

NEW JERSEY SEA GRANT CONSORTIUM

ANNUAL REPORT

2024



**DR. PETER M.
ROWE**
Executive Director
NJSGC

Welcome! I am pleased to share with you New Jersey Sea Grant Consortium's 2024 Annual Report. The old bromide begins, "There are two types of people." In this case, the punchline is, "those who love sunrises and those who love sunsets." Of course, one can love both, and in New Jersey, we have an abundance of beautiful and striking sunrises and sunsets, especially along our coastal landscapes and waterscapes. Sunrises bring the dawn of a new day with hopes, dreams, and opportunities in front of you. Sunsets bring a sense of reflection on a day well spent, a job well done, the challenges faced, and contemplations on improving for the next day. Looking at the past year, 2024 has been a year of new activities, projects, and programs incorporated into our ongoing programs, which resulted in the satisfaction of the success of those programs for our audiences, partners, and ourselves. The sun's daily cycle and the ebb and flow of our activities come together to do our work with purpose and enthusiasm. Although each sunrise and sunset are different, we can navigate the challenges and uncertainties they bring through our research, education, extension, and communications.

With the promise of sunrise, we continue to develop new programs and expand current ones in order to extend our reach and deepen our understanding of New Jersey's coastal ecosystems and communities to ensure their preservation and sustainability. Our extension staff continues to provide our constituents with established programs like the Clean Vessel Act Program (vessel pump-out stations) and "Green Infrastructure Champions," aimed at enhancing stormwater management in overburdened communities. Newer projects like

Harmful Algal Bloom Lake Management and hosting the NJCRC-NJDEP NJ Coastal & Climate Resilience Conference brought our constituents and partners together. Our communications team led our annual events such as The State of The Shore press event, Favorite Beaches ceremony, and the Jersey Shore Photo Contest, alongside hosting summer interns. Communications has successfully increased our digital footprint. Many of our research projects continued from the year before, and NJSGC successfully supported eight new Sea Grant-funded research projects aligned with our strategic focus areas. We continued to secure new funding for National Sea Grant projects. Led by our Education Director and our Aquaculture Program Coordinator, NJSGC continues to expand and strengthen its aquaculture workforce development program. The Education Department continued its outstanding programs in K-12 Education, Scouting, and obtaining outside funding to support those programs and expand into others. Of course, all these efforts (education, communications, extension, and research) culminated in our 21st Annual Ocean Fun Days!

Our dedicated staff remains committed to addressing New Jersey's changing coastal and marine challenges for all who experience New Jersey. These achievements would not have been possible without the hard work and dedication of NJSGC's staff, board members, partners, stakeholders, and friends. Reflections on a job well done (sunsets) in 2024 will guide us into 2025 with opportunities and optimism (sunrises). Thank you for your unwavering support of NJSGC, and please enjoy the 2024 Annual Report.



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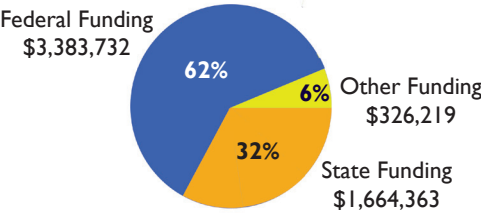
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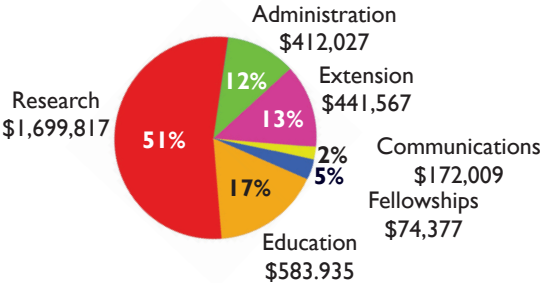
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Total Funding \$5,374,313



INVESTMENT OF FEDERAL FUNDS



EXTENSION

NEW JERSEY COASTAL RESILIENCE

COLLABORATIVE - Coastal Resilience Specialist (CRS) Laura Kerr continued to co-facilitate the New Jersey Coastal Resilience Collaborative (NJCRC). Support has primarily focused on developing the program for and hosting the NJCRC's first conference held jointly with NJDEP entitled the NJ Coastal & Climate Resilience Conference. Laura worked closely with Thomas Herrington, Resilient Communities and Economies Specialist, to develop the Conference and provide presentations that met the needs of a broad range of conference attendees. The 3-day Conference held on March 12-14, 2024, at Monmouth University hosted approximately 280 people, with 6 plenary sessions, 4 concurrent tracks, a total of 20 break-out sessions, 144 speakers, and 1 field trip. 67 post-conference surveys and feedback from sections chairs confirmed that the conference was very successful. Planning has already begun for the 2026 Conference and there is great interest in hosting a series of small events throughout 2025. In addition, the CRS co-authored with numerous Sea Grant personnel from across the country, a feature article for the Sea Grant special issue of Oceanography, titled, "Sea Grant programs building resilience to coastal climate hazards."

COASTAL PROCESSES - The Coastal Processes Specialist (CPS) Dr. Jon Miller continued to work on a variety of beach and living shorelines initiatives with the state of New Jersey. In October, the CPS attended and presented ongoing living shoreline work at the American Shoreline Beach and Preservation Association's Annual Conference, where he was also awarded the Robert G. Dean Coastal Academic Award. During the winter, the CPS worked to finalize an update to the NJ Living Shoreline Engineering Guidelines which include guidance for conducting engineering assessments, formula specific design guidance, and technique specific guidance. The update is scheduled to be released in 2025.

RESILIENT COMMUNITIES AND ECONOMIES -

Dr. Thomas Herrington, Resilient Communities and Economies Specialist (RCES), continued to advance coastal resilience in New Jersey in 2024 through leadership in resiliency organizations and networks, engagement in public events, and facilitating resilient project design and implementation. In collaboration with the U.S. Navy and Colliers Engineering, the RCES moved two resilience projects—located in the Cliffwood Beach section of Aberdeen Township and the Borough of Highlands—through final design and permitting, with construction anticipated in 2026. Similarly, the RCES helped secure a second grant from the National Fish & Wildlife Foundation in partnership with the NJ Bay Islands Initiative, Long Beach Township, and Stockton University, to continue design and permitting work for nature-based solutions on two

marsh islands in Barnegat Bay. As managing director of the NJ Coastal Resilience Collaborative (NJCRC), the RCES co-organized and hosted the NJCRC-NJDEP NJ Coastal & Climate Resilience Conference at Monmouth University in March 2024. Tom was instrumental in securing Monmouth University as the host of the conference. The RCES also led a Delaware Bay resilience project field tour for attendees of the Society of Environmental Journalists Conference in Philadelphia, PA in April 2024. Nationally, the RCES's leadership was recognized through invitations to participate in the National Academies of Sciences Policy Forum on Nature-Based Solutions in Washington, DC, FEMA's NYC Climate Week panel on Nature-based Solutions, and the International Shellfish Restoration Conference in Georgia, as a participant on the Department of Defense panel.

MARINE RECREATION Agent Michael Danko has continued to work with the NJDEP and members of the Harmful Algal Bloom Expert Team and to complete the Harmful Algal Bloom Lake Management Guidance document designed to help lake managers and lake communities develop a plan to address Harmful Algal Blooms (HAB). The Guidance document was released at the 2024 NJDEP HAB Summit. Training on how to use the document and develop plans to prevent and reduce HABs was held in the spring of 2024. Several NJSGC member institutions serve on the panel along with members from federal agencies and private consultants. NJSGC member institutions include George Mason University, Monmouth University, Montclair University, Rowan University and Rutgers University.

New Jersey Sea Grant Consortium's (NJSGC) Marine Recreation Agent, continues to represent the organization on New Jersey Southern Junior Science and Humanities Symposium's Executive Board. The 7th annual symposium was held at Lakehurst Naval Air Station Base on February 9, 2024, and hosted by Ocean County College.

In partnership with the NJDEP Fish and Wildlife, the 2024 Marine Recreational Fishing Regulation Cards and Posters were printed and distributed. Over 200,000 cards and 400 posters were distributed to recreational fishing related businesses for distribution to anglers. In 2024, the effort saw an increase in the requests for both the cards and posters from existing contacts and an increase in the number of new bait shops that requested the materials.

NJSGC Extension Intern, Daniel Raphael, a recent graduate with a B.A. in Ecosystem Science and Policy from the University of Miami conducted a field survey of marinas with pumpout facilities to determine their operation status and provide educational materials. The field survey was conducted on behalf of the New Jersey Clean Vessel Act Program from July to August 2024. 65 marinas were selected for visits from the 152 marinas that are known

EXTENSION

to have pumpout facilities. 58 of the 65 marinas were successfully surveyed and 49 of them were found to have working pumpout units.

SHELLFISH AQUACULTURE PROGRAM -

Coordinator (APC) Dr. Michael Acquafredda's extension and outreach activities included providing direct technical assistance to numerous shellfish growers, organizing NJ Aquaculture Growers Forum, and providing representation at the Atlantic Coast and Delaware Bay Shellfish Council meetings in 2024. As part of the Apprenticeship in Shellfish Aquaculture Program (ASAP) project team, they have visited high schools to share lessons on aquaculture literacy and to recruit apprentices. The Project Team has reached more than 460 students from six schools (Vineland HS, Pinelands Regional HS, Southern HS, Absegami HS, Lower Cape May Regional HS, Cape May County Technical HS). In addition, Mike has worked closely with the shellfish growers who will serve as mentors and host ASAP apprentices on their farms.

The APC organized a regional fisheries conference called the 2024 Joint Meeting of Mid Atlantic Chapter/Northeast Division of the American Fisheries Society, with NJSGC as a sponsor. Approximately 200 people attended this three-day meeting which included 2 plenaries, over 65 oral and poster presentations, professional development activities, and many student focused events. In addition, the APC continued to conduct research on surf clams, ribbed mussels and hard clam breeding.

WATER RESOURCES - The Water Resources Agent (WRA), Dr. Roy Messaros, continued running the Green Infrastructure Champions Program in 2024, now in its sixth year, with ten unique and completely virtual educational sessions offered for approximately 200 participants. The

Water Resources Agent assisted and empowered five Green Infrastructure Champions by providing project coordination, technical support, and construction management for their green infrastructure projects in overburdened communities. The WRA organized construction by procuring project materials, hiring contractors, and coordinating with local public works staff to install green infrastructure projects. While WRA worked diligently to manage the physical success of the project, it was critical for the Green Infrastructure Champion to take the lead on outreach and engagement, including communication with municipalities and stakeholders, volunteer coordination, and maintenance planning to ensure the long-term viability of projects.

In total, four of the five Green Infrastructure Champions completed green infrastructure projects in overburdened communities. They were installed at Cedarbrook Elementary School, Plainfield; Passaic Preparatory School, Passaic; South Toms River Elementary School, Toms River; and Middlesex Public Library, Middlesex.

These four green stormwater infrastructure projects total 1,125 square feet in size and manage a total volume of 138,989 gallons of stormwater annually. A total drainage area of 15,830 square feet is managed, including 34,346 square feet of impervious surfaces including building rooftops and pavement. In addition to water quantity, these green infrastructure practices remove pollution from runoff, including 0.26 pounds of total phosphorus (TP), 1.33 pounds of total nitrogen, and 36.86 pounds of total suspended solids (TSS). These projects also had a total of 309 native plants installed.

COMMUNICATIONS

In 2024, NJSGC expanded its communications and outreach capacity, maintaining a COASTodian newsletter subscriber base of more than 9,000 readers. The quarterly publication continues to serve as a key platform for sharing updates on NJSGC-funded research, education programming, and statewide community engagement efforts. Our digital presence also remained strong, with social media outreach extending to over 2,800 Facebook followers, more than 2,020 Twitter/X followers, 1,300 Instagram followers, and 550 LinkedIn connections.

NJSGC hosted the 22nd annual State of the Shore media event in Asbury Park in May 2024. Coastal Processes Specialist Dr. Jon Miller, together with NJDEP Commissioner Shawn LaTourette, provided an assessment of New Jersey's beach conditions and offered outlooks for the 2024 summer season. This signature event continues

to attract regional media attention and serves as an important resource for coastal communities and the public.

The 2024 Jersey Shore Photo Contest once again garnered exceptional participation, with hundreds of entries showcasing the beauty and diversity of New Jersey's coastline. Public voting determined the 12 finalist images, which were featured on njseagrant.org and included in the 2025 Jersey Shore Photo Contest Calendar.

Ocean City retained its designation as New Jersey's "Favorite Beach" in NJSGC's annual statewide poll. Several thousand voters took part in the selection process, and the award ceremony was held on the Ocean City boardwalk in July 2024, celebrating another year of strong coastal pride.

EDUCATION

K-12 PROGRAMS - From April to November 2024, 14,651 K–12 students and their teachers came to Sandy Hook to experience hands-on science with the New Jersey Sea Grant Consortium (NJS GC). These outdoor field trips bring classroom learning to life, connecting students to the ocean and coastal environment through immersive programs that align with New Jersey Student Learning Standards. Led by NJS GC's expert educators, students explore marine biodiversity, coastal ecosystems, climate change, and human impact—leaving inspired and more connected to their coastal world.

SCOUTS - In 2024, 1,175 Boy and Girl Scouts, along with 322 troop leaders, joined NJS GC programs that blend hands-on STEM learning with environmental stewardship, while helping scouts earn badges along the way. From curious Brownies and Cub Scouts to dedicated Eagle Scout and Gold Award candidates, scouts of all levels explored coastal science through interactive experiences. NJS GC's ongoing mentorship has even sparked lasting contributions, including a renewable energy teaching model and a native plant ID project developed for the National Park Service.

OCEAN FUN DAYS - Ocean Fun Days marked its 21st year as a lively, eco-friendly celebration of New Jersey's coast, bringing ocean stewardship and energy conservation to life for thousands of visitors. Held each May at the start of beach season, this free, family-friendly event spans two days across two iconic locations, Sandy Hook and Island Beach State Park. With over 60 exhibitors, hands-on activities, and interactive displays, guests explore coastal science, conservation, and NJS GC-supported research. In 2024, 122 volunteers helped welcome nearly 15,000 attendees. Hosted in partnership with New Jersey Natural Gas, the National Park Service, and the NJ Department of Parks and Forestry, Ocean Fun Days continues to inspire action and awareness for a healthier ocean and planet.

PROFESSIONAL DEVELOPMENT - The New Jersey Sea Grant Consortium empowers educators by offering professional development that boosts both content knowledge and teaching strategies, making it easy to bring fresh, relevant lessons back to the classroom. As one of only two nonprofit partners in Monmouth University's NJDOE-funded learning collaborative, NJS GC hosted six hands-on workshops for teachers from across the state. These sessions combined experiential learning with best teaching practices, giving educators the tools and confidence to tackle climate science in today's K–12 classrooms.

PARTNERSHIPS - Through a continued partnership with the National Park Service–Staten Island and Jamaica Bay–Rockaway Parks Conservancy, the New Jersey Sea Grant Consortium brings the wonder of the outdoors to life for students in grades 3–5 as part of the National Park Foundation's Open Outdoors for Kids – Every Kid Outdoors initiative. This program inspires children and their families to explore and connect with the natural beauty and cultural history of our national parks. In 2024, 10,388 children experienced NJS GC's engaging programs, including field trips, scout activities, summer camps, and both in-school and virtual lessons, all centered on the unique coastal ecosystems of Gateway National Recreation Area and the lasting value of our public lands.

COMMUNITY ACTION - In 2024, New Jersey Sea Grant Consortium teamed up with Columbia University's School of Sustainable Development at the Earth Institute and New York Sea Grant on a powerful youth-led initiative funded by the Bipartisan Infrastructure Law. Through the Marine Debris Community Action Coalition project, middle and high school EcoAmbassadors explored the issue of microplastic pollution in New Jersey and New York watersheds. Participants gained hands-on experience with environmental sampling, data analysis, and the United Nations Sustainable Development Goals, then turned their findings into impactful StoryMaps that proposed real solutions to plastic pollution in their communities. The program drew 246 applicants from 15 countries, ultimately accepting 118 students, including 42 from six U.S. states, with 24 from New Jersey's and 9 from New York's watershed areas.

WORKFORCE DEVELOPMENT - Launched in 2024, the Sea Grant-funded Apprenticeship in Shellfish Aquaculture Program (ASAP) is helping to grow New Jersey's future aquaculture workforce, starting with high school students. In collaboration with Rutgers University's Haskin Shellfish Research Lab, the program introduced aquaculture literacy to 780 students across 34 classrooms, sparking interest in this rapidly growing industry. After a competitive application process, 13 students were selected for an intensive week-long “bootcamp” in June, where they gained hands-on training in core aquaculture skills. Over the summer, students completed eight-week apprenticeships on local shellfish farms, supported by nine growers and a university aquaculture facility. Biweekly cohort meetings offered mentorship, industry insights, and guidance on workplace safety and ethics. With 14 students already accepted for the 2025 cohort, ASAP is building strong momentum for Year 2.

RESEARCH AWARDS

OMNIBUS

Advancing an Online Calculator of Oyster Farms' Water Quality Benefits to Foster Coastal Communities' Environmental Stewardship
Janine Barr - Rutgers, The State University of New Jersey

Determining whether surfclam subspecies can hybridize and evaluating their tolerance to ocean warming
Dr. Michael Acquafredda
Rutgers, The State University of New Jersey

Distribution and sources of per- and polyfluoroalkyl substances in commercial coastal species in South New Jersey
Thivanka Ariyaratna
Rowan University

Assessing coastal invertebrate diversity and presence of fouling organisms through eDNA approaches with regards to offshore wind development
Kirsten Monsen-Collar
Montclair State University

Unlocking Wind-Whale Co-Existence Through Artificial Intelligence]
Ahmed Aziz Ezzat - Rutgers, The State University of New Jersey

Freshwater mussel stocking to assess water quality benefits in nutrient-impaired ponds
Martha Maxwell-Doyle
Partnership for the Delaware Estuary

Synthesis and assessment of potential green infrastructure retrofitting materials for adsorption and photocatalytic degradation of PFAS in stormwater runoff
Dibyendu Sarkar
Stevens Institute of Technology

Listening In: Acoustic Monitoring for Improved Management and Protection in NJ Tidal Marshes
LeeAnn Haaf - Partnership for the Delaware Estuary

National Sea Grant College Program 2023-2025 Special Projects Expanding the New Jersey Apprenticeship in Shellfish Aquaculture Program (ASAP)
Diana Burich - New Jersey Sea Grant Consortium

Community Science to Address Microplastic Pollution in Environmentally Underserved Urban Watershed Communities in New Jersey and New York
Diana Burich - New Jersey Sea Grant Consortium

2022-2024 NOAA Supplemental

Filth Fly (*diptera; Muscidae, Calliphoridae*) Functional Biodiversity at Wastewater and Coastal Sites to Explore Impact on Water Associated Industries
Michael Monzon - Rutgers, The State University of New Jersey

Does the Surface Area of Edge Habitat Affect Community Structure Between Hard and Soft Sediments?
Sophia Piper - Rutgers, The State University of New Jersey

It's Not Just Oysters! The Importance of Biodiversity in Restoration Studies
Allison Fitzgerald
New Jersey City University

OMNIBUS

Quantifying the Role of Vegetation Cover on Berm-Dune Geometry and Sedimentation Patterns in Long Branch, New Jersey
Jorge Lorenzo-Trueba
Montclair State University

Testing the Influence of the Sedge Island Marine Conservation Zone on Blue Crabs
Paul Jivoff - Rider University

Tropical Cyclone Impacts and Climate Resilience of Maritime Forests of New Jersey
Nicole Davi
William Paterson University

Advancing Techniques to source track fecal Microbes in estuarine and coastal Waters to engage civic Scientists
Nicole Fahrenfeld - Rutgers, The State University of New Jersey

Expanding Project SEA: Science, Education, and Action
Lauren Madden
The College of New Jersey

Prioritizing Hazard Mitigation Investments for Equitable and Efficient Adaptation of Coastal Residential Communities
William Payne - Rutgers, The State University of New Jersey

Predicting the response of salt marsh methane emissions to sea-level rise through field and numerical experiments
Charles Schuttet
Rowan University

Application of Ecoenzymes to Marine Oil Spill Mitigation
Philip Sontag - Rutgers, The State University of New Jersey

Combining eDNA with Acoustic and Video Data to Assess the Ecology of Submerged Coastal Structures
Peter Straub
Stockton University

The Impact of Offshore Wind Farms on Local Physical Oceanography and Summer Flounder Distribution
Ruo-Qian Wang - Rutgers, The State University of New Jersey

National Sea Grant College Program 2020-2021 Special Projects

Co-Treatment of Nitrogen and Phosphorus in Lignocellulosic Bioreactors: Control of Redox Conditions to Stimulate Denitrifiers and Polyphosphate Accumulating Organisms
Dr. Mathew Reid
Cornell University

Innovative Inflow Distribution Design for Optimizing Hydraulic and Pollutant Removal Performance in Bioretention Systems
Dr. Michel Boufadel

Growing Trees by Growing Communities: Fostering Volunteer Tree Stewardship Through Community-Based Social Marketing
Dr. Mitchell Pavao-Zuckerman

Removal of Nutrients and Pollutants from Stormwater Runoff through Green Infrastructure and Low Impact Development Optimization
Dr. Zhiming Zhang

Developing Low-Impact-Development Plans in Underserved Communities by Optimizing the Co-Benefits, Locations, and Characteristics of Green Infrastructures
Dr. Rayan Assaad

Continued Support for Expanding the Atlantic and Gulf Shellfish Seed Biosecurity Collaborative [Aquaculture NSI]
David Bushek - Rutgers, The State University of New Jersey

Enhancing Community Resilience Through Knowledge Co-Production on Sediment Transport and Bypassing Around Natural Tidal Inlet [NOAA Special Project: National Sea Grant College Program and US Coastal Research Program]
Dr. Kimberly McKenna
Stockton University

Co-Developing Ensemble Flood Forecast Products to Improve Communication and Preparedness Across Diverse Populations [NSGCP Special Project with NOAA/ NOS/Disaster Preparedness Program]
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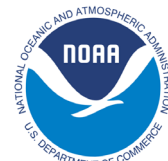
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