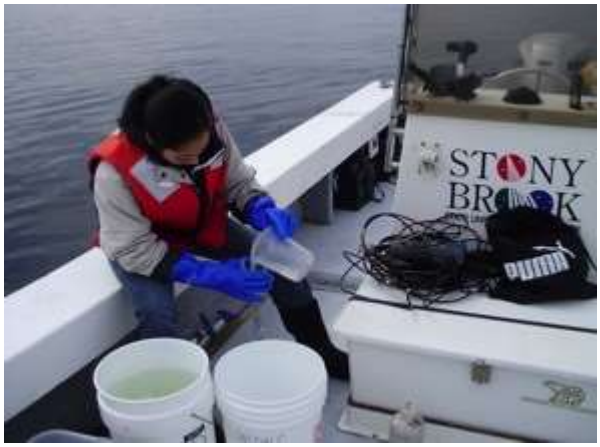
Connecticut's Sentinel Monitoring in Long Island Sound

The Connecticut Coastal Program worked with federal, state, and local partners to craft an innovative scientific approach for monitoring the health of a vital ecosystem.



A researcher collects field samples on Long Island Sound.

Nearly nine million people live, work, and relax along the shores of Long Island Sound. The Sound contributes approximately $8 billion annually to the regional economy through commercial and recreational activities. However, there is clear evidence that this estuarine environment is changing. Despite significant progress in reducing wastewater pollution, Long Island Sound remains stressed by increasing population and development. Sea level and water temperatures in Long Island Sound are rising at rates higher than the global average. In addition, coastal waters are becoming more acidic. These conditions may cause long-term alteration of the Long Island Sound ecosystem, which is directly linked to the well-being of coastal communities.

Recognizing the need for better scientific understanding and monitoring of these changes, the Connecticut Coastal Management Program (CCMP) collaborated with federal, state, and local partners through the Long Island Sound Study (LISS). The LISS is a National Estuary Program partnership between the U.S. Environmental Protection Agency, the States of Connecticut and New York, Sea Grant, and other governmental and non-governmental organizations. It was established in 1985 with the purpose of restoring and improving the environmental quality of Long Island Sound. The LISS coalition realized that local data would be necessary to understand the health of Long Island Sound and how it is changing over time.

This gave rise to Sentinel Monitoring for Climate Change in Long Island Sound, a scientific approach to detect and measure the effects of environmental stressors on coastal and estuarine life. A "sentinel" is a measurable variable that can be monitored as a warning sign for changes in the health of the entire ecosystem. The size of marshes and presence of invasive species are examples of sentinels. For this study, a multidisciplinary work group of experts identified 37 different sentinels for Long Island Sound. CCMP was a key player in this process, along with Connecticut Sea Grant, New York Sea Grant, the New York Department of Environmental Conservation, EPA, and NOAA. CCMP staff provided scientific expertise, facilitated large work group discussions, and administered the project's funding.

In 2013, the work group collaborated with researchers at the University of Connecticut to pilot this monitoring strategy. The research team investigated three priority sentinels related to wildlife and ecosystem changes: the abundance of sensitive bird species, the number of different coastal tree and plant species, and the land area covered by salt marshes. The project gathered a wealth of data that can be used to inform resource management decisions and strategies for increasing the ecological resilience of Long Island Sound. The study's results were published in 2014. The Sentinel Monitoring program established the first protocol for quantifying climate change impacts on the Long Island Sound ecosystem. "This was a groundbreaking effort," said Brian Thompson, Coastal Program Director. "The Sentinel Monitoring program was extremely valuable as a model that can be scaled up to a larger region or transferred to other important estuaries." The Northeast Regional Ocean Council is currently using Connecticut's Sentinel Monitoring program as a template for an Integrated Sentinel Monitoring Network, an initiative that will span the entire coast of the Northeast U.S.