



Briefing Book

New Jersey Sea Grant Consortium
Sea Grant Site Review May 13-14, 2015





NEW JERSEY SEA GRANT COLLEGE PROGRAM 2015 Site Review Briefing Book

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Overview

Founded in 1969 as the New Jersey Marine Sciences Consortium, New Jersey Sea Grant Consortium (the Consortium or NJS GC) is a not-for-profit, membership-based affiliation of colleges, universities and other entities dedicated to advancing knowledge and sustainable use of New Jersey's marine and coastal resources. To achieve its shared goals, the Consortium engages the intellectual power of its members which includes most of New Jersey's academic and scientific community along with a wide variety of other partners to coordinate programs and conduct projects that ensure the health of New Jersey's environment and its coastally-dependent economy.

Since 1976 the Consortium has administered the National Oceanic and Atmospheric Administration's National Sea Grant College Program in New Jersey. In recognition of its academic and scientific achievements the Consortium was awarded full Sea Grant College Program status in 1989.

Over the years, NJS GC has come to be recognized as one of the state's leading coastal connections. While marine and coastal research and outreach remain the cornerstones of the Consortium's activities, a current focus is to support new ways for science to create and sustain resilient coastal communities and economies. Some of NJS GC's success stories include developing fast-growing and disease-resistant oysters that have helped to revitalize the state's oyster industry, capitalizing on new communication technologies to create better tools to predict and transmit warnings about potentially dangerous rip currents, and improving the engineering of dunes and shoreline protection systems to increase the resilience of New Jersey's coastal communities.

Institutional Setting

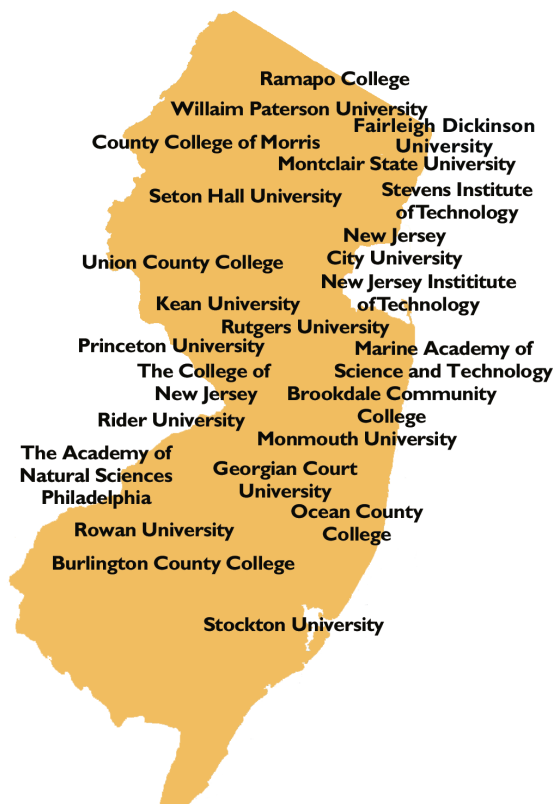
Since 1972, NJS GC has been headquartered on Sandy Hook in a former Army barracks that was once part of Fort Hancock. The location is now a National Historic Landmark. In 2010, the Consortium completed a major restoration of its Fort Hancock facility which returned most of the external features of the building to their original historic condition.

Sandy Hook is a large barrier beach peninsula that comprises the northernmost portion of New Jersey's Atlantic coast. It is ideal for scientific research and discovery with its shallow estuarine open waters, sandy beaches, mudflats, maritime forest and a salt marsh that supports a large number of regionally important species. The location has been especially beneficial for the Consortium's education programs with the richness and diversity of the ecosystems offering exceptional settings for teaching and learning. The northern end of the peninsula, where the Consortium is located, is also home to the NOAA/NMFS James J. Howard Marine Sciences Laboratory; the Marine Academy of Science and

Technology (MAST), a marine-science themed public high school; and several non-profit groups with environmental missions.

Sandy Hook was long considered a strategic location for the defense of New York City and New York Harbor. It is now owned by the federal government and is managed by the National Park Service as the Sandy Hook Unit of Gateway National Recreation Area, a system of urban parks located along the shores of New York/New Jersey Harbor. Gateway parks are located amid the most densely populated urban area of the country. More than 2 million people visit the Sandy Hook Unit each year.

New Jersey Sea Grant Consortium Member Institutions





Program Management and Organization

MANAGEMENT TEAM

NJSGC's management staff is a close-knit team of experienced professionals who work together to ensure the relevancy and effectiveness of the Sea Grant program in New Jersey. Although each manager is in close contact, the team formally holds monthly meetings to discuss administrative, fiscal, and programmatic issues and to monitor and evaluate progress. The entire staff also meets monthly for a similar discussion, including the review of departmental reports (education, extension, research, communications, administration) circulated in advance to facilitate meaningful, informed discussion.

NJSGC's management team and primary duties are:

Claire Antonucci, Executive Director provides overall leadership of the Consortium. She provides vision and leadership for all projects and programs at NJSGC, including those funded through NJSGC's Omnibus proposal. She is responsible for the effective administration of NJSGC's operations, including staff, fiscal, facility, grants and contract management, and ensures that NJSGC's activities address the priorities of National Sea Grant, NOAA, and New Jersey. She reports directly to the Executive Committee of NJSGC's Board of Trustees and coordinates interactions between governing boards and member institutions. Ms. Antonucci is also the director of NJSGC's education program.

Dr. Peter Rowe, Associate Director for Sea Grant Administration/Director of Research and Extension is NJSGC's liaison to the National Sea Grant Office for Sea Grant Administration. He is NJSGC's representative to the Sea Grant Association and chief liaison to the NJSGC Stakeholder Board and Sea Grant Advisory Committee. He supervises the reporting of data and achievements as related to NJSGC and National Sea Grant metrics as identified in the Planning, Implementation, and Evaluation Resource (PIER) information system. He directs NJSGC's extension and research programs and works closely with Ms. Antonucci on budgeting and strategic planning.

Augustine Anfuso, Fiscal Officer coordinates all fiscal and budgetary functions at NJSGC and provides oversight and tracking of all program expenditures, including those associated with Sea Grant education, communications, extension, and funded research programs. He assures compliance with all federal and state regulations and auditing standards and is responsible for upholding National Sea Grant fiscal policies, including those associated with Sea Grant funded research. He is also responsible for the fiscal administration of all NJSGC grants, contracts and tuition-based programs funded through non-Sea Grant sources, including state government and private sources.

Deborah Quinn, Office Manager/Corporate Secretary is responsible for day-to-day operations of the Consortium, including those activities related to personnel, insurance coverage and general communications. She ensures that all financial information as it relates to cash receipts, sales, cash disbursements and payroll is properly assessed, evaluated, coded, approved and paid. She is the fiduciary agent for the employee fringe benefit and retirement program. She is also the lead administrative contact to NJSGC's Board of Trustees, Member Representatives and School Councils, and ensures that the organization's constitution and by-laws are upheld.

Leadership and support for NJSGC's communications, education, research and extension programs are provided by:

Diana Burich, K-12 Program Coordinator/Sea Grant Associate performs duties and responsibilities as necessary to ensure day-to-day operation, growth, and advancement of NJSGC's education programs. Although her primary focus is on pre-college programs, she also contributes to NJSGC's teacher training initiatives and grant-funded education and outreach projects. As Sea Grant Associate, she assists Dr. Rowe with the coordination of NJSGC's biennial research competition and works closely with funded researchers to integrate their activities with pre-college and public education efforts.

Michael Danko, Assistant Director of Extension/ Marine Recreation Agent: Fisheries and Boating performs duties required to assist with the efficient and timely operation of the NJSGC Extension Program while maintaining and growing an extension program in marine recreation. Emphasis is given to environmental stewardship, community impacts, sustainability, tourism, species management, essential fish habitat, leadership issues, and fisheries technology.

Rosemary Higgins, College and Special Programs Coordinator works with NJSGC's member institutions to coordinate, promote, and grow college-level programs in the marine sciences for New Jersey's graduate and undergraduate students. She also directs

NJSGC's annual public outreach event, Ocean Fun Days, administers the Stew Tweed Scholarship and contributes to other grant funded education projects as needed.

Matthew McGrath, Communications Specialist is responsible for conveying concise, accurate, and useful information to the media and specific target audiences. The majority of this information is based on NJSGC research and programmatic activity but also evolves from initiatives and input from other agencies, organizations, and stakeholders seeking to increase understanding of New Jersey's coastal ocean environment. Communications staff also includes graphic artist Rory Joyce.

Distribution of Sea Grant Funds

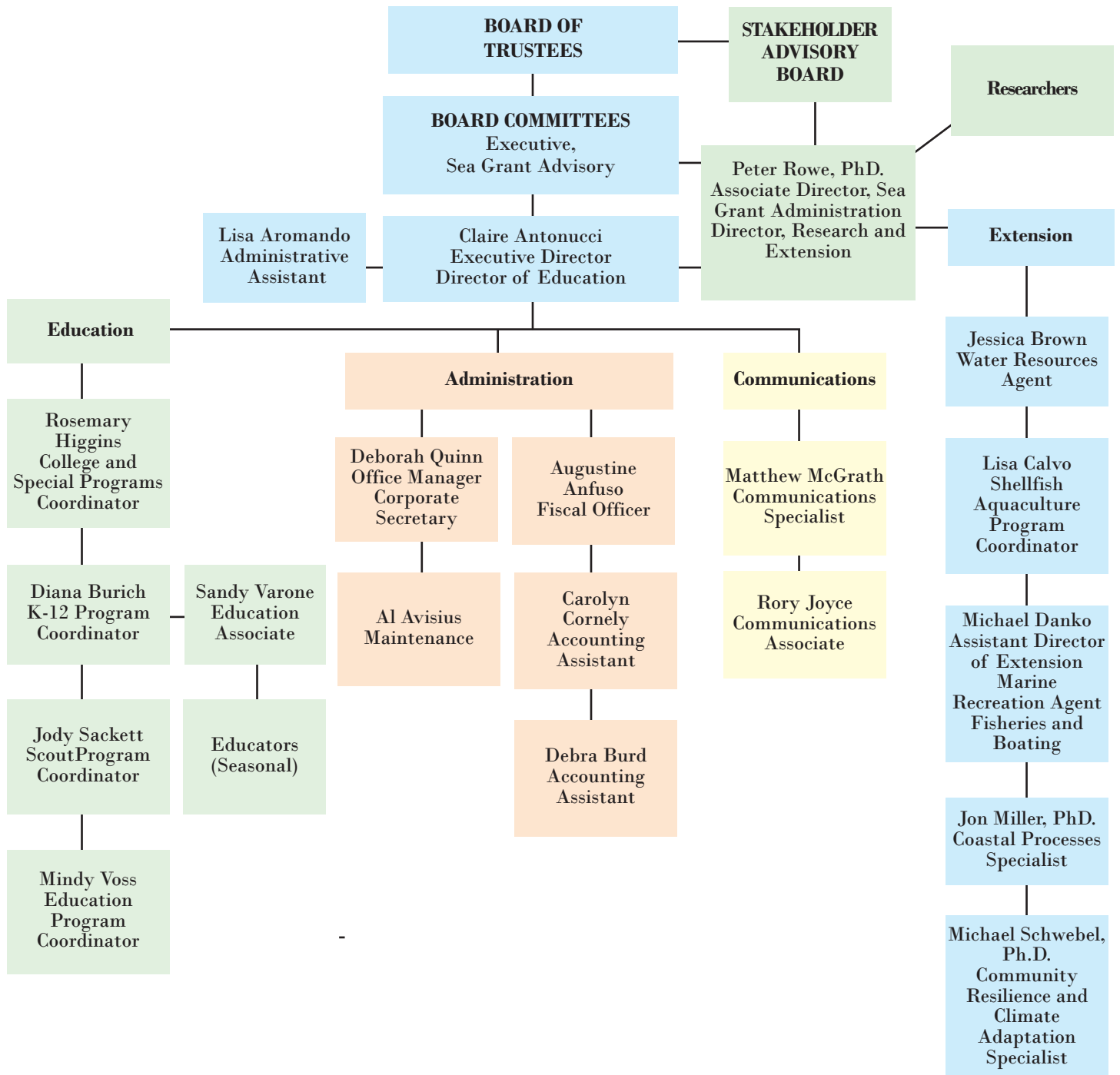
	2011	2012	2013	2014
Research / Match	\$255,231 / \$149,106	\$306,725 / \$146,977	\$263,205 / \$149,878	\$574,194 / \$357,155
% of all program areas	28%	30%	25%	40%
Extension / Match	\$330,632 / \$166,463	\$288,700 / \$144,350	\$332,300 / \$166,145	\$335,065 / \$113,284
% of all program areas	35%	28%	32%	23%
Education / Match	\$42,384 / \$21,195	\$133,757 / \$66,879	\$133,801 / \$66,879	\$160,779 / \$187,027
% of all program areas	4%	13%	13%	12%
Communications / Match	\$200,482 / \$100,239	\$155,000 / \$77,500	\$155,000 / \$77,500	\$155,000 / \$35,418
% of all program areas	21%	15%	15%	10%
Management / Match	\$108,222 / \$64,194	\$150,000 / \$75,000	\$150,000 / \$75,000	\$224,182 / \$51,501
% of all program areas	11%	15%	15%	15%
All Program Areas	\$946,951	\$1,034,182	\$1,034,306	\$1,449,220
All Match	\$501,197	\$510,706	\$535,402	\$744,385
All Program Areas + All Match	\$1,448,148	\$1,544,888	\$1,569,708	\$2,193,605

Additional National Sea Grant Program Support

	2011	2012	2013	2014
Research (NSI)			\$99,894 / \$50,000	\$197,498 / \$98,751
Extension (NSI)	\$100,000 / \$52,161	\$100,000 / \$52,318	\$100,000 / \$52,218	
Coastal Hazards Rapid Response / Match				
Coastal Storm Awareness Program			\$50,000 / \$17,410	\$305,000
Fellowships			\$305,000	\$56,500
Knauss				
NMFS			\$32,083 / \$6,417	\$64,186 / \$12,834



Organizational Chart



Staff Time Devoted to Sea Grant

MANAGEMENT

	FTE	SG Funds (%)	Match (%)
Augustine Anfusio, Fiscal Officer	1	67	33
Claire Antonucci Executive Director, Director of Education	1	47	53
Deborah Quinn, Office Manager	1	0	100
Dr. Peter Rowe Associate Director, Sea Grant Administration Director of Research and Extension	1	78	22

ADMINISTRATION

Lisa Aromando, Administrative Assistant	1	95	5
Al Avizius, Maintenance	.5	0	100

ACCOUNTING

Debra Burd, Accounting Assistant	.5	8	92
Carolyn Cornely, Accounting Assistant	1	0	100

COMMUNICATIONS

Rory Joyce, Communications Associate	.5	80	20
Matthew McGrath, Communications Specialist	1	75	25

EDUCATION

Diana Burich, K-12 Program Coordinator Sea Grant Program Associate	1	44	56
Rosemary Higgins College and Special Programs Coordinator	1	33	67
Jody Sackett, Scout Program Coordinator	.5	0	100
Sandra Varone, Education Associate	.75	67	33
Mindy Voss, Education Specialist	.5	33	67
Educators (Seasonal)	8	0	100

EXTENSION

Jess Brown, Water Resources Agent	.3	88	12
Lisa Calvo, Shellfish Aquaculture Program Coordinator	.3	90	10
Michael Danko, Assistant Director Extension Marine Recreation Agent: Fisheries and Boating	1	55	45
Dr. Jon Miller, Coastal Processes Specialist	.4	62	38
Dr. Michael Schwebel, Community Resilience and Climate Adaptation Specialist	1	50	50



Governance

The activities of NJSGC, including those related to its membership and staff, are governed by a Board of Trustees to which the Executive Director directly reports. In addition to providing governance to NJSGC, the Board of Trustees facilitates and strengthens the partnership between NJSGC and the State of New Jersey, New Jersey's academic and research institutions and the National Sea Grant Program.

The board is made up of public trustees, government agency representatives and academic trustees from the Consortium's member institutions. In addition, each member institution appoints a representative and an alternate for communication with Consortium staff and the Board of Trustees. Although these institutional representatives do not have the individual right to vote at board meetings, they attend all general meetings of the Consortium's Board of Trustees with the right to be heard on all subjects considered by the Board. Member representatives also elect trustees to represent them on the Board of Trustees within their own academic category.

The NJSGC Board of Trustees meets two times per year to review Consortium programs, policies, and procedures and to set administrative policy that the Executive Director implements. An Executive Committee meets with the Executive Director and the management team as needed between meetings of the Board of Trustees. The Executive Committee is responsible for fiduciary matters including the supervision and approval of NJSGC's annual public fiscal audit, personnel management, and ongoing supervision of the Executive Director.

In addition, a Sea Grant Advisory Committee meets quarterly to provide Ms. Antonucci and Dr. Rowe with advice and guidance. The Advisory Committee was first established in 2005 based on recommendations from the 2004 National Sea Grant Program Assessment Team (PAT). The committee has its own charter which is part of NJSGC's constitution. The purpose of the committee is to:

1. Provide advice and assistance on matters regarding New Jersey's coastal issues in an

integrated and effective manner to advance the strategic goals of NJSGC and the National Sea Grant program; and

2. Facilitate communication on Sea Grant matters between NJSGC management, the Board of Trustees, the National Sea Grant office, the New Jersey Legislature, resource agencies and others, including NJSGC's member institutions.

Specific tasks of the committee are to:

- a. Review and provide advice on strategic planning and programmatic policy.
- b. Advise NJSGC's Executive Director and Director of Research and Extension on matters regarding emerging trends, needs, and opportunities in coastal and marine resource policy and management in New Jersey and the region.
- c. Identify opportunities for funding and collaboration, and suggest new ways of advancing the work of the Consortium.
- d. Assist in soliciting information and advice on the research and informational needs of the New Jersey's coastal users and stakeholders, and review and evaluate input received from stakeholders for use in revising and/or focusing NJSGC's strategic and implementation plans.

The current members of the Board of Trustees of the NJSGC are:

Mr. Dennis T. Kearney, Chair*
Pitney Hardin LLP

Dr. Howard I. Parish, Vice-Chair*
New Jersey City University (emeritus)

Mr. Gregory T. Aikins*
Medical Management Techniques, Inc.

Dr. Michel Boufadel
New Jersey Institute of Technology

Dr. Michael Bruno (through 2012)
Stevens Institute of Technology

Dr. Keith R. Cooper*
Rutgers, The State University

Mr. Lindsay Fuller
 South Jersey Advisors, LLC
 President Paul Gaffney, II * (through 2012)
 Monmouth University
 Vice Admiral Richard Larrabee (through 2011)
 Port Authority of NY & NJ
 Dr. Richard Lutz (through 2014)
 Rutgers, The State University
 Mr. Tony MacDonald
 Monmouth University
 Dr. Igor Oksov
 Union County College
 Dr. Michael Peek
 William Paterson University
 Dr. Robert Prezant
 Montclair State University
 Dr. Oscar Schofield
 Rutgers, The State University
 Dr. Donald Sebastian (through 2012)
 New Jersey Institute of Technology
 Mr. Thomas R. Siegert, CPA*
 Institute of Electrical and Electronics Engineers
 Dr. David Spang (through 2013)
 Burlington County College
 Dr. Peter Straub (through 2013)
 Richard Stockton University of NJ
 Dr. Brian Teasdale
 Kean University
 Mr. Christopher Zeppie (through 2014)
 Port Authority of NY & NJ

* Member of Executive Committee

Government Representatives

Ms. Genevieve Boehm-Clifton
 NJ Department of Transportation, Office of
 Maritime Resources
 Mr. Christopher Cerf
 NJ Department of Education
 Mr. David Eater
 NJ Department of Treasury
 Honorable Douglas H. Fisher
 NJ Department of Agriculture

Ms. Dorina Frizzera
 NJ Department of Environmental Protection,
 Coastal Management Office
 Honorable Bob Martin
 NJ Department of Environmental Protection
 Dr. Thomas Noji
 National Marine Fisheries Service, NOAA
 Ms. Elizabeth Semple
 NJ Department of Environmental Protection
 Honorable Andrew P. Sidamon-Eristoff
 State Treasurer

The members of the Sea Grant Advisory Committee are:

Dr. Michel Boufadel
 New Jersey Institute of Technology
 Dr. Keith R. Cooper, Chair
 Rutgers, The State University
 Dr. Richard Lutz (through 2014)
 Rutgers, The State University
 Dr. Igor Oksov
 Union County College
 Dr. Michael Peek
 William Paterson University
 Dr. Robert Prezant
 Montclair State University
 Dr. Oscar Schofield
 Rutgers, The State University
 Dr. Brian Teasdale
 Kean University
 Mr. John A. Tiedemann
 Monmouth University



Stakeholder Advisory Board

The Stakeholder Advisory Board (SAB) at NJSGC provides advice and assistance to the staff, Board of Trustees and other interested members of the organization on matters regarding the Consortium's contribution to the well-being and wise-utilization of New Jersey's marine and coastal resources. Although SAB members are drawn from a diverse range of agencies and disciplines, all have been recruited for their expertise and interest in the state's marine and coastal affairs.

Active involvement by citizens, educational and environmental professionals, agency personnel and marine industry representatives is essential to the efficacy of NJSGC's operation. By identifying and prioritizing the areas of greatest need in managing New Jersey's marine and coastal affairs, the SAB contributes crucial guidance to ensure that NJSGC's resources and energies are well applied and wisely used.

The group meets twice annually and is consulted year-round by the management, staff and NJSGC's Board of Trustees for:

- Information and advice on the needs and the issues of New Jersey's coastal stakeholders and the state, which is used to guide the development and direction of NJSGC's research, extension, and education activities.
- Input and review of NJSGC's strategic planning, implementation plans, and proposal documents, including NJSGC's Omnibus proposal.
- Relevancy criteria for NJSGC's requests for research (RFP) proposals. The Advisory Board also ranks in terms of meeting relevancy criteria, all pre-proposals and provides review and comment on all full proposals to NJSGC's Technical Review Panel (TRP) for the final selection process.
- New initiatives, projects and funding opportunities.

Stakeholder Advisory Board Composition and Terms

SAB members represent a broad cross section of New Jersey coastal stakeholders, including environmental agency personnel, commercial and recreational fishers, representatives from the maritime, shore tourism and

aquaculture industries and other groups and individuals with an interest and recognized understanding of the issues facing New Jersey's coastal environment.

The SAB currently consists of nine members invited to serve by SAB members with at least one member selected from NJSGC's Board of Trustees. One member of the Stakeholder Advisory Board, Mr. Steve Carnahan, has been elected by the SAB members to serve as chair for a two-year term. As chair, Mr. Carnahan reports on the activities of the SAB to NJSGC's Board of Trustees and is a member of the Sea Grant Advisory Committee.

Stakeholder Advisory Board

Mr. Steve Carnahan, Chair
Seaboard Fisheries Institute

Ms. Genevieve Boehm-Clifton
NJDOT Office of Maritime Resources

Mr. Gary Buchanan
NJDEP Office of Science

Mr. Bob Connell (through 2012)
NJDEP Office of Science

Dr. Vincent Guida
NOAA/National Marine Fisheries Service

Mr. Jim Hutchinson
Recreational Fishing Alliance/Fisherman Magazine

Mr. Mark Mauriello (through 2012)
Mark Mauriello Consulting
Commissioner, NJDEP (retired)

Mr. Daniel Nee
Brick Patch/Shorebeat

Dr. Thomas Noji (through 2013)
NOAA/National Marine Fisheries Service

Mr. Jorge Reyes
NJDEP Sustainability and Green Energy

Mr. Richard Ritota
NJ Department of Health/Food Safety Systems

Ms. Barbara Steele (through 2012)
Ocean County Department of Public Affairs and Tourism

Ms. Margot Walsh
Jersey Shore Partnership

Recruiting Talent – The Research Program at NJSGC

PLANNING PROCESS

Under the guidance of the Executive Director and the Director of Research and Extension, NJSGC develops its Request for Proposals (RFP) through an ongoing process culminating in the selection of research priorities by its Stakeholder Advisory Board (SAB). To gather ideas and suggestions and to become aware of the needs of its stakeholders, NJSGC interacts with coastal stakeholders, current and former researchers and other experts including an extensive list of contacts at academic and research institutions. Research priorities are also drawn from and compared to NJSGC's strategic plan and the strategic plans and RFP of other coastal organizations within the state. The research priorities are next reviewed by NJSGC's Board of Trustees, Extension Agents and Specialists and the SAB. At every stage, the management team maintains an open dialogue with the SAB, prioritizing and reprioritizing the SAB's concerns as coastal and marine resource issues emerge. The working list of research priorities is then narrowed down to the most relevant by the SAB, resulting in priorities that not only meet the needs of New Jersey's stakeholders but also align with NJSGC's strategic plan.

PROPOSAL SOLICITATION AND REVIEW PROCESS

The final research priorities become the basis of an RFP that is released every other fall. The RFP is distributed to NJSGC's nearly two dozen member institutions, all other academic institutions within the state, government and non-government contacts, current and past Sea Grant researchers, and NJSGC's expertise database. This database was developed and is maintained by NJSGC to facilitate cooperative and interdisciplinary projects and help connect the media, the public and potential partners. It is located on NJSGC website at <http://njseagrant.org/research/new-jersey-sea-grant-consortium-membership-expertise-directory/>. By distributing the RFP widely to New Jersey's research community, we leverage our long-term relationship with Consortium member institutions while also expanding our network by reaching beyond current alliances. Interdepartmental

and inter-university partnerships are strongly encouraged.

A Technical Review Panel (TRP) is convened for each competition. This group of 8 to 12 individuals is made up of appropriate scientific experts from out-of-state academic institutions, nonprofits, private industry, and/or federal agencies. Each TRP represents a broad spectrum of marine and coastal interests and specialties.

Together with the SAB, the TRP reviews and ranks each pre-proposal received. The TRP scores each pre-proposal for merit and relevancy while the SAB evaluates the pre-proposals for relevance to the stated set of priorities. Each group's evaluation carries equal weight for the pre-proposal rankings. The TRP then convenes to make the final pre-proposal selections that determine which pre-proposals will be encouraged to move forward.

Full proposals for Omnibus funding are received in late May and sent to the TRP. In addition, each proposal is sent to three external peer reviewers for evaluation. The full proposals are assessed for merit, relevancy, budget, the PI's qualifications, extension component, and student engagement/involvement. SAB members and NJSGC extension and education staff are encouraged to provide comments in relation to relevancy. The rankings and evaluation by the TRP, the external peer reviewer evaluations, and other comments are compiled and made available to the TRP prior to an in-person meeting of the TRP.

After a thorough review, final selections for inclusion into NJSGC's Omnibus proposal are made by the TRP and Dr. Peter Rowe. Throughout the entire process, Dr. Rowe is assisted by Sea Grant Associate, Diana Burich. Selected researchers are provided an opportunity to respond to external peer reviewer comments as part of their proposal submission to the Omnibus. NJSGC's federal program officer is included in the process and is invited to TRP pre- and full-proposal meetings.



LOOKING AHEAD

NJSGC typically supported 4 Omnibus research grants per two-year cycle at a ceiling of approximately \$140,000 each. As such, funding dedicated to competitive research represented about 30% of NJSGC's core Sea Grant budget. However, as a result of merit funding and a rebalancing of funds by National Sea Grant in 2014, NJSGC was able to fund an additional 4four grants in the 2014-16 cycle, representing a core budget increase to 40% for research.

Going forward, 40% of the 2016-18 core budget is set aside for research and it is anticipated that eight proposals will be funded at about \$140,000 each. For both the 2014-16 and 2016-18 cycle, one of the grants will be a regional award with the mid-Atlantic Sea Grant Programs. Two small Project Development (PD) grants of up to \$5000 each are typically awarded in the spring of every other year at the discretion of the Executive Director and Director of Research and Extension. Research priorities for PD grants reflect the Omnibus RFP. In addition, NJSGC is currently working with its Sea Grant Advisory Committee to reinstate small minigrants (\$1000-\$2000) to support undergraduate summer research at NJSGC's smaller (non-research) member institutions.

SUCCESS IN NATIONAL COMPETITIONS

Over the review period, NJSGC was successful in obtaining funding in national competitions and, in particular, Sea Grant supported ones. These include research grants and others that combine research and extension. Although not strictly research, NJSGC was successful in Sea Grant National Strategic Investments (NSI) competitions for aquaculture extension and climate adaptation (Coastal Communities Climate Adaption Initiative or CCCAI).

NJSGC's NSI project for CCCAI targeted the development of modeling scenarios for coastal storm flooding in Jersey City, New Jersey. For this project, Dr. Phil Orton (Stevens Institute of Technology) teamed up with several Jersey City offices to begin a dialogue not only with city officials, engineers and planners but also with Jersey City residents. Public open houses and a final project workshop were held.

This project was leveraged and contributed to other envisioning planning projects in Jersey City focused on the reduction of coastal storm flooding.

Sea Grant NSI funding for aquaculture extension was obtained in 2011 to support extension and applied research for the oyster aquaculture industry in the Delaware Estuary. As a result of this NSI, production methods have improved and oyster growers have initiated a grower's co-op. The NSI also contributed towards the hiring of Shellfish Aquaculture Program Coordinator Lisa Calvo. Additional support from Rutgers University and NJSGC has retained Calvo beyond the length of the NSI project resulting in sustained capacity for NJSGC, Rutgers University and the oyster aquaculture industry in New Jersey and Delaware Bay.

With this additional capacity and in concert with researchers at Rutgers Haskin Shellfish Research Laboratory (HSRL), the Shellfish Aquaculture Program Coordinator teamed up with HSRL Director Dr. David Bushek to submit a successful NSI proposal for aquaculture research in 2014. Their proposal sought to develop a course of applied research designed to inform oyster aquaculture regulations and advance harvest practices to minimize levels of *Vibrio* in cultured oysters, thereby reducing the risk of vibriosis. This research is being conducted regionally with co-PI's from the Virginia Institute of Marine Science.

Additionally, NJSGC has recently been successful at the national level by supporting graduate student development through research via two NMFS Sea Grant Fisheries Fellowships. The first fellowship supports Christopher Free at Rutgers University (started in 2013) and addresses techniques to evaluate and improve stock assessment methods of data-poor species by using data-rich stock assessments from the RAM Legacy Stock Assessment Database. In 2014, Lisa McManus at Princeton University received a three year fellowship to assess the impact of connectivity on coral reef metacommunity dynamics in the Coral Triangle. She is investigating the scale-dependent effects of connectivity on the persistence of corals in the Coral Triangle. In addition, McManus is attempting to gain a holistic understanding of the

processes governing larval dispersal with a population-genetics approach.

REGIONAL RESEARCH

NJSGC has been active in the mid-Atlantic Sea Grant region on a variety of research and other competed resources. Through a Sea Grant NSI on aquatic invasive species (AIS) at the regional level, NJSGC teamed up with Maryland Sea Grant and other mid-Atlantic Sea Grant programs to investigate vectors of AIS transfer in the bait industry. This project supported research that determined that AIS hitchhikers are abundant on seaweed packing materials; subsequently, the project began extension pilot activities on fisher awareness through participating bait and tackle shops.

NJSGC was a sub-awardee on a regional CCCAI grant through Delaware Sea Grant. The project utilized other federal partners and concentrated on assessing climate adaption tools for Delaware City, Delaware. Results of this assessment were then transferred to similar communities on the New Jersey side of the Delaware Bay via a workshop supported by NJSGC.

Currently NJSGC Extension is involved in applied research to test the feasibility of fish devices that will reduce the impact of barotraumas on fish brought up from depth (black sea bass). This regional project is being led by Virginia Sea Grant through a National Sea Grant Office (NSGO) special competition.

The Sea Grant programs in the Superstorm Sandy affected states (NJ, NY, CT) received funds from NSGO via NOAA as part of funds NOAA received from the Disaster Relief Assistance Act. The three SG programs proposed the Coastal Storm Awareness Program (CSAP) that would support research and outreach to address the issue of effective messaging in federal storm warnings in order to reduce loss of life and property. The three programs are managing 10 research projects that address these issues, including projects investigating social media, peer response, families, the elderly, the disabled, and nonnative

speakers. CSAP will be completed at the end of August 2015. Although the research is targeted to the Sandy-affected region, the results will have application nationally.

Despite their diversity, mid-Atlantic Sea Grant programs have a lot of similarities. Building on a smaller regional Sea Grant award between DE, MD, and VA, the other regional programs (NY, PA, NJ, and NC) joined together for 2014-16 to support research addressing climate change and adaptation across natural and human dimensions. Each program contributed a share of their Sea Grant research dollars (NJ - \$140,000) to become part of the pool that researchers could draw from, with the provision that those funds would only be used regionally if the winning proposal had a PI from their state. Eleven multi-state pre-proposals were received, with six being considered at the full proposal stage. Over half the proposals included a PI from New Jersey. The winning project is being led by Dr. Malin Pinsky from Rutgers University with co-PIs from NC, VA, and NY. This leveraging resulted in a two-year award of \$560K focused on impacts of climate change on the distribution and stock contributions of Summer Flounder in the mid-Atlantic. In addition, MD and NJ used PD funds (\$10k each) to support a pilot study based on a joint proposal sent into the regional competition that is studying stormwater management methods (e.g., rain gardens) and effectiveness under climate change conditions.

After this first regional effort, four of the mid-Atlantic Sea Grant programs (NJ, DE, MD, and VA) teamed up again for another regional research competition for 2016-18, focused on coastal resiliency (up to \$560K Sea Grant dollars for a two-year project). As part of the dynamic process of finding best methods to work regionally, proposals for this competition must have a PI from each state. As of April 2015, four proposals have been received and are under review. Two proposals have a NJSGC member institution researcher as the lead PI.



NUMBER OF PROPOSALS SUBMITTED AND INSTITUTIONS REPRESENTED

During the four-year review period, two biennial research competitions were completed with a third one started. For those competitions, NJSGC received 66 pre-proposals from 59 institutions. Of that group 34 were solicited for full proposals and 13 were funded (2016-18 competition results still pending). It is interesting to note that 24 institutions were represented in the 25 pre-proposals received for the 2016-18 omnibus research competition; this shows a marked increase in investigator collaborations from a diverse set of institutions from the previous cycle. Additionally, five project development projects were funded with one being regional.

	2010-12	2012-14	2014-16	2016-18
PRE-PROPOSALS	24	18	23	25
Institutions	23	20	15	24
New Investigators	11	6	13	12
FULL PROPOSALS	11	9	11	14
Institutions	16	13	13	15
New Investigators	5	5	8	8
FUNDED PROJECTS	4	4	9	TBD
Institutions	5	5	7	TBD
New Investigators	1	3	2	TBD
DEVELOPMENT GRANTS	2	2	1	TBD
REGIONAL GRANTS				
Proposals	N/A	N/A	6	4
Funded Projects	N/A	N/A	1	1
NSI GRANTS				
Proposals	N/A	3	3	TBD
Funded Projects	N/A	1	1	TBD

INSTITUTIONS SUPPORTED BY SEA GRANT FUNDS

Academy of Natural Sciences of
Drexel University
AICP Jersey City Division of City Planning
Atlantic Capes Fisheries, Inc
Bloustein School of Planning and Public Policy
Climate Central
College of William and Mary
Columbia University
East Carolina University
George Mason University
Georgian Court University
Haskin Shellfish Research Laboratory
Institute of Marine and Coastal Sciences
Jacques Cousteau National Estuarine
Research Reserve

Manhattan College
Monmouth University
Montclair State University
New Jersey Institute of Technology
Nurture Nature Center
Princeton University
Rutgers, The State University of New Jersey
Rutgers University Marine Field Station
Rutgers Cooperative Extension
SIROM Scientific Solutions, LLC
Stevens Institute of Technology
Stockton University
Stony Brook University
University of North Carolina at Chapel Hill
William Paterson University

Current and Recent Research Projects

2014-2016

OMNIBUS: Facilitating Natural Dune Building Dr. Nancy L. Jackson, New Jersey Institute of Technology

Advancing Eastern Oyster Aquaculture through Marker Assisted Selection

Dr. Ximing Guo, Haskin Shellfish Research Laboratory, Rutgers, The State University of New Jersey (RU)

Development of Historically-Calibrated Sea Level Rise Projections for Risk Management Along the New Jersey Shore Dr. Robert E. Kopp, RU

Determining Sustainable Catch Limits for Data-Poor Fisheries in New Jersey: Validation and Refinement of a Data-Poor Harvest Control Rule Dr. John Wiedenmann, RU

A Green Technology for Nutrient and Metals Reduction in New Jersey Coastal Waters

Dr. Dibyendu Sarkar, Montclair State University

Genetic Monitoring to Improve Fish Stock Assessments Dr. Malin Pinsky, RU

Development of Climate Change Adaptation Elements for Municipal Land Use Plans: Building Resiliency in Ventnor City, New Jersey Dr. Karen W. Lowrie, Bloustein School of Planning and Public Policy, RU

Enhancing the Effectiveness of Decision Support Tools for Coastal Resilience Dr. Richard Lathrop, RU

MID-ATLANTIC REGIONAL: Understanding the Impacts of Climate Change on the Distribution, Population Connectivity, and Fisheries for Summer Flounder in the Mid-Atlantic Dr. Malin Pinsky, RU

AQUACULTURE NATIONAL STRATEGIC INVESTMENT (NSI): Minimizing Risks of Vibrio Bacteria in Farm-Raised Oysters Grown in Mid-Atlantic Intertidal Environments Dr. David Bushek, Haskin Shellfish Research Laboratory, RU

COASTAL COMMUNITIES CLIMATE ADAPTATION INITIATIVE NSI: Collaborative Climate Adaptation Planning for Urban Coastal Flooding Dr. Philip Orton, Stevens Institute of Technology

PROGRAM DEVELOPMENT/REGIONAL: Evaluation of Climate Resilient Stormwater Management Practices for the Mid-Atlantic Region Dr. Christopher Obropta, Rutgers Cooperative Extension, RU

COASTAL STORM AWARENESS PROGRAM: Best Practices in Coastal Storm Risk Communication Dr. Cara Cuite, RU

They Had the Facts, Why Didn't They Act? Understanding and Improving Public Response to NWS Coastal Flooding Forecasts Rachel Hogan Carr, Nurture Nature Center

Adolescent and Family Decision Making In Time of Disaster Dr. Cristina Hoven, Columbia University

2012-2014

OMNIBUS: The Decline of Winter Founder: Influences of Changes in Connectivity Between Estuaries and the Inner Continental Shelf Dr. Kenneth Able, RU

Evaluating Ecological and Social Impacts of New Jersey Legislation Regulating Fertilizer Nitrogen Loads to Barnegat Bay – Little Egg Harbor Estuary by Using Isotopic Signatures, Seagrass Demographics, Social Response and Communications Dr. Michael Kennish, RU

The Influence of Estuary Geomorphology on Accretion of Coastal Wetlands: A Potential for Priority Planning for New Jersey's Coastal Areas Vulnerable to Sea Level Rise

Dr. David Velinsky, Academy of Natural Sciences of Drexel University



Economic Vulnerability to Climate Change on the Jersey Shore: Promoting Adaptation, Resilience and Sustainability in Coastal New Jersey Dr. Robin Leichenko, RU

PROGRAM DEVELOPMENT: Comparative Analysis of Bivalve Clearance Rates for Restoration Management Dr. David Bushek, Haskins Shellfish Research Laboratory, RU

Developing the Sampling Protocols and Competencies Needed to Monitor Effectiveness of a Rain Garden Designed for Nitrogen Removal Dr. Louise Wootton, Georgian Court University

2010-2012

OMNIBUS: Meteorological modulation of the exchange between Raritan Bay and the Coastal Ocean Dr. Robert Chant, RU

Reducing uncertainty in stock-recruitment relationships and fishery reference points using Bayesian meta-analysis Dr. Olaf Jensen, RU

Assessing plant performance of 'Cape' American Beachgrass, *Ammophila breviligulata*, against local Beachgrass ecotypes Dr. Michael Peek, William Paterson University

Collection of Sex-Ratio Data for Summer Flounder Landings: Commercial and Recreational Dr. Eric N. Powell, Haskins Shellfish Research Laboratory, RU

PROGRAM DEVELOPMENT: Underwater survey and mapping of temperate artificial and natural reef habitats for modeling of productivity and trophic linkage to black sea bass and tautog fisheries Dr. Peter Straub, Stockton University

Assessing Impacts of Catch and Release Practices on Striped Bass (*Morone saxatilis*) Implications for Conservation and Management John Tiedemann, Monmouth University

ADDITIONAL RESEARCH WITH NJSGC MEMBER INSTITUTIONS

In addition to research funded by NOAA/Sea Grant, NJSGC administered the following additional research projects in partnership with the New Jersey Department of Environmental Protection:

Barnegat Bay Nutrient Reference Model – Years 1-3	Academy of Natural Sciences of Drexel University (ANS)	\$373,207
Nutrient Reference Conditions in New Jersey Lakes	ANS	\$70,000
Baseline Characterization of Phytoplankton and Harmful Algal Blooms – Years 1-3	ANS	\$295,933
Tidal Freshwater and Salt Marsh Wetland Studies of Changing Ecological Function and Adaptation Strategies – Years 1-2	ANS	\$194,999
Ecological Evaluation of Sedge Island Marine Conservation Area in Barnegat Bay – Years 1-2	Rider University	\$111,730
Baseline Survey of Zooplankton of Barnegat Bay – Years 1-3	Monmouth University	\$344,994
Sediment Impairment Index for NJ Lakes	ANS	\$82,000
Periphyton Speciation Project for the Study of Diatom Communities in NJ Streams Below the Fall Line – Year 2	ANS	\$22,000
Living Shorelines – Years 1-2	Stevens Institute of Technology (SIT)	\$342,012
Storm Surge Reduction Alternatives for Barnegat Bay	SIT	\$108,008
Flood Adaptation Strategies for the NJ Hudson River Waterfront	SIT	\$193,360
Strategies for Flood Risk Reduction for Vulnerable Coastal Populations	Monmouth University	\$23,000
Phosphorus Dynamics in the Barnegat Bay	ANS	\$95,000

Leadership on Boards and Committees

Association of NJ Environmental Educators (ANJEE) Advisory Board - Claire Antonucci
 ASBPA (American Shore Beach Preservation Association) Science and Technology and Young Member Committees, 2016 National Conference Co-chair - Dr. Jon Miller
 Barnegat Bay Partnership Advisory and Science and Technology Committees - Dr. Peter Rowe
 FEMA Coastal Flood Study Technical Advisory Panel, Coastal Outreach and Advisory Team, Post-Sandy Mitigation Assessment Team - Dr. Jon Miller
 Hudson River Sustainable Shorelines Project Coordinating Team - Dr. Jon Miller
 Jersey Shore Partnership Board of Directors - Claire Antonucci
 Marine Trades Association of NJ Conference Planning and Education Committees – Michael Danko
 Marine Academy of Science and Technology Senior Project Committee - Michael Danko
 Marine Academy of Science and Technology Advisory Board - Dr. Jon Miller, Dr. Peter Rowe
 Monmouth Ocean Development Council Energy and Environment Committee - Michael Danko
 Monmouth-Ocean Development Council Non-Profit Committee - Claire Antonucci
 Monmouth Junior Science Symposium Executive Committee - Michael Danko
 NJ Marine Education Association Board of Directors - Diana Burich
 NJ Clean Vessel Act Committee, NJ Clean Marina Committee - Michael Danko
 NJ Resiliency Network Advisory Board - Dr. Peter Rowe
 NJ Coastal Protection Assistance Service (NJCPAS) - Dr. Jon Miller, Assistant Director
 NJDEP Division of Stormwater Marina Discharge Advisory Committee - Michael Danko
 NJDEP Living Shorelines Rule Writing Committee, Measures and Monitoring Workgroup - Dr. Jon Miller
 NJDEP Coastal Dune Technical Advisory Panel, Marine Event Response Planning Team - Dr. Jon Miller
 NJDOT Office of Maritime Resources Waterway Linear Segmentation Committee - Michael Danko
 NJ Resiliency Network Advisory Board - Dr. Peter Rowe
 NY/NJ Harbor Education Subcommittee - Mindy Voss
 NY/NJ Harbor Estuary Program, Citizen's Advisory Board - Claire Antonucci
 Ocean County Barnegat Bay Environmental Educator's Roundtable - Rose Higgins
 Partnership for the Delaware Estuary Science and Technology Committee - Dr. Peter Rowe
 Rider University Science Advisory Board - Dr. Peter Rowe
 Sustainable Jersey Climate Adaptation Task Force - Dr. Peter Rowe, Dr. Michael Schwebel, Dr. Jon Miller
 Trust for Public Lands Barnegat Bay 2020 Steering Committee - Michael Danko
 21st Century Community Learning Center Advisory Board - Rose Higgins
 Water Equals: National Education Campaign, Regional Advisor - Claire Antonucci, Diana Burich

Within Sea Grant:

Assembly of Sea Grant Extension Leaders - Dr. Peter Rowe
 Climate Network - Dr. Michael Schwebel
 Coastal Hazards and Climate Network - Dr. Jon Miller
 Fiscal Officers Network - Augustine Anuso
 Mid-Atlantic Sea Grant Extension Program Leaders Committee - Dr. Peter Rowe
 Mid-Atlantic Sea Grant Regional Research Planning Steering Committee - Dr. Peter Rowe
 National Sea Grant Educator's Network - Diana Burich
 NY Bight Sea Grant Regional Research Planning Steering Committee - Dr. Peter Rowe
 NOAA Climate Stewards - Diana Burich, Mindy Voss
 Sea Grant Association - Dr. Peter Rowe
 Sustainable Coastal Communities Development Network - Dr. Michael Schwebel



Stakeholder Engagement

Collaboration with stakeholders and the facilitation of partnerships between like-minded agencies, institutions, scientific experts and individuals is fundamental to NJSGC and its mission to advance informed decision-making and sustainable use of New Jersey's marine and coastal resources. To achieve shared goals, NJSGC engages the intellectual power of its members, which include most of New Jersey's academic and scientific community along with a wide variety of other partners and stakeholders to coordinate programs and conduct projects for the benefit of the people of New Jersey.

Our partners and stakeholders are diverse and numerous. They include students and teachers, academics, business owners and administrators, recreational and commercial fishers, shellfish aquaculturists and decision-makers at all levels of local, state and federal government. We take an active role in every project we undertake with our stakeholders and partners and view our role as an unbiased, honest source of the best possible science for the task at hand.

EXAMPLES OF STAKEHOLDER ENGAGEMENT

Superstorm Sandy Response: In the aftermath of Sandy, NJSGC's Coastal Processes Specialist found himself in the frontline for recovery with resilience in mind. Immediately after the storm he provided expertise to FEMA, the State of New Jersey and New York City officials. In Jersey City he worked with oceanographers from Stevens Institute of Technology to help that community understand present and future vulnerabilities. He continues to aid New Jersey's coastal communities through his work with the New Jersey Coastal Protection Technical Assistance Service by identifying measures to reduce exposure and enhance resiliency during rebuilding.

Educating for Resilience: In the wake of Superstorm Sandy and in accordance with NJSGC's strategic goals in climate and ocean literacy, NJSGC's educators developed curriculum materials on coastal resiliency and climate adaptation to address climate change and the climate-associated challenges (flooding, coastal erosion, extreme weather conditions) that New Jersey's coastal communities face. Funding provided by

business partners TD Bank and Jersey Shore Partnership permitted staff to provide direct training on the new materials to over 175 New Jersey educators.

Boy and Girl Scout Collaborations: NJSGC's interactions with scout troops grew exponentially over the review period. A total of twenty-six badge-related programs and 5 field trips specifically tailored for scouts became part of NJSGC's offerings. Each program uses marine science and environmental themes to support badge requirements, is outdoor-based, often includes laboratory experiments, and is highly interactive. A total of 1041 boy and girl scouts participated in NJSGC's scout programs in 2014 alone.

Rip Current Awareness An Innovative Partnership: Throughout the review period, NJSGC's education and extension staff sustained a partnership with the Girl Scouts of the Jersey Shore (GSJS) to inform beachgoers on rip current safety. Accomplishments include a "Break the Grip of the Rip" badge now offered by councils statewide that is earned by scouts who develop and implement a rip current awareness project of their own design. Since its introduction, projects have included "rip current themed" sandcastle contest entries, a YouTube video and a campaign that added QR tags to rip current signs. When scanned by a SMART phone, the tag connects users to the rip current section of NJSGC's website including a children's booklet "Rip Current Kids" funded by TD Bank and developed by NJSGC, Stevens Institute of Technology, the Jersey Shore Partnership and the GSJS.

Enriching STEM Education through the Marine Sciences: In 2013, NJSGC received grants from the PSEG and PADI Foundations to support the development and implementation of STEM programming for underserved middle school-aged students focused on the use of remotely-operated vehicles (ROVs) in ocean exploration. Students built their own ROVs and met NOAA scientists who utilize ROVs in their research. They also worked with engineers and engineering students from Stevens Institute of Technology who design and build robots for the Navy. A curriculum guide is being developed so teachers statewide can implement the STEM-rich ROV program into their programs.

Pre-Service Internships: Eighteen pre-service educators from NJSGC member institutions completed internships with education program staff over the past four summers. The future educators were provided with the chance to observe and assist NJSGC's team of marine educators and teach their own groups of visiting students. Many interns developed a unit of study on a coastal topic and field tested their work during NJSGC's marine science summer camp. Seton Hall University intern Laura Degman was recently hired to teach science in the Linden Public School District.

New Jersey Clean Vessel Act Program Assists Recreational Boating Industry: NJSGC's Marine Recreation Agent assisted various state agencies by assessing damage to pumpout facilities from Superstorm Sandy. Data collected were used to provide recreational boaters with a list of operational facilities before the start of the 2013 boating season. The Agent is currently working with the CVA program to replace damaged pumpout stations. The information also helped NJDOT Office of Maritime Resources prioritize efforts to remove sediment from channels deposited by Sandy.

Oyster Cooperative Established: The efforts of NJSGC's Shellfish Aquaculture Program Coordinator, including a 2012 workshop on cooperative approaches

to shellfish aquaculture, led to the establishment of the Cape May Oyster Growers Cooperative. The Cooperative has since been incorporated and in 2014 received funds from USDA's Rural Business Enterprise to purchase a refrigerated van to ensure safe delivery of product from field to market.

Green Infrastructure For Environmental Justice: Starting in 2012, NJSGC's Water Resources Agent expanded the highly successful rain garden program to underserved and Spanish-speaking communities in Newark and Camden, New Jersey. Assisted by Rutgers Cooperative Extension interns, the Green Infrastructure program reached 970 people, maintained 30 rain gardens and installed over 70 projects. Overall, the Agent's rain garden efforts have easily conserved two million gallons of rainwater.

Needs Assessment of Waterfront Business Owners: A needs assessment targeting marina owners and operators regarding their awareness and attitudes on the potential effects of climate change on their businesses was conducted by NJSGC's Marine Recreation Agent. The assessment is the first phase of an education and outreach campaign related to climate change impacts and adaptation for waterfront businesses. A final report was recently published.

Key Partners

American Association of Landscape Architects
 American Shore and Beach Preservation Association
 Atlantic Capes Fisheries
 Atlantic States Marine Fisheries Commission
 Barnegat Bay Partnership
 Boy Scouts of America
 FEMA
 Girl Scouts of America
 Haskin Shellfish Research Laboratory
 Institute of Marine and Coastal Sciences,
 Rutgers University
 Jacques Cousteau National Estuary Research Reserve
 Jersey Shore Partnership
 Marine Trades Association of NJ
 National Fish and Wildlife Foundation
 National Park Service
 National Weather Service

NJ Coastal Protection Technical Assistance Service
 NJ Department of Environmental Protection
 NJ Department of Transportation, Office of
 Maritime Resources
 NJ Division of Fish and Wildlife
 NJ Division of Parks and Forestry
 NJ Division of Travel and Tourism
 NJ Natural Gas
 NJ School Districts
 Ocean County Department of Planning,
 Public Affairs and Tourism
 Partnership for the Delaware Estuary
 Rutgers Cooperative Extension
 United States Lifesaving Association
 Urban Coast Institute at Monmouth University
 US Department of Agriculture (USDA)
 USDA Plant Materials Center



Collaborative Network Activities

NJSGC maintained a high level of collaborative activities at the regional and national level while upholding its core mission to serve the people of New Jersey. Several of these partnerships have been sustained over many years. For example, Marine Recreation Agent Michael Danko has a long history of interaction with the federal Clean Vessel Act and Clean Marina programs. Education staff regularly collaborate with NOAA/NMFS personnel at the James J. Howard Marine Sciences Laboratory adjacent to NJSGC's Sandy Hook Headquarters on education and outreach efforts that mutually benefit both entities. Selected examples of NJSGC collaborative efforts with NOAA entities and other Sea Grant programs including regional collaborations are:

NOAA Collaborations:

The Coastal Storm Awareness Program (CSAP):

NJSGC and its partners, New York and Connecticut Sea Grant, received a total of \$1.8 million in grants from NOAA as part of Sandy Supplemental Funding to enhance the Sandy affected region and nation's ability to respond to coastal disasters. The goal of CSAP is to determine and understand what influences the choices individuals make in the face of predicted extreme weather events and how they can be reached more effectively in the future. Ten social science projects were funded in 2013 for research to be conducted in 2014-15. The ultimate goal of this research will link cutting edge risk communication science with targeted outreach to help people choose their actions with a clear knowledge of the risks and consequences of their choices.

Benthic Camera Workshop: Dr. Rowe collaborated with Dr. Richard Langton, NOAA/Northeast Fisheries Science Center, to host a 2014 workshop on undersea benthic imaging systems. Major themes of the workshop concerned cost effectiveness and comprehensive sampling imaging methodology for characterizing benthic communities; documenting the advantages and limits of various systems currently being used; and consideration of the future needs regarding imaging systems. Participants from across the nation attended. A summary report has been published and distributed both online and in hard copy.

Public Outreach/Ocean Fun Days:

Each spring since 2003, NJSGC has collaborated with

NOAA/NMFS, the National Park Service, NJDEP Division of Parks and Forestry and corporate sponsor New Jersey Natural Gas to host Ocean Fun Days. This large scale public education event is coordinated by NJSGC's College and Special Programs Coordinator Rosemary Higgins. An average of 10,000 visitors turn out each year over two days to participate in classes in energy conservation, rip current safety, dune building and marine plant and animal identification. A major event attraction is the open house at the James J. Howard/NOAA Marine Fisheries Laboratory which invites the public in for a once-a-year opportunity to tour the lab and meet NOAA researchers and scientists.

Regional Collaborations:

Mid-Atlantic Aquatic Invasive Species Research and Outreach:

Marine Recreation Agent Michael Danko and Dr. Rowe worked with Sea Grant Programs from Delaware, Maryland, Virginia and North Carolina, the Smithsonian Environmental Research Center (SERC) and the University of Maryland on a project that integrates research and education to address the pathway in which aquatic invasive species (AIS) are transported. The outreach message developed from the research results "Protect Our Fisheries - Trash Extra Worms & Packing" highlights the importance of proper disposal. This message is the focus of education materials that were piloted in selected bait and tackle shops from New Jersey to North Carolina.

Legal & Policy Solutions for Mid-Atlantic Ocean Planning Symposium:

Funded by the National Sea Grant Law Center, NJSGC and its partners (Monmouth University Urban Coast Institute, Seton Hall University School of Law, and the Environmental Law Institute) organized and hosted the Legal & Policy Solutions for Mid-Atlantic Ocean Planning Symposium in April 2013. This regional ocean governance symposium was built on past and ongoing efforts to identify innovative and robust legal and policy approaches to support priorities and address timely and critical issues along the mid-Atlantic coast and ocean. Invited papers based on the symposium speakers' presentation appeared in the Sea Grant Law and Policy Journal.

RipCur Smartphone App: Developed by Stevens Institute of Technology computer science students and Coastal Processes Specialist Dr. Jon Miller, this smart phone app allows lifeguards to communicate with one

another in real-time and assists the National Weather Service and the U.S. Coast Guard with data collection and rip current forecasting. The app is just one contribution NJSGC has made to NOAA's rip current awareness program. Other rip current awareness activities include the posting of over 2400 warning signs at New Jersey beaches statewide.

Harbor Literacy Points: Working with more than 50

educators, the Metropolitan Waterfront Alliance, New York Sea Grant and the New York Department of Conservation, NJSGC educators helped develop and publish learning standards designed to integrate the study of the New York/New Jersey Harbor Estuary into the everyday curriculum of elementary, middle, and high school students. The guide covers essential information for a "harbor-literate" citizen to know along with questions for further research and discussion.

Program Changes Resulting from Previous Review

NJSGC's previous site review was in June 2011. Following their review, the Site Review Team made two recommendations and two suggestions.

Recommendation: Consider refining Program leadership to more clearly identify the single individual with responsibility for overall integration and performance of the Program, and authority over Program staff and resources -- the Program "Director."

Response: The structure of the NJSGC as well as the small size of the program within the Sea Grant network presents a unique set of operating conditions as well as opportunities. These conditions were responded to by the Board of Trustees of the NJSGC in 2009 with the appointment of an Executive Director (Claire Antonucci) and an Associate Director for Sea Grant Administration (Dr. Peter Rowe). This model has, in the opinion of the Board of Trustees, served the organization well and it was decided that it would continue. Ms. Antonucci is CEO of the NJSGC, working closely with the board and the membership of the organization. She also directs the organization's education program. Dr. Peter Rowe directs the NJSGC's research and extension activities and handles reporting and certain governance tasks related to the administration of Sea Grant funds. As Executive Director, Ms. Antonucci is the PI of record on the institutional grant and has the responsibility for overall program fiscal performance. She and Dr. Rowe have the advantage of being able to work together closely and collaborate frequently on Sea Grant matters. This team approach has served New Jersey's Sea Grant program well and has greatly enhanced the integration of all four NJSGC functional areas.

Recommendation: Reconcile the apparent disconnect between Program's education component and its strategic decision making and planning. The SRT recommended that care be taken to involve the Program's highly successful education component in all aspects of strategic decision making and planning.

Response: We agreed wholeheartedly with the SRT's recommendations regarding education. Since 2010, and in accordance with a re-branding effort that integrated the Consortium's research, extension, communications and education programs under one umbrella (New Jersey Sea Grant Consortium), education has been fully integrated into Sea Grant activities and identified as such. Increased federal and private sector funding has allowed the program to respond rapidly to changing needs and educational trends. For instance, following Superstorm Sandy the program was able to quickly expand its efforts in climate literacy as well as directly address the storm through the development and dissemination of targeted curriculum materials and teacher training. The NJSGC and its Board of Trustees was pleased to see that the NSGO recognized the importance of ocean education in its own 2014-18 strategic plan with the addition of a fifth focus area, Environmental Literacy and Workforce Development. Mid-course correction has been made to NJSGC's 2010-2014 strategic plan to reflect the NJSGC's strong education program and education has its own section in NJSGC's current strategic plan. Both of these additions allow NJSGC's education program to be acknowledged and evaluated in PIER and the PRP reports.

Suggestion: Continue to seek creative ways to make use of the Consortium's unique structure to help address the Program's strategic, operational, and financial goals.



Response: We agree that the structure of the Consortium does present some clear advantages for program success including meeting financial goals. During the review period, increased private sector funding allowed NJSGC to expand efforts in climate and STEM education. A financial and programmatic partnership with the Girl Scouts of the Jersey Shore resulted in exponential growth of NJSGC's scout programs. A partnership with Monmouth University resulted in the co-funding of a new extension position dedicated to community resilience and climate adaptation. A member institution expertise database launched in 2012 on NJSGC's website has led to increased partnership diversity and increased research opportunities (non-Sea Grant) for member institutions.

Suggestion: Sea Grant should consider ways to assure that funded research is responsive to stakeholder needs.

Response: NJSGC has always funded research that is responsive to stakeholder needs, and has made every effort to assure that it does and will continue to do so since the last site review. NJSGC does this in several ways. NJSGC research is stakeholder driven. We obtain stakeholder needs for research through direct interaction; from our extension agents who meet directly with stakeholders and in group settings; and through our stakeholder advisory board composed of individuals with a diversity of coastal interests and backgrounds. These stakeholder needs are the basis for our research relevancy criteria that is developed into our RFP. The SAB and extension staff are involved in the process from submission to discussion to selection. This interaction and discussion occurs throughout the year as the SAB meets on a semi-annual basis with staff to discuss and provide advisement on all aspects of NJSGC

programming. Also, the chair of the SAB attends and reports out at NJSGC Board of Trustees meetings and at during quarterly Sea Grant Advisory Committee conference calls.

We also address the stakeholder responsiveness issue by encouraging researchers and extension agents to be engaged from the start of the pre-proposal process either through guidance to develop a realistic and impactful extension component to the research, or for the extension agent to become part of the proposed work itself as a collaborator. Additionally, after final selections are made, an agent is assigned as liaison to the grant in order to insure that extension activities will result in impacts to intended stakeholders. The Research and Extension Director works closely with researchers to guide and develop a solid extension plan.

In addition, NJSGC's Technical Review Panels (TRP) score relevancy and the extension component in their rankings during the pre-proposal and full proposal stage. To increase assurance that TRP decisions are based on more than technical merit, the value of relevancy and the extension component in the rankings have been increased. Furthermore, the impact that the SAB has on the selection of the pre-proposal to full proposal stage has increased as well. SAB input has evolved from simple comments and an evaluation of relevancy provided to the TRP to a 50% stake in the pre-proposal rankings used for selection to full proposal stage by the TRP.

In these ways, NJSGC feels it has strengthened the response of funded research to stakeholder needs.

