



Sea Grant

**CONNECTICUT
ANNUAL REPORT 2017**

LETTER FROM THE DIRECTOR



Welcome to Connecticut Sea Grant's annual report. We offer here highlights of Connecticut Sea Grant (CTSG)'s accomplishments over the 2016-17 Sea Grant fiscal year, which runs from February 2016 through January 2017. This brief and simplified report documents our efforts at developing partnerships and leveraging resources from outside the Sea Grant core budget. It also provides a glimpse into the sources and allocation of our funds and the research efforts supported.

A few of our success stories appear as highlights summarizing selected accomplishments and impacts from our efforts. These range from supporting aquaculture, to understanding and preventing pollution, and learning lessons from Superstorm Sandy in communicating risk and protecting lives. You can find out more via articles in our award-winning *Wrack Lines* magazine or on our web site, <http://seagrant.uconn.edu>. Despite challenging economic times, we are proud to continue to work with many different stakeholder groups (including industry, government, non-government and academic partners) towards achieving our mission. Simply stated, we will “**provide science-based information to achieve healthy coastal and marine ecosystems and consequent public benefits**” by integrating research, outreach and education in partnership with stakeholders, as outlined in our Strategic Plan.

I look forward to hearing from anyone who would have feedback to offer on this report specifically, or on the program in general.

Yours,

A handwritten signature in black ink, appearing to read 'Sylvain De Guise', written in a cursive style.

Sylvain De Guise, Director

SUMMARY OF CONNECTICUT SEA GRANT ACHIEVEMENTS:

- ▶ CTSG managed **\$1,342,588** in core Sea Grant funding; **\$644,397** in state match funding; **\$564,898** in other competitive Sea Grant funds (competitive fellowships and national strategic initiatives), and an additional **\$1,905,029** in leveraged funds, for a total of over **\$4.4 million**.
- ▶ The Return on Investment ratio for state matching funds is **5.9:1**
- ▶ The Return on Investment ratio for core federal funds is **2.3:1**
- ▶ Provided technical assistance that helped lead to the creation of **5** new aquaculture businesses and the retention of **10** other businesses and jobs.
- ▶ Reached **177** K-12 educators and **6,498** students
- ▶ Hosted **40** public events and workshops that involved **2,126** stakeholders
- ▶ Leveraged **3,995** hours of volunteer time (valued at **\$117,000**) towards CTSG-supported activities
- ▶ Trained **77** people in HACCP seafood safety handling and processing, making a positive economic impact on **40** retained businesses and **59** jobs valued at **\$1.97M**, and on **18** senior aquaculture high school students who received school-to-career training.
- ▶ Supported **62** new and continuing undergraduate and graduate students in research, extension, workforce development and education activities
- ▶ Partnered with N.Y. and N.J. Sea Grant programs in developing Coastal Storm Awareness Program research-based recommendations for improved storm risk communications shared at **5** major national venues and **partially adopted by NOAA**.



PROGRAM PRIORITIES:

Healthy Coastal Ecosystems and Economy

Seafood Production and Consumption

Hazard-Resilient Coastal Communities

Ocean and Coastal Literacy and Workforce Development

Leveraged private funds
\$198,794

Leveraged state funds
\$320,547

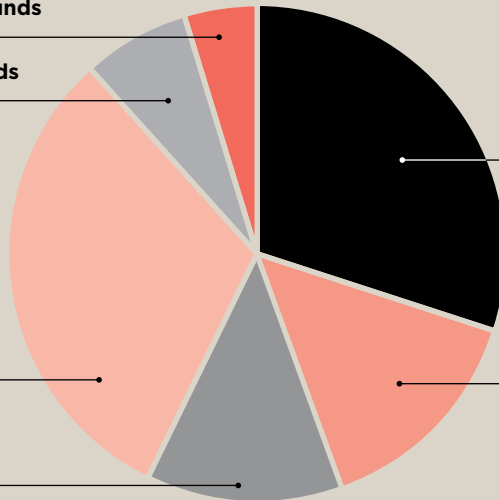
SOURCE OF CTSG FUNDS

Leveraged federal funds
\$1,385,688

Other competitive Sea Grant funds
\$564,898

Core federal funds
\$1,342,588

State matched funds
\$644,397



Development
1%

Research
45%

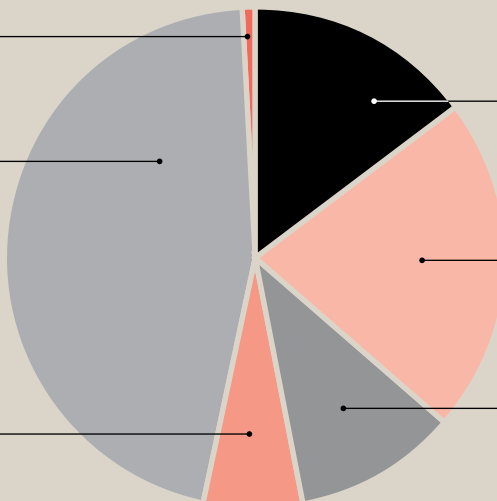
FEDERAL DOLLARS INVESTED

Education
7%

Administration
15%

Extension
21%

Communications
11%



2017 HIGHLIGHTS:

SEAFOOD PRODUCTION AND CONSUMPTION:

Supporting key maritime businesses:

- ▶ Provided technical assistance to five new shellfish and seaweed farms and 10 existing aquaculture businesses. Advanced shellfish farming with aid in development of remote setting techniques for oyster seed, testing of new gear with 30 shellfish farms and partnering with 25 shellfish farms on use of flip bags to enhance growth rates of oysters.
- ▶ Participated in 20 public events and hosted tours of shellfish farms to further the CT Shellfish Initiative. Released vision plan with 35 recommendations for enhancing commercial, recreational and natural shellfish resources.
- ▶ Provided technical support and guidance for commercial seaweed industry, including investigation of critical questions about cultivation, testing, safe handling and processing. Five commercial kelp farms in CT and others in the northeast are the beneficiaries.
- ▶ Hosted commercial fishing safety and survival refresher training: 49 fishermen trained, plus 24 fishermen became certified drill conductors. Partnered with Coast Guard, Fishing Partnership Support Services and local fishing community.



“ We’ve worked together with Sea Grant on several different projects and experiments which were attempts to adopt new practices into our business, like remote setting for oysters and seaweed and flip bags. Some of these new techniques will help offset the slower years. We’ve lived through three major storms three years in a row, and those were hard to recover from.”

— Jimmy Bloom,
farm manager at
Norm Bloom & Son Oysters

WORKFORCE DEVELOPMENT

Advancing valuable skills:

- ▶ 77 processors, regulators, faculty and high school seniors trained in seafood safety management, with economic impact on 40 businesses and 57 jobs valued at \$1.97 million.
- ▶ Contributed to opportunities in marine science and policy projects for 62 graduate and undergraduate students in applied research, extension and education.



“ I took the HACCP class and it was amazing, very informative. It helped us set up a small shucking operation here that will restore that business to Connecticut. I’ve gone on to train our workers.”

— Lauren Gauthier,
special projects manager at
Copsps Island Oysters





“The presence of Sea Grant and Juliana Barrett in particular has been a resource and an inspiration. When this challenge came up, it was natural to reach out to them for their guidance. I rely on Sea Grant. I’m a volunteer, not a professional and I’m given this challenge to deal with, and I can’t do this by myself.”

— Beth Sullivan,
Avalonia Land Conservancy,
on Sea Grant’s help creating a
“living shoreline” at Dodge
Paddock in Stonington after
damage from Superstorm Sandy

HAZARD-RESILIENT COASTAL COMMUNITIES:

Improving storm communications and guidance:

- ▶ Results of \$1.8 million Coastal Storm Awareness Program social science research project presented at five major national venues to state, local and federal officials responsible for storm prediction, preparation and emergency response. Joined with N.Y. and N.J. Sea Grant programs to support research evaluating storm warning communications and recommend changes for more effective messages. Eastern region of the National Weather Service has incorporated some recommended changes.
- ▶ Webpages and technical guidance created for coastal property owners seeking to protect and restore beaches and dunes from coastal erosion from storms, flooding and surge.

Better tools, planning for the future:

- ▶ Three-part workshop offered on living shorelines for local and state agencies and shoreline property owners.
- ▶ With National Sea Grant Law Center and UConn Law School, hosted symposium on legal and policy questions regarding the financing of coastal resilience and the development of marine spatial plans for Long Island Sound.

- ▶ Served as science advisor on beach stabilization demonstration project along Niantic Bay Boardwalk. 8 ELHS students and 6 UConn-AP students planted 600 beachgrass seedlings on the site.
- ▶ Partnered with CT NEMO to divert 2.15 million gallons of stormwater with rain gardens and tree box filters.
- ▶ Co-leading creation of a marine spatial “Blue Plan” for Long Island Sound by 2019. Vision and goals drafted and reviewed; inventory of relevant data being collected. Key stakeholders engaged with public meetings.



OCEAN AND COASTAL LITERACY:

For K-12 students:

- ▶ “Meet the Seaweeds” workshop involved 140 middle school students and 12 teachers at Marine Sciences Day.
- ▶ Hosted 19th annual Quahog Bowl, regional competition for 17 high school teams and 70 volunteers.
- ▶ Waterford HS student worked with teacher to build a small unmanned sailboat equipped with GPS transmitter. Boat tracked across the Atlantic and made landfall in Ireland. Received international media coverage and enhanced ocean literacy.
- ▶ Collaborated with local elementary school teacher to establish after-school explorers club for 45 fourth and fifth graders.

For college students, the public and teachers:

- ▶ Supported Coastal Perspectives lecture series, which attracted 640 people this year. Audience has increased 17 percent since 2010.
- ▶ Worked with UConn Neag School and marine sciences researchers to improve coastal literacy by focusing on high school biology teachers.
- ▶ Sponsored the 2017 Arts Support Awards Program that selected two New London sculptors who created an installation highlighting the state’s marine coastal environment and maritime heritage.



HEALTHY COASTAL ECOSYSTEMS AND ECONOMY:

Addressing real-life problems:

- ▶ Pilot study showed road salt used on permeable parking lots increases chloride levels in shallow groundwater. Further research showed the chloride could react with radium, potentially leading to production of high levels of cancer-causing radon gas.
- ▶ Barriers to tidal marsh migration identified through surveys of property owners.
- ▶ Marshes show ability to migrate inland with sea level rise into no-mow zones, but less into adjacent woodlands. Provides guidance for resource managers.
- ▶ A study showed that both restored and unrestored coastal wetlands were effective at removing nitrogen, but restored wetlands showed greater capacity. Increasing salinity in marshes due to sea level rise could suppress nitrogen removal.
- ▶ Effects of heat waves on copepod species in Long Island Sound that are the primary food for larval fish could have implications for fisheries.
- ▶ 500 Bridgeport residents surveyed about willingness to support saltmarsh expansion for wildlife habitat, as part of climate adaptation actions. Found support from many residents, if the actions would also help protect homes, beaches, recover brownfields and support jobs.
- ▶ Trained 121 master gardeners since 2013 in Coastal Certificate Program classes in using gardening practices that improve water quality in LIS. They in turn have provided 1000 volunteer hours, hosted 48 public talks and walks, and completed stewardship projects that have reached more than 10,000 residents.



“ Class was chockfull of meaningful, relevant information I will take with me the rest of my life. The string of professional speakers was very impressive, and I enjoyed our time tremendously. Thank you for arranging such a fine class.”

— Mark Fiorentino,
2016 Coastal Certificate
program graduate

CURRENT RESEARCH PROJECTS

Core Research Projects

The future of Long Island Sound tidal marshes: understanding marsh migration into different upland types.

Shimon Anisfeld, *Yale University*

The effects of timing and duration of climatic heat waves in Long Island Sound on a zooplankton population.

Hans Dam, *University of Connecticut*

Assessment of juvenile horseshoe crab age class structure and nursery habitat requirements in Long Island Sound.

Mark Beekey, *Sacred Heart University*

Human dimensions of LIS ecosystems: socio-economic model for education and management.

Christopher Elphick, *University of Connecticut*

Wetlands at the edge of sea level rise: effects of salt water intrusion on wetland ecosystem functions in urban landscapes.

Ashley Helton, *University of Connecticut*

Modeling alternative management for sustainable stocks of tautog.

Eric Schultz, *University of Connecticut*

Modeling *Vibrio parahaemolyticus* outbreaks in commercial shellfish areas of western Long Island Sound.

Michael Whitney, *University of Connecticut*

EPA Long Island Sound Research Projects (with NY Sea Grant Institute)

Recent temporal evolution of nitrogen loading and oxygen dynamics in LIS studied using stable isotope geochemistry.

Mark Altabet, *UMass Dartmouth*

Quantifying benthic-pelagic coupling in Long Island Sound.

Robinson Fulweiler, *Boston University*

Biochemical nitrogen loss vs recycling in Long Island Sound: connecting sediments to overlying water.

Craig Tobias, *University of Connecticut*



Northeast Sea Grant Consortium Projects

Probing molecular determinants of bivalve resilience to ocean acidification.

Bassem Allam, *Stonybrook University*

Flexing mussels: Does *Mytilus edulis* have the capacity to overcome effects of ocean acidification?

Dianna Padilla, *Stonybrook University*

Genetic and phenotypic response of larval American lobster to ocean warming and acidification across New England's steep thermal gradient.

Richard Wahle, *University of Maine*

Sensitivity of larval and juvenile sand lance *Ammodytes dubius* on Stellwagen Bank to predicted ocean warming, acidification, and deoxygenation.

Hannes Baumann, *University of Connecticut*

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Curt Johnson, Executive Director, Connecticut
Fund for the Environment / Save the Sound

Robert Johnston, Director, George Perkins Marsh
Institute, Clark University

Don Murphy, Stonington Shellfish Commission/
U.S. Coast Guard (ret.)

Sandy Prisløe, Environmental Planner,
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Mark Tedesco, Director, EPA Long Island Sound
Study

Thaxter Tewksbury, former Director, Project
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U.S. Navy (ret.), Past President, CORE

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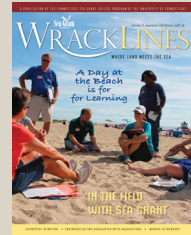
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Seventeen years, 34 issues and still growing – that's our goal for *Wreck Lines*, our biannual magazine. In the latest issue, a new editor has filled it with stories and photos about marine science education for teachers, chemical and physical analysis of Long Island Sound and seaweed and shellfish aquaculture. It's been sent to hundreds of new readers and organizations, joining those already on our extensive mailing list or reading it online. While maintaining a strong presence on our website, Facebook and Twitter, Connecticut Sea Grant has found that engaging readers in print remains a welcome and vital means of outreach.



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