



SPRING 2023 | Newsletter of the Long Island Sound Study | longislandsoundstudy.net

SOUND UPDATE

LISS's 2022 in Review

The Bipartisan Infrastructure Law (or BIL) passed by Congress in 2021 provides a once-in-a-generation opportunity to improve water quality, tackle the climate crisis, and advance environmental justice. Under the legislation, the Long Island Sound Study program is receiving \$21.2 million per year over the next five years beginning in 2022 (\$106 million in all through 2026) to fund local initiatives to improve the environmental health, climate resiliency, and economic vitality of the Sound in an equitable manner. These BIL investments complement the regular, annual funds for Long Island Sound from Congress, which were more than \$31 million in 2022.

The program is focusing on implementation: actions that will reduce pollution, improve habitat, increase resilience of coastal communities to flooding and storm surge, and build the physical and social infrastructure needed to accelerate environmental improvements. BIL funds will also support the *Justice40 Initiative*, a federal program to deliver 40 percent of the overall benefits of relevant federal investments to underserved and overburdened communities.

What is being accomplished? In New York, 2022 funding was provided to expand financial assistance to North Shore

homeowners across Suffolk and Nassau Counties to upgrade old septic systems, reducing the amount of nitrogen in the wastewater by half, which will reduce nitrogen concentrations in groundwater and ultimately nitrogen pollution to Long Island Sound. Three properties will be protected from development, expanding existing habitat conservation areas to safeguard coastal water quality and preserve habitat for wildlife. In Connecticut, BIL funding will help to remove two defunct dams, one in the Pequabuck River in Bristol, and another in the Norwalk River in Wilton. The projects will reopen 18.5 miles of free-flowing river for fish to access historic spawning grounds. In Massachusetts, funding will assist the city of Chicopee to upgrade its wastewater treatment plant to achieve advanced nitrogen removal levels, reducing nitrogen pollution flowing from the Connecticut River to Long Island Sound. And throughout the watershed, Restore America's Estuaries through the new LIS Community Impact Fund program will provide technical and financial assistance to underserved and overburdened communities to address local environmental challenges and concerns.

These are just a few examples of the lasting benefits to Long Island Sound from BIL investments made this past year alone.

— Mark Tedesco, Director,
EPA Long Island Sound Office

Long Island Sound Study National Estuary Program (LISS) is a partnership working to protect, conserve, and restore Long Island Sound. Through its grant program, the Long Island Sound Futures Fund, run by the National Fish and Wildlife Foundation, since 2005 LISS has achieved:

\$42 million invested in local and regional conservation projects.

\$97 million generated for conservation projects, between LISFF investments and \$54 million in grantee matching funds.

570 conservation projects funded.

115 river miles opened for fish migration by removing dams and installing fishways.

842 acres of coastal habitat restored.

4.2 million people engaged in protection and restoration of the Sound.

206 million gallons of stormwater pollution treated through installations such as rain gardens and other green infrastructure.

Long Island Sound Futures Fund (LISFF) Grants

The LISFF grant program supports implementation and planning projects to restore and protect the health of the Long Island Sound estuary. Established in 2005, the program is managed by the National Fish and Wildlife Foundation and supported by the Long Island Sound Study (LISS), the Environmental Protection Agency (EPA), and the Long Island Sound Funders Collaborative. The map across these pages reflects the latest round of projects funded in 2022.

The LISFF is organized around four themes:

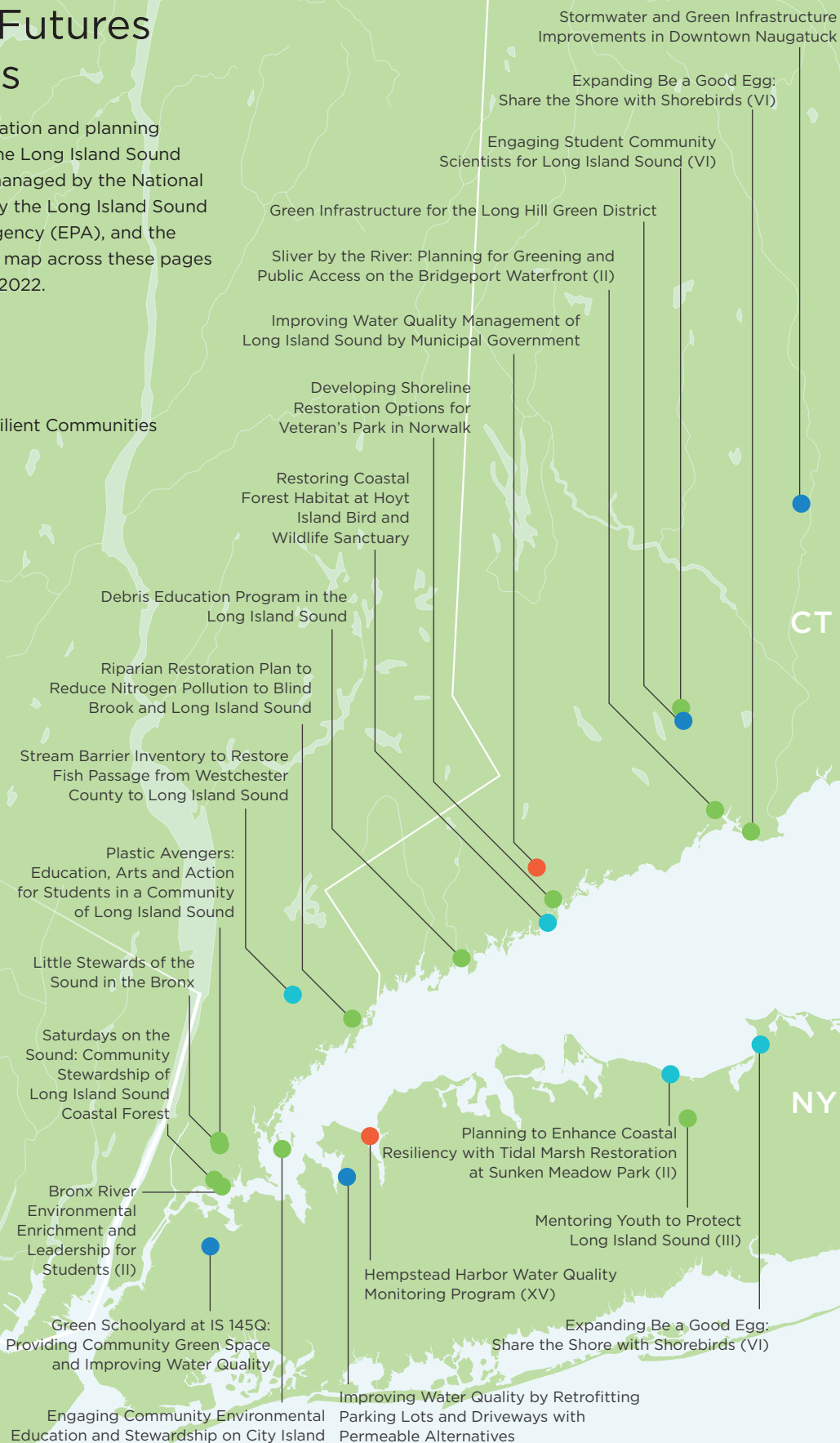
- Clean Water and Healthy Watersheds
- Thriving Habitats and Abundant Wildlife
- Educating + Engaging Sustainable and Resilient Communities
- Sound Science and Inclusive Management



WATERFRONT PLANNING IN BRIDGEPORT:
The Trust for Public Land will design and produce plans for green infrastructure and resilience features at a new park in Bridgeport, CT.



STUDENT COMMUNITY SCIENTISTS:
Earthplace will engage 200 high school and college students in virtual, on-the-water, and laboratory learning about LIS water quality.



Multiple projects in upper states:

Working with Agricultural Partners to Improve Water Quality in the Connecticut River Valley (NH, VT)
 Restoration along Utley Brook to Improve Water Quality in Downstream Long Island Sound (VT)
 Deploying a Nitrogen Reclamation Project in the Long Island Sound Watershed (IV) (VT)
 Building a Shared Pathway to Design and Permitting of Nitrogen Pollution Prevention Projects (MA)
 Upgrading the Easthampton Wastewater Treatment Plant to Improve Water Quality in Long Island Sound (MA)
 Upgrading the North Brookfield Wastewater Treatment Facility to Improve Water Quality (MA)
 Collaborating to Reduce Pollution on Farms in the Upper Housatonic Watershed (CT, MA, NY)

Cultivating Long Island Sound Stewards through Environmental Education and Exploration

Fish Passage at the Highland Pond Dam (II)

Manure Management to Reduce Nitrogen Pollution into Long Island Sound

Fish Passage on Beaver Brook (II)

Engaging Communities in "River Smart" Stormwater Management the Farmington River Watershed (II)

Comprehensive Coastal Resiliency Planning for Three Connecticut Communities

Marine Debris Education for High School Students in Coastal Communities of Long Island Sound

Community Engagement and Education for Eelgrass Protection on Fishers Island (II)

Exploring Nature-based Restoration to Improve Shoreline Resilience and Public Access

Restoring Great Pond Freshwater Wetland Habitat

Planning Fish Passage at the Baiting Hollow Boy Scout Camp

Long Island Sound Marine Debris Removal and Prevention

\$10.3 million awarded in 2022 to

41 funded projects. Through them, an estimated

8,000 pounds of marine debris will be removed,

215 acres of vital habitat for fish and wildlife will be restored or enhanced,

5.3 million gallons of stormwater will be prevented from polluting the Sound, and

319,000 people will be reached through education and outreach efforts.



Connecticut College



The Bronx is Blooming



Save the Sound, Inc.

(Top down)

NATURE-BASED RESTORATION:

Connecticut College will install and evaluate new nature-based structures to help restore the saltmarsh and protect the shoreline.

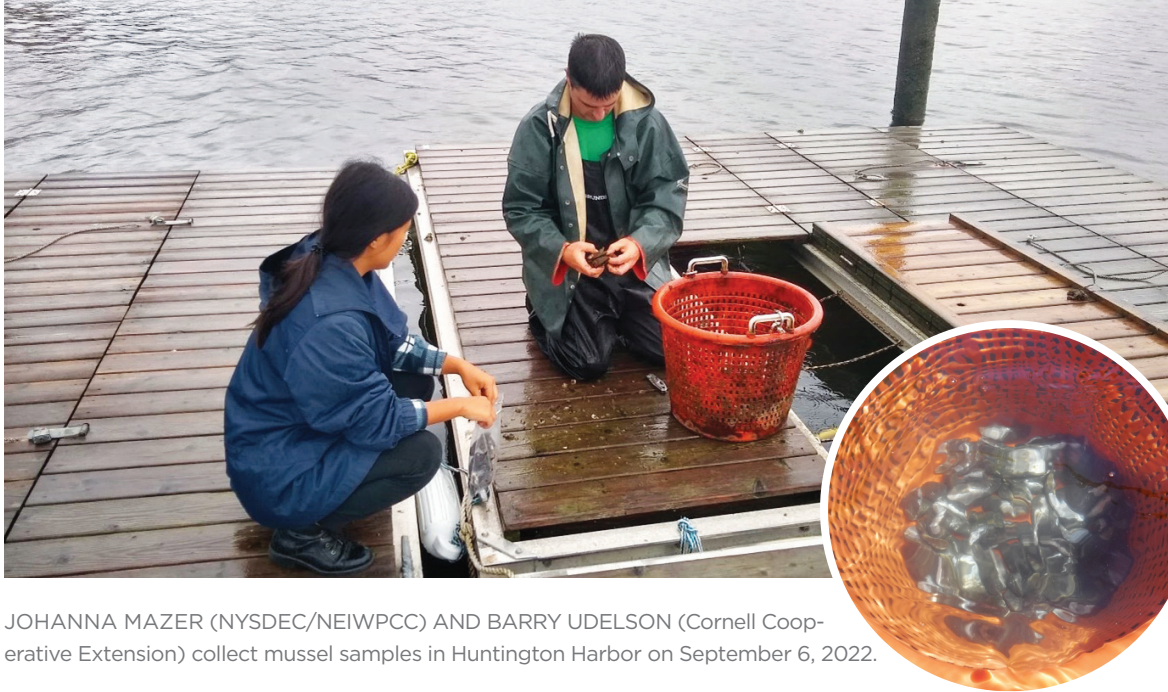
SATURDAYS ON THE SOUND: The Bronx is Blooming will engage 1,500 community members in hands-on stewardship projects, including restoration efforts at the Soundview Park coastal forest.

RESTORING FISH PASSAGE: Save the Sound will conduct an inventory of barriers to fish passage in Westchester County to help inform future restoration projects.



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 the Sound.



Kristin Krasieski, NYSDEC; Barry Udelson, CCE (inset)

JOHANNA MAZER (NYSDEC/NEIWPC) AND BARRY UDELSON (Cornell Cooperative Extension) collect mussel samples in Huntington Harbor on September 6, 2022.

Can Ribbed Mussels Save the Day?

Bioextraction is the use of shellfish or seaweed to remove excess nutrients like nitrogen from the water. Excess nitrogen, or nitrogen pollution, can lead to harmful algal blooms and hypoxia (low oxygen) and is one of the main threats to Long Island Sound's environmental health. In 2022, the LISS and partners at the NYS Department of Environmental Conservation (NYSDEC) launched a project exploring the use of ribbed mussels to address this issue.

The project aims to determine whether ribbed mussels can be grown successfully in a hatchery, cultivated for bioextraction, and repurposed after harvesting. This past year was Year 1 of the 2-year project, during which mussel larvae were successfully cultured in a hatchery and allowed to grow throughout the year. While the cultured mussels were still growing, researchers used wild-caught mussels placed in Northport Harbor, NY, and Huntington Harbor, NY, to test their capacity for bioextraction by measuring the water quality around them, and by testing their shells and tissues for nitrogen and other pollutants. The samples were also tested to assess their nutritional value to determine whether they would be appropriate for use in animal feed after harvest.

— Kristin Krasieski, NYSDEC /NEIWPC

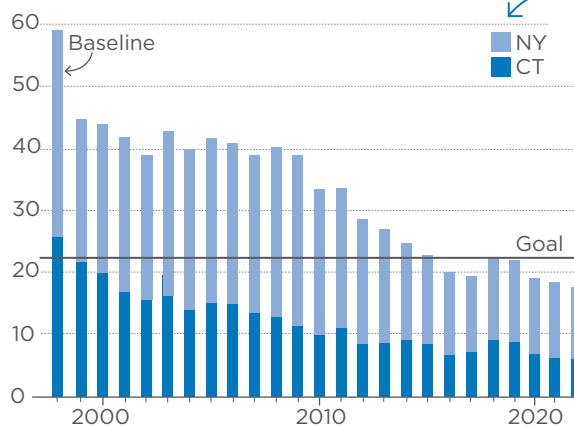
Creating a Systemwide Water Quality Model for the Sound

In 2022, the EPA and NYC Department of Environmental Protection made substantial progress on developing a computer model to simulate water quality in Long Island Sound and nearby

NY waters. Its purpose: to simulate known physical and biological processes affecting coastal water quality, which will help policymakers, environmental managers, and scientists to better understand changes in water quality under different scenarios, such as reductions in nutrient pollution, global warming, and sea level rise. Over the past year, the focus has been on "tuning" the model so that simulated parameters like water level agree with real-world observations. Progress was also made on developing an interactive program that will enable managers to run the model themselves, allowing them to make informed decisions to reduce pollution and improve water quality in Long Island Sound.

— Melissa Duvall, EPA

LIS Point Source Nitrogen Trade-equalized Loads (Thousands TE pounds per day)



29,358 square feet of green infrastructure installed through LISFF in the last reporting period, helping keep nutrient pollution out of the Sound.

5,777,331 gallons of stormwater treated through LISFF green infrastructure installations.

3,331 pounds of nitrogen prevented from entering the Sound through LISFF green infrastructure projects.

58% reduction: Because many changing factors can contribute to the Sound's hypoxia year to year, we use a 5-year rolling average to better measure progress. In the latest period between 2018-2022, the extent of hypoxia stretched 87 square miles, a 58% reduction from the 208 sq. mile baseline from 1987-1999.

13,136 lbs of marine debris per mile of coastline were collected in beach cleanups across Sound beaches in NY and CT for the International Coastal Cleanup.

17,509 TE lbs/day: On average, wastewater treatment plants discharged this amount of nitrogen per day in 2022. (TE means this number takes into account the relative nitrogen impact on water quality from the treatment plants based on where they discharge). This is the lowest amount on record and a 70.3% reduction from the 1990s baseline!

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.

Acquisitions/Easements:

- A. Wolfebrook Property
- B. Toby Hill VIII Property
- C. Camp Deer Lake
- D. Stratford Pt. Preserve
- E. Williams Property
- F. Mayrock Property
- G. Marsiello Property
- H. Town of Brookhaven and J. Suffolk County, AFM Realty Property
- I. Kozikowski Property
- J. Jayne Blvd. Land
- K. Jefferson Drive
- L. Wellborne Lane Property
- M. Laramie Ct Property
- N. Coram Swezeytown Rd.
- O. Gulino Property

Restorations:

- 1. Barn Island
- 2. Camel Reef
- 3. Hepburn Preserve Living Shoreline
- 4. Upper Collinsville Dam Fishway (Canton, CT)
- 5. Cove River
- 6. Tingue Dam Fish Passage Modification
- 7. Great Meadows
- 8. Bulkley Pond Dam
- 9. Fisher Lane Wetland
- 10. Fulton Brook
- 11. Glenwood Lake
- 12. Bronx River
- 13. Cunningham Park Forest
- 14. Oakland Lake Shoreline
- 15. Alley Creek Shoreline and Coastal Forest
- 16. Hope Goddard Iselin Preserve
- 17. Cushman Woods
- 18. Humes Property
- 19. Wawapek Property
- 20. Carpenter Farm Park
- 21. Betty Allen Twin Ponds Nature Park

Restoring the Great Meadows Marsh

Great Meadows Marsh in Stratford, CT is one of the state's largest marshes in the region, spanning an impressive 700 acres. However, years of encroaching development, dredged material deposits, and other human impacts have severely degraded the marsh over time, leaving it infested by invasive plant species and pesky mosquitoes.

After years of planning, a team made up of Audubon CT, NOAA, CT DEEP, US Fish and Wildlife, and the Town of Stratford led the restoration of 34 acres of the marsh during late 2021 and 2022. The process involved controlled burning at the site and removal of six inches of topsoil to eliminate invasive plants, and the creation of a tidal creek to help reduce pooled water and allow high tides to flush out the marsh. The restoration team also installed 14 hummocks, or small hills, to serve as potential refuges against sea level rise for nesting saltmarsh sparrows.

After these changes in the marsh were completed, Audubon CT launched the Salt Marsh Stewards Program, a team of 12 high school students from local schools who helped plant marsh vegetation at the site and educate their peers on salt marsh conservation. Through 19 planting events, and with the help of the Salt Marsh Stewards, project partners, and over 200 volunteers from the local community, Audubon CT planted 165,000 salt marsh plants at the restoration site.

Although it will take some time for the plants to grow and the site to recover from the construction, some positive changes have already been observed. Saltmarsh sparrow nests were found there in the summer of 2022, despite the busy construction period, and soon after the restoration there was a very noticeable drop in the mosquito population at the marsh.

The restoration project also included the re-opening of a trail that had been closed for many years and the installation of two viewing platforms, further improving this as an accessible natural space for the community.

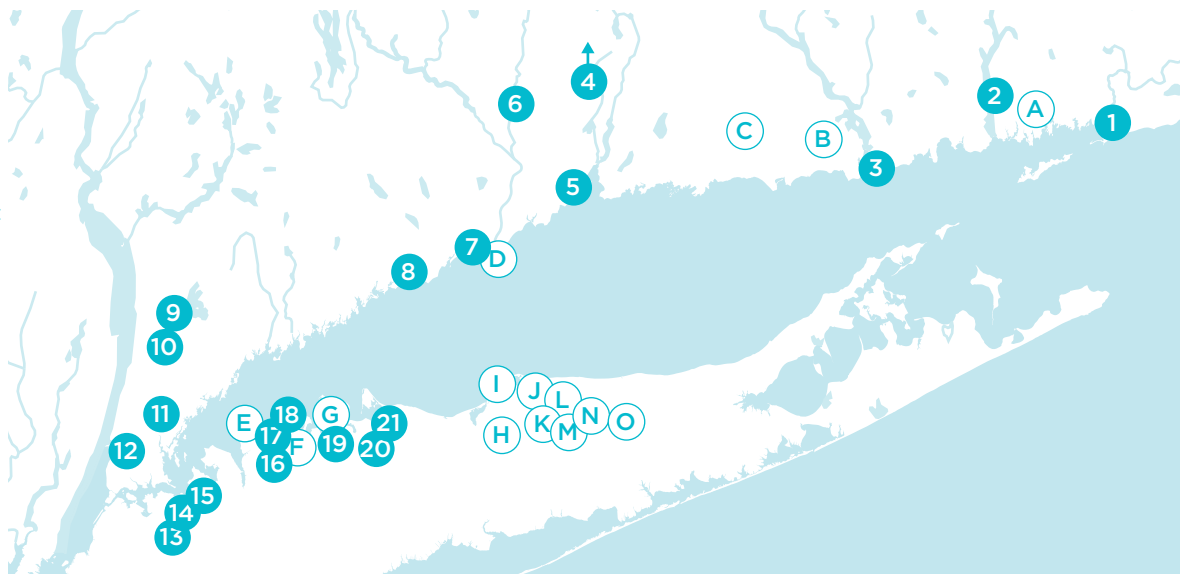
Work into 2023 will include maintenance of the restoration area and the restoration of an additional six acres around a brackish pond and in the adjacent uplands. The Salt Marsh Stewards program will also continue unto its second year, co-creating the program with local high schools, and including field trips and new lessons on the Great Meadows Marsh.

— Jimena Perez-Viscasillas, NYSG

MORE THAN 200 Volunteers and project staff helped plant 165,000 seedlings at the Great Meadows Marsh Restoration site.



Corrie Folsom-O'Keefe, Audubon Connecticut





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.



Jimena Perez-Viscasillas, NYSG

NYC AND WESTCHESTER Outreach Coordinator Lillit Genovesi introduces groups of Sound Stewards to the Sound at Orchard Beach, NY. One teacher expressed the value of the program by citing the experience of a student: "Hector's whole world just opened up. He's never had an experience like this...Being out in nature, seeing and touching things like crabs and fish. This is his happy place."

Working Towards Climate Resiliency

In 2021, LISS convened the Sustainable and Resilient Communities (SRC) team, a group of 5 extension professionals from NY and CT Sea Grant focused on providing support to coastal communities as they work towards climate resiliency. During 2022, the SRC team conducted an informal regional needs assessment of more than 300 stakeholder entities to better understand the current environmental challenges Sound communities face and their barriers to advancing sustainability and resilience efforts. Guided by the findings of their needs assessment, the team held its first Annual Long Island Sound (LIS) Bi-State SRC Workshop on December 1, 2022. This interactive, virtual workshop provided over 260 attendees with a valuable opportunity to network, share, and learn from on-the-ground experiences related to increasing resilience to climate change and other environmental threats. Up next, the team will continue its support of coastal communities through more training programs, an online LIS Resilience Resource Hub, and a LIS Grant-Writing Assistance Program.

— Sarah Schaefer-Brown, NYSG

Expanding Sound Stewards to NYC

LISS's on-the-field educational program Sound Stewards expanded to New York City and Westchester County for the first time in 2022. Initially through a partnership with Bronx Children's Museum, Sound Stewards brought elementary school students from the South Bronx to Pelham Bay Park and Orchard Beach in the Bronx, where they participated in collecting and studying water

quality parameters like temperature, salinity, and acidity. Most of the excitement stemmed from the face-to-face encounters with a diversity of spectacular organisms, including horseshoe crabs, silversides, and flounder, which were brought to shore by seine (fishing net). Students learned about the estuary's importance as a nursery for hundreds of organisms and the ways that everyone can participate in taking care of this important resource.

The program continued to grow over spring and summer 2022, partnering with over a dozen schools and reaching more than 350 students. Additionally, through outreach and information sharing with teachers, chaperones, and parents the program reached an additional 50 adults.

— Lillit Genovesi, NYSG

ONE SOUND STEWARDS GROUP encountered a horseshoe crab at Orchard Beach, which they decided to name Mr. Salty.



Jimena Perez-Viscasillas, NYSG

247,262 people

learned about the Sound and conservation topics through LIS Futures Fund projects.

4,258 volunteers

engaged in stewardship activities through LIS Futures Fund projects.

1,400+ observations

of more than 600 species were logged by participants of the 2022 LI Coastal Bioblitz using the iNaturalist app. The LI Coastal Bioblitz, hosted by Seatuck in partnership with LISS, the Peconic Estuary Partnership, the South Shore Estuary Reserve, and the Long Island Invasive Species Management Area (LIISMA), invites people to explore their surroundings and help monitor for potential invasive species.

2,952 volunteers in

NY and CT participated in Long Island Sound beach, park, and river cleanups as part of the Ocean Conservancy's International Coastal Cleanup.

83 times, a small

but mighty cohort of 11 volunteers around Westchester and the North Shore of Long Island monitored sites for eel and river herring populations during the spring fish migration. The LI Volunteer River Herring and Eel Survey is a community science program run by the Seatuck Environmental Association in partnership with LISS, the Peconic Estuary Partnership, and the South Shore Estuary Reserve.

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.

26 volunteer groups monitored 43 bays, inlets, and harbors around Long Island Sound in May - October 2022 as part of the Unified Water Study. UWS, run by Save the Sound, is a coordinated monitoring program that makes it possible for groups around the Sound to collect comparable data.

605 acres of coastal habitat protected from development.

134 acres of coastal habitat restored (**85** acres were tidal wetlands). The current goal is to restore 1,000 additional acres from the 1,646-acre baseline from 2014. With **2,239** acres restored to date, we are more than halfway there!

Championing Long Island Sound

The LISS Citizens Advisory Committee (CAC) is made up of local organizations, municipalities, conservation groups and businesses from New York and Connecticut who provide advice and promote strategies to help restore and protect a healthy, thriving estuary. In addition, we educate the public and elected officials to help advance projects for cleaner water, thriving wildlife, and sustainable communities resilient to climate change impacts.

CAC members usually visit Washington DC annually to meet with congressional leaders and share stories about how Long Island Sound federal funding benefits people and their environment. Last July, CAC members told first-hand stories of how improved water quality allowed communities to reopen shellfish beds, create new aquaculture jobs, and promote local seafood, beaches, and tourism; how more oxygen in the Sound leads to healthier habitats, more fish, and the return of whales and dolphins. We also stressed the need for continued investments to tackle water pollution, reduce habitat loss, and curb climate risks.

Through our work, LISS CAC members have helped secure dramatic increases in annual federal funding bringing the LISS budget for 2023 to over \$62 million! This represents an extraordinary opportunity to accelerate restoration of LIS along with the responsibility to ensure everyone has access to the benefits of a healthy ecosystem.

— Nancy Seligson, Town of Mamaroneck, CAC Co-chair



Cayla Sullivan, EPA

A SAMPLING TEAM made up of partners from EPA, the Massachusetts Institute of Technology, and the University of Connecticut collected eelgrass and sediment samples monthly in June through October 2022 in Mumford Cove and Beebe Cove in CT.

Projects Underway to Protect Eelgrass Meadows

Eelgrass (*Zostera marina*) is the most common type of seagrass found in NY and CT waters. Not to be confused with seaweed, seagrasses are flowering, rooted plants, and they serve not only as important habitat for aquatic life but also as significant carbon sinks, absorbing carbon from the environment. Unfortunately, populations of eelgrass have been declining.

In 2022, LISS convened a group of local experts from federal and state agencies, nonprofit organizations, and academia to develop a targeted Long Island Sound Eelgrass Management and Restoration Strategy. The group identified current issues, threats, resources, and gaps, and established a prioritization system for management areas and next steps. The finalized strategy provides guidance for short and long-term actions that should be taken to manage and restore eelgrass meadows in the Sound and acts as a resource for other estuaries in the region facing similar issues.

The past year also saw advancements in the development of a web-based tool to study the effects of water quality and climate drivers on eelgrass populations. The tool uses machine learning techniques to estimate eelgrass meadow distribution and health using satellite imagery data. Eelgrass data layers will then be overlaid by bay-specific water and sediment quality parameters (such as temperature, water clarity, and sediment grain size) to better understand their impacts on eelgrass beds in each bay.

— Cayla Sullivan, EPA

The LISS budget is organized into the nine Program Activities and three Bipartisan Infrastructure Law (BIL) Activities outlined below; the FY2022 LISS budget breakdown by Program Activity is:	
Coordination	\$816,326
Water Quality Planning and Implementation	\$1,586,638
Modeling	\$2,527,636
Monitoring	\$7,399,465
Research	\$3,218,375
Habitat Restoration and Protection	\$2,510,638
Public Education and Outreach	\$1,090,007
Stewardship and Resiliency	\$1,650,365
Implementation Assistance	\$10,650,000
(BIL Activity) Environmental Justice	\$3,062,632
(BIL Activity) Climate Resiliency	\$6,009,800
(BIL Activity) Water Infrastructure	\$12,383,284
TOTAL	\$31,449,450



Long Island Sound Study
500 Innovation Road
IDC Bldg Suite 102D
Stony Brook University
Stony Brook, NY 11794

ADDRESS SERVICE REQUIRED

UPDATE EDITOR:

Jimena Perez-Viscasillas (NYSG/LISS)

CONTRIBUTING EDITORS:

Mark Tedesco (EPA LIS Office), Robert Burg (NEIWPCC), Lillit Genovesi (NYSG/LISS), Casey Abel (EPA)

The Long Island Sound Study is sponsored by the states of New York and Connecticut and the EPA. The LISS Management Committee consists of representatives from the EPA, NYSDEC, NYSDOS, CT DEEP, NYCDEP, USDO, IEC, NEIWPCC, NY and CT Sea Grant Programs, co-chairs of the Science and Technical Advisory Committee and Citizens Advisory Committee.

The Long Island Sound Study SOUND UPDATE is produced and printed by NYSG under a cooperative agreement with the EPA #LI-96261417. The viewpoints expressed here do not necessarily represent those of NYSG, EPA or the LISS Management Committee, nor does mention of trade names, commercial products or causes constitute endorsement or recommendation for use.

EPA LIS OFFICE: Stamford Government Center
888 Washington Blvd., Stamford, CT 06904-2152
Phone: (203) 977-1541

NEW YORK SEA GRANT 500 Innovation Road,
IDC Bldg Suite 102D, Stony Brook University,
Stony Brook, NY 11794
Phone: (631) 632-8730/ Fax: (631) 632-8216

www.longislandsoundstudy.net



Department of
Environmental
Conservation

A Thank You and Farewell to Dr. Jennifer Mattei

The Long Island Sound community in December mourned the death of **Jennifer Mattei**, a professor at Sacred Heart University whose innovative research played an outsized role in helping to protect the Sound's habitats and its wildlife.

Mattei helped bring climate resiliency projects to Long Island Sound that focused on nature-based solutions, known as living shoreline projects, as opposed to hard infrastructure projects such as seawalls and bulkheads. She originated the first living shoreline project in Long Island Sound at Stratford Point in 2013 with a grant from the Long Island Sound Futures Fund. Since then, there have been more than a dozen projects completed, under construction, or planned in New York and Connecticut.

Mattei also founded *Project Limulus*, a participatory science monitoring project focused on protecting the horseshoe crab, an important marine species older than the dinosaurs, but now in decline. She worked to protect and conserve horseshoe crabs globally serving as a member of the Horseshoe Crab Specialists Group of the International Union for Conservation of Nature. Locally, she mentored dozens of undergraduate and graduate research students, gave public lectures to thousands of people, and helped tag over 98,000 horseshoe crabs to better understand their patterns of movement and track their abundance.

Learn more about Mattei's projects, her career, and her passion for protecting the environment in the Sound Spotlight section of the LISS website. To help this horseshoe crab monitoring season (May – July), visit projectlimulus.org (CT) or nyhorseshoecrab.org (NY).

— Robert Burg, NEIWPCC

DR. MATTEI led hundreds of volunteers in monitoring the Sound's horseshoe crab populations.



Jo-Marie Kasinuk, Sacred Heart University

Subscribe to our quarterly e-newsletter Sound Matters at <http://lisstudy.net/subscribe> or by scanning the QR code below and stay up to date with what's happening around the Sound:

