Sound Bytes

NEWS FROM THE LONG ISLAND SOUND STUDY

Spring 2016

LISS NEWS

Management Committee Approves Budget; Adds Funds for Nitrogen Strategy

A sample of Macro algae collected in Little Narragansett Bay in Stonington as part of a research project on the impact of nitrogen in embayments.

At its quarterly meeting on April 21, the Long Island Sound Study (LISS) Management Committee agreed to a $4.54 million budget to fund projects beginning on Oct. 1, 2016. The budget includes $300,000 dollars to support a new strategy to reduce nitrogen pollution in the Sound and in its bays, harbors, and coves.

The funds for the nitrogen strategy will be used by EPA to hire a contractor to compile, summarize, and assess the impact of nitrogen loads into Long Island Sound, including from sources that drain into the Sound from urban runoff, coastal wastewater treatment plants, and upland tributaries. The information will help in EPA's efforts to work with the states of Connecticut and New York to establish nitrogen thresholds necessary to protect designated uses. Current nitrogen loading will be compared to the thresholds to identify where and to what degree further nitrogen reductions are needed.

Nitrogen is a nutrient that stimulates the growth of macro and micro algae in coastal waters such as Long Island Sound. When in excess it can lead to large algal and phytoplankton blooms that could be toxic, or lead to conditions that starve the Sound of oxygen or degrade habitats such as eelgrass meadows (see article below for more information on nitrogen strategy).

Besides the nitrogen strategy, the funds for the 2016 budget will be distributed to LISS's partners. The budget calls for renewed funding of several projects, including $1.27 million for the National Fish and Wildlife Foundation to manage the Long Island Sound Futures Fund grant program, $1.1

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million for the Connecticut Department of Energy and Environmental Protection to run the Long Island Sound Water Quality monitoring program, and $212,500 for the Connecticut and New York Sea Grant Programs to manage the Long Island Sound Study Research grant program.

EPA awards the money to LISS and its partner organizations to implement the Long Island Sound Comprehensive Conservation and Management Plan. To learn more about LISS programs and projects, read the annual EPA work plan and the biennial report posted on the Our Mission page of LISS's website.

EPA Continues Rollout of Nitrogen Strategy

EPA will host a public meeting at the Pioneer Valley Planning Commission in Springfield, MA on May 12 to discuss the Nitrogen Strategy for Long Island Sound. Since January, EPA has held nitrogen strategy webinars and public meetings in New York and Connecticut and met with staff from five state agencies in the Long Island Sound watershed.

The strategy proposed by EPA is intended to complement a Total Maximum Daily Load (TMDL), an agreement reached by the states of New York and Connecticut to reduce nitrogen by nearly 60 percent from early 1990 levels. While the 2000 TMDL is premised on achieving water quality standards for dissolved oxygen (DO) in the open waters of the Sound, the new EPA strategy expands the focus to include other nutrient-related adverse impacts to water quality, such as loss of eelgrass, which affects many of the Sound's embayments (such as bays, harbors, and coves) and near-shore coastal waters.

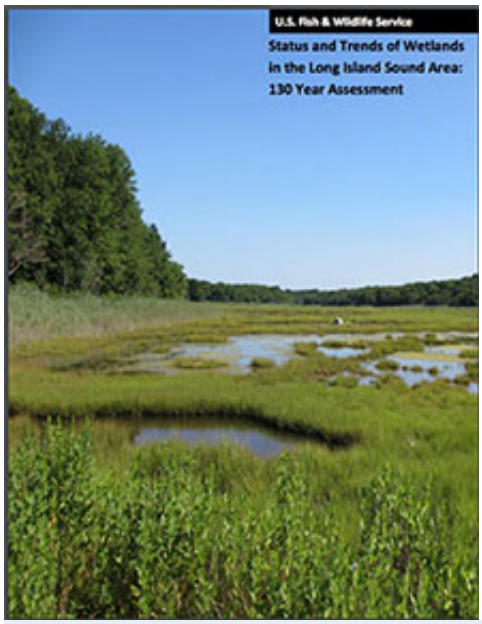
Nitrogen is a nutrient that stimulates the growth of algae in coastal waters. An overabundance of algae can lead to low dissolved oxygenated waters, or hypoxia, a condition that is harmful to fish and other aquatic life. The nitrogen can enter the Sound through a variety of sources, including from treated sewage discharged from wastewater treatment plants and septic systems, fertilizer runoff, and atmospheric deposits from industrial waste. As a result of the TMDL, actions by New York and Connecticut to upgrade wastewater treatment plans have reduced nitrogen pollution by more than 40 million pounds of nitrogen annually.

The strategy as well as a slide presentation is available in LISS's water quality section.

New Report Details Large Wetlands Loss in Long Island Sound

Nearly a third of the wetlands along Long Island Sound have disappeared since the 1880s, representing a serious loss of this vital resource for coastal communities and for fish and wildlife. The decline has been documented in a study recently published by the US Fish and Wildlife Service with assistance from the Connecticut Department of Energy and Environmental Protection (CTDEEP) and the New York State Department of Environmental Conservation (NYSDEC). Conducted under the Long Island Sound Study partnership, the work is the first long-term, Sound-wide assessment of the changes in the area of tidal wetlands.

While the report largely identified a negative trend, it suggested that setting goals to protect a publicly desired level of wetland condition and function around the Sound, addressing site-specific threats, and securing the public's support for large-scale restoration could help change the course of wetland loss in Long Island Sound.



The study, available at FWS's northeast region website, was conducted by Georgia Basso, a wildlife biologist at the US Fish and Wildlife Service, Kevin O'Brien, an environmental analyst for CTDEEP, Victoria O'Neill, a NYSDEC habitat restoration coordinator, and Melissa Albino Hegeman, a marine biologist at NYSDEC.

The report received wide news coverage in March following the distribution of a news release announcing the report's availability on the USFWS website. The coverage included an interview with Mark Tedesco, director of the EPA Long Island Sound Office, on Connecticut National Public Radio stations.

Sound Update Takes a Look Back to 2015 with Year in Review Issue

A map of 2015 projects funded by the Long Island Sound Futures Fund, featured in the spring issue of *Sound Update*.

The spring issue of ***Sound Update***, LISS's print newsletter, takes a look back at 2015 to highlight some of the important projects accomplished and milestones achieved toward restoring and protecting Long Island Sound. It looks at progress through the prism of the four themes in Long Island Sound Study's recently revised Comprehensive Conservation and Management Plan: Clean Waters and Healthy Watersheds, Thriving Habitats and Abundant Wildlife, Sustainable and Resilient Communities; and Sound Science and Inclusive Management. The issue, edited by Amy Mandelbaum, the Long Island Sound Outreach Coordinator at New York Sea Grant, is available as a pdf on the Long Island Sound Study website.

SOUNDoff! Strikes a Chord for Protecting the Sound

The Whaling Museum and Education Center of Cold Spring Harbor is a new grantee of the Long Island Sound Futures Fund. Through the help of an LISFF small grant, the Whaling Museum on April 17 hosted SOUNDoff!, an event aimed at educating Long Island residents about the wonders of the Sound, the environmental threats to the Sound, and what they can do to protect the Sound. Close to 300 people attended, taking part in hands-on activities such as learning how to sample for water quality, and holding oysters, horseshoe crabs, and other sea life at a touch tank, while learning about the effects of local marine debris and stormwater pollution on the Sound.

"This event is poised to have an impact through the rest of the summer months as Long Islanders get ready to hit the beaches, spend time on boats and fertilize their lawns," said Nomi Dayan, executive director of the Whaling Museum, in a news release.

Sound Check: Has Decreased Nitrogen Loading in Long Island Sound Improved Bottom Water Oxygen?

Sound Check is a new feature in which we ask Dr. James Ammerman, LISS's science coordinator, about an

A young girl makes a "boom" to contain an oil spill using straws and pipe cleaners at SOUNDoff's oil pollution station.

indicator recently updated in the LISS Status and Trends presentation. In our first installment, Dr. Ammerman looks at nitrogen loads into Long Island Sound. The 2015 data was added to the indicator in March, and shows a 2000-era target to reduce nitrogen is now more than 99 percent completed.

Q: Has Decreased Nitrogen Loading in Long Island Sound Improved Bottom Water Oxygen?

Dr. Ammerman: Nitrogen loading from sewage treatment plants to Long Island Sound has decreased by more than 42 million pounds per year since the early 1990s, greater than a 60 percent decline. This decrease is largely due to improvements in nitrogen removal by wastewater treatment plants in both New York and Connecticut and will meet the requirements of the Total Maximum Daily Load (TMDL) first implemented in 2000 by 2017.

SOUND CHECK

One of the major results of excessive nitrogen loading to estuaries and coastal waters is bottom water hypoxia, or decreased oxygen concentrations (<3 mg dissolved oxygen per liter), which can imperil marine life, and which is measured from June to September by the Connecticut Department of Energy and Environmental Protection (CTDEEP) as part of the Long Island Sound Study Water Quality Monitoring Program. Hypoxia occurs because the plankton blooms fueled by the excess nitrogen are degraded by bacteria which use the oxygen in the process. Therefore, decreased nitrogen loading, as seen in Long Island Sound, should result in both a decreased area and intensity of hypoxia.

There is evidence that the area of hypoxia has declined in the last decade, to an area of 38 square miles in 2015, the second smallest since the start of monitoring in 1987. The one exception was 2012, an unusually warm year, when the hypoxic area was 289 square miles, the largest since 2003. In addition, the areas of severe hypoxia (<2 mg dissolved oxygen per liter) and anoxia (<1 mg dissolved oxygen per liter), either of which would likely be deadly to marine life, have also declined over the last decade. Severe hypoxia was zero in 2015, the first time severe hypoxia did not show up in the Sound since CTDEEP began sampling for that measure in 1991. Anoxia in Long Island Sound has been zero for the past three years.

So far, there is not a decrease in chlorophyll a concentrations in Western Long Island Sound, which would be expected as a result of the decrease in nitrogen loading. However, the chlorophyll data is limited and may not tell a complete story. We are looking forward to this year's monitoring data to determine whether these positive trends continue.

note: the links go to the indicator web pages on the LISS Status and Trends presentation.

AROUND THE SOUND

Stony Brook Marine Scientist Receives EPA Environmental Champions Award

Dr. Christopher Gobler, a Stony Brook University marine scientist who is well known for communicating water-related issues to Long Island residents, has received an Environmental Champions award from EPA's New York-New Jersey region, it was reported in Newsday in April. Gobler, a Long Island native, runs a research lab at Stony Brook's

Christopher Gobler, pictured far right in the gray shirt, with members of his lab.

Southampton campus where he investigates the impacts of eutrophication on coastal waters, including harmful algal blooms and depleted oxygenated waters. Gobler also conducts research on climate change issues, including the impacts of ocean acidification to coastal waters, and was a contributor to the Long Island Nitrogen Action Plan, a multi-partner effort to reduce nitrogen loads from Long Island into its groundwater and coastal waters.

Gobler's lab provides a weekly Long Island Water Quality Index to News 12 Long Island. His State of the Bays presentation is held annually as part of the Southampton Lecture Series at Stony Brook's Southampton campus. This year's presentation, "State of the Bays 2016: Challenges, Victories, and Solutions," was held on April 1. You can read an article about it in the East End Beacon.

Gobler was one of six New Yorkers nominated by US Senator Kirsten Gillibrand for the award, which will be presented on May 13.

Ornithologist Feted for Work at Great Gull Island

Helen Hays (left)

Helen Hays, a legendary ornithologist, will be receiving an EPA Environmental Champions Award on May 13 for her work helping to protect roseate and common terns nesting on Great Gull Island, a Long Island Sound Stewardship site. She was nominated by EPA Region 2.

Since 1969, Hays has worked at the tiny island at the far eastern end of Long Island's North Shore, which is home to almost half of the northeast North American population of roseate terns, a migratory bird listed as endangered by the US Fish and Wildlife Service. Although only 17 acres in size, Great Gull Island was home to 1,500 pairs of summer nesting roseate terns in 2011 compared to a total of 3,139 pairs of the birds counted in all of the northeast US and Canada.

Hays is the chair of the Great Gull Island Committee at the American Museum of Natural History, which which owns the island. As part of her work she has conducted significant research on the deadly effect of PCBs in the world's oceans and their adverse effect on marine life. Her advocacy helped bring this fact to the attention of United States legislators and the world, and she has lobbied successfully to reduce these environmental contaminants.

Hays also has received several awards including the Conservation Service Award from the US Department of the Interior, the Lifetime Achievement Award from the New York Audubon Society, and the President's Volunteer Action Award. She has authored dozens of scientific papers and has been a mentor to hundreds of students who have done field work on the island.

To learn more about Great Gull Island, vist the Great Gull Island Project website.

Chester Resident Leads Campaign to Use Reusable Water Bottles

Felise Cressman, right, with Cathi Lepore, a co-organizer of the Chester Cares Initiative, at Parker's Point on the Connecticut River.

Felise Cressman is on a mission to reduce the use of single-use plastic water bottles in her hometown of Chester along the Connecticut River. She is encouraging her neighbors to purchase reusable aluminum water bottles with the logo **Chester, Connecticut: We're a Walking Town** on them.

According to a recent profile of Cressman and the Chester Cares Initiative in the Shoreline Times, the Chester resident got interested in the plastic waste issue after watching the round-the world Volvo Ocean Race on-line and being surprised to see how many times the boats encountered plastic debris. In addition, her son, Anderson Reggio, is involved with 11th Hour Racing, a program that works with the sailing community to promote ocean health.

According to the Container Recycling Institute, almost eight out of ten plastic bottles end up in a landfill or incinerator, and hundreds of millions end up as litter on roads and beaches or in streams and other waterways. The Ocean Conservancy estimates that there could be one ton of plastic for every three tons of finfish in our oceans in 10 years if nothing is done.

The Chester bottles are being sold in local shops in Chester and proceeds are going to the Rozalia Project for a Clean Ocean. The Chester Cares Initiative Facebook page has more information about the Initiative.

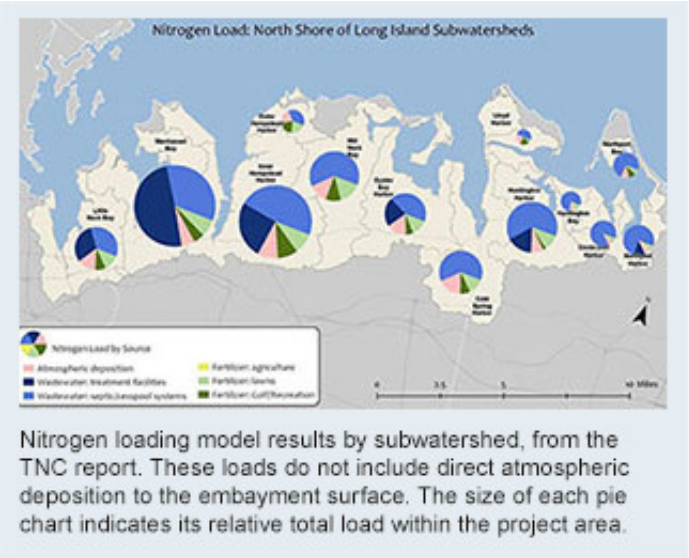
Prohibition on the Taking of Alewife and Blueback Herring from Connecticut Waters Extended for another Year

Students from the Cloonan Middle School in Stamford watch CTDEEP staff release alewives into the Mill River. Photo by Matthew Vinci.

Connecticut's Department of Energy and Environmental Protection announced in April that the prohibition on the taking of alewives and blueback herring from most inland and marine waters in Connecticut has been extended for another year. This action was initially taken in April of 2002, and has been extended each successive year because there has been no improvement in populations of these species during the past year. The current action by CTDEEP Commissioner Robert Klee extends the prohibition through March 31, 2017. You can read more about the prohibition in a news release on the CTDEEP website.

A recent article in the Canadian Journal of Fisheries and Aquatic Sciences suggested that bycatch from northeast Atlantic commercial fisheries might be the cause of the decline in Long Island Sound. You can read an abstract or purchase the article at the NRC research press website.

Septics and Cesspools Big Contributor to Pollution in Nassau County Waters



Nitrogen loading model results by subwatershed, from the TNC report. These loads do not include direct atmospheric deposition to the embayment surface. The size of each pie chart indicates its relative total load within the project area.

The Nature Conservancy released a report in March highlighting that septic systems and cesspools in northern Nassau County are the biggest contributors of nitrogen pollution in North Shore bays and harbors that lead into Long Island Sound. The 30-page report entitled "Modeling Nitrogen Source Loads on the North Shore of Long Island" puts forth the results of nitrogen load modeling in 13 watersheds from Little Neck Bay to Northport Harbor. In all but one of the 13 watersheds, septic systems and cesspools were found to be the major source of nitrogen pollution, accounting for more nitrogen than fertilizer, stormwater or sewage treatment plants. The report is available on the TNC New York region website.

WQ in CT Streams Show Steady Signs of Improvement, USGS Says

Water quality in Connecticut streams flowing into Long Island Sound has steadily improved over the last 40 years, according to a new US Geological Survey study.

USGS has been monitoring water quality in the state's streams for 43 years, since the implementation of the Clean Water Act in 1972. Nitrogen concentrations in the streams studied have decreased significantly adding to the overall water quality improvements. These nitrogen decreases are due to several factors including upgrades in wastewater facilities, agricultural best management practices, and reductions in nitrogen from precipitation.

Phosphorous has also decreased, most likely due to improvements in wastewater treatment and the removal of phosphorus from laundry detergents between 1972 and 1995. Decreased concentrations of nitrogen and phosphorus have led to reduced loads (the total mass discharged from the rivers), when adjusted for variations in streamflow conditions, averaging about 24 and 47 percent, respectively at the sites studied in this investigation.

The study, Nutrient, Organic Carbon, and Chloride Concentrations and Loads in Selected Long Island Sound Tributaries: Four Decades of Change Following the Passage of the Federal Clean Water Act, SIR 2015-5189, was conducted in cooperation with the Connecticut Department of Energy and Environmental Protection, and is available online.

AROUND THE WEB

"Living Shorelines" Highlighted in New UConn Website

Living shorelines are innovative and environmentally friendly alternatives to hard structures such as sea walls and bulkheads to prevent shoreline erosion and the risks from sea level rise. University of Connecticut's Center for Land Use Education and Research along with the Connecticut Institute for Resilience and Climate Adaptation and Connecticut Sea Grant, with material from NOAA, has recently published a new website that has examples of living shorelines for beaches and marshes.

An example of a living shoreline, a dune in Stonington, CT. Photo by David, Bergin, Emmett and Elliott through Flickr under Creative Commons license.

Two bacteria organisms were isolated from shell lesions from Long Island Sound lobsters; they are believed to be the main cause of shell disease. Photograph in the report, *Responding to a Resource Disaster: American Lobsters in Long Island Sound, 1999-2004*, by Andrei Chistoserdov by and Roxanna Smolowitz.

Maine Lobsters Beginning to Experience Shell Disease Found in LIS

In 1999, shell disease, attributed to warm temperature, was a major factor in a catastrophic collapse of Long Island Sound's lobster fishery. To this day there is no sign of recovery. In recent years, Maine, which has one of the largest lobster fisheries in the world, is beginning to experience shell disease as well. You can read what the lobster industry and the scientific and regulatory community in Maine are trying to do to prevent a collapse in an article in Hakai, an on-line magazine of coastal science and society.

Infographic Shows Why "Clean Water Rules"

This infographic from EPA's Clean Water Rules website is a great visual showing why it's important to protect the streams and wetlands that feed our rivers, lakes, bays, and coastal waters.

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