

Sound Update



Newsletter of the Long Island Sound Study

Spring/Summer 2006

Long Island Sound Study Priorities 1986-2006: Then and Now

by Paul Stacey and Karen Chytalo

According to the 1986 Long Island Sound Study (LISS) Annual Report, we were into our second year of “a five-year project” focusing on three major problems: 1) toxic contamination, 2) low dissolved oxygen concentrations, and 3) the health of fish and shellfish. There was some certainty that toxic contamination would be the predominant water quality issue in the Sound, and much of the funded “staff” (including the article authors and Howard Golub at the Interstate Sanitation Commission) effort was directed towards reviewing data. Hypoxia was breaking news based on early surveys by Dr. Don Rhoads of Yale University and Dr. Barbara Welsh of the University of Connecticut and soon elbowed toxic contamination to the sidelines.

The FY 1985 Work Plan was an ambitious one, given the half million dollars or so that LISS partners had to share. We simply had to create a comprehensive database; report on water, sediment, and biota toxic contamination problems in the Sound; supplement data by monitoring and field surveys (fortunately NOAA chipped in \$300,000 of effort in that area); develop pollutant loadings; identify trends; assess risks to consumers and the resource; and relate problems to sources, both point and nonpoint. In our spare time, we were to complete parallel tasks to flesh out the hypoxia problem while an energetic Eric Smith was leading the effort to compile fisheries catch statistics for the “Principal Fisheries of Long Island Sound, 1961-1985”, without LISS funding we might add. This fisheries report was a critical starting off point for the Living Marine Resource Committee, which was formed to assess how the resources were being affected by the identified problems,

especially hypoxia. The work of that committee laid the groundwork for the new marine dissolved oxygen criteria.

Not surprisingly, despite good progress, there were many tasks left undone from that initial work plan. As the focus shifted from toxic contamination to hypoxia, modeling, public involvement and stewardship, many other newly identified tasks have been completed, carrying us well beyond the five-year Congressional intent. Much of that initial data-gathering effort was fraught with difficulties – analytical tools were much poorer and computer technology was still fairly young. Thousands of observations were placed in the Ocean Data Evaluation System (ODES) after painstaking entry onto 5-inch floppies, only to have been deleted from

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Newspaper headlines in 1988 and 1989 about the Sound.

LISS celebrates 20 years.

In 1985 the Long Island Sound Study (LISS) was initiated by Congress to investigate water pollution degrading Long Island Sound. Two years later, Congress authorized the National Estuary Program, and LISS became a charter member. This issue of UPDATE celebrates these 20th anniversaries by looking at our “top 20” topics of the past two decades.

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Sound Update is published by the public outreach program to inform the public about issues pertaining to the Long Island Sound Study.

Message From The Director

In 1987 Cher won the Academy Award for best actress for her role in *Moonstruck*. Ray Bolger, better known as the scarecrow in the 1939 film classic *The Wizard of Oz*, passed away at the age of 83. But 1987 was also the birth of a new program to protect and restore estuaries – the National Estuary Program. Created by Congress through amendments to the Clean Water Act, the National Estuary Program, or NEP, was based upon the experiences and lessons from the already decade-old Chesapeake Bay Program.

What were those experiences and lessons? First, that national pollution control requirements were not adequate to protect and restore coastal water and living resources in the face of increased population and use of our coastal areas. Second, cooperative

partnerships were needed to analyze data, assess trends, characterize issues, and develop comprehensive restoration plans. Because each estuary has its own unique geography and ecology, the restoration plans for each would need to be crafted locally, involve all stakeholders, and be based on a thorough scientific characterization.

The Governor of any state could nominate an estuary as nationally significant and request that a management conference be convened to develop a comprehensive restoration plan for that estuary. The Long Island Sound Study, created two years earlier through a direct congressional appropriation, was required by the legislation to be given priority consideration by the U.S. Environmental Protection Agency (EPA) for acceptance into the program. A nomination package was quickly prepared by Connecticut and New York and a ceremony to formally designate Long Island Sound into the National Estuary Program was held at the U.S.

Merchant Marine Academy in Kings Point, New York on March 28, 1987.

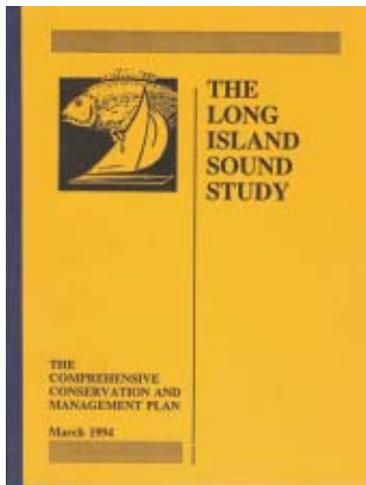
With 27 other estuaries around the country now designated along with Long Island Sound, the National Estuary Program has grown from its modest beginning. The program has served as a testing ground for new, innovative management techniques and approaches that have been applied to other areas. But perhaps the most important lesson learned is that, in many ways, developing a management plan to restore our estuaries is the easy part. The difficult part is making the hard choices and long-term commitment necessary to implement it.

The past 20 years have seen an information revolution, a stock market bubble (and crash), global trade, and international terrorism. On a more local and modest scale, this issue of the *UPDATE* highlights 20 events in the past 20 years that have shaped our understanding of and connection to Long Island Sound.



1. The Early Years of LISS

In 1985, Congress, prompted by a U.S. Environmental Protection Agency (EPA) study detailing poor water quality in Chesapeake Bay, provided funds to investigate environmental conditions at four other estuaries, including Long Island Sound. That same year, the Long Island Sound Study (LISS) began as a partnership that included the EPA, New York State, Connecticut, the National Oceanic and Atmospheric Administration, the Interstate Environmental Commission, the State University of New York, and the University of Connecticut. Researchers investigated the Sound for toxic contamination, pathogens, hypoxia (the condition of low levels of oxygen in waters that impair underwater habitats and harm aquatic life), and floatable debris. They quickly focused on hypoxia after three consecutive summers of severely hypoxic waters were observed in the western Sound from 1987 to 1989. In 1987 Congress amended the Clean Water Act, formally creating the National Estuary Program (NEP). Unlike traditional regulatory approaches to environmental protection, NEP partnerships such as the LISS target a broad range of issues and encourage communities to develop coordinated solutions. The issues LISS identified in its early years led to the creation in 1994 of a Comprehensive Conservation and Management Plan with a goal to restore and protect the Sound.



2. The \$5 Billion Sound

The importance of cleaning up the Sound is rarely questioned - but the costs have been. The Comprehensive Conservation and Management Plan identifies significant capital projects, such as upgrading sewage treatment plants that can cost communities tens of millions of dollars. Does the return on that investment justify the costs? In 1990, Dr. Marilyn A. Altobello, a University of Connecticut professor of economics, developed estimates of the economic value of the important water quality dependent uses of the Sound, such as fishing, boating, and beachgoing. The conclusion - the Sound's water quality dependant uses alone generated \$4.9 billion per year in direct and indirect economic value. The study demonstrated the value of Long Island Sound in economic terms and the importance of investments to preserve and restore Long Island Sound.

3. The Long Island Sound Office

The Long Island Sound Improvement Act of 1990 directed the U.S. Environmental Protection Agency (EPA) to continue the Long Island Sound Study (LISS) Management Conference and establish an office to provide support and monitor implementation of the Comprehensive Conservation and Management Plan (CCMP). The legislation codified EPA's role in coordinating and funding the implementation efforts of state, federal and local governments. The initial federal authorization was \$3 million per year. EPA established the office in Stamford, CT in 1991 and a satellite office in Stony Brook, NY in 1992. The Long Island Sound Office continues today to coordinate implementation of the CCMP and provide the public with access to staff and information.

4. Medical Waste on Long Island Sound Beaches!

The 1988 medical waste scare brought floatable debris to the public's attention and escalated concern for water pollution. The floatable debris washing up on area beaches contained a small number of syringes, which alarmed people into believing the Sound was awash with dangerous medical waste. Attendance at Long Island Sound beaches plummeted and seafood consumption dropped, resulting in an estimated loss to the Tri-State regional economy of \$1-\$2 billion. The medical waste, which in total filled about two shopping bags, was believed to have washed into the Sound from city streets or combined sewers.

Today, filtration systems help to capture floatable debris before they enter the Sound and in most areas combined sewers are separated so items flushed down toilets are captured at treatment plants. Legislation also increased oversight of medical waste disposal, including syringes. During the 80s and 90s, beach cleanups collected high numbers of plastic items like plastic bags and six pack rings. Today the number one item collected is cigarette filters, which are now made of plastic or a slowly degrading cellulose.



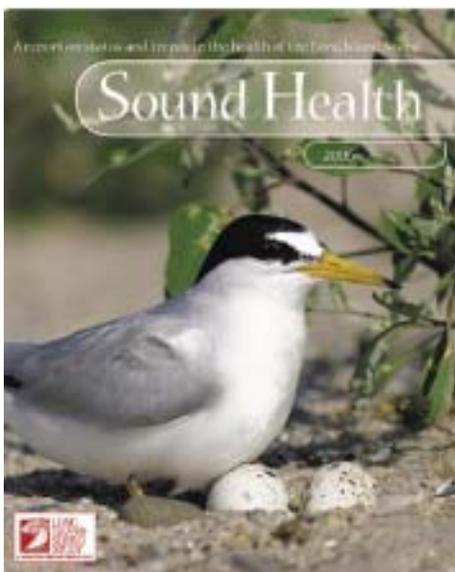
Medical debris, Newsweek August 1, 1988.

5. The Comprehensive Conservation and Management Plan

The Long Island Sound Study Management Conference was charged with developing a Comprehensive Conservation and Management Plan (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, improve understanding of the Sound, coordinate management efforts, and to 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.



Governor Mario Cuomo of New York, U.S. EPA Administrator Carol Browner and Lieutenant Governor Eunice Groark of Connecticut at the CCMP signing event at SUNY Maritime College.



6. Sound Health and Environmental Indicators

How do you determine the health of a waterbody? Resource managers focus on specific environmental conditions, such as dissolved oxygen levels of the water or the populations of key bird and fish species, to act as indicators of the broad health of the entire ecosystem. These environmental indicators measure progress and challenges ahead in restoring the Sound in much the same way economists use indicators, such as the unemployment rate or housing costs, to measure the progress of the economy. Resource managers and scientists have developed more than 40 specific indicators to track the Sound's health. The Study seeks ways to make this information public so citizens are aware of how the Sound is doing. Since 2001, many of these indicators are included in the Study's *Sound Health* report, a 16-page insert in Sunday newspapers. In 2006, copies of *Sound Health 2006* reached more than 450,000 homes throughout the Sound.



Bunker kill photo by Rick D'Amico.

7. Research Surveys Document Severity and Extent of Hypoxia

In the summer of 1987, scientists from the University of Connecticut found that summertime hypoxia in western Long Island Sound was more severe and widespread than anticipated. While hypoxic conditions were slightly less severe in 1988, waters west of Bridgeport and Port Jefferson had oxygen concentrations well below acceptable levels. In 1989, the LISS sponsored the most widespread and comprehensive survey ever undertaken to determine the health of Long Island Sound waters. University of Connecticut's Marine Sciences Institute sampled the eastern half of Long Island Sound, while Stony Brook University's Marine Sciences Research Center worked the western half and the Interstate Environmental Commission and New York City Department of Environmental Protection supplemented studies in the East River and the Narrows. These efforts provided essential data for hydrodynamic and water quality modeling that has provided insights to understand the severity and causes of hypoxia, and implement management programs to address the problem.

8. Finding NEMO?

Did you know that the Long Island Sound Study (LISS) helped give birth to NEMO? No, not the fish of recent animated movie fame, but the Nonpoint Education for Municipal Officials program. It all started in 1990 when the LISS funded development of a comprehensive land cover map of Connecticut using remote sensing and GIS technology. The mapping was a recommendation of the LISS Nonpoint Source Work Group to better understand the link between pollution and how we develop the land. In 1991, the LISS helped fund a pilot project focusing on three coastal communities in Connecticut to help them reduce nonpoint source pollution from land development. In 1992 the NEMO Program was created at the University of Connecticut as collaboration among the Cooperative Extension System, Connecticut Sea Grant, and the Natural Resources Management and Engineering Department. By 1995 NEMO staff was conducting workshops in other states to initiate NEMO programs there. The LISS provided additional funding in 1997 for a targeted NEMO program in support of the Norwalk River Watershed Initiative and in 2000 to help establish a New York NEMO program. Today NEMO has expanded into a national network of 31 NEMO programs in 24 coastal states and 6 inland states.



Old Saybrook, CT town officials reviewing town maps. Photo courtesy of the University of Connecticut's NEMO Program.

Preparing samples inside the RV Dempsey. Looking out to the stern and the sampler. Photo by Matt Lyman, CTDEP.



9. LIS Water Quality Monitoring Program

In January 1991 the Connecticut Department of Environmental Protection (CTDEP) initiated a water quality and hydrographic survey, continuing the monitoring begun in 1988 by Long Island Sound Study (LISS) university partners. These data are essential to understanding the status and trends in the Sound's water quality. In 1994, the program expanded from 12 to today's 17 stations, sampled monthly. In summer up to 30 additional stations are sampled during six to seven additional cruises to accurately assess summertime hypoxia. The survey has continued to expand using U.S. Environmental Protection Agency support from both LISS and the National Coastal Assessment, forming the core of CTDEP's Long Island Sound Ambient Water Quality Monitoring Program.



*Jeanette Brown at Stamford Plant.
Photo courtesy of Save the Sound.*

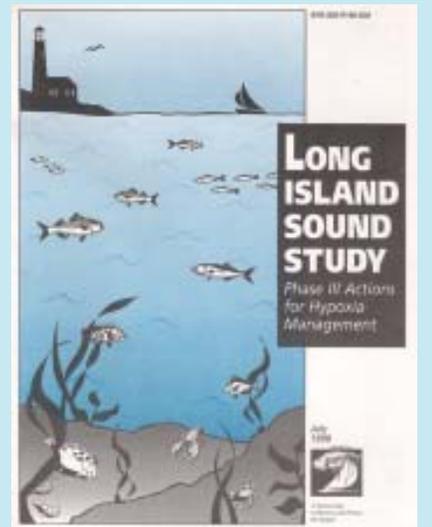
10. Stamford's Denitrifying Plant

In the early 1990s, Stamford developed an inexpensive way to reduce nitrogen in sewage treatment plants that became a model for other communities, demonstrating that nitrogen pollution could be reduced. Stamford's innovation, developed by Jeanette Brown, executive director of the Stamford Water Pollution Control Authority, involved a method to optimize the existing plant to improve a commonly used process to break down nitrogen with bacteria. The process requires the biochemical conversion of ammonia to nitrate, and then to a harmless nitrogen gas, in the plant's biological tanks. The process only cost a few thousand dollars, but it helped remove 65-80 percent of the nitrogen that would otherwise have discharged into the Sound, contributing to poor water quality.

In 2004, the U.S. Commission on Ocean Policy praised Stamford's innovative process to remove nitrogen, but by then Stamford, concerned about an expanding population that would increase the demands on the plant, decided it wanted to do more. The city undertook an upgrade and expansion of the plant and the plant is now in start-up. Once the plant achieves steady state it will be able to remove 90 percent of nitrogen entering the plant daily.

11. Phased Plan for Nitrogen Reduction

In 1990, Connecticut and New York agreed to the first steps in controlling nitrogen loads to Long Island Sound. A phased approach was adopted by the Long Island Sound Study (LISS) that froze sewage treatment plant (STP) discharges of nitrogen (Phase I) and committed to reduce STP discharges (Phase II) using low-cost upgrades and process modifications. By 1997 a reduction of 3,900 tons of nitrogen per year had been reached. In 1998, agreement was reached on Phase III, including a commitment to reduce nitrogen from New York and Connecticut by 58.5% from baseline levels by 2014. On April 3, 2001 the U.S. Environmental Protection Agency (EPA) approved the Total Maximum Daily Load (TMDL) for nitrogen discharges to Long Island Sound that was developed by Connecticut and New York. The TMDL formalized the agreement and made the reductions enforceable under the Clean Water Act. The phased nitrogen goals included a Phase IV to review out-of-state air and watershed sources of nitrogen and management actions coordinated by EPA. Phase V actions include several non-treatment technologies, such as aeration and tide gates on the East River.



12. Clean Water Jobs Coalition

On January 18, 1992, fear that the no-net-increase policy for nitrogen discharges might potentially lead to a moratorium on development brought more than 1,500 construction workers to the Long Island Sound Citizens Summit conference to stage a demonstration. But from that conflict, a unique coalition arose between environmental groups and construction trade organizations. The construction workers realized they have a common interest with environmental groups - major investments in clean water create large construction projects, produce jobs and strengthen long term economic growth leading ultimately to a cleaner Sound. The Clean Water/Jobs Coalition was formed to advocate for legislation, funding, and policies that improve the health of Long Island Sound while providing for construction jobs.



13. The Nitrogen Trading Program

- To meet Total Maximum Daily Load (TMDL) commitments for nitrogen control, Connecticut, New York, and the Long Island Sound Study (LISS) investigated "effluent trading" 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 was ideally-suited to implement an innovative nitrogen effluent trading program. In June 2001 Connecticut Public Act 01-180 established a Nitrogen Credit Exchange Program and in 2002 Connecticut Department of Environmental Protection issued 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. In New York, innovative "bubble" permits that aggregated loading limits into tradable units were established. The bubble permits provided flexibility to dischargers to identify the most cost-effective mix of actions to achieve nitrogen reduction requirements.

14. The Lobster Die-off of 1999

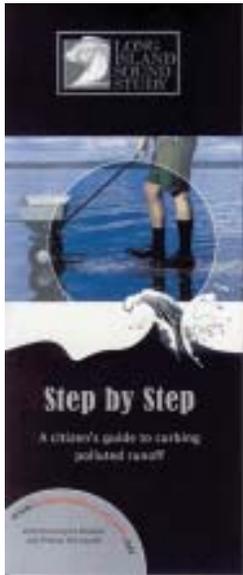
During the fall of 1999, the lobster population in Long Island Sound suffered a significant die-off, particularly in the western and central Sound. The bi-state commercial lobster landings west of Norwalk showed declines by as much as 99 percent. While the reductions in ports east of Norwalk in the central Sound ranged from 64 to 91 percent. In addition, lobsters in the central and eastern Sound were succumbing to a non-fatal shell disease. As a result of the ecological and economic impacts of the die-off, Congress, at the requests of the governors of New York and Connecticut, provided funds to investigate the potential causes of the disaster, and to provide economic relief to lobstermen losing their livelihood. The states also contributed to the efforts. The *Lobster Research Initiative* subsequently identified a variety of factors contributing to the deaths and disease, including above normal water temperatures, crowded conditions, low dissolved oxygen, and stress from pollutants. Warm temperatures were believed to be the driving factor. The threshold for lobsters is 20° C (or 68° F), but in the summer of 1999 bottom water temperatures were 1-2° C higher. It became likely that at the higher temperatures, the lobsters' immune systems were unable to mount a sufficient response to diseases, including paramoebiasis, a deadly parasitic disease. Today, resource managers are looking at regulations to help manage and sustain the fishery that survived.



Long Island Sound lobster survey. Photo courtesy of Connecticut Department of Environmental Protection.

15. The Norwalk River Initiative

In 1995 the Natural Resources Conservation Service (NRCS) and the Long Island Sound Office began to develop a model watershed management approach. By March 1996 the Long Island Sound Study (LISS), Connecticut Department of Environmental Protection, and NRCS mutually identified the Norwalk River watershed as a key area to test the watershed management approach. A Technical Advisory Group added municipal representatives in October 1996 and the next year the Norwalk River Watershed Initiative (NRWI) Committee was formed. To equip municipal officials with tools for land use decision-making, LISS funded a series of 12 Nonpoint Education for Municipal Officials (NEMO) workshops in six of the seven NRWI communities. The workshops were attended by more than 200 stakeholders. A Watershed Action Plan was successfully developed and, by 1999, a NRWI Coordinator was funded by LISS. The chief elected officials of the seven watershed towns signed an updated Action Plan, published in 2005. Today the NRWI is an active program building on the success of the Action Plan.



16. Polluted runoff

As municipalities upgrade sewage treatment plants to reduce nitrogen, more attention is being focused on other ways nitrogen enters Long Island Sound. Resource managers, for example, are interested in controlling animal waste and excess fertilizer that are carried away by stormwater during precipitation events into catch basins, and eventually the Sound. The stormwater runoff may contain nitrogen, pathogens from dog waste, motor oil, and sediments, thereby impairing water quality. In 2000, the U.S. Environmental Protection Agency required small municipalities to come up with management programs to control polluted stormwater runoff. Communities around the

Sound are developing control measures. In 2005, the Long Island Sound Study (LISS) office published a new brochure, *Step by Step: A citizen's guide to curbing polluted runoff*, to help municipalities inform their residents about the dangers of polluted runoff. LISS printed and distributed about 10,000 brochures to municipalities and community groups to provide to the public. In addition, several municipalities and organizations have requested an electronic copy of the brochure design template for their own printing. So far, an additional 40,000 copies have been printed by municipalities with at least another 20,000 copies anticipated.

Continued from Page 1.

the system along the way. The floppies may still be around, if anyone is interested.

Today's work plan is much more sophisticated, of course, as our evaluation and management tools, have improved. Both the LISS, through the passage of the Long Island Sound Restoration Act and creation of the Long Island Sound Program Office, and our understanding of the ecosystem have grown exponentially. While there is still the necessary emphasis on monitoring and research in the 2005 work plan, we've moved from evaluating crusty data to reviewing modern, quality assured data. Up-to-date data keeps us informed on how well the chemistry and biology of Long Island Sound are responding to our multi-million dollar management efforts. Efforts of a much broader LISS partnership are aimed squarely at improving the comprehensive "health" of the Sound, as articulated in each annual work plan. This improved direction is reflected in the flavor of the 2003-2004 LISS Biennial Report, which reports on the relatively new efforts to restore habitat, promote stewardship, conduct state of the art monitoring and research, and involve the entire LIS community in the process. These efforts nicely complement the longstanding concerns of hypoxia, toxic contamination, and ecosystem health that have been central to the LISS process.

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17. Seals, Striped Bass, and Ospreys

Improved environmental conditions, fostered by environmental laws and conservation measures, have resulted in increased populations of species that were barely seen in and around Long Island Sound 20 years ago.

Seals, for example, are making a recovery as a result of cleaner waters and the 1972 Marine Mammal Protection Act that restricts the killing of seals and other marine mammals. Seals are now commonly seen wintering in rock outcrops off the shore of Long Island Sound harbors and embayments.



Osprey photo by Don Reipe.

Another important recovery story is striped bass. Their populations in the Sound and throughout the Atlantic coast were severely low in the 1980s. Fishery management measures, including catch limits and minimum size restrictions, have helped the species recover, and make it a popular sport fish once again. In 2004, an estimated 1.5 million striped bass were caught (and mostly released) by recreational anglers in the Sound, according to the National Marine Fisheries Service. While the population has recovered, polychlorinated biphenyls (PCBs) in the fish tissue of striped bass remain a threat to human health, and as a result public health advisories in New York and Connecticut recommend limits on the amount of striped bass to eat. PCBs, once used in industry as an insulator, are a known animal carcinogen and possible human carcinogen. They do not break down easily and as a result they still persist in the Sound even though their use was banned in 1977.



Harp seal photo by Amy Ferland, The Maritime Aquarium at Norwalk.

Ospreys are another success story. Over a generation ago, their numbers had dwindled throughout the U.S. as a result of the birds ingesting DDT, a pesticide that caused the thinning of their eggshells. The birds of prey recovered gradually as a result of the ban of DDT in 1972. In Long Island Sound, its recovery has been helped by the efforts of volunteer birding groups who have erected wooden platforms along the shoreline. These platforms are used by ospreys for nesting sites, and have taken the place of tall trees that had been on the coast.



Long Island Sound Study Fish Trawl Survey, striped bass photo by Richard Howard.

18. Tidal Wetland Loss?!

In 1999 New York State Department of Environmental Conservation (NYSDEC) staff noticed that some protected intertidal marsh habitats seemed to be shrinking in size. The Connecticut Department of Environmental Protection also found evidence of tidal wetland loss around portions of the rivers that drain to the Sound. No clear causes were identified in either case. To try to address the problem, the Long Island Sound Study (LISS) sponsored a tidal wetlands loss workshop administered by NYSDEC. Invited experts from around the country attended the two day workshop. The workshop participants concluded that the causative factors in marsh loss were unknown but that multiple factors were likely at work. The participants agreed to regional collaboration and coordination of research, monitoring, restoration, and management activities. The LISS has supported research and plans to hold a follow up workshop to review the results.



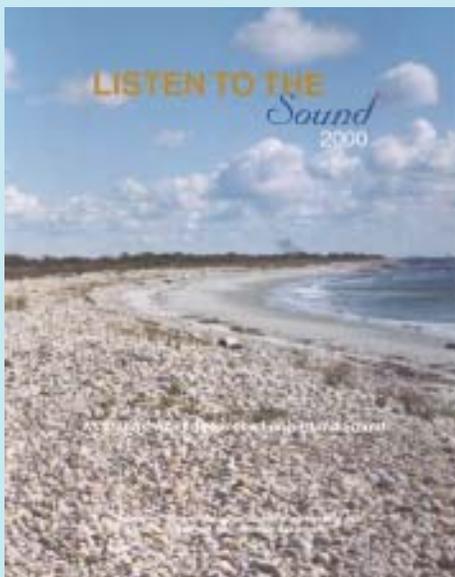
Hempstead Harbor Bar Beach restoration project. Photo by Matthew Graff.

19. Long Island Sound Habitat Restoration Initiative

In 1996, the Long Island Sound Study (LISS) Management Committee funded habitat restoration coordinators in the New York State Department of Environmental Conservation and Connecticut Department of Environmental Protection to develop a habitat restoration plan for the Sound. An interagency work group was formed to guide the effort and by 1997 the LISS Habitat Restoration Initiative held public meetings to solicit information on possible restoration opportunities. In 1998, the LISS adopted specific goals to restore at least 2000 acres of coastal habitats and 100 miles of riverine migratory corridors for fish passage within ten years. The interagency Habitat Restoration Team has identified and ranked 373 sites for potential habitat restoration, with 111 ranked as 'high priority'. A poster of sites was printed and distributed and updated in 2002. By the end of 2005, the Habitat Restoration Initiative had restored 573 acres of habitat and opened up 90 miles of streams for fish passage.

20. "Listen to the Sound" Hearings

In the late 1980s, as the Long Island Sound Study (LISS) Management Conference was planning for the environmental cleanup of Long Island Sound, individuals and citizens wanted to make sure their voice was heard. In 1990, the National Audubon Society launched *Listen to the Sound*, a series of 15 citizen hearings, attended by 1,500 individuals, which gave a voice to the public's yearning for clean, clear water for swimming, litter-free beaches, harbors accessible to the boating public, and the protection of abundant and diverse wildlife. The *Listen to the Sound* hearings became the impetus for a Long Island Sound network of citizen groups to work together to make recommendations and influence the LISS's Comprehensive Conservation and Management Plan (CCMP). Ten years later, in 2000, the Audubon chapters of New York and Connecticut convened a second set of *Listen to the Sound* hearings. The focus that year was on restoring and protecting coastal habitats, and ensuring public access to the recreational and natural areas of the shoreline. At the hearings, citizens made recommendations on what special places should be protected as part of a Long Island Sound "reserve system." Some of these recommended sites have since been identified as inaugural areas in the LISS Stewardship Initiative. By identifying places with significant biological, scientific, or recreational value throughout Long Island Sound, and developing a strategy to protect and enhance those special places, the Stewardship Initiative is implementing CCMP recommendations related to Living Resources & Habitat Management.



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