



Sea Grant

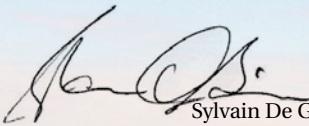
CONNECTICUT
ANNUAL REPORT 2019

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 2018-19 Sea Grant fiscal year, which runs from February 2018 through January 2019. 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 across our areas of investment. These range from continuing to work on developing a strong seafood sector, to helping communities become more resilient to a changing climate and maintain healthy coastal ecosystems, to training tomorrow's scientists, workforce and citizens. You can find out more via articles in our award-winning *Wrack Lines* magazine or on our website, <http://seagrants.uconn.edu>. 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 seek to sustain and support **"thriving coastal ecosystems and communities"** by integrating research, outreach and education in partnership with stakeholders, as outlined in our Strategic Plan. I look forward to hearing from anyone who has feedback to offer on this report specifically, or on the program in general.

Yours,



Sylvain De Guise, Director



SUMMARY OF CONNECTICUT SEA GRANT ACHIEVEMENTS:

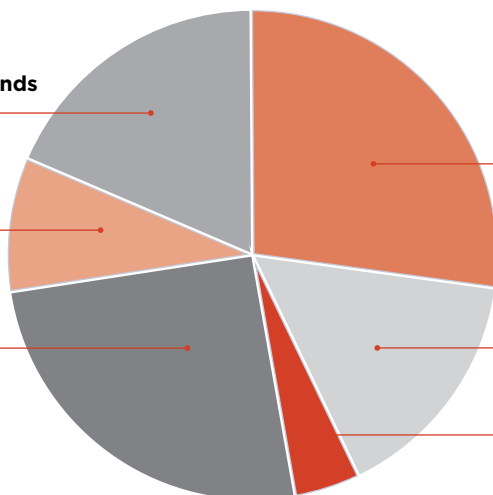
- ▶ CTSG managed **\$1,225,707** in core Sea Grant funding; **\$718,868** in state match funding; **\$188,900** in other competitive Sea Grant funds (competitive fellowships and national strategic initiatives), and an additional **\$2,390,227** in leveraged funds, for a total of over **\$4.5 million**
 - ▶ The Return-on-Investment ratio for state matching funds is **5.3:1**
 - ▶ The Return-on-Investment ratio for core federal funds is **2.7:1**
- ▶ CTSG activities contributed to creating or retaining **984 jobs** and **13 businesses**, for a combined economic (market and non-market) benefit of **\$82.7 million**.
- ▶ Reached **124** K-12 educators and **5,607** students.
- ▶ Hosted **105** public events and workshops that involved **3,669** stakeholders.
- ▶ Leveraged **1,770** hours of volunteer time towards CTSG-supported activities.
- ▶ Supported **58** new and continuing undergraduate and graduate students in research, extension, workforce development and education activities.

Leveraged private funds
\$836,591

Leveraged state funds
\$402,377

Leveraged federal funds
\$1,151,259

**SOURCE
OF CTSG
FUNDS**
\$4,523,702



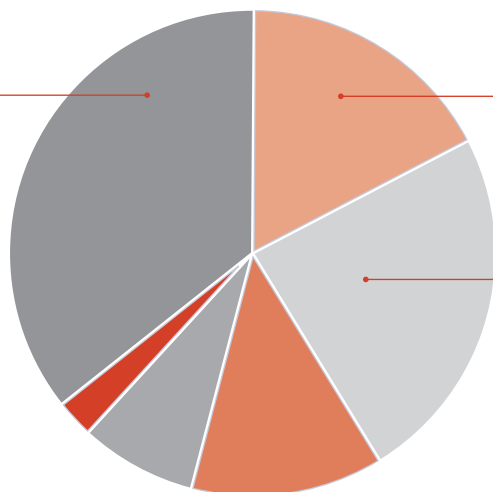
Core federal funds
\$1,225,707

State matching funds
\$718,868

**Other competitive
Sea Grant funds**
\$188,900

Research
36%

**CORE
FEDERAL
DOLLARS
INVESTED**
\$1,225,707



Administration
17%

Extension
24%



2019 HIGHLIGHTS

FISHERIES AND AQUACULTURE

Supporting key maritime businesses:

1. Responding to expressed need, CT Sea Grant created a first-of-its-kind document to guide shellfishermen on the regulatory requirements of selling fresh or frozen clams, mussels, oysters and scallops directly to consumers. Sea Grant worked with the state Departments of Agriculture's Bureau of Aquaculture, Public Health and Consumer Protection on the document, which has been posted on our website.
2. A Shellfish Management Plan Template was created to assist municipal shellfish commissions in writing their own plans. Four of 15 commissions have used the template thus far. Sea Grant partnered with the state Bureau of Aquaculture and municipal shellfish commissions on the project.
3. Connecticut Shellfish Initiative recommendations implemented include: training of 67 municipal shellfish commission members; support for local clam digs; update of aquaculture guidance and permit application; assistance on municipal shellfish management plans; update of the Aquaculture Mapping Atlas.
4. Farmers and chefs were brought together for a "meet-and-greet" session about developing markets for farmed kelp. This led to a CT Chefs Association-sponsored cooking demonstration and tasting of kelp dishes for members.
5. At the request of town officials, CT Sea Grant gave public presentations in Stonington and Groton to address the public's concerns about proposals for new shellfish businesses and impacts on other water-dependent uses. More than 100 people attended the Stonington presentation.



“ Since working with Sea Grant I find that I am thinking about things that I hadn't thought of and doing things that I didn't think I could do. As president of the CT Chefs Association we are combining our knowledge and skills with Sea Grant and because of the seed that Sea Grant has planted we are on a path to making a difference in the lives of people across the state. ”

**— James Oswald, president,
Connecticut Chefs Association**



WORKFORCE DEVELOPMENT

Advancing valuable skills:

1. "Climate Resilience and Adaptation, Municipal Policy and Planning," a new interdisciplinary course, was developed at UConn focusing on local, practical issues and impacts of climate change. The fall course is followed by independent projects in the spring in which "Climate Corps" student teams work directly with towns on climate resilience projects. Success of this model spawned complementary "Brownfields Corps" classes.
2. Free safety and survival training was provided to 36 commercial fishermen, aquaculture producers and state agency staff. CT Sea Grant partnered with Fishing Partnership Support Services to offer the training, which was new to 80 percent of participants and has been credited with saving lives during onboard emergencies.
3. Fifty-eight undergraduate and graduate and three post-graduate students received support for research, development, extension and communications projects and fellowship opportunities in marine science and policy with CT Sea Grant funding.
4. Two adults with disabilities and special needs associated with the nonprofit group Marrakech learned new skills for washing, dehydrating and packaging the native seaweed *Gracilaria*. The dried seaweed was sent for lab testing to establish baseline data for public health and processing guidelines.

“ In the fall of 2018 I took the Climate Corps class with Juliana Barrett and Bruce Hyde. It was a class in which I was able to respond to realistic scenarios regarding climate change, such as the effects of sea level rise in Miami Beach. This class provided me with the opportunity to gain a better understanding of how to approach these issues that enabled me to then use those skills in future independent studies and internships involving similar situations. ”

— Sarah Schecter, UConn class of 2021, anthropology/environmental studies



“ I was afforded every opportunity to offer my input (into the Long Island Sound Blue Plan), through a collaborative process that considered current and historic data as well as fishermen's direct observations and opinions. I, and the fishermen of Connecticut, wanted to be involved in order to give an accurate first-hand account of the resources we rely on, the nature and scope of our activities, and our concerns for the future. ”

— Joe Gilbert, owner, Empire Fisheries

RESILIENT COMMUNITIES

Better tools, planning for the future:

1. The creation of the state's first marine spatial plan for Long Island Sound was advanced significantly, and was co-led by Sea Grant. A Resource and Use Inventory for the Long Island Sound Blue Plan was completed and accepted, and a draft version of the plan was completed with significant stakeholder input.
2. The Climate Adaptation Academy (CAA) workshop attended by 80 municipal and state officials focused on the legal, environmental and practical approaches to road flooding, and a legal fact sheet was produced about responses to nuisance flooding of coastal highways. These two actions were a direct response to questions raised at two previous legal-focused CAA workshops.
3. Working with a local land trust, a marsh migration buffer was created in a 2.6-acre coastal preserve in Stonington, to accommodate anticipated sea level rise through 2050. Native plants replaced formal gardens on the property to foster the growth of a coastal meadow.

“ “People love their homes and the community where they live. Sharing projects that mitigate flooding on roads and neighborhoods helps us improve our designs, our resiliency, and our communication with the people across our community.” ”

— Steven Johnson, assistant director of public works, acting open space and natural resource agent, City of Milford

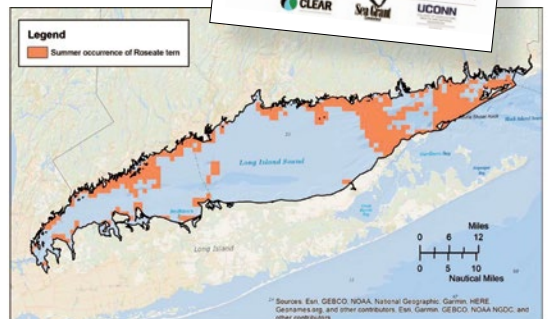
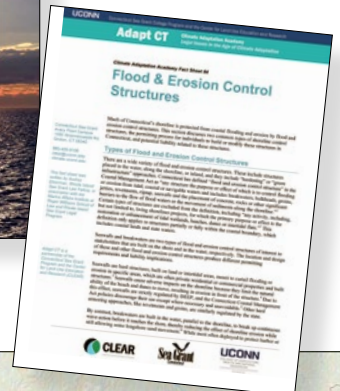


Figure 2a-11 Predicted summer occurrence of roseate tern in LIS.

ENVIRONMENTAL LITERACY

Enhancing literacy among multiple audiences:

1. Five environmental educators used Sea Grant support to participate in the national Project WET (Water Education for Teachers) conference focusing on climate change effects on aquaculture and aquatic systems. They are using the information to develop ways to include climate change resilience in public outreach programs and respond to new state policy requiring climate change topics in the K-12 curriculum.
2. Eighty students from 16 CT and RI teams competed in the 21st annual Quahog Bowl at UConn Avery Point.
3. The Long Island Sound Mentor Teacher Program trained 30 teachers, who in turn reached more than 5,000 students with Long Island Sound curricula linked to the Next Generation Science Standards.
4. The East Lyme Public Trust Foundation developed a pamphlet series on beach vegetation, shells and seaweeds for Niantic beaches and bay, with support from CT Sea Grant.
5. The non-profit group Eating with the Ecosystem hosted consumer education programs and cooking events about local seafood at CT farmers markets during the summer with support from CT Sea Grant. More than 750 people sampled local seafood at farmers markets.
6. More than 150 people participated in the Thames River Quest, three treasure-hunt style educational hikes focusing on the history and ecology of the river. CT Sea Grant partnered with the Thames River Heritage Park to develop the event for CT Trails Day.
7. A Blue Heritage Trail is being developed by faculty in the UConn Maritime Studies Program in partnership with CT Sea Grant to create a multimodal trail highlighting cultural, environmental, economic and historic content related to southeastern CT's maritime heritage. Grants from the National Park Service and UConn are supporting the project.
8. Works by two artists, one depicting human impacts on endangered right whales, the other creating photographic imprints of Long Island Sound on beach debris, were supported by Sea Grant's Arts Support Awards Program. "Crosscurrents," a 10-year retrospective exhibit of artists supported by this program



“As interim provost it has been a privilege and a pleasure to learn so much about our university. On June 14th I had the opportunity to bounce around on choppy waters while learning a great deal about what we do at Avery Point in Marine Science (in CT Sea Grant's on-the-water workshop). And in the process I rubbed elbows with significant partners in the state agencies, learned about our significant investments in understanding the life of Long Island Sound, and so much more.”

— John Elliott, interim provost, UConn



and plein-air paintings from a Sea Grant-sponsored paint-out celebrated Sea Grant's 30th anniversary. The awards program and exhibit bridged arts and marine-related humanities. CT Office of the Arts support added an additional award of \$1,000 to the program for 2019.

9. CT Sea Grant's 30th anniversary was marked with a researchers' forum, four on-the-water workshops and a cable access show, all showcasing the work of Sea Grant-funded scientists and staff to stakeholders and the general public.

“The best professional development experiences for teachers concerning issues related to Long Island Sound are offered by the Connecticut Sea Grant College Program. Participating in the Long Island Sound Teacher Mentor Program provided me the tools and insight to create an intensive field study experience for my high school marine biology students at Hammonasset Beach State Park in Madison. There's nothing like the real thing! Going into the field allows students to see the biodiversity of the habitats and organisms in the Sound.”

— Valerie Cournoyer, science teacher, director of Bermuda Studies, Amity Regional High School



COASTAL ECOSYSTEMS AND WATERSHED

Addressing real-life problems:

1. The #DontTrashLISound-Break the Single-Use Plastic Habit campaign reached 135,000 individuals on social media, inspired two beach cleanups and distribution of 7,000 educational stickers. CT Sea Grant and the EPA Long Island Sound Study partnered on the campaign, which drew statewide media coverage.
2. More than three million gallons of stormwater is diverted yearly through low-impact development projects, due to combined efforts of Sea Grant and Connecticut NEMO (Nonpoint Education for Municipal Officials) program training and installation of rain gardens, tree box filters, pervious pavements and sidewalks.
3. Forty-year environmental dataset from Project Oceanology citizen science in Long Island Sound was digitized with Sea Grant support. Analysis showed important climate change trends that were used to update climate vulnerability assessments of the Sound.

CURRENT RESEARCH

1. The mechanism for the trapping and export of sediment and associated heavy metal contaminants into Long Island Sound is compared using a typical Connecticut estuary, the West River, and the tide-gated Mill River, both in New Haven. The research seeks to better understand the quantities and timing of contaminant export during storm flows and variable tidal conditions. **Gaboury Benoit**, *Yale University*
2. The response of toxin-producing dinoflagellate *Alexandrium fundyense*, a key species of public health concern, to projected climate change impacts on Long Island Sound is tested. Findings will inform fisheries management about the proliferation and intensity of red tide blooms, which can be harmful to the aquaculture and fishing industries and cause human illness. **Hans Dam**, *University of Connecticut*
3. A framework is developed to assess the effectiveness of alternative management practices for tautog (blackfish) that evaluates recreational fishermen's behavior changes in response to new regulations.

The results will inform recommendations on the combination of regulatory changes that are most likely to achieve economic benefits and stock recovery outcomes. **Eric Schultz**, *University of Connecticut*

4. Nutrient contributions of the Westerly and Pawcatuck wastewater treatment plants to Little Narragansett Bay and the Pawcatuck River are quantified to understand their role in the proliferation of the invasive macroalgae *Cladophora*. Collaborating with the organization Clean Up Sound and Harbors (CUSH), the work will be used to provide robust management targets for the watershed. **Julie Granger**, *University of Connecticut*

5. The patterns and controls of methylmercury accumulation in copepods, a main component of Long Island Sound zooplanktonic communities, are determined. The work will help characterize the role of sizes, species and dietary preferences of copepods in the accumulation of this neurotoxin in fish that consume them. **Zofia Baumann**, *University of Connecticut*



“I'm thankful for the opportunity to be involved in a research project funded through Connecticut Sea Grant that gave me the chance to conduct compelling research in my own community. Many of the things I value most about this experience, from participating in local workshops and talking to individuals about the health of the coastal ecosystem to presenting our local findings at a national science conference, are also core values of Sea Grant which provide a great service to the public.”

—**Veronica Rollinson**, *UConn graduate student, Department of Marine Sciences*

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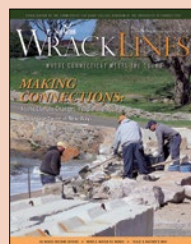
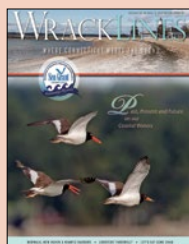
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Project Oceanology

Richard (Dick) West, Rear Admiral,
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CTSG-20-04



Wrack Lines, our semi-annual magazine, continues to expand its reach, with more than 2,500 print copies going to households, businesses, libraries and offices and hundreds more readers accessing the electronic version. This year we dedicated one issue to our 30th anniversary, with articles looking at the progress, setbacks and continuing challenges in Long Island Sound harbors over the last three decades, and two iconic species — lobsters and shad — that have gone in opposite directions in their survival stories. We also shared the winning photos from a reader contest. In the second issue, we examined more frequent road flooding and the knotty problems it presents along the highly developed coastline. Severe impacts were explored in articles about research into increasing wind vulnerability as homes are elevated to avoid flood risk, and the lingering effects of Superstorm Sandy. We reflected on aspects of human-nature connections from the perspectives of nature writer Edwin Way Teale and the artists whose works were displayed in the "Crosscurrents" exhibit, celebrating 10 years of the Connecticut Sea Grant arts award program.

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