



New Jersey
Sea Grant Consortium

ANNUAL REPORT

2020



Acting Executive Director's Message

As Acting Executive Director of the New Jersey Sea Grant Consortium, I am pleased to present to you the 2020 Annual Report. "2020" is usually associated with perfect vision, but I do not believe that anyone had the vision or predictive ability to know what would transpire in year 2020. I know that NJS GC was looking forward to a banner year, but the appearance of the coronavirus and ultimately the Covid-19 pandemic totally changed how we approached the year.

Nevertheless, the hard work and dedication of NJS GC's staff, board members, partners, stakeholders, and friends made it a successful year.

Through the staff's flexibility, adaptability, and creativity, NJS GC continued contributing to the improvement of New Jersey's coastal envi-

ronments and its people by preserving and sustaining our state's marine and coastal resources. NJS GC is an organization where its mission comes together through a dynamic interaction of its people with marine and coastal research, education, communication, and extension programs and activities. The staff's work is amazing and this report will speak to it.

Thank you for your interest and support in NJS GC and its work. I hope you enjoy this Annual Report.



**DR. PETER
M. ROWE**

Research Awards

OMNIBUS RESEARCH 2020-2022

Spatial and Temporal Patterns in Shorebird Distribution in Relation to Horseshoe Crab Eggs

Dr. Daphne Munroe, Haskin Shellfish Research Laboratory; Rutgers, The State University of New Jersey

Physics-Based Assessment of Hurricane-Induced Wave Hazards Under Climate Change: Barrier Islands of New Jersey

Dr. Reza Marsooli, Stevens Institute of Technology

Mapping eastern black rail habitat to aid coastal conservation and climate resiliency planning

Dr. Julie Lockwood, Rutgers, The State University of New Jersey

Demographics, survivorship and post-released behavior of sharks captured in the land-based recreational shark fishery using fisheries-dependent data

Dr. Keith Dunton, Monmouth University

"Local catch-of-the-day": Connecting NJ seafood har-

vesters with culturally and economically diverse customers

Dr. Cara Cuite, Rutgers, The State University of New Jersey

Project SEA: Science, Education, and Action

Dr. Lauren Madden, The College of New Jersey

Developing and Implementing an Index to Assess the Resiliency of New Jersey's Fishing Communities to Climate Change Impacts

Lisa Auermuller, Jacques Cousteau National Estuarine Research Reserve; Rutgers, The State University of New Jersey

Development of Point-of-Use Trace Metal Sensor and In-situ Sediment Extraction New Jersey

Dr. Philip Sontag, Rutgers, The State University of New Jersey

Impacts of Oyster Aquaculture Gear on Submerged Aquatic Vegetation Recruitment and Recruitment Processes

Dr. Elizabeth Lacey,

Stockton University

Optimizing Atlantic striped bass aquaculture through the integration of duckweed and macroalgae

Dr. Gal Hochman, Rutgers, The State University of New Jersey

Microplastic ingestion by New Jersey breeding seabirds

Dr. John Wiedenmann, Rutgers, The State University of New Jersey

Interactive influences of Dermo disease and the Microbiome on *Crassostrea virginica* disease susceptibility and microbial dynamics

Dr. David Bushek, Haskin Shellfish Research Laboratory; Rutgers, The State University of New Jersey

Developing capacity for microplastics extraction from an archived New Jersey larval fish time series

Dr. Thomas Grothues, Rutgers, The State University of New Jersey Marine Field Station

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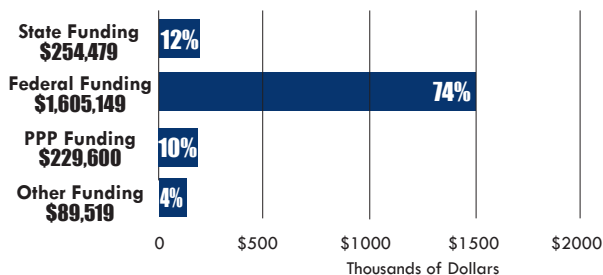
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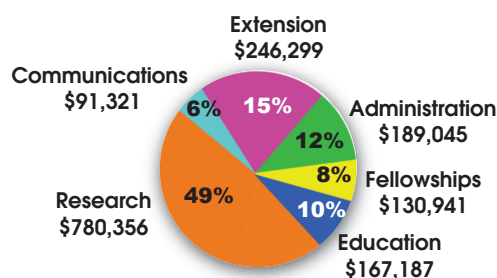
Budget Overview - Fiscal Year 2020

SOURCE OF FUNDS

Total Funding **\$2,178,747**



INVESTMENT OF FEDERAL FUNDS



For complete financials, visit <http://njseagrant.org/annual-report-2020>

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Extension

Living Shorelines

The NJSGC Coastal Processes Specialist Dr. Jon Miller and Coastal Resilience Specialist Laura Kerr continued to promote the use of living shorelines. Living shorelines projects merge traditional coastal engineering and ecosystem restoration disciplines, to create shoreline stabilization designs that enhance community resilience and improve coastal habitats. In 2020, NJSGC worked with The Nature Conservancy and Jacques Cousteau National Estuarine Research Reserve (JCNERR) to develop outreach materials detailing the costs and the effectiveness of several projects. JCNERR hosted a virtual workshop for over 250 people at which Dr. Miller presented the results of research that confirmed living shorelines can effectively reduce wave energy and mitigate shoreline erosion at a cost which is comparable to traditional bulkheads.



Water Resources

Sara Mellor, Water Resources Agent facilitated The Green Infrastructure Champions Program for its second year providing 10 unique sessions. Four were held at Duke Farms. The remainder were offered virtually, expanding outreach nationally. 46 participants became certified Green Infrastructure Champions who can advocate in their communities. In September 2020, the Monmouth Beach Department of Public Works installed its first rain garden with guidance from the RCE Water Resources Program. Excavation and installation of the 670-square-foot rain garden were completed in a day and it was planted by DPW staff, Monmouth Beach Environmental Commission volunteers, and NJSGC staff.



Helping Oyster Farmers Impacted by COVID-19

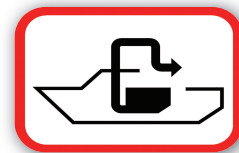
NJSGC launched a new initiative to assist oyster farmers impacted by COVID-19 market disruptions by purchasing unsold oysters to restore oyster habitats. As restaurants shuttered as a result of COVID-19, oyster demand plummeted. This not only decreased farm revenues, but also created a farm management issue as oysters bound for spring harvests remained on the farm taking up precious space needed by swiftly growing younger oysters. The purchase program provided an immediate outlet for the surplus which were planted on oyster reefs in Barnegat Bay, Delaware Bay, and the Mullica River. Oysters are tremendously beneficial to the environment, serving as habitat for a suite of commercially and recreationally important fish. Project partners included Rutgers University, NJDEP, Stockton University, Barnegat Bay Partnership, Partnership for the Delaware Estuary, The Pew Charitable Trusts and the New Jersey Aquaculture Association.



Marine Recreation and Tourism

Marine Recreation Extension Agent Michael Danko has continued the partnership with the NJ DEP Division of Fish and Wildlife, Marine Trades Association of New Jersey, Monmouth County Health Department, Ocean County Planning Department and others to provide funds from the New Jersey Clean Vessel Act Program to marinas to for installing, operating and maintaining pumpout facilities. Coastal water quality has been improved, needed pumpout services have been provided for recreational boaters thus improving overall watershed function to coastal estuaries.

NJSGC continues to serve on the Executive Committee of the Jersey Shore Junior Science Symposium and participates in the event to foster STEM research projects in the fields of marine biology and oceanography at the high school level with scholarship awards to the top environmental paper and poster presenter.



Extension

Coastal Resilience

The COVID-19 pandemic may have changed the way in which Resilient Communities and Economies (RCE) Specialist Dr. Tom Herrington engaged with coastal stakeholders in 2020 but it did not impact the outcomes of community resilience efforts. Stay-at-home orders prevented workers from going to their offices but citizen scientists continued to collect data in their communities with added vigor as a way to get outside. Flood data collected by NJSGC partners in Ocean City, NJ recorded an additional 46 flood events in 2020, 22 more than NOAA pre-



Photo - Monmouth University

dicted in Atlantic City. In Monmouth County, community partners continued to sample coastal lakes twice a month for long-term lake health monitoring.

In an effort to lessen coastal community impacts during the pandemic, the RCE Specialist collaborated with the NJSGC Communications Specialist and NY Sea Grant Coastal Processes and Hazards and Communications Specialists to develop a social media #BEachSAFELY campaign that combined beach safety and covid-19 pandemic social distancing and mask wearing guidance. With the goal of making people feel comfortable and safe to go to the beach, original posts over the nine-week campaign reached over 9,345 stakeholders and received 738 engagements on Facebook and gained 22,724 impressions and 653 engagements through Twitter.

Communications

State of the Shore

The 18th Annual State of the Shore media event was unfortunately cancelled. However, Coastal Processes Specialist Dr. Jon K. Miller reported on beach conditions, coastline forecasts, and important pre-summer updates in the annual State of the Shore Report, posted on our website and disseminated to media outlets.



Jersey Shore Photo Contest and Calendar

NJSGC's re-vamped "Jersey Shore Photo Contest" debuted with the "Favorite

Beaches" poll. After dozens of entries and thousands of votes, the Top 12 images were used to create NJSGC's 2021 calendar. The competition which embraced natural elements of the state's beautiful coastline, garnered vast social media promotion. A downloading desktop version is available on the NJSGC website.



BEach SAFELY

In summer 2020, NJSGC and New York Sea Grant debuted a new graphic each week to remind beachgoers to stay safe while still having fun at the Shore. Information was provided



on Rip Currents, Sunburn, Marine Debris, Life Jackets and other safety issues related to beach visits.

New Jersey's "Favorite Beaches" Survey

Hundreds of voters participated in NJSGC's "Favorite Beaches" poll. Even without the possibility of hosting a public ceremony alongside the ocean, NJSGC announced the top "favorite beaches" for 2020! Brigantine, Cape May, Asbury Park and Point Pleasant Beach placed first in the voting.



Education

K-12 Programs

The COVID-19 Pandemic greatly impacted NJSGC education efforts in 2020, causing the suspension of all in-person programming, from field trips to scout programs as well as the college course and site-based engagement. Education staff was quick to pivot, creating 5 new synchronous learning programs delivered virtually to 918 students at 21 different K-12 schools throughout New Jersey.

Students participated in lively, “gamified” presentations that promoted interaction, and students were even able to “meet” live marine animals. Topics included coastal ecosystems, climate change, microplastics in the marine environment, and swimming safety.



Scouts

One of the most common skills learned by both boy and girl scouts is safe hiking, so a new remote learning opportunity was created to accommodate scout groups. “Hiker” teaches how to safely move about in nature while discovering the unique characteristics in any outdoor area. Two options include an instructor-led remote synchronous version and a pre-recorded narrated presentation, both available with accompanying materials to explore any outdoor environment.

Professional Development

NJSGC regularly engages educators to share best practices and to support their efforts to further environmental literacy. NJSGC co-coordinated and co-hosted 2 regional conferences, the Mid-Atlantic Climate Change Education Conference and the Mid-Atlantic Regional Sea Grant Meeting, with more than 375 industry professionals in attendance. NJSGC educators presented sessions at these and 2 additional conferences (Association of New Jersey Environmental Educators, New Jersey Marine Education Association and Mid-

Atlantic Marine Education Association) to 155 participants on topics that included best practices for delivering virtual content, using breakout rooms to increase student interaction during virtual programs, and marine debris.

Ocean Fun Days

Ocean Fun Days, NJSGC’s largest annual outreach event, transitioned to virtual format as it celebrated its 17th year in 2020.

An entirely new website, ocean-fundays.org, was created by NJSGC. Educators and the Communications Specialist, together with founding partner New Jersey Natural Gas, worked to house environmentally-friendly content accessible by the general public at a time when in-person events were put on hold. Exhibitors created educational videos for the event on topics that ranged from marine animals and ocean research to fun experiments and “green” tips for saving energy. Approximately 6,500 visitors were engaged on the website over the 17-day period.



Partnerships

NJSGC Education partners with civic groups and other organizations to meet the needs of New Jersey’s diverse populations. Since 2018, Education staff has worked with the Central Jersey Club of the National Association of Negro Business and Professional Women’s Clubs, Inc. to increase science literacy and STEM career awareness for under-resourced and underrepresented children in the communities that they serve.

Curriculum

Plastic debris in the ocean environment is an emerging concern, especially since some research suggests that tiny plastic particles or microplastics have been found in shellfish and other marine food sources. Two new lesson plans on microplastics in the ocean environment were developed in 2020 to teach students about this growing problem and how it can affect marine food webs.

Staff

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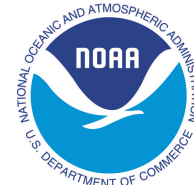
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