



SOUND UPDATE

NEWSLETTER OF THE LONG ISLAND SOUND STUDY

Long Island Sound Study Celebrates 20 Years of Progress with the Comprehensive Conservation and Management Plan

The passage of time is usually all that is needed to humble any prognosticator. So it was with some trepidation that I began to read the lead article of the fall 1993 edition of the Long Island Sound Study Update newsletter, entitled *Long Island Sound Study... Looking to the Future*. In it, the author, namely me, suggested that the key to implementation of the soon-to-be released Comprehensive Conservation and Management Plan was to make those responsible for developing the plan also accountable for its implementation. This meant coordination and communication among existing agencies and organizations, not creation of some new authority. Equally important was to continue the science and public engagement that formed the initial plan, actively adjusting and evolving how and what was done, while maintaining the commitment to act.

Less intimidating, and perhaps more instructive, was the newsletter's retrospective on the Long Island Sound Study offered by two individuals with a long history of involvement in management of Long Island Sound: Dr. Mickey Weiss, director of Project Oceanology and former co-chair of the Citizens Advisory Committee, and Dr. Donald Squires, director of the University of Connecticut Department of Marine Sciences and co-chair of the Science and Technical Advisory Committee.

[CCMP SIGNING EVENT at the SUNY Maritime College in 1994.](#)

LISS



Dr. Weiss looked back his involvement in a previous comprehensive plan for Long Island Sound conducted in the early 1970s by the New England River Basins Commission. "We were still shell-shocked from that experience," recalled Dr. Weiss, "because that was a very comprehensive study, took a lot of time, but basically never became implemented in a comprehensive fashion. We didn't accomplish much because our efforts were so diluted." Dr. Weiss offered another lesson. "When the work was done, everybody went home. It all disappeared... Above all else we need to put a mechanism in place to provide continued, coordinated management."

Dr. Squires emphasized the need for science to underpin planning. "Long Island Sound is truly an urban sea and warrants fuller investigation of the relationship between large human populations and an urban estuary... The most significant difference between the New England River Basins Commission Plan and the Long Island Sound Study has been the data accumulated by the recent study. For the first time in 40 years, the Sound was measured in a systematic fashion."

So clearly my thoughts were less a prediction of the future of Long Island Sound as they were reminders of lessons past, of the need to learn from them while applying new knowledge to an uncertain future. Now, 20 years later, the Long Island Sound Study, still a vibrant partnership to protect and restore the Sound, prepares to update the Comprehensive Conservation and Management Plan in 2014, setting a course for the next 20 years. Again, we start by looking back, with a timeline of select accomplishments and events since 1994. We can say with pride that the region has translated the plan created in 1994 year by year into actions that have resulted in cleaner water, healthier habitats, and a more aware and engaged public. The vision for the next 20 years is to sustain a healthy Long Island Sound for our way of life and economy in the face of climate change and continued population growth and development. With good science, open communication, and an involved and supportive public on our side, do you want to make any predictions?

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

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



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HOW TO READ THE TIMELINE

TO VISUALIZE how the Long Island Sound Study (LISS) is achieving its mission of restoring and protecting the Sound, this timeline provides a snapshot of various events and actions since the adoption of the Comprehensive Conservation and Management Plan (CCMP) in 1994. These events are further highlighted in the blue boxes, while other noteworthy environmental moments are called out separately.

Keep in mind that many important events occurred in the Sound prior to the 1994 CCMP, such as the fish kills in the Mianus River in Connecticut that occurred during the summers of 1987-93 due to hypoxic, or very low oxygen, conditions. In 1988, floatable debris washing up on area beaches contained a small number of syringes. The event escalated public concern with water pollution, floatable debris, and public safety.

You can learn more about these and many other events that took place prior to the 1994 CCMP on the LISS website www.longislandsoundstudy.net.



FISH KILLS (above) along with floatable debris (right) escalated public concern of the health of the Long Island Sound in the late 1980s and early 1990s.



1994

The LISS adopts the **Comprehensive Conservation and Management Plan (CCMP)** to restore and protect the Sound. The Long Island Sound Study Management Conference was charged with developing a CCMP for protecting and improving the health of the Sound while ensuring compatible human uses within the ecosystem. The plan identifies 232 specific actions to improve water quality, protect habitat and living resources, educate and involve the public, coordinate management efforts, and monitor progress. The CCMP was signed on September 26, 1994 in a ceremony attended by then Governor Mario Cuomo of New York, Lieutenant Governor Eunice Groark of Connecticut, and the U.S. EPA Administrator Carol Browner.

CCMP SIGNING EVENT at the SUNY Maritime College (left).



'94

1994: The Long Island Sound Water Quality Monitoring Program expands from 12 to 17 monitoring stations. In the summer months, up to 30 additional stations are sampled.



1997: A Multinucleated Sphere Unknown (MSX) outbreak in Connecticut oysters causes serious economic damage to the oyster industry.

'96

'97

1996

A partnership of federal and state agencies, municipalities, and local groups form the **Norwalk River Watershed Initiative (NRWI)** to work together to solve environmental problems using a watershed management approach. To equip municipal officials with tools for land use decision making, the LISS funds a series of 12 Nonpoint Education for Municipal Officials (NEMO) workshops, in six of the seven NRWI communities, attended by more than 200 stakeholders. The NRWI develops a Watershed Action Plan in 1998, and, by 1999, the LISS funds a NRWI Coordinator. The chief elected officials of the seven watershed towns sign an updated Action Plan in 2005 and again in 2011.

NRWI HOSTS a NEMO workshop on rain gardens (right).



SINCE THE NITROGEN TMDL ADOPTION IN 1994, THE NITROGEN LOAD INTO THE SOUND HAS REDUCED. AS OF 2012, 86% OF THE FINAL NITROGEN REDUCTION GOAL IS ACHIEVED.

1999: Lobster population in the Sound suffer a significant die-off. As a result, the Lobster Research Initiative subsequently identifies a variety of factors contributing to the deaths, with warmer temperatures in the Sound believed to be the driving factor.

2000

The Connecticut and New York State offices of the National Audubon Society conduct **Listen to The Sound Hearings** on what special places should be protected as part of a Long Island Sound "reserve system." At the hearings, citizens provide input on how to restore and protect coastal habitats and ensure public access to the recreational and natural areas of the shoreline. Since these hearings in 2000, some of the recommended sites are identified as inaugural areas in the LISS Stewardship Initiative as they have significant biological, scientific, and/or recreational value.

THE LISS IS WORKING to protect lands, like Hammonasset Beach, CT, for future generations (above).



'98

1998

Connecticut, New York, and the EPA adopt a **Nitrogen Reduction Plan** to reduce human sources of nitrogen pollution to the Sound by 58.5% by 2014. As part of this plan, a Total Maximum Daily Load (TMDL) is set for nitrogen. A TMDL establishes the maximum amount of a pollutant that may be introduced into a waterbody while ensuring that water quality standards are met. To attain the nitrogen TMDL, a variety of restoration options are being employed, such as upgrading sewage treatment plants with nitrogen removal technologies, controlling polluted runoff through stormwater best management practices, and smart growth policies. As of 2012, 86% of the final nitrogen reduction goal is achieved.

NITROGEN DISCHARGES have been decreasing due to wastewater treatment plant upgrades (right).



'99

1998

The LISS sets **Habitat Restoration Goals** to restore 2,000 acres of habitat and 100 miles of river for fish passage by 2008 through the Habitat Restoration Initiative. The Habitat Restoration Initiative follows through on recommendations made in the CCMP that the LISS develop a plan to restore the Sound's degraded coastal habitats. The Habitat Restoration Work Group is formed to coordinate these efforts and to strengthen partnerships among various agencies and organizations conducting restoration projects. Progress is being made toward reaching the habitat restoration goals since they were adopted in 1998. In May of 2000, partner agencies signed a MOU to work toward the goals of the Initiative and share the responsibility for reaching them.

HABITAT RESTORATION projects are successful in Rye, New York (right).



'00

1999: The U.S. Environmental Protection Agency requires regulated small Municipal Separate Storm Sewer Systems (MS4s) to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for their stormwater discharges. Each regulated MS4 is required to develop and implement a stormwater management program.

2001

To meet the TMDL commitments for nitrogen control, Connecticut, New York, and the LISS institute a **Nitrogen Trading Program** as an innovative, market-based way to meet water quality standards.

CONNECTICUT, with 79 Publicly Owned Treatment Works (POTWs) within the Long Island Sound drainage basin, is ideally-suited to implement an innovative nitrogen effluent trading program. In June 2001, Connecticut Public Act 01-180 establishes a Nitrogen Credit Exchange Program, and, in 2002, Connecticut Department of Energy and Environmental Protection issues a General Permit for nitrogen to include all 79 POTWs under that single authority. The first year of nitrogen trading was completed by 2003 in what is today a nationally recognized and cost-effective tool to improve water quality.

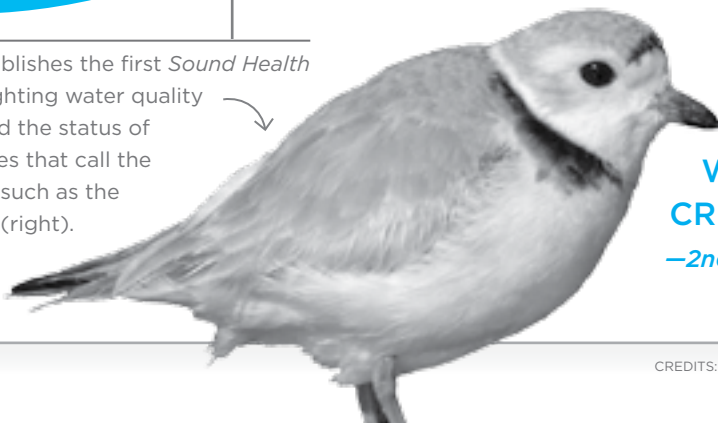
NEW YORK establishes innovative “bubble” permits that aggregate loading limits into tradable units. The bubble permits provide flexibility to dischargers to identify the most cost-effective mix of actions to achieve nitrogen reduction requirements.

MUNICIPALITIES are removing nutrient pollution by investing billions in wastewater treatment plant upgrades, including a new aeration tank, which helps remove nitrogen from sewage, at the Stratford Wastewater Treatment Plant in Stratford, CT (above), and a \$237 million project at Wards Island in New York City (left).



'01

2001: LISS publishes the first *Sound Health* report, highlighting water quality conditions and the status of living resources that call the Sound home, such as the piping plover (right).



2002

Connecticut Sea Grant develops the **Long Island Sound Mentor Teacher Program**, which New York Sea Grant adopts in 2010. The Long Island Sound Mentor Teacher Program engages certified educators to share their successful strategies for implementing Long Island Sound into existing curricula with their peers in professional development workshops. All workshop lessons and activities designed for use in the classroom or field are aligned to the content standards of the Connecticut/New York Science Frameworks and/or the National Science Education Standards, in a format that can be implemented into existing curricula. The Long Island Sound Mentor Teachers plan interdisciplinary sessions that include a participant field component within the Long Island Sound watershed.



FORMAL AND INFORMAL EDUCATORS attend Long Island Sound Mentor Teacher workshops to learn how to best incorporate the Sound into their classrooms while adhering to the State Science Frameworks (both images above).

'02

“THE WORKSHOP WAS TOP NOTCH! I WILL BE DOING WATER SAMPLING IN THE CREEK BEHIND OUR SCHOOL.”

—2nd grade teacher, Wading River, New York

2004: Stamford's innovative denitrifying wastewater treatment plant uses a method to optimize the breaking down of nitrogen with bacteria. This helps to reduce the load of nitrogen entering the Sound.

'04

2002

The LISS funds and the U.S. Fish and Wildlife Service conducts the first **Comprehensive Eelgrass Survey** in Long Island Sound to determine the status and trends of eelgrass beds over time. The U.S. Fish and Wildlife Service's National Wetlands Inventory Program (NWI) subsequently conducts eelgrass inventories for the eastern end of Long Island Sound. These surveys map eelgrass bed abundance, an indicator of good water quality. Excessive levels of nutrients such as nitrogen and phosphorous can stimulate the overgrowth of phytoplankton (algae) blooms that could block the energy from the sunlight that eelgrass needs to grow.

EELGRASS, *Zostera Marina*, is a rooted underwater grass that grows along the coast. Eelgrass meadow habitat provides food and nesting ground for fish and food for many migratory birds (below).



'05

2005

The **Long Island Sound Futures Fund** program is initiated through the EPA's Long Island Sound Office and the National Fish and Wildlife Foundation (NFWF). The Futures Fund supports projects in local communities that aim to protect and restore the Long Island Sound. It unites federal and state agencies, foundations and corporations to achieve high-priority conservation objectives. Funded activities demonstrate a real, on-the-ground commitment to securing a healthy future for the Long Island Sound. Since 2005, the Futures Fund has invested \$11.7 million in 285 projects in communities surrounding the Sound. With grantee match of \$24 million, the Long Island Sound Futures Fund has generated a total of almost \$36 million for projects in both states.

THE BRANFORD FISHWAY, a Futures Fund project, allows for fish, such as alewives, to migrate from the saltwater of the Sound to freshwater rivers, streams, ponds, and lakes to spawn every spring. Prior to the installation of the fishway, a 17-foot high dam blocked fish from swimming upstream for the past 100 years (above).



'06

2006

SHEFFIELD ISLAND'S lighthouse is owned and maintained by the Norwalk Seaport Foundation. Sheffield Island is one of the 25 islands that comprise the Norwalk Islands, an inaugural Stewardship Area. The island is owned by the Stewart B. McKinney National Wildlife Refuge. Visitors enjoy Sheffield Island every summer and fall by taking the Norwalk Seaport Foundation's ferry (above).



The **Stewardship Act of 2006** officially recognizes 33 inaugural stewardship areas around the Sound. These areas are identified by the Stewardship Initiative work group as places with significant ecological or recreational value throughout the Sound. The goals of the Stewardship Initiative work group are to conserve natural areas, increase access to the Sound, protect important habitats, and plan for multiple uses.

The Stewardship Initiative work group continues to focus on initiating projects to develop creative partnerships with local communities and landowners to protect and enhance the values of these special places. By promoting community involvement and using a collaborative approach, the Stewardship Initiative work group is striving to address threats and act on opportunities at the stewardship areas.

2007: No Discharge Area designation in Connecticut is established. A No Discharge Area is an area of a waterbody into which the discharge of sewage, whether treated or untreated, from all vessels is completely prohibited.

2008: Connecticut fertilizer regulation goes into effect for fertilizer that is distributed in nonpackaged form, also known as bulk fertilizer.

2008

The LISS establishes the **Sentinel Monitoring Work Group for Climate Change in the Long Island Sound Ecosystem** to examine the effects of

climate change in different areas of the Sound and its coast. Researchers and resource managers collect information to help the region understand potential climate change impacts and to

learn how to adapt to climate change. This multidisciplinary work group also provides early warnings of climate change impacts to Long Island Sound ecosystems, species, and processes to facilitate appropriate and timely management decisions and adaptation responses. These warnings will be based on assessments of climate related changes to a set of indicators/sentinels recommended by the technical advisory work groups.

MEASURING THE LOSS OR GAIN in tidal marsh sediments through conducting Surface Elevation Table (SET) monitoring (above).



2009

Connecticut and New York settle the Sound Cable litigation, establishing a fund for research on the sea floor of Long Island Sound. A steering committee for the fund establishes the **Long Island Sound Seafloor Mapping Program** and by 2011, develops a plan for mapping the seafloor in partnership with NOAA and academic institutions in the region. In 2012, a pilot project begins mapping an area in central Long Island Sound. A project of this size has many challenges, including a large geographic area, a diverse assemblage of collaborators, disparate past and present research activities, limited financial resources, and outcomes that are generally identified, but not explicitly defined. Multiple partners have come together to identify, define, organize and guide this effort.

SEDIMENT SAMPLES are collected to get a better understanding of the spatial variability of sediments in the Sound (below).



2011

Ribbed Mussel and Seaweed Pilot Projects in the Bronx River begin in Hunts Point in the South Bronx, New York to test the effectiveness of ribbed mussels and seaweed in removing nitrogen from the local environment. The ribbed mussels and seaweed are installed off a raft in the Bronx River. NOAA aquaculture scientists from the Milford Laboratory in Connecticut evaluate the effectiveness of the mussels at removing nutrients from the Bronx River, while researchers at the University of Connecticut helped to evaluate the effectiveness of the seaweed at removing nutrients. The harvest of cultivated aquatic animals and plants for the purpose of removing nutrients from the environment is referred to as "nutrient bioextraction." This project in the Bronx River is one of the first in the region to test the effectiveness of this innovative technology.

RIBBED MUSSELS found along the shore of the NOAA Milford laboratory (above).

THE NOAA SHIP, *Thomas Jefferson*, began the Seafloor Mapping Project of Long Island Sound in 2012.



'11

2011: New York designates the Long Island Sound a No Discharge Area.

2011

The Long Island Sound Study announces its **Action Agenda: 2011-2013**.

This agreement identified priority actions to implement the 1994 CCMP from 2011 to 2013 and set the stage for a more comprehensive update to the CCMP that is planned for 2014. The actions are structured to be specific and measurable, and will be tracked by the LISS. The Action Agenda is intended to produce results from the LISS and its management conference partners. It is organized around four themes: Waters and Watersheds, Habitats and Wildlife, Communities and People, and Science and Management.

The Long Island Sound Executive Steering Committee adopted the Long Island Sound Study Management Committee's Action Agenda with the following statement: *"Consistent with the CCMP, the Executive Steering Committee of the Long Island Sound Study endorses the Long Island Sound Study Action Agenda: 2011-2013. As a path forward to guide priority actions to improve water quality, restore habitat, conserve the land, maintain biodiversity, and increase opportunities for human use and enjoyment of the Sound."*

THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION

Commissioner Daniel C. Esty, Environmental Protection Agency New England Regional Administrator Curt Spalding, and New York Citizen Advisory Committee co-chair Nancy Seligson were some of the guests at the *SoundVision* tour in Greenwich, CT where the Long Island Sound Study Action Agenda was announced (above).



2013

SCIENTISTS SORT AND ANALYZE Long Island Sound Trawl Survey catch aboard CTDEEP's research vessel, the *John Dempsey*. The data collected during the Trawl Survey provide scientists with a better understanding of the biology of the Sound (above). *Long Island Sound: Prospects for the Urban Sea* (right).



The most comprehensive review and synthesis of scientific research of the Long Island Sound is published in **Long Island Sound: Prospects for the Urban Sea**. This book, part of Springer's Series of Environment and Management, is written by scientists, research managers, and historians that summarized nearly 1,500 research papers on what is known about the historic and recent trends of the ecological health of Long Island Sound. Six technical chapters describe the Sound's human history, geology, physical oceanography, geochemistry, pollutant history, and biology and ecology. A seventh chapter details the cross-cutting issues and the complex interrelationships between different environmental and socio-economic trends. The new and enduring challenges addressed in the book include climate change, coastal development and use conflicts, fisheries management goals, emerging contaminants, invasive species, and nutrient pollution.



12

Both Hurricane Irene (lower image), in **2011**, and Superstorm Sandy (top), in **2012**, result in water pollution and shoreline destruction along the coast of the Sound.

2012: New York fertilizer regulation goes into effect limiting the sale or use of phosphorus fertilizer.

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Revising the Comprehensive Conservation and Management Plan for the Next 20 Years

The Long Island Sound Study is updating its Comprehensive Conservation and Management Plan (CCMP). In 1994, the states of Connecticut and New York and the EPA approved the first CCMP for the LISS. This plan has served as the blueprint for improving or maintaining the health and vibrancy of the Sound for the past 20 years. Since then, our understanding of how the Sound functions has improved greatly, thanks to extensive citizen involvement, monitoring and scientific discoveries. Many emerging issues, including sea level rise, effects of Super Storm Sandy, planning for community and ecosystem resiliency, stormwater management, and aquaculture have come to the forefront of social and environmental issues in the Sound. Furthermore, the theory behind managing large ecosystems has evolved. Now the CCMP is being updated in order to incorporate this new knowledge and to make the CCMP effective over the next 20 years.

Successful development and implementation of the CCMP update requires input and feedback from partner agencies, advocacy groups, and citizens within the Long Island Sound watershed. This is being accomplished through social media outlets, a page devoted to the update on the LISS website, online public surveys, and public meetings. Updates on opportunities to get involved or to comment on the plan, as well as progress made, can be found on the Long Island Sound Study website and through Facebook at www.facebook.com/LISSplanupdate, and Twitter @PlanUpdate. We are planning public meetings early in 2014 to get the word out and to get your feedback. The first draft of the revised CCMP should be ready for review in spring 2014. We look forward to your involvement!

—Danna Truslow, CG, PG, Principal at WaterVision LLC, has been contracted by the LISS to assist in the revision of the CCMP

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

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