

The Milford Laboratory Oysters, Clams, Scallops, and Fish Too!

a history of the National Marine Fisheries Service's Milford Laboratory's 80 years of service

The U. S. Bureau of Commercial Fisheries assigned Dr. H. F. Prytherch to Milford in 1928 to study Connecticut's oyster industry. Milford, centrally located on the North Shore of Long Island Sound near some of the state's most productive shellfish beds, has played an important role in the oyster industry. Prytherch conducted his research in a shed donated for this purpose on the grounds of the Connecticut Oyster Farm Co., which was located on the east side of Milford Harbor. When Prytherch was reassigned to North Carolina, the State of Connecticut Shellfish Commission petitioned the Bureau of Fisheries for a replacement. In November 1931 Dr. Victor Loosanoff was assigned as a full time fishery biologist to Milford. He arrived in early 1932 and started work at the State Dock, located next to the Royden Oyster Co. on the west side of the harbor, using the state boat "Shellfish" during the summer months, and boats from various oyster companies in the winter. Yale University provided additional work space in the Osborn Zoological Laboratory.

The early science conducted at the laboratory was concerned with the development of methods for the control of oyster predators and competitors such as the oyster drill, flatworms and the seastar. Loosanoff distributed information from these studies to the local oystermen through the Milford Laboratory Bulletins. Long-term studies on the timing and intensity of oyster settlement were of great value to the industry. Basic physiology and ecology of marine invertebrates as well as physical and chemical studies of Long Island Sound were also conducted. The interest in oysters naturally lead to studies of commercial bivalves, such as the hard shell clam, soft shell clam, surfclam, mussels, ocean quahog, and others. Studies of turbidity and feeding were conducted both in the field and in laboratory experiments. Methods to conduct laboratory spawning of bivalves were developed that gave rise to the aquaculture industry, and many of these methods are still used today.

In 1935, a temporary structure was constructed on state property located near the State Dock. Although details are unclear, a shed from the Connecticut Oyster Co. property may have been floated across the harbor to this site. Loosanoff began the work of obtaining property from the State of Connecticut for a more permanent



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Original laboratory buildings, 1939. The main laboratory building and water tower are on the right; tidal and algae tanks are situated on the left (under roof).

facility. In 1938, with the help of oyster industry representatives Charles "Shang" Wheeler and Howard Beach, the U. S. Congress provided approximately \$65,000 for the building of a permanent laboratory, seawall, pier, and tidal tanks. This new facility was completed in 1940 including a residence for the Laboratory Director. Several small boats were acquired and work continued on commercial oyster boats.

This new laboratory building, with approximately 4,800 square feet of floor space, included offices along with wet labs, a darkroom, and a small library. Seawater was provided to the wet labs by a gravity system which consisted pumping water from the harbor and storing it in an attic tank. A tidal tank was also located near the shore where water could be stored between high tides. An additional tank was also located at the end of the tidal tank for the production of algae required for oyster studies.

During the 1940s research expanded to include pollutant effects on the oyster beds of Long Island Sound. Large scale studies to develop methods to prevent oyster predation were conducted on beds around Milford Harbor. Studies involving chemical and physical methods of predator control were developed. Ties to commercial industry continued to be strong.

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Late 1950 brought the design and construction of a dedicated research vessel, the *R/V Shang Wheeler*. Commissioned in 1951 and named after the general manager of the Connecticut Oyster Farm Co., Charles “Shang” Wheeler, for his support of the Milford Laboratory throughout the years. The *R/V Shang Wheeler* was a copper clad wood hulled boat, 50 feet in length. Specifically built to conduct science on Long Island Sound, she included a laboratory, sleeping quarters, and galley. The vessel served the laboratory for many years before being retired from service in 2001.

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New laboratory building under construction, 1940. The brick building replaced wooden structures and provided improved laboratory space. A new Director's residence is under construction on the left.

The 1950s brought new methods for culturing pure microalgae for shellfish food. Marine algae isolated from Long Island Sound waters were cultured for feeding studies. A large collection of many species of these pure sterile cultures has been maintained over the years to create a working algae “library”. Algae from this collection can be mixed and matched in research studies, such as determining how to maximize bivalve growth, or how to produce large quantities of high quality food to maintain stocks. Scientists from around the world have received samples from the collection for use in their studies.

In 1962 Loosanoff was reassigned to the U. S. Bureau of Commercial Fisheries Laboratory at Tiburon, California, and Dr. James Hanks became the Milford Laboratory Director. During the 1960s the laboratory expanded beyond the capabilities of the existing buildings and a new facility was constructed. Finished in late 1967, the new building, providing more than 28,000 square feet of floor space, included more office space, laboratories, and a larger wet laboratory with dedicated hatchery rooms. Seawater was still provided by a gravity



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James Hanks (left) discusses the new laboratory building with contractor, 1967.

system but with increased flow rates and the addition of both heated and chilled seawater, either filtered or raw. The building also contains an improved library and a dedicated area for the storage of pure strains of algae and large-scale production of these strains for research projects. In 1970, part of the outdoor tank farm area was enclosed to provide additional space for year-round research.

The 1970s brought an increased interest in the bay scallop. Field studies along the Connecticut shoreline and laboratory feeding studies increased the understanding of these creatures and their habitats. Starting in the 1970s and continuing into the 1980s studying pollutant effects in Long Island Sound was an area of interest. Research on metal and PCB contamination at locations in the Sound was conducted. Metal and PCB concentrations in various marine life was also measured.

In 1985 Hanks resigned as the Laboratory Director to become the Aquaculture Liaison to the shellfish industry. Dr. Anthony Calabrese became the Laboratory Director. Several new additions to the site were added during 1996-97, including a greenhouse designed for the larger production of algae required for the new bay scallop recirculating seawater nursery located in the tank farm. The scallop nursery was designed to be as automated and energy efficient as possible, with computer tracking of salinity and temperature and a feeding loop from the greenhouse to provide continuous algae for food.

Starting in the 1970s and into the 1980s, culture of the lobster was explored and work on methods of rearing and feeding was conducted. Research on finfish

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aquaculture also began, studying the blackfish (also called tautog). They succeeded in developing the ability to spawn and raise finfish in closed and semi-closed seawater systems. Methods for maximizing growth and production of these animals have great implications for the aquaculture industry.

In late 2001, the *R/V Shang Wheeler* was retired from service and replaced with a former Coast Guard buoy tender renamed the *R/V Loosanoff*. This new boat, approximately the same size as the retired vessel, is constructed with a steel hull and was modified to meet the requirements of the laboratories research. It provides laboratory space, sleeping quarters, and galley, and large deck space. The vessel is capable of conducting water and sediment sample collection, as well as collection of marine invertebrates and finfish for habitat studies.

Recent work involves studies of various areas of the Connecticut coast that serve as spawning and nurseries for finfish and lobster. An extensive beach seining program to identify and quantify these areas has produced valuable results. Results from recent work on the use of probiotics in the shellfish hatchery and their possible impacts on production are very promising. Various outreach programs have provided many opportunities for scientists, teachers, and students to expand their knowledge of the marine environment by working with scientists from the Milford Laboratory.

Dr. Calabrese retired in early 2004 with Mr. Ronald Goldberg named the Acting Laboratory Director. A new permanent Director, Dr. Christopher L. Brown, was named in May 2007. Once again in the laboratory's history, Brown is seeking to improve the current buildings located on the site and to provide new state-of-the-art research space to keep the laboratory at the cutting edge of marine science.

About the Author:

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