# SOUND UPDATE

NEWSLETTER OF THE LONG ISLAND SOUND STUDY

# Long Island Sound Study's Year In Review: 2015

#### By Mark Tedesco

In case you hadn't noticed, 2015 was a busy and eventful year for Long Island Sound. There was welcomed progress on old issues and new initiatives that will set the course for years to come (and ensure that 2016 will be just as busy).

Released in June, a first-ever ecosystem health report card 61.4 percent decline. showed Long Island Sound earning grades of very good for water quality in Eastern Long Island (an "A") to very poor for water quality in the Western Narrows (an "F") near New York City. The report card, funded through the Long Island Sound Futures Fund, with additional support through the Long Island Sound Funders Collaborative, was produced by the Integration & Application Network at the University of Maryland Center for Environmental Science. The report card was based on quality assured regional data, applied thresholds used in national programs by EPA, and was reviewed by local scientific experts. The report card provided a geographically specific assessment of the ecosystem health of Long Island Sound, showing the clear east to west gradient of increasing stress. Importantly, the Long Island Sound Funders Collaborative plans to continue the report card to highlight progress in improving conditions.

A great example of improving conditions in 2015 was the second smallest summertime area of low dissolved oxygen in Long Island Sound measured in the past 29 years, 38 square miles, only one tenth the size of the recorded maximum dead zone, which occurred in 1994. Combined with a declining five-year rolling average in the size of the low oxygen zone,

THE 2015 CCMP is the blueprint for action that revises the 1994 plan. It is organized around four themes, as is this newsletter.

resilient state to

benefit both people

and the natural

**Clean Waters and** 

**Healthy Watersheds** 

Improve water

quality by reducing

contaminant and

nutrient loads from

the land and the

waters impacting

Long Island Sound.

this news suggests Long Island Sound water quality may be responding to the reductions in nitrogen pollution. For example, as a result of upgrades to the 106 wastewater treatment facilities in Connecticut and New York, an estimated 41.8 million fewer pounds of nitrogen were discharged in 2015 compared to levels in the early 1990s, a

Then, in October, culminating years of work, the Long Island Sound Study released an update of the Comprehensive Conservation and Management Plan (CCMP), setting 20 ambitious targets to be achieved by 2035. The new plan builds on the successes of the original 1994 CCMP by incorporating scientific and technological advances, incorporating the current needs of Sound communities, and addressing new environmental challenges, while emphasizing sustainability, climate change resilience, and environmental justice.

One issue highlighted in the CCMP was the need to continue progress in improving water quality. Working to make that happen, EPA announced in December a new strategy to reduce nitrogen pollution. The strategy proposed options for improving water quality in both the open water of the Sound and in bays, harbors, and near-shore waters. The proposed EPA strategy has many similarities with a draft scoping document released by New York State on a comprehensive effort to reduce nitrogen pollution throughout Long Island. As a result, 2016 will be a busy year for involving the public and regional experts in the refining these strategies and beginning implementation of "no regrets" actions to further reduce nitrogen pollution.

# CONTENTS

- Director's 1 Remarks
- 2 **Projects Map**
- 4 Clean Waters and Healthy Watersheds
- 5 Thriving Habitats and Abundant Wildlife
- 6 Sustainable and Resilient Communities
- 7 Sound Science and Inclusive Management
- 8 What You Can Do to Help the Sound

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



Find the Long Island Sound Study on Facebook

Sustainable **Thriving Habitats and** Abundant Wildlife and Resilient Communities Restore and protect the Sound's ecological Support vibrant, balance in a healthy, informed, and

engaged communities that use, appreciate, and help protect Long Island Sound.

Sound Science and

-Tedesco is the Director of the **EPA Long Island Sound Office** 



SCHOOLYARD HABITATS: Provide critical bird habitat for migratory songbirds in urban areas using school grounds as outdoor living classrooms to engage students in hands-on conservation and to increase knowledge about and connection to Long Island Sound habitats and wildlife.



## STRATFORD POINT LIVING SHORELINE: Restore the function and value of the 28 acre coastal ecosystem to add habitat structure for butterflies, resident and migratory birds, and other wildlife to feed, nest and take shelter in

habitats of Long Island Sound.



### **GREEN INFRASTRUCTURE**

BIOSWALES: Develop a tool to select green infrastructure bioswales and train community members to install and maintain bioswales that will improve water quality in New Haven Harbor and Long Island Sound.



quality monitoring of pollution in outer and inner Hempstead Harbor to track trends and to help local government detect and respond to illicit discharges in the Harbor and LIS.

Paul DeOrsav/Friends of the Bay



COMMUNITY STEWARDSHIP AT MYSTIC AQUARIUM: Host a community beach cleanup and an event educating visitors on how to be a steward for Long Island Sound. Fishway rehabilitation at Versailles Pond

Community Stewardship at Mystic Aquarium

Discovering Art in Coastal Cleanups

DISCOVERING ART IN COASTAL CLEANUPS: Collected debris from coastal cleanups will be documented and delivered to local artisans to be re-purposed into wildlife sculptures that will be on display in public spaces, festivals, and events to generate community awareness about shoreline and floatable pollution in Long Island Sound.



Group for the East End

# Long Island Sound Futures Fund Grant Program: 2015

In 2015, the Long Island Sound Futures Fund awarded nearly \$1.3 million in grants to groups that matched these funds with an additional \$2.1 million to conduct 22 stewardship, restoration, watershed management, and education projects. During this period, EPA, the US Fish and Wildlife Service (USFWS), and the National Fish and Wildlife Foundation (NFWF) provided funds to support the program. Since 2005, the Futures Fund has invested \$14.3 million in 324 projects. With recipient match of \$28 million, the program has generated \$42 million for locally based conservation. The projects have opened up 157 river miles for fish passage, restored 1,024 acres of critical fish and wildlife habitat and open space, treated 100 million gallons of pollution from ground and surface sources, and educated and engaged 1.8 million people from communities surrounding the Sound. See *www.longislandsoundstudy.net/grants* for descriptions of all projects.

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

# **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. Here are just a few of the projects that were conducted in 2015.



#### Green Infrastructure Bioswales

In 2015, the New Haven Urban Resources Initiative (URI) was awarded a Long Island Sound Futures Fund grant to develop a tool to optimize site selection for green infrastructure bioswales as well as a corresponding training program in how to maintain the bioswales. This project partners with Common Ground High School, Emerge, Inc., the Yale School of Forestry and Environmental Studies, City of New Haven, and the Greater New Haven Water Pollution Control Authority. The project will result in the installation of 200 bioswales in New Haven that will treat approximately 710,000 gallons of polluted stormwater draining to New Haven Harbor and Long Island Sound from combined sewers.

## Long Island Sound Report Card

Grading the water quality and ecosystem health of the Urban Sea



NEW HAVEN URI'S "GreenSkills" green jobs training program teaches adults the construction skills and how to install green infrastructure, like this bioswale.

#### A Report Card for Long Island Sound

On June 8th, two events – one in Connecticut and one in New York – were organized by NFWF to announce the Long Island Sound report card on the ecosystem health of the Sound.

The report card was developed by the Integration and Application Network of the University of Maryland Center for Environmental Science with funding from the Long Island Sound Futures Fund, a program administered by NFWF, and the Long Island Sound Funders Collaborative. The Maryland team found that there was a clear gradient in water quality, with grades ranging from excellent in the eastern Sound to poor in the western Sound. The westernmost part of the Sound, the Western Narrows, which is affected by the highly populated suburban-urban communities surrounding New York City, received a very poor grade. Further east, the water quality improves, as pollution is diluted by increased water exchange with the Atlantic Ocean. The report's release received extensive press coverage, including Newsday, Danbury News Times, News 12 in Connecticut and New York, the Hartford Courant, and the Associated Press. The grades can be viewed on the report card website at longislandsound.ecoreportcard.org.

2015 REPORT CARD, showing Echo Bay in New Rochelle, NY.

#### **Reducing Nitrogen**

In 2015, the 106 New York and Connecticut wastewater treatment facilities discharged 22,815 thousand trade equalized pounds per day of nitrogen compared to the early 1990s baseline level of 59,147 thousand trade equalized pounds per day, a 61.4% decrease. The Long Island Sound nitrogen Total Maximum Daily Load (TMDL) sets a reduction target to 22,774 thousand trade equalized pounds. A decrease in point source nitrogen loads reflects progress by the states in upgrading wastewater treatment facilities.

Equalization is a mathematical calculation of the transport efficiency of a pound of nitrogen released from a source based on its geographical proximity to Long Island Sound.

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. Here are just a few of the projects that were conducted in 2015.

### Sea Level Affecting Marshes Model Web Portal

The Sea Level Affecting Marshes Model, known as SLAMM, was applied to Long Island Sound to assist land use planners and natural resource managers in making decisions on how to manage the region's changing salt marsh habitats.

The SLAMM web portal provides access to easy-to-use web based map viewers for SLAMM, which was applied to each segment of the Sound's shoreline to predict how each coastal area is expected to respond to sea level rise. There is also a fact sheet describing SLAMM, data viewer user manuals, and data summaries by state and for the entire Sound.

SLAMM has been used by coastal managers since its initial development by EPA in the 1980s. A recent enhancement to the model not only predicts how salt marshes are expected to migrate in response to sea level rise, but the likelihood that a marsh will exist in a location at different time steps. This information will help resource managers most effectively target limited resources to areas with greatest potential for supporting marshes in the future. SLAMM is also unique in that it predicts not only where marshes are expected to occur in the future, but how different habitat types within a marsh are expected to change. You can now check out how your local marsh may respond to sea level rise at different time steps through the year 2100 and learn more about the Sound's tidal marshes and ecological processes affecting the Sound's marshes in the future by visiting *www.longislandsoundstudy*. net/slamm.

#### Habitat Restoration Database

Since 1998, the habitat restoration work in Long Island Sound has resulted in more than 1,750 acres of habitat restored, more than 5,000 acres protected through acquisitions and easements, and more than 350 miles of streams reconnected to the Sound for fish passage by removing dams and building fishways.

Users can now search the online database for project details or click on the interactive map to search for projects by location. The details include the type of habitat restored or protected, its size, and the partners involved in ensuring the project's completion. Many project web pages include before and after photos. The database can be accessed at www.lisshabitatrestoration.com.



WITH MORE THAN A **DOZEN** individual funding sources contributing towards the purchase price, and over 25 partners in all. the Preserve. located within three Connecticut towns (Old Saybrook, Essex, and Westbrook) was finally acquired for conservation in May 2015.



#### HABITAT RESTORATION PROJECTS

- 1. Barn Island Wildlife Management Area Tidal Marsh, C1
- 2. Groton-New London Airport Tidal Marsh, CT
- 3. Avalonia Land Conservancy
- Coastal Habitat Restoration at Dodge Paddock and Beal Preserve, CT
- 4. Mile Creek Tidal Marsh, phase 2, CT 5. Kelsey Place Tidal Marsh. CT
- 6. Charles Island Coastal Forest, CT
- 7. Great Creek Tidal Marsh, CT
- 8. DeLuca Field Tidal Marsh. CT
- 9. Great Meadows Tidal Marsh at Igor I. Sikorsky Memorial Airport, CT
- 10. Pine Creek Tidal Marsh, phase 2, CT

- 11. 38 and 40 Old Mill Road, Westport, CT 12. Calf Island Coastal Forest, CT
- 13. Pelham Bay Park Hunter and Twin Islands, NY
- 14. North Brother Island, NY
- 15. Alley Pond Park Kettle Pond Forest and Oakland Lake, NY
- 16. Restoration of Forests at Audubon's First Bird Sanctuary, NY
- 17. Coastal Grasslands Restoration at Caumsett State Park, NY
- 18. Sunken Meadow Creek Salt Marsh, NY
- 19. Marine Meadows Eelgrass Project, NY
- 20. Great Gull Island Management and Invasives Control, NY

## LANDS PROTECTED

- A. Coogan Farm, Mystic CT
- B. Avery Farm, Groton-Ledvard, CT C. The Preserve, Old Saybrook, CT
- D. Kaczynski Property, Branford, CT
- E. Humes Property, Mill Neck, NY
- F. Gordon-Aronson Property, St. James, NY
- G. Bartkowski/Dyke Road Property, East Setauket, NY
- H. Boom Development, Riverhead, NY
- I. Luce/MKZ Farm, Riverhead, NY
- J. Sidor, Regeness, Kraebel, Mattituck, NY
- K. Krupski Farmland, Southold, NY
- L. Moffat Farm North, LLC, Southold, NY M. Whitcom Marsh, Orient, NY

## DIRECTOR

Mark Tedesco, EPA LIS Office

PROGRAM SPECIALIST Joe Salata, EPA LIS Office

NATIONAL ESTUARY PROGRAM COORDINATOR

Leah O'Neill, EPA New England

COMMUNICATIONS COORDINATOR Robert Burg, NEIWPCC

CT COORDINATOR Mark Parker, CTDEEP

NY COORDINATOR Cassandra Bauer, NYSDEC

CT OUTREACH COORDINATOR Judy Preston, CT Sea Grant

NY OUTREACH COORDINATOR Amy Mandelbaum, NY Sea Grant

#### UPDATE EDITOR

A. Mandelbaum, ACB328@CORNELL.EDU

CONTRIBUTING EDITORS M. Tedesco, L. O'Neill, R. Burg, C. Bauer

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, USDOI, 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 #CE-962911-13. 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 endoresement or recommendation for use.

#### EPA LIS Office

Stamford Government Center 888 Washington Blvd Stamford, CT 06904-2152 Phone: (203) 977-1541 / Fax: (203) 977-8102

#### New York Sea Grant

146 Suffolk Hall, Stony Brook University, Stony Brook, NY 11794-5002 Phone: (631) 632-9216 / Fax: (631) 632-8216

#### Visit us at:

www.longislandsoundstudy.net, www.epa.gov, www.nyseagrant.org, www.seagrant.uconn.edu, www.ct.gov/deep, and www.dec.ny.gov



# 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. Here are just a few of the projects that were conducted in 2015.



## Creating a Network of Schoolyard Habitats to Engage Students in Conservation of Long Island Sound

Audubon Connecticut, in partnership with USFWS and other local partners, has created 11 habitats at public schools to serve as outdoor classrooms to teach students about birds and the watershed health of Long Island Sound. Students learn that as urban areas expand, urban forests, and other green spaces become critical to protecting Long Island Sound. NFWF produced a video highlighting one of the schoolyard habitat projects, the Barnard Environmental Magnet School in New Haven, CT. It can be viewed at *www.nfwf.org/lisff.* 

#### Removing Floatable Debris on the Bronx River

In 2015, the Bronx River Alliance addressed the issue of floatable pollution entering Long Island Sound from the Bronx River by engaging 360 volunteers in the collection of 6,060 pounds of floatable debris in three locations. As part of the project, 11 paddle and pick-up, boom clean, and coastal cleanup events were held along the Bronx River. The removal of floatables and submerged trash for proper disposal not only improved the Bronx River ecosystem, but also reduced the amount of marine debris that would have otherwise entered Long Island Sound. THE CLIMATE CHANGE WEBSITE provides users with information on how climate change is currently impacting Long Island Sound.

#### Climate Change in Long Island Sound

There is now a new website to help Long Island Sound residents, educators, and municipal officials learn more about climate change issues that can impact Long Island Sound. Climate Change in Long Island Sound: A Long Island Sound Resource Guide, which can be accessed at *www.lissclimatechange.net*, is divided into four sections:

- 1. What You Should Know: a primer on key concepts about climate change as well as access to web resources, including indicators of climate change in Long Island Sound.
- Town and City Resources: a portal providing links to what communities are doing to adapt to climate change and reduce greenhouse emissions, including cases studies from five Long Island Sound communities.
- Science and Monitoring: examples of research and monitoring being conducted in Long Island Sound.
- 4. Educators' Toolbox: resources for teaching about Earth's climate system and the changing climate, including "Science Spotlights" of local scientists conducting climate change research, and highlights of a teachers' workshop on climate change.

PADDLE AND PICK-UP volunteers helped collect floatable debris along the Bronx River before it entered Long Island Sound.



Bronx River Alliance

# 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. Here are just a few of the projects that were conducted in 2015.



EPA and Partners Release New Blueprint to **Restore and Protect Long Island Sound** On October 22, the Long Island Sound Study released a new CCMP for restoring and protecting the Long Island Sound, setting 20 ambitious targets to be achieved by 2035. Among these goals are: a reduced number of beach closures due to sewage pollution; a reduced area of the Sound with unhealthy oxygen levels; improved water clarity; restored coastal wetlands; increased open space; and a reduction in the amount of plastic marine debris in the Sound. This plan builds on the successes of the original 1994 CCMP by incorporating scientific and technological advances, incorporating the current needs of Sound communities, and addressing new environmental challenges, while emphasizing sustainability, climate change resilience, and environmental justice.

The CCMP includes 20 ecosystem targets to improve water quality, restore and protect habitats, and engage citizens to take an active role in protecting the Sound. At the October 2015 and January 2016 Management Committee meetings, the Management Conference members agreed on developing new work groups and modifying responsibilities of existing work groups to help coordinate the bi-state efforts to meet these targets. For more information about the CCMP, visit *www.longislandsoundstudy.net/ccmpinfo.* 

## New pH and Carbon Dioxide Sensor will Study Ocean Acidification

The US Environmental Protection Agency (EPA) provided the Long Island Sound Study with \$65,000 in National Estuary Program funds to support a high precision pH and carbon dioxide sensor on Long Island Sound. The Long Island Sound Study is only one of four National Estuary Programs selected to assist EPA in assessing how global, coastal, and regional factors are impacting ocean and coastal acidification. EPA selected the proposal for funding based on specific criteria, including consideration for current work on acidification, technical expertise for maintaining the instruments, potential collaboration with the regional science community, and potential synergies with ongoing or planned efforts. The funds were awarded to the Long Island Sound Integrated Coastal Observing System (LISICOS), which is maintained by the University of Connecticut. The sensor was installed on one of LISICOS's water quality monitoring buoys in the Sound.

Ocean acidification is defined as the increased concentration of carbon dioxide in sea water, causing a measurable increase in acidity and a reduction in the ocean's pH. This may lead to reduced calcification rates of shelled organisms such as corals, mollusks, algae, and crustaceans. In February 2015, scientists at the Natural Resources Defense Council, University of California at Davis, the Ocean Conservancy, and Duke University, and collaborators from nine additional institutions released the first nationwide vulnerability assessment for ocean acidification in the journal

> Nature Climate Change. In a news release about the study, Long Island Sound was identified as an example of an at-risk "hot zone" for having an abundance of nitrogen pollution that exacerbates ocean acidification in shellfish-rich areas.

THE pH AND CARBON DIOXIDE sensor was installed on one of LISICOS's water quality monitoring buoys in Long Island Sound.

University of Connecticut

UNIVERSITY OF CONNEL MARINE SCIENCE



THALASSIONEMA NITZSCHIOIDES is a common diatom in Long Island Sound, particularly during winter-spring blooms. Diatoms are overall the most common type of phytoplankton.

### Long Island Sound Water Quality Sampling and Fast Repetition Rate Fluorometry Results

Since July 2015, water quality samples in Long Island Sound have been tested for phytoplankton physiology using fast repetition rate fluorometry. The preliminary results indicate that phytoplankton in Long Island Sound appeared to be more stressed in the late spring and summer, and that these techniques provide a more reliable way of determining nutrient limitation than using nutrient measurements alone. This study is being conducted by the NOAA Northeast Fisheries Science Center Milford Laboratory and the Connecticut Department of Energy and Environmental Protection, in collaboration with McLaughlin Research Corporation.

## LISS BUDGET

FY 2015 (Oct. 2014 - Sept. 2015)

Coordination & Reporting of Environmental Actions and Results	\$343,914
Public Outreach, Information, Participation and Education	\$587,141
Water Quality Monitoring, Modeling and Scientific Research	\$2,051,097
CCMP Implementation Support and Technical Assistance	\$1,557,848
ΤΟΤΑΙ	\$4,540,000

7

# What You Can Do to Help the Sound

Long Island Sound provides recreational fun for us, habitat for wildlife, and income to many local economies. However, the Sound is heavily affected by the nearly 24 million people who live within 50 miles of the coastline. We all must do our part to make sure we understand how our everyday actions affect Long Island Sound and protect it however we can. Visit *www.longislandsoundstudy.net/get-involved/what-you-can-do* for tips on simple things you can do to keep the Sound clean for future generations.

- Eliminate or reduce fertilizer use
- Keep litter out of waterways
- Compost food and yard waste
- Install a rain barrel
- Pump out your septic system every 3-5 years
- Leave natural vegetation (not a lawn) along a stream, ditch, or waterfront
- · Properly dispose of harmful chemicals and household grease and oil

LEFT: A rain barrel is a cost-effective way to store the water coming off your roof and to water your plants during a drought.

RIGHT: Butterfly weed is a native plant that not only attracts butterflies, but can also tolerate drought.





Long Island Sound Study c/o New York Sea Grant 146 Suffolk Hall **Stony Brook University** Stony Brook, NY 11794-5002

NONPROFIT **U.S. POSTAGE PAID UNIVERSITY AT STONY BROOK** 



Scan here to sign up for our e-newsletter, Sound Bytes!

Please recycle or share with a friend!

Printed on 100% recycled paper.

ADDRESS SERVICE REQUIRED