Sound Update

LONG ISLAND SOUND STUDY
A Partnership To Restore and Protect The Sound

Winter
Spring
2003

Message from the Director

On December 4, 2002, the Long Island Sound Study Policy Committee met at the Norwalk Aquarium in Connecticut to sign a new Long Island Sound Agreement. The vision for this Agreement is a Long Island Sound restored to ecological health by 2014, the 400th Anniversary of Adrian Block's Exploration of Long Island Sound. How do we make progress toward that vision? I believe it requires us to set clear goals and targets, and then challenge and engage everyone — federal, state, interstate, and local governments, businesses, schools and universities, and citizens — around the Sound to work together to meet them. This issue of UPDATE contains the Long Island Sound 2003 Agreement and articles explaining the background and significance of some of the targets the agreement contains.

Long Island Sound 2003 Agreement Ceremony at the Maritime Aquarium in Norwalk, Connecticut. Photo by Kimberly Zimmer.

Why pursue a Long Island Sound Agreement when we already have a Comprehensive Conservation and Management Plan (CCMP) for Long Island Sound? First, it reaffirms the strong, bi-state support for implementing the plan that was expressed by Governor Rowland and Governor Pataki when they signed the 1996 Long Island Sound Agreement. Second, no document is static. Using the CCMP as a blueprint, the LISS has continued to refine and add detail to commitments and priorities, most recently when adopting specific targets and time frames for nitrogen reduction and habitat restoration in 1998. The Long Island Sound 2003 Agreement will continue this process by setting additional targets and time frames for addressing toxic contaminants and pathogens, watershed management, preserving open space, protecting living resources and their habitats, and community involvement and education. Third, the 2003 Agreement focuses on results, defining desired outcomes in measurable, trackable terms. It will require the LISS to link what we do — cleanup actions, studies, monitoring, and public education — directly to achieving results and making progress toward our goals. This is what every successful organization strives to do.

One last thought. Commonly, public agencies are hesitant to commit to a vision and targets that they may not have the tools, authority, or funding to accomplish. For example, can federal/state agencies be fully accountable for reducing nonpoint source pollution so influenced by decisions at the community and individual level? It's a valid concern. But the worst response would be to set low expectations. Instead, the 2003 Agreement challenges us to build the partnerships and capacity neccessary to achieve real and measurable progress. Perhaps, ultimately, the 2003 Agreement is an opportunity to set a vision for Long Island Sound that can affect the conservation culture of the region.

Mark Tedesco

INSIDE

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

LONG ISLAND SOUND STUDY
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The Long Island Sound Study is sponsored by the States of New York and Connecticut and the US Environmental Protection Agency. The LISS Management Committee consists of representatives from the USEPA, NYSDEC, NYSDOS, CTDEP, NYCDEP, USDOI, Interstate Environmenntal Commission, NY and CT Sea Grant Programs, Technical Advisory Committee and Citizens Advisory Committee co-chairs.

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Long Island Sound Stewardship System

by Carole Nemore

The Long Island Sound Stewardship System work group was created in December 2001 to develop a management structure and program plan for creating a network of protected open spaces around the Sound. This work is needed to fulfill the Long Island Sound 2003 Agreement goal to:

By 2003, identify a coordinated strategy for developing a Long Island Sound Stewardship System that: a) promotes conservation of open space, landscapes, and ecosystems; b) improves access to the Sound; c) establishes a listing of existing open space properties and priorities property types for natural resource conservation and natural resource-based outdoor recreation; d) incorporates the sites; of outstanding and exemplary scientific, educational, or biological value indentified by Action IV.7; and e) promotes federal, state, local, and private funding for open space projects.

The work group is composed of representatives from city, county, and state governments of Connecticut and New York, US EPA and US Fish & Wildlife Service, Regional Plan Association, Save the Sound, Inc., academia, scientists, Sea Grant, and non-profit land trusts. Work group members have a wealth of experience and expertise in land use issues surrounding the Sound. Audubon New York is proud to serve as the facilitator for the work group.

The work group will build on the foundation laid by the *Listen to the Sound 2000 - Citizens' Agenda for the Long Island Sound*. In 2000 more than 600 citizens testified at hearings about the need to adopt permanent protection strategies for the land around the Sound in a comprehensive plan. Citizens identified more than 200 sites that they felt were valuable in order to protect the Sound and to provide public opportunities to appreciate this wonderful resource.

Long Island Sound is one of the nation's most urbanized estuaries with more than 20 million people, nearly 10% of this nation's population, living within 50 miles of the Sound. A Stewardship System is premised on the belief that permanently sustaining gains in water quality will require the protection and proper management of significant parcels of the uplands around the Sound. As stated in the Listen to the Sound 2000 report, "What's at stake is the very soul of the Sound and its waterfront communities, and the integrity of the Sound's ecological systems… Approximately 10% of its shoreline

The Stewardship System would include access and recreation sites. Photo courtesy of CTDEP.

remains undeveloped, and these lands are under tremendous growth pressure… The few remaining natural areas are also a critical element of the Sound's ecological health and vitality. The Sound's dwindling network of unspoiled uplands, dunes, bluffs, tidal rivers wetlands, flats, and other natural features are an integral part of the Sound's natural systems. They filter pollution and provide habitat for birds, mammals, and insets, and provide shelter for shorebirds, shell and fin fish. Destruction of these values could ripple through the ecological chain of the entire estuary, making the Sound less resilient to natural and manmade stress. After spending billions of dollars to restore the Sound's water quality, if these natural resources are lost, we could end up with a relatively clean but permanently impaired estuary, instead of a healthy, self sustaining one."

A Stewardship System can help people identify with the regional heritage of the Sound. A Stewardship System can link communities, attract more visitors, and promote economic activity that is environmentally compatible with the Sound.

There are other regional plans that can serve as models for the Stewardship System, including Natural Heritage Areas, the Hudson River Greenway, and the Chesapeake Bay Gateways.

A draft strategy for creating the Stewardship System will be available for public review in the Spring 2003.

Carole S. Nemore is the Director of Conservation for Audubon New York.

The LIS Stewardship System, Ecologically Speaking ...

by Don Henne

A popular issue for Long Island Sound these days is the creation of a system of reserves. In conservation biology, the term reserve relates to an area in which natural ecosystems are protected from most forms of human use (Hunter 1995). Webster's New World Dictionary defines reserve as "something kept back or stored up, as for later use or for a special purpose". In the context of Long Island Sound, the challenge of establishing a reserve system means conserving key resources while serving the lifestyles of the more than 20 million people who reside within fifty miles of the Sound.

Flax Pond, Setauket, New York. Photo by Kimberly Zimmer.

The Management Committee has expanded the original Long Island Sound Study recommendation for an ecological reserve system to include access and open space for conservation and natural resource-linked recreation. As mentioned in Carole Nemore's article, there is an established work group, with local, state, and federal expertise and dedication, integrating these issues for the Stewardship System.

The work group will incorporate the concept of an ecological reserve into the larger Stewardship System. The US Fish and Wildlife Service's role is to ensure that the best available knowledge and judgment about the ecology of the watershed are applied in moving the Stewardship System from concept to reality. We are assembling digital information about soils, land cover, land use, bathymetry, sediments, and other characteristics. Information about areas with rare species, significant fish and shellfish production, and unique habitats must be evaluated as well. We are collaborating on lists of representative plant and animal species and habitats that will be used to identify those areas that supply the Sound with biodiversity and productivity necessary to survive human-caused stress.

We also envision a process where individuals and resource agencies recommend areas known to have important ecological values. Undoubtedly, many existing parks, sanctuaries, and management areas will be eligible to be included. There are sites of academic study and restoration research that would be logical candidates. A Stewardship System in this densely-populated region will be very different from one where the focus is wilderness protection. We cannot ignore the past habitat loss and continued conversion of habitats to housing development, commercial facilities, and infrastructure expansion. We should recognize that some recreational uses can be compatible with resource conservation, particularly where controlled use areas serve to buffer or link more sensitive sites.

How would a Long Island Sound Stewardship System be managed? Remember, we have a variety of private, local, state, tribal, and federal land and water management authorities and rights to consider. We need an approach that produces new sources of funds to conserve and protect resources with little overhead. We need a cooperative that enhances communication among the resource stewards and shares best management practices and guidelines that are sensible. Outreach and education would enhance the understanding and visibility of the stewardship approach. This will help site managers compete more successfully for funding and help them increase public awareness about the role of the Stewardship System. Stakeholders have clearly supported the concept for a Stewardship System and the partnerships are in place to make it happen. We look forward to contributing to this challenging effort.

Long Island Sound 2003 Agreement goal: By 2004, identify sites of outstanding and exemplary scientific, educational, or biological value.

Donald Henne is Project Leader for the Southern New England - New York Bight Coastal Ecosystems Program, U.S. Fish and Wildlife Service.

Long Island Sound 2003 Agreement goal: By 2005, characterize the scope and rate of tidal wetland losses in the Sound and promote research that will determine to what degree accelerated sea level rise, sediment supply disruptions, or other factors are responsible for the loss of habitat that is critical to the Sound s birds, finfish, and overall productivity.

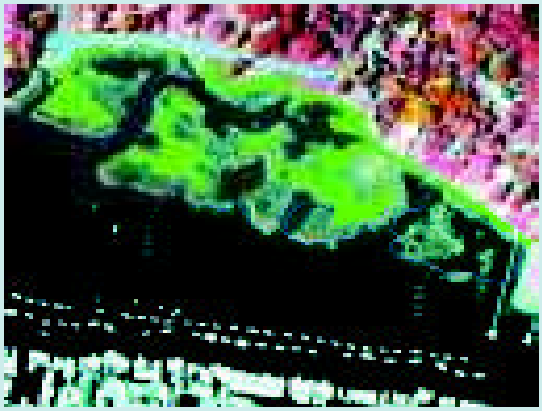
Importance of Documenting Tidal Wetlands Loss

by Fred Mushacke

The era of "fill and build" in tidal wetlands has passed in the states of Connecticut and New York, thanks to the promulgation in New York of tidal wetlands regulations (6NYCRR Part 661) and the Environmental Conservation Law Article 25 and, in Connecticut, the Tidal Wetlands Act of 1969. The value of tidal wetlands lies in primary food production, habitat, absorption of pollutants, and organic materials. The public awareness of these values has saved acres of tidal wetlands. Recently the New York State Department of Environmental Conservation (NYSDEC) conducted tidal wetlands trends analyses to determine the effectiveness of New York State's tidal wetlands regulations. The NYSDEC found that the regulations are highly effective; no detectable losses have occurred as a result of direct filling and building in tidal wetlands. In areas on the south shore of Long Island, such as Shinnecock and Moriches Bays, more than 250 acres of tidal wetlands have been gained through the upland migration of high marsh vegetation.

Losses have been detected, however, in areas such as Jamaica Bay and, to a lesser degree, certain focus areas along the north and south shores of Nassau and Suffolk Counties. Losses along the north shore range from 0.1 acre to 1.8 acres/year. In Jamaica Bay the losses are occurring at an unprecedented and accelerating rate of 44 acres/year. Wetland loss due to accelerated sea level rise was first brought to the Connecticut Department of Environmental Protection's attention in 1987. Since that time, numerous losses of low marsh habitat have been identified in western Long Island Sound, where the tide range is greatest and losses of more than 200 acres have occurred in the brackish marshes of the Quinnipiac River. They also estimate that losses are running as high as 60% since 1974 in specific locations.

Documenting these losses is paramount in determining the qualitative and quantitative status of wetland classes and rate of acreage loss. Enumeration of losses can help identify suspected or potential mechanisms of loss such as sea level rise, sediment budget disruption, wave action, wakes and wind generated erosion, and subsidence. The purpose is to focus research toward definitive, individual or synergistic causes and develop effective management plans. Early detection and thorough documentation (historic photography, for example) can lead to a more comprehensive understanding of causes and preparation for remediation, leading to a successful marsh restoration project and lower project costs. For more information see the web site: www.dec.state.ny.us/website/dfwmr/marine/twloss.html



Wetland boundaries from the Fivemile River in Connecticut for 1934, 1974 and 1995. All we can conclude from this data is that wetland losses began prior to 1974. Photo courtesy of CTDEP.

In Jamaica Bay there is little time for extensive research; wetlands restoration on a large scale is necessary because of unprecedented and accelerating losses. In Nassau and Suffolk Counties however, trends of focus areas is a "wake up call" to the potential of more widespread losses. Subsequently, a holistic trends analysis can be conducted to determine the extent and causes of tidal wetlands loss, if any, in the remaining areas of the counties, allowing time for funding, research, preparation of management plans, and remediation if needed.

Fred Mushacke is a Marine Biologist for New York State Department of Environmental Conservation.

Eelgrass Mapping

by Ron Rozsa

Scientists now recognize that rooted vascular flowering plants (i.e., submerged aquatic vegetation or SAV) such as eelgrass (*Zostera marina*) are one of the best indicators of estuarine water quality. Eelgrass beds are very productive and provide nursery functions for finfish and lobsters. The primary cause of SAV declines along the eastern seaboard is nitrogen enrichment from both point sources such as sewage treatment plants and nonpoint sources, especially septic systems. Eelgrass requires high amounts of light for growth and maintenance. Excessive nitrogen can reduce light availability by several means. Excessive production of phytoplankton, epiphytic algae on the leaf blades of eelgrass, and benthic algae all reduce light availability.

In the late 1980s, the Connecticut Department of Environmental Protection (CTDEP) determined that eelgrass once occurred throughout the Sound in the shallow nearshore zone, bays, and coves. A massive decline of eelgrass occurred in 1931 in the North Atlantic, the likely cause being a regional climatic event. By the 1950s, the beds of eelgrass in easternmost LIS and Fishers Island Sound had returned to their pre-1931 abundance. Bed growth and recovery in central and western Long Island Sound was poor, a likely indicator of nitrogen enrichment in the 1950s. CTDEP provided Dr. Charles Yarish at the University of Connecticut, Stamford, a Long Island Sound Research Fund grant to map eelgrass beds in 1992. That survey determined that the majority of beds were restricted to the shallow waters east of the Connecticut River and the westernmost bed was in Clinton Harbor, Clinton. Beds were absent in central and western Long Island Sound and there were no known populations on the north shore of Long Island. Furthermore, the bed in Clinton was described as declining.

It had been CTDEP's goal to periodically remap eelgrass beds and use bed trends as an indicator of water quality. As no academic institutions were interested in mapping eelgrass using aerial photography, no additional mapping was completed.

Realizing the importance of the mapping, the Long Island Sound Study has funded the CTDEP and New York State Department of Environmental Conservation to map the beds in eastern Long Island Sound. The US Fish and Wildlife Service's National Wetlands Inventory section in Hadley, Massachusetts, agreed to map beds from aerial photos. The Service hired a private contractor to photograph the study area in the spring of 2002.

These data will be compared and contrasted to the survey of Dr. Yarish to identify trends in eelgrass abundance. It will take a series of aerial surveys to have sufficient data to reliably identify trends. Trend data will be used to identify priority research areas to determine the underlying causes of declines and recommend appropriate management techniques to maintain or restore beds. Areas where expansion is occurring may signal water quality improvements and opportunities for implementing restoration projects.

Aerial of eelgrass beds (shown in black) in Connecticut. Photo courtesy Harry Yamalis.

Long Island Sound 2003 Agreement goal: By 2003, complete the mapping of eelgrass in the Long Island Sound area to determine trends. Continue to promote investigations and research into determining the impacts of nitrogen upon the degradation of aquatic habitats (i.e., loss of eelgrass, increases in macroalgae and benthic algae) in shallow embayments and bays in Long Island Sound.

Ron Rozsa is a Coastal Ecologist for Connecticut Department of Environmental Protection.

SURF S UP IS IT SAFE?

by Peter L. Sattler

Long Island Sound 2003 Agreement goal: By 2010, minimize chronic bathing beach closures in Long Island Sound due to pathogen indicators, with a goal of eliminating all chronic closures (closed for at least three days per year for at least three of the last five years).

For me the ultimate summer activity is going to the beach, swimming and body-surfing, shell collecting, hitting the sand, and enjoying a picnic lunch. With weekend traffic and weather enough to worry about, the typical beachgoer should at least be confident of water quality.

It is the responsibility of local health departments to determine the sanitary condition of the bathing waters. To the region's credit, the health of local citizens and visitors using area beaches is paramount. Water quality samples collected throughout the bathing season provide the necessary data to inform the public of potential health risks and the advisability of using public and private beaches after rainfalls or unplanned contaminant releases.

Monitoring programs and notification protocols have been in place for decades in this region. This portion of the northeastern United States has experienced fewer and fewer beach closings every year due to increased vigilance and measures to reduce floatable debris, manifest procedures for medical waste, elimination or reduction of combined sewer overflows and sanitary sewer overflows, and major expenditures by all levels of government to maintain infrastructure–sewer pipes, interceptors, and treatment facilities.

Because the criteria to determine the sanitary conditions of bathing beaches varies from state-to-state in the tri-state region, as well as across the nation, it is necessary to raise public awareness of a health issue that affects everybody. On a national level, new legislation was enacted on October 10, 2000, to strengthen protection for America's coasts and beaches by requiring coastal water quality standards and public notification when they are not being met.

The Beaches Environmental Assessment and Coastal Health (BEACH) Act amends the Federal Water Pollution Control Act (Clean Water Act) to (1) require states to adopt water quality criteria and standards for coastal recreational waters; (2) conduct a national assessment of potential health risks resulting from exposure to pathogens; (3) improve detection of pathogens harmful to human health; (4) improve public notice including signage that coastal waters are not meeting or are not expected to meet water quality standards; and (5) make publicly available databases of discrete coastal recreational waters that list whether such waters are part of a monitoring plan. The Environmental Protection Agency (EPA) has also issued guidance regarding how the states are going to implement EPA's bacterial criteria.

For the most part, the waters of Long Island Sound are designated for primary contact recreation and shellfish harvest, where approved. Not all waters are fully meeting water quality standards, and there is much room for improvement. There are advisories to suspend swimming following significant rain storms. There are shellfish beds in western Long Island Sound that have been closed since the 1930s. There are health advisories restricting the amount of local finfish consumed. The region has been a living landscape for nearly four centuries; burdens on the waters are those associated with heavy industrialization, major marine transport, and highly-congested urban centers. Through constant monitoring, maintenance of infrastructure, inter- and intra-agency communication, and legislative and public education, water quality can be maintained and improved.

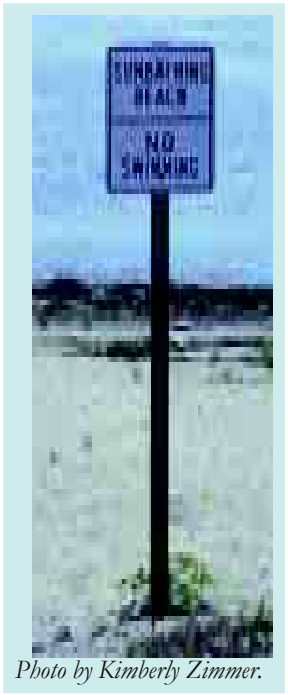


Photo by Kimberly Zimmer.

Peter Sattler is Principal Environmental Planner for the Interstate Environmental Commission.

Impervious Surface Cover as an Indicator of Water Quality

by Mel Cote and Chester Arnold

While sewage treatment plants and other "point" sources of pollution have received most of the attention from federal and state environmental agencies charged with restoring water quality in Long Island Sound, it's clear that we cannot meet the goals for reducing nitrogen and other pollutant loads without addressing polluted runoff and other "nonpoint" sources. Storm water runoff from urban and urbanizing areas is widely recognized as a major cause of water pollution in the Long Island Sound watershed and throughout the entire United States. There are three types of storm water impacts: (1) chemical contaminants deposited on the land are carried by runoff and infiltration to surface and groundwater; (2) physical increases in impervious surfaces raise runoff rates that, in turn, increase mass pollutant loadings and contribute to erosion and sedimentation; and (3) biological, and the combined chemical and physical alterations of watershed systems degrade aquatic habitat. Research over the past 20 years by the Center for Watershed Protection, the University of Connecticut (UConn), and others consistently shows a strong correlation between the imperviousness of a drainage basin and the health of its receiving waters, with stream health decreasing with increasing impervious coverage of the watershed.

Despite this knowledge, population and demographic data indicate that the rate of development, and with it the amount of impervious surface, is outpacing population growth.

To address this issue, the Long Island Sound 2003 Agreement set a goal to identify trends in the amount of impervious surfaces in the watershed and to minimize increases in impervious cover to a rate consistent with population change. There are numerous tools already available and many more under development to support this work. Nationally, the Center for Watershed Protection has developed a general watershed planning model, known as the impervious cover model (ICM), which predicts that most indicators of stream quality decline when watershed impervious cover exceeds ten percent, with severe degradation expected beyond 25 percent. The ICM has proven to be an extremely important tool for watershed planning, since it can rapidly project how streams will change in response to future land use, particularly for small watersheds where impervious cover ranges from 10-30 percent. The Center is currently conducting additional research to increase its confidence in the model's predictive capabilities for larger watersheds and for watersheds where impervious cover exceeds 30 percent.

Storm drain with debris from a recent rain storm.

Closer to home, the UConn has long been engaged in education and research programs that address impervious surfaces. UConn's work dates back to 1989, when the LISS commissioned the Laboratory for Earth Resources Information Systems (LERIS) to create a remote sensing-based land cover map of Connecticut and the New York portions draining to Long Island Sound, for the purposes of estimating nonpoint source nitrogen loading to the Sound. This led to the creation, in 1991, of Cooperative Extension's Nonpoint Education for Municipal Officials (NEMO) Project, which educates local land use decision makers about the connection between land use and water quality. To demonstrate this relationship, NEMO developed techniques for estimating impervious coverage from the land cover data, and for projecting future levels of imperviousness based on local zoning

Continued on page 8.

Long Island Sound 2003 Agreement goal: By 2003, Connecticut and New York will identify the amount of impervious surface in their respective portions of the watershed, based on available land use/land cover data. Through watershed planning efforts the states will encourage municipalities to adopt limitations on impervious surfaces, with an overall goal of minimizing increases in impervious cover a rate consistent with population change.

Mel Cote is Manager for the EPA New England Water Quality Unit. Chet Arnold is the NEMO Project Coordinator at the University of Connecticut.

Calander of Events

March 7, 2003

3rd Annual Lobster Health Symposium hosted by CT Sea Grant, contact Nancy Balcom (860) 405-9127 or Antoinette Clemetson (631) 727-3910.

March 13, 2003

Citizens Advisory Committee Meeting, Stamford, CT, contact Joe Salata for more information at (203) 977-1541.

March 16-20, 2003

National Estuary Program Meeting, Washington, DC, contact Mark Tedesco for more information at (203) 977-1541.

March 21-22, 2003

Volunteer Water Quality Monitoring Workshop, Stevens Institute of Technology, Hoboken, NJ, for more information contact Seba Sheavly at (757) 496-0920.

March 29, 2003

LISWA Conference, New York Botantical Garden, Bronx , NY, for more information contact Robin Kriesberg at 888 SAVE LIS.

Impervious Surfaces continued from page 7.

regulations. UConn's work on impervious surface continues on many fronts. LERIS researchers have developed a cutting-edge technique to directly extract accurate impervious coverage from the satellite imagery, and are in the process of conducting this analysis for the entire state of Connecticut.

The UConn Geospatial Technology Extension Program is working with LERIS, NEMO, and the NOAA Coastal Services Center on a customized GIS tool to enable local planners and others to estimate imperviousness by watershed with the click of a button. Another customized tool, using the Orton Foundation's Community Viz software, will allow planners to analyze the impervious coverage increases associated with individual subdivision plans. Finally, new information and tools developed will be incorporated into NEMO's ongoing educational programs for community officials. Based on the success of UConn's NEMO Project, 20 states around the country have established their own programs and participate in a NEMO National Network, including a Long Island project headed by New York Sea Grant.

The availability of these resources gives the LISS a head-start on meeting its new impervious surface goal, but it will require a concerted effort to pull together a plan for mapping the New York state portions of the watershed and then using the information to influence local land use decision making. The first step may involve developing a plan and securing funding to complete the mapping effort, followed by an outreach strategy to utilize this information and develop the ability to track increases in impervious surfaces as an environmental indicator.

2003 Agreement Signed

The Long Island Sound Study Policy Committee met on December 4, 2002 at the Maritime Aquarium in Norwalk. The committee signed the 2003 Long Island Sound Agreement to restore the Sound by 2014. You will find the signed Agreement and the 30 new goals inserted into this issue of the newsletter.

Left to right: Arthur J. Rocque Jr. Commissioner, CTDEP; Erin M. Crotty, Commissioner, NYSDEC; Robert W. Varney, Administrator, EPA New England; Jane M. Kenny, Administrator, EPA Region II.

Photo by Kimberly Zimmer.

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