

# SOUND UPDATE

NEWSLETTER OF THE LONG ISLAND SOUND STUDY



## Long Island Sound Study's Year in Review: 2018

In October 2018, the Congress passed, and the President signed into law, the *America's Water Infrastructure Act of 2018*. Among the many provisions of this far-ranging bill, Sec. 4104. *Amendments to Long Island Sound* programs revised the legislative underpinnings of the Long Island Sound Study and reauthorized funding through 2023. The bill's passage is important for several reasons. It codifies Congress's intent to authorize continued funding, it strengthens requirements for assessing program progress and financial integrity, and it lowers the non-federal share of grants from 50 percent to 40 percent. It also signals Congress's general support for the Long Island Sound and other aquatic restoration programs such as Puget Sound in the state of Washington.

In 2018 Congress also increased Long Island Sound funding to \$12.6 million, a \$4 million increase compared to 2017. After averaging around \$4.5 million between 2011 and 2016, the new funding has enabled initiatives to monitor and model water quality in embayments around the Sound, along with increase the pace and number of on-the-ground projects to improve water quality, restore habitat, and conserve land. In December, Congressman Lee Zeldin joined EPA Regional Administrator Pete Lopez to announce 36 subawards totaling \$2.6 million to local government and community groups to improve the health and ecosystem of Long Island Sound. The activities, funded through the Long Island Sound Futures Fund, which is administered for the Long Island Sound Study by the National Fish and Wildlife Foundation, show how projects led by local groups and communities make a big difference in improving water quality and restoring habitat around the Long Island Sound watershed. The projects funded will reach more than 1.7 million residents through environmental education programs and conservation projects. Water quality improvement projects will treat 1.9 million gallons of water and collect 37,000 pounds of floating trash. The projects

will open six miles of river for fish and restore 18 acres of coastal habitat for wildlife. The grants will be matched by \$3.1 million from the grantees, resulting in \$5.7 million in funding for on-the-ground conservation projects in New York, Connecticut, Massachusetts and Vermont.

In addition, the Long Island Sound Research Grant Program, administered by the Sea Grant programs of New York (NYSG) and Connecticut (CTSG), recently announced the award of more than \$1.5 million for four research projects. Two will focus on water column respiration rates, measuring organic matter degradation rates, nutrients, oxygen, carbon dioxide and controlling variables including pH, alkalinity and temperature. Another project will examine how different homeowner lawn care behaviors influence nitrogen export and stormwater runoff, and evaluate the effectiveness of programs and policies designed to encourage responsible lawn care and landscaping practices. The last project will gather data from satellite images of Long Island Sound to develop new remote sensing products to improve our knowledge of LIS ecosystem parameters, including harmful algal blooms.

These and other projects are making a difference. In 2018 the five year running average of the hypoxic area, dissolved oxygen less than three milligrams per liter, in Long Island Sound was 89 square miles, a 57 percent reduction from the pre-2000 average of 208 square miles. The area of waters with less than 3 milligrams/liter (mg/l) of dissolved oxygen in 2018 was 52 square miles, the third smallest recorded in the past 32 years of monitoring.

And now the program is planning investments for 2019, bolstered by a further increase approved by Congress in funding to \$14.6 million. One constant remains: the program's focus on sound science and inclusive management.

—Mark Tedesco, Director,  
Environmental Protection Agency,  
Long Island Sound Office

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Sound Update provides readers with news about the Sound and the Long Island Sound Study.



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# Long Island Sound Futures Fund Grant Program: 2018

In 2018, the Long Island Sound Futures Fund (LISFF) awarded 36 grants totaling \$2.57 million. These projects will reach more than 1.7 million residents through environmental education programs and conservation projects. Water quality improvement projects will treat 1.9 million gallons of water and collect 37,000 pounds of floating trash. Habitat improvement projects will open up six miles of river and restore 18 acres of coastal habitat for fish and wildlife. The grants will be matched by \$3.09 million from the grantees resulting in \$5.67 million in funding for on-the-ground conservation projects in New York, Connecticut, Massachusetts and Vermont. Since 2005, the LISFF has invested \$19.6 million in 416 projects. The program has generated an additional \$36 million in grantee match, for a total conservation impact of \$55.6 million for locally based projects. The projects have opened up 163 river miles for fish passage, restored 1,109 acres of critical fish and wildlife habitat and open space, treated 204 million gallons of pollution, and educated and engaged 4.7 million people.

- Clean Water + Healthy Watersheds
- Thriving Habitats + Abundant Wildlife
- Educating + Engaging Sustainable and Resilient Communities

Lynde Point Land Trust (L); The Rich Earth Institute (M); Town of South Hadley (R)

Hepburn Living Shoreline Project in Old Saybrook (CT)



Innovative Diversion Technology to Reduce Wastewater Nitrogen in the LIS (VT)



Enhancing Nitrogen Removal at the Springfield Regional Wastewater Treatment Facility (MA)



Group for the East End

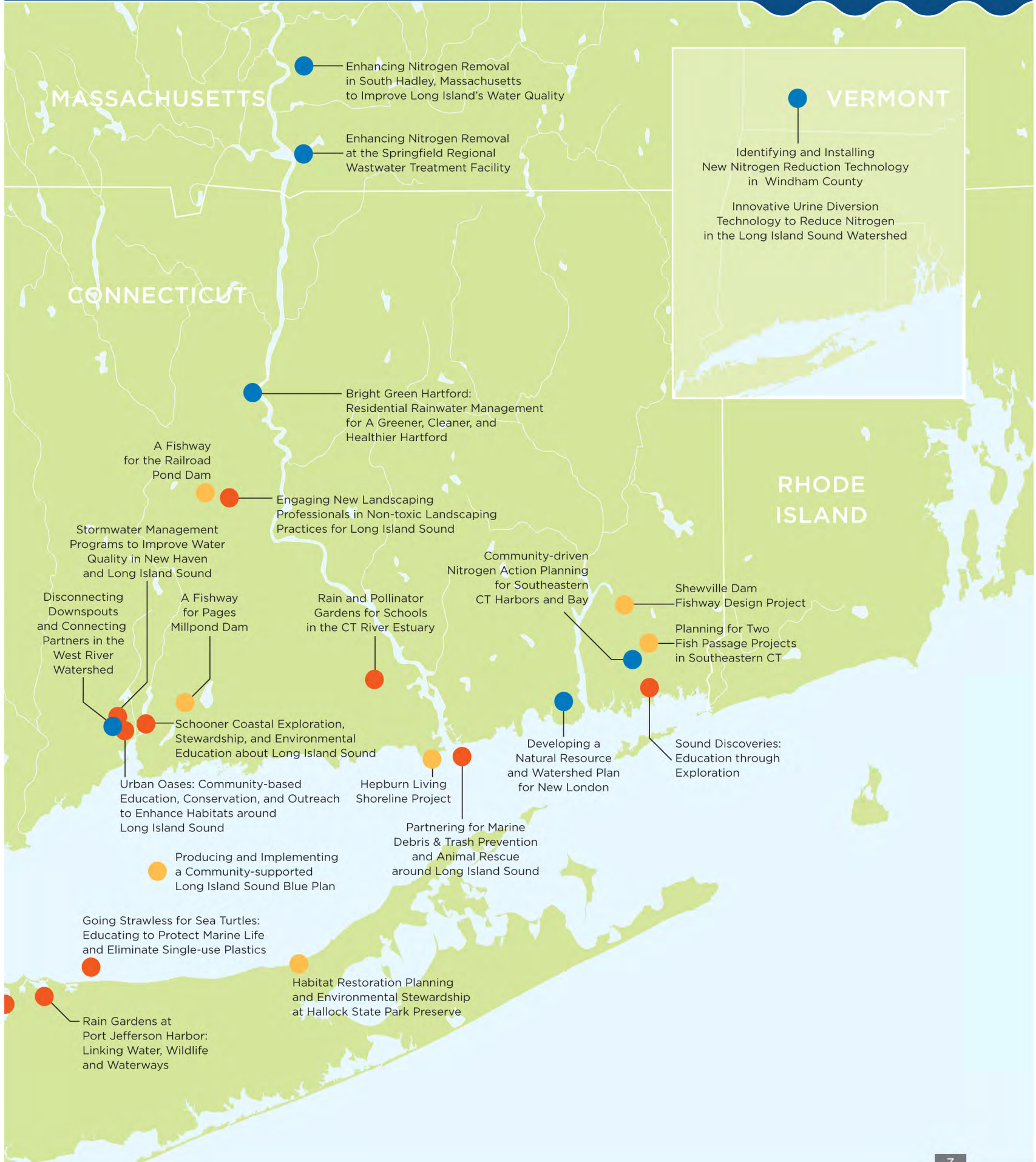
Habitat Restoration Planning and Environmental Stewardship at Hallock State Park Preserve (NY)



NEW YORK









# Clean Waters and Healthy Watersheds

THE GOAL OF THIS THEME is to improve water quality by reducing contaminant and nutrient loads from the land and the waters impacting Long Island Sound.



CFE/Save the Sound

## Water Quality Monitoring Initiative for Long Island Sound Embayments

Save the Sound, a program of the Connecticut Fund for the Environment (CFE), in coordination with partners from every region of Long Island Sound, launched a Unified Water Study (UWS) to measure pollution impacts on Sound bays and harbors. The UWS is a water quality monitoring protocol enabling citizen-science groups around Long Island Sound to collect and share comparable data. The Futures Fund grant helped establish two new harbors and three new water quality monitoring programs: Mamaroneck Harbor and Little Neck Bay; Save the River – Save the Hills, Save the Sound, and Coalition to Save Hempstead Harbor. Each of these groups will follow the newly designed Standard Operating Procedures (SOPs) and a Quality Assurance Project Plan (QAPP) that is used to ensure that data collection procedures are uniform and thorough. The data collected will be shared with state and federal agencies, environmental organizations, and towns and communities to communicate the health status of the Long Island Sound.

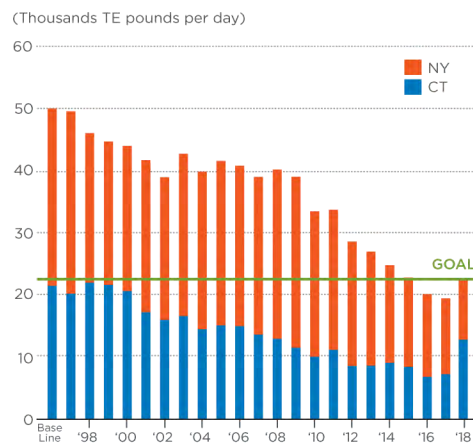
## Green Infrastructure at Mamaroneck Town Center

Last year, the Town of Mamaroneck, NY, with the support of the Long Island Sound Futures Fund grant program, installed 8,185 square feet of green infrastructure at the Mamaroneck Town Center. Before the installation, stormwater from the site flowed directly into the neighboring harbor. The green infrastructure included rain barrels and rain gardens, which help to capture rainwater and reduce the amount flowing onto the property. In addition to absorbing excess water, the rain gardens simultaneously act as a filtration system to soak up nutrients and pollutants. The Town also installed porous pavement, permeable sidewalks, and catch basins, which can prevent flooding and erosion by absorbing excess water. This technology will reduce the amount of nitrogen and other pollutants entering waterways by treating (through absorption and retention) up to 700,000 gallons of water and preventing 280 pounds of floatable debris from entering the harbor.

CONNECTICUT FUND for the Environment/ Save the Sound staff deploy continuous dissolved oxygen and conductivity loggers to monitor water quality in the Sound.

## Reducing Nitrogen

In 2018, nitrogen loads increased from the prior year for the first time since 2011. A greater than normal amount of precipitation in 2018 is believed to be the primary cause. However, nitrogen loads remained under the TMDL.



## BY THE NUMBERS:

- In accordance with recent trends, water quality in the Long Island Sound continued to improve in 2018. The maximum area of hypoxic waters, which occurs when there is insufficient oxygen to support marine life, was **52 square miles**, down from **70 square miles** in 2017, and the **third lowest reported** since water quality monitoring began in 1987.
- The average duration of hypoxia in Long Island Sound from 1991 to 2000, the year before the TMDL was approved, was **56 days per year**, with a **range of 34 to 73 days**. In 2018, the **duration of hypoxia was 35 days**.
- In 2018 the annual total nitrogen discharged from wastewater treatment plants (WWTP) in CT and NY increased for the first time since 2011, but remained below the Total Maximum Daily Load (TMDL) allocation and permit limits. The observed increase was likely caused by a greater than normal amount of precipitation in 2018. Rainfall entering a wastewater treatment plant, either through the sewage pipe system or by depositing directly onto sewage storage tanks, can reduce the efficiency of the plant's ability to treat and remove nitrogen before discharging into Long Island Sound.
- Through the Unified Water Study, **19 groups monitored water quality in 33 embayments, sampling 189 stations** from May to October.



# Thriving Habitats and Abundant Wildlife

THE GOAL OF THIS THEME is to restore and protect the Sound's ecological balance in a healthy, productive, and resilient state to benefit both people and the natural environment.



City Parks Foundation

**VOLUNTEERS PLANT** native wetland vegetation that will help improve and restore water quality at Alley Pond Park.

## Coastal Habitat Restoration at Alley Pond

The City Parks Foundation is helping restore Alley Pond in Queens by removing invasive species and placing sediment to restore tidal wetlands, with the support of the Long Island Sound Futures Fund. Last year, the City Parks Foundation established 0.23 acres of tidal pools over a 15-acre contiguous salt marsh, and removed 5.5 acres of invasive plant species along Little Neck Bay and Long Island Sound. Additionally, over 90 trained volunteers participated to help remove debris, plant native wetland vegetation, and place coir logs for erosion control. As a result, the wetland restoration efforts will improve water quality, provide habitats for fish and wildlife and develop tools to address marsh and shoreline loss.

## BY THE NUMBERS:

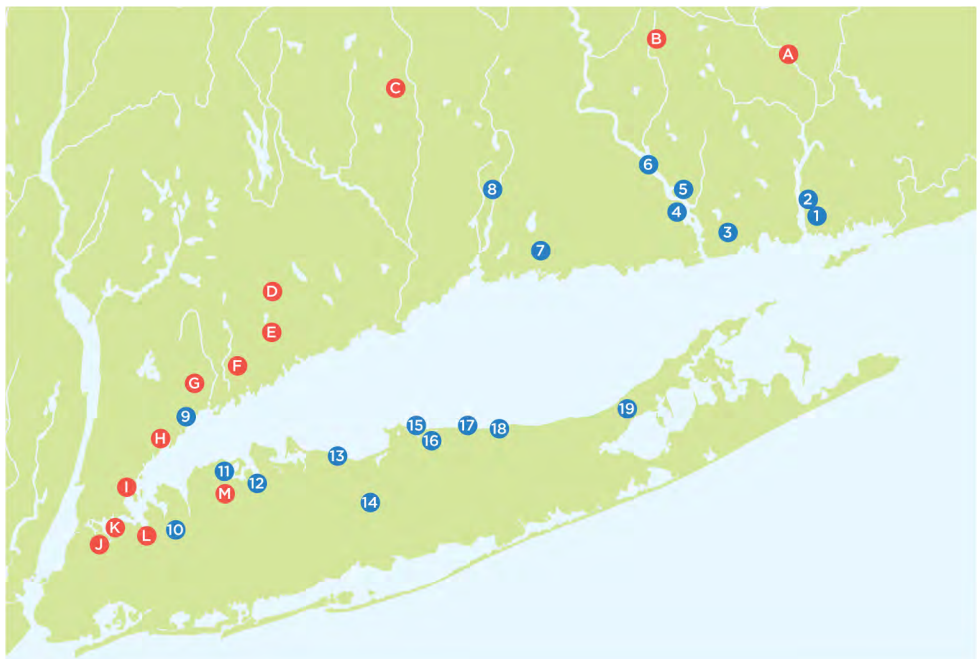
- In 2018, the LISS partnership achieved a major milestone to provide healthy habitat for coastal wildlife, surpassing the goal of **restoring 2,000 acres** by 2020. Program partners restored and protected **37 acres of coastal habitat** in 2018 alone. This included a **12-acre coastal forest restored** by the Westchester Land Trust at Otter Creek in Mamaroneck, and a **7.25-acre freshwater wetland restored** by the Connecticut Department of Energy and Environmental Protection at the Bond Property in Greenwich.
- In 2018, **9.2 acres of tidal wetlands were restored** contributing to the goal of restoring at least **515 acres by 2035**.
- To meet the **2035 goal of opening 200 additional miles** of river to fish migration, an average of 10 stream miles per year need to be reconnected to Long Island Sound. In 2018, **33.1 stream miles were reconnected** to the Sound with over **418.71 stream miles restored** since 1998. Connecting these bodies of water enables migratory fishes, such as herring, to reach their spawning grounds. This is a crucial step to restore the population of these fishes.
- In 2018, **412 acres of land** in Connecticut and **70 acres of land** in New York were protected. Protecting open space preserves natural and undeveloped areas for the purpose of maintaining a vital ecosystem and/or providing natural resource-based recreational opportunities.

### HABITAT RESTORED 2018:

- A. Scotland Dam Fish Lift
- B. Blackledge River Dam Removal
- C. Heminway Pond Dam Removal
- D. Cannondale Dam Breaching
- E. Flock Process Dam Removal
- F. Noroton River Fishway at I-95
- G. Bond Property Freshwater Wetland Restoration
- H. Otter Creek Preserve Coastal Forest Restoration
- I. Coastal Forest Restoration in Pelham Bay Park
- J. Flushing Bay Tidal Wetland Restoration
- K. Powell's Cove Park Coastal Forest Restoration
- L. Alley Creek Coastal Forest & Vernal Pool Restoration plus Alley Creek Coastal Habitat Restoration
- M. Hope Goddard Iselin Preserve Restoration

### COASTAL LANDS PROTECTED 2018:

- 1. Leo Antonino Preserve
- 2. Gungywamp Archaeological Site
- 3. Denison Farm Parcel
- 4. Doane Property Acquisition
- 5. Thach Preserve
- 6. Vynalek Property
- 7. Warner-Hull Property
- 8. 182 King's Highway
- 9. Osprey Point Properties LLC and 2C Holdings LLC Acquisition
- 10. DeRoulet Easement
- 11. Humes Forest Acquisition
- 12. Grace/Krasnoff Property Acquisition
- 13. Kruse Property Acquisition
- 14. Haupauge Springs-Bradt Property Acquisition
- 15. Besunder Property Acquisition
- 16. Malguarnera & T&S Builders Inc. Property Acquisition
- 17. Baisch Property Acquisition
- 18. Treco Property Acquisition
- 19. Mill Lane One LLC Easement





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Conservation

## Sustainable and Resilient Communities

THE GOAL OF THIS THEME is to support vibrant, informed, and engaged communities that use, appreciate, and help protect Long Island Sound.

### BY THE NUMBERS:

- Every fall, community groups from around the world sponsor coastal and beach clean-ups. A total of **86 events** were hosted on Long Island Sound in 2018. **Over 3,231 volunteers** collected **163 pounds of marine debris** from **107 miles** of shoreline along the Sound.
- The second #DontTrashLISound social media campaign focused on breaking the single-use plastic habit by encouraging people to use reusable bottles and bags. The campaign reached **over 130,000 people** through social media and distribution of campaign stickers. As a part of the campaign, the LISS and its partners hosted beach clean-ups in Bluff Point, CT and Sunken Meadow, NY.
- Since 2010, the Long Island Sound Study's Sound Stewards program has provided students with outdoor learning experiences by participating in citizen science projects. These projects include seining to measure the diversity of marine life and testing water quality. In 2018, staff from New York Sea Grant and the New York State Department of Environmental Conservation **hosted seven Sound Stewards programs**, reaching more than **350 students** at Sunken Meadow State Park in Smithtown, NY and Cedar Beach in Mount Sinai, NY.
- LISS's NY Habitat Restoration and Stewardship Coordinator administered and hosted trainings for a citizen science project to monitor river herring, alewife and blueback herring, along the Long Island Sound. A total of **33 volunteers monitored 15 different sites**. River herring were spotted at **three** of these locations. In 2018 the first volunteer training in Westchester County was conducted expanding the program's reach. The monitoring data is used to plan for future fish passage restoration projects.
- In 1998, *Project Limulus* was founded to educate volunteers of all ages to become Citizen Scientists and help gather data on horseshoe crab (*Limulus polyphemus*) population dynamics in Long Island Sound. Since then, *Project Limulus* has tagged **over 88,000 horseshoe crabs** and is currently monitoring **over 14,000 recaptured horseshoe crabs** through a tracking app. In 2018, the *Project Limulus* team, including Sacred Heart University staff and citizen scientists, **tagged 2,329 horseshoe crabs**. In 2018, citizens reported **137 recaptures** with a total of **910 volunteers** attending public education and tagging events.

### Connecticut Coastal Certificate Program

The Coastal Certificate Program, led by the CT Outreach Coordinator for the LISS, Judy Preston, is a collaboration between the Long Island Sound Study, UConn's Master Gardening Program and CT Sea Grant. With 2018 marking its sixth year, the program combines outreach and education with science-based information to provide community members with the resources to practice sustainable gardening. One of the main issues affecting the health of Long Island Sound is nitrogen pollution, which leads to hypoxia (low oxygen). Although the primary contribution of nitrogen to the Sound is from wastewater treatment plants and septic tanks, fertilizers coming from densely populated coastal communities is a contributor that especially impacts coastal coves and embayments. This program aims to significantly reduce the nitrogen pollution from landscaping by providing information on sustainable alternatives such as encouraging homeowners to use native plants that, once-established, can reduce or eliminate the need for fertilizer, or replacing or reducing resource-intensive lawns with wildlife habitat. The program's outreach component encourages participants to take what they have learned back into their community and backyard. Over the past six years, the Coastal Certificate Program has provided over 1,600 hours of diverse outreach and stewardship to Long Island Sound watershed communities in CT and Preston has given over 40 educational talks as a result of the program. The Coastal Certificate rotates to all five of Connecticut's coastal counties, and has drawn close to 200 participants from 55 towns (and RI and NY). The 2019 program is being held at the Yale Peabody Museum in New Haven.





# Sound Science and Inclusive Management

THE GOAL OF THIS THEME is to manage Long Island Sound using sound science and cross-jurisdictional governance that is inclusive, adaptive, innovative, and accountable.

## Long Island Sound Bioextraction Program

Why not use marine plants and animals, such as seaweed and shellfish, to remove nitrogen from Long Island Sound? In 2018, New England Interstate Water Pollution Control Commission (NEIWPCC) hired a Bioextraction Coordinator, Nelle D'Aversa, to explore the potential for using nutrient bioextraction to reduce nitrogen and improve water quality in the Long Island Sound while supporting the aquaculture industry. Nutrient bioextraction utilizes shellfish and seaweed aquaculture to remove excess nutrients that could have otherwise led to algal blooms, hypoxia, and related water quality impairments that harm marine life. Shellfish consume phytoplankton that have already taken up nitrogen in the form of dissolved inorganic nitrogen. Nitrogen from the phytoplankton is then incorporated into shellfish tissues and shell. The nitrogen is removed from the local marine environment when the shellfish are harvested. Seaweed nutrient bioextraction can also be effective, as marine plants absorb nitrogen directly from seawater. Bioextraction is just one of the elements of the nitrogen reduction strategy for the Long Island Sound. Funding from the Long Island Sound Study has made this Bioextraction Initiative possible. It is a partnership between NEIWPCC and the Long Island Nitrogen Action

Plan (LINAP). New York State's Department of Environmental Conservation (NYSDEC) and the Long Island Regional Planning Council partnered with Suffolk and Nassau Counties in Long Island to lead the LINAP effort to reduce nitrogen loading and improve water quality in coastal waters.

The Nutrient Bioextraction Initiative is assessing the efficacy of and potential challenges involved in advancing seaweed and shellfish aquaculture to remove excess nitrogen loads from NY and CT surface waters. As part of this program, a publicly-available GIS-based siting tool, to identify suitable sites for bioextraction, is being developed by assembling and mapping relevant data on natural resources, navigation, existing aquaculture, and potential use conflicts. Additionally, the Initiative is working with industry professionals and other regional and local stakeholders to assess cultivation costs and marketing opportunities for potential bioextraction species to evaluate the overall economic viability of seaweed and shellfish bioextraction. The Initiative is also planning and developing a nutrient bioextraction pilot project using seaweed. It is being developed to assess the efficacy of bioextraction in urban Long Island Sound waters. For more



Nelle D'Aversa

ADELPHI UNIVERSITY PROFESSOR, Aaren Freeman, learns how to grow and harvest seaweed for a bioextraction research project in NY.

information on bioextraction, please visit: <http://longislandsoundstudy.net/our-vision-and-plan/clean-waters-and-healthy-watersheds/nutrient-bioextraction-overview/>.



Anna Wesner-Dunning

## Discover Long Island Sound Exhibit

The Mystic Aquarium's Sea Research Foundation announced a multisensory, multimedia exhibit, *Discover Long Island Sound*. This exhibit, with funding from the Futures Fund grant, will reach over 75,000 visitors and aims to help improve knowledge of the Sound. There are a variety of tools used, ranging from hands-on water table models, touch tanks with native invertebrates, to a hands-on augmented reality sandbox watershed. The exhibit focuses on how humans interact with and impact the health of the Sound. Over 250 teens will participate in an outreach component to speak to schools and community members about stewardship projects.

MYSTIC AQUARIUM'S virtual watershed allows participants to create their own watershed by shaping sand to see how the elevation, topographic contour lines and water flow react to these changes.

## LISS BUDGET

FY 2018

Coordination & Reporting of Environmental Actions and Results	\$521,785
Public Outreach, Information, Participation and Education	\$877,869
Water Quality Monitoring, Modeling and Scientific Research	\$5,841,918
CCMP Implementation Support and Technical Assistance	\$5,452,198
<b>TOTAL</b>	<b>\$12,600,000</b>





# What You Can Do to Help the Sound

## Estuary Day

In 2018, and for the first time, Long Island's three estuary programs: the Long Island Sound Study (LISS), Peconic Estuary Program, and South Shore Estuary Reserve, joined resources to develop and conduct Long Island's first collaborative Estuary Day with a public education focus on nitrogen (N) pollution as a pressing problem on Long Island. The Seatuck Environmental Association at the Suffolk County Environmental Center in Islip hosted the event. This free event provided the public with a better understanding of ways they can help reduce N pollution locally such as upgrading antiquated septic systems that may be leaching N, properly disposing of pet waste, planting native plant species that absorb N, and testing soil before applying N fertilizer to lawns and gardens. This inaugural Estuary Day, included lectures, workshops, 20 informational exhibits, and family-friendly activities such as beach clean-ups and nature hikes. As a result, Long Island citizens who attended are more informed about local efforts to protect Long Island's natural resources. The 2018 Long Island Estuary Day was held as part of National Estuaries Week, established by EPA. The LISS will serve as lead organizer for the 2019 Estuary Day currently scheduled for September.

## Long Island Sound Day

In 1997, Connecticut marked the Friday before Memorial Day as "Long Island Sound Day," a day to celebrate the many benefits of a healthy Sound. In 2018, the state of New York officially joined in this effort. The States encourage residents and visitors to get out and enjoy the Sound and all its resources. Long Island Sound Day is an important day to recognize and reflect on the benefits, be it recreational, economic and environmental, that this estuary provides.



NYSDEC



NYSDEC

ESTUARY DAY PARTICIPANTS help collect and record marine debris along the shores of Long Island in Islip, NY (top). Community members learn about the Long Island coastline and issues surrounding nitrogen pollution at the first collaborative Estuary Day event (bottom).



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