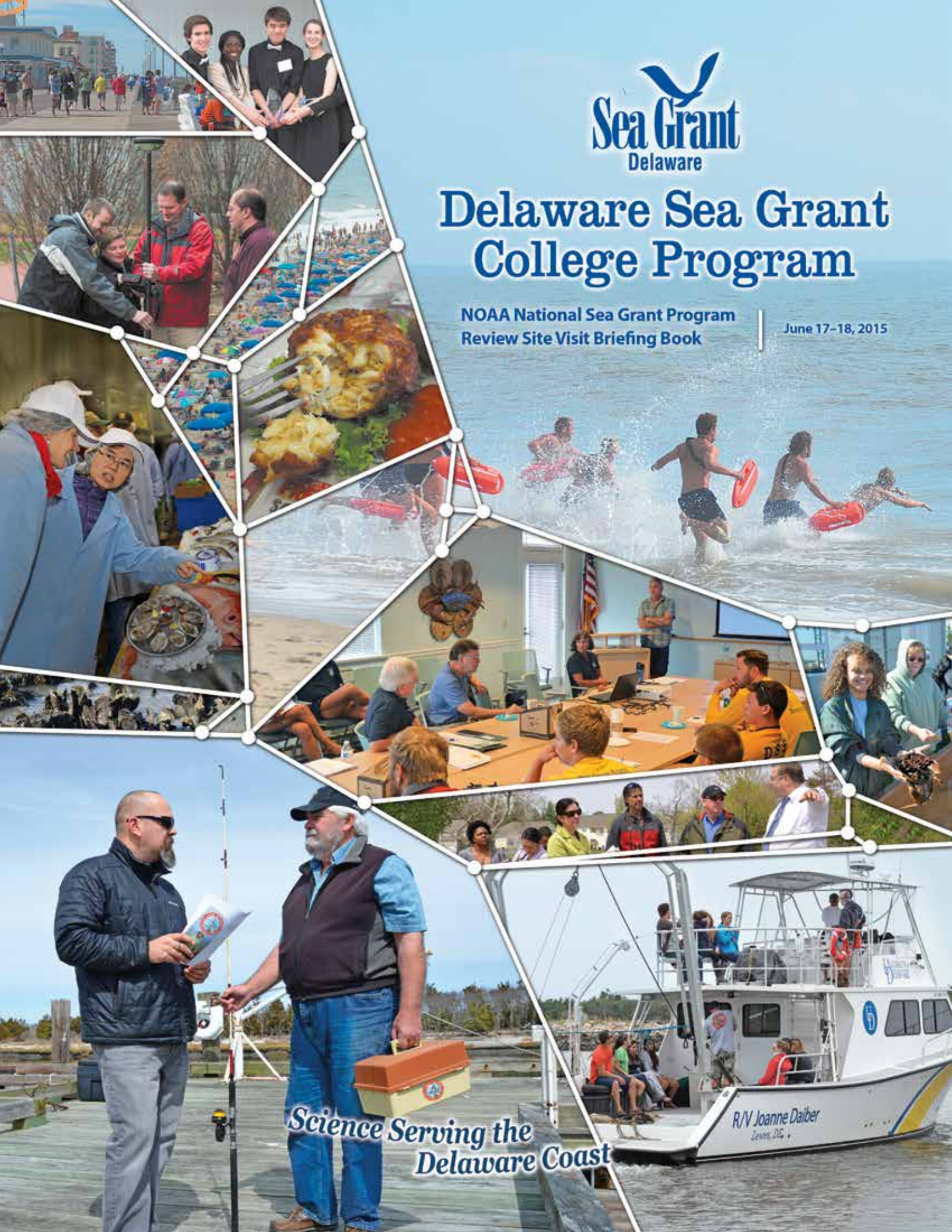




# Delaware Sea Grant College Program

NOAA National Sea Grant Program  
Review Site Visit Briefing Book

June 17-18, 2015



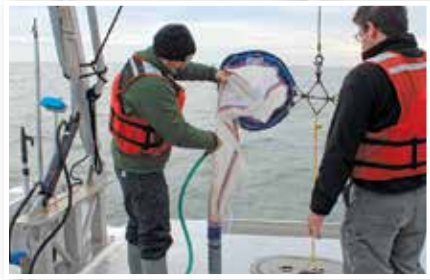
*Science Serving the  
Delaware Coast*

R/V Joanne Dalber  
Levon, DE

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Science Serving the Delaware Coast



## INTRODUCTION

Those of us who live along the coast look to it for sustenance, economic value and recreation. It is important for us to realize that these uses are not mutually exclusive and that the environment and the economy are linked. Maintaining and supporting healthy coastal ecosystems, and the ecological services they provide, ultimately results in greater economic benefit for our communities. Ensuring that

coastal development proceeds in a sustainable way reduces the impact of coastal hazards and means that we benefit now and into the future.

Population growth, climate change, development, balancing access to multi-use resources and hazard resilience are challenges that face our coast, both in Delaware and around the nation.

From our base of operations at the University of Delaware (UD), Delaware Sea Grant (DESG) advances the understanding, development, use and conservation of state

and regional marine and coastal resources throughout our state. Integration of research, education and outreach built upon active partnerships with state and federal agencies, the private sector and citizens at large makes us a recognized leader in our state, region and across our national networks.

Originally funded to conduct oyster research in 1968, the program expanded rapidly and was named a Sea Grant Institution in 1971. UD was named the nation's ninth Sea Grant College in 1976, in recognition of high quality programs built on a solid foundation of federal, state and private support.

Today, after 46 years of Sea Grant's existence at UD (including 38 years as a Sea Grant College), the program's coordinated research, education and outreach activities continue to attract significant investments—\$6.3 million in federal and \$3.1 million in match funds since the 2011 DESG Site Review—and a strong partnership has been forged among the university, federal and state governments and private sector.

Additionally, over the years more than 390 students—40 since the last DESG review—have been educated as marine scientists, engineers, or policy specialists with DESG support; many of these DESG alumni hold important environmental positions in both the private and public sectors. Through our outreach and education programs we have touched the lives of tens of thousands of people, from kindergartners to senior citizens, through knowledge-based partnerships and programs.

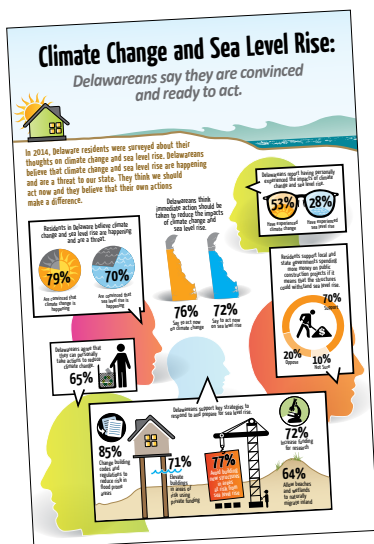


**Jim Falk (Associate Director DESG and Marine Advisory Service Director) presents DESG Student Award during the College of Earth, Ocean and Environment's Honors Day 2014.**



**Forty** students received DESG support since our last program review in 2011. Many of them now hold environmental positions.

DESG continues to evolve, building on historical strengths and developing new capabilities in the face of changing challenges and opportunities. The following is a brief overview of our program's management and organization, stakeholder and partner engagement, collaborative network activities (including NOAA activities) and program changes resulting from our 2011 review.



**In 2014, DESG partnered with the State of Delaware to survey Delawareans about climate change and sea level rise.**

## PROGRAM MANAGEMENT AND ORGANIZATION

### Leadership

#### Management team composition and description of their responsibilities

DESG's administration is vested in its management team. The responsibilities of the key administrators are as follows.



**Dr. Nancy Targett**

**Director:** Responsible for long-range planning, overall program direction, and policy.

Dr. Nancy Targett holds dual appointments (since 2005) as Director of the Delaware Sea Grant College Program and Dean of the University of Delaware College of Earth, Ocean, and

Environment (CEOE). She is responsible for the overall strategic and tactical planning and execution of Delaware Sea Grant program priorities, as well as the day-to-day operations of the program.



**James Falk**

**Associate Director DESG and Director, Marine Advisory Service (MAS):** Responsible for MAS program development, administration and integration of research and outreach activities.

As Associate Director, Jim Falk provides administrative support to the director in all aspects of program planning and

reporting, budget decisions and evaluation. As MAS Director, Falk oversees six specialists, each of which has expertise in at least one of the following program areas: marine education, seafood technology, aquaculture and fisheries, coastal processes and hazards, marine resource management and coastal community development. MAS core staff are supplemented as needed by soliciting the involvement of faculty, graduate students, contractors and citizen volunteers. All outreach personnel have statewide responsibilities.



**Jennifer Merrill**

**Research Coordinator:** Responsible for the administration of DESG research.

As Research Coordinator, Dr. Jennifer Merrill supports the Director and Associate Director in strategic and tactical program planning, reporting and facilitating new opportunities

and collaborations. The research coordinator manages the research competition, including the pre-proposal review panel and the full proposal technical review panel and assures that principal investigators for the projects awarded meet Sea Grant reporting requirements. She also works with funded graduate students to improve their recognition of the Sea Grant mission, Delaware programs and career



opportunities. Her work as the Delaware Project Manager for the NSF-funded Maryland/Delaware Climate Change Education Assessment and Research award affords additional opportunities for Sea Grant leveraging and collaboration.



**Katy O'Connell**

**Director, Environmental Public Education (EPE):** Responsible for EPE program development, administration and coordination of marine and environmental information/education activities for both technical and non-technical audiences.

Katy O'Connell directs EPE, which provides communications and public education expertise to DESG and the UD College of Earth, Ocean, and Environment (CEOE). In addition

to the director, EPE staff includes a communications specialist, production coordinator, digital outreach specialist and an art director. Each individual's time is split 50–50 between DESG and CEOE. Thus, a total of 2.5 FTEs are devoted to DESG projects, programs and activities.



**Lisa Ridenour**

**Assistant Director, Sea Grant and Sponsored Programs:** Responsible for fiscal and reporting oversight.

Lisa Ridenour has managed DESG's fiscal operations since 2007. She provides leadership, oversight and management of the fiscal and administrative operations of the program including budget

preparation and control, contract and grant administration, financial report preparation and interpretation and recommending fiscal allocation priorities to the DESG Director. She also coordinates the activities of DESG's Sea Grant Advisory Council.

DESG has a total of 8.5 FTEs devoted to Sea Grant, divided over 14 individuals (Table 1). Because many DESG staff have dual roles across the program and college, DESG is able to efficiently leverage significant staff time. The majority of DESG FTEs (6.0 FTEs representing 9 individuals) are devoted to personnel in outreach, education and communication.

**Table 1.** Staff time devoted to Sea Grant.

Management Team	FTEs
Director	0.2
Associate Director/Marine Advisory Service (MAS) Director	0.8
Research Coordinator	0.5
Director, Environmental Public Education (EPE)	0.5
Assistant Director, Sea Grant and Sponsored Programs	0.5
<b>Other Staff</b>	
MAS Staff (5 staff members)*	4.0
EPE Staff (4 staff members)	2.0

\*One additional MAS staff member is fully funded through the state-supported Sustainable Coastal Communities Initiative.

### Advisory board membership and function

The Delaware Sea Grant Advisory Council (SGAC) (Table 2) is composed of individuals representing the state general assembly, state and local government agencies, industry, resource management agencies, non-governmental agencies, formal and informal education and the public. Members serve staggered two-year terms that are renewable.



Gerard Esposito (SGAC chair) and Hilary Valentine (SGAC member) attend the spring 2014 SGAC meeting.

The SGAC is chaired by Mr. Gerard Esposito, President of Tidewater Utilities, Inc. and a long-standing SGAC member. The SGAC meets twice a year—in the spring and fall—at a central location (usually in the city of Dover, the state capital). The meetings provide structured forums for SGAC input on aspects of DESG research, outreach and education projects. The SGAC is a critical component in the development of DESG’s strategic and implementation plans. When the SGAC reaches consensus regarding coastal priorities, it represents a strong mandate because of the diverse stakeholders represented.

A subset of SGAC members, chosen for their diverse backgrounds, is selected to participate in the research pre-proposal review process. As a panel, with the DESG Management Team, they provide comments on the relevance of proposed research to our strategic plan. When coupled with their collective on-the-ground expertise these panelists provide a powerful mechanism for ensuring our research is relevant and serves our stakeholders’ needs. Discussions of each pre-proposal, and recommendations for improving the utility of the research for stakeholder communities, is shared with the PIs. The majority of full proposals submitted reflect and incorporate stakeholder comments and suggestions.

The SGAC also facilitates partnerships and alliances for DESG researchers, outreach specialists and educators throughout the state and region.

**Table 2.** 2015 Delaware Sea Grant Advisory Council (SGAC)

Member	Position	Organization
Jennifer Adkins	Executive Director	Partnership for the Delaware Estuary (National Estuary Program)
Gene Bailey	Executive Director	Diamond State Port Corporation
Bill Baker	Owner	Bill’s Sports Shop
Chris Bason	Executive Director	Delaware Center for the Inland Bays (National Estuary Program)
Ruth Briggs-King	Representative	Delaware General Assembly
Sarah Cooksey	Administrator	Delaware Coastal Programs, Delaware Department of Natural Resources and Environmental Control
Gerard Esposito*	President	Tidewater Utilities, Inc.
Thomas Fikslin	Branch Manager	Modeling, Monitoring, and Assessment, Delaware River Basin Commission
Todd Fritchman	President and CEO	Envirotech Environmental Consulting, Inc.
Kate Hackett	Executive Director	Delaware Wild Lands, Inc.
Jeanie Harper	Sales Representative	Samuels and Son Seafood
A. Richard Heffron	President	Delaware State Chamber of Commerce
Daniel Leathers	State Climatologist	University of Delaware
Ernesto Lopez	Senator	Delaware General Assembly
Sharon Lynn	City Manager	City of Rehoboth Beach
Dyremple Marsh	Dean	College of Agriculture and Related Sciences, Delaware State University
David McBride	Senator	Delaware General Assembly
Tonyea Mead	Science Education Associate	Delaware Department of Education
William J. Miller, Jr.	Retired	Delaware River and Bay Authority
Christopher Moore	Executive Director	Mid-Atlantic Fishery Management Council
Betsy Reamer	Executive Director	Lewes Chamber of Commerce
Michelle Rodgers	Associate Dean and Director	University of Delaware Cooperative Extension
Paul Sample	CEO	Samples, Inc.
David Saveikis	Director	Division of Fish and Wildlife, Delaware Department of Natural Resources and Environmental Control
John Schneider	Manager, Watershed Assessment and Management	Division of Watershed Stewardship, Delaware Department of Natural Resources and Environmental Control
Edward Simek	Partner	Environmental Resource Management, Inc.
F. Gary Simpson	Senator	Delaware General Assembly
Halsey Spruance	Executive Director	Delaware Museum of Natural History
Hilary Valentine	Director	Environmental Training Center, Delaware Technical and Community College
Peggy Vavalla	Education Liaison	DuPont
Katherine Ward	Executive Director	Delaware Press Association
Stuart Widom	Director, Governmental and Regulatory Affairs	Calpine Corporation

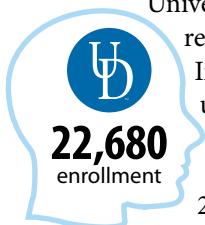
\*SGAC Chair

## Program setting within the university structure

The organizational chart and reporting structure for the DESG College Program is presented in Figure 1.

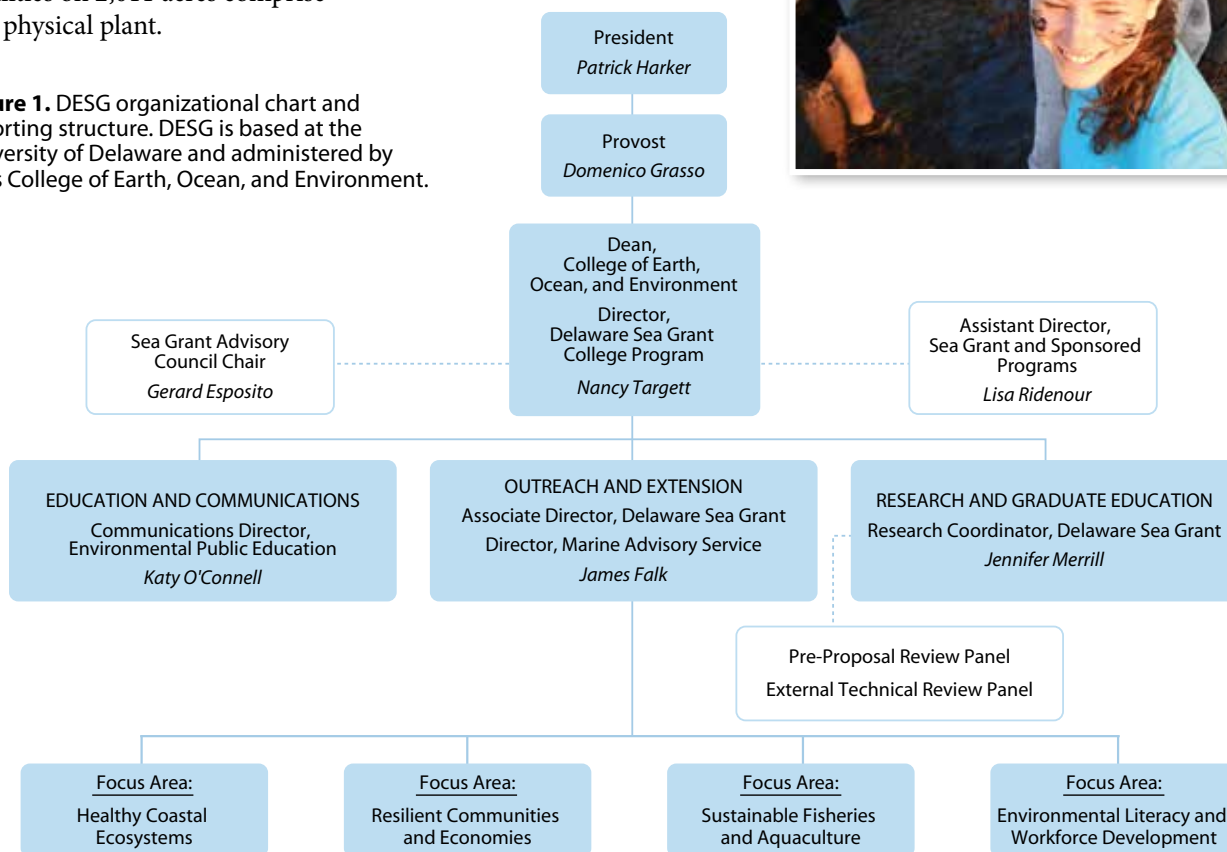


Delaware Sea Grant is based at the University of Delaware (UD). A private university with public support, UD is a Land Grant, Sea Grant, Space Grant and Carnegie Research University (very high research activity), and in 2015 received Carnegie designation as an Engaged Institution. UD is Delaware's oldest and largest university, with an annual enrollment of 22,680 students (18,222 undergraduate, 3,729 graduate and 729 continuing education) in the 2014–2015 academic year.



UD's operating budget was \$908.1 million in Fiscal Year 2015, and its endowment was valued at over \$1.5 billion. In addition to the main campus in Newark, UD operates campuses in Lewes, Georgetown, Dover and Wilmington. A total of 447 facilities on 2,011 acres comprise the physical plant.

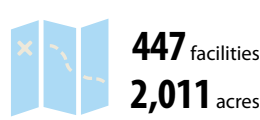
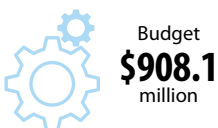
**Figure 1.** DESG organizational chart and reporting structure. DESG is based at the University of Delaware and administered by UD's College of Earth, Ocean, and Environment.



UD has seven colleges: Agriculture and Natural Resources; Arts and Sciences; Earth, Ocean, and Environment; Education and Human Development; Engineering; Health Sciences; and Lerner College of Business and Economics.

UD's faculty include internationally known scientists, authors and teachers, with more than 100 named professorships. UD's educational, research and public service endeavors are supported by 4,268 administrators, faculty and staff. The 32-member UD Board of Trustees oversees the institution's management.

UD has partnerships with other institutions of higher education throughout the state, including Delaware State University, Delaware Technical and Community College, Wesley College and Wilmington University.





72,000 ft<sup>2</sup>  
Institution space

The University of Delaware's Hugh R. Sharp Campus in Lewes is home to many DESG researchers and the Marine Advisory Service.

R/V Hugh R. Sharp  
146 ft

## UNIVERSITY OF DELAWARE College of Earth, Ocean, & Environment

The College of Earth, Ocean, and Environment (CEOE) at the University of Delaware is DESG's administrative home. Marine and coastal research actually began at UD more than 60 years ago when in 1950 a group of local fishermen approached the Delaware General Assembly for help in determining why fisheries were declining in Delaware Bay. The fishermen believed the university could come to their aid. The 116th session of the General Assembly responded by allocating \$30,000 to establish a marine biology program in UD's Department of Biological Sciences.

UD received its first Sea Grant project award, for oyster research, in 1968—the same year Dr. E. Arthur Trabant took office as university president. He appointed a study group to identify steps to strengthen UD's marine capabilities. The resulting recommendation was to establish a graduate college of marine studies, which was officially created by the UD Board of Trustees on June 6, 1970. Management of Delaware Sea Grant was assigned to the new college. In a sense, the college and DESG have “grown up” together, complementing and benefiting each other over the years. DESG supports a range of initiatives in partnership with CEOE, other UD colleges and, more broadly, with institutions throughout the state.

CEOE facilities are located on UD's main campus in Newark and on the 62-acre Hugh R. Sharp Campus at the mouth of Delaware Bay in Lewes. DESG staff and researchers are located at both locations. The Environmental Public Education Office is in Newark; the Marine Advisory Service is based in Lewes.

The two campuses, 90 miles apart, are linked by two-way interactive TV, allowing faculty, students and staff to participate in classes and meetings from either location, minimizing the need for a three-hour round-trip commute.

The Lewes campus features 72,000 square feet of modern laboratory, classroom and office space. It is home port for the 146-foot *R/V Hugh R. Sharp*, one of the most advanced coastal research vessels in the United States.

The *R/V Sharp* is a member of the University-National Oceanographic Laboratory System, a fleet of academic-owned research ships that receives the majority of its funding from the National Science Foundation. Sea Grant provided a total of four days of funded ship time aboard the *R/V Sharp* during the SRT review period.





## Recruiting Talent

### Process for developing Request For Proposal (RFP) priorities

DESG RFPs are derived from the priorities outlined in the DESG strategic plan to ensure consistency with the priorities articulated in the NOAA Sea Grant Strategic Plan and national focus areas. The strategic plan is carefully synthesized from stakeholder input collected broadly across the region and specifically through the DESG Advisory Council. Through online questionnaires, face-to-face meetings and workshops, our stakeholders identified research priority areas aligned with national focus areas that reflect the management and information needs of the state of Delaware and the Mid-Atlantic region. Research, outreach or education projects in each focus area are expected to help meet specific objectives and fulfill specific performance benchmarks outlined in the strategic plan. Tables that include DESG goals and outcomes are excerpted from the strategic plan and included in the body of the RFP with appropriate outreach and advisory service staff noted. PIs are encouraged within the RFP—and at all times—to contact DESG MAS and/or EPE staff to develop thoughtful and appropriate outreach plans.



#### FOCUS AREAS FOR 2014-2017

- 1 Healthy Coastal Ecosystems
- 2 Sustainable Fisheries and Aquaculture
- 3 Resilient Communities and Economies
- 4 Environmental Literacy and Workforce Development

### Review process including composition of review panels

Research proposals are solicited in the winter, a full year prior to submission of the Omnibus request. DESG advertises the RFP broadly through email, web-based and social media outlets to ensure awareness of eligible researchers statewide. The SGAC is an equally important distribution mechanism. In fact, including the Delaware State University (DSU), Dean of the College of Agriculture and Related Sciences on the SGAC led directly to DSU pre-proposal submissions for the 2016-2018 RFP. The RFP and all supporting announcements are posted on the DESG website. A Q&A session is offered prior to the pre-proposal submission deadline to discuss new changes to the RFP and to enable researchers to engage with DESG management team members.

Pre-proposals are reviewed by the DESG management team and five SGAC members who represent a range of stakeholder perspectives important to the research submissions. Criteria for review are: scientific merit, utility and anticipated benefits; relevance to the DESG program priorities; an extension or outreach plan; PI and co-PI qualifications; and a required budget. All discussants (SGAC and staff) are screened for conflict of interest and recused from the discussion if a conflict is identified.

Discussions during the pre-proposal session explore the context for each project to support or define relevance of the work, identify potential linkages between projects, likely application of results, potential for significant impacts and connection to outreach. Pre-proposals are ranked according to their overall fit with criteria, with approximately one-third designated to each category (high, middle, low). The ranking, along with a discussion summary and panel recommendations, was provided to all individuals who submitted pre-proposals. All PIs who submit a pre-proposal are eligible to submit a full proposal. Those in the lowest category are strongly encouraged to incorporate all recommendations and address the concerns expressed by the panelists full proposal.

Full proposals must meet all RFP criteria to be considered, and PIs seeking a funded graduate student in addition to their project must include a formal request that demonstrates a commitment to student development and acknowledges the need for participation in additional Delaware Sea Grant activities. Alternatively, PIs can include student support within their project budget. All full proposals are evaluated by up to four external reviewers for technical merit. Each identified peer reviewer is contacted in advance to determine his or her

#### Reviewers are asked to address the following:

- Have the PIs identified an important question or compelling research topic?
- Are the hypotheses, research questions and objectives clearly stated?
- Is the proposed work innovative? Is it good science?
- Is the methodology appropriate and feasible?
- Are the PIs competent to do the work?
- Is the time schedule and budget reasonable?
- Are the potential benefits of the work significant and clearly stated?
- Is there a well-developed plan for education and outreach activities?



availability for a timely and objective review. Reviewers must attest that there is no conflict of interest with any aspect of the proposal that they are being asked to consider.

In August, a proposal review panel of external experts (outside of Delaware) convenes to consider the proposals' technical merit and to rank them into three categories (recommend for funding, not recommended for funding and fund if possible). The DESG management team and a representative from the National Sea Grant office attend the panel and participate as appropriate. Panelists are selected from outside of Delaware with expertise that spans the breadth of proposals submitted each cycle. Panelists summarize the proposals and technical reviews, discuss the merits of the research and outreach plans and following discussion of all proposals, provide each with a ranking. The highest ranked proposals are included in the Omnibus request. Proposals in the panel's "fund if possible" category are selected for funding with consideration given to the relevancy review and discussion and programmatic considerations, such as portfolio balance. Student support is awarded based on the quality of the request in the proposal, demonstrated need for completion of the work and proven mentoring skills of the PIs.

**Table 3.** Membership of proposal review panels during the reporting periods addressed by this review.

2011–2012	2012–2014	2014–2016
Microbial Ecologist Old Dominion University	Chemist Philadelphia University	Physical Oceanographer University of Maryland Center for Environmental Science
Social Scientist Virginia Sea Grant	Geochemist University of Maryland Center for Environmental Science	Aquaculture Scientist Rutgers University
Biological Oceanographer University of Maryland Center for Environmental Science	Coastal Engineer Stevens Institute of Technology	Geochemist University of Maryland Center for Environmental Science
	Microbiologist University of New Hampshire	Geomorphologist East Carolina University
	Social Scientist Virginia Sea Grant	Social Scientist Virginia Sea Grant
		Biological Oceanographer University of North Carolina

### Number of institutions represented throughout the RFP process

The majority of the research and outreach supported by DESG is based at the University of Delaware, residing in units in the College of Earth, Ocean, and Environment; College of Engineering; and College of Agriculture and Natural Resources. Work occurs at locations in each of Delaware's three counties: New Castle, Kent and Sussex. Partnerships

also exist with Delaware State University, one of America's Historically Black Colleges and Universities, which has a significantly smaller research and outreach portfolio.

**Table 4.** DESG research proposal summary.

	2011–2012	2012–2014	2014–2016
<b>Pre-Proposals</b>	15	31	31
<b>Full Proposals</b>	11	24	24
<b>Omnibus Submissions</b>	5	11*	11
<b>Institutions</b>	University of Delaware: College of Earth, Ocean, and Environment; College of Engineering	University of Delaware: College of Earth, Ocean, and Environment; College of Engineering Delaware State University	University of Delaware: College of Earth, Ocean, and Environment; College of Engineering; College of Agriculture and Natural Resources

*\*Including one Mid-Atlantic regional proposal*

### New versus continuing projects and principal investigators

DESG typically funds 10–12 research proposals in each Omnibus cycle. Proposals are funded at a level of no more than \$140,000 over two years. In addition, nearly all PIs are awarded student funding (approximately \$40,000 annually for stipend with tuition waived for CEOE students). Graduate student funding is administered through a separate line within the Omnibus to ensure those funds are applied for student support.

During the current reporting period social science projects were encouraged through the RFP and noted as social science in the Omnibus request. Supplemental funding awarded by NSGO (50% of the program cost of approved proposals) was then reinvested into additional research programs that had been competed and recommended by the panelists as "fund if possible." Program development (PD) funds applied to research are considered "new projects" for DESG and require the same reporting requirements as fully funded awards. The tally below includes these PD projects.

**Table 5.** Summary of DESG projects and PIs.

	2011–2012	2012–2014	2014–2016
<b>New Projects</b>	5	8	6
<b>Continuing Projects</b>	7	9	8
<b>New PIs</b>	2	1	7
<b>Continuing PIs</b>	22	15	9
<b>New Institutions*</b>	0	0	0
<b>Success in NSIs</b>	1	3	3
<b>Regional and Multi-Program Projects</b>	1	1	0

*\*Given the nature of research-based higher education institutions in Delaware, DESG does not anticipate proposals from institutions other than UD and Delaware State University.*

## STAKEHOLDER ENGAGEMENT

Delaware's relatively small geographic size affords DESG the opportunity to forge close partnerships and working relationships. Our program has been successful in leveraging these partnerships for strong, responsive and proactive stakeholder engagement.

By definition, stakeholders have an interest in the decisions made by an organization, and partners assist an organization in fulfilling its mission.

Involving constituencies—both internal and external to Delaware Sea Grant—has been a long-standing and integral component of developing our strategic plan. DESG consults with stakeholders from the broad marine community of organizations and individuals in the Delaware and Mid-Atlantic region on high priority ocean and coastal issues that need attention.

Members of the Delaware Sea Grant Advisory Council (SGAC) represent a broad array of DESG stakeholders. They provide valuable perspectives that inform DESG program research, outreach and education projects and serve as conduits to the broader DESG stakeholder community. DESG benefits from long-term relationships with many of our stakeholders through our experienced staff.

DESG meets regularly with our SGAC, communicates with the governor and members of our General Assembly, hosts visits for our congressional delegation and collects formal and informal input through our websites, social media, at workshops and public lectures and at Coast Day—our annual event that attracts thousands of visitors to learn about the coastal environment.



Coast Day, hosted annually by DESG and UD's College of Earth, Ocean, and Environment, welcomes thousands of visitors to UD's Lewes campus to learn about coastal and marine resources.

The Delaware Sea Grant management team and staff are engaged at local, state, regional, national and international levels on boards and committees that are integral to efforts affecting our ocean and coastal communities. Members of our Marine Advisory Service fulfill a number of leadership roles that provide opportunities to engage our stakeholders in discussions of pressing issues and allow them to explore new solutions together.



*"By working across institutional and geographic boundaries, Sea Grant is able to leverage its talents, capabilities and resources. Sea Grant programs partner with **thousands** of organizations in order to leverage efforts, meet goals and expand the scope of their efforts."*

~ National Sea Grant



The SGAC represents a wide variety of stakeholder groups from across the state of Delaware.

## Leadership by staff on boards and committees

### Delaware Sea Grant Management Team

Nancy Targett: Director

- International Society of Chemical Ecology, 1986–Present
- MADE CLEAR: Maryland and Delaware Climate Change Education, Assessment and Research, 2010–Present
- Mid Atlantic Coastal Resilience Institute, 2014–Present
- National Academy of Sciences, National Associate, 2002–Present
- Ocean Leadership, 2007–Present
  - Trustee, 2007–2009, 2010–2013
  - Chair, 2010–2013
  - Futures Education Task Team, 2013–2014, Chair
  - Executive Committee, 2008–2009, 2010–2013
- Sea Grant Association, 2007–Present
  - Treasurer, 2013–2015
- State of Delaware, Climate Vulnerability Taskforce, 2012–2013
- University of Delaware
  - *Delaware Will Shine* Strategic Planning Initiative: Grand Challenges, Great Debates, Big Ideas Working Group Chair, 2014–Present
  - First State Marine Wind, Director, 2010–Present
  - President's Executive Council, 2005–Present
  - President Dean's Council, 2005–Present

James Falk: Associate Director, DESG and Director, Marine Advisory Service

- Sea Grant Extension Assembly
  - Chair-Elect, 2011–2012
  - Chair, 2013–2014
  - Sea Grant Extension Assembly/Communications Network Bi-annual Meeting, Chair, 2013
  - Sea Grant Academy Instructor, 2012
- Sea Grant Association
  - External Relations Committee, Assembly Liaison, 2011–2012
  - Program Mission Committee, Assembly Liaison, 2013–2014
  - Networks Advisory Council, Assembly Representative, 2013–2014
  - Sea Grant Week 2014, Organizing Committee Members, 2013–2014
- National Sea Grant
  - Sustainable Coastal Community Development Network, Executive Committee and Assembly Liaison, 2008–Present
  - Sustainable Coastal Development Focus Team, Member, 2008–2014
  - Performance Measure and Metric Optimization, Extension Work Group, Member, 2013
- Mid-Atlantic Region Sea Grant Network, Chair, 2010–2012
- Atlantic States Marine Fisheries Commission, Committee on Economics and Social Science, Delaware Representative, 2011–Present
- University of Delaware
  - Sustainable Coastal Communities Initiative, Steering Committee, 2006–Present
  - *Delaware Will Shine* Strategic Planning Initiative, Models of the New American Research University Work Group, Member, 2014–Present

Jennifer Merrill: Research Coordinator

- National Sea Grant
  - Research Coordinator Network, 2011–Present
  - Knauss Marine Policy Fellowship National Panel, 2014
- University of Delaware
  - Carnegie Classification Engagement Taskforce, UD Engagement Commission, 2013–Present
  - UD Diversity Taskforce, College of Earth, Ocean, and Environment, Chief Diversity Advocate, 2015
- MADE CLEAR: Maryland and Delaware Climate Change Education, Assessment and Research, Interim Project Director, 2013–2015; Delaware Project Manager, 2011–Present

Katy O'Connell: Director, Environmental Public Education

- National Sea Grant
  - Communicators Network, 2014–Present
  - Strategic Communications Subcommittee, 2014–Present
- University of Delaware
  - Coordinated Communications Council, 2008–Present; Co-chair, 2014–Present
  - Campus-Wide Social Media Group, 2010–Present
  - Steering Committee, Colleges Representative, 2010–Present
  - Web Governance Committee, 2014–Present
- Delaware Association for Environmental Education, 2013–Present
- Green Eggs and Sand: Horseshoe Crab/Shorebird Education Project
  - Board of Directors, 2000–Present

Lisa Ridenour: Assistant Director, Sea Grant and Sponsored Programs

- National Sea Grant
  - Financial Associates Network, 2007–Present

### Outreach and Education Specialists: Marine Advisory Service and Environmental Public Education Office

Tamara Beeson: Art Director

- University of Delaware Creative Services Committee

Wendy Carey: Coastal Hazards and Resilience Specialist

- City of Lewes Hazard Mitigation Planning Team, Member, 2010–Present
- Delaware Community Rating System (CRS) User Group, Co-Coordinator, 2013–Present
- Delaware DNREC Climate Change Impact Assessment Steering Committee, Member, 2012–2014
- Delaware Emergency Management Agency, State Hazard Mitigation Council, Member, 2006–Present
- Delaware National Estuarine Research Reserve, Coastal Training Program Advisory Committee, 2007–Present
- Delaware Surf Zone Injury Work Group, Co-Coordinator, 2010–Present



- International Lifesaving Federation Rip Safe Committee, Member, 2012–Present
- International Rip Current Symposium Organizing Committee, Member, 2010–2012
- National Sea Grant Hazard Resilience in Coastal Communities Focus Team, Member, 2008–2014

#### Leah Dodd: Digital Outreach Specialist

- National Sea Grant
  - Communicators Network, 2014–Present
- University of Delaware
  - Campus-wide Social Media Group, 2014–Present
  - Web Developers Group, 2014–Present

#### John Ewart: Fisheries and Aquaculture Specialist

- National Shellfisheries Association (NSA)
  - Website Committee, 1997–2011
  - Associate Webmaster, 2008–2011
- World Aquaculture Society (WAS)
  - Coordinator, WAS Employment Service, 1985–Present
- East Coast Shellfish Research Institute (ECSRI)
  - Treasurer, 2007–Present
- Aquaculture Network Information Center (AquaNIC)
  - National Advisory Committee, 1994–2011
- Northeastern Regional Aquaculture Center (NRAC)
  - Technical Industry Advisory Council (TIAC), 2011–2015
  - Northeast Aquaculture Extension Network, 1993–Present

#### Joe Farrell: Marine Resource Management Specialist

- Delaware NEMO (Non-point Education for Municipal Officials), Coordinator, 2007–Present
- DNREC, Community Involvement Advisory Council, 2013–Present
- Delaware Center for the Inland Bays STAC, 2007–Present
- DNREC Non-Point Source Advisory Committee, 2007–Present
- University of Delaware
  - Green Liaison—College of Earth, Ocean, and Environment, Sharp campus representative, 2009–Present
  - Citizen Monitoring Program, Program Manager



#### Doris Hicks: Seafood Technology Specialist

- National Seafood HACCP Alliance
  - Steering Committee, 1997–Present
  - Editorial Committee, 2000–Present
  - Train the Trainer Committee, 2002–Present
- Delaware Association of Family and Consumer Science Executive Board, 2004–2010
- Technical Committee for National Fisheries Institute, 2005–Present
- Northeast Aquaculture Extension Network, 1993–Present
- Atlantic Fisheries Technology Conference Executive Committee, 2003–Present
- Aquatic Food Products Division Executive Board—Institute of Food Technologists, 2003–2007
- Interstate Seafood Seminar Planning Committee, 2000–Present

#### Chris Petrone: Marine Education Specialist

- National Marine Educators Association
  - Board of Directors, 2012–Present
  - Technology Committee, 2011–Present
  - Educational Research Committee, 2011–Present
  - 2014 Annual Conference Committee, Marketing and Advertising Chair, 2012–2014
  - Nominating Committee, 2014
- Sea Grant Education Network
  - Executive Committee (nominee)
  - Nominating Committee, 2013, 2014
- Mid-Atlantic Marine Education Association
  - Board of Directors, 2013–Present
  - Social Media Manager, 2010–Present
  - *Masthead* (quarterly newsletter) Editor, 2008–2012
  - Mid-Atlantic Environmental Literacy Workgroup, 2012–Present
- Delaware Association for Environmental Education
  - Board of Directors, 2012–Present
  - Communications Committee, 2012–Present
  - Annual Conference Committee, 2013–Present
- Delaware Children in Nature Coalition
  - Steering Committee, 2013–Present
  - Committee Chair, 2013–Present
- Delaware Science Coalition, University Partner, 2012–Present
- Lewes Education Coalition, Chair, 2012–Present
- Cape Henlopen State Park REECH Program Steering Committee, 2014–Present

#### Ed Lewandowski: Coastal Communities Development Specialist

- University of Delaware Sustainable Coastal Communities Initiative, Coordinator, 2011–Present
- Town of Bridgeville/Planning & Zoning Commission, 2013–Present
- Delaware Natural Areas Advisory Council, 2012–Present
- Sussex Economic Development Action Committee
  - Ex-officio Member, 2011–2014
  - Board Member, 2014–Present
- Delaware Waterways Management and Finance Advisory Committee, 2014–Present
- Inland Bays Water Use Plan Implementation Committee
  - Member, 2011–Present
  - Chairman, 2014–Present
- Sussex County Association of Towns, Member, 2011–Present
- Sustainable Coastal Communities Development Network, Mid-Atlantic Regional Coordinator, 2012–2014
- Delaware Water Supply Coordinating Council, 2011–2013
- Delaware Water Resources Advisory Panel, 2011–Present
- Lewes-Rehoboth Canal Improvement Association, Board of Directors, 2012–Present

#### Karen Roberts: Communications Specialist

- University of Delaware
  - UDaily committee, 2014–Present
  - Coordinated Communications Council, 2014–Present





## Key Partnerships and Important Stakeholders

For the purpose of this section, we define stakeholders as those individuals, groups, or other audiences served by DESG. Such service includes helping to answer critical questions, conduct essential research and facilitate resource management decisions.

Members of the Delaware Sea Grant Advisory Council (SGAC) represent a broad array of DESG stakeholders. They provide valuable perspectives that inform DESG program research, outreach and education projects and serve as conduits to the broader DESG stakeholder community.



**PARTNERS ASSIST DESG IN A VARIETY OF WAYS. THEY:**

- supply funding support for DESG research, outreach and communication programs and events;
- provide salary support for outreach staff;
- support programs with speakers or contributions;
- work collaboratively on outreach and/or research programs;
- provide equipment, supplies, or other services; and
- volunteer services to assist with research and/or outreach programs.

Our involvement of key stakeholders in our programmatic activities are driven by our DESG strategic plans (2009–2013) and (2014–2017). Early input from stakeholders is always critical to the development of the plans and continues to guide us in our planning and delivery of services to them, and others, with their continued support.

Generally, stakeholder groups served by DESG, who we also consider to be partners, represent resource managers, coastal communities, emergency managers, consumers, formal and informal educators, seafood and fisheries professionals,

students, elected officials, policy makers and private citizens.

Highlighted in this section are a number of ongoing partnerships where DESG works actively to respond to stakeholder needs. In using this format, we rely on the Site Review PIER Report (see Appendix) to document the long list of our partners and stakeholders that we have previously reported and use this section to focus on examples of engaging with our partners to address stakeholder needs.

**Delaware Center for the Inland Bays (CIB):** DESG has a long standing relationship with colleagues from Delaware’s Center for the Inland Bays (a National Estuary Program). Our partnership has produced numerous outcomes



and accomplishments. Coordinating the Citizen’s Water Quality Monitoring program for more than 20 years has been an enduring program that has provided the CIB and state resource managers with verifiable water quality data to help manage the resource. DESG has also worked with center staff on providing technical support to enhance the oyster gardening program. Most recently two DESG staff members served on the CIB “tiger team” which helped draft legislation to allow the commercial production of shellfish in the inland bays. The state’s General Assembly passed the legislation (HB 160) in June 2013 to lay the groundwork for an aquaculture industry to begin. DESG and CIB are working with interested watermen to take the legislation from concept to implementation.



**Delaware Department of Natural Resources and Environmental Control (DNREC):** DESG has had a strong partnership with DNREC and its various divisions, sections and offices for many years. Key members of the department serve on our DESG advisory council and help to support many of our programs. The Office

of Shellfish and Recreational Waters funds DESG to conduct the recreational water sampling along Delaware Atlantic coast beaches, which has led to a top rating of 5-stars at two ocean

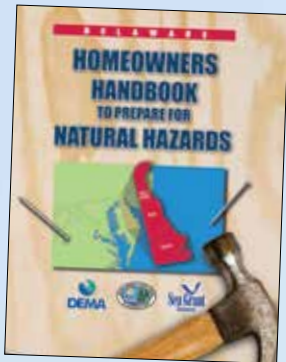
beaches for the past three years. DNREC's Division of Fish and Wildlife was a key stakeholder as we approached them to co-sponsor a workshop on "Sustaining Delaware's Marine Fisheries."

The Shoreline and

Waterway Management Section was a key stakeholder in the development of web-based flood risk awareness maps for 10 Sussex County coastal communities. These interactive maps are available via the internet. DNREC and DESG often work jointly on issues related to coastal hazards, sea level rise and climate adaptation, serving both resource manager needs and that of coastal communities.



Web-based flood risk awareness maps.



**Delaware Emergency Management Agency (DEMA):**

DEMA has been a key stakeholder of ours for many years, partnering with us on educational programs, outreach publications and other opportunities to help educate residents throughout Delaware about potential hazards. Most recently DEMA colleagues teamed up with DESG and other agencies to produce the popular

guide, "Homeowners Handbook to Prepare for Natural Hazards." The financial support from DEMA, through FEMA's Hazard Mitigation Grant Program, helped to produce the guide which helps homeowners and residents understand and plan for hazardous situations. The guide is in its second printing, with over 9,000 copies distributed to homeowners, community organizations and local governments.

**Regional bait dealers:** Bait and tackle dealers throughout the region are working with Sea Grant extension agents and specialists in Delaware, Pennsylvania, Maryland, Virginia, North Carolina and New Jersey to help educate recreational anglers about proper bait handling practices of live bloodworms to prevent the spread of invasive species. Seaweed used as packing material for live worm shipments from other locations can contain a variety of invasive species, which if not disposed of properly can lead to unwanted species thriving in Mid-Atlantic waters.



**Seafood industry and state regulators:**

DESG provides a crucial service in directly training and certifying seafood processors and retailers about new HACCP safety procedures, which plays a very important role in protecting consumer safety, as well as the viability of commercial seafood products. State regulators were certified to be able to inspect facilities to insure compliance with regulations. DESG also partners with colleagues at Maryland Sea Grant to train regulators and seafood industry representatives in both states. In addition, DESG, with numerous partners, conducted the "Framing the Message about Seafood" workshop which brought together stakeholders to address the topic of the health benefits of seafood. Industry representatives, government, academia and advocacy groups discussed the challenges of a risk-based approach to seafood safety and the roles of government and industry. This approach represents the first time a stakeholder group had convened to discuss information that has been presented to the public on seafood health benefits and risks. A consensus was reached on a science-based approach that could be readily translated to an existing web-based resource (<http://seafoodhealthfacts.org>).



**Beebe Healthcare, Emergency Service Department:**

DESG and Beebe Healthcare, Emergency Service Department are the key collaborators on a project that involves coordination of many agencies and organizations including UD's Department of Civil and Environmental Engineering, Delaware DNREC and coastal community beach patrols. Researchers worked with lifeguards in Delaware communities and state park beaches, and use sampling equipment, to correlate data on beach conductions with patients reporting for emergency treatment at Beebe facilities. Positive project outcomes include enhanced prediction of surf/ocean conditions that are likely to cause injuries, communication of study results to local beach patrols and the National Weather Service to enhance and improve beach hazard statements, and focused/targeted education and outreach efforts directed to the beach-going public.



**Mid-Atlantic high school students:** Working with support from the Consortium for Ocean Leadership, DESG hosted a regional competition of the National Ocean Science Bowl (Chesapeake Bay Bowl) in February 2014. Twelve teams of high school students from Delaware, Maryland, Pennsylvania, Virginia and Washington, D.C. competed to attend the national competition in Seattle, Washington. The competitors experienced the University of Delaware marine studies campus in Lewes, Del., where they networked with UD scientists, graduate students and Delaware Sea Grant staff. This marked the first time in National Ocean Science Bowl history that a regional bowl was held on the Delmarva Peninsula.



**University of Delaware Cooperative Extension and Institute for Public Administration:** DESG provides leadership and coordination for an ongoing collaboration with these two outreach arms at the university to create the Sustainable Coastal Community Initiative. The program, which is supported by an appropriation from the Delaware General Assembly, conducts research and outreach to address social, economic and environmental issues facing coastal communities throughout the state.



**Laurel Redevelopment Corporation:** DESG collaborated with the non-profit Laurel Redevelopment Corporation (LRC) to engage community stakeholders in Laurel, Del., in a



visioning process to reimagine their downtown area. DESG secured funding from the LRC to employ a University of Delaware landscape architect professor to produce a waterfront redevelopment plan, including artist renderings that reflected the community's aspirations. The proposed project, christened "The Ramble," features a cottage-style, pocket neighborhood called "The Cottages at Laurel Mills"; a mixed-use, residential/commercial development to be called "The Village Green"; a landscaped river walk; a children's playground; a kayak launch; and numerous green-infrastructure practices to control and treat non-point source runoff. DESG continues to consult with leadership from the LRC and the Town of Laurel to recommend and implement sustainable design strategies for "The Ramble."



**PreK–12 Educators:** DESG is actively involved at the state and school district-levels with building the environmental literacy of Delaware's preK–12 teachers. Through single- and multi-day workshops, which include inquiry based, differentiated activities, educators learned a wide variety of content and skills, including local weather and climate, water quality, watersheds, ecology, marine biology, wind energy and Next Generation Science Standards (adopted in Delaware in fall 2013). Experiences are integral to building new knowledge and skills, so all DESG teacher professional development opportunities include a hands-on component, contact with scientists and participant-networking time.

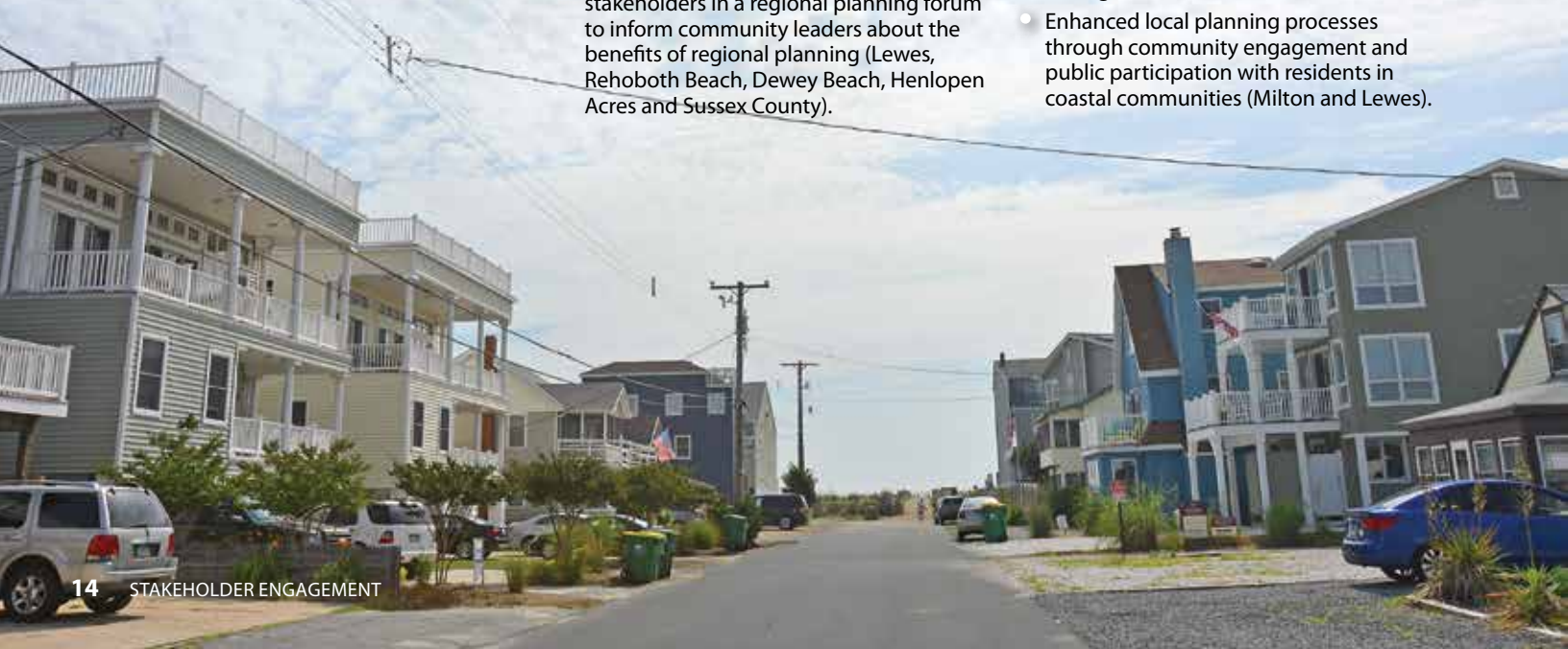
**Traditional maritime communities:** A number of commercial fishing and water-dependent populations reside along Delaware's tidal coastline. DESG has established partnerships with local officials and stakeholders in some of these historic, working waterfront communities to address the need for economic development. By fostering an environment in which economic growth and environmental protection are viewed as mutually compatible and non-conflicting activities, DESG has encouraged community leaders to integrate economic development opportunities within a coherent setting of land-use planning principles and policies, such as addressing problems of environmental carrying capacity. DESG is helping these communities plan and develop activities that are within the limits of their local socio-economic capacities as well.





**Delaware coastal communities:** DESG works with local communities in many ways to help answer problems and challenges they face living and working in our coastal settings. We sponsor workshops and seminars, conduct demonstration projects, develop outreach materials and provide one-on-one advisement. Examples of our actions include:

- Offered public workshops and presentations to help the general public understand the impacts of climate change (coastal communities, statewide).
- Developed a brochure to increase awareness of how best-practices and designs can mitigate future damage in the event of a septic system failure in bayside communities (Delaware bayside communities).
- Supported the development of a maritime heritage display at the Lewes Historical Society highlighting the rise and fall of the Menhaden Fishery (Lewes).
- Used time-lapse videos to illustrate and increase resident's awareness of tide and storm flooding impacts (Lewes).
- Worked with University of Delaware economists to publish "The Contribution of the Coastal Economy to the State of Delaware." This publication identifies the significant economic contributions of the Atlantic Ocean's economy to the state. (Sussex County).
- Supported the creation of rain gardens in local coastal communities to address pollution control strategies and to educate residents about better techniques to control stormwater (Milton and Lewes). In addition, DESG coordinated a rain garden workshop for professional landscapers (Sussex County).
- Through the Sea Grant-led Sustainable Coastal Communities Initiative, engaged stakeholders in a regional planning forum to inform community leaders about the benefits of regional planning (Lewes, Rehoboth Beach, Dewey Beach, Henlopen Acres and Sussex County).
- Led community leaders and residents in a planning exercise to develop a master plan for Phase II of the State of Delaware's Chesapeake Watershed Implementation Plan (Bridgeville and Greenwood).
- Assisted the Town of Millville develop Low Impact Development (LID) standards using NEMO (Non-point Education for Municipal Officials) approaches (Millville).
- Worked with community partners to increase teacher awareness of potential field trip opportunities blending environmental and historical themes in a historic, waterfront community (Lewes).
- Hosted an Inland Bays' shellfish aquaculture workshop to discuss the potential role of shellfish aquaculture in Delaware's Inland Bays for stock enhancement, restoration and coastal community economic development (Inland Bay communities).
- Has taken a lead role to initiate development of a National Flood Insurance Program Community Rating System (NFIP CRS) User Group in Delaware (communities throughout the state).
- Enhanced communication among local beach patrols and NOAA, NWS Forecast Office in Mt Holly, NJ through rip current outreach and coordination efforts (ocean beach communities).
- Led two Delaware towns in adopting Hazard Mitigation and Climate Adaptation Action Plans through the DESG-led Coastal Community Climate Adaptation Initiative (CCCAI) Project (Lewes and Delaware City).
- Assisted the Lewes Board of Public Works in developing a nutrient offset strategy as a pollution reduction program to satisfy permit requirements for direct discharge into the Lewes-Rehoboth Canal (Lewes).
- Introduced weTable and CommunityVIZ® technologies to enhance public participation for community-level land use planning in Delaware (communities throughout the state).
- Enhanced local planning processes through community engagement and public participation with residents in coastal communities (Milton and Lewes).





## COLLABORATIVE NETWORK/ NOAA ACTIVITIES

Since its last review, DESG has had more than \$15M in non-Sea Grant NOAA funding that is either directly related to current Sea Grant efforts or has been catalyzed by past DESG-funded projects. In addition to project funding, DESG collaborates with other Sea Grant programs and NOAA to enhance research and engagement around issues relevant to the state, region and nation.

### *Collaborations with Sea Grant, NOAA and agency partners*

#### **NOAA Collaborations**

*Mid-Atlantic Regional Request for Proposals Series:* In each Omnibus cycle, Delaware Sea Grant has participated in an effort to fund regional-scale research in close partnership with Maryland and Virginia Sea Grant programs. The size of the effort has grown in the past and current cycle. During the 2014–2016 competition New York, New Jersey, Pennsylvania and North Carolina participated as well, and the RFP underway (2016–2018) includes Maryland, Virginia and New Jersey. This regional Sea Grant collaboration shares administration of the competition between participating programs on a rotating basis; the development of the RFP is done collaboratively to ensure the RFP addresses each program's strategic plan. Award funding is maintained within each state. Successful projects demonstrate integration in their work and applicability of their research to stakeholders within each state.

*Knauss Marine Policy Fellowship:* Residents of Washington, DC, find themselves without a home Sea Grant program when applications are due for the prestigious Knauss Marine Policy Fellowship. Administration (applications, interviews, funding of successful applicants) is rotated between the Delaware, Virginia and Maryland Sea Grant Programs. Delaware administered a 2014 Knauss Fellow from Washington, DC.

*Sustainable Coastal and Marine Tourism Roundtable:* Chris Ellis (NOAA, Coastal Services Center) collaborated with J. Falk and other Sea Grant partners to conduct this meeting in Baltimore, MD. October 14, 2011.



*Sustainable Coastal Tourism: Renewing Sea Grant's Role (A Policy White Paper):* Chris Ellis (NOAA, Coastal Services Center) collaborated with J. Falk and other Sea Grant partners to help draft the "white paper." May 2012.



*NOAA Roundtable for Delaware Congressional Staff Supporting Vibrant Delaware Communities and Economies:* W. Carey and J. Falk collaborated with N. Bartlett, NOAA, NART Regional Coordinator to plan this briefing to update congressional staff members on NOAA activities in Delaware. September 16, 2014.



*MARACOOS:* Through omnibus research competitions Delaware Sea Grant has provided funds to the Center for Remote Sensing (CRS, PI Yan), which is the group responsible for operating the primary satellite receiving stations supporting the Mid-Atlantic Regional Association Coastal Ocean Observing System.

*Rip Current Initiative:* W. Carey interacts with the regional weather service offices on rip current observations, and interacts with the national weather service office on the NOAA/USLA rip current education and awareness campaign. 2006–Present.

*Climate Adaptation/Community Resiliency:* W. Carey coordinated with Delaware DNREC, DNERR and NOAA's Coastal Services Center on workshops related to climate adaptation and resiliency for Delaware communities. 2011–2014.

*Bay Watershed Education & Training (BWET) Grant Program:* C. Petrone served as a BWET grant proposal panel reviewer in 2013.

### *Mid-Atlantic Environmental Literacy Workgroup:*

C. Petrone serves as the Delaware university partner for the NOAA Chesapeake Bay Office/Chesapeake Bay Program workgroup, which is tasked with evaluating and recommending policies related to preK–12 bay education in the Chesapeake Bay states. 2012–Present.

*Chesapeake Exploration Workshop:* C. Petrone provided a hands-on presentation on ocean observing systems and using online data at a NOAA Environmental Science Training Center teacher professional development workshop. August 2012.



**MADE CLEAR:** This NSF project team, that includes C. Petrone and J. Merrill from DESG, has strong connections to NOAA through both the Office of Education and the Environmental Science Training Center Education Coordinator (ESTCEC). Bart Merrick of ESTCEC and C. Petrone collaborated on field- and classroom-based activities for teachers participating in the MADE CLEAR Climate Science Academies (July 2013 and 2014). J. Merrill worked with NOAA Climate Education Coordinator, Frank Niepold, on presentations for American Geophysical Union and National Council for Science and the Environment annual meetings (2013, 2014). Frank also participates in MADE CLEAR as a member of the External Advisory Committee and has made numerous presentations to the MADE CLEAR project team and teacher participants (2012–2015).

*CBNERRVA Discovery Lab:* C. Petrone provided a presentation, via video conference and DESG resources for the June 2014 Chesapeake Bay National Estuarine Research Reserve in Virginia’s Horseshoe Crab Discovery Lab.

*NOAA “Bay to Bay” Project:* C. Petrone, PI for the NOAA BWET-funded “Bay to Bay” project, worked collaboratively with DNERR Education Coordinator, Jennifer Holmes (co-instructor), Maryland Sea Grant Watershed Restoration Specialist, Jennifer Dindinger (presenter), NOAA Environmental Science Training Center Education Coordinator, Bart Merrick (presenter) and Connecticut Sea Grant Education Coordinator, Dr. Diana Payne (project advisory board, evaluation), to conduct the six-day “Bay to Bay” Delmarva Transect in July 2014. This project continues through 2016.

## **National Sea Grant Collaborations**

### **Outreach**

*National NEMO Network:* J. Farrell coordinates Delaware’s participation in the network to educate local (town/city/county) land use decision makers about protecting water quality as communities grow. There are currently NEMO programs in 30 states, most led by either University-based Extension and/or Sea Grant programs. Each of these programs is an adaptation of the original NEMO program at the University of Connecticut Center for Land Use Education and Research.

*Coastal Hazards/Coastal Community Resiliency:* W. Carey was a member of the Hazard Resilience in Coastal Communities National Sea Grant focus team. 2008–2013.

*Sustainable Development:* J. Falk was a member of the Sustainable Coastal Development National Sea Grant focus team. 2008–2013.

## **Sea Grant Program Collaborations**

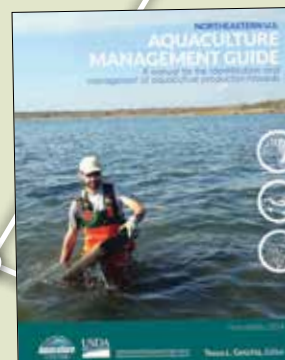
### **Outreach**

*Aquatic Invasive Species:* DESG in cooperation with Pennsylvania, Maryland, Virginia, North Carolina and New Jersey Sea Grant programs, the University of Maryland and the Smithsonian Environmental Research Center (SERC) participated in the National Sea Grant Funded project “Preventing Aquatic Invasive Species through Vector Management: Live Bait Vector as a Model in the Mid-Atlantic Region.” 2009–Present.

*Seafood HACCP Training:* D. Hicks partners with Sea Grant colleagues in Maryland to conduct seafood HACCP training programs in the Mid-Atlantic region. In addition, Hicks also partners with NJSJ colleagues to conduct seafood HACCP training programs in New Jersey. 2011–Present.

### *Aquaculture Health Hazards:*

Connecticut Sea Grant coordinated a NRAC Regional Extension Project, “Aquaculture Health Hazards—Developing Outreach Services to the Region’s Farmers Using a HACCP Approach.” Numerous SG programs (including DESG) and other partners were involved in producing “Northeastern U.S. Aquaculture Management Guide. A manual for the identification and management of aquaculture production hazards.” Partners included Connecticut Sea Grant, University of Connecticut, Salem State University, Pennsylvania Sea Grant, The Pennsylvania State University, Rutgers Cooperative Extension, University of Massachusetts, Maryland Sea Grant Extension Program, Roger Williams University, Delaware State University, Maine Sea Grant/University of Maine Cooperative Extension, University of Maryland Eastern Shore, Sea Grant Extension Program, Cornell Cooperative Extension, Center of Marine Biotechnology, University of New Hampshire Sea Grant/UNH Cooperative Extension, Cape Cod Cooperative Extension & Woods Hole Sea Grant Program and Rhode Island Cooperative Extension.





**Rain Gardening:** E. Lewandowski participated in and secured funding for a regional initiative to develop a Mid-Atlantic Rain Garden App for iPhone and Android platforms, partnering with Maryland, New Jersey and Connecticut Sea Grant programs.

**weTable Tool:** E. Lewandowski collaborated with TX SG/Texas A&M to organize and co-host the inaugural weTable Users' Conference in Houston, TX. February 2013. E. Lewandowski also conducted training during a weTable workshop in College Park, MD for staff and associates of the MD SG/Extension program, and conducted training during a weTable workshop for PA Sea Grant in Chester, PA.

**Sea Grant Sustainable Coastal Community Development (SCCD) Network:** E. Lewandowski is the current Mid-Atlantic Regional Coordinator and previously served as the Mid-Atlantic Regional Representative from 2012–2014; E. Lewandowski served on the planning committee and helped to facilitate the SCCD Network's annual meeting in Washington, DC. November 2014. J. Falk also serves as the Sea Grant Assembly liaison to the SCDD network.

**Rip Current Awareness:** W. Carey worked with North Carolina Sea Grant to develop a review paper on rip current science advances and updates. 2014.

**Climate Adaptation Planning:** W. Carey collaborated with New Jersey Sea Grant colleagues to extend resources and information on climate adaptation planning to New Jersey communities. 2014. In addition, DESG provided NJSGC with the Delaware Homeowners Handbook to Prepare for Natural Hazards text and template to use in preparation of the NJ Homeowners Handbook. 2014. DESG also provided Massachusetts Sea Grant with text and template from Delaware Homeowners Handbook to Prepare for Natural Hazards. 2013.

**Coastal Community Resiliency:** W. Carey coordinated with colleagues at Hawaii Sea Grant for Delaware delivery of a National Disaster Preparedness Training Center Course on coastal community resiliency. 2014.

**Food Safety and Seafood Risks/Benefits:** D. Hicks is working on a multi-institutional partnership building effort with Connecticut and Rhode Island for a National Survey of Nursing and Nutrition/Dietetic Educators on Curricula Content related to Food Safety and Seafood Risks/Benefits. 2013–Present.

**Mid-Atlantic Sea Grant Regional Network:** C. Petrone served as planning committee co-chair and host of the April 2012 regional network meeting in Rehoboth, DE. E. Lewandowski served on the planning committee for the Mid-Atlantic Sea Grant Network regional meeting held in Corolla, NC. April 2014.

## Education

**Chesapeake Bay Academy:** Virginia's Coastal Ecosystems: C. Petrone collaborated with Virginia Sea Grant educators to conduct a five-day teacher professional development workshop at the VIMS Eastern Shore Lab in Wachapreague, VA. July 2011.



**Boy Scout Oceanography Merit Badge Program:** C. Petrone worked with veteran merit badge program coordinator, Diana Burich, from New Jersey Sea Grant, on the creation of a similar, very successful program in Delaware. 2012.

## Regional/multi-program projects

**Mid-Atlantic Ocean Research Plan (New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina):** Sea Grant programs and the Gerard J. Mangone Center for Marine Policy at the University of Delaware's College of Earth, Ocean, and Environment completed the Mid-Atlantic Ocean Research Plan that prioritizes a research agenda for the region. Beginning with a thorough review of all research plans produced for the region, surveys and stakeholder workshops, the plan was made available to state and federal agencies, as well as the Mid-Atlantic Regional Ocean Council (MARCO). (<http://www.midatlanticoceanresearchplan.org>)

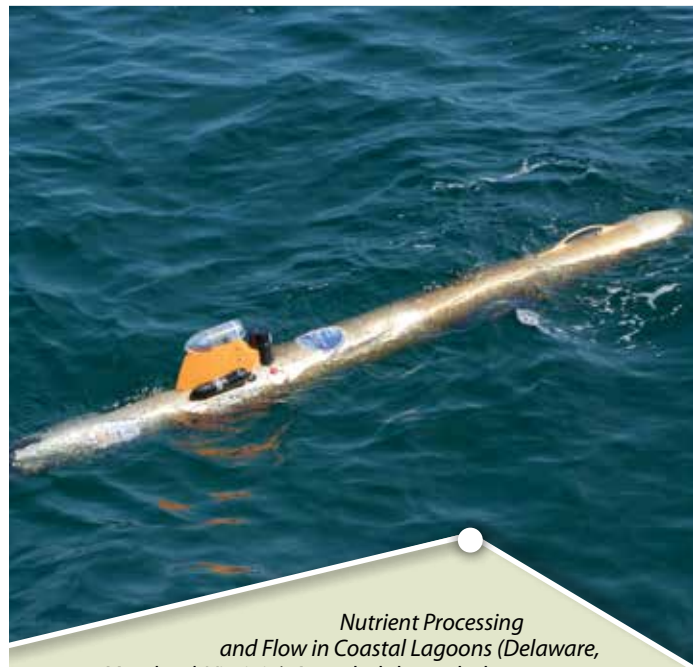
**Delmarva Water Quality Modeling (Delaware, Maryland, Virginia):** Awarded through the 2012–2014 Mid-Atlantic Regional RFP, Sea Grant researchers refined a land use and nutrient loading model to include nitrogen cycling and seagrass abundance in coastal lagoons. The PIs worked effectively across the region, and the work included a stakeholder workshop to further refine the online computer simulation modeling tool and ensure its applicability to real world management. E. Lewandowski and J. Farrell facilitated the Delmarva Water Quality Modeling Workshops for this Sea Grant-funded research collaboration.

## Success in Sea Grant National Competitions

Delaware Sea Grant has supported national investments in research through National Strategic Investment (NSI) awards.



2011–2015 National Strategic Investments	Award Amount
Weathering Change—Integrated Hazard and Adaptation Training to Create Resilient Local Governments	\$100,000
Public Perceptions of Coastal and Nearshore Wind Power Turbines and Transmission	\$69,999
The Economic Impact of Offshore Wind Farms on Coastal Tourism and Beach Use in Mid-Atlantic Region	\$69,816
Climate Initiative	\$60,000
Social Dimensions of Offshore Wind Power Development off the Delmarva Peninsula	\$91,063
A Bioeconomic Analysis of Ecosystem-Based Horseshoe Crab Fishery Management	\$61,204
Aquaculture and Fisheries Technologies for Food and Health Educators, Seafood Professionals and Communicators	\$119,357
Economics of Ecosystem Services from Oyster Aquaculture	\$317,215
	<b>\$888,654</b>



*Nutrient Processing and Flow in Coastal Lagoons (Delaware, Maryland, Virginia):* Awarded through the 2009–2011 Mid-Atlantic Regional RFP, Sea Grant researchers developed a model of nutrient processing and flow in coastal lagoons; Delaware PIs contributed extensive autonomous underwater vehicle (AUV) surveys to inform the physical parameters of the model.

*Sustainable Coastal and Marine Tourism Roundtable: (Delaware, Hawaii, Maine, Mississippi/Alabama, North Carolina, Ohio and South Carolina Programs and the National Sea Grant Office).* J. Falk (DE) and J. Carey (HI) led this effort to host a roundtable to bring together Sea Grant colleagues and others to begin developing a renewed interest in coastal and marine tourism throughout the Sea Grant network. Meeting held in Baltimore, MD. October 14, 2011.

*Sustainable Coastal Tourism: Renewing Sea Grant's Role (A Policy White Paper): (Delaware, Florida, Hawaii, Maine, Mississippi/Alabama, North Carolina, Puerto Rico, South Carolina).* J. Falk (DE) and J. Carey (HI) led this team of experts in coastal recreation and tourism in drafting a white paper to provide background and context to help renew a community of practice in coastal and marine tourism. May 2012.

*Maryland and Delaware Climate Change Education, Assessment and Research (MADE CLEAR):* Delaware Sea Grant collaborates with the NSF-funded MADE CLEAR project through educational activities (professional development, education materials distribution, and project management) that has resulted in a number of high profile climate education activities including draft recommendations for Governors Markell and O'Malley to consider as members of the White House Task Force on Climate Resilience, participation in the White House Roundtable on Climate Change Education, a panel at the 2015 National Council for Science and the Environment focused on climate change education, numerous presentations at national science (e.g., AGU) and education (e.g., NSTA) conferences.



### SEA GRANT FELLOWSHIPS



**2015 Knauss Fellowship**  
**Alexis Martin**  
**Degree:**  
MMP in  
Marine Policy

2011–2015 Fellowships	Award Amount
Alexis Martin, DE Sea Grant Knauss Fellowship. 2015	\$56,500
Bari Greenfeld, DE Sea Grant Knauss Fellowship. 2014	\$56,500
Katya Samoteskul, DE Sea Grant Knauss Fellowship. 2013	\$52,500
Marysia Szymkowiak, DE Sea Grant NMFS Fellowship. 2013	\$64,166
Amardeep Dhanju, DE Sea Grant Knauss Fellowship. 2010	\$44,000
Caitlin Snyder, DE Sea Grant Knauss Fellowship. 2010	\$44,000
	<b>\$317,666</b>

## PROGRAM CHANGES RESULTING FROM PREVIOUS SITE REVIEW

In the final report from Delaware Sea Grant's site review in 2011, the National Sea Grant Office provided no recommendations (items the program must consider); however, several suggestions (ideas the program might consider) were provided. Noted below are the suggestions made in 2011 that have resulted in Delaware Sea Grant program changes.

**Suggestion:** The program might be able to take advantage of its relationship with CEOE to find ways of providing graduate students in the department with exposure to Sea Grant activities, including extension activities.

**Progress:** We have made a concerted effort to work more closely with Sea Grant funded graduate students. Graduate students receiving DESG support are introduced to the program's mission and strategic plan and our staff, and are provided opportunities for supplemental professional development. Students are introduced to our Marine Advisory Service specialists and Environmental Public Education professionals, and we continue to develop mechanisms to have them work closely with staff on outreach/extension projects. In addition, graduate students have benefited from customized professional development opportunities, such as an introduction to Sea Grant session and professional media training provided through EPE with assistance from the University of Delaware Office of Communications and Public Affairs.



**Suggestion:** There might be opportunities for fruitful engagement with the NOAA Education Office to connect with NOAA's education goals and resources, including potential grant funding opportunities.

**Progress:** Shortly after our April 2011 site review, Delaware Sea Grant hired a marine education specialist, Chris Petrone. Since his hire, he has been active in providing outreach services to the K-12 education sector in Delaware, as well as being active regionally and nationally with education colleagues. In 2013, he secured a two-year, NOAA Chesapeake Bay Office BWET-funded project: "Bay to Bay:

A multidisciplinary, multi-watershed investigation across the Delmarva Peninsula" targeted to educators in the Mid-Atlantic region. In addition, DESG's research coordinator collaborates frequently with the NOAA Education Office in her role as the Delaware manager of the MADE CLEAR project. Numerous interactions have led to a familiarity with the office, and active collaborations (e.g., collaboration on AGU and NCSE panels, participation in White House events) have resulted.

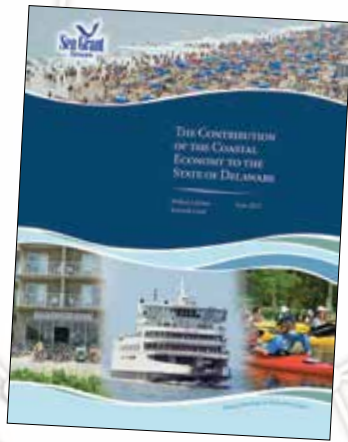


**Suggestion:** The SRT suggests the program continue working on gaining and attracting human dimension, socioeconomic research and work.

**Progress:** Each of our DESG Omnibus cycle Request for Proposals (RFPs) since our 2011 site review have explicitly identified social science as a priority funding area. With support from the NSGO we have been fortunate to fund at least two social science projects each of the last two funding cycles. Additionally, our Marine Advisory Service staff continues to be active in the social science field, evidenced by the June 2012 report initiated by Joe Farrell, “*The Contribution of the Coastal Economy to the State of Delaware.*”

**Suggestion:** The program might consider expanding or rotating the individuals or constituencies on the advisory council as new issues emerge. An additional member from a non-coastal, non-tourism-driven city might serve the advisory council well.

**Progress:** Multiple turnovers and replacements have occurred on our Sea Grant Advisory Council since the 2011 site review, including new representation from two other state institutions of higher education—Delaware State University and Delaware Technical and Community College. We also have recruited a new member of the Delaware General Assembly, Senator David McBride, who represents a non-coastal, non-tourism-driven district in Wilmington, DE to serve on our SGAC.



constituents and members of the general public to solicit their participation in the plan's development. In addition, we invited multiple stakeholders, including members of our Sea Grant Advisory Council, to a full-day planning session and recorded their contributions and input. Information collected from these efforts, and from multiple stakeholders, formed the basis for the development of our 2014–2017 Strategic Plan.



**Suggestion:** Given the program's good relations with businesses in the state, it might be possible to have industry partners contribute more financially to targeted activities (e.g., seafood safety).

**Progress:** Since our 2011 site visit we have received additional private sector support to promote targeted activities. The most significant industry support has come in terms of sponsorship of Coast Day (a targeted activity). Industry support for Coast Day has exceeded \$50K during the past four years (2011–2014). If in-kind services from industry were included, that figure would more than double.

**Suggestion:** The program might be in an ideal position to lead in the development of a regional (or broader) community of practice in long-term volunteer monitoring, given the quality of its relations with its own volunteers and the productivity of its efforts with state agencies and the National Estuary Program.

**Progress:** Delaware Sea Grant staff members who are involved in volunteer monitoring efforts have participated in discussions with other NOAA and Sea Grant personnel who have been leading these national efforts. In addition, Delaware Sea Grant has taken the lead on organizing volunteer monitoring groups in Delaware to share ideas and discuss opportunities to network more closely.



Senator David McBride



Dyremphe Marsh  
Delaware State  
University

**Suggestion:** We suggest the program consider conducting affirmative checks to assure that all constituents are being reached by DESG, for example, during the early stages of the program's next strategic planning cycle.

**Progress:** DESG initiated an extensive strategic planning process in spring 2012 for the Development of the DESG Strategic Plan 2014–2017. Initially, we created an online survey that targeted a broad cross-section of stakeholders,



## Appendix – Delaware Sea Grant Partners

Member	Sub Unit	Supplied funding support for research, outreach and/or communication programs	Provided salary support for outreach staff	Supported programs with speakers or other contributions	Worked collaboratively on outreach and/or research programs	Provided equipment, supplies or other services	Volunteered services to assist with research and/or outreach programs
Abbott's Grill				X			
ab+c Creative Intelligence					X		
ACF First State Chefs Association					X	X	
American Institute of Architects	Delaware Chapter				X		
American Red Cross	Delaware Chapter				X		
American Seafoods				X			
Aquaculture Network Information Center					X		
Association of Food and Drug Officials					X		
Beebe Healthcare					X		
Bornstein's Seafood				X			
Boy Scout Troop 95						X	
Bill's Sport Shop					X		
Blue Water Wind LLC		X					
Broadwater Oyster Company LLC		X			X		
California Sea Grant					X		
Cape Cod Cooperative Extension					X		
Cape Gazette					X		
Cape Henlopen High School							X
Cape Henlopen High School	Band Boosters					X	
Cape May-Lewes Ferry					X		
Centers for Disease Control and Prevention				X			
Cheyney University	Aquaculture Research and Education Center				X		
Christiana Bank and Trust		X					
City of Lewes	Board of Public Works						
	Building Officials	X			X		
	Mitigation Planning Team				X		
	Planning Commission				X		
Clean Currents LLC		X					
Colby College					X		
Colonial School District	Nutrition Services Department				X		
Colorado State University	Department of Food Service and Human Nutrition					X	
Connecticut Sea Grant				X	X		
Consortium for Ocean Leadership	National Ocean Sciences Bowl				X		
Delaware Camping Center						X	
Delaware Center for the Inland Bays			X	X	X	X	X
Delaware City, Delaware					X		
Delaware Department of Agriculture					X		
Delaware Department of Education					X		X
Delaware Department of Health and Social Services					X		
Delaware Department of Insurance					X		
Delaware Department of Natural Resources and Environmental Control		X		X			
	Delaware Coastal Programs	X		X	X		
	Delaware National Estuarine Research Reserve			X	X		
	Division of Parks and Recreation / Delaware State Parks			X	X	X	
	Division of Energy and Climate	X		X	X		
	Division of Fish and Wildlife			X	X		
	Division of Watershed Stewardship	X	X	X	X		
	Division of Water Resources, Watershed Assessment			X	X	X	
	Environmental Lab Section	X					
	Non-point Source Program	X					
	Office of Planning			X			
	Office of Shellfish and Recreational Waters	X	X			X	
Delaware Department of Transportation					X		
Delaware Division of Public Health				X			
Delaware Electric Cooperative					X		
Delaware Emergency Management Agency					X		
Delaware Forest Service					X		
Delaware Geographic Alliance				X		X	X
Delaware Geological Survey				X	X		
Delaware Greenways					X		



Member	Sub Unit									
Delaware Invasive Species Council								X		
Delaware Marine Trades Association									X	
Delaware Municipal Electric Corporation		X						X		
Delaware Museum of Natural History								X		
Delaware Nature Society								X		
Delaware Office of State Planning Coordination								X		
Delaware Public Archives								X		
Delaware River and Bay Authority		X						X		
Delaware River and Bay Cooperative								X		
Delaware Science Coalition										X
Delaware State University		X						X		
Delaware Teacher Center										X
Delaware Technical and Community College	Road Scholar Program							X		
	Classic Upward Bound Program								X	
	TRIO Programs							X		
	Upward Bound Math and Science Program								X	
Delaware Underwater Swim Club								X		
Delaware Wildlands							X			
Delmarva Chefs and Cooks Association, Inc.							X	X		
Delmarva Emergency Task Force							X			
Delmarva Power		X					X			
Dogfish Head Craft Brewery							X			
Dover Rent-All									X	
DuPont	Clear into the Future	X								
East Coast Shellfish Growers Association							X	X		
East Coast Shellfish Research Institute							X			
Envirotech Environmental Consulting, Inc.		X								
ERM	ERM	X								
Federal Emergency Management Agency								X		
Friend Shellfish Company								X		
Fins Fish House and Raw Bar		X								
Florida Sea Grant								X		
Gamesa Corporation		X								
Gary Downes Insurance		X								
George Mason University								X		
Goose Point Oysters							X			
Greater Lewes Community Village								X		
Greater Lewes Foundation								X		
Gulf and South Atlantic Fisheries Foundation, Inc.							X			
Hawaii Seafood Council								X	X	
Hawaii Sea Grant								X		
Henlopen City Oyster House		X					X			
Highwater Management								X		
Hudson Management Company									X	
Ideal Nutrition and Fitness LLC							X			
International Food Protection Training Institute							X		X	
International Food Information Council							X			
Interstate Seafood, Inc.								X		
Just Stumps, Inc.		X								
Kent County	Office of Emergency Management							X		
L Town Surf and Earth		X								
Laitrim Machinery Seafood Processing Manufacturer							X			
Lake Champlain Sea Grant							X			
Laurel Redevelopment Corporation		X								
Lewes Chamber of Commerce								X	X	
Lewes Historical Society							X	X		
League of Women Voters								X		
Gulf and South Atlantic Fisheries Foundation, Inc.								X		
Lightship Overfalls								X		
Louisiana Seafood Promotion Board							X			
Louisiana Sea Grant								X		
Louisiana State University							X	X		

**Appendix – Delaware Sea Grant Partners** (continued)

Member	Sub Unit	Supplied funding support for research, outreach and/or communication programs	Provided salary support for outreach staff	Supported programs with speakers or other contributions	Worked collaboratively on outreach and/or research programs	Provided equipment, supplies or other services	Volunteered services to assist with research and/or outreach programs
Lower Delaware and Maryland Building Officials Association					X		
Lund's Fishery, Inc.				X			
Maine Sea Grant					X		
Marine Education, Research and Rehabilitation Institute					X	X	X
Maryland Cooperative Extension					X		
Maryland Department of Agriculture	Seafood Marketing and Aquaculture Development				X	X	
Maryland Department of Natural Resources					X	X	
Maryland Public Television				X	X		
Maryland Sea Grant				X	X		
Maryland State Department of Education					X		
Mid-Atlantic Fishery Management Council						X	
Millersville University	Ocean Science Club						X
Milton Community Foundation					X		
Mississippi-Alabama Sea Grant Consortium					X		
MIT Sea Grant					X		
National Aquaculture Association				X			
National Fisheries Institute					X		
National Fisheries Institute	Fisheries Scholarship Foundation	X	X				
Non-point Education for Municipal Officials (NEMO)				X			
National Oceanic and Atmospheric Administration		X					
	Chesapeake Bay Office		X		X		
	Chesapeake Environmental Science Training Center			X			
	Coastal Services Center			X	X		
	Environmental Cooperative Science Center				X		
	National Estuarine Research Reserve System				X		
	National Marine Fisheries Service, National Seafood Inspection Laboratory			X	X	X	
	National Marine Fisheries Service, Protected Resources Division				X		
	National Weather Service				X		
	North Atlantic Regional Team			X	X	X	
	OAR, International Activities Office				X		
	Oceans and Human Health Initiative, Hollings Marine Laboratory				X		
	Pacific Islands Regional Office				X	X	
	Sea Grant Aquaculture Extension and Technology Transfer Program	X	X				
	Sea Grant Aquatic Nuisance Species Outreach Program	X	X				
	Sea Grant Coastal Communities Climate Adaptation Initiative		X				
	Climate Change Education Partnership		X				
National Science Foundation							
National Shellfisheries Association					X		
New Castle County Conservation District					X		
New Castle County	Office of Emergency Management				X		
New Hampshire Sea Grant					X		
New Jersey Sea Grant					X		
New York Sea Grant	SUNY Stony Brook				X		
	Cornell Cooperative Extension				X		
North Carolina Sea Grant					X		
North Carolina State University	Cooperative Extension				X		
Northeastern Regional Aquaculture Center		X	X				
Northeast Sustainable Energy Association	Delaware Chapter				X		
Northeastern Massachusetts Aquaculture Center					X		
NRG Energy, Inc.		X					
Oceanpro Industries, Ltd.				X			
Old Inlet Bait and Tackle					X		
Old Landing Golf Course						X	

Member	Sub Unit	Supplied funding support for research, outreach and/or communication programs	Provided salary support for outreach staff	Supported programs with speakers or other contributions	Worked collaboratively on outreach and/or research programs	Provided equipment, supplies or other services	Volunteered services to assist with research and/or outreach programs
Oregon State University			X				
	Food Innovation Center				X		
	Seafood School				X		
Overseas Shipholding Group, Inc.		X					
Pacific Coast Shellfish Growers Association				X			
Partnership for the Delaware Estuary		X		X	X	X	
Personal Chef Association	Delaware Chapter					X	
PNC Bank		X					
Port of Wilmington	Diamond State Port Corporation	X					
Prime Hook National Wildlife Refuge				X			
Purdue University					X		
R.C. Quinn Consulting Services, Inc.					X		
Rehoboth Beach Museum					X		
Rhode Island Sea Grant					X		
Roger Williams University					X		
Rutgers University	Cooperative Extension				X		
Salem State University					X		
Samuels and Son Seafood				X	X		
Sea Watch International					X	X	
Shore Property Maintenance		X					
Sierra Club		X					
South Bethany Historical Society					X		
South Carolina Department of Natural Resources					X		
South Carolina Sea Grant					X		
Southern Delaware Tourism Office					X		
State of Delaware		X					
Statoil		X					
Sunoco		X					
Sussex County	Council	X					
	Emergency Operations Center				X		
	Planning and Zoning Commission				X		
Sussex County Association of Towns					X		
Sussex Economic Development Action Committee					X		
TEACH FLEET					X		
The Nature Conservancy				X	X		
The Resiliency Place					X		
The Villages of Five Points						X	
Toby Island Bay Oyster Co.					X		
Town of Bethany Beach					X		
Town of Bowers Beach					X		
Town of Dewey	Beach Patrol				X		X
Town of Fenwick Island		X			X		
Town of Greenwood					X		
Town of Laurel					X		
Town of Leipsic					X		
Town of Little Creek					X		
Town of Milton					X		
Town of Ocean City, Maryland					X		
Town of South Bethany					X		
Towson University				X	X		
University of California	Davis Cooperative Extension				X		
University of Connecticut	Cooperative Extension				X		
University of Delaware	Admissions					X	
	Athletics					X	
	Bob Carpenter Center					X	
	Bookstore					X	
	Center for Applied Business and Economics Research			X	X		
	Center for Applied Coastal Research			X	X		
	Center for Science, Ethics and Public Policy				X		
	Center for Teacher Education				X		
	College of Earth, Ocean, and Environment	X	X	X	X	X	X
	Conference Services					X	
	Cooperative Extension				X	X	X

**Appendix – Delaware Sea Grant Partners** (continued)

Member	Sub Unit	Supplied funding support for research, outreach and/or communication programs	Provided salary support for outreach staff	Supported programs with speakers or other contributions	Worked collaboratively on outreach and/or research programs	Provided equipment, supplies or other services	Volunteered services to assist with research and/or outreach programs
University of Delaware	Delaware Biotechnology Institute				X	X	
	Department of Behavioral Health and Nutrition						
	Department of Music					X	
	Government Relations					X	
	Hotel, Restaurant and Institutional Management					X	
	Facilities, Real Estate and Auxiliary Services					X	
	Institute for Public Administration, Water Resources Agency	X		X	X	X	
	Communications and Public Affairs	X	X	X	X	X	
	Office of Development and Alumni Relations	X				X	
	Osher Lifelong Learning Institute					X	
	Professional Development Center for Educators				X		
	Professional Theater Training Program and Resident Ensemble Players					X	
	Delaware Small Business and Technology Development Center			X	X		
	Student Centers					X	
	The College School					X	
	U-Del Federal Credit Union					X	
University Printing					X		
University of Florida	Department of Food Service				X		
University of Maine	Cooperative Extension				X		
University System of Maryland					X		
University of Maryland	Center for Environmental Science			X	X		
	Eastern Shore, Center for Food Science and Technology				X		
University of Massachusetts	Extension Aquaculture Program				X		
University of Rhode Island	Department of Nutrition and Food Sciences				X	X	
University of Rhode Island	Fisheries Center				X		
U.S. Coast Guard						X	
U.S. Department of Agriculture	Agricultural Research Service, Oyster Virology Laboratory	X	X		X	X	
U.S. Department of Agriculture	National Institute for Food and Agriculture	X	X				
U.S. Environmental Protection Agency	Building Blocks for Sustainable Communities				X		
U.S. Environmental Protection Agency	Office of Policy, Economics and Innovation				X		
U.S. Fish and Wildlife Service				X	X	X	
U.S. Food and Drug Administration					X	X	
U.S. Geological Survey				X			
Utech Survey, Inc.		X					
Villanova University					X		
Virginia Institute of Marine Science						X	
Virginia Sea Grant					X		
WBOC TV-16				X		X	
WDDE 91.1		X				X	
WMDT 47 ABC						X	
West Virginia University	Cooperative Extension				X		
Western Massachusetts Center for Sustainable Aquaculture					X		
Wilmington Area Planning Council					X		
Wilmington University					X		
World Aquaculture Society					X		
Zwaanendael Museum					X		





College of Earth, Ocean,  
& Environment


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