LISTENING TO THE SOUND

by Saxon Henry • *Photography by Elizabeth Glasgow*

ARE CLAIMS THAT Long Island Sound's waters are compromised an effluvial myth or a tidal problem? Since the formation of the Long Island Sound Study (LISS) in 1985, a group of representatives from citizen and environmental groups, businesses and industries, academic institutions, and local, state and federal governments have been asking just that — monitoring, testing and studying the water that laps Long Island's North Shore in order to determine whether there is cause for concern.

In 1994, the group produced the Comprehensive Conservation Management Plan (CCMP), consisting of 232 action items that its authors hope will restore the Sound, its watershed and its tributaries. An "Estuary of National Significance" since 1987, the Long Island Sound (LIS) is deemed an estuary because it intermingles salt water from the ocean and fresh water from rivers and the land. Spanning nearly 110 miles from east to west, it is 21 miles across at its widest point and contains 2.19 trillion cubic feet of water, or approximately 18 trillion gallons. Its watershed extends northward through Connecticut, New York, Massachusetts, Vermont and New Hampshire, nosing into Canada.

What secrets have been plumbed from its mid-Sound depths of between 60 and 120 feet in the intervening 16 years since a study of the estuary's complex ecosystem began? The CCMP lists seven issues that merit special attention:

The Long Island Sound, seen here from the vantage point of Northport Harbor, has been the subject of the ongoing Long Island Sound Study (LISS) since 1985. The LISS determined that the "once degraded" waters of the Sound are still impaired from old abuses, as well as the increasing pressures of population growth.

Empty traps stand as symbols of an industry decimated by lobster die-offs in Long Island Sound. In January 2000, the U.S. Secretary of Commerce declared the LIS fishery a disaster.

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- Low dissolved oxygen, or hypoxia
- Toxic contamination
- Pathogen contamination
- Floatable debris
- Living resources and habitat management
- Land use and development
- Public involvement and education

In spite of measurable improvements since the passage of the Clean Water Act over two decades ago, the study has determined that the once "degraded waters" of the LIS are still impaired from old abuses. Measurable quantities of contamination have existed in the Sound's waters since the mid-1800s, but the population influx that occurred in the region after World War II quickened the estuary's decline, as residential, commercial and recreational development accelerated, and human waste and runoff entering the Sound's waters increased dramatically.

During the intervening five decades, population increases have continued, creating the most densely populated region of the United States. More than 21 million people live within a 50-mile radius of the Sound today and additional millions of non-resident enthusiasts flock to its waters yearly for recreation.

Though intermittent beach closures and tougher regulations for fish catches have consequences for local and visiting recreationists, the Sound's instability mainly affects the marine life within it, along with those who harvest the estuary's living resources for sale.

Of the seven concerns identified by the CCMP as noteworthy, hypoxia is seen as the greatest threat to a variety of esturine species. The condition occurs between mid-July and September, when oxygen levels in the bottom waters of the Sound fall to levels inadequate to support

Both commercial and recreational fishermen ply the waters of the Sound. As recently as 1998, the LIS lobster industry was the third largest in the nation.

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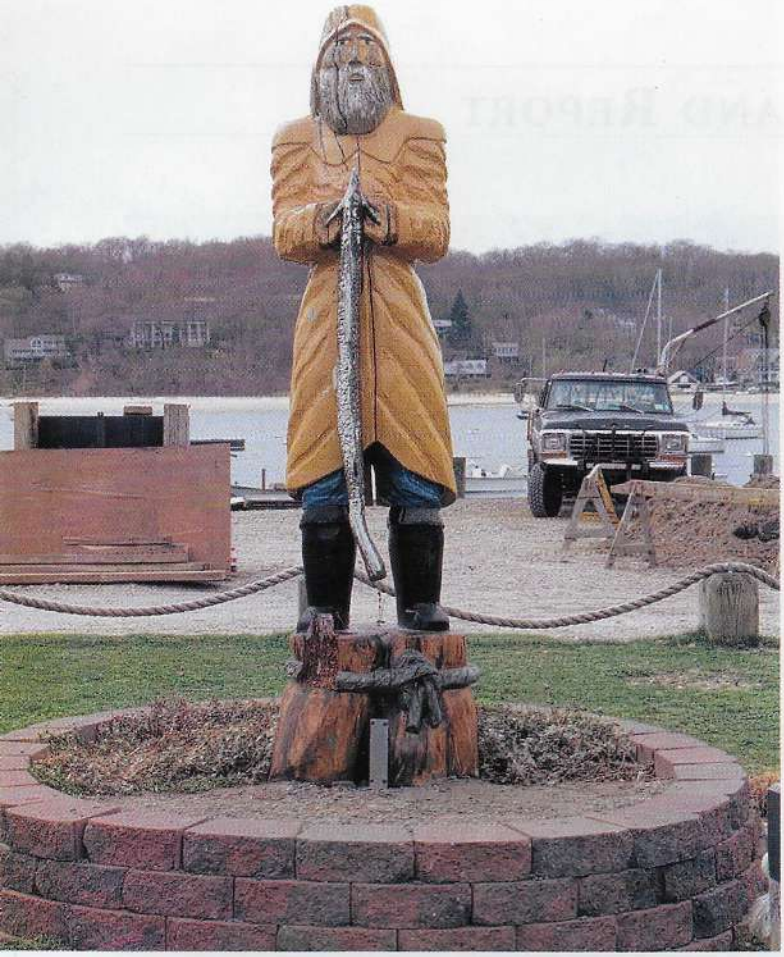
healthy populations of aquatic life. Hypoxia is especially deadly to species that cannot move or that move slowly, such as lobsters caught in pots and starfish. Critical habitat for vulnerable juvenile fish is also affected, as hypoxia stunts the growth of submerged aquatic vegetation.

Hypoxia results from a variety of factors, including natural occurrences of nitrogen entering the waters, agricultural and stormwater runoff, nitrogen oxide emissions to the air and discharges from sewage treatment plants. (The 82 sewage treatment plants in Connecticut and 23 in New York discharge more than a billion gallons of treated effluent each day into the Sound or its tributaries.)

Since 1990, the LISS has been implementing a phased plan in an effort to reverse the 300-year trend of elevating amounts of nitrogen entering the Sound. In 1998, LISS adopted a 58.5 percent reduction target for nitrogen loads from human resources over a span of 15 years. Upgrades to sewage treatment plants, watershed restoration strategies to control nitrogen runoff and reductions in nitrogen oxide emissions to the air are all goals of the plan. Stricter regulations for sewage treatment plants alone have decreased the discharge of nitrogen into the Sound by 19 percent since 1990, resulting in a decrease in the severity of hypoxia since the late 1980s.

Thanks to the committed efforts of the LISS, these decreases are expected to continue. "A sustained commitment is a requirement to success," says Mark A. Tedesco, director of the EPA Long Island Sound Office.



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"The most encouraging thing is that the past seven years have accelerated cleanup efforts and that the partnerships and the will to continue are there."

But, he notes, there is still much to be done. In spite of these reductions in nitrogen discharges over the past several years, a troubling die-off of lobsters has all but annihilated the LIS lobster fishery, which was the third largest in the country behind Maine and Massachusetts in 1998. According to National Marine Fisheries Service statistics, the dockside value of the lobster trade was over $29 million in New York alone in 1998.

Over 1,300 lobstermen have since been severely affected by this die-off, which began in mid-September 1999 and continued through 2000. In some places in the western Sound in 1999, commercial lobster landings fell 90 to 99 percent, or to near zero. The situation has become so dire, in fact, that the U. S. Secretary of Commerce declared the LIS lobster fishery a disaster in January 2000.

Though experts remain unsure as to why the lobsters are dying in the western Sound, University of Connecticut scientists have found that all dead lobsters hosted the same protozoan parasite, Paramoeba. Research continues as to what factors have combined to cause such widespread devastation of these crustaceans.

Hypoxia is not the only challenge faced by the Sound's marine species. Toxic contaminants, which have been found in LIS waters, pose consequences for esturine life as well. Toxic contaminants enter the Sound from manufacturing processes, household cleaning and pest control products, automobile exhausts, emissions from fossil fuel power plants and storm-water pipes carrying contaminants washed from roads, parking lots, disturbed land and construction sites.

These contaminants infiltrate shellfish and marine fish stocks, causing the governments of New York and Connecticut to offer some sobering caveats when it comes

The woodcarving of a bayman (above left) was installed at Northport Harbor following the Northport Historical Society's 1995 exhibit honoring the men and women "who harvest the bay." Not far away, a storm drain (left) deposits rain water run-off into the LI Sound.

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to the consumption of the Sound's living resources. New York State cautions individuals who pull marine bluefish and eels from the LIS not to consume these species more than once a week. Marine striped bass caught from the Sound's waters are not to be consumed by women of childbearing age nor children under 15 if caught from the Sound west of Wading River. Others should eat no more than one serving per month from the western Sound, while no more than one serving per week taken from the Sound east of Wading River is advised for anyone. Both states agree that the Hepatopancreas (green meat or mustard) in crabs and lobsters should never be eaten due to PCB, cadmium and dioxin contamination.

"Infrastructure improvements are needed to better treat the wastewater," says Mark A. Tedesco. "But we also need to recognize that the remaining sources of pollution come from how we develop and use the land." He also believes that learning to understand how we as individuals affect the Sound, as well as how our actions within our communities impact its waters, are both critical to improving the estuary's health.

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In the next issue of Distinction *Magazine, we will explain how pathogen contamination and habitat restoration are being addressed by the LISS, and explore what communities and individuals can do to help protect Long Island's crucial resource, the Long Island Sound.*