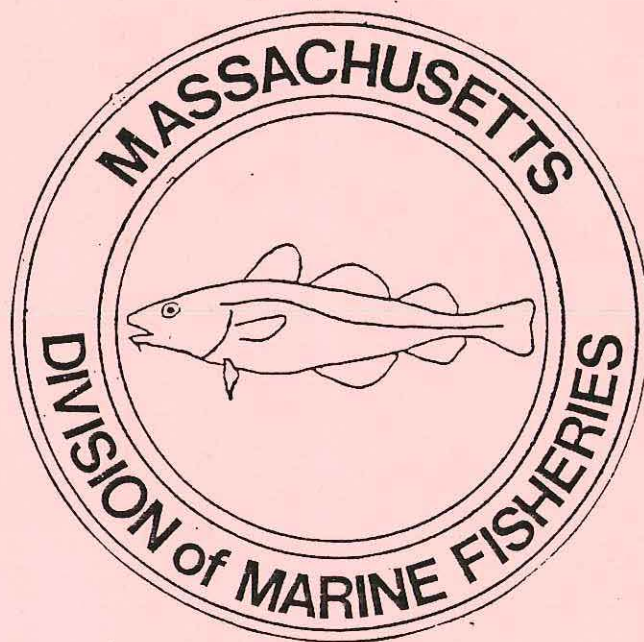


**THE HISTORY OF SHELLFISH BACTERIAL
CLOSURES IN BUZZARDS BAY
1900 TO 1992**

AUGUST, 1992



**BY
FRANK J. GERMANO JR.
MASSACHUSETTS DIVISION OF MARINE FISHERIES
SHELLFISH CLASSIFICATION & MANAGEMENT PROGRAM**

INTRODUCTION

Buzzards Bay is a large coastal embayment between Cape Cod and Southeastern Massachusetts. The bay is approximately thirty miles long by nine miles wide and contains approximately 180,000 acres of shellfishing waters. Buzzards Bay is open to the Atlantic Ocean (Rhode Island Sound) to the west and has three passages through the Elizabeth Islands into Vineyard Sound to the south side. The Cape Cod Canal, at the northeastern extremity of the bay, allows large vessel passage into Cape Cod Bay. Major tributaries entering Buzzards Bay are the Westport, Slocum, Acushnet, Mattapoissett, Weweantic, Wareham, Pocasset, and Wild Harbor Rivers.

Buzzards Bay has been an important part of the history of Southeastern Massachusetts. The City of New Bedford, once the homeport of the great whaling vessels, has more than 200 large commercial offshore fishing vessels. Large freighters and tankers daily transit Buzzards Bay using the Cape Cod Canal to safely reach their ports of call. Shellfish sanitary surveys conducted by the Division of Marine Fisheries listed more than 6,000 boats docked or moored in the bay. Ten of the eleven coastal communities bordering the bay have long used its waters for both recreational and commercial shellfishing.

According to 1991 shellfish catch statistics submitted to the Division of Marine Fisheries by the bay's communities more than 7,291 recreational and 380 commercial shellfish licenses were issued in 1991. Total landings were 87,034 bushels of shellfish. The estimated value of the shellfish harvest as reported by the local shellfish constables was more than \$4,254,774.

SHELLFISH CLOSURE HISTORY

The following is a chronology of the Buzzards Bay bacterial shellfish closures from 1900 to 1992 (Table 1). There will be no mention of the heavy metal or hydrocarbon closures which occurred during that period.

1900 - 1909

According to the Massachusetts Department of Public Health (DPH), the Commissioners of Inland Fisheries and Game, the Department of Environmental Quality Engineering (DEQE) and the Division of Marine Fisheries (DMF) historic records, portions of Buzzards Bay had been classified as prohibited or restricted to the harvest of shellfish since the early 1900s as a result of illness caused by the discharge of raw sewage. Despite public health concerns about shellfish from bacterially polluted waters, water sampling was generally conducted only following the outbreak of illness.

The prevalence of typhoid fever, 565 cases with 93 deaths between 1900 and 1903, among individuals consuming shellfish in New Bedford caused the State Department of Health to conduct an investigation of the shellfish water quality around the City of New Bedford. Following the three year study, it was determined that large quantities of sewage entered New Bedford Harbor, the Acushnet River and Clarks Cove.

On July 21, 1904, the Massachusetts Department of Health requested the Commissioners of Inland Fisheries and Game to prohibit the taking of shellfish from approximately 624 acres of Clarks Cove and 1,335 acres of the Acushnet River and Outer Harbor. This closure totally closed shellfishing in the Town of Acushnet.

During the period from the closure in 1904 until 1910, 503 cases of typhoid fever with 73 deaths were reported in New Bedford. Interestingly, many of these cases were from the families of shellfishermen harvesting quahogs from Clarks Cove and the Acushnet River with "contaminated bait only" permits.

There were no other changes in the classification of bay waters for the remainder of the decade. At the end of the decade, approximately 1,959 acres of Buzzards Bay were classified as prohibited to the harvest of shellfish.

1910 - 1919

In 1911, New Bedford began construction of an intercepting sewage system designed to collect all of the City's sewage and discharge it into Buzzards Bay nearly 3,300 feet south of Clarks Point, the approximate site of the present Wastewater Treatment Plant primary outfall. After January 1915, the bulk of New Bedford's sewage was discharged, without treatment, to the offshore outfall.

Following an request by New Bedford's Mayor Charles S. Ashley to reopen Clarks Cove for shellfishing, a 1917 State Health Department survey found that shellfish along a larger portion of the western or Dartmouth side of the Cove was potentially unsafe as a food source. In an October 1, 1918 letter from the Massachusetts Department of Health's Assistant Engineer, Mr. Rufus Whittet, the Clarks Cove closure was increased to approximately 900 acres and a closure zone be established around the outfall.

The outfall prohibited zone stopped the harvest of all shellfish within the area south of Fort Rodman given the name "The Trapezoid" because of its shape. The Trapezoid closed approximately 680 acres of very productive shellfish waters in Dartmouth and New Bedford.

At the end of the decade, Buzzards Bay shellfish closures totalled 2,778 acres.

1920 - 1929

When sewage polluted oysters were implicated as the cause of nationwide outbreaks of typhoid fever in epidemic portions in 1924 and 1925, the U.S. Public Health Service was charged with developing a program for the certification of shellfish growing areas. States began a system of routine inspection and monitoring of their shellfish areas using a total coliform standard.

As a result of sanitary surveys and water samples collected by the Massachusetts Department of Public Health, several areas in Buzzards Bay were reclassified as prohibited to the harvest of shellfish in the 1920s.

On January 5, 1926, approximately 153 acres of Mattapoissett Harbor in the Town of Mattapoissett were classified as prohibited to shellfishing because of the large amounts of human sewage flowing into the shellfish areas via stormdrains and from boats.

On September 22, 1926, nearly 90 acres along the eastern shore of the Apponagansett River and Apponagansett Bay in Dartmouth were classified as prohibited to shellfishing for the same reasons. In May of 1927, this closure was reduced to approximately 35 acres, north of the Bridge Street Bridge.

By the end of the decade shellfish closures in Buzzards Bay totalled 2,963 acres and included five towns.

1930 - 1939

In 1930 and 1931, the Apponagansett Bay closure was classified as seasonally approved during the winter months. The seasonal classification was discontinued on December 3, 1932 when testing indicated that the pollution problems still existed. The closure was then enlarged to include 55 acres along the Padanaram shoreline.

The Town of Wareham saw its first shellfish closure on January 16, 1936 in the Broad Marsh River when approximately 50 acres of Johnson's Creek were reclassified as prohibited due to excessive amounts of sewage and laundry waste entering the shellfish growing area from the Home Washing Company.

Following the Great September, 1938 Hurricane, the DPH briefly reclassified hundreds of acres of the western shore of Buzzards Bay as prohibited to shellfishing. The closures were generally in effect for several weeks, none lasting past the end of the year.

The decade ended with approximately 3,033 acres of Buzzards Bay were closed to shellfishing.

1940 - 1949

A review of the DPH records indicated that a shellfish closure was placed in Dartmouth around the southern tip of Mishaum Point on February 5, 1943. At that time, Mishaum Point was a U.S. Army Reservation, housing approximately 200 soldiers during World War II. The two septic tanks had overflow pipes into Buzzards Bay. The 190 acre prohibited zone extended seaward around the base for a distance of a quarter mile. The area was reclassified as approved for shellfishing on January 16, 1948 after the Army closure of the facility.

A second similar DPH closure was placed along the shore of Dartmouth's Round Hill, then also a military reservation, because of the discharge from the base's septic tank into the bay. The area extended seaward one quarter mile between Round Hill Point to the Col. Green's Wharf closing 90 acres to shellfishing on February 12, 1943. The area was reclassified as approved on April 5, 1946 after the Army discontinued the facility.

The September 14, 1944 hurricane prompted the Department of Public Health to briefly reclassify several areas around New Bedford, Fairhaven and Dartmouth as prohibited to shellfishing. Following the hurricane, the Town of Mattapoisett requested the State inspect shellfish from a contaminated relay to determine if the quahogs were fit for human consumption. As a result of this inspection, the western portion of Mattapoisett Harbor west of a line drawn from "Middle Pier" to Rycroft Point and the Mattapoisett River were added to the existing closure, increasing the Mattapoisett Harbor closure to approximately 350 acres. The area remained closed to shellfishing until 1946.

On March 4, 1946, following a sanitary survey, the DPH reduced the size of the size of the Mattapoisett Harbor closure to 75 acres around the town piers and abutting shoreline east of the mouth of Eel Pond.

During the ten years of the 1940s, a maximum of 7,588 acres had been classified as prohibited to the harvest of shellfish. By the close of the decade, closed shellfish acreage in the bay decreased to 2,955 acres.

1950 - 1959

In the early 1950s, more than a thousand acres of Clarks Cove were reclassified as conditionally approved. Shellfishing was allowed during the winter months and during period of limited rainfall until the CSOs overflowed. Subsequent to Hurricane Carol on August 31, 1954, all 1,179 acres of the Cove was briefly

closed to shellfishing. In January 1955, the closure line was moved to a line across the Cove from Woodlawn Street to Rogers Street closing approximately 125 acres and operation of the conditional zone was apparently discontinued.

Hurricane Carol also forced the DPH to temporarily prohibit shellfishing in portions of Dartmouth, Fairhaven, Wareham and Bourne. Following the hurricane, Mattapoissett's Board of Selectmen, apparently not remembering the lesson of the 1944 hurricane, requested the State inspect shellfish from a contaminated relay to determine if the quahogs were fit for human consumption. As a result of this inspection, 56 acres of Mattapoissett Harbor off Crescent Beach were reclassified as prohibited. The closure remained in effect until 1965.

At the end of the decade, Buzzards Bay shellfish closures again had decreased to a total of 2,236 acres, mainly as a result of the reopening of Clarks Cove.

1960 - 1969

As with past hurricanes, Hurricane Donna on September 12, 1960, forced the DPH to place temporary shellfish closures along much of the western shore of Buzzards Bay.

Clarks Cove was again closed to shellfishing from October 1, 1963 until November 18, 1964 while the U.S. Army Corp of Engineers constructed the New Bedford "Hurricane Barrier" around the northern perimeter of the Cove. As a result of the construction, sewage was diverted from the Cove Road line directly into the Cove. On November 18, 1964, the Corp of Engineers informed the City that sewage was no longer being dumped into the Cove and the closure reverted to the 125 acre Woodlawn Street to Rogers Street closure line.

In 1965, the Crescent Beach section of Mattapoissett Harbor was reclassified as approved for the harvest of shellfish.

As in 1918, when Mayor Ashley's request to the Massachusetts Department of Health to reopen portions of Clarks Cove to shellfishing resulted in an increased closure, the February 3, 1967 request by New Bedford City Council Shellfish Committee to reopen the northern portion of the Cove also resulted in a larger closure. On February 28, 1967, as a result of the shellfish sanitary survey requested by the City, the state's Department of Public Health Director, Dr. Worthen H. Taylor ordered 2,000 acres of Clarks Cove and Buzzards Bay south of the Cove in Dartmouth and New Bedford reclassified as prohibited to shellfishing because of the discharge of untreated sewage from the combined sewer outfalls (CSOs) in the Cove.

Buzzards Bay shellfish closures for the 1960s totalled

approximately 4,200 acres.

1970 -1979

On September 28, 1970, the Department of Public Health enlarged the shellfish closure in the New Bedford area to include all of Clarks Cove, the Acushnet River, the New Bedford/Fairhaven Inner and Outer Harbor as well as a portion of the bay north of a line drawn from Ricketsons Point in Dartmouth to Wilburs Point in Fairhaven. The closure, which totalled 7,286 acres, resulted from the untreated discharge of raw sewage into Buzzards Bay from the outfall pipe south of Clarks Point, the New Bedford CSOs and stormdrains along the Fairhaven shoreline. The New Bedford Wastewater Treatment Plant was not built until 1974. It is interesting to note that these conditions had been noted as pollution sources in sanitary survey reports since State engineer Rufus Whittet's 1918 report, requiring nearly fifty years to pass before the area was closed to shellfishing.

Similarly, the Dartmouth Wastewater Treatment Plant was built in June of 1971, the DEQE which assume classification responsibilities in 1972, did not establish a closed safety zone around the outfall until January 29, 1978. The original closure was approximately 600 acres and did not include Salters Pond. The pond was classified as conditionally approved and remained open to shellfishing unless problems occurred at the wastewater treatment plant.

In 1971, East River, Broad Cove and Muddy River in Wareham closed to shellfishing; in 1974, part of the Buzzards Bay off Point Connett in Mattapoissett was reclassified as prohibited. Hiller Cove in Mattapoissett was reclassified as conditionally approved, with shellfishing allowed only during the winter months.

The 1970s were a decade of first closures for some of the bay's towns. Cuttyhunk Pond in the Town of Gosnold was closed in August 1977. Westport and Bourne saw their first closures in 1978 when a portion of the East Branch of the Westport River and Red Brook Harbor were closed to shellfishing.

By the end of the decade, 8,052 acres of Buzzards Bay were closed to the harvest of shellfish representing nearly a 185% increase in the last ten years. The increase may reflect an increase in the sampling effort by DEQE rather than an increase in the amount of pollution present in the bay.

1980 - 1989

Major classification changes in the bay occurred in the 1980s. In 1981, the Dartmouth side of Clarks Cove was opened to shellfishing. In January 1983, the Cove closed and the

Dartmouth, Fairhaven, New Bedford closure was enlarged to 9,000 acres.

Bypasses of raw or poorly treated sewage at wastewater treatment plants caused large, but thankfully, brief shellfish closures. Nearly 2,000 acres of Buzzards Bay and the Slocum River in Dartmouth were briefly reclassified as prohibited in 1982 as a precaution following the failure of the chlorinators at the Dartmouth Wastewater Treatment Plant which allowed the discharge of unchlorinated wastewater into Buzzards Bay.

On December 10, 1987, the New Bedford, Dartmouth, Fairhaven closure was enlarged to more than 21,000 acres following the bypass of an estimated 100 million gallons of partially treated sewage by the New Bedford Wastewater Treatment Plant. The closure lasted three weeks unfortunately putting nearly one hundred shellfishermen out of work for Christmas.

In February 1989, the prohibited zone around the Dartmouth outfall was enlarged to nearly 2,500 acres for a month because of a malfunction at the treatment plant.

During the decade, more than 1,300 acres of the West Branch of the Westport River and 1,776 acres of the East Branch were briefly closed to shellfishing forcing a total suspension of shellfishing in the town. Richmond Pond in Westport was classified as prohibited as were Allens Pond in Dartmouth; portions of Little Bay in Fairhaven; Nasketucket Bay in Fairhaven and Mattapoissett; Eel Pond and the Mattapoissett River in Mattapoissett; Aucoot Cove in Marion and Mattapoissett; Briggs Cove, Wing Cove and Sippican Harbor in Marion; the Weweantic River in Marion and Wareham; portions of the Wareham River and Onset Bay in Wareham, and West End Pond in Gosnold.

After fourteen years of closures from oil spills and mercury contamination, Falmouth received its first bacterial closure when Quisset Harbor closed in 1983. It was soon followed by Herring Brook and the Sippiwissets. In 1984, all of Buttermilk Bay in Bourne and Wareham closed to shellfishing for the first time .

Nearly 900 acres in Bourne were closed during the 1980s. The Cape Cod Canal; Back River and Eel Pond; Pocasset River; Hen's Cove, and Barlows Landing were all closed to shellfishing. On July 16, 1987, shellfishing in all 1,500 acres of Pocasset Harbor, east of a line drawn from Wings Neck to Scaggy Neck were closed for the summer because of unacceptable water quality.

By the end of the 1980s, the shellfish closure total had increased to 14,749 acres, again representing a 183% increase over the last ten years.

1990 - 1992

The 1990s promise to be an interesting time in the shellfish history of Buzzards Bay. By September 1990, a total of 17,890 acres were reclassified as prohibited. Changes were made on the closed safety zone on two of the bay's larger wastewater treatment plants. On May 30, 1990, the prohibited zone around the Dartmouth outfall was enlarged from approximately 600 acres to 1,097 acres as a precaution due to increases in the plant's effluent volume. On September 10, 1991 as a result of a DMF and U.S. FDA hydrographic study conducted at the New Bedford primary outfall, the closure line was extended westward to the Bents Ledge buoy.

On August 20, 1991, the day after Hurricane BOB, all of Buzzards Bay was briefly reclassified as prohibited as a precautionary measure. While the waters around the Elizabeth Islands were only closed for a week, some of the growing areas in the harder hit communities of Mattapoisett, Fairhaven and Bourne were closed for 3 months.

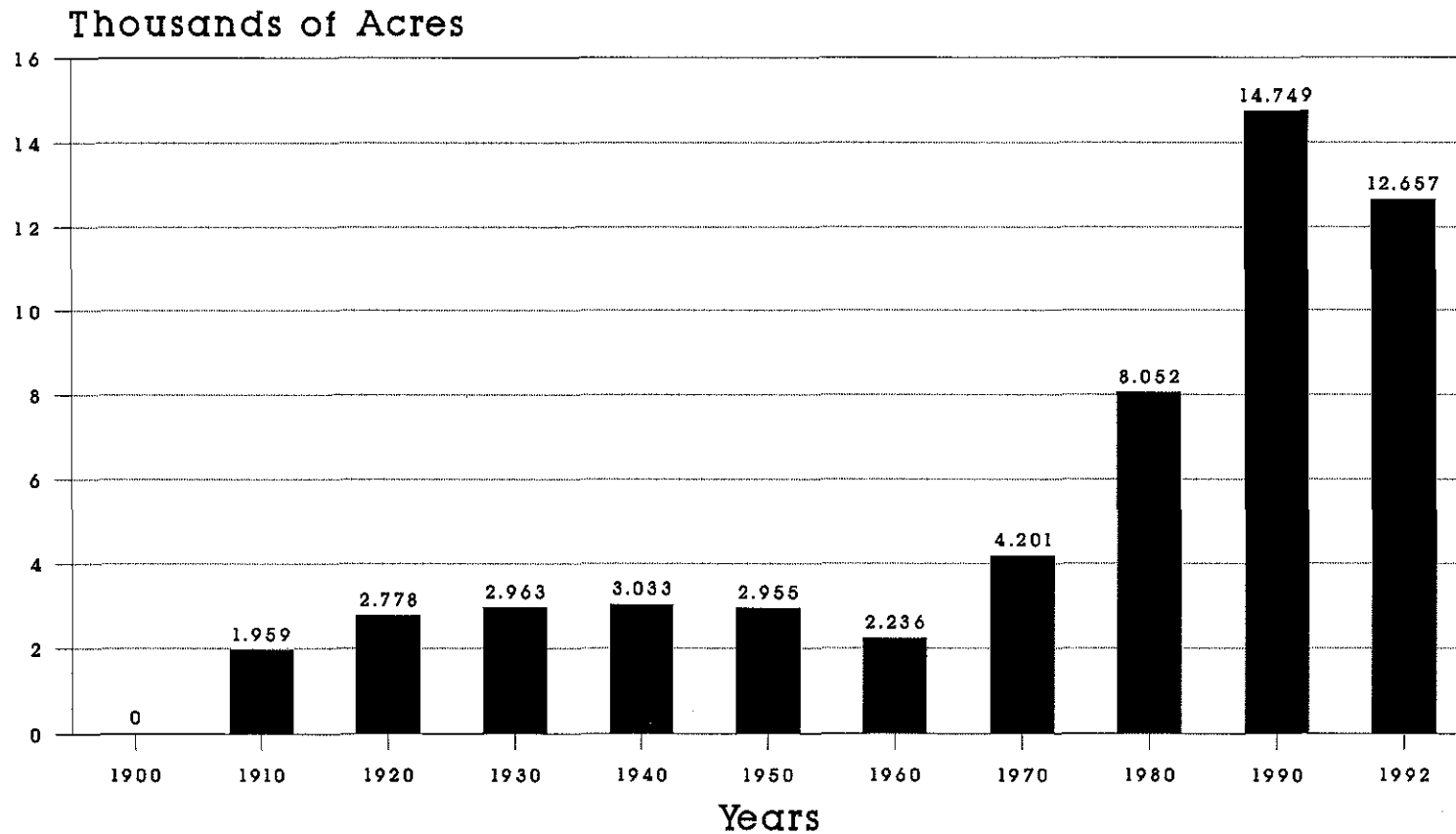
On a more positive note, the Division of Marine Fisheries with the assistance of local officials has been able to reclassify large portions of Buzzards Bay as "Conditionally Approved" for shellfishing. The conditional classification allows the reopening in shellfish beds which are subject to predictable intermittent pollution events such as rainfall or seasonal fluctuations in water quality. Once the criteria for a conditional classification is established and a management plan is in place, shellfishing can resume in areas previously closed.

Memorandums Of Understanding (MOUs) signed by the Division and the City of New Bedford and the Towns of Fairhaven, Dartmouth and Westport reclassified nearly 2,468 acres of previously prohibited shellfish waters as conditionally approved based upon rainfall amounts.

CONCLUSION

Today, a total of 12,657 acres of Buzzards Bay is still classified as restricted or prohibited to shellfishing. The large increases in closed acreage seen in the 1970s and 1980s reflects an intensified sampling and survey effort by DEQE and DMF rather than an increase in pollution in Buzzards Bay. Today's closed acreage represents a 29% decrease in closures since September 1990. The decrease is due in large part to the cooperative effort developed by the bay's communities and the Division of Marine Fisheries. The implementation of the MOUs and the local assistance in conducting sanitary surveys reflects a willingness on the part of the Buzzards Bay communities to work towards solving the bay's problems.

Chronology of Buzzards Bay Bacterial Closures of Shellfish Areas from 1900 to 1992



Prepared by Div. of Marine Fisheries
7/31/92