



ANNUAL REPORT 2012

*The vision of
NJSGC is a
sustainable future
for New Jersey's
coastal environment.*

*Its mission is to
promote responsible
use of New Jersey's
coastal and marine
environment.*

The New Jersey Sea Grant Consortium (NJSGC) was founded by six State colleges in 1969 as a cooperative center for the study of marine and marine-related environmental science. Today it boasts a growing membership of colleges, universities and other organizations that share and support the vision and mission of the organization, making it one of the largest alliances of its kind in the state, region and the nation.

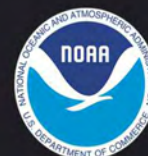
The NJSGC has contributed leading research in the fields of marine and coastal-related environmental science since 1976 and in recognition of its academic and scientific achievements, was awarded Sea Grant College status in 1989.

For over 40 years, the New Jersey Sea Grant Consortium has been the state's leading coastal connection. NJSGC supports research and education in marine and environmental science and develops innovative projects that offer residents and visitors the opportunity to better understand, appreciate, respect and connect with New Jersey's coastal resources.

While marine research and technology are the cornerstones of the Consortium's foundation, its goal is to put the results of the work it supports to practical use to find new ways for science to serve our coast. Some of NJSGC's success stories include developing cultured oyster seeds and disease resistant shellfish that helped revitalize and restore 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 building better dunes and shoreline protection systems to help minimize future devastating property and shoreline damage.

Legislators, educators, scientists, boaters, beachgoers, anglers, commercial fishers, local business and tourism leaders, and basically anyone who lives, works and plays near New Jersey beaches and bays can all count on the New Jersey Sea Grant Consortium to help find solutions and answers to their coastal concerns and challenges. Learn more at njseagrant.org.

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Chairman's Message

On October 29, 2012, the future arrived in New Jersey. Superstorm Sandy rudely reminded us that New Jersey is coastal. Mother Nature will not be ignored, nor will she be taken lightly.

Sandy was especially dramatic for the New Jersey Sea Grant Consortium. The storm flooded the basement of our headquarters on Sandy Hook, displacing us for almost six months. Through the generosity of Monmouth University, and our trustee, President Paul Gaffney, staff found temporary quarters on campus to continue their work. When every excuse in the world existed to suspend our efforts, our staff pressed on. This report would be incomplete without acknowledging their Herculean efforts to serve New Jersey when New Jersey needed them most.

It should be no surprise to any visitor to these pages that our staff and member institutions were intensely researching the benefit of dunes before Sandy was on the radar. One of our core missions is coastal preservation, as I proudly reported to the Governor's staff when we met this summer. Indeed, if every (hurricane) cloud has a silver lining, Sandy pushed the Sea Grant Consortium front and center in the conversation of: "how can we be better prepared the next time?"

One recurring theme on these pages has been our ability to persevere in the face of trying economic times. We are a unique model under the federal Sea Grant umbrella because we embrace 23 members consisting of New Jersey colleges and universities. Under our auspices, the time and talent of marine scientists throughout the State work for the benefit of every citizen. No other Sea Grant participant can make such a claim.

On the eve of Sandy, the national Sea Grant review board

expressly acknowledged the unique place we hold. In its evaluation of our performance, we were recognized as being the top Sea Grant program in one important respect: we get more out of every dollar than any other program.

Our challenge in the year ahead is keep our foot on the maritime gas pedal even as access to financial resources remains tight. We are constantly searching for new ways to partner with member institutions and the State. Our goal, on your behalf, is to make sure federal funds earmarked for Sandy recovery are spent wisely. Our bench is deep with talent; we expect those writing the checks will tap our expertise. Rebuilding is important, but so is the practical research that will tell us where, when and how to rebuild.

Finally, I would be remiss not to acknowledge ten years of service provided by former Monmouth University President (and retired US Navy admiral) Paul Gaffney. The New Jersey Sea Grant Consortium has never had a better friend or protector. He may have retired from our board and from Monmouth University, but he can't hide. Whenever we need guidance or encouragement, we know who to call. On behalf of all of us, I offer President Gaffney our gratitude. Godspeed in your new endeavors.

And on behalf of the fine people who populate these pages, I am proud to offer this annual report.



DENNIS KEARNEY
Chairman
Board of Trustees

Executive Director's Message

Welcome to the New Jersey Sea Grant Consortium's 2012 annual report. Each year we look forward to this opportunity to tell you about the progress we've made towards our mission to advance greater understanding and wise utilization of New Jersey's marine and coastal resources. Through hands-on technical assistance, targeted research and a comprehensive set of education and outreach efforts, we hope you find the accomplishments presented herein responsive to the opportunities and challenges of living with the New Jersey coast.

On October 29 those challenges became especially evident. Superstorm Sandy was a sobering reminder that nature and its power should never be underestimated. New Jersey has the good fortune of possessing 130 miles of ocean coast which offers us countless advantages including great places to live, work and play. As Sandy reminded us, these advantages come with a degree of risk. From our government and non-government agencies to our institutions of higher learning, New Jersey also has the good fortune to have a wealth of capable resources to advance understanding of the risks and guide the way to a better prepared and more resilient future. With these resources and others at the

disposal of our leaders, New Jersey's citizens and visitors should have every confidence that a "new" New Jersey will emerge that will be better prepared for future storm events. The NJSGC is here to assist and it is my greatest hope that our work not only had an impact on what our leaders were able to do to assist their constituents following the storm, but also laid the groundwork for a more resilient and sustainable future.

There is no question that New Jersey will recover. We look forward to continuing to provide the services and training that our coastal communities have come to rely on us for, and we look forward to working with our many partners to build a state of excellence and resilience in a changing and increasingly challenging environment. Thank you for your interest in our organization and please enjoy this annual report.



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Coastal Communities Agent

Jon Miller
Coastal Processes Specialist

Jillian Thompson
Water Resources Agent

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The New Jersey Sea Grant College Program

The mission of the New Jersey Sea Grant Consortium (NJSGC) is to provide research and outreach programs that promote better understanding, conservation and use of New Jersey's coastal resources. By working closely with coastal communities, marine researchers, water dependent industries, government agencies, citizen groups, students, teachers, schools and individuals, the NJSGC fosters environmental stewardship, long-term economic development and responsible use of New Jersey's coastal and ocean resources. NJSGC is part of a nationwide network of 34 state programs supported by the National Sea Grant College Program within the National Oceanic and Atmospheric Administration. Most of the 34 state programs are hosted by a single academic institution; however, as a consortium, NJSGC is able to utilize the intellectual power and knowledge of its 23 member institutions to achieve its mission. As a consortium, NJSGC's ability to meet its mission, including the goals and outcomes of its strategic and implementation plans, is greatly enhanced.

NJSGC's strategic and implementation plans were developed with input from New Jersey's coastal stakeholders regarding their needs within the state. The plans are aligned with National Sea Grant's strategic and implementation plans in order to increase the impact of NJSGC's activities at state, regional and national levels. In 2012, NJSGC also continued its regional and national participation in Sea Grant through

regional research planning (New York Bight and Mid-Atlantic), the Mid-Atlantic Sea Grant Extension Program, Assembly of Sea Grant Extension Program Leaders and the Sea Grant Association.

NJSGC invests in high-priority, stakeholder-driven research through competitive grants to scientists and educators throughout New Jersey. It maintains a standing stakeholder-driven Sea Grant Advisory Board that advises not only for research priorities but also for extension, education and communications activities. Similarly, the Sea Grant Advisory Committee, a standing committee of the NJSGC Board of Trustees, offers advice and guidance and strengthens the link between NJSGC staff and the Board of Trustees.

NJSGC awards approximately one third of its federal dollars annually to research that addresses coastal and marine issues including coastal community resiliency, coastal processes, coastal ecosystems, water quality and fisheries. Researchers examine both the natural and human impacts on these systems. The collective expertise and interaction of NJSGC's extension agents, educators and communications specialists in conjunction with our Sea Grant-funded investigators provide the foundation for the timely, relevant and meaningful dissemination of research results that can be applied by our coastal stakeholders.



Omnibus Research Awards

Dr. Kenneth W. Able, Dr. Thomas M. Grothues

Rutgers, The State University of New Jersey

**The Decline of Winter Flounder:
Influences of Changes in Connectivity Between
Estuaries and the Inner Continental Shelf**

R/6210-0014



Dr. Michael J. Kennish, Dr. Benjamin Fertig

Rutgers, The State University of New Jersey

**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**

R/6210-0013



Dr. Robin Leichenko, Dr. Richard G. Lathrop Jr.

Rutgers, The State University of New Jersey

**Economic Vulnerability to Climate Change on the
Jersey Shore: Promoting Adaptation, Resilience and
Sustainability in Coastal New Jersey**

R/6210-0012

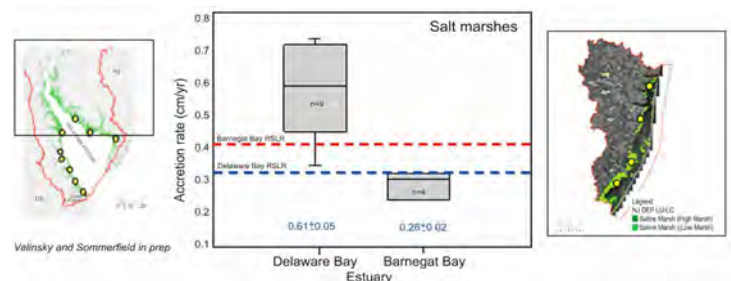


Dr. David Velinsky, Dr. Tracy Quirk

*The Academy of Natural Sciences of
Drexel University*

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

R/6210-0011



Development Research

Dr. David Bushek

*Rutgers University – Haskin Shellfish
Research Laboratory*

**Comparative Analysis of Bivalve Clearance
Rates for Restoration Management**

Dr. Louise Wootton

Georgian Court University

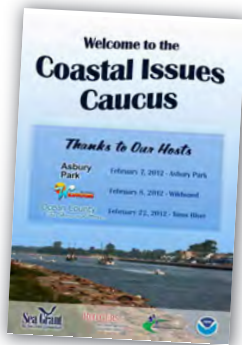
**Developing the Sampling Protocols and
Competencies Needed to Monitor
Effectiveness of a Rain Garden Designed for
Nitrogen Removal**

EXTENSION PROGRAM

DR. PETER ROWE - Director of Research and Extension

The NJSGC Extension Program had an active and productive year in 2012. Extension staff engaged coastal stakeholder communities within the state, region and the nation by delivering new, continuing and expanded projects. Agents and specialists met and provided technical assistance to coastal stakeholders both individually and in groups via educational activities and tours, invited presentations at conferences, workshops, symposia, seminars and outreach events, and also through memberships on boards, advisory councils, committees and associations. Extension staff enthusiastically received thousands of visitors at NJSGC's two-day public outreach event, Ocean Fun Days. Extension staff was also instrumental in reaching out to stakeholders in order to develop the NJSGC's 2014-17 strategic plan.

The Extension Program saw changes to its staff in 2012. Coastal Communities Agent, Caroline McLaughlin, and Water Resources Agent, Jillian Thompson, both took their skills and expertise to other organizations outside the state. Jessica Brown came on board, teaming up with Amy Boyajian to continue extension activities in water resources. In addition to Director Dr. Peter Rowe, full-time staff at Sandy Hook included Michael Danko, Assistant Extension Director and Marine Recreation Agent, and until late fall of 2012, Ms. McLaughlin. The Extension Program maintained its successful Memoranda of



Agreement (MOA) with Stevens Institute of Technology to retain the services of Dr. Jon Miller, Coastal Processes Specialist. Another MOA with Rutgers University Cooperative Extension supported two Water Resources Agents, Ms. Boyajian and Ms. Brown. Lisa Calvo, Shellfish Aquaculture Program Coordinator, entered her second year supported by a National Strategic Investment (NSI) Aquaculture Extension Grant through an MOA with Rutgers University.

Dr. Rowe continued his involvement in Sea Grant Extension at the regional and national level. Members of the Extension staff were active participants at the Mid-

Atlantic Sea Grant Extension meeting held in Rehoboth, Delaware in April. This meeting led to new collaborations with sister programs in the mid-Atlantic region including the transfer of stormwater management best practices with the Delaware and Maryland Sea Grant Extension Programs.



The Extension Program continued its success in obtaining grants and contracts. From the State of New Jersey, Michael Danko received funds to continue the Clean Vessel Act and Clean Marina Programs. Through a new Coastal Communities Climate Adaptation Initiative award, Mr. Danko has begun reaching out to coastal businesses to increase their understanding and awareness of the impacts of climate change. An Aquatic Invasive Species Mid-Atlantic award with the other Mid-Atlantic Sea Grant programs allowed him to reach out to anglers to obtain data on aquatic invasive species knowledge and best practices in the live bait trade. The National Strategic Investment with Rutgers University for shellfish aquaculture extension also completed its second full year. Ms. Calvo and Ms. McLaughlin received funding to promote community supported fisheries and aquaculture through a USDA grant. Dr. Rowe received funds to develop a legal symposium on coastal issues in the mid-Atlantic and, through Delaware Sea Grant, to provide coastal communities on the Delaware Bay with information on hazard resiliency in response to climate change. Both of these activities will be completed next year.

On October 29, 2012, New Jersey took a direct hit by Superstorm Sandy. The storm had direct impact on the infrastructure of the NJSGC on Sandy Hook and the lives of the people who work there. Despite these hardships, extension staff immediately became engaged with Sandy recovery by reaching out to their stakeholders including coastal communities, marinas and watermen. Activities included providing economic damage assessment through surveys to state and federal agencies and the assessment of beach and dune loss. These activities will continue and grow in 2013.

The following summaries highlight the projects and activities of the Extension Program's agents and specialists in 2012.





DR. JON MILLER - Coastal Processes Specialist

Rip Currents

NJSGC took rip current education and awareness to a new level of excellence in 2012. In addition to the signage program which has been responsible for supplying over 2,000 rip current safety signs and over 30,000 brochures to coastal communities since 2004, NJSGC launched two new programs in 2012.

The first was a collaborative effort with the Girl Scouts of the Jersey Shore and the Jersey Shore Partnership. Through the project, Girl Scout troops participated in a variety of activities including inventorying the existing rip current signs, providing and applying quick



response (QR) tags to them and participating in several sand art contests where the designed projects had a rip current safety theme.

The other project was the development of a rip current app to improve communication among lifeguards and emergency management personnel. The app was developed by a talented group of computer science students at Stevens Institute of Technology. The app was tested by a dozen New Jersey communities in 2012 and was highlighted by several media outlets including the Weather Channel during its Rip Current Week coverage. The coastal processes specialist was invited to Silver Spring, Maryland and Minneapolis, Minnesota to present the app to a wider audience including NOAA, the National Weather Service and the United States Lifesaving Association.

Superstorm Sandy

In the aftermath of Superstorm Sandy, NJSGC's Coastal Processes Specialist found himself on the front lines trying to help New Jersey's communities recover and rebuild with resilience in mind. Immediately after the storm, Dr. Miller toured the devastation with representatives from FEMA, the State of New Jersey, and New York City, to provide local expertise and context to the storm impacts and to assist in identifying solutions. In addition, Dr. Miller was invited by several communities including Toms River Township and Bay Head to discuss shore protection options to prevent future disasters. Perhaps more importantly, he was invited to provide testimony before several committees of the State Legislature on the recovery effort and attempts to provide commentary on several bills designed to increase hazard resiliency in our coastal communities. The press also relied heavily on Dr. Miller's expertise as he was regularly asked to provide commentary on topics ranging from coastal storms, to climate change, to community preparedness. Thanks in part to his efforts, New Jersey is well on its way to recovery and is moving forward with a more sustainable future in mind.

MICHAEL DANKO - Marine Recreation Agent

New Jersey Clean Marina Program

The NJSGC Extension Program continued its partnership with the New Jersey Department of Environmental Protection Office of Coastal Management to implement the New Jersey Clean Marina Program to minimize the impact recreational boating



activities have on the environment. Over 160 marinas have participated in Clean Marina related workshops, 249 marinas have received the guidebook and 48 marinas have been recognized as Clean Marinas. Marinas have implemented best management practices to reduce spills that occur during fueling, capture water from hull washing, use dustless sanders, improve recycling efforts, collect mercury containing devices, develop emergency response plans, educate boaters and install pumpout facilities. These efforts have improved coastal water quality, enhanced recreational boating and helped sustain businesses.



NJSGC continued its effort to prevent sewage and other discharges from vessels and provide information on boating access sites through NJBoating.org.



NJBoating.org is a new website that was launched in 2012 through a joint press announcement with the New Jersey Department of Environmental Protection.

The website is the result of the efforts of the members of the New Jersey Clean Vessel Act Program. The website contains a comprehensive list of pumpout facilities and boat ramps open to the public as well as information on boating best practices, recreational fishing regulations, Barnegat Bay, boating safety and other boating and fishing related information.

AMY BOYAJIAN, JILLIAN THOMPSON and JESSICA BROWN - Water Resources Agents

The Water Resource Agents dedicated their time and energy toward promoting best management practices that result in improved water quality in our watersheds and by making known the connection between healthy watersheds and healthy estuarine and coastal waters. Their extension activities targeted communities, municipal officials, schools, watershed groups and individuals interested in promoting improved water quality of watersheds, including New Jersey's coastal waters. These impacts were the result of expanding current programs, developing new ones, increasing partnerships, and leveraging funding. Leveraged funding for projects was provided by USDA, USEPA, NJDEP, Hamilton Township and the Camden County Municipal Utilities Authority.

Rain garden programs included Rain Garden Landscaper Training, Stormwater Management in Your Backyard, and Stormwater Management in Your Schoolyard, which reached over 1400 individuals, and conserved over 200,000 gallons of water. The Rain Garden Landscaper Training program strengthened regional partnerships with presentations given in Lewes, Delaware as part of a Delaware Sea Grant workshop and at US EPA Region 3 in Philadelphia, Pennsylvania. Rain Barrel programs included the Rain Barrel Art Program/"One Barrel at a Time Co-op" and the "Build a Rain



Barrel" Workshops. Through these programs over 2400 people were reached and over 1.7 million gallons of rainwater was conserved. The water resources team expanded the Green Infrastructure for Environmental Justice Communities program to the underserved communities of Newark and Camden. Additional programs were developed to help train volunteers to collect data for watershed restoration plans and educate municipal officials on stormwater management compliance. The Green Infrastructure programs reached over 970 people with over 50 projects installed. The programs have expanded geographically beyond New Jersey with presentations, installations and workshops given in Delaware, Pennsylvania and New York. The agents also were involved with a NJSGC-funded Program



Development project at Georgian Court University in partnership with the Rutgers Cooperative Extension's Water Resources Program on the development of rain gardens designed to remove nitrogen from stormwater.

LISA CALVO – Shellfish Aquaculture Program Coordinator

Shellfish Aquaculture Situation and Outlook Survey

There is no consistent annual reporting program for shellfish aquaculture in New Jersey and the economic importance of the industry remains undocumented and poorly understood. In the wake of recent natural disasters, the need for documentation regarding the scope and economic value of the industry is more important than ever. In 2012, the NJSGC's Shellfish Aquaculture Program Coordinator developed and launched an annual survey to address this issue for shellfish aquaculture in New Jersey. The Shellfish Aquaculture Situation and Outlook Survey is modeled after a successful survey program conducted by the Virginia Institute of Marine Science and Virginia Sea Grant. This survey will prove vital in understanding the importance of New Jersey's aquaculture industry to the economy and will help industry members gain support for key issues.

Twenty-three shellfish growers participated in the New Jersey survey. The hard clam industry was not well captured, but nearly all of the State's oyster growers participated, providing important statistics on the growing industry. Based on the survey, the total number of cultured oysters produced and sold as market sized oysters in 2012 was 1.5 million. These oysters yielded an average price of \$0.51 and were primarily sold wholesale. As of January 2013, the farms participating in the survey reported having 16.8 million field planted oysters. Oyster growers project that 2.6 million oysters will be harvested in 2013.

Cape Shore Oyster Growers Cooperative

In the last 15 years, oyster aquaculture has emerged as a vital industry in Delaware Bay, New Jersey. In contrast to the wild oyster fishery, which is located in the mid-to-upper bay, New Jersey's oyster farms are primarily located in the saltier waters of the lower bay. The lower bay area has extensive intertidal sand flats, known as the Cape Shore flats. These flats present an ideal environment for rack and bag oyster culture systems that are accessed from the beach at low tide. The bags and cages are stocked with hatchery produced oyster seed or wild caught oyster seed. The lower bay growing area is characterized by high quality clean waters that are rich with just the right combination of nutrients and salt enabling the production of consistently high quality delicious oysters.

The geographic centralization of most of New Jersey's oyster farms in the lower Delaware Bay creates an ideal opportunity for farmers to work cooperatively as they produce consistently high quality oysters in similar growing conditions. In January 2012, Rutgers University and the NJSGC Extension Program hosted a workshop on cooperative approaches to shellfish aquaculture. The workshop prompted a group of oyster growers to explore the possibility of forming a cooperative. Working with NJSGC's Aquaculture Program Coordinator, industry members formed a steering committee and formed the framework for the Cape Shore Oyster Growers Cooperative. The cooperative has been registered as a 308B Cooperative in Minnesota (as Delaware Bay Oyster Growers Cooperative), where there is a robust legal climate for farmer cooperatives. Finalization of incorporation documents is in process.

The guiding principles of the Cooperative are to: (1) establish a supportive community of oyster growers who will work together to provide fresh, high-quality cultured oysters to local and regional markets; and (2) adopt science-based best management practices to improve production efficiencies and ensure environmentally responsible and sustainable farming. The Co-op will evolve to serve marketing, purchasing, infrastructure and professional service needs of its members. The Co-op is particularly interested in serving specialty niche markets such as food cooperatives and upscale restaurants.



COMMUNICATIONS

Communications is a core program component that delivers diversified creative and production services to the New Jersey Sea Grant Consortium. The Communications Department functions as an in-house publishing, advertising and marketing agency for the organization and is responsible for effectively conveying information to the media, individuals and targeted user groups. Much of the information is marine science oriented and often based on NJSGC's own research and program activities. But Communications also integrates information input from other agencies, organizations and stakeholders who are working to increase understanding of New Jersey's coastal ocean environment.

The Communications team designs, produces and distributes publications and other resource materials to appropriate audiences and embraces all means and mediums including conventional print, electronic technology, radio and TV, web and social media to develop the most innovative and creative methods possible of transmitting and sharing information .

The 2012 New Jersey Sea Grant Consortium's Communications team included Director Kim Kosko,

full-time Communication Specialist Marsha Samuel and part-time Graphic Designer and Communication Associate, Rory Joyce. This small but dedicated and highly productive staff of talented media professionals were faced with additional challenges during the last quarter of 2012 when Superstorm Sandy uprooted them from their Sandy Hook home base and limited their access to critical technological tools they needed to execute their assignments and maintain their high level of productivity.

A special note of thanks and recognition needs to be given to Premier Graphics in Atlantic Highlands which offered equipment, office space, internet and phone access for conference calls and moral support to the Communications Staff for the duration of NJSGC's five months of "homelessness" following the storm.

While the Communications team played an integral role and contributed to the success of many NJSGC organization and department activities it also coordinated a number of stand-alone specific special events and projects in 2012 which included:

Tenth Annual State of the Shore Media Event

Representatives from dozens of television, radio, web and wire services, and newspaper outlets throughout the Tri-State area attended the Communication's Department's pre-summer premier media event. The *2012 New Jersey: Tenth Annual State of the Shore Report*, written and presented by Dr. Jon Miller, Coastal Process Specialist for the NJSGC was the showcase and anchor publication for the event.

Project partners included the NJDEP, NJ Division of Travel and Tourism, Stevens Institute of Technology and the Richard Stockton College Coastal Resource Center. Department of Environmental Protection Commissioner Bob Martin and Division of Travel and Tourism Executive Director Grace Hanlon were on hand to give remarks in support of the state's coastal health and thriving beach tourism industry. The event provided

millions of residents in New Jersey, New York, Pennsylvania and Connecticut with a reinforcing reminder about the importance of the State's coastal resources and their economic value to the State.

Dr. Thomas Herrington of Stevens Institute of Technology who wrote and delivered the first ever *Annual State of the Shore Report* in 2003 was a featured speaker. In a coincidental pre-Sandy themed agenda, Michael Augustyniak of the NJ Office of Emergency Management, Mary Colvin, FEMA Region II, and Dr. Stewart Farrell Director, Richard Stockton College Coastal Research Center provided overviews of state and federal coastal storm impacts and planning and response programs. NJSGC's reputation as an accurate and relevant information source about the condition of the State's beaches and current coastal issues was further strengthened by this much-anticipated, well attended annual media event.



New Jersey's Top Ten Beaches Survey and Coastal Prize Package Giveaway



The Consortium's popular New Jersey Top Ten Beaches survey project launched in 2008 in cooperation with the Richard Stockton College's Coastal Research Center was created to make people feel more connected to and protective of New Jersey's beaches. In 2012 New Jersey residents and beach lovers were once again asked to help rank the state's favorite shore

destinations in the Fifth Annual New Jersey Top Ten Beaches Poll. Visitors to njtoptenbeaches.org were also invited to take part in a simple, single-question poll that asked them to select which issue they felt would have the biggest impact on the future of coastal New Jersey. The single-question poll asked web site visitors to select from a list of twenty issues the one they felt would have the



biggest impact on New Jersey's coastal future. The poll responses provided valuable information that served as a catalyst for new project ideas for NJSGC. To thank participants NJSGC worked closely with key tourism representatives from coastal counties to coordinate a Jersey Coast Prize Packages giveaway. Website voters could opt to enter a drawing for one of four prize packages that featured merchandise and certificates for attractions and activities that can be enjoyed while down and around the shore.

The results of the mini-poll and winners on the Jersey Coast Prize Packages were announced at NJSGC's annual State of the Shore showcase media event along with the top vote getters in the Top Ten Beaches survey.

Rip Current Awareness: Innovative Partnerships Ripcur Smartphone Mobile App Project

Rip current related drownings are one of nature's deadliest phenomena, but sometimes receive less publicity than other natural hazards because our understanding of them is still somewhat limited.

Communications organized a special media event for NJSGC and Stevens Institute of Technology on June 6th in Spring Lake to officially introduce and demonstrate an exciting new smartphone mobile app developed by a team of Stevens Institute Computer Science Students. The device will help lifeguards track potentially deadly rip currents and assist the National Weather Service with data collecting and rip current warnings.



Spring Lake was one of the first New Jersey beach communities to test/use the mobile application and other pilot towns including Belmar and Lavallette were announced at the press conference.

The Ripcur App project was coordinated by NJSGC Coastal Processes Specialist Dr. Jon Miller of Stevens Institute. The press event and app itself received national and even international attention and interest and the story was picked up by most major TV networks and featured on a special segment on the Weather Channel.

Rip Current Awareness Asbury Park Press Conference

To coincide with National Rip Current Awareness Week, Communications worked with the City of Asbury Park and NOAA/NWS to hold a special press conference on the Asbury Park boardwalk to help promote rip current awareness and showcase the Girl Scouts of the Jersey Shore and their rip current projects.



The Stew Tweed Fisheries and Aquaculture Scholarship



NJSGC established a scholarship fund in 2008 to honor the memory of Stew Tweed who worked as a Marine Agent for the NJSJGEP between 1978 and 2005. The scholarship is designed to perpetuate Stew's combined passion for shellfish culture and marine science education and for taking fisheries and marine-related technology and scientific information and finding ways to apply them to the real world of shellfish aquaculture and commercial fisheries. A generous group of industry leaders and individual benefactors recruited by Project Coordinator Kim Kosko established enough "seed" money to fund the aquaculture scholarship program. Each year, scholarships are awarded to support one graduating high-school senior (\$1,000) and one undergraduate/graduate student (\$1,500) pursuing studies or an outstanding research or technology project focusing on fisheries or aquaculture. The 2012 winners were Colleen Talty for the Undergraduate/Graduate Scholarship and Danielle Beers for the High School Scholarship. Congressman Frank Pallone (NJ-6th District) who once worked for New Jersey Sea Grant Extension and was a colleague of Stew Tweed presented the scholarship awards during NJSGC's Ocean Fun Days an annual education-oriented outreach event.

Awards and Accolades

NJSGC Communications accolades in 2012 included a prestigious APEX Award for the limited edition calendar, *New Jersey Shore Shots*, which featured winning photos from the first New Jersey Top Ten Beaches Photo contest held in 2011. Three of the state's most notable photographers representing southern (Al Campbell), central (Paul Scharff) and northern (Dwight Hiscano) New Jersey served as the panel of judges. They selected 24 photos from hundreds of entries and those finalists were posted on the New Jersey Top Ten Beaches website so visitors could vote for their favorite dozen photos, to be included in the calendar.



New Year, New Research

The New Jersey Sea Grant Consortium (NJSGC) recently submitted its 2012-14 Sea Grant Overview Report to the National Science Foundation (NSF) to support its ongoing research, education, and communication activities. The proposal also requests funding for further new research projects focusing on issues of high priority in New Jersey's coast. These include work within Rutgers Bay and Estuarine Consortium (Rutgers Bay Institute). The four research projects included in the proposal are:

- The Impact of Winter Weather:** Advances of Change in Connectivity Between Eastern and the Outer Continental Shelf submitted by Dr. Kenneth Hill and Dr. Thomas Grotzinger, Rutgers University, Institute of Marine and Coastal Sciences. The overall goal is to enhance the understanding of winter weather connectivity between eastern and continental shelf habitats and address issues related to the decline of winter flounder and management of its fishery.
- Evaluating Ecological and Social Impacts of New Jersey Legislation:** Rutgers University, Rutgers Bay Institute and Rutgers University, Institute of Marine and Coastal Sciences. The overall goal is to assess the effectiveness of, and the impact of, the new legislation on the coastal fisheries and aquaculture industry.
- Assessing the Impact of Climate Change on the Jersey Shore:** Rutgers University, Rutgers Bay Institute and Rutgers University, Institute of Marine and Coastal Sciences. The overall goal is to assess the impact of climate change on the coastal fisheries and aquaculture industry.
- Assessing the Impact of Climate Change on the Jersey Shore:** Rutgers University, Rutgers Bay Institute and Rutgers University, Institute of Marine and Coastal Sciences. The overall goal is to assess the impact of climate change on the coastal fisheries and aquaculture industry.

Desktop Calendars Celebrate New Year and New Jersey's Coast

In response to the overwhelming popularity of the first edition of the 2012 Shore Shots calendar, the New Jersey Sea Grant Consortium will announce the New Jersey Top Ten Beaches Photo Contest. The limited supply of printed calendars will be available for only a few weeks of publication, so NJSGC will offer the images for download on its website. The first calendar, released in the September annual Coast Guard Journal in Cape May, has been a success, highly sought after items. The second calendar will be available for purchase in the fall. The calendar features the top ten beaches in New Jersey as voted by the public. The images were selected from a contest that received over 10,000 entries. The calendar features the top ten beaches in New Jersey as voted by the public. The images were selected from a contest that received over 10,000 entries.

SHARE	DESCRIPTION	PRODUCER
Hard-core	Farmed	Wing Village
Soft	Farmed	Norfolk Neighbors
Malibu River Oysters	Wild	Muswell Shellfish
Crab	Farmed, cleaned, cut	Luxco Shellfish
Crab	Farmed, cleaned, cut	Luxco Shellfish
Oysters	Farmed	Cape May State Atlantic Shellfish
Bluefish	Dredged	Luxco Shellfish
Chopped clams and chowder base		

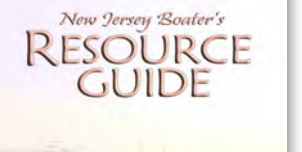
PRICE: \$20/Share, \$250/Share to be paid in full by May 1, 2012.

SHARE SIZE: While the size of the share will vary weekly depending on its market value, one share will generally be enough for two people. If you purchase more than one share as long as additional individual shares are in the share.

PICKUP: Usually beginning Saturday, June 9, 2012. Pickups for most Saturday mornings 9-12. If you are unable to pick up your share, please no returns if you wish a pickup. Also, we cannot hold shares for another pickup more than one share as long as additional individual shares are in the share.

LOCATION: 585 Farms, 250 S. Mountain Ave, Gateway Twp., NJ 08215. Turn in driveway and it will be on your shelf. Please follow signs for CSEA parking.

ADDITIONAL RESOURCES AND INFORMATION: Every two weeks, the arrival of seafood shares will be accompanied by the latest availability of additional seafood shares. Shareholders will receive a short description of the seafood producer, the species being offered, recipe suggestions, an instruction for preparation. We will also provide information on local seafood markets, seafood processing, and seafood safety. We hope that by "tasting the water" with the seafood shares we will increase the amount of fresh, locally sourced seafood in local consumers, support the livelihoods of small scale local fishermen, and increase awareness of how important it is to broaden the base of local food movement. For assistance, help or request the share, please contact Jennifer Lammara at jlammara@njsgc.com, Gail Flinn at flinn@njsgc.com, or look for the information at SeafoodShare.com.



Reel in a Reward
for your **Winter Flounder Catch!**

Researchers from Rutgers are tracking the movements of winter flounder. If you catch a fish with either of the devices pictured below please follow the instructions.

Archival Tag
Archival tag will be inserted in the base of the dead fish. Tag will be placed in the fish's mouth. Please follow signs for CSEA parking.

Dorsal Yellow Loop Tag
If you catch a fish that has a dorsal yellow loop tag, please follow signs for CSEA parking.

Little Neck Clams
NAUTICAL NUGGETS

1 and operated by Rita Corona and her son, Ray, and based in Port Republic, New Jersey. The business has been in operation since 1970. Founded by Rita Corona and Rita Corona in the mid-1970s, Nautical Clams is a family business in Atlantic City and a local-based nursery, which are also the producers of Little Neck Clams for planting in New Jersey coastal bays on Essex.

Winter Flounder
Open Season: Nov. 23 - Dec. 31

PROHIBITED SPECIES
The Atlantic Ocean is the home of many species of fish and wildlife. It is important to protect these species and their habitats.

KEEP OUR WATER CLEAN
We need water to breathe, but we don't have unlimited supplies. Let's keep our water clean by following the 4 R's: Reduce, Reuse, Recycle, and Respect.

EDUCATION PROGRAM

Part of the mission of the NJS GC is to assure that New Jersey's citizens and visitors understand, value, and appreciate the marine and coastal environment that surrounds them. Each year, the staff of the Education Program at the NJS GC works towards that mission by conducting programs that advance ocean literacy, enrich science education and create awareness of key coastal issues. At the same time, stewardship for the environment is nurtured through teaching that uses the excitement of experiential learning to foster awareness, appreciation and behavioral change.

In 2012 the majority of the department's efforts were focused on school-aged children and their teachers. Besides conducting hundreds of guided field trips from NJS GC's Sandy Hook headquarters, education staff held programs for pre-K-12 audiences at New Jersey's schools, informal education centers and at after-school and out-of-school time childcare centers. These off-site presentations became especially important following Superstorm Sandy which closed NJS GC's Sandy Hook headquarters for the remainder of the year. In addition,

education program staff hosted courses in the marine sciences for New Jersey's undergraduate students, provided a variety of teacher training experiences for pre- and in-service educators and contributed to a number of marine and coastal related public outreach events including the coordination of NJS GC's own annual open house, Ocean Fun Days.



Education Program highlights for 2012:

The Coastal Experience

Despite Superstorm Sandy which ended NJS GC's field trip season prematurely, over 18,000 New Jersey schoolchildren participated in a diverse range of content-rich learning experiences on the beaches, bays and maritime forest habitats of Sandy Hook. Field trips were coordinated by staff members Diana Burich and Cindi Valkos along with a dedicated team of nearly forty marine science educators. Following Sandy, off-site presentations increased statewide over the fall and winter. A new partner, Our Lady of Mount Carmel 21st Century Learning Center in Asbury Park brought in the NJS GC for a ten-week series of after-school presentations to school-aged children led by staff member Rosemary Higgins.



Marine Science Summer Camps

In 2012, 156 children from grades 3 through 8 spent part of their summer vacations with NJS GC's educators. Led by Jessica Staats, extensive outdoor explorations were conducted followed by challenging laboratory investigations including squid and shark dissections. A new activity was introduced by NJS GC's K-12 Program Coordinator Diana Burich during which campers designed, built, and tested remotely operated underwater vehicles of their own design.

Pre-Service Internships

Two pre-service educators from NJS GC member institutions Monmouth University and Seton Hall University completed summer internships with education program staff in 2012. The future educators were provided with the chance to observe and assist NJS GC's team of marine educators and teach their own groups of visiting students. Each intern also developed a unit of study on a coastal topic and field tested lessons from it with students from the Consortium's marine science summer camp.

Congratulations to Seton Hall University intern Laura Degman who upon her graduation was hired to teach science in the Linden Public School District.

Project PATH

(Parents, Administrators, Teachers and Higher Education Faculty helping rural disadvantaged students stay on a pathway to a geoscience career): By exposing students while they are still young to geoscience careers, a future workforce will result that will be equipped to deal with local, state and national environmental and technical needs. This is the premise of Project PATH. For this project, NJS GC educators entered into a multi-year partnership led by Dr. William Slattery of Wright

State University (Dayton Ohio) to work with a group of 30 under-resourced students from rural Ohio over the course of their middle school years. During the summer of 2012, NJS GC educators provided a weeklong program in geoscience education focused on marine science and marine science careers to the students. The group included teachers, administrators, parents and university faculty from Ohio who worked alongside the students to become acquainted with the science of the ocean and research being conducted to increase understanding of its critical habitats. One highlight of the week was a visit to the James J. Howard Marine Sciences Laboratory where the group had the opportunity to meet with many of the NOAA research scientists working there.

Following that, 15 Wright State masters-level science education majors participated in a three-day seminar at Sandy Hook led by NJS GC staff. The workshop provided the group with experiences, ideas and examples of ways to use marine science to build understanding and

excitement for science, technology, engineering and math (STEM) topics when they return to their K-12 classrooms in the fall. One highlight of the program was a sampling cruise aboard the NOAA research vessel Nauvoo co-taught by NJS GC educator Jessica Staats and Captain Peter Plantamura of the NOAA/National Marine Fisheries Service. Funding for Project PATH was provided by the National Science Foundation.



Geoscience Education at Sandy Hook

Despite the need to educate K-12 students on earth systems science (a recently added mandate in New Jersey's core curriculum content standards), New Jersey's teachers lack access to current research and applied, location specific teaching tools to inform themselves and their students on the discipline. To begin to close this gap, NJS GC staff members Claire Antonucci, Diana Burich and Mindy Voss teamed up with researchers and educators from Rutgers University to help teachers and administrators from Red Bank, New Jersey improve their earth systems science curricula through use of marine science content. As a follow-up to an intensive 2011 summer institute held at NJS GC headquarters, this team provided curriculum planning assistance and in-class support to the Red Bank group throughout the 2011/2012 school year. The collaboration resulted in the district-wide adoption of a new science curriculum for Grades 3-8 which includes local, place-based marine and coastal content throughout. In addition, Red Bank's educators developed lessons to integrate into the district's mathematics, language arts, and health classes that featured marine science themes. Funding for Geoscience Education at Sandy Hook was provided by the National Science Foundation.



Public Outreach/Ocean Fun Days

Each year, NJSGC's educators reach out to the public at a number of public events that focus on increasing ocean literacy or advancing environmental science education. In 2012, these events included the Barnegat Bay Festival, the New Jersey Science Teachers Convention, the New Jersey School-Age Care Coalition Conference, the Ocean County Environmental Educator's Roundtable, the Association of New Jersey's Environmental Educators Conference and Cape May's HarborFest. In addition, the Consortium's large-scale public outreach event, Ocean Fun Days, coordinated since its founding in 2004 by New Jersey Natural Gas and NJSGC's College and Special Programs Coordinator Rosemary Higgins, was held on May 19 and 20.

In 2012, Ocean Fun Days attracted over 12,000 attendees over two days. 56 like-minded groups (local and



regional environmental organizations, government and non-government agencies, colleges, universities and informal education centers, etc.) contributed exhibits and programs to educate the public regarding New Jersey's marine, coastal and estuarine resources. The 2012 event included classes in energy conservation, rip current safety, dune building and marine plant and animal identification. At Sandy Hook, the James J. Howard/NOAA Marine Fisheries Laboratory opened its doors to the public with NOAA researchers and scientists on hand to speak with all visitors. The NJSGC receives financial and in-kind support from the event's founding partner New Jersey Natural Gas which makes it possible to offer this event to the public at no charge. Additional 2012 Ocean Fun Days supporters were the Asbury Park Press, NJDEP, New Jersey Division of Parks and Forestry and the Sandy Hook Foundation.



Rip Current Awareness - An Innovative Partnership Continues

To better inform New Jersey's beachgoers on the dangers of rip currents, the Jersey Shore Partnership Foundation, Stevens Institute of Technology and NJSGC's educators teamed up for the second summer in a row with the Girl Scouts of the Jersey Shore (GSJS) in 2012. A video produced by two girls who participated in the 2011 program was completed in 2012 and can be viewed at http://www.youtube.com/watch?v=SlIi2LvRR5k&feature=em-share_video_user.

In 2012 the project expanded to additional councils with girl scouts participating statewide to earn a "Break the Grip of the Rip" badge. To earn the badge, girl scouts visited beaches throughout New Jersey distributing rip current brochures and adding QR tags to rip current signs. The tag, when scanned by a SMART phone or I-pad, connects users to the rip current section of NJSGC's



website. To view these materials including a booklet for children co-developed by NJSGC staff member Mindy Voss and members of the GSJS, go to <http://www.njseagrant.org/extension/coastal-concerns/rip-current-awareness>. Funding for the rip current awareness program was provided by Jersey Central Power & Light, TD Bank and the Jersey Shore Partnership Foundation.