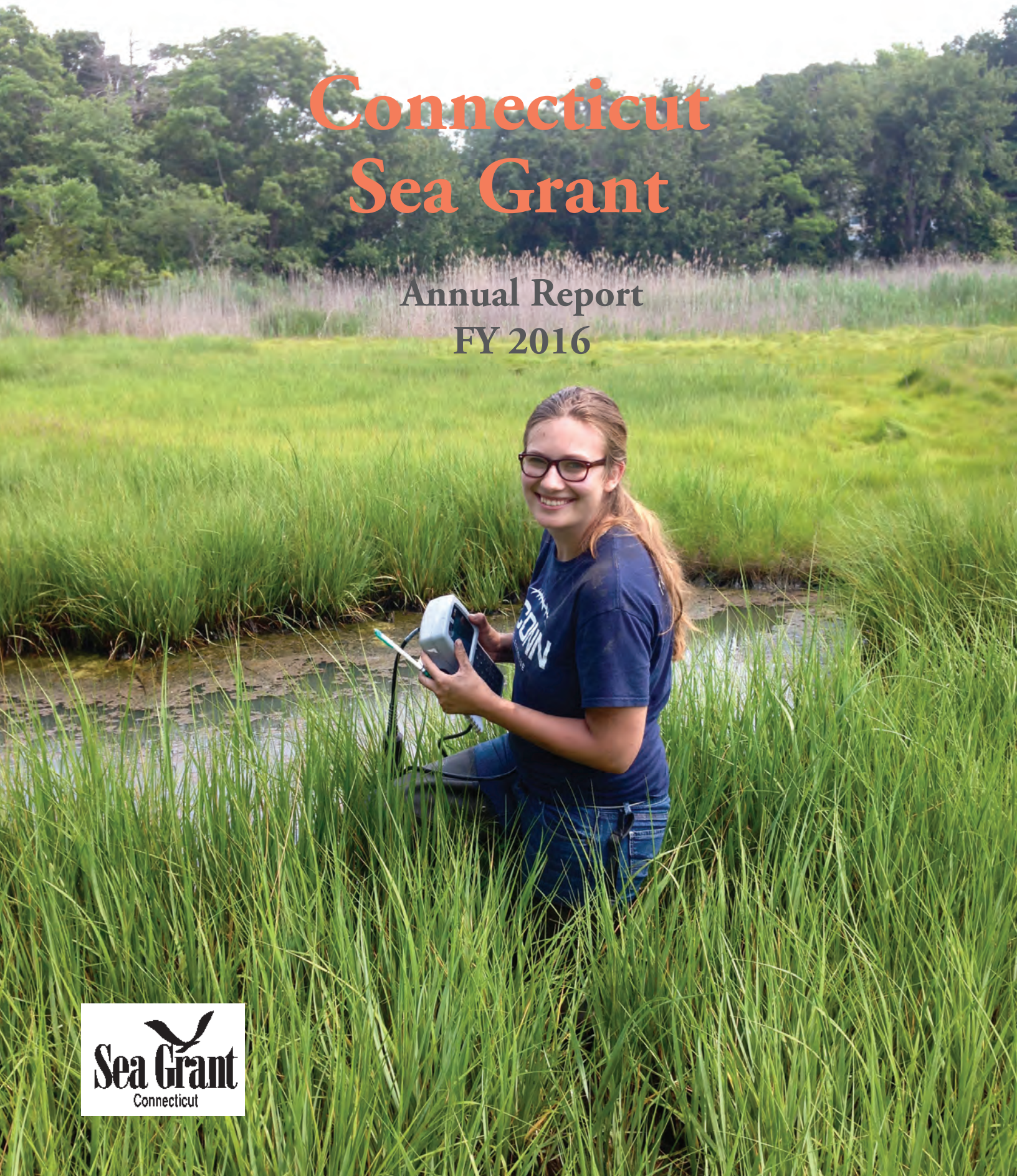
Connecticut Sea Grant

Annual Report
FY 2016



Sea Grant
Connecticut

Letter From the Director

Welcome to Connecticut Sea Grant's annual report for FY16. We offer here highlights of Connecticut Sea Grant (CTSG)'s accomplishments over the 2015-16 (FY16) Sea Grant fiscal year, which runs from February 2015 through January 2016. 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.

Summary of Connecticut Sea Grant achievements for FY16:

- CTSG manages $1,195,200 in core Sea Grant funding; $624,258 in state match funding; $395,738 in other federal and pass-through funds, and an additional $2,079,122 in leveraged funds, for a total over $4.2 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
- CTSG helped in the creation of 4 new businesses.
- CTSG is a recognized center of excellence for education, outreach and research in Long Island Sound and the Northeast.
- CTSG education programs reached 99 K-12 educators and 1577 students.
- CTSG held 33 public events/meetings that reached 1,819 stakeholders in Connecticut coastal communities.
- CTSG leveraged 1515 hours of volunteer time towards Sea Grant-supported efforts.
- CTSG trained 90 people who became certified in HACCP seafood safety, helping 40 businesses stay in operation.
- Supported 52 new or continuing undergraduate and graduate students on research, extension, development and education activities

Success stories highlight selected accomplishments and impacts from our efforts. These range from protecting important species, 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 with feedback to offer on this report specifically, or on the program in general.

Yours,

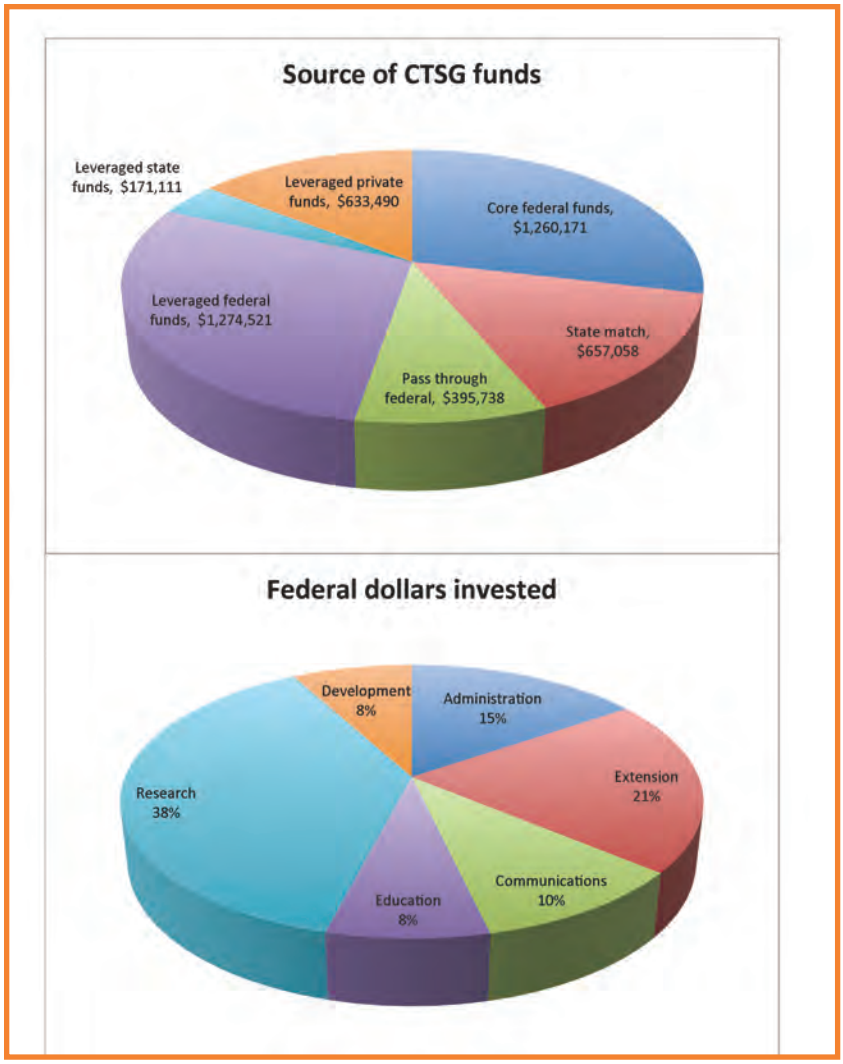
Sylvain De Guise, Director

Program Priorities

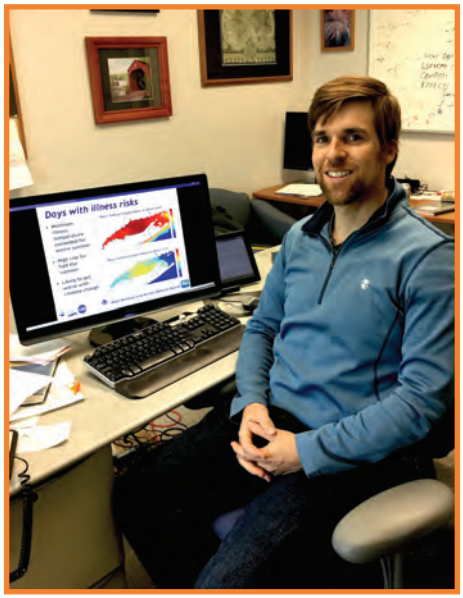
Four themes identified in our Strategic Plan 2014-2017 guide our program. These themes respond to local, regional, and national priorities.

Healthy Coastal Ecosystems and Economy
Seafood Production and Consumption
Hazard-Resilient Coastal Communities
Ocean and Coastal Literacy and Workforce Development

Budget Overview



Current Research Projects



UConn research resulted in a computer model that accurately predicts areas likely to have *Vibrio* bacteria outbreaks.

Core Research Projects

The future of Long Island Sound tidal marshes: understanding marsh migration into different upland types. *S. Anisfeld, Yale University*

The effects of timing and duration of climatic heat waves in Long Island Sound on a zooplankton population. *H. Dam, University of Connecticut*

Assessment of juvenile horseshoe crab age class structure and nursery habitat requirements in Long Island Sound. *M. Beekey, Sacred Heart University*

Human dimensions of LIS ecosystems: socio-economic model for education and management. *C. Elphick, University of Connecticut*

Wetlands at the edge of sea level rise: effects of salt water intrusion on wetland ecosystem functions in urban landscapes. *A. Helton, University of Connecticut*

Modeling alternative management for sustainable stocks of tautog. *E. Schultz, University of Connecticut*

Modeling *Vibrio parahaemolyticus* outbreaks in commercial shellfish areas of western Long Island Sound. *M. 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 Long Island Sound studied using stable isotope geochemistry. *M. A. Altabet, UMass Dartmouth*

Quantifying benthic-pelagic coupling in Long Island Sound. *R. Fulweiler, Boston University.*

Biochemical nitrogen loss vs recycling in Long Island Sound: connecting sediments to overlying water. *C. Tobias, University of Connecticut*

Northeast Sea Grant Consortium Projects

Coastal hazards and northeast housing values: comparative implications for climate change adaptation and community resilience, *R. Johnston, Clark University*

Buy out or build back? a comparative assessment of approaches to employing public funding to vulnerable coastal properties in the Northeastern United States, *P. Hoagland, Woods Hole Oceanographic Institute*

Social and ecological factors influencing shoreline hardening in the Northeast: implications for vulnerability, resilience and informed decision making, *J. Grabowski, Northeastern University*

CTSG Investing in Connecticut's Coast

• The size of the state's aquaculture industry tripled over the past two years. Connecticut Sea Grant provides assistance with business planning and permitting, and training to prospective shellfish and seaweed farmers.

• Shellfish farming now generates $30 million in farm gate sales annually, with 46 licensed harvesters and 70,000 acres under cultivation in coastal waters.

• CTSG contributed to the science that led to an $18.7 billion settlement following the *Deepwater Horizon* oil spill. Settlement funds will help to restore Gulf of Mexico ecosystems.

• CTSG helps lead efforts in Marine Spatial Planning, which will be used to develop a comprehensive management plan for Long Island Sound by 2019.

• Ninety processors and state and federal regulators from Maine to Texas were trained in applying HACCP principles to seafood processing. This allowed retention of 40 businesses and 60 jobs, with an economic impact of $2.3 million.

• Surveys in Waterford and Old Saybrook residents showed that while residents are naturally concerned about the protection of homes, they also value and are willing to protect public natural resources such as beaches and coastal marshes.

• Three new rain gardens were installed, totaling 1.615 square feet. The gardens treat an areas of 12,520 square feet, and will collectively treat about 208,421 gallons of stormwater.

The Project Limulus team at Sacred Heart University identified and categorized juvenile horseshoe crab habitats.

Communicating Science

Wrack Lines Magazine reached 2,200 readers in print and had more than 10,500 online views, exposing people to topics such as changing shorelines, marine education, climate change, shellfish, and resiliency. Our social media reached 2,500 people, and our primary website had more than 66,000 visitors.

Senior Advisory Board

Jeff Seemann, UConn Vice President for Research (Chair)

Bonnie Burr, Department Head, UConn Extension

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

Marian Galbraith, Mayor of City of Groton

Don Murphy, Stonington Shellfish Commission

Sandy Prisloe, Town Planner, Old Saybrook

Tracy Romano, Vice President of Research, Mystic Aquarium

Curt Johnson, Director of Legislative and Legal Affairs for Save the Sound at CT Fund for the Environment

Henry Talmage, Exec. Director, CT Farm Bureau

Mark Tedesco, Director, EPA Long Island Sound Study

Thaxter Tewksbury, Director, Project Oceanology

Richard West, Rear Admiral, US Navy (ret.), Past President, CORE

Betsey Wingfield, Conn. DEEP Bureau of Water Protection and Land Reuse

International Impacts

While our core work focuses on the Connecticut and Long Island Sound region, we also leverage resources to reach beyond those borders to make a difference on the global scale. Here are some examples.

Snakehead aquaculture for human food in Cambodia was reopened because a new plant-based food source for the fish was developed.

Snakehead fishery in Southeast Asia

In Cambodia, a decade-long government ban on farming snakehead for human food was lifted in 2016, as a result of a research program led by Bob Pomeroy (Connecticut Sea Grant) and partners. The team developed a plant-based feed to replace small freshwater and marine fish as the food source, which eliminated the main concern and will lead to improved food security.

Advancing the ecosystem approach to fisheries management in Asia-Pacific

An ecosystem-based fisheries management training package and toolkit were developed and trainings provided with leaders in fisheries and other sectors in the Philippines, Indonesia, Malaysia and Vietnam. The trainings provided a practical and effective means to manage fisheries more holistically. It represents a move away from fisheries management that focuses on target species, towards systems and decision-making processes that balance environmental, human and social well-being within improved governance frameworks.

Fulbright Experience

Education Coordinator Diana Payne served as an expert in ocean literacy, travelling to Denmark in the fall of 2015 on a Fulbright scholarship. She co-led an international workshop on ocean literacy, trained graduate students and researchers to incorporate ocean literacy in research and outreach, and collaborated with Danish schools and museums to incorporate ocean science education and research into programs and curricula. She also received prestigious awards from both the National Marine Educators Association and the Connecticut Science Teachers/Science Supervisors Associations for her service in science and education.

Diana Payne meets with teachers from the Copenhagen International School to integrate marine science education and research into school programs and curriculum.

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