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# UPDATE

Summer/Fall 2000

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## MESSAGE FROM THE DIRECTOR

In every edition of the *UPDATE*, we report on efforts to protect and restore Long Island Sound. It is important for us to assess, on an ongoing basis, just how effective these efforts have been. Is the water cleaner and safer to swim in? Are contaminant concentrations decreasing? Are habitats being protected and restored? Are the fish and shellfish more abundant (and safe to eat)? Just what is the state of the ecological resources of Long Island Sound? Under a new initiative, the Long Island Sound Study is working to develop indicators of the health of the Sound to answer these kinds of questions.

Everyone is familiar with the use of indicators. Inflation, unemployment rates, factory orders, new home construction, consumer spending, the gross domestic product- these are a few of the indicators that economists use to gauge the health of the economy and to guide management of it. We wouldn't think of trying to manage the economy without having this kind of publicly accessible and easily understood data on the economy's performance. We need a similarly developed set of indicators to gauge the health of Long Island Sound (which is at least as complex as the economy). The concept, borrowed from industry quality improvement initiatives, is that you can't improve what you don't measure.

To start with, the LISS is using data that are currently available from federal, state, and other databases. These data will be summarized, from a soundwide perspective, into a State of the Sound report. The indicators can provide insight into the effectiveness of the hundreds of millions of dollars being invested to restore the Sound. The first State of the Sound report will be

made available online through the LISS web site [www.epa.gov/region01/eco/lis](http://www.epa.gov/region01/eco/lis) this fall, along with a summary report printed in tabloid newspaper format.

Trying to succinctly summarize the health of a body of water 120 miles in length and with a surface area of 1,268 square miles is not without risk. Short sound bites (no pun intended) cannot capture the geographic variability of Long Island Sound. In addition, good news (reductions in nitrogen and toxic contaminant discharges) and bad news (a troubling die-off of lobsters) are part of the same complex story. But putting the pieces side by side can help us better appreciate the complexity of the Sound and force us to think about the links between them. I hope that an added value of the effort will be a discussion of the gaps in existing monitoring programs that prevent an adequate assessment of status and trends.

The Long Island Sound indicators highlighted in this newsletter are just a sample of the indicators that are being developed. Many other ecosystem restoration programs, including Chesapeake Bay, New York-New Jersey Harbor, Delaware Bay, and Puget Sound to name a few, are also actively developing and using indicators to gauge the health of their estuaries. The article by Dr. John Paul highlights the research supported by the EPA's Environmental Monitoring and Assessment Program (EMAP) to develop the science behind indicators and develop a comprehensive monitoring program to assess the condition of our coastal waters. Both Connecticut and New York are participating in that effort, which will further expand the basis for assessing the health of Long Island Sound.

*Mark Tedesco*

# CAC CORNER

by John Atkin

In 1998 the Long Island Sound Study's Habitat Restoration Initiative Team (LISHRI) developed a list of over 400 potential sites of restoration around the Sound. The list included all types of restoration, from tidal wetland restoration to beach and dune plantings, to installing anadromous fish passages in riverine migratory corridors.

One example of efforts being pursued is an anadromous fish passage on the Rippowam/Mill River in Stamford, CT. This project, coordinated by Save the Sound, with input from a steering committee, will allow the restoration of ancestral runs of anadromous fish by passing over the first blockage, the Main Street Dam in downtown Stamford. This will open up seven miles of river and directly benefit several fish species, particularly alewife, blueback herring, and sea-run brown trout. It could also potentially benefit sea lamprey, and would provide secondary benefits to other fish and wildlife such as striped bass, bluefish, osprey, waterfowl, and wading birds that feed on the species using the fish passage.

The project is funded by NOAA, The Pew Charitable Trusts, and Trout Unlimited. The steering committee, still in formation, includes: the City of Stamford, CT DEP, NOAA/National Marine Fisheries Service Restoration Center, SoundWaters, the Environmental Council of Stamford, and the League of Women Voters of Stamford.

The public will be able to view the fishway as part of Stamford's Mill River Corridor Revitalization Plan, and learn more

about the river and its living resources through interpretive signs on the history of the river and dam, the biology of the river and the targeted species, and the purpose of the fishway. Over the next 10-12 months the design and permitting will take place with construction slated for the summer of 2001.

The States and New York City have been very active in scores of habitat restoration projects around the Sound, such as this fishway, large tidal wetland restorations, beach and dune plantings, and others. However, funding as always, remains a major impediment to more of these projects being completed. LISHRI set a goal of restoring 2000 acres and 100 river miles by 2008, a goal that can only be attained, and hopefully surpassed, by finding more funding.

Pending before the US Congress are two critical pieces of legislation that would provide funding to the states to enable them to embark on more restoration projects. One, the Estuary Bill sponsored by the late Senator John Chafee (RI) has already passed the Senate unanimously, and is awaiting House action. The bill would provide tens of millions of dollars annually for estuarine restoration projects across the country. The second, the Conservation and Reinvestment Act (CARA) bill, would provide approximately \$100 million to New York State and \$25 million to Connecticut for coastal land acquisition and restoration projects. If these two critical acts pass in this session, both the states of New York and Connecticut would benefit and be able to restore more vital habitat within the Sound's ecosystem. *John Atkin is the Connecticut co-chair of the Citizen Advisory Committee and is the president of Save the Sound, Inc. in Stamford, CT and Glen Cove, NY.*

## June 8 CAC Meeting Bridgeport, Connecticut

The Long Island Sound Study (LISS) Citizens Advisory Committee (CAC) met at the Bridgeport Regional Vocational Aquaculture School. The CAC received a presentation from Anita Flanagan on the proposed 24-inch diameter Iroquois gas pipeline extension going from Northport to the Bronx along the bottom of the Sound. The CAC also identified 6 priority issues from the Tracking and Monitoring report to focus on in 2000/2001.

The CAC meets quarterly on the second Thursday of March, June, September, and December at alternating New York and Connecticut Long Island Sound communities. Meetings are open to the public. The CAC provides advice to the LISS management conference partners and communicates issues of concern on LIS to their organizations' membership.

## Save the Date

The next CAC meeting is scheduled for Thursday, September 14, 2000 at Pfizer in New York City. Call the EPA Long Island Sound Office at 203.977.1541 or check the LISS web site at: [www.epa.gov/region01/eco/lis/calendar.htm](http://www.epa.gov/region01/eco/lis/calendar.htm) for the schedule of 2000 CAC meetings.

## Coming Soon!

In recognition of the 15th anniversary of the Long Island Sound Study, the Long Island Sound Study partners, the Connecticut DEP, New York DEC, and the EPA are preparing the first State of the Sound report.

*Sound Health 2000 - Status and Trends in the Health of Long Island Sound* draws from data provided by several agencies, universities, and municipal programs. It will provide a snapshot of current conditions and trends in the Sound and draw information collected from key indicators. This is a summary of a more comprehensive indicator report which will appear on the Long Island Sound web site [www.epa.gov/region01/eco/lis](http://www.epa.gov/region01/eco/lis) later this year. It will highlight water quality conditions in the Sound, the status of its living resources and trends in land use and development, helping us to assess the effectiveness of efforts to deal with issues such as nitrogen pollution, sediment contamination, habitat restoration, and the health and abundance of living resources.

The Long Island Sound Study partners believe that the Sound and many of its living resources have come a long way since the 1970s. We hope the release of *Sound Health 2000* will pique the reader's interest in further exploring Long Island Sound and its watershed and in making changes in personal habits and practices that will further help the clean-up effort.

The following pages have just a few of the indicators that will be in *Sound Health 2000*. If your organization has more information on any of these indicators, please contact Rosemary Pastor at 203.977.1541 or by E-mail [pastor.rosemary@snet.net](mailto:pastor.rosemary@snet.net)

## Indicators and Estuarine Monitoring

by Dr. John Paul

When the topic is monitoring, discussion is almost certain to move to indicators. This term is commonly used but is sometimes misunderstood. In its simplest form, an indicator is a sign or signal that relays a complex message in a simplified or useful manner. As applied to estuaries such as Long Island Sound, an indicator reflects physical, chemical, and/or biological attributes of the estuarine condition. This seems quite straightforward until we focus on telling us something about estuarine condition. How do we know that our indicators are giving us the information we think that they should?

US EPA's Office of Research and Development (ORD) has developed a technical reference document to help researchers and environmental managers in the selection and development of ecological indicators for monitoring environmental condition. The draft document, *Evaluation Guidelines for Ecological Indicators*, is an expansion upon previous efforts by ORD's Environmental Monitoring and Assessment Program (EMAP) to advance the science of environmental monitoring and assessment. It presents a standardized set of considerations for ecological indicators. Copies of this document can be obtained through [www.epa.gov/html/pubs/resdocs](http://www.epa.gov/html/pubs/resdocs).

The National Coastal Assessment (also known as Coastal 2000) is a five-year effort led by US EPA's ORD

and is a partnership with the coastal states. Its purpose is to evaluate the assessment methods ORD has developed to advance the science of ecosystem condition monitoring. This program is intended to survey the condition of the Nation's coastal resources (estuaries and coastal waters) by creating an integrated, comprehensive coastal monitoring program to assess coastal ecological condition. The program initiated in the years 2000-2001 is for estuarine waters. A common set of estuarine indicators are measured by the program partners, allowing for comparison of conditions at various spatial scales.

The foundation for Coastal 2000 is EMAP's indicator program and process for sample site selection and the ongoing estuarine monitoring conducted by the states. An example of a local state program is the Connecticut Department of Environmental Protection's Long Island Sound Ambient Water Quality Monitoring Program. Coastal 2000 will supplement the water quality monitoring at the state's sampling sites with samples for sediment and fish quality.

The Coastal 2000 strategy is based upon four types of indicators:

**Biotic Condition Indicators:** These are characteristics of the environment that provide quantitative evidence of the status of ecological resources and biotic integrity. These measurements quantify the

integrated response of the estuarine resource to individual and multiple stressors. Examples include chlorophyll-*a* concentration, community parameters for benthic organisms and fish and shellfish, incidence of gross pathology or disease, and contaminants in organisms.

### **Exposure Indicators:**

These provide measures of the magnitude and extent of pollution exposure. Measures of potential pollutant exposure include physical, chemical, and biological parameters that quantify pollution exposure, habitat degradation, or other causes of degraded ecological condition. Examples include dissolved oxygen concentrations, sediment toxicity, and sediment contaminant concentrations.

### **Habitat Indicators:**

These describe the physical, chemical, and biological conditions of sample sites and provide basic information about the overall environmental setting. Examples include depth, salinity, temperature, sediment characteristics (such as grain size and moisture content), pH, and water clarity. Habitat indicators are frequently used to normalize exposure and response indicators across natural environmental gradients. For example, the number of species are normalized across salinity gradients.

### **Stressor Indicators:**

These are economic, social, engineering, and landscape measures that can be used to estimate pollutant loadings to

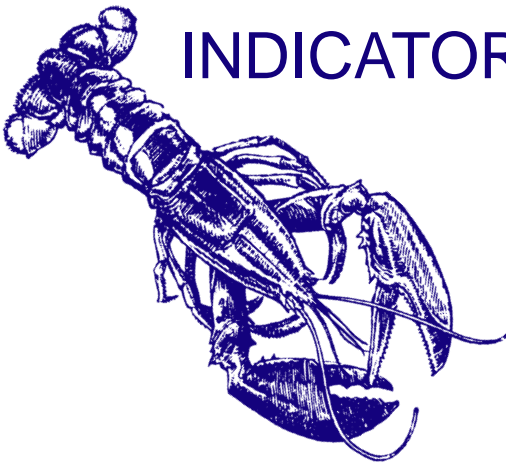
estuarine waters and to identify their sources. Examples include land use patterns, point source discharges, freshwater inflows, and pesticide use across a watershed.

The states of Connecticut and New York are collecting samples from Long Island Sound this summer for a suite of indicators of water quality, sediment quality, and biota quality in conjunction with Coastal 2000. These indicators will be evaluated and reported on for the Sound by the states and EPA ORD within the next year or so.

*Dr. John Paul works at the Office of Research and Development for the US Environmental Protection Agency.*

*The material in this article was drawn from the draft documents "Evaluation Guidelines for Ecological Indicators" and "Coastal 2000 - A National Coastal Survey, Strategy for Implementation (2000-2004)."*





# INDICATOR: L o b s t e r H a r v e s t

## status

Until their recent die-off, the American lobster was one of the most important and valuable seafood products harvested in New York and Connecticut. Long Island Sound's lobster fishery was the third largest lobster market in the country behind Maine and Massachusetts. Earning a dockside value in New York alone of over \$29 million in 1998 according to National Marine Fisheries Service statistics, the lobster catch was greater than the value of all finfish combined in 1996, 1997, and 1998.

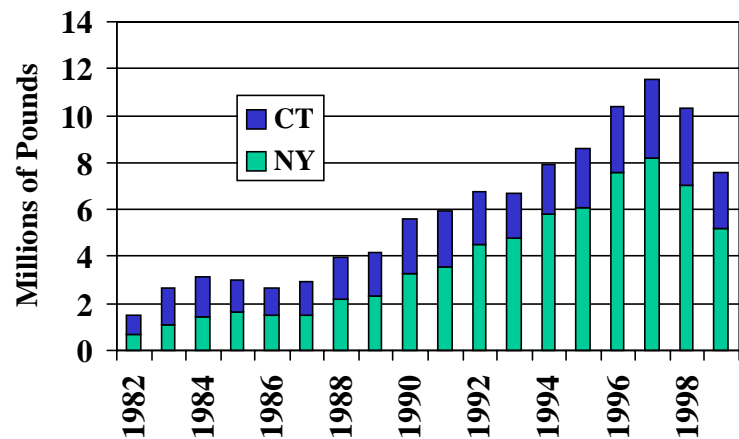
The current state of New York-Connecticut's Long Island Sound lobster industry may be in question, though. For the third time in the past two years, diseases that kill aquatic life have ripped through important underwater crops adjacent to Long Island. In 1997 and 1998, it was oysters and clams. In 1999, it was lobsters.

## trends

Lobster fishermen and dealers began reporting dead and dying lobsters in their lobster pot gear in the western half of Long Island Sound in mid-September of 1999. By November it was clear that the die-off was unprecedented in scope and catastrophic to the lobster fishery. To make matters worse, over the past few years, the incidence of shell disease, in which bacteria forms a black mass that rots through the shell, had increased in lobsters from eastern Long Island Sound. The situation caused the US Secretary of Commerce to declare the Long Island Sound lobster fishery a disaster in January 2000.

Scientists are unsure what's causing the lobsters to die in the western Sound, but University of Connecticut scientists found that the affected lobsters all had the same protozoan parasite called *Paramoeba*. Part of solving the "big picture" in the lobster mystery will be to research whether changes in weather or climate conditions such as storms or average temperature fluctuations, pollutants in the water or sediments, hypoxia (lack of oxygen), dietary change, or management practices such as dredging could have weakened the animals so that they became susceptible to disease and parasites. At this time, the long-term effect on the surviving lobster population of the losses due to *Paramoeba* and shell disease is not known, nor is the effect on the structure of the Long Island Sound ecosystem as a whole. Workshops were held in April and May to determine research priorities and to document the lobstermen's observations during the die-off. For more information visit the web site [www.seagrant.sunysb.edu/pages/LILobsters.htm](http://www.seagrant.sunysb.edu/pages/LILobsters.htm)

## Lobster Landings



Note: The 1999 lobster catch for New York is a projected number and represents a decrease of 1-1.5 million pounds from the 1998 catch. The bulk of the decline occurred in the western Long Island Sound.

## Money to Research the Cause and Support the Fishers

The government has responded to the lobster die-off in Long Island Sound. In the near term, the US Environmental Protection Agency has provided a \$121,000 grant to monitor the Sound and Dr. Richard French was awarded \$98,097 from the Long Island Sound Study to research diseases in lobsters. In addition, Congress has appropriated \$13.9 million in assistance, of which, \$7.3 million will go to the harvesters to pay off boat loans, replace equipment, and make transitions to other jobs, and \$6.6 million will go for more comprehensive research. Governor John G. Rowland of Connecticut has also announced \$1 million to study the recent lobster die-off. These funds will support a Long Island Sound Research Fund to document water quality conditions and to study lobster abundance and health during the fall of 2000. The Marine Sciences Research Center at the State University of Stony Brook received \$1 million from the New York State Legislature to establish a Long Island Marine Disease and Pathology Research Consortium. The Center will provide animal disease research on fish and shellfish and work closely with the State Department of Environmental Conservation.



# INDICATOR: Coastal Bird Abundances

While gulls may be the most obvious coastal birds, numerous other species are also found along the shore, taking advantage of Long Island Sound's abundant animal and plant life. Bird populations in and near the Sound vary seasonally. In winter, birders delight in large concentrations of waterfowl and other water birds. Mergansers, scaup, scoter, mallards, black ducks, loons, cormorants, and Canada geese are among

the waterfowl commonly seen along the coast in winter.

Spring brings the annual migration of a wide variety of plovers, terns, sandpipers, waterfowl, and songbirds. During the summer months, birds are busy tending their nests and young. Fall, once again, brings masses of birds migrating along the coast on their way to southern wintering grounds.

## Osprey (*Pandion haliaetus*)

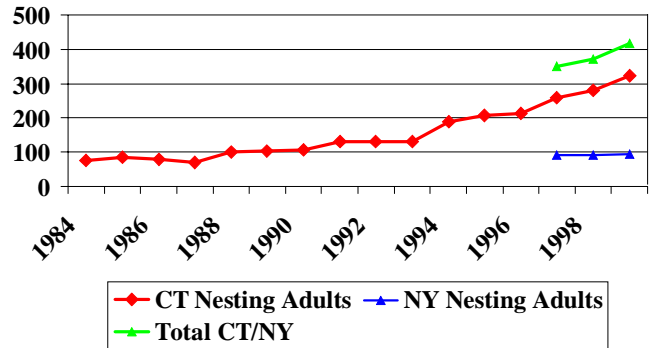
### status

Ospreys are fish-eating birds of prey that live throughout the world. The availability of fish, water conditions, and health of the environment directly contribute to the health, reproduction, and nesting success of the Sound's osprey population. As predators that are high in the food web, ospreys are important indicators of the health and integrity of the Sound.

### trends

The osprey population around Long Island Sound fell sharply during the 1950s and 1960s due to effects of pesticides, particularly DDT. Since the ban on DDT during the 1970s and the placement of nesting platforms in wetlands all along the Sound, the osprey population has been making a recovery. From 1997-99 osprey nesting sites have continued to increase.

Osprey Nesting Adults



## Piping Plover (*Charadrius melodus*)

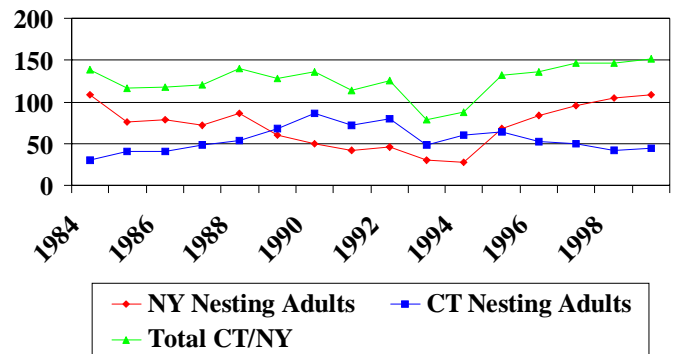
### status

Piping plovers are thrush-sized shorebirds that nest on beaches, often with least terns. Nests are frequently destroyed by human intrusion, storm tides, and predators. Also important is the productivity of the piping plover nesting sites. Sometimes piping plovers will occupy a potential nesting area, but fail to reproduce. Typical causes of failure of piping plover pairs to successfully mate include: human disturbances, storms, and predation. The piping plover was given federal threatened species status in 1986.

### trends

Since protection and monitoring efforts began in 1984, nesting success has improved, resulting in more returning adults in subsequent years. The slight decline in nesting birds in Connecticut might be a function of the birds' mobility: the population has been increasing *regionally*, suggesting that some of Connecticut's plovers might have moved to other locations.

Piping Plover Nesting Adults



## Least Terns (*Sterna antillarum*)

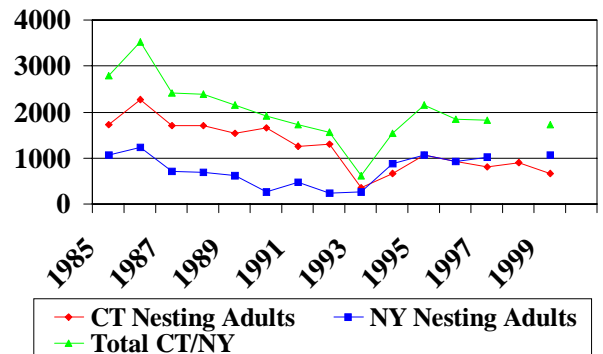
### status

The least terns is likely to be seen in the Sound from May to early August. They were hunted to near extinction for the hat trade in the 1800s. The numbers rebounded after hunting was banned. More recently, disturbances, loss of habitat, and habitat degradation are affecting the population of least terns in the Long Island Sound area.

### trends

The least tern population has fluctuated during the last fifteen years with relatively lower numbers present during the late 1980s/early 1990s. Least terns have been on the rebound from an all-time low of 610 birds in 1993.

Least Tern Nesting Adults



# INDICATOR: Contaminant Trends

Potentially toxic substances, both naturally-occurring and human-generated, can cause adverse ecosystem or human health risks when exceeding certain concentrations. They include trace metals (chromium, copper, lead, mercury, silver, arsenic, zinc) and organic compounds such as PAHs (polycyclic aromatic hydrocarbons), PCBs, and pesticides (such as DDT, chlordane, and atrazine). These toxic chemicals enter Long Island Sound from sources such as manufacturing processes, household cleaning and pest control products, automobile exhausts, and emissions from fossil fuel power plants. Stormwater pipes carry contaminants washed from roads, parking lots, disturbed land, and construction sites. Rivers and streams transport contaminants from the watershed into Long Island Sound.

Many contaminants become associated with particles suspended in the water. These particles then settle to the bottom, accumulating the contaminants in higher concentrations in the sediments than in the overlying waters. Different areas accumulate sediments and associated contaminants differently. Areas of weak currents, large sediment inputs, and little sediment reworking accumulate more contaminants. Areas where strong bottom currents stir

## Contaminant Levels in Mussels status

Since 1986, NOAA National Status & Trend's (NS&T) Mussel Watch Program has monitored chemical contaminants in bivalve mollusks. In Long Island Sound, the blue mussel is an excellent organism for this type of monitoring. Blue mussels live on the sea bottom, are immobile, and filter large volumes of water. Therefore, it is an excellent indicator of water and sediment quality near the sea floor. Concentrations of chemicals in mussels are related to the levels of chemicals in the water that they inhabit and in the food that they filter from the water. When chemical concentrations increase or decrease in the water and in food sources, concentrations increase or decrease in mussels.

## trends

On the whole, the levels of metals (copper, nickel, lead, and zinc) and organics in mussels have declined. Contamination is decreasing at many

up the bottom tend to have less sediment accumulation and lower contaminant concentrations.

As particles settle to the bottom of the Sound, they create a reservoir of contaminants that can harm marine life living or feeding near sediments. Fish and shellfish can, in turn, accumulate toxins, posing a human health risk. Public health advisories are published to inform consumers, especially those in a high risk group, about potential risks from eating large amounts of specific types of seafood that contain higher chemical levels.

Humans have used Long Island Sound as a resource and a disposal site since industrialization began. Measurable quantities of contaminants exist in sediments dating back to the mid-1800s. Quantities for some have increased over time, new contaminants have been added, and amounts of some have decreased in response to regulatory action. Today, the major sources of toxic chemicals to Long Island Sound are municipal sewage treatment plants (STPs), industrial discharges, and urban stormwater. The major source of mercury is atmospheric deposition. Federal and state programs strive to reduce toxic chemical discharges to the Sound and to minimize the toxicity of effluents from sewage treatment plants and industries.

sites for chemicals whose use has been banned (chlordane, DDT, PCBs), or severely curtailed (cadmium).

The LISS continues to work on reducing toxic effluents to the Sound from sewage treatment plants and industries. This effort is resulting in decreases in levels of many metals and organic contaminants in sediments and living resources of Long Island Sound.

Site	As	Cd	Cu	Hg	Ni	Pb	Se	Zn	Cdane
Connecticut River									
New Haven									
Housatonic River									
Sheffield Island									
Mamaroneck									
Throgs Neck									
Hempstead Harbor									
Huntington Harbor									
Port Jefferson Harbor									

As=Arsenic, Cd=Cadmium, Cu=Copper, Hg=Mercury, Ni=Nickel, Pb=Lead, Se=Selenium, Zn=Zinc, DDT=Total DDT, Dield=Total Dieldrin, PCB=Total Polychlorinated Biphenyls, PAH=Total Polycyclic Aromatic Hydrocarbons, BT=Total Butyl Tin

No Trend	Decreasing Trend	
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## Dredging Update

An Environmental Impact Statement (EIS) is being developed by the US Environmental Protection Agency (EPA), Regions I and II, and the US Army Corps of Engineers(ACE), New England and New York Districts. An EIS assesses the potential environmental impact of a proposed action. In this case, the proposed action is the designation of one or more disposal sites in Long Island Sound for dredged material.

During the EIS process, EPA and the ACE have continued to solicit public input. To date there have been a series of meetings and workshops: three Public Scoping meetings were held in June 1999; two workshops were held in October 1999; and two workshops were held in April 2000.

The April workshop in Port Jefferson, NY, and Groton, CT, presented the building blocks for the EIS which were developed after the October 1999 workshops. The building blocks are the Work Plan, Field Work, and Evaluation of Alternatives. Three factsheets were produced, *EIS Work Plan and Process*, *Field Work for Open Water Sites*, and *Evaluation of Disposal Alternatives*.

EPA and ACE solicited April workshop participants to join a Working Group for input on the selection of alternatives and ultimately the screening and selection of sites for analysis in the

EIS. This Working Group of 35 people met in Old Lyme, CT on Wednesday, July 19, 2000. The full day meeting consisted of an hour-long presentation and discussion by EPA, ACE, and members of the working group, on the environmental and economic approach for the EIS.

### [EPA and ACE field to date](#)

**February:** the vessel *Isabelle* collected approximately 1000 sediment samples and tested for chemistry, toxicity, and biology.

**June:** fish trawling with the CTDEP for tissue analysis and fishery resource data.

**July:** two surveys, one aboard the *Anderson* collected benthic invertebrates for community sampling and analysis, and the other on the *Isabelle* collected benthic organisms for tissue analysis.

**September:** sampling is expected with the CT DEP fish trawl for tissue analysis and fishery data.

Information on this project can be found at the [www.epa.gov/region01/eco/lisdreg/](http://www.epa.gov/region01/eco/lisdreg/)

If you would like to be placed on the Long Island Sound Environmental Impact Statement mailing list, give comments, or would like more information please contact: Ann Rodney, US EPA - Region I, One Congress Street, Suite 1100, CWQ, Boston, MA 02114-2023, 617. 918.1538, fax 617.918.1505, [rodney.ann@epa.gov](mailto:rodney.ann@epa.gov)

## Indicator Web Sites of Interest

**Chesapeake Bay** - [www.chesapeakebay.net/pubs/sob/index.html](http://www.chesapeakebay.net/pubs/sob/index.html)

The report describes the health of the Chesapeake Bay, its tributaries, habitats, and the creatures that call the Bay home and highlights the most challenging issues the program faces as Bay managers begin to set restoration goals beyond 2000.

**Great Lakes** - [www.epa.gov/glnpo/glindicators/proposal.html](http://www.epa.gov/glnpo/glindicators/proposal.html)

The State of the Lakes Ecosystem Conference (SOLEC) is one of the principal reporting mechanisms on the state of the Great Lakes and on progress toward the goals of the Great Lakes Water Quality Agreement (GLWQA). The first two conferences reviewed the state of various components of the Great Lakes ecosystem through the use of indicators and a subjective assessment of "good", "fair", "improving", etc. To continue SOLEC, indicators were identified that objectively represent the state of major ecosystem components across all Great Lakes basins.

**Puget Sound** - [www.wa.gov/puget\\_sound/Publications/pshealth2000/index.html](http://www.wa.gov/puget_sound/Publications/pshealth2000/index.html)

The second Puget Sound Water Quality Action Team's report on key indicators of Puget Sound's health was prepared in response to the Washington State Legislature's request to evaluate efforts to protect Puget Sound. The report includes updated information on the 12 indicators originally presented as well as five new indicators.

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# LONG ISLAND SOUND

## LIS Research Funded

The EPA-Long Island Sound Office/New York Sea Grant/Connecticut Sea Grant Partnership for Long Island Sound environmental research has announced the three recipients of grants supporting research aimed at improving the understanding of the natural and human processes that govern the quality of Long Island Sound.

Dr. Richard French was awarded \$98,097 to support the first year of his research, *Assessment of the Causes and Extent of Morbidity and*

*Mortality of American Lobster (Homarus americanus) in Long Island Sound.* Dr. Johan Varekamp will receive \$75,909 to conduct research over a two-year period on the *Environmental Changes in Long Island Sound Over the Last 400 Years.* Dr. Sergio Sanudo-Wilhelmy was awarded \$122,518 to research *Trace Metals, Organic Carbon, and Inorganic Nutrients in the Surface Waters of the Sound: Sources, Cycling, and Effects on Phytoplankton Growth.*

## \$5,000 Grants and Grant Writing Workshops

For the seventh consecutive year, the Long Island Sound Study is seeking proposals for projects, programs, or publications to educate and involve the public in the protection and restoration of the water quality and habitat of Long Island Sound and its watershed.

Past projects include curriculum for school teachers, production of a series of posters on controlling nonpoint source pollution, a Sound-wide Beach Clean Up, and summer programs for children from low-income families. So far, \$212,450 in grants has funded 58 projects in New York and Connecticut. Non-profit organizations, local governments or public agencies, private businesses,

educational institutions, and classroom teachers can apply. Proposals must be postmarked by October 6, 2000. The maximum funding for each proposal is \$5,000.

Grant-writing workshops will be held to guide applicants through the proposal process. They are scheduled from 7:00-9:00 pm at Marine Science Research Center at SUNY Stony Brook, September 11 and Stamford Government Center, September 12. Contact Kimberly Zimmer (631.632.9216, or ks21@cornell.edu) for more information and to reserve a space at a workshop.

## Calendar of Events

**September 11 and 12** Small Grants workshop, 7-9pm, in Stony Brook and Stamford, contact Kimberly Zimmer 631.632.9216

**September 14** CAC meeting, NYC, contact Joe Salata 203.977.1541

**September 16** International Beach Cleanup, in CT contact Peg VanPatten 860.405.9141 and in NY contact Barbara Cohen at 718.471.2166

**September 19-20** National Environmental Technology Conference in Boston, for more information visit [www.epa.gov/region01/ra/empact/conference/index.html](http://www.epa.gov/region01/ra/empact/conference/index.html)

**September 27** Policy Committee Meeting, Stamford, contact Joe Salata 203.977.1541

**September 30** National Estuaries Day

**October 6** Small Grants Deadline

**October 19** Management Committee Meeting, Stamford, contact Joe Salata 203.977.1541

**December 14** CAC meeting, contact Joe Salata

## 2000 Biennial Long Island Sound Research Conference

A Long Island Sound Research Conference will be held, November 17 and 18 at the University of Connecticut, Stamford. Researchers from all disciplines, locations, and organizations will come together to discuss their work.

Individuals involved in research on Long Island Sound should plan to attend the conference and poster session. Topics include: marine ecosystem status, historical trends/indicators, sediments/dredging, nonpoint source pollution, monitoring, and aquaculture. For more information on the conference, contact Barbara Mahoney at (860) 405-9151, [barbara.mahoney@uconn.edu](mailto:barbara.mahoney@uconn.edu) or visit [www.lisfoundation.org/lisrconf\\_2000.html](http://www.lisfoundation.org/lisrconf_2000.html)

## UPDATE

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