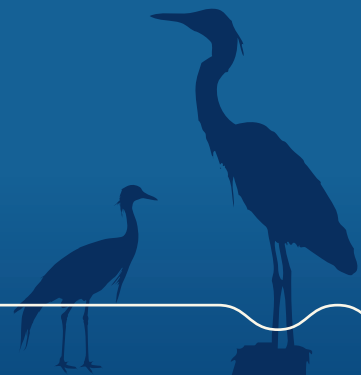


SOUND UPDATE

NEWSLETTER OF THE LONG ISLAND SOUND STUDY



Long Island Sound Study's Year in Review: 2019

This edition of the newsletter provides an update on progress made in protecting and restoring Long Island Sound in 2019. There is much to highlight, considering that in 2019 Congress further increased Long Island Sound funding to \$14.6 million, a \$2 million increase compared to 2018. This enabled expanded efforts in Connecticut and New York to understand and curb nitrogen pollution, with new or strengthened partnerships to better monitor water and habitat quality, particularly in the local harbors and bays where people recreate. Continuing a positive trend, the 2019 five-year running average of the area of Long Island Sound exposed to unhealthy levels of dissolved oxygen (less than three milligrams per liter) remained at 89 square miles, a 57 percent reduction from the pre-2000 average of 208 square miles.

But 2019 also marks the end of the first five-year action plan of the 2015 Comprehensive Conservation and Management Plan (CCMP). With the start of 2020, the Long Island Sound Study (LISS) will now look back and assess the effectiveness of implementation over the past five years: Where did we make progress? Where can efforts be improved? In conducting the evaluation, the LISS will incorporate leading practices into performance reporting that were recommended by the Government Accountability Office in a recent report (GAO-18-410).

The 2015 CCMP was a major revision to the original 1994 plan. It established a vision and goals to guide action for the next 20 years. The plan adopted ambitious, achievable ecosystem targets to gauge progress and drive attainment of those goals. The LISS regularly updates, on our website, the progress being made in attaining each of 20 Long Island Sound ecosystem targets. The plan also contained 139 specific, tactical actions to take between 2015 and 2019. The LISS will be developing and posting a comprehensive assessment of progress

in implementing those actions in summer 2020. This will set the stage for establishing a new five-year action plan for the period 2020-2024 in a 2020 update of the CCMP. The vision, goals, and objectives of the CCMP will remain the same, but the new action plan will apply lessons learned and incorporate advances in science and technology.

Looking ahead, 2020 will also be a busy time for implementation. Congress has approved \$21.6 million for the Long Island Sound Study, a \$7 million increase compared to 2019. After averaging around \$4.5 million between 2011 and 2016, the increased funding has strengthened federal-state partnerships, increased assistance to local governments, and fostered public-private partnerships to protect and restore Long Island Sound. Work to measure and improve the quality of Long Island Sound waters and sediments, bays and harbors, and rivers and streams has expanded. The number of on-the-ground projects to improve water quality, restore habitat, and conserve land has increased, and larger and more complex habitat protection and restoration projects are being undertaken.

Since penning this introduction, the region and the country has been battling the Covid-19 virus. Each day can shift from moments of inspiration at the heroism of healthcare workers to despair at the tragic loss of life. Through it all is a reminder of the importance of the health of ourselves, our family and friends, and the health of our society. We will get through this fortified, I believe, in our commitment to protect human health, our environment, and the Long Island Sound.

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

THE LONG ISLAND SOUND STUDY Comprehensive Conservation and Management Plan is organized around four themes, as is this newsletter.

Clean Waters
and Healthy
Watersheds

Thriving Habitats
and Abundant
Wildlife

Sustainable
and Resilient
Communities

Sound Science
and Inclusive
Management

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



Find the
Long Island
Sound Study
on Facebook

Long Island Sound Futures Fund Grant Program: 2019

In 2019, the Long Island Sound Futures Fund (LISFF) awarded \$2.6 million in grants to 35 stewardship, restoration, resource management, and education projects to take place across the Long Island Sound watershed, including Vermont and Massachusetts. Grantees provided an additional \$3.8 million in matching funds, bringing total program funding to \$6.4 million. This round of LISFF grants will support projects conducted in 2020. The work is expected to reach 200,000 people through educational and outreach projects, reconnect 13.5 river miles for fish passage, treat 8.2 million gallons of stormwater, prevent 17,000 pounds of nitrogen from polluting the Sound, and collect 46,000 pounds of marine debris. Since 2005, the program has invested \$22 million in 451 projects and totaled \$39 million in recipient match, generating \$62 million for local conservation efforts. The projects have reopened 176 river miles, restored 1,114 acres of critical fish and wildlife habitat and open space, treated 212 million gallons of pollution, and educated and engaged 4.9 million people. For full project descriptions, visit www.longislandsoundstudy.net/grants.

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



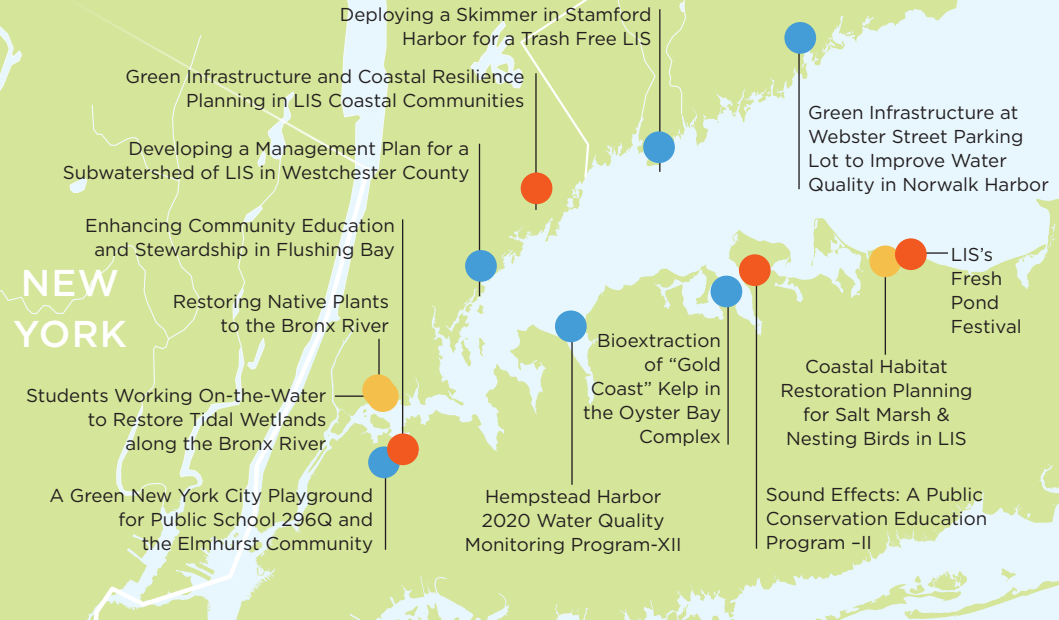
YOUTH RESTORING TIDAL WETLANDS: Rocking the Boat, a Bronx-based organization, will engage students in restoring tidal wetlands and monitoring plant growth.



DECREASING NITROGEN IN THE SOUND: The Town of South Hadley will upgrade its wastewater treatment plant to better remove nitrogen from waters reaching the Sound.



TRASH-FREE LONG ISLAND SOUND: Soundwaters's marine trash skimmer installation is expected to remove 3,190 pounds of floating marine debris from Stamford Harbor.





BIOEXTRACTION IN OYSTER BAY: Adelphi University will study the potential of using sugar kelp to remove pollutants in Oyster Bay, NY.



Photo of Oyster Bay by Dave Gugerly; photo of sparrow by Matt Tillet

ASSESSMENT OF FUTURE RESTORATION SITES: National Audubon Society (Audubon Connecticut and New York) will assess and identify potential salt marsh restoration sites, which serve as nesting habitat for species such as the salt marsh sparrow.

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.

BY THE NUMBERS

The maximum area of hypoxic, or low-oxygen, waters measured in the Sound in 2019 was **89 square miles**. This represents an increase from the previous year, but it remains among the lowest eight measurements of hypoxia recorded in the Sound in 33 years. Additionally, the five-year average (2015-2019), which also happens to be 89 square miles, is a **57% reduction** in hypoxic area compared to the average of **208 square miles** that occurred

between 1987 and 2000, the years prior to when the Total Maximum Daily Load (TMDL) permit-levels were first established.

In 2019 the annual total nitrogen discharged from wastewater treatment plants (WWTP) in CT and NY decreased by **401 pounds per day** compared to 2018, and remained below the Total Maximum Daily Load allocation and permit limits. In total, the 106 New York and Connecticut

WWTPs discharging to Long Island Sound have reduced nitrogen by more than **42 million pounds** annually compared to the early 1990s.

Save the Sound's Unified Water Study, a citizen science water monitoring project mostly funded by the LISS, worked with **23 volunteer groups** to monitor **40 embayments** and collected data from **413 monitoring stations** across the LIS.

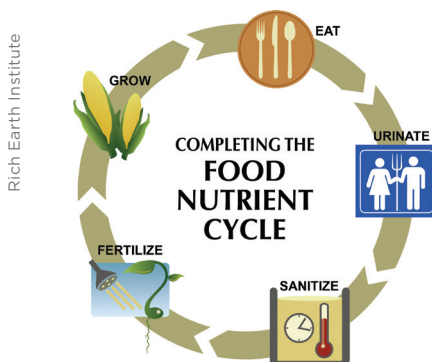
Spotlight: Tackling Nutrient Pollution

“Peecycling” to Reduce Nutrient Pollution

Urine contributes 75 percent of the nitrogen in wastewater, making wastewater treatment plants a major contributor to nutrient pollution in Long Island Sound. In 2018, the Brattleboro Wastewater Treatment plant in Vermont emitted more than 110,230 pounds of nitrogen, contributing to the pollution of downstream aquatic systems. As an alternative to adding nitrogen removal technology to wastewater treatment, the Vermont-based organization Rich Earth Institute promotes the practice of “peecycling,” which diverts nutrients from the wastewater and reclaims them as fertilizer for local farms.

The Rich Earth Institute operates the nation's only Urine Nutrient Reclamation Program (UNRP). In 2019, they collected more than 10,000 gallons of urine, which contains approximately 500 pounds of nitrogen. This nitrogen was “recycled” as a resource instead of a waste product by applying it to hay fields at local farms. This helps prevent the environmental costs of importing synthetic nitrogen fertilizer and supports a more sustainable food-nutrient cycle by returning nitrogen to soil where plants can use it. If all of Vermont's septic systems were upgraded to urine diversion systems, Rich Earth calculates that 2.5 million pounds of nitrogen could be annually captured and recycled.

More than 150 individuals are already participants in the UNRP, donating their urine to the grassroots program. Thanks to support



from the Long Island Sound Futures Fund (LISFF), the group is now planning to install more permanent urine diverting systems in both public and residential locations. In 2019, in collaboration with the ecological sanitation non-profit Nutrient Networks, Rich Earth conducted site visits and began developing designs for new potential installations of urine diversion systems in a brew pub, a local library, college campuses, summer camps, and private residence retrofits.

Through its “peecycling” program, Rich Earth is opening new pathways for ecological sanitation and watershed conservation. The group's creative infrastructure offers a dynamic model for other communities to adopt. Rich Earth was funded again this year by the LISFF and will continue to engage with local and state regulators, plumbers and state plumbing inspectors, as well as their treasured community members to work toward a world with clean water and fertile soil.

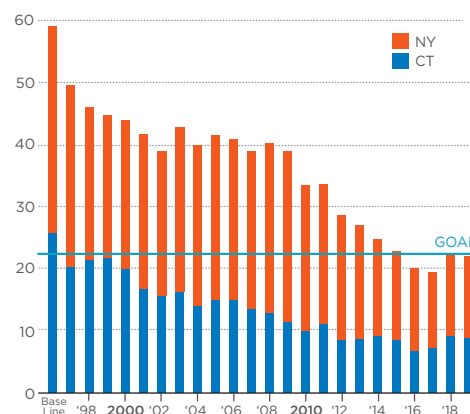
— Julia Cavicchi, Rich Earth Institute

LIS Nitrogen Reduction Strategy Update

Under the Long Island Sound Nitrogen Strategy, EPA is working closely with its contractor, Tetra Tech, to revise the analytical methods used to develop nitrogen targets for Long Island Sound. In 2019, EPA presented the work for external technical review and public comments, and in response, is revisiting certain assumptions and conducting supplemental analysis to further improve the work's technical basis and methodology. In 2020, EPA and Tetra Tech will revise the contract deliverables, documenting responses to all comments. The external technical review, the subtask reports, and other documents related to the EPA Nitrogen Reduction Strategy are available on the LISS website under Reducing Nitrogen.

— Leah O'Neill, Environmental Protection Agency

LIS POINT SOURCE NITROGEN TRADE-EQUALIZED LOADS (Thousands TE pounds per day)



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.

The Ups and Downs of the Pages Millpond Dam

After a pivotal year of progress in 2019, a team led by Save the Sound will complete in early 2020 the installation of a fishway at Pages Millpond Dam in North Branford, CT. This project has a great deal of importance, as the Pages Millpond Dam, first built 323 years ago, is the final historically significant barrier for migratory fish on the Farm River. Once the fishway is complete, populations of Alewife and other forage fish, such as American shad and gizzard shad, will have access to an additional 3.6 river miles and 4.25 acres of lake habitat.

The work of restoring fish passage to the waters above the dam began more than 15 years ago, when owner Lindsay Suter noticed fish unsuccessfully attempting to surmount the dam. At that time, it was the second barrier on the Farm River after the (much smaller) East Haven Diversion Dam, which some fish could get over when the river was running high. Conversations began between the Suters, the Hammonasset Chapter of Trout Unlimited (HCTU), the CTDEEP, and the South Central Connecticut Regional Water Authority (SCCRWA), which owns the East Haven Diversion Dam, and it was decided that both dams ought to have fishways installed.

Designs for both fishways were completed by 2008 and construction was completed on the Diversion Dam fishway by 2013. However, complications with timing and available funding sources delayed construction of the Pages Millpond fishway for another five years. Save the Sound joined the project in 2017, and secured construction funding through the Long Island Sound Futures Fund in 2018. After a decade of work, 2019 saw a flurry of activity—designs were finalized, contractors were engaged, site preparations were completed, and permits were secured. With all the pieces in place, construction officially began in the first days of 2020. This spring, access for migratory fish will be restored to the full 12.35 miles of their historical habitat on the Farm River for the first time in more than 300 years.

— Anthony Allen, Save the Sound

BY THE NUMBERS

In 2019, LISS and its program partners restored **54.1 acres of coastal habitat**, totaling **2,056 restored acres of coastal habitat** since work began in 1998. Among the restored habitats this past year was a **36-acre coastal forest** in the H. Smith Richardson Preserve in Connecticut. This site suffered from depleted soils and plummeting biodiversity due to 90% cover by non-native weeds. It borders a small tidal creek that is either home or a stopover point for **60 bird species**, including **48 migratory species**, and about **200 species of insects**.

Through the installation of fish passages and the removal of dams, **418.8 river miles** have been reopened since 1998, increasing the amount of available habitat for fish migrating upriver to spawn. In 2019, completed projects reopened **1.8 stream miles**.

Program partners restored 1.9 acres of tidal wetlands in 2019, resulting in **1,062.7 acres** restored since 1998.

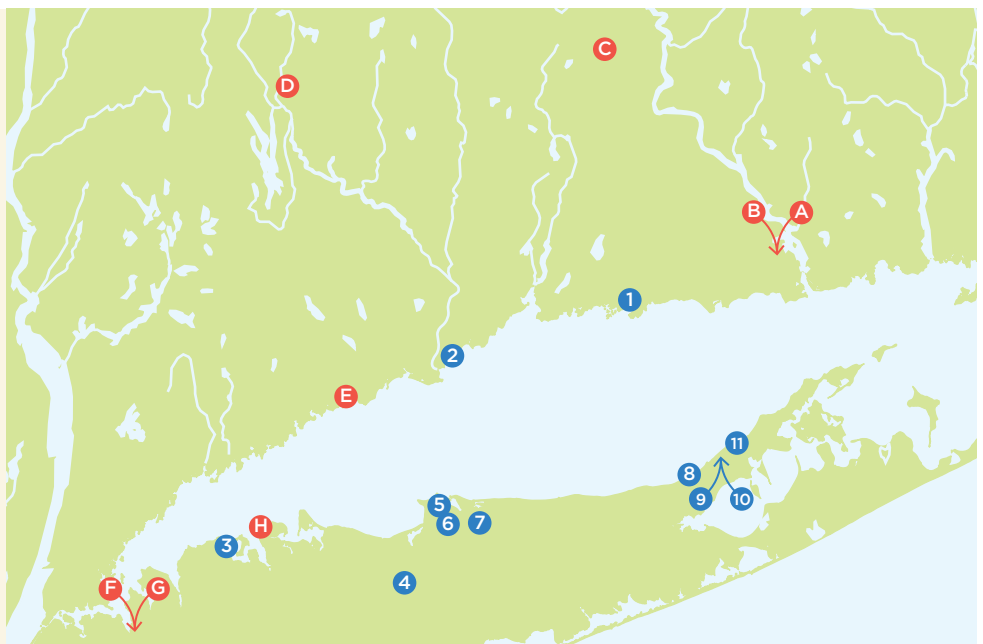
In 2015, the LISS adopted the goal of protecting an additional 7,000 acres of open space habitat; 4,000 in Connecticut and 3,000 in New York. In 2019, **173.1 acres of open space were acquired** for protection; **116.3 acres of coastal land in New York** and **56.8 acres in Connecticut**, totaling in 6,845.8 acres protected since 2006. These areas will either remain as undeveloped natural landscapes to support the local ecosystem or serve as resource-based, natural recreational areas.

COASTAL LANDS PROTECTED:

1. Expansion of the Guilford Westwoods Acquisition
2. Expansion of the Charles E Wheeler Wildlife Management Area Acquisition
3. Braunstein Property Easement
4. Lucyshyn Property Acquisition
5. Witczak Property Acquisition
6. Runs Road Acquisition
7. McLaughlin Property Acquisition
8. Gorman Property Acquisition
9. Krupski Property Easement
10. Robinson Property Easement
11. McBride Property Easement

HABITAT RESTORATION:

- A. Dolan Pond Fishway
- B. Mill Pond Dam Fishway
- C. Kensington Dam Fish Ladder
- D. Old Paper Mill Pond Dam Removal
- E. H. Smith Richardson Preserve Coastal Forest Restoration
- F. Alley Pond Phase III Forest Restoration
- G. NYCDEP Alley Creek Tidal Wetland Restoration
- H. Matheson Meadows Restoration



Lucy Reading-Ikkanda

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

The American Littoral Society and Save the Sound, with funding assistance from the LISS, organized **105 beach clean-ups** in 2019—32 in New York and 73 in Connecticut. The events attracted **4,239 volunteers** in total, who helped recover **14,423 pounds of trash** and marine debris from the Sound's coasts.

In partnership with the Peconic Estuary Program and the South Shore Estuary Reserve, the LISS and NYSDEC organized the second annual Long Island Estuary Day, which took place at Theodore Roosevelt Park in Oyster Bay, NY. Around **100 people** attended the event, which kicked off with a morning beach clean-up led by Friends of the Bay, and included

hands-on activities for kids, presentations on microplastics and marine debris, and information on stewardship activities from local environmental groups.

In 2019, the LISS Coastal Certificate Program, in partnership with the UConn Master Gardening program, offered a 4-evening workshop to **29 participants** about the connections between gardens, water quality, and the health of the Sound. This outreach program reached **569 people**, not including the lawn-replacement native plant garden created at Hammonasset Beach State Park, CT, which hosts **50,000 visitors annually**.

LISS's third #DontTrashLISound social

media outreach campaign reached over **135,000 views, likes, and shares** this past summer through Facebook, Instagram, and Twitter. The campaign's theme in 2019 encouraged people to "Break the Single-Use Plastic Habit" and included educational events, online posts sharing facts about plastic waste, and the distribution of thousands of waterproof "Protect Our Wildlife" stickers to use on reusable bottles.

The LIS Mentor Teacher Program organized **four workshops** "for teachers by teachers" in New York and Connecticut. A total of **35 educators** attended workshops in 2019 and will reach an estimated **3,093 students**.

Spotlight on Public Engagement and Education

The Port Jefferson Rain Gardens Project

With support from the Long Island Sound Futures Fund, the Long Island Explorium has installed two rain gardens in Port Jefferson Village in 2019, with a third one coming in 2020. The two existing gardens are important outreach efforts located at the Village Hall and at the Village Center. An indoor exhibit explaining rain gardens, their role in reducing pollutants reaching the Long Island Sound from stormwater runoff, and their contribution to providing healthy habitats for animals using native plants was also completed. Accompanying the exhibit are educational activities such as the popular "Make a Seed Ball",

in which children make a clay ball into which they place native seeds to take home.

The Rain Garden Project Coordinator, Julia Todorov, also offered and continues to offer workshops on the rain gardens. In 2019, the museum organized 14 workshops on the structure, importance, and maintenance of rain gardens, and engaged 80 volunteers in planting the new rain gardens and watering the Explorium's Sensory Garden, which is comprised of 70 percent native plants. The fifth-grade classes from Edna Louise Spear Elementary School in Port Jefferson attended the workshops, while community members and students from the Earl L. Vandermeulen High School's Environmental Club (pictured) visited and helped plant the gardens under the supervision of the landscape ecologist responsible for the project, Rusty Schmidt, and landscape designer Cassandra Castaño.

The Explorium will hold a ribbon-cutting ceremony to present the rain gardens to the public during the annual Long Island Maker Faire in 2020 at the Port Jefferson Village Center.

— Julia Todorov,
Long Island Explorium

Sustainable and Resilient Communities Work Group Forms

At its October 2019 meeting, the LISS Management Committee decided to establish a new working group focused on Sustainable and Resilient Communities in support of Theme Three of the Comprehensive Conservation and Management Plan (CCMP). This working group will meet over the next year to define priorities and actions needed to advance the Theme's established outcomes and related implementation actions. The principle deliverable at the end of this year is intended to be a five-year work plan that will guide implementation of the Sustainable and Resilient Communities Theme and will tie directly into the next five-year Implementation Plan of the CCMP. The working group has members with broad representation across entities in both Connecticut and New York, including from academia, federal, state and county government agencies, municipalities, and community and non-governmental organizations.

— Rebecca Shuford,
NYSG & Sylvain DeGuise, CTSG



Julia Todorov, Long Island Explorium

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.

The Blue Plan: Mapping out the Sound's Mosaic of Marine Life and Human Uses

In 2015, the Connecticut General Assembly passed Public Act 15-66, an act requiring the creation of a Long Island Sound Blue Plan to identify the areas of the Sound that are especially significant for human use and ecological integrity. In 2019, a team of experts in partnership with public stakeholders completed the last stage of this Blue Plan, a resource management tool that could greatly improve the process of protecting the offshore waters of Long Island Sound.

Since 2016, the Long Island Sound Study (LISS) has provided a total of \$325,000 in financial assistance toward the development of this Blue Plan. The process first required that scientific and technical experts from both Connecticut and New York organizations—including the Connecticut Department of Energy and Environmental Protection (CTDEEP), the New York State Department of Environmental Conservation, The Nature Conservancy, and the University of Connecticut—work together to collect geographical information about how the ‘spaces’ within the

Sound were being used. Importantly, the process also involved the participation of stakeholders and the public including fishermen, boaters (pictured), local businesses, aquaculture, divers, commercial maritime interests, energy utilities, native tribes and more. The collected information was then compiled to create the Resource and Use Inventory, which was completed in 2018.

This past year, the Inventory was used to identify ‘special, priority areas’ within Long Island Sound, based on their distinct characteristics and human and ecological significance. The Blue Plan identified areas within two types: 14 Ecologically Significant Areas (ESAs)—defined as *areas of unique environmental conditions or species concentrations*—and 29 Significant Human Use Areas (SHUAs)—which represent *unique concentrations of a particular type of human activity*, including features of recreational, commercial, historical, cultural, educational, or research significance. Maps of the ESAs and SHUAs were also created in 2019 and are available for use at CTDEEP’s Map Viewer.



Geoff Steadman, CT Harbor Management Association

The Blue Plan, which includes policies to help guide decision-making, was finalized in September 2019 and delivered to the Connecticut legislature in February 2020. Once official, the law will require Connecticut state agencies granting new offshore permits—that is, existing permit programs regulating activities in the deep waters of the Blue Plan policy area—to consider the information and guidance of the Blue Plan during their permit-granting process.

— Jimena Perez-Viscasillas,
NYSG & Nathan Frohling, The Nature Conservancy

LISS BUDGET

FY 2019 (Oct. 2019 – Sept. 2020)

Coordination & Reporting of Environmental Actions and Results	\$411,707
Public Outreach, Information, Participation and Education	\$1,074,255
Water Quality Monitoring, Modeling and Scientific Research	\$7,158,625
CCMP Implementation Support and Technical Assistance	\$5,955,413
TOTAL	\$14,600,000

Integrated Water Quality Modeling for New York

A scientific model is a mathematical, conceptual, or physical representation of a real phenomenon that might otherwise be difficult to observe or understand. These models can be used to explain or predict the behavior of said phenomenon and help make more informed management decisions. In the 1990s, local water quality models helped provide the information to plan a successful effort to remove nitrogen pollution and make improvements in the Sound’s water quality. But more can be done, and new challenges such as warming temperatures and increasing precipitation threaten the progress that has been made. For this reason, the federal, state and county governments are once again investing in water quality modeling, updating their models, and coordinating their programs with help from the LISS and its partners.

In 2019, the NYC Department of Environmental Protection (NYCDEP), with funding support from LISS, requested proposals for the development of a new regional integrated framework for water quality modeling. This effort will include hydrodynamic and water quality models as well as a graphical user interface and decision support tool. It will build and improve upon the previous generation of models to guide future planning and management based on the best available science. Work is expected to begin in summer 2020 and continue to 2024.

In addition to the efforts above, there are many other water quality modeling projects recently completed or underway around the Sound in both New York and Connecticut. New York State developed the Long Island Nitrogen Action Plan (LINAP) to identify sources of nitrogen, establish nitrogen reduction endpoints, and develop nitrogen reduction plans in both Nassau and Suffolk Counties. In 2019, Suffolk County released its detailed Subwatersheds Wastewater Plan, which established nitrogen load reduction goals and priorities for 191 subwatersheds, including 27 that discharge into LIS. Finally, the United States Geological Survey (USGS) has undertaken a broader project to delineate groundwater recharge areas, travel times, and outflows to Long Island streams and estuaries.

— James Ammerman, NEIWPCC/Long Island Sound Study

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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, CTDEEP, NYCDEP, USDO, IEC, NEIWPCC, NY and CT Sea Grant Programs, co-chairs of the Science and Technical Advisory Committee and Citizens Advisory Committee.

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Visit us at:

<https://longislandsoundstudy.net/>



Department of
Environmental
Conservation

What You Can Do to Help the Sound

What a Regular Person Can Do About Climate Change

While climate change won't be solved by one individual's buying or driving habits alone, collectively small things can make a difference. The single most important thing a person can do is limit their use of fossil fuels such as oil, coal, and natural gas by replacing them with renewable and cleaner sources of energy.

Here are some suggestions for things you can do to lower your carbon footprint!

- Visit energy.gov for information on how to get an energy audit or how to do it yourself
- Use Energy Star appliances
- Wash clothes in cold or cool water, wash full loads of laundry
- Unplug electronic devices when not in use
- Use dryer balls, and dry clothes on a clothes line or dryer rack
- Switch to LED lights; they really make a difference
- Install low flow shower and faucet heads
- Turn off your engine if you're stopped for more than 10 seconds
- Make sure your tires are properly inflated for fuel economy
- Check your gas cap: escaping gas is bad news, and wastes fuel
- Plan your errands to choose the most efficient route

— Judy Preston, CTSG

Check out resources at the new LISS website!

The new page features updated information on LISS's ecosystem targets, research, updated educational resources, current listings of local volunteer opportunities, and easy tips on how individuals can help reduce their environmental impacts at home, in their backyards, at school, and when enjoying the Sound. Check out the site at <https://longislandsoundstudy.net>.

VOLUNTEER MICHAEL TUSIANA of Boy Scout Troop 55, Garden City, and his father **Roger** bring in trash from clean-up at Beekman Beach on Estuary Day 2019.



Robert Burg



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