



SOUND OUTLOOK

A NEWSLETTER OF THE CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

General Permit for Nitrogen Reduction... Give it Some Credit!

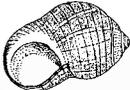
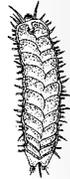
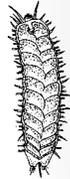
The Department of Environmental Protection (DEP) took a major step forward in its Long Island Sound Nitrogen Removal Program with the formal adoption on January 1, 2002 of a General Permit for Nitrogen Discharges. The general permit, developed pursuant to the passage by the State Legislature in 2001 of An Act Concerning Nitrogen Reduction in Long Island Sound, will limit the total amount of nitrogen discharged into the Sound by municipal sewage treatment plants (STPs). To complement the general permit, the Act also authorizes the DEP to establish, oversee, and manage a Nitrogen Credit Exchange program, and to create a Nitrogen Credit Advisory Board.

The federal Clean Water Act required the DEP and New York Department of Environmental Conservation to establish a Total Maximum Daily Load (TMDL) analysis for Long Island Sound. TMDL is the maximum amount of a pollutant that a waterbody can naturally absorb and still be healthy. The general permit discharge limits must be based on DEP's TMDL analysis, which was approved by the federal Environmental Protection Agency in 2001. Specifically, the permit regulates the discharge of total nitrogen from each of 79 municipal STPs in Connecticut. It requires that the total nitrogen discharged from the plants must be reduced by approximately 64% by the year 2014 in order to achieve the final nitrogen reduction target set by the TMDL.

To meet the general permit's annual limits, STPs have the option of either treating their sewage to meet the nitrogen limits or purchasing nitrogen reduction credits under the Nitrogen Credit Exchange. If a treatment plant is able to reduce nitrogen below its limit, the town receives payment from the nitrogen exchange program. The plant can then use the money to offset nitrogen removal costs. If a STP does not meet its annual nitrogen reduction target, it can still comply with the permit by purchasing excess credits from the exchange. This unique and innovative program will provide substantial flexibility to the regulated community, minimize cost, and assure that we meet water quality standards for the Sound.

The General Permit for Nitrogen Discharges, complemented by the Nitrogen Credit Exchange program, demonstrates Connecticut's continuing commitment to the restoration of Long Island Sound. For additional information on the implementation status of the general permit, or for details about the Long Island Sound TMDL and Nitrogen Credit Exchange programs, check the DEP website or contact Mark Parker, Long Island Sound Study Outreach Coordinator, Bureau of Water Management, at 860-424-3276 or by e-mail at mark.parker@po.state.ct.us.

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No. 9

Mercury in the LIS Watershed: How it Gets In... How We Get it Out

As reported in the last issue of *Sound Outlook*, an estimated 70% of the mercury entering Long Island Sound (LIS) originates from what we call anthropogenic (human caused) activities. These are not just human activities that take place in or near Sound waters, but those occurring anywhere within the LIS watershed. Deposition of airborne mercury from outside the watershed is also an important anthropogenic source of the metal in the Sound.

Mercury contained in stormwater and snowmelt flows into lakes or rivers, where bacteria may convert it into toxic methylmercury. Mercury also enters the environment through the improper disposal of mercury-containing products in sewer systems or in trash, by burning such products in barrels or incinerators, and from spilling of mercury and mercury containing liquids onto the ground. The DEP's Pollution Prevention (P2) Program provides fact sheets and information about products that contain mercury and how to keep mercury out of the environment (see the DEP web site at www.dep.state.ct.us/wst/mercury/mercury.htm).

The environmental concern associated with mercury is its ability to accumulate in animal tissue. As animals progressively consume other animals positioned below them on the food chain, mercury becomes concentrated in their body tissues. Scientists call this phenomenon "bioaccumulation." Fish that live in waters with even low concentrations of mercury can bioaccumulate the metal to considerably higher levels. Because humans generally eat fish that are at the top of the aquatic food chain, there is concern that we may experience negative health impacts from mercury in contaminated fish.

The DEP and the Connecticut Department of Public Health (DPH) are working together to ensure that any public health threats from mercury are reduced. The DEP has provided funding and resources for the testing of fish tissues from waterbodies throughout Connecticut. The DPH has produced a series of brochures to educate people about the consumption of contaminated fish found in the state, and the two agencies have issued fish consumption

advisories that place limits on the amount of certain fish that people eat. It should be noted that advisories have not been issued for mercury in fish taken from Long Island Sound because excessive levels of mercury have not been detected in those species. Existing fish consumption advisories are available at www.dph.state.ct.us/bch/eeoh/webfsh.htm.

Beginning in the fall of 2000, the DEP also embarked on an ambitious goal to reduce the amount of mercury that enters the environment. Through household hazardous waste collections, school clean outs and mercury thermometer exchanges sponsored by DEP's P2 Program, Connecticut residents and businesses have succeeded in removing more than 2,020 pounds of mercury from the waste stream that might have otherwise entered the environment. We can all help to reduce mercury contamination in 2002 by continuing these efforts. For more information about Connecticut's Mercury Reduction Program, contact the Office of Pollution Prevention at (860) 424-3297 or visit the DEP website.

LIS Fund Awards \$250,000 Grant for Programs at Outer Island

On September 18, 2001, DEP awarded a \$250,000 Long Island Sound Fund grant to the Connecticut State University System's (CSU) Center for Education and Research at Outer Island in Branford. The award is part of an agreement that creates an endowment to ensure the protection of

funds for this project, thereby bringing the Center's total endowment to over \$500,000.

Outer Island is the outermost of the Thimble Islands located off the coast of Branford. The 5-acre island, donated to the U.S. Fish and Wildlife Service by Elizabeth Hird in 1995, is now part of the Stewart B. McKinney National Wildlife Refuge. The island's diverse habitats offer numerous opportunities for students to investigate intertidal zonation and other aspects of coastal ecology.

The LIS license plate grant and matching funds will support instructional, research and public outreach activities for

elementary and secondary schools, universities, environmental organizations and other interested groups at Outer Island. Students and teachers will gain hands-on research experience in marine

biology, ornithology, geology and environmental studies. For more information about Outer Island, or to arrange a class or other educational group visit, visit the Center's website at www.ctstateu.edu/ceroi/ceroi.htm, or contact one of the program coordinators at ceroi@www.ctstateu.edu or call (203) 392-6265.



Outer Island's natural resources, while providing continued public access to the island for existing programs. The Community Foundation for Greater New Haven (CFGNH) will provide matching



Purchase of an LIS License Plate supports the LIS Fund

As of November 30, 2001:

- Plates sold: 112,929
- Funds raised: Over \$3.9 million
- Projects funded: 204

The LIS Fund supports projects in the areas of education, public access to the shoreline, habitat restoration, and research.

For information on ordering a Long Island Sound license plate, call 1-800-CT-SOUND.

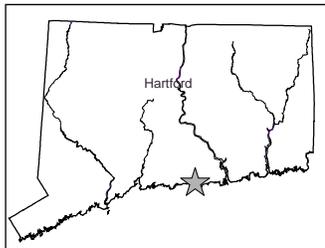
SPOTLIGHTED Coastal Access: Hammonasset Beach State Park, Madison

When you think of Hammonasset Beach State Park, do you smell suntan lotion and hotdogs? Does it make you crave shade and sandals to protect your feet from the hot sand? Then it's a good bet that you've never visited this intriguing place in the winter. Without the hustle and bustle of summertime beach-goers, wildlife takes center stage in the 919-acre Park (site no. 150 in the *Connecticut Coastal Access Guide*). With a bit of luck, you may glimpse a sleek red fox or lanky coyote.

Winter birding at Hammonasset can be especially spectacular. Among the more interesting birds are the northern harriers (marsh hawks) and short-eared, snowy, and great horned owls that can sometimes be spotted hunting for their dinners of voles, moles and mice. Flocks of Lapland longspurs, horned larks and snow buntings may pepper the field near the Meigs Point Nature Center. And if you wander the Meigs Point trail you may be able to spot both common and red throated loons, as well as a variety of ducks, including redbreasted merganser, common goldeneye, and all three species of scoter (surf, black and white-winged).

You might also try strolling the new boardwalk that stretches from the West Bathhouse to the Main Pavilion. The boardwalk wends its way back and forth between the beach and the back side of the dunes, offering a wonderful and easy walking tour of these coastal resources. Even in winter, the prickly beach rose and the other dune plants are attractive to the eye as well as to small birds and mammals who take shelter and feed there. This is also the place to look for harbor seals bobbing like corks in the water or hauled out onto the rocks for a rest.

While winter may not be the season for swimsuits and sandals, it is still a great time to visit this jewel of Connecticut's State Parks system. So as the world starts to think about warming up in anticipation of spring and the summer to follow, bundle up, beat the crowd, and head to the beach. There are winter wonders to be discovered. Hammonasset is easy to find. Take Exit 62 off I-95, and head south for one mile. The road will lead you right into the Park. Off-season, the Park is free and open during daylight hours as long as the roads are cleared of snow and safe to travel.



LOOK OUT for upcoming events!!

Mystic Marinelife Aquarium Call 860-572-5955 for times, cost and registration.

Feb. 23: Family Bald Eagle Watch: view eagles and other wildlife on Connecticut River cruise.

Mar. 23: Family Seal Watch – View harbor, harp and gray seals on Long Island Sound cruise.

March: Migrating osprey return to Connecticut.

Long Island Sound License Plate Program

March 13 (4:30 pm): Deadline for submission of grant applications. Call Kate Hughes at 860-424-3034 for information, or email kate.hughes@po.state.ct.us.

Norwalk Maritime Aquarium Programs: Call 203-852-0700, ext. 2206 for times, cost and registration for the following:

On-going programs –

- Marine Animal Storytime (ages 3-4, topics vary)
- Winter Creature Cruises
- View seals and other LIS wildlife
- Weekend Marine Life Study Cruises (Begins in April)

Workshops –

- Family Boat-Building Weekend
- Greenland Kayak Paddle Making
- Half-Hull Model Making

Other programs –

- Feb. 18-22:** School Vacation Week Program – Explore the natural world
- Mar. 29:** Fantastic Holiday Games – stories, crafts, animal encounters
- Apr. 4:** Science Career Exploration Night for Girls

April: Striped bass migrate north to Connecticut waters.

April 22: Earth Day

DEP Educator Workshops Call 203-734-2513 for times, cost and registration.

WET & WILD on Long Island Sound!

May 6: Connecticut River Museum, Essex

May 31, June 1: Outer Island, Branford

May 24: Long Island Sound Day

Please be sure and check the Calendar of Events listed in DEP's website: <http://dep.state.ct.us>

If you did not receive this issue of Sound Outlook in the mail and would like to be placed on the mailing list, please send your name and address to: Sound Outlook, Connecticut DEP, Office of Long Island Sound Programs, 79 Elm Street, Hartford, CT 06106-5127; or e-mail your address to laurie.valente@po.state.ct.us.

SPOTLIGHTED Coastal Resource:

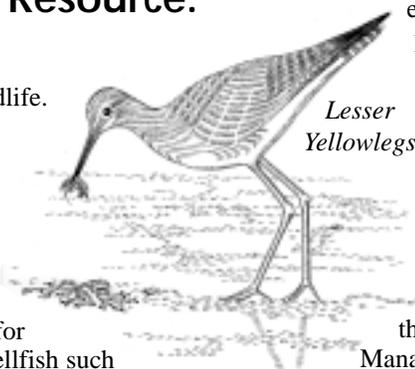
Intertidal Flats

Intertidal flats are a vital component of the Long Island Sound ecosystem. They develop in sheltered environments along the shore where reduced tidal currents allow the deposition of muddy, silty and fine sandy sediments. Flats exist both as narrow bands around tidal marshes, and as broad expanses, such as at Long Wharf in New Haven Harbor, and at the mouths of the Housatonic and Connecticut rivers. Intertidal flats often form a transitional zone between two other important coastal resources: tidal wetlands and estuarine embayments.

Though they may appear barren, mud flats are highly productive habitats. Microscopic algae which live on the flats are important baseline components of the estuarine food web. Intertidal flats are also home to larger organisms that provide a food source for resident and

migratory wildlife. Burrowing crustaceans, molluscs and worms, which are consumed by shorebirds at low tide, serve as prey for finfish and shellfish such as winter flounder and blue crabs when the flats are submerged.

Intertidal flats provide exceptional opportunities for wildlife observation. Shorebirds can be seen feeding on mudflats throughout the year, including semi-palmated plovers, lesser yellowlegs, and snowy egrets in the summer, and purple sandpipers, dunlin and sanderlings in the winter. Mud flats also offer recreational shellfishing



opportunities, with soft shell clams, eastern oysters and blue mussels present along most of the shoreline. However, if you plan to go shellfishing, contact local shellfishing authorities to identify Approved or Conditionally Approved open shellfishing areas, and to learn about local laws and license requirements.

Intertidal flats are protected through the Connecticut Coastal Management Act, which disallows activities that would cause erosion of or otherwise damage the habitat. For example, dredging and filling of flats is strongly discouraged. Coastal policies also encourage the restoration of degraded flats.

For more information about intertidal flats, please contact Lori Benoit at the DEP Office of Long Island Sound Programs, 860-424-3034, or by email at lori.benoit@po.state.ct.us.

DEP Develops GIS Project to Assist Dredged Material Management in Long Island Sound

The DEP Office of Long Island Sound Programs (OLISP) recently completed a two-year project to develop a Sediment Quality Information Database (SQUID) for the waterways and harbors of Long Island Sound in which dredging occurs. Using database and geographic information system (GIS) technology, the SQUID provides a repository for sediment chemistry data, as well as tools for resource managers to analyze proposed dredging and dredged material disposal activities.

The SQUID was compiled from data on heavy metals, polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), and pesticides taken from reports required by the DEP and the Army Corps of Engineers for

evaluation of dredging activities. This new, centralized database enables users to determine where sediment sampling and analysis have occurred, and how historic contaminant levels at proposed dredging sites have changed over time.

The SQUID has been used to evaluate levels of various contaminants in the Thames River as part of the ongoing remediation of contaminated sites. Future applications may include analysis of copper concentrations in marinas along the coast to determine how boat maintenance activities have affected dredged sediment conditions. The SQUID will be made available to federal, state and local agencies and the public at large in electronic format via CD-ROM. Eventually, it will be distributed in a

web-based format.

The SQUID was developed by Kevin O'Brien, who came to OLISP through the National Oceanic and Atmospheric Administration's (NOAA) Coastal Management Fellowship program. The program, administered by NOAA's Coastal Services Center, places recent college graduates who have advanced degrees in coastal or environmental management with State agencies to assist with projects relating to coastal management issues.

For more information on the SQUID project, please contact Kevin O'Brien at the DEP Office of Long Island Sound Programs, 860-424-3034, or by email at kevin.obrien@po.state.ct.us.

The Connecticut River Estuary Regional Planning Agency Receives National Coastal Management Award

On October 3, 2001, the Connecticut River Estuary Regional Planning Agency (CRERPA) received the National Oceanic and Atmospheric Administration's (NOAA) 2001 Walter B. Jones Award for Excellence in Local Government for its leadership in coastal management planning and implementation. This award is given annually in honor of the late U.S. Rep. Walter B. Jones of North Carolina,

Chairman of the House Committee on Merchant Marine and Fisheries which oversaw the development of the federal Coastal Zone Management Act.

Under the capable direction of Linda Krause, CRERPA staff have successfully increased regional awareness of coastal issues through their day-to-day planning and zoning advice to municipalities. The agency has promoted coastal management goals by establishing

canoe and kayak trails in the lower Connecticut River, and by coordinating research and outreach efforts on issues such as coastal nonpoint source pollution control, marina waste management, and the impacts of dock development in the lower River. CRERPA's planners and staff are dedicated stewards of the state's precious coastal resources.

Congratulations, CRERPA, on your well-deserved national recognition!

Connecticut Develops Clean Marina Program

For the past year, the DEP's Boating Division and Office of Long Island Sound Programs have been working with Connecticut's recreational boating industry to develop a Clean Marina Program. Because marinas and boatyards are located at the water's edge, routine activities at these facilities may impact the health of surrounding waters; the runoff from one significant rainfall can flush an array of pollutants into the water unless preventative measures are taken. The goal of the Clean Marina Program is to educate marina operators across the state about simple ways to reduce their facilities' impacts on Connecticut's waters, and to encourage better management of nonpoint sources of pollution.

As part of the Clean Marina Program, the DEP and a steering committee comprised of industry representatives are developing an environmental manual for marinas which outlines environmental management techniques and procedures for common activities from changing oil to pressure-washing boat hulls. The DEP will be introducing the manual to the state's boating facilities at workshops this winter and spring.

The manual will also include information about the steps necessary for certification as a Clean Marina. To gain certification a marina must take steps, above and beyond what is required by law, to reduce the impacts of nonpoint source pollution and improve the environmental quality of its facility and the adjacent waters. It is anticipated that DEP will begin certifying marinas for the 2003 boating season. If you see a flag with the Clean Marina logo flying at a marina, you will know that the facility has earned Clean Marina certification.

Also as part of the Clean Marina Program, the Boating Division will be educating the state's boaters about environmentally responsible boating practices. DEP staff will be visiting marinas during this boating season to distribute information, answer questions, and encourage you to take a few easy steps to become a Clean Boater.

For more information about the Clean Marina Program, contact Elke Sutt at 860-424-3034, or by email at elke.sutt@po.state.ct.us, or, for the Clean Boater Program, Kim Czaplá at 860-434-8638, or by email at kim.czaplá@po.state.ct.us.

Sound Tips

Commissioning Your Boat

Here are a few clean boating tips to help you get ready for the boating season:

- ✓ Use a vacuum sander to reduce dust when refinishing.
- ✓ Prep and paint your boat on a lawn or gravel driveway. Use a drop cloth to collect paint chips.
- ✓ Wash your boat away from the water with "non-toxic" and "phosphate-free" cleaners.
- ✓ Replace cracked fuel lines; check for loose connections.
- ✓ Drain your gas tank and dispose of stale fuel at a local hazardous waste collection.
- ✓ Recycle used motor oil and antifreeze. Collect drips and clean up small spills.
- ✓ Flush winterizing antifreeze from your holding tank at a shoreside or mobile pumpout facility.
- ✓ Place an absorbent pad in the bilge to soak up petroleum products.

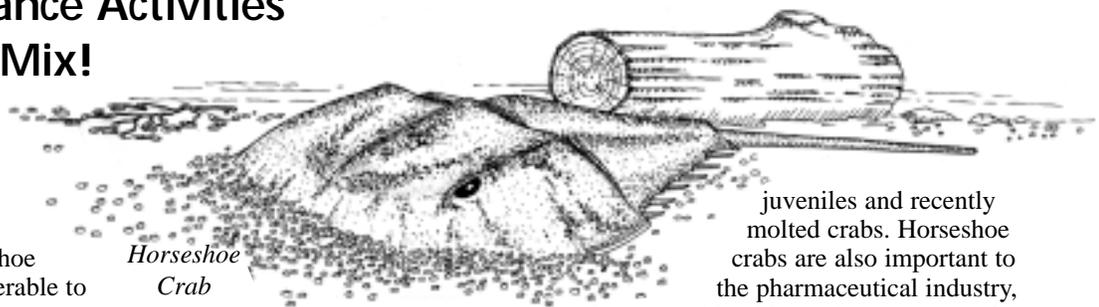
For more information contact Elke Sutt at 860-424-3034 or by email at elke.sutt@po.state.ct.us or Kim Czaplá at 860-434-8638 or by email at kim.czaplá@po.state.ct.us.

Horseshoe Crab Eggs and Spring Beach Maintenance Activities Don't Mix!

This spring, before your beach association or town recreation department sets out to tidy up the beach in preparation for Memorial Day, please keep in mind that horseshoe crab nests on the beach may be vulnerable to grading or raking activities.

For approximately six weeks each spring during May and June, bottom dwelling American horseshoe crabs (*Limulus polyphemus*) return to the water's edge to mate and spawn. Females seek out open areas near the high tide line, bulldozing their bodies completely into the sand and depositing up to 20,000 eggs. The eggs are fertilized by males which gather on the beach to seek available mates, and the nests are then covered with sand by incoming waves. Unfortunately, horseshoe crab nests are usually located in the vicinity of accumulated seaweed and other flotsam where beach grading and raking are typically conducted. These activities can disturb the nests and adversely affect horseshoe crab populations.

Horseshoe crabs, which are not true crabs but more closely resemble spiders, are an essential part of the marine ecosystem. Migratory shorebirds feed on their eggs, and fish eat the



Horseshoe
Crab

juveniles and recently molted crabs. Horseshoe crabs are also important to the pharmaceutical industry, where their blood is used to test drugs for

the presence of bacteria.

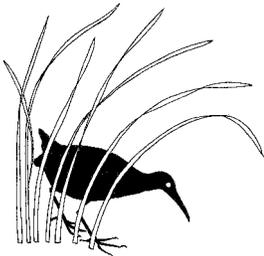
The DEP has made great progress in protecting horseshoe crabs from overfishing for use as bait, and these efforts will be bolstered through better-timed beach maintenance activities. In order to protect horseshoe crab nests, beach maintenance or grading should be conducted before May 10th or after June 25th. Please note that any mechanical beach maintenance work or grading performed at or waterward of the high tide line also requires prior authorization from the DEP. Please contact the Office of Long Island Sound Programs at 860-424-3034 for information on permit requirements.

Horseshoe crabs are considered to be one of the oldest surviving marine species in the world. Let's do our part to keep them around for another 350 million years!



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How's the Water?

In the last issue of Sound Outlook we began a series of articles on metals that are found in Long Island Sound. In this issue we look at the metal cadmium. Cadmium occurs naturally at very low levels in the environment. The natural concentration of cadmium in seawater is approximately 0.1 part per billion (ppb), while in marine sediments natural levels average 1.0 ppb. Cadmium also enters the environment from anthropogenic (human-caused) sources, including metal processing, the burning of fossil fuels and household waste, and from the manufacture of paints, fertilizers and batteries. Cadmium can bioaccumulate in the food chain and is found in shellfish tissue. Exposure to elevated levels of cadmium can have adverse human health effects over the long term, primarily affecting the kidneys and bones.

While worldwide anthropogenic cadmium emissions increased during the first half of the 20th century, they have continually decreased since the 1960s. This has been due primarily to decreased use of cadmium in the manufacture of certain products such as metal plating and pesticides, and to increased efficiency in reclaiming and reusing the metal. Cadmium levels in Long Island Sound sediment still reflect man's historic influence, even though there are no longer any significant cadmium emissions. In 2000, the DEP, in partnership with the US EPA's National Coastal Assessment monitoring project, collected and analyzed sediment samples from LIS. Sediment cadmium levels ranged from 100-740 ppb in the western Sound, from 100-220 in the Central Sound and from 60-100 ppb in the Eastern Sound, probably resulting from decreasing levels of development from west to east. At the same time, the National Oceanic and Atmospheric Administration's (NOAA) National Status and Trends Program has shown a decline in cadmium levels in blue mussels at a majority of sites sampled in Long Island Sound over the last decade. Thus, the LIS sediment provides historical evidence of cadmium in the environment, while the mussels reflect current conditions relative to the past. Clearly, cadmium is becoming less of a presence in Long Island Sound.

Find Permit Forms Online

Many permit application forms and instructions may now be downloaded from the DEP website at www.dep.state.ct.us/pao/download.htm. Check the website periodically as more forms become available online.

Visit the DEP website at www.dep.state.ct.us.

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