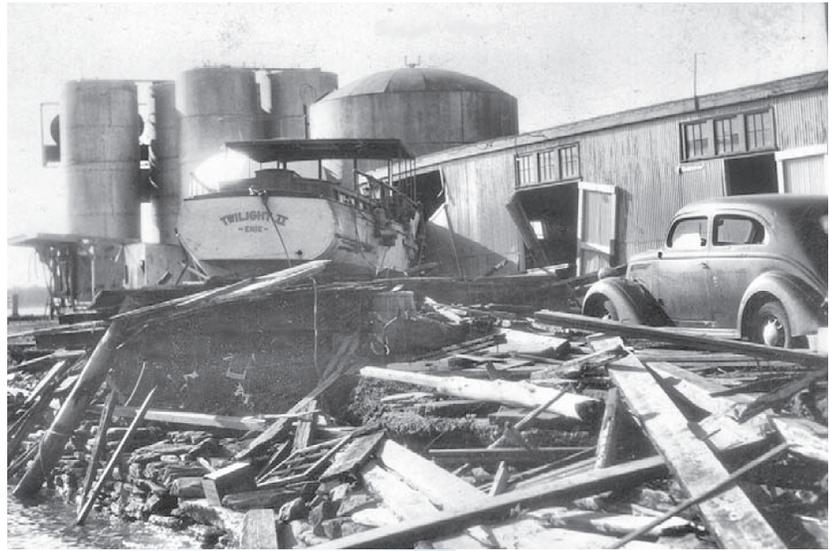


A History of Oyster Aquaculture in Rhode Island

By Michael A. Rice



Top: The Great Hurricane of 1938 severely damaged wharves, warehouses, and other shoreside facilities throughout the state. Photo by the Providence Journal. Middle: Photo courtesy Perry Raso, Matunuck Oyster Farm.

Bottom: Rhode Island Agricultural Experiment Station Marine Laboratory at Jerusalem on Point Judith Pond. Photo taken in 1897 shows a steam tractor and nets for sampling the pond bottom. Photo courtesy of URI Special Collections.

The Rhode Island aquaculture industry is no longer moribund as evidenced by this steady and healthy rate of growth.

Shellfishing and consumption of shellfish from Narragansett Bay and Rhode Island's coastal salt ponds has been an important part of Rhode Island's history. During the early Colonial period, extensive oyster reefs were harvested for the consumption of the meats, but the oyster shells had higher value as a raw material for the manufacture of lime for use in masonry mortar. Limestone, a traditional raw material for lime kilns, was not readily available in southern New England and surely contributed to the value of oyster shell as a source of calcium carbonate. By the early 1700s, the Colonial Assembly recognized that the harvest of oysters exclusively for use in lime production was a wasteful use of the marine resource, so it outlawed the practice in 1734.

During the later Colonial period, oysters were not considered a luxury food as they are today, but growing populations in Rhode Island's coastal towns provided a ready market. By 1766, the Colonial Assembly recognized that the oyster beds were being overfished and as a result they passed a law specifying that oysters could only be taken by tongs. Following the Revolution, the Rhode Island General Assembly enacted laws aimed at restricting harvest of oysters during the spawning season to further protect the resource.

All of the early legislation by both Rhode Island's Colonial Assembly and the post-Revolution General Assembly to regulate the oyster fishery led to the state issuing the first exclusive private harvest grants of oyster banks in Narragansett Bay, which forbade the general public from "molesting or disturbing [the grantee] in his enjoyment of the provisions of his charter." Despite the granting of the exclusive rights to cultivate oysters on their grant areas, the grantees were not charged a lease fee for their grants. The lack of lease fees and the exclusion of the public from harvesting in the grant areas generated considerable controversy among fishermen. At this time—prior to the adoption Rhode Island's 1843 constitution—the colonial King Charles Charter of 1646 was considered the unofficial constitution of Rhode Island.

Despite a passage in the charter stating that marine fisheries were to be treated as a common property resource, the fishermen took this as evidence that the General Assembly had no right to make grants of commonly held fishing

grounds or to regulate the fisheries. However, the common property principle and the states' rights to manage their resources were reinforced by the 1842 U.S. Supreme Court.

In light of the controversy surrounding the early aquaculture leases and the U.S. Supreme Court decision, the General Assembly passed the Oyster Act of 1844, which was Rhode Island's first aquaculture law. The act established a system of leasing tracts of submerged land for the purpose of culturing oysters, as well as setting up a board of three shellfishery commissioners—who served without salary—and a fee structure for the leases. The fee structure ranged from a high of \$10 per acre per year to a low of \$1 per acre per year for larger, multiple-acre leases. The first year of leasing generated \$60 in lease fees.

Despite the clarity of legislative intent of the 1844 Oyster Act to enhance oyster production and to establish a clear set of leasing protocols, the newly established Rhode Island Shellfisheries Commission got off to a rocky start. The fishermen on the public oyster grounds became openly rebellious. Stealing oysters from lease sites became rampant and arrests were made, leading to a number of court cases in the 1850s that upheld the power of the General Assembly to grant the leases. By 1855, the General Assembly authorized the use of lease fees for the purchase of a patrol boat to watch the leases, but this also proved unsuccessful, as those willing to lease new grounds were few, and lease income declined. Further laws passed in the 1850s aimed at improving the climate for shellfish aquaculture. An 1852 statute required all shell to be returned to beds to serve as setting substrate for oysters, and an 1854 statute allowed private aquaculture lessees to harvest 5 bushels of oysters per day from public beds to serve to seed the leased farms. Despite these legislative actions, by the end of the decade lease fees declined to zero, prompting the General Assembly to require a report from the commissioners as to the reasons. That report, made in 1859, referenced the poaching problems and pointed at possible pollution of the oyster grounds.

In 1864, the General Assembly amended the 1844 Oyster Act to improve the operations of the shellfisheries commission. The number of commissioners was reduced to one commissioner who would be elected to a five-year term. The General Assembly also enhanced the professionalism of the job by paying the commissioner a \$400-per-year salary, as well as increasing the level of accountability and oversight by requiring an annual report of the commissioner. The first shellfisheries commissioner after the 1864 restructuring was Judge John Knowles (later appointed Federal District Judge in Providence). During his five-year term, Knowles improved the performance of the office by improving collection of lease fees, terminating leases for nonpayment of fees, and providing an annual report to the General Assembly. As a result, confidence was restored, oystermen again began taking out leases, and the lease fees collected increased from \$61 to \$1,949.

Knowles was replaced as commissioner in 1869 by three elected commissioners with James Collins serving as chairman. Collins served as a commissioner until his death in 1910. Under Collins' able leadership, the oyster industry in Rhode Island grew into a multimillion-dollar operation with lease fees paid to the state exceeding \$100,000. The amount of

submerged lands leased for aquaculture peaked in 1911 and 1912 at about 21,000 acres—roughly 20 percent of the entire bottom of Narragansett Bay.

Around this time, scientists at the newly established (1888) Rhode Island Agricultural Experiment Station (RIAES) and the Rhode Island College of Agriculture and Mechanical Arts (founded in 1892 and a forerunner of the University of Rhode Island (URI)) became involved with the activities of the shellfisheries commissioners. Oyster farmers with leases in Point Judith Pond noticed that oyster production was declining, so in 1895, they approached George Field, RIAES marine scientist, about investigating the reason for the decline in oyster production in the pond at a time when production in Narragansett Bay was increasing. As a result of these meetings, College President John Washburn authorized the establishment of Rhode Island's first marine laboratory in the village of Jerusalem on Point Judith Pond in July 1896.

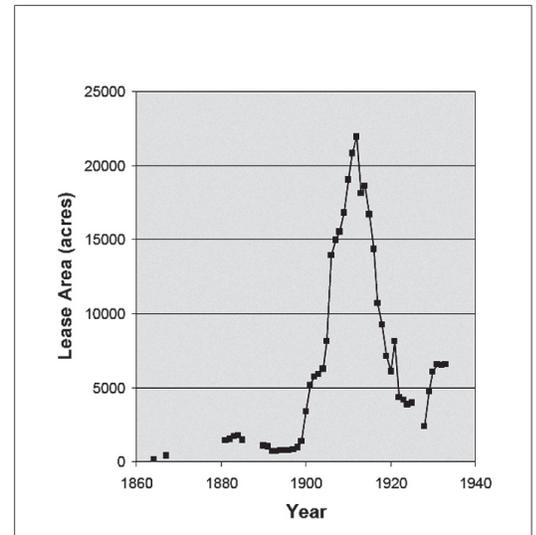
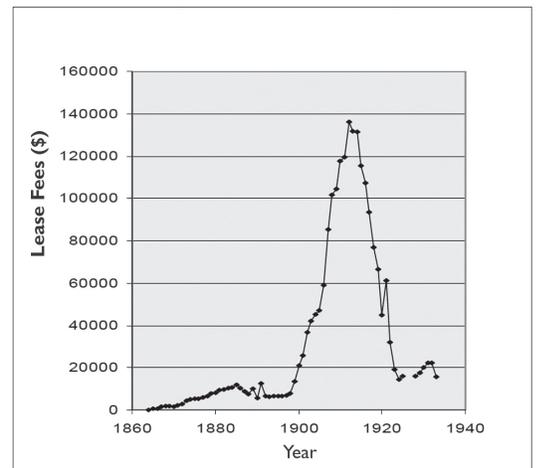
During the summer of 1896, Field measured oxygen levels, siltation rates, and ammonia concentration in Point Judith Pond. Field then reported his findings in an RIAES Annual Report, concluding that the oyster beds were being smothered by silt deposited from the Saugatucket River and were declining because of low oxygen conditions caused by lack of a permanent breachway in the pond, creating inadequate tidal flushing. Interestingly, the 1896 RIAES report made no mention of the fact that two major textile mills in Peace Dale and Wakefield on the Saugatucket River were known to discharge a variety of ammonia and dye-laden effluents as a byproduct of their manufacturing processes. Nevertheless, Field concluded that a solution to the problem of declining oyster production would be to open and maintain a permanent breachway in Point Judith Pond. The commissioners asked Field to abstract his findings for the General Assembly. As a result of these reports, the General Assembly began the process to raise funds to open a permanent breachway into Point Judith Pond. A 1901 statute moved the responsibility of leasing oyster farms in Point Judith Pond from the shellfisheries commission to the towns of South Kingstown

and Narragansett (provided that they use the funds to open and maintain the breachway). These early actions eventually led to the initial opening of a permanent breachway in the early 1900s and the buildup of the major fishing port at the village of Galilee.

Peak production of oysters in Rhode Island occurred around 1911 with 1,394,983 bushels of oysters landed, with 1,331,192 gallons of shucked oyster meats sold. Assuming 80 pieces per bushel, 8 pounds per gallon, and today's retail prices of 75 cents apiece and \$5 per pound shucked meats, these oysters would collectively be worth about \$135 million today.

But the decline of the oyster industry was evident by the early 1920s and, according to the 1921 annual report, largely attributed to "large quantities of oil floating on the waters of our rivers, bay and tributaries..." Despite the commissioners' recognition that oil pollutants might have a negative effect on oyster larvae, there were other potential pollutants discharged in the 1920s that could have affected the shellfish. For example, the modern electroplating process invented in England in the 1840s was adopted as an industrial process in Providence, and heavy metal ion effluents from waste electroplating baths had deleterious effects on oyster and other bivalve larvae. Alternatively, the sewerage of Providence during the 1910s led to greater nutrient and carbon loading to upper Narragansett Bay. Silt-laden runoff from deforested upland farm areas common in the 1920s and 1930s offered another explanation. Whatever the exact cause or combination of causes, pollution of some form was likely to have been responsible for the oyster industry decline in the 1920s.

In its 1921 report, the commissioners made lengthy note of William Wells' successful establishment of an oyster hatchery in West Sayville, N.Y., and suggested that artificial propagation of seed oysters might be a means to escape pollution's effects on larval and juvenile oysters. Clearly finances were a barrier to establishing an oyster hatchery in the 1920s, but in the following decade, famed oyster biologist Paul Galtsoff of the U.S. Bureau of



Top graph: Growth and decline of Rhode Island's oyster aquaculture industry between 1864 and 1933 as evidenced by oyster lease fees paid to the state. Data are actual fees paid by lessees without correction for inflation. Data from annual reports of the Rhode Island Commissioners of Shellfisheries, 1864 to 1933.

Bottom graph: Growth and decline of Rhode Island's oyster aquaculture industry between 1864 and 1933 as evidenced by acreage of oyster farming leases. Data from annual reports of the Rhode Island Commissioners of Shellfisheries, 1864 to 1933.

Commercial Fisheries was invited in 1936 to the Rhode Island State College's Narragansett Marine Laboratory (now URI's Narragansett Bay Campus) to experiment with the propagation of oysters. Rhode Island's first oyster hatchery was established by Galtsoff in a small building then known as the North Laboratory (now Mosby Center) near the end of South Ferry Road.

The Rhode Island oyster industry continued its decline into the 1930s, with the Great Depression taking its toll on marketing and sales. The industry sustained a crushing blow on September 21, 1938, when the Great Hurricane roared up Narragansett Bay damaging shucking houses, shipping wharves, and the oyster

vessels. Many oyster companies never reopened. In addition to the 1938 Hurricane, the onset of World War II in 1941 deprived the remaining oyster companies of able-bodied labor, further eroding the business.

In 1949, there was a major shift in the governance of the oyster-leasing system. The shellfisheries commissioners were abolished and their function was subsumed into the newly formed Department of Fish and Wildlife, which continues today as a division of the R.I. Department of Environmental Management. By the early 1950s there were only two remaining oyster companies in business. The Blount Oyster Company of Warren transformed itself into the Blount Seafood Corporation, processing offshore ocean quahogs for the manufacture of soups, and the last remaining oyster lessee, the Warren Oyster Company, ceased operations in 1954.

For the next two decades there was very little interest in any aquaculture, and the state's aquaculture leasing system became moribund. In 1971, the R.I. Coastal Resources Management Council (CRMC) was established by the General Assembly. Among the responsibilities of the CRMC was the processing of leases for aquaculture. And in 1976, CRMC granted permission to Luther Blount—a member of the family of prominent oyster growers during the heyday of the industry—to construct two tidally flushed “oyster ponds” on the north end of Prudence Island along Jenny’s Creek. Although few oysters grew to salable size in the ponds, they were part of an education program that served to teach the public about the potential for restoring shellfish aquaculture to Rhode Island. Between 1977 and 1980, under the old oyster leasing permit laws, CRMC granted 13 more aquaculture permits, most of them small, 1-acre or less plots in the coastal salt ponds. The exception to this was the 1978 granting of 60 acres to Blue Gold Mussel Farm in the East Passage adjacent to the old Navy Base facilities in Middletown.

This granting of a 60-acre lease for aquaculture under the old leasing system caused a storm of protest by quahoggers, who pointed out that the leasing of such public trust land

was done without a formal public hearing. The controversy prompted then-Governor J. Joseph Garrahy in 1980 to ask CRMC to issue a moratorium on aquaculture leases and to conduct a study on aquaculture as a compatible use in the Bay. After a year’s study, the conclusion was that aquaculture was indeed a compatible use, but there was a complete rewrite of the aquaculture laws to include a system of public hearings and review of all aquaculture lease applications by the Rhode Island Marine Fisheries Council. In 1983, the CRMC published their Coastal Resources Management Program (CRMP) or “Red Book,” which outlined procedures for aquaculture lease application. After the promulgation of the revised aquaculture laws and CRMP, there were few new aquaculture applications received by CRMC, and most of the aquaculture leases granted during 1977 to 1980 were left to expire and were not renewed. By 1990 there were only four small leases left in the coastal ponds. The Blue Gold Company moved their operations to New Bedford in 1988 and ceased growing mussels in Rhode Island.

Renewed interest in aquaculture leasing began in 1988 when Robert Rheault, Jr., and his partner Robert Bergen of Spatco Ltd. submitted an application for a small 50-by-50-foot aquaculture lease in Point Judith Pond. This was the first real test of the revised 1981 aquaculture laws. The Spatco (aka Moonstone Oysters) application was finally approved in 1990, but only after 14 different public hearings by several different agencies and boards. The whole process of multiple hearings and nearly two-year time frame to obtain an aquaculture lease was seen as an impediment to the promotion of Rhode Island’s nascent aquaculture industry. 1993 brought the incorporation of the Ocean State Aquaculture Association (OSAA) and the publication of its OSAA Newsletter, aimed at educating the policymakers and the public about the benefits of a Rhode Island aquaculture industry. A year later, a report by URI resource economists James Anderson and Mark Spatz provided a comprehensive policy review and economic constraints faced by Rhode Island’s aquaculturists. As a



Oyster shell piles from two oyster-shucking houses at Fields Point, Providence, 1911. Photo from 1912 annual report of the Rhode Island Shellfisheries Commissioners.

result of the findings in this report and other publications, CRMC member Rep. Eileen Naughton of Warwick created the Legislative Commission on Aquaculture with a charge to investigate the means to promote and foster environmentally sound aquaculture in Rhode Island. The first act of the commission was to further study the opportunities and constraints of aquaculture. As a result of the commission’s work, legislation passed in 1996 established CRMC as the coordinating agency for the permitting of all aquaculture projects in the state regardless of location and type. Further, it streamlined the hearing process, created a coordinated application process, and required annual reporting to the General Assembly. As part of this legislative package, funds were appropriated to CRMC to create a state aquaculture coordinator position.

Since implementation of the 1996 revisions to the aquaculture laws, aquaculture has grown in value of product sales from \$83,518 in 1995 to \$1.3 million in 2006, and the number of farms has grown from six to 28. The Rhode Island aquaculture industry is no longer moribund as evidenced by this steady and healthy rate of growth. But the industry is still dominated by oyster aquaculture, for, as the old oystermen knew, there’s no better place to grow oysters than in Rhode Island.

—Michael A. Rice is a Professor of Aquaculture in the URI Fisheries, Animal and Veterinary Science Department.

Editor’s Note: This article was excerpted from “A Brief History of Oyster Aquaculture in Rhode Island,” which appeared in *Aquaculture in Rhode Island: 2006 Yearly Status Report* by the R.I. Coastal Resources Management Council.