in a way that limits damage to the fragile Eastern Lake Ontario dune ecosystem. *Performance Measure #3*

Milestone

Work with the NYS Dept. of Environmental Conservation, NYS Office of Parks, Recreation and Historical Preservation, and The Nature Conservancy to develop specific work plans to be implemented by Steward Interns on public properties and to develop education messages to be communicated to beach users on the various sites.

Expected Outcome (MT)

Foster willing compliance with Salmon River use guidelines to assure that recreational use is carried out in a way that limits damage to the fisheries and the Salmon River corridor. *Performance Measure #3*

Milestone

Work with the NYS DEC to coordinate the Salmon River stewards program.

Expected Outcome (MT)

Increase the stewardship efforts of small private shore landowners on their private property. *Performance Measure #3*

Milestones

Expand and update the NY Sea Grant Extension web site.

Expand and update the Eastern Lake Ontario Dunes and Wetlands web pages.

Update the publication “Sand, Wind and Water.”

Expected Outcome (MT)

Increase and enhance the stewardship efforts of private and public landowners in the Salmon River watershed. **Performance Measure #3**

Milestone

As part of the outreach portion of the Salmon River Watershed Natural Resources Assessment Project, New York Sea Grant has agreed to design, produce, manage and host on a Cornell web server a project web site.

Expected Outcome (MT)

Establish a Great Lakes Sand Dune Ecosystem Coalition that will bring together all persons, both in the U.S. and Canada, currently involved in sand dune related research, education efforts, management, monitoring and other activities in an effort to share information and increase the awareness of these unique ecosystems. **Performance Measure #3**

Milestone

Plan and convene a 2-day conference for all persons involved in Great Lakes sand dune ecosystem ecology, management, research and education efforts.

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 (PD)

Resource managers and other scientists will have a powerful analytical monitoring tool allowing the quantitative detection of QPX in clams and the environment as well as aid the further investigation of QPX in the environment, its biology and ecology leading to better prediction of disease outbreaks. **Performance Measure #2**

Milestone

(Allam R/XG-15)

Develop a quantitative real-time Polymerase Chain Reaction technique for research and diagnosis of the QPX organism in clams and in environmental samples.

Expected Outcome (PD)

Resource managers and hard clam aquaculturists will be better able to assess shellfish recruitment in Long Island bays and have an estimate of ctenophore prey selectivity, ingestion rates of bivalve larvae and bivalve mortality rates. **Performance Measure #2**

Milestone

(Lonsdale R/FBM-32)

Determine if ctenophore *Mnemiopsis leidyi* predation is a significant source of mortality of planktonic larvae of the bivalve *Mercenaria mercenaria* in Long Island embayments.

Expected Outcomes (AC)

Funding to support research into the causes of the 1999 LIS mortality has concluded; however, these populations continue to be affected by disease and stress. With the expansion of the lobster disease research oversight steering committee's mandate to include additional states, it is necessary to continue outreach in support of the efforts being undertaken by the resource management agencies and industry in the region.

Performance Measure #3

New York Sea Grant will continue its role as facilitator to collaborators that are working together to construct a research agenda that addresses the incidence of lobster disease in the region. Such efforts would directly contribute to a formal proposal document to request new lobster disease research funding.

Milestones

Complete outreach publications and website presentations from previous lobster disease research in Long Island Sound, to summarize the research conclusions and accomplishments. This information will help educate legislators and other stakeholders about the need for additional research.

Work with Sea Grant specialists from New England to New Jersey to coordinate a regional workshop to identify additional lobster disease research issues and topics. The information that is gathered at this meeting may be used as a reference for management bodies, such as the Atlantic States Marine Fisheries Commission, or the lobster disease research oversight committee to develop a new lobster disease research agenda for the region.

Develop a comprehensive database of stakeholders (including industry, agencies, researchers, etc.) with an interest in the American lobster throughout New England, which will serve as a resource to communicate with the industry and other stakeholders in future. This exercise will be conducted in collaboration with Sea Grant specialists and resource managers throughout the region.

Continue to provide secretarial support for the lobster disease research oversight committee, by providing assistance to coordinate and participate in the meetings.

Continue to maintain the Web site: www.nyseagrant.org/lilobsters to feature all publications, press releases, and news clips to support the efforts of the Lobster Steering Committee. (BAB)

Expected Outcomes (AC)

Diagnosis of QPX in New York State in 2004 resulted in closure of a major source for hard clam (*Mercenaria mercenaria*) transplant that is operated by the State in Raritan Bay. New research and continued monitoring of this disease will require outreach support to bring industry and researchers together to exchange information. Under the existing organization, the clam industry makes significant capital investment before having knowledge of the management decision as it relates to QPX occurrence, and it is difficult for these operators to develop their business plans under this structure.

Performance Measure #2

By bridging the information gap that exists between the clam industry and resource managers, the industry will improve its ability to use the research and monitoring results to make informal decisions as they relate to fishing operations. **Performance**

Measure #3

Milestones

Working with researchers engaged in QPX studies, create new information brochures to describe the incidence of this disease to educate clam harvesters and other stakeholders.

Determine the interest and willingness of resource managers, researchers, and industry to discuss more amicable options to streamline and reduce the gap in information feedback to the clam industry.

Expected Outcomes (AC)

There is need to develop more focused outreach to educate marine constituencies about fish disease and pathogens, to compliment the research being supported. If funded, this type of effort will create new options and opportunities to highlight the research that is being conducted by the fish pathologists at Stony Brook University. New York Sea Grant has also funded research over multiple years, to address specific issues pertaining to biology and stock dynamics.

By undertaking a comprehensive review of available research results on fish biology and health and disseminating the information in a format that is accessible to non-technicians, a means will be provided for stakeholders to enhance their decision making capabilities.

Performance Measure #3

Milestone

Use ongoing dialogs with fish pathologists and researchers investigating fish health and work with them to develop new tools and resources to educate non-technical stakeholders. These tools may include web pages summarizing results, online access to data bases, and brochures. Create at least three new sources for obtaining information.

Expected Outcome (DM)

Fishers will be brought together to share information and technologies on common issues (population dynamics, recruitment, management and assessment) facing fisheries managers in the ocean and freshwater. **Performance Measure #3**

Milestone

Work with the NYSG marine fisheries specialist to organize a needs assessment meeting with fisheries extension counterparts from the Northeast and Mid-Atlantic states to identify important issues of mutual interest, identify and develop collaborative extension and research efforts and plan collaborative workshops for marine and freshwater fisheries researchers for information exchange and investigation of partnerships.

Expected Outcome (DM)

The Lake Ontario Prey Fish Assessment program will continue to reduce the uncertainty of stocking estimates. **Performance Measure #2**

Milestone

NYSG will organize at least one workshop for assessment biologists to inform them of the latest innovations in fish population assessment, population modeling and data analysis using invited scientific experts as faculty.

Expected Outcome (LS)

Provide information for managers, agencies, and the public that will help explain the physiological basis for the LIS lobster mortalities by determining the mechanism of impact on the immune system. Also provide additional evidence and insight about the role of natural environmental stress and climate change in the health of Long Island Sound lobsters and the long-term prospects for the LIS lobster fishery. **Performance Measure #3**

Milestone

(Factor R/FBM-31)

Determine the physiological impact on the immune system of American lobster after sublethal exposure to the environmental stresses of high temperature and reduced oxygen.

Expected Outcome (LS)

A tool that integrates all the steps in deriving calculations of forage abundance and distribution in a unified way to obtain acoustic survey estimates that reflect the real precision in abundance estimates. **Performance Measure #2**

Milestone

(Sullivan R/FTD-9)

Provide a synthesis of acoustic survey methods for all three of New York's large lakes (Erie, Ontario and Champlain) into a form that is portable and general to almost any aquatic system.

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 Outcome (DM)

Fishers will better be able to identify the fish that they catch and understand the value of fishing ethics to help avoid inadvertent mortality and to be more successful in fishing to stimulate additional fishing trips. **Performance Measure #3**

Milestones

Organize two annual angling clinics (spring and fall) for the Salmon River angling community with NYSDEC Salmon River coordinator, Fran Verdoliva. Collaboration will be sought with regional Gander Mountain stores.

Produce educational posters and brochures of trout and salmon ID, using newly developed full-color artwork, with funding from NYSDEC and Salmon River Committee, with assistance from Fran Verdoliva.

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 Outcome (DM)

Keep up to date with the state of the science of fisheries management and extend that information to the fisheries community and help them organize into groups so that they can use their new information to proactively voice their preference for management alternatives in reasonable science-based arguments. **Performance Measure #3**

Milestones

Attend annual meetings of International Association of Great Lakes Research (IAGLR), American Fisheries Society (AFS), Great Lakes Fishery Commission (GLFC) and other professional societies, time permitting.

Attend monthly meetings of county fisheries advisory boards.

Work with NYS Senator Wright, NYS Assemblyman Barkley and Oswego County to organize a fisheries advisory board.

Facilitate the development of a stakeholder-driven lake wide advisory panel for tributary interests and assist the group in decision-making on their fisheries issues positions.

Expected Outcome (LS)

Fisheries scientists and managers will have available updated information on predator/prey dynamics in Lake Ontario along with updated information about wild recruitment and updated modeling tools for use in assessing the outcomes of changing climate and/or stocking levels and different management actions. **Performance Measure #2**

Milestone

(Ringler R/BBF-18)

Synthesize data from several sources responsible for Lake Ontario research and management and update an existing lake-wide predator/prey model. Plus generate new data and synthesize existing information on wild production of salmonines from Lake Ontario tributaries.

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 (DM)

Fisheries stakeholders and resource managers near Lakes Erie and Ontario will better understand the uncertainties of fisheries management, have methods to incorporate uncertainty in their thinking, and work together to incorporate these concepts into decisions about specific fisheries. **Performance Measure #2**

Milestones

Identify and solicit assistance from social economists and ecological economists to form an external advisory panel to NYSG staff for organizing extension programs in these areas for sport fishing stakeholders. Pursue the organization of business management workshops for stakeholders, geared at uncertainty planning.

Identify and solicit assistance from human dimension researchers in the area of resource management decision-making and risk communication to form an advisory panel; Organize separate workshops: for resource managers on the development of a risk communication plan for making fishery management decisions; and for stakeholders on accounting for risk and uncertainty in making business decisions.

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

Expected Outcome (LS)

A better understanding of alewife production in a changing Lake Ontario ecosystem providing managers with information about prey abundance to complement estimates of predatory demand. **Performance Measure #2**

Milestone

(Rudstam R/FBF-19)

Investigate the effect of light on the interaction between alewife and *Mysis relicta* through physiological measurements, laboratory experiments, and field observations.

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

Goal 5: New 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 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 (PD)

Water and resource managers will have a baseline explanation for bloom occurrence within each major lake system in order to develop a management plan designed to minimize the impact and occurrences of cyanobacteria blooms in the Great Lakes.

Performance Measure #3

Milestone

(Gobler R/CTP-37)

Utilize molecular, ecological, and chemical techniques to understand how both environmental stressors and food web interactions may act singularly, or in unison, to promote growth and toxin production by cyanobacteria in NY's Great Lakes.

Expected Outcome (HD)

Researchers and agency representatives will work together to understand type E Botulism and its impacts, important environmental issues on Lakes Erie and Ontario and the St. Lawrence River. **Performance Measure #3**

Milestones

Conduct an annual conference, write proceedings and reports, provide presentations and programs and create educational materials for agencies, environmental groups and stakeholders around Lake Erie and Lake Ontario to educate them about the environmental and human health issues related to botulism outbreaks in the Lower Great Lakes.

Continue to maintain and track www.seagrant.sunysb.edu/botulism on the NYSG Web site. (BAB)

Expected Outcome (LS)

Information about the genetics of *Fallopia* populations and how hybridization and selection impact the degree of invasiveness into novel habitats will help managers to predict and prevent the spread of these plants into our important coastal habitats.

Performance Measure #2

Milestone

(Pigliucci R/XG-16)

Determine the genetic make-up and degree of hybridization of the highly invasive *Fallopia* species of plants on Long Island.

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

Expected Outcome (CO)

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

Measure #1

Milestones

Educate 250 Great Lakes drinking water stakeholders on impacts of aquatic nuisance and invasive species on consumptive uses of Great Lakes waters so that they can make better decisions regarding control and management of such species and treatment of drinking water.

Develop outreach programming and materials to educate 500 drinking water treaters, public health professionals, and public officials, on the causes and control of drinking tastes and odors.

As part of Great Lakes MERHAB project, survey operators of drinking water treatment facilities which utilize the Great Lakes or their contiguous waterways as their raw water source to determine the extent of taste and odor problems in the region.

Identify university, agency, and private sector researchers with expertise in drinking water taste and odor formation and control, particularly knowledge of the drinking water taste and odor precursors 2-MIB, geosmin and waterborne cyanobacterial toxins and develop a database of experts.

As part of Great Lakes MERHAB project, plan and implement a research forum to pertaining to cyanobacteria and cyanotoxin issues.

Compile a bibliography of papers pertaining to 2-MIB and geosmin, zebra mussel influence on the formation of drinking water tastes and odors, zebra mussel impact on

plankton in the Great Lakes, and cyanobacterial toxins in public drinking water.

As part of Great Lakes MERHAB project, design and implement a web site pertaining to cyanobacteria and cyanotoxin issues in the Great Lakes and the Finger Lakes.

As part of Great Lakes MERHAB project, develop and distribute educational materials regarding taste and odor and cyanobacterial toxin impacts on drinking water uses of Great Lakes waters.

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

Expected Outcomes (CO/DO)

Educate 4,000 researchers, resource managers, government officials, water resources decision makers, educators and students, environmental special interest groups, extension agents, media representatives, and others on how to prevent or slow the introduction and spread of invasive aquatic species and how to mitigate their impacts by enhancing access to the body of knowledge pertaining to such issues. **Performance Measure #3**

Milestones

Plan and implement extension education activities, publications, PowerPoint presentations, web sites, and other outreach materials on the history and impact, prevention, control and management of aquatic nuisance and invasive species introductions in NYS for lay audiences such as home owners, recreational boaters and anglers, local officials, teachers and students, and the media.

Continue to expand the National Aquatic Nuisance Species Clearinghouse library and World Wide Web searchable bibliography and increase the Clearinghouse's publication holdings; add more species to the Clearinghouse library as identified by the Clearinghouse's Scientific Advisory Board.

Utilize the World Wide Web as a means of implementing New York Sea Grant aquatic nuisance and invasive species and outreach education and technology transfer programming.

Serve on the national Invasive Species Advisory Committee.

Serve on the NYS Invasive Species Task Force.

Plan and implement, working in cooperation with Cornell Cooperative Extension and the NYS Invasive Species Task Force, invasive species outreach education activities and materials for use statewide.

Expected Outcome (DO, DM)

Five thousand stakeholders will understand about ANS/NIS invasions and impacts so that they will desire to and be able to slow the spread of ANS / NIS, prepare for the arrival of selected ANS / NIS in their areas, and minimize the impacts of the selected ANS / NIS.

Performance Measure #3

Milestones

Oversee publication of 4 issues of the National Aquatic Nuisance Species Clearinghouse Digest, *Aquatic Invaders* per year while expanding the technical content and types of features presented. Develop an author information page on the Clearinghouse website to streamline and enhance the recruitment of contributing authors for *Aquatic Invaders*.

Write 8-10 annotations for each issue, solicit and edit papers by researchers and policy makers for the issues, write features or articles as needed and review new library holdings to highlight in each issue. Assist in efforts to increase distribution of this publication.

Organize, a workshop on predicting species invasions and understanding mechanics of species invasions for the Great Lakes research community.

Pursue organization of a workshop on risk assessment for Asian Carp, Northern Snakehead invasion to the St. Lawrence River.

Support the activities of the Clearinghouse by responding to special information requests, supervising and reviewing work of students hired to prepare annotations and dealing with library-related issues such as securing papers and copyright.

Maintain the Clearinghouse searchable electronic bibliographic catalog by identifying papers for inclusion, maintaining literature searches, seeking out “grey literature”, maintaining and expanding the website topical outline and assigning keywords to papers.

Support expansion and improvement of the Clearinghouse World Wide Web Site.

Expected Outcome (CO)

Provide technical support to state and regional zebra mussel/aquatic nuisance/invasive species task forces and working groups Nationwide. **Performance Measure #3**

Milestones

Serve on the Northeast Panel on Aquatic Nuisance Species.

Serve on the Mid-Atlantic Panel on Aquatic Nuisance Species.

Expected Outcome (HD)

K-12 teachers will better understand the AIS and ANS problems and students will have a ready, targeted sources for information about AIS and ANS so they can also understand and teach their parents about the problems with AIS and how to combat them.

Performance Measure #3

Milestones

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.

Provide 5 teachers' workshops throughout the coastal counties of New York for teachers and non-formal educators related to aquatic exotics species.

Work on the National Sea Grant Office-funded project with Illinois/Indiana Sea Grant to improve the SGNIS Kid's Page on the Internet. This will incorporate workshops and the expansion of the webpage offerings to improve its educational potential and provide information for teachers.

Expected Outcome (HD)

The public will better understand the AIS and ANS problem via education of resource user groups. **Performance Measure #3**

Milestone

To serve as a speaker and resource for groups such as New York State Walleye Association, Southtowns Walleye or other groups, to present information and research findings on exotic species.

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

Expected Outcome (PD)

National and international water resource managers will be able to assess real-time data sets to best protect against drinking water toxin contamination. The proposed optical monitoring systems can readily be incorporated into other autonomous monitoring systems located across New York State and around the country. **Performance Measure #3**

Milestone

(Boyer R/CTP-38)

Develop an automated and instantaneous monitoring system for cyanobacterial blooms and cyanobacterial toxins in Lake Ontario coupled with a hydrodynamic and algal growth model to allow managers to make informed decisions on water usage, recreational contact and human exposure

Expected Outcome (PD)

Provide resource managers with a new option to help improve general water quality, the quality of food for other shellfish and possibly provide a new brown tide mitigation strategy. **Performance Measure #3**

Milestone

(Cerrato R/CE-26)

Examine the potential of the ribbed mussel *Geukensia demissa* in regulating blooms of toxic algae and in regulating small form phytoplankton that are inefficiently filtered by many other suspension feeding bivalves.

Expected Outcome (HD)

New York and other Great Lakes Sea Grant Network programs will continue to improve protocols on the AIS HACCP project (funded by Great Lakes Protection Fund) and develop new and innovative educational projects on aquatic exotics species.

Performance Measure #3

Milestone

Conduct a workshop and assist with a second workshop in another Great Lake state on AIS HACCP – Hazard Analysis and Critical Control Point to have participants develop HACCP plans to reduce the spread of invasive species.

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

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

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 (HD)

Science education, and therefore scientific literacy, will be improved by providing K-12 educators with hands-on curriculum and activities concerning the coastal zone and students with practical opportunities to utilize science. **Performance Measure #?**

Milestones

Utilizing the Great Lakes COSEE project, hold training workshops for formal and non-formal educators and teachers to update their knowledge and bring to them the latest scientific findings, and to involve them and their students in applied science projects.

Work as a coordinator for the 2006 Great Lakes Student Summit which brings 200-250 students/teachers to Buffalo to share their research and projects and learn about the environment. NYSG has been involved with the GLSS since its inception.

Work with the National Marine Educators Association, Science Teachers of New York State - STANYS, Niagara Frontier Science Supervisors and other teachers' associations to support their efforts in aquatic science education. Continue efforts as the Environmental Science SAR (Science Area Resource) for STANYS. Conduct presentations at conferences to inform teachers of NY Sea Grant and its educational efforts.

Work with, provide assistance and support marine education efforts of ERIE II and Niagara/Orleans BOCES, the Aquarium of Niagara, Monroe BOCES – BUBLE and other educational entities in counties along Lake Erie and Lake Ontario.

Coordinate NYSG marine and coastal education program with other specialists to optimize potential and scope of information and assure audience needs are met.

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.

Provide appropriate NYSG publications and posters to teachers and students as requested. (BAB)

Expected Outcomes (NH)

Teachers will integrate more Hudson River estuary stewardship and science information in their classrooms. **Performance Measure #?**

Milestone

Produce series of lesson plans for distribution to school districts in the 10 county region bordering the Hudson River. Lesson plans are selected from 5 years of teacher developed curriculum in NYSG sponsored Hudson River ecology summer teachers' class. Coordinate with regional programs and agencies that provide curricula.

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 Outcome (DW)

Graduate students will get an education that is more focused on science-based resource management so that they will better be able to contribute to decision making in the future. **Performance Measure #?**

Milestone

Serve as an adjunct instructor for the SUNY College of Environmental Science and Forestry. The primary focus will be on graduate student committee participation.

Expected Outcome (BAB)

A high percentage of NYSG-sponsored research will be published in reputable science journals. *Performance Measure #?*

Milestone

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 for Coastlines articles; send masters and doctoral theses written by them to the National Sea Grant Library.

Expected Outcome (HD)

Undergraduate students will be exposed to the contributions that science can make to resource management decision-making and the employment opportunities that such a focus opens. *Performance Measure #?*

Milestones

To serve as adjunct faculty for the Aquarium Science course at Niagara County Community College, as part of their Animal Management Program.

To teach an undergraduate Great Lakes Ecology course at SUNY Buffalo.

To serve as a tutor and course evaluator through Empire State College for up to 3 courses in Marine Biology, Ichthyology, Biological Conservation, Environmental Science and other aquatic science related courses.

Continue to provide appropriate materials and press coverage to summer REU students at Marine Sciences Research Center at Stony Brook University. (BAB)

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 (RK)

Urban and suburban youth will be introduced to the sport of fishing, fisheries biology, stewardship of aquatic resources, fishing ethics and proper handling of their catch.

Performance Measure #1

Milestones

Implement an I Fish New York program in Suffolk and Nassau Counties on Long Island modeled on the one begun in New York City. Special emphasis will be on starting a program for schools and for out of school non-formal educational settings.

Expand the I Fish New York program that NYS DEC launched in New York City by adding staff that can deliver more programs, and improve and expand upon existing educational materials including curriculum for schools, materials for clinics, materials placed on the Internet, and fishing promotional materials.

Develop tools to evaluate the success and impacts of the I Fish New York Program, and begin to identify future funding sources to keep the program going. A long term goal is to expand I Fish New York to urban areas along the Great Lakes (Buffalo, Rochester), and perhaps Albany.

Work with I Fish NY personnel to develop appropriate publications and posters as well as Web site. (BAB)

Expected Outcome (HD)

Students and the public will have a better appreciation of and pragmatic experience with the importance of coastal environmental issues and will incorporate science-based information into their decision-making. **Performance Measure #3**

Milestones

Serve as a resource and educator/scientist for Erie County/Museum of Science distance learning project for the 2004-2006 school years. This project uses new technologies such as distance learning and the Internet.

Continue work with the NYDEC and Center for Marine Conservation on the annual Great Lakes Beach Sweep in September. This annual environmental conservation activity continues to involve an increasing numbers of teachers, students and stakeholders each year.

Provide information to the media on aquatic science topics and coastal issues to reach the public with information about these important environmental issues.

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 (BAB)

New York Sea Grant will reach more decision makers with appropriate messages and increase the chances of receiving funding during times of fiscal uncertainty.

Performance Measure #?

Milestone

Develop targeted information packets such as a Program Guides, Coastlines, one-pagers, or other novel educational products for NYSG staff use in educating the media, state, and Congressional legislators, agency representatives and other decision makers about NYSG's efforts regarding the wise use of the state's marine and Great Lakes coastal resources.

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 (BAB)

New York Sea Grant science will be more accessible and appealing to stakeholders and the general public via targeted publications. **Performance Measure #?**

Milestones

Produce and distribute NYSG's flagship publication *Coastlines* on a regular three-per year schedule, using a 16-page color format, to write stories that integrate extension, education and research projects that are balanced between Great Lakes and marine issues.

Meet with the editorial board to plan each issue and request in advance any material to be contributed by Extension staff or researchers for upcoming issues.

Use the results of a reader survey to make improvements and updates. Continue to identify key audiences and update mailing list.

Coordinate with management and extension staff the development of publications, fact sheets, brochures, displays and other print, visual or electronic tools that highlight the value of NYSG efforts.

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

Maintain an inventory of technical and nontechnical publications; fulfill publication requests that come to NYSG's offices. Continue using an electronic database to track publications and distribute mandatory publications to University of Rhode Island's National Sea Grant Library.

Expected Outcome (BAB)

NYSG will have greater visibility in the mass media in both the marine and Great Lakes. **Performance Measure #?**

Milestones

Attend Fair Media Council events to expand media contacts in Long Island metro area.

Continue to supervise consultant publicist in the Great Lakes, reviewing and approving draft press releases and media hits.

Prepare and/or approve one press release monthly from both the Great Lakes and marine districts. Provide media contacts, press kits, or press releases regarding research or outreach efforts for NYSG, regional or national meetings, conferences, or symposia as requested by state, regional or national SG offices.

Expected Outcome (BAB)

New York Sea Grant's Web site will continue to grow to meet the needs of the program and show further increases in visitorship to the already popular site. **Performance Measure #?**

Milestones

Maintain NYSG's website www.nyseagrant.org and its links to research, extension and educational activities. Create and maintain new sub-sites as requested by extension staff.

Work with a NYSG-wide team to complete a site redesign in 2006 that streamlines and coordinates the look of the web sites program-wide.

Continue using *WebTrends* software to measure the usage of the web site.

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 (KG, LB, SM)

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. **Performance Measure #3**

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.

Provide information for the three NEPs for their Web sites, which the public often turns to as a source of information.

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

Assist teachers and other educators by helping them find suitable curriculum materials related to these estuaries and produce new educational materials as deemed appropriate and necessary.

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

Assist the LISS with its public perception survey.

Provide information about the 3 NEPs at the upcoming National Marine Education Conference in Brooklyn in 2006 which should attract some 400 educators.

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 Outcomes (KG)

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

Performance Measure #1

Milestones

Serve as Technical Advisor to the New York Seafood Council Board of Directors, and manage the 2005-06 joint project 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 conducted on behalf of the state's seafood industry.

Provide direct technical assistance on food processing technologies and marketing to seafood businesses in New York 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 (KG)

Fishermen will have the knowledge to handle their catches more safely. **Performance Measure #1**

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 developed 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 (KG)

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.

Performance Measure #1

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.(BAB)

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 (KG)

Seafood regulatory groups and businesses will adopt scientific systems to ensure seafood safety. **Performance Measure #1**

Milestones

Plan, develop and deliver at least 3 one-day Segment Two HACCP training programs in NY 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 from the seafood industry and regulatory agencies across the U.S., and provide assistance as needed to students and qualified trainers.

Provide technical assistance to at least 50 seafood businesses 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 (KG)

Seafood businesses will be more efficiently educated and better informed on strategies for increasing seafood safety. **Performance Measure #1**

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.

Continue to provide leadership for the national Seafood HACCP Alliance by participating on the Steering Committee and attending at least one national meeting. Continue to participate on the 8-member subcommittee charged with providing comments to FDA on their current guidance on HACCP controls for seafood products.

Serve on the planning committee and organize one symposium on current seafood issues for a national and international audience at the 50th anniversary of the Atlantic Fisheries Technology Conference meeting in Norfolk, VA.

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 (KG)

Seafood businesses will adopt science-based strategies designed to minimize risks associated with biological or chemical food safety hazards. **Performance Measure #1**

Milestones

Conduct research and outreach project activities as a project collaborator in 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 assist with FDA’s risk assessment for *Listeria* contamination of smoked seafood products.

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.

Complete peer review publication process with the journal Food Protection Trends for the manuscript describing the evaluation results and costs of *Listeria* controls for ready-to-eat seafood processors associated with the 2003 national *Listeria* control workshop series.

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.

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. Determine the processes and rates of transport, fate, interactions, and bioaccumulation of point and non-point source anthropogenic contaminants and pathogens (e.g., pesticides, fertilizer, sewage, metals, pharmaceuticals) and develop appropriate models to predict effector concentrations and distribution in coastal waters.

Expected Outcome (PD)

Resource managers will be able to highlight toxicological consequences to predators feeding at contaminated sites and facilitate the modeling of metal body burdens in predators inhabiting impacted coastal environments. **Performance Measure #2**

Milestone

(Wallace R/CTP-39)

Understand and predict metal trophic transfer to higher trophic-level benthic predators by using mechanism-based approaches (metal subcellular partitioning) and predator-(digestion) dependent processes.

Expected Outcome (LS)

Management decisions about water quality based on budgets of nutrients and contaminants to Jamaica Bay will factor in SGD as a possible significant source of these chemical species to the Bay. **Performance Measure #3**

Milestone

(Cochran R/CTP-40)

Determine the input of submarine groundwater discharge (SGD) to Jamaica Bay, and evaluate its importance to the freshwater budget and as a route for nutrient and contaminant inputs.

Objective b. Develop techniques to predict and evaluate the effects of water quality on human uses of coastal resources, and the relative effects that alternative uses of coastal resources and areas have on water quality.

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

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

Objective e. Evaluate the effectiveness of and improve and deliver best management practices for non-point source pollution prevention and mitigation targeted to property owners, municipalities, industries, and businesses.

Expected Outcome (EK)

Municipal officials across Long Island will implement effective strategies for non-point source pollution reduction. **Performance Measure #3**

Milestones

Conduct workshops, trainings, and consultations to assist municipalities with specific aspects of stormwater management such as ordinance development, pollution prevention, and coordination between inter-related programs.

Create PowerPoint presentations, utilizing GIS graphics and digital images to promote municipal application of effective non-point source control practices.

Prepare “focus topic” sessions covering such topics as: septic system maintenance, site design review, land-use and watershed planning, post-construction runoff control, municipal pollution prevention and good housekeeping, illicit detection and elimination, and construction site runoff control.

Generate printed reference materials such as fact sheets, summaries, and guides, to complement the Program curriculum.

Maintain up-to-date information on the NYSG NEMO Program Web page, www.seagrant.sunysb.edu/nemo/. (BAB)

Expected Outcome (EK)

Municipalities will be able to meet the requirements of the Phase II stormwater regulations. *Performance Measure #3*

Milestone

Review municipal PH II annual reports. Identify gaps and weaknesses in meeting New York PH II requirements. Assist municipalities in evaluating their programs and identifying necessary improvements.

Expected Outcome (EK)

Municipal efforts to control non-point pollution will be consistent with Long Island's Estuary Programs' Management Plans' objectives. *Performance Measure #3*

Milestone

Attend Long Island Sound Study, South Shore Estuary Reserve Council and Peconic Estuary Program watershed, workgroup and committee meetings.

Expected Outcome (MT)

Municipal leaders in Northern New York will identify and work to improve nonpoint source pollution problems or potential problems. *Performance Measure #3*

Milestone

Distribute a resource notebook with information about non-point source pollution issues to municipal planners through a series of workshops. These workshops will be used to assess the municipal leaders understanding of non-point source pollution, their interest in further workshops and any additional information or resources they would like to attain.

Expected Outcome (HD)

Stakeholders will be better educated about water quality issues and the role of LaMPs in restoring and maintaining water quality and ecosystem health so they can participate in the cleanup. *Performance Measure #3*

Milestones

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

Disseminate the Lake Erie LaMP education presentation and support materials, developed with NYSG input, to stakeholders along the Lake Erie shoreline of New York State.

By attendance at Lake Erie LaMP Binational Forum meetings throughout the year, work on projects that will help advance the work of the LaMP and the protection of Lake Erie.

Attend meetings/conferences and review information on the Lake Ontario Toxics Management Plan (LOTMP) and the Lake Ontario Lakewide Management Plan (LaMP).

Provide assistance to other Sea Grant Specialists with workshops/conferences related to coastal water quality issues.

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

Expected Outcome

Stakeholders will help lobby for federal funds to conduct regional Ocean Observation Systems.

Milestone

Obtain funding for one or more NYSG extension positions to identify stakeholders who might use results of the regional Ocean Observation Systems and determine the types and forms of information that would be most useful.

Participate in preparation of proposals to the regional associations with the Sea Grant Great Lakes network and/or institutions in the Mid-Atlantic sub-regions (Long Island Sound, the New York Bight) using as a rationale the need to supply the right information to the right peoples in the right form.

Participate in planning meetings for the regional associations.

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 in contributing to the management of the effort by meeting with state agencies and NGOs to gain a consensus on the specific needs for GL restoration in NYS.

NYSG will provide reviews of the GL Restoration plans.

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

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

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

Objective f. To encourage interaction and dialogue among NYSG, GLP at UB, Great Lakes Research Consortium, and Buffalo State College's Great Lakes Center to enhance technology transfer concerning Great Lakes research initiatives.

Expected Outcome (HD)

Each of the programs will leverage their efforts by combining talents and opportunities for distributing information

Milestones

Serve as a liaison between New York Sea Grant, Great Lakes Program at UB, and the GL Research Consortium. Provide assistance with the GLRC annual conference and assist with the coordination of the GLRC seminar series (spring/fall semesters) on the UB campus. Serve as a lecturer for seminar series at UB or for the GLRC.

Act as a liaison for NY Sea Grant and the Great Lakes Program in meetings with Buffalo State College's Great Lakes Center, US Fish and Wildlife Service, and NY DEC.

Organizational Goals and Objectives

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

Rationale: NYSG has had relatively flat core federal and state budgets for the last two decades. NYSG must continue to work closely with its Federal Congressional delegation

to increase NSGCP funding authorizations and appropriations, increase its core state funding, and obtain other federal, state and private funds in order to make up for losses in spending power due to inflation, etc.

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

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

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

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

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

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

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

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

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

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

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

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

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

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, 2007. 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 near the end of June of 2007. 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, 2007).

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 (e.g., combining marine and fresh water quality issues) integration 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.

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 staff from NYSG meets 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. 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. This is the first time we have done this so we are excitedly awaiting the response. Not having a SFA for this year will allow us to evaluate the success of having NYSG provide the integration of multiple projects under an SFA.

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 one year 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 submitted with the omnibus proposals or amendments.

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 25 have been prepared and 15 are well underway. The impact statements have been well received by many categories of stakeholders, including state and Federal legislators. In fact, one 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 to remain solvent. 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, 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. Regional or 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 is currently 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 and chair of the ASMFC Lobster Control Board's Lobster Steering 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, Long Island University at Southampton, 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 involves representatives of the boating industry as well as NYS DEC and NYS DED. The avian botulism effort is a collaboration with PASG, OHSB, NYS Department of Health, the Canadian Department of fisheries and Oceans, and the Ontario Department of the Environment.

A more complete list of 2005 collaborating organizations is included in Appendix C of 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 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 be preparing the Annual Progress Report and will be summarizing results anyway. During this period, the PAC has focused more on strategic planning because of the criticism of the 2000 PAT. However, 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 research project coordinator 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. Unfortunately, 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 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. 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 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.⁴

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 programs 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, this work has yet to be published and 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 also serves on several regional and state advisory groups.

⁴ These Goals are numbers 4, 7 and 3, respectively in the 2000-2005 Strategic Plan.

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 2, Facilitate sustainable use of economically important coastal fisheries is aimed primarily at Lake Ontario recreational 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.