



Connecticut NATIONAL ESTUARINE RESEARCH RESERVE

eNewsletter

Summer Reflections 2024



Photos by CT Reserve and CT Sea Grant

A note from the Training Coordinator, Katie Lund



Each of the 30 Reserves in the ***National Estuarine Research Reserve System*** have a Research, Stewardship, Education, and Training program. While these first three are likely easier to understand, you might wonder what our Coastal Training Program (CTP) does!

As the CTP Coordinator, one difference of my work compared to others at our Reserve is that I focus on “coastal decision-makers” as the audience for my activities. These are individuals or groups who regularly make decisions about our coastal ecosystems - so nonprofits, state agency or municipal staff, tribal members and staff, community-based organizations, and consultants participate in CTP activities.

Importantly, CTP events often leverage the expertise of our Reserve’s partners as “trainers”

along with our own research, stewardship, and education program staff. Also, trainings can focus on specific topics or building “process” skills, which include strategies to manage and plan projects more effectively or **facilitation basics for coastal managers**. One upcoming topic-specific event is an **Invasive Plant Training at Bluff Point State Park**. Other trainings can focus on topics to improve the habitat, water quality, and climate resilience of our Reserve and surrounding watershed communities.

Finally, CTP activities can also involve leading collaborative efforts – like the recently established CT-NY **Long Island Sound Eelgrass Collaborative**. This group meets four times a year to implement eelgrass management and restoration strategies, including at a recent **workshop in June**. The Collaborative is funded by the Long Island Sound Study and facilitated by our Reserve’s CTP Program - since our boundary includes half of Connecticut’s existing eelgrass beds and is an important reason why our Reserve was designated.

Hopefully these examples give you a better understanding about what our Coastal Training Program does. If you have questions, are interested in these types of activities, or have an idea for a training topic, please be in touch with me at katie.lund@uconn.edu.

CT Reserve hosts its first Teachers On The Estuary workshop

The Reserve had its first Teachers on the Estuary (TOTE) Workshop this August. It was two and a half days full of learning, field trips, and fun.

UConn researchers, Chris Elphick and Frank Gigliotti, taught participants about the saltmarsh sparrow with a trip to the Barn Island Wildlife Management Area for some hands-on learning. That afternoon, teachers took the role of students as they worked through data mysteries, “The Polar Bear of the Salt Marsh?” and “What’s That Smell?!” with UConn researcher, Beth Lawrence, and Smithtown High School teacher, Kimberly Williams. These data mysteries are available on our website ([link](#)).

On the last day, participants learned about ospreys with Milan Bull, Joe Attwater, and Heather Kordula from the Connecticut Audubon Society with a trip to Great Island Boat Launch for some birdwatching. They learned about the state’s osprey monitoring program and apps that they can use in their classroom to identify birds and bird calls.

Thank you to all of the teachers for their enthusiasm and participation. We also extend a special thanks to CT State Rep, André Bumgardner, and Senator Blumenthal staffer, Beatrix Dalton, for joining us!

We can’t wait to see how teachers will



inspire the next generation of scientists with the new skills they learned.



If you are an educator and are interested in getting involved in a teaching workshop or learning about the resources available to you, please email larissa.graham@uconn.edu to learn more.

Summer Scholars

Hollings Scholar: Oyster cages and eelgrass meadows

This summer, the Reserve hosted two undergraduate fellows, who both were interested in how oyster aquaculture gear may interact with the marine habitats in which they sit. Inspired by NOAA Milford Lab's [*GoPro Aquaculture Project*](#), which investigated fish assemblage and use of gear in rocky reef, marsh edges, sandy bottoms and oyster reef environments - Olivia Berman (NOAA Hollings Scholar of University of California, Santa Cruz) and Kelly Jiang (CT Sea Grant Undergraduate Research Fellow of University of Connecticut, Avery Point) spent their summers deploying cameras and examining underwater video of oyster cages placed within an eelgrass meadow.



Eelgrass (*Zostera marina*) and the Eastern Oyster (*Crassostrea virginica*) are both important marine species and each provide a number of ecosystem services. Both were previously in decline and efforts are underway to increase their abundances. In certain locations, evidence indicates the oyster aquaculture industry has improved water quality and in turn improved conditions for eelgrass. Eelgrass and oyster aquaculture thrive in similar environmental conditions, yet eelgrass is federally protected as Essential Fish Habitat thereby prohibiting aquaculture gear and farming activities near eelgrass meadows. Therefore, management decisions are imminent in order to protect both resources effectively, as the two find themselves beginning to overlap in certain areas.

Curious about this potential resource conflict, Olivia and Kelly were able to take advantage of a larger aquaculture x eelgrass project happening at the Reserve, funded by CT Sea Grant and led by CT Reserve Director Dr. Craig Tobias and Research Coordinator, Dr. Jamie Vaudrey. Throughout the summer, they placed GoPro cameras in four habitat types of the project's study sites: (1) Elevated oyster bottom cages within eelgrass; (2) Eelgrass (no cages); (3) Elevated oyster bottom cages on bare sediment; and (4) Bare sediment (no cages). They then analyzed video for fish and invertebrate communities and calculated population metrics.

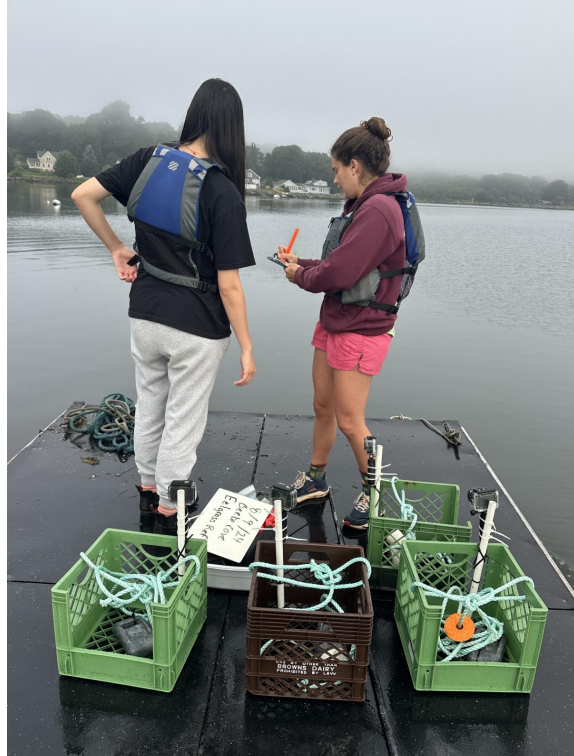
Olivia focused on *what* fish and invertebrate species were present in each habitat and *how they may change* over tidal cycles and with time. She found that the habitats that contained aquaculture cages also had the highest diversity, with the cages within the eelgrass being the most diverse habitat. These cages supported both common eelgrass associated fish species, as well as reef associated species. She also found that high tide brought a greater number of fish to all four habitats. What was most appealing about this project for Olivia was, "... that oysters provide important ecosystem services and additionally can be a food source for people. Connecting human needs productively with ecosystem services without degrading the habitat is the route toward a sustainable future."

Kelly will now spend their fall semester analyzing the video for fish *behavior*, as they are interested in *how the gear is utilized* in the different habitats. They will quantify behaviors such as feeding, schooling, taking shelter/resting, escaping predation, acting territorial and spawning. Understanding how the cages provide habitat can help quantify ecosystem services provided by shellfish farms compared to bare sediment and an eelgrass meadow. Check out these additional articles which highlight Kelly's



fellowship from [CT Sea Grant](#) and the [New Haven Register](#).

We are grateful for Olivia and Kelly's hard work and dedication this summer! We hope to replicate their methods next summer for additional data. If you have questions about the projects or results, reach out to Monitoring Lead Ashley Hamilton (ashley.hamilton@uconn.edu)

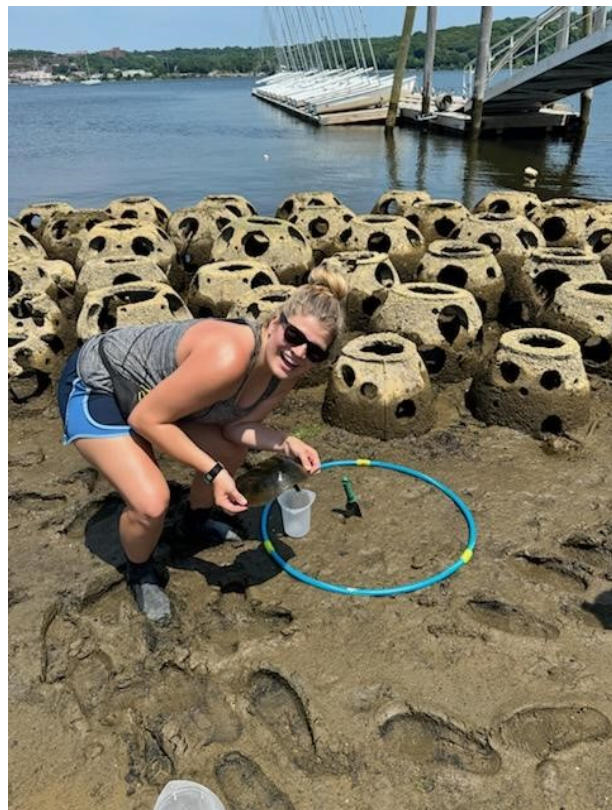


Hollings Scholar: Reef balls and carbon capture

This summer, the Reserve took on our first cohort of Ernest F. Hollings scholars, among which was Rebecca Buwalda from the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences. Becca's NOAA Hollings scholar project: "Determining the Carbon Sequestration Rates of New and Maturing Living Shorelines" investigated rates of carbon capture by Reef Ball living shorelines at Connecticut College (New London, CT) and Stratford Point CT.

We chose this topic because the Reserve is interested in understanding the effectiveness of various innovative coastal restoration techniques. Reserve Research Coordinator Dr. Jamie Vaudrey and Stewardship Coordinator Dr. Jason Krumholz have both been studying wave reduction, sediment accretion, and biota usage on the Reef Ball living shorelines here in Connecticut, along with many collaborators at Connecticut College, Sacred Heart University, Connecticut Audubon, and Remote Ecologist, since before the Reserve was officially founded, but Becca's geology background prompted this study, which focuses on changes in the sediments, and the ability of the living shorelines to perform an important ecosystem service provided by natural marshes: sequestering carbon.

Becca determined that carbon sequestration rates are highly variable, and both location and age may be important factors in understanding these processes. However, she showed positive carbon sequestration values at both living shoreline sites, indicating that while the magnitudes and timing may be variable, these restorations are functioning as intended. This research will help



us understand how well and how quickly these restorations can provide many of the ecosystem services that natural marshes provide.

Research topics like this are of great interest to the Reserve because they help us understand how to best manage competing uses for the land and water resources in the Reserve. This is an excellent example of how the Reserve's sectors work together to advance preservation, conservation, and restoration of natural resources.

Davidson Fellow: Nature-based infrastructure and climate resilience

The CT NERR is pleased to announce that Donald Fonseca, a Ph.D. candidate from the University of Massachusetts-Amherst, will be working with us as our inaugural Margaret A. Davidson (MAD) Fellow. Donald's project will use the CT NERR as case-study in assessing the ecological and socioeconomic efficacy of Nature-Based Infrastructure in enhancing climate resilience.

Throughout her distinguished career at the National Oceanic and Atmospheric Administration, Margaret Davidson pushed boundaries and advocated for innovative ways to help coastal communities survive and thrive. The MAD Fellow program honors the life and legacy of one of the preeminent figures in coastal management by providing opportunities for students in graduate programs to gain research experience with the "living laboratories" of the Reserve System to tackle key management needs.

Through this unique 2-year program, Fellows work with Reserve staff members in a collaborative mentor-mentee relationship. Reserves benefit from the project outcomes, and Fellows receive real-world experience, and unique professional development and networking opportunities as they move towards their graduate degrees.

"We're very excited to be working with Donald on this project," noted CT NERR Research Coordinator Dr. Jamie Vaudrey who will be working with Reserve Manager Kevin O'Brien as a co-mentor. "This is an opportunity for us to help grow one of the next generation of scientists, which is always very exciting. Plus, Donald will help us by delivering a project that is in-part geared to using social science techniques and methods, an area of interest to us here at the CT NERR. It's really a win-win."

Donald told us about why he was interested in the position. "I grew up in Jamaica and have seen first-hand the negative effects of climate change. These include rising temperatures, increased droughts, loss of species, more severe storms, destruction of crops and livelihood and increased poverty and displacement. This experience has increased my desire to study and develop solutions to address the negative impacts of climate change and to enhance coastal resiliency in threatened areas. Implementing nature-based solutions or green infrastructure is one answer. It involves conserving and restoring natural spaces, and the biodiversity they contain, is essential for limiting emissions and adapting to climate impacts," he said.

Donald, along with the other 29 members of the 2024-26 cohort, are just getting underway (the Fellowship formally kicked off in August and will complete in the Summer of 2026). You can learn more about the Fellowship Program [here](#), and follow progress on our project in future updates!

Reserve Highlights

Educational programming

Thanks to the help of our staff and summer

Research Updates

Our Research Team spent the summer

interns, our Education Coordinator was able to host programs for summer camps, community members, and teachers, reaching more than 450 people this summer!

We have a few more programs to close out the summer. Keep an eye out for our fall and winter events and, if you don't already, be sure to follow us on social media - links below.



Stewardship Updates

Our Stewardship team was busy this summer working on our invasive species inventory project. We were back at Bluff Point and surveyed about 30 additional stations to round out the effort we started last summer. We also collected data from approximately 230 stations at CTDEEP Marine Headquarters, Great Island, and throughout the Roger Tory Peterson Natural Area Preserve.

This was challenging fieldwork accomplished by boat, kayak, and on foot through difficult terrain! We are extremely grateful for the wonderful team of undergraduate interns who joined us this summer to assist with this (and many other) Reserve projects.

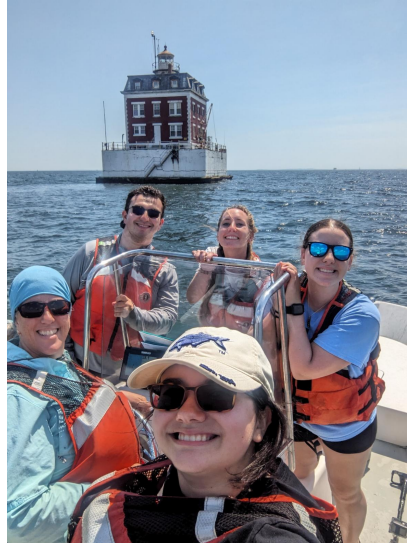
We presented the initial results of this project at the Spring NEERS conference in Portland, ME, and through a webinar hosted by UConn CLEAR, and will be working with the Coastal Training Program to do an information sharing workshop this fall (more info below).

investigating questions, large and small. Summer interns participated in a 36-hour sampling event, with the goal of sampling every four hours at the aquaculture cages deployed in eelgrass meadows (the same cages monitored by Kelly Jiang and Olivia Berman). Data will help us understand how oyster aquaculture and eelgrass meadows may interact, using carbon measurements to understand how these two very important organisms may benefit each other.

We also kayaked and boated along the Farm River, to determine the extent of seaweed in the system and collect sediment to help modelers look at the impact of nutrient pollution on water quality in shallow coastal bays and harbors.

Close to home, we take a daily photo of our shoreline on campus, to assess changes in seaweed over time. Seaweed washing up on the beach can hopefully tell us something about the amount of seaweed in the neighboring bay and how that seaweed biomass changes over the season and over the years. Our students worked at developing methods to analyze those photos. We hope to set up similar monitoring in our properties – "photo stations" that will allow visitors to Bluff Point and Haley Farm State Parks participate in documenting change in our environment - look for these photo stations in the coming years (hopefully by 2026)!

We have also been out looking for flowering eelgrass, deploying GoPro's to look at fish communities along living shorelines at Connecticut College and in Stratford, supporting EPA as they map eelgrass by SCUBA to evaluate the use of satellite images for mapping, deploying game cameras in marshes to see who visits when humans are not around, and participating in the Pathogen Monitoring Network to check bacteria levels in freshwater streams.



Upcoming Events

Water Fest 2024 (Sept 21)

Join the Alliance for the Mystic River Watershed and Mashantucket Pequot Museum for their Water Fest! They will be hosting activities such as hiking, swimming, and paddling to help you learn how to care for the water that gives us life. To learn more and register, visit <https://www.alliancemrw.org/>

Nature Talk (Sept 25)

The Nature Conservancy in Connecticut is thrilled to announce this year's Nature Talks event featuring renowned marine biologist Dr. Ayana Elizabeth Johnson at Avery Point! We're doing a deep dive on our relationship with the ocean, and how the ocean is impacting local communities every day...because "the ocean's future is our future." **Register here**—there's also an option to tune in virtually. Doors will open at 4:30 p.m. on Wednesday, Sept. 25, at the Branford House with light refreshments, and the program will begin at 5 p.m.

Connecticut College Living Shoreline Site Visit (Sept 27)

Join Professor Maria Rosa from Connecticut College and Connecticut National Estuarine Research Reserve Stewardship Coordinator Dr. Jason Krumholz for a site visit and discussion at the "Camel's Reef" Living Shoreline adjacent to Connecticut College's arboretum. This one hour program will include a tour of the site and explanation of the project's history and future directions, as well as a discussion of how living shorelines and "Reef Ball" artificial reefs fit into our restoration and coastal resilience toolbox. Space is limited to 20 participants so **Register Today!**

Public meeting (Nov 13) Bluff Point State Park - Restoration & Improvement Plan

The Connecticut Reserve, SLR Consulting, and CT DEEP State Parks have received funds from the Long Island Sound Futures Fund to conduct a restoration and improvement plan for Bluff Point State Park. As part of this Plan, we are hosting a public meeting to review the results of the Visitor Use survey and share ideas for how the Park could be improved. For more information, please visit s.uconn.edu/bluffpoint.



Visit our Website

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