Action Plan

Protecting and Enhancing Shellfish Resources

Problem

Since the 1970s, Buzzards Bay has been experiencing a tremendous increase in the number of shellfish-harvesting areas closed as a result of potential pathogen contamination (see Figure 5.3). In 1970, slightly more than 4,000 acres of shellfish beds were closed in Buzzards Bay; in 1991, approximately 13,200 acres are closed. Degradation of water quality due to pathogen contamination represents a serious human health risk and economic loss.

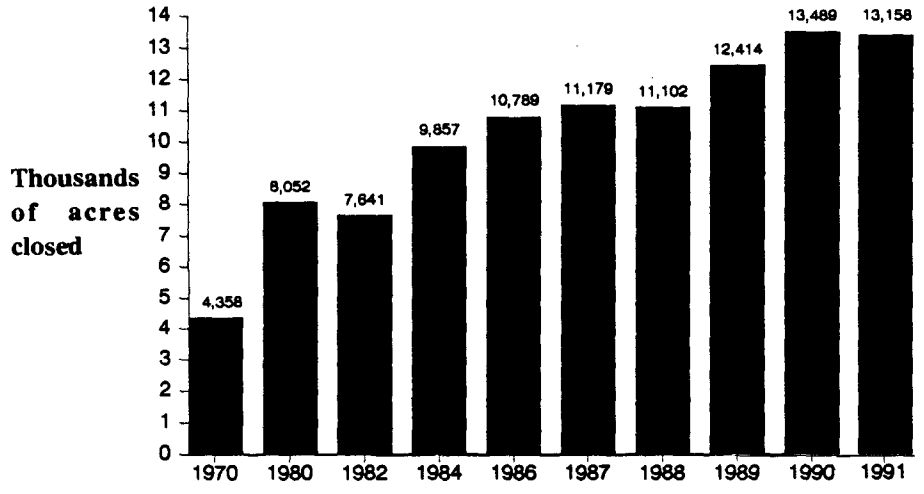

Figure 5.3. Shellfish resource areas closed in Buzzards Bay

These shellfisheries are a valuable resource and need to be protected. Quahogs, bay scallops, soft-shell clams, and oysters are the predominant species harvested. In 1988, the landed value of the commercial shellfisheries of the Bay was $4.5 million out of a statewide total of $18.8 million (Figure 5.4). Landings of quahog and bay scallop constitute the majority of the commercial shellfishery in Buzzards Bay.

For these reasons, the closing of shellfish beds is one of the priority problems that has been addressed by the Buzzards Bay Project over the past five years. More beds are being closed because more pathogens are finding their way to the Bay and, to a lesser extent, because improved monitoring has identified previously undocumented problems.

NATIONAL SHELLFISH SANITATION PROGRAM

In order to protect public health from shellfish contaminated by sewage, the National Shellfish Sanitation Program (NSSP) was established in the 1920s. Composed of federal, state, and industry representatives, today this program is carried out through a forum known as the Interstate Shellfish Sanitation Conference. In Massachusetts, the Division of Marine Fisheries and the Massachusetts Division of Food and Drugs are the responsible state agencies in the NSSP.

One goal of the NSSP is the proper classification of shellfish resource areas to safeguard public health from pathogen-contaminated shellfish. A major portion of the classification process involves the growing-area survey, or sanitary survey. A sanitary survey must be conducted in each shellfish harvesting area prior to its approval by the state for any harvesting purpose. The sanitary survey has four major components: (1) evaluation of potential pollution sources affecting the area; (2) evaluation of the meteorological factors affecting the entrance and dispersal of contaminants; (3) evaluation of hydrographic factors affecting the distribution of pollutants in the area; and (4) assessment of the water quality. The synthesis and analysis of this information to determine the proper classification of the area is referred to as a sanitary survey report.

The classification process requires periodic evaluation and review. Each year, water quality data are collected and analyzed on at least five separate occasions for each approved growing area. Every three years, the classification of each growing area is reevaluated based on the latest survey report and most recent data. Every 12 years, a complete shoreline survey is conducted to pinpoint obvious pollution sources.

A second goal of the NSSP is to determine appropriate classification standards that will protect public health. As indicated in Chapter 4, fecal coliform bacteria are currently used to classify shellfish harvesting areas. Because public health agencies are not able to measure the entire host of human pathogens directly, they rely on fecal coliform bacteria as an indicator of public health risk. Although the fecal coliform standard appears to be a very conservative measure, legitimate questions have been raised about the accuracy of the method.

As important recreational and commercial shellfish areas are closed, fishing pressure on open areas increases. Therefore, in addition to pathogen contamination, this action plan addresses several resource-management issues as a means to enhance the productivity of open shellfish areas. Other action plans, especially Controlling Stormwater Runoff, Managing Sewage from Boats and Managing On-Site Systems, deal with controlling sources of pathogen contamination.

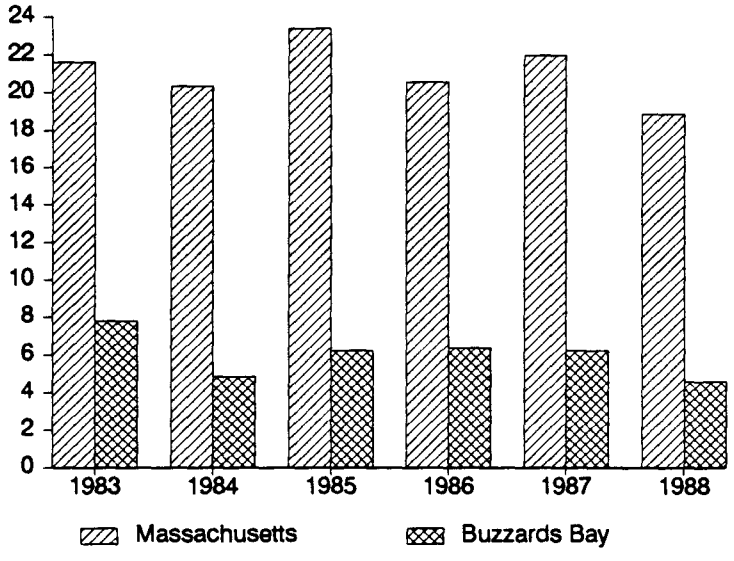

Figure 5.4. Annual value of shellfish landings in Buzzzards Bay and all of Massachusetts

Background

Major sources of pathogens and coliforms entering Buzzards Bay include sewage treatment plants, combined sewer overflows (CSOs), stormwater runoff, boat sewage, and septic systems. As of April 1991, 13,150 acres of shellfish areas were closed due to pathogen contamination; 19,550 acres were under administrative closure because they had not been surveyed by DMF; and 554 acres were conditionally approved (DMF, personal communication).[1] Chapter 4, Characterization of Pollution Sources, presents a full discussion of the sources of pathogens entering Buzzards Bay.

In the New Bedford area (Clarks Cove and Outer New Bedford Harbor) closures because of sewage contamination have resulted in the loss of nearly 500,000 bushels of

1 All of Buzzards Bay is subdivided into approximately 60 shellfish "resource areas" for classification purposes. Shellfish resource areas include both productive beds and commercially and recreationally unproductive areas. For this reason, both closed and open shellfish areas are not always indicative of the viable shellfish resource in that area. As of April 1991, there were a total of 114,383 acres of resource areas approved for shellfishing.

quahogs valued at nearly $5 million (Conservation Law Foundation, 1988). This contamination is primarily the result of CSOs located in the area, as well as inadequate performance of the New Bedford sewage treatment plant. This is perhaps the most striking example of the magnitude of the problem of pathogen contamination.

In the less urbanized areas, Project findings indicate that stormwater runoff is a major factor contributing to the increased closings of shellfish beds around the Bay and that discharge of sewage from boats represents a significant potential source of pathogens impacting shellfish-harvesting areas.

In 1989, the Division of Marine Fisheries (DMF) completed an extensive effort to survey shellfish-growing areas along the coast. Information from sanitary survey reports are being entered into the Buzzards Bay Project database to prepare maps, such as that shown in Figure 5.5 for Dartmouth, and other useful products for state and municipal environmental managers.

The problem facing the shellfisheries of Buzzards Bay is not limited to the closure of harvesting beds; the headline news of the productivity of open areas is also an issue. In general, shellfish management is vested in local communities (size limits are set by the state). Over the past 20 years, local shellfish management has improved as the result of the technical and financial assistance programs administered by the DMF. These programs are being severely undermined as a result of fiscal constraints at the state level. The expansion of local shellfish programs has increased the need for technical assistance from the state, but state funding for such assistance has not kept pace with the demand. In addition, classification of shellfish areas has taken precedence over technical assistance in assignment of staff time. In the state budget for fiscal year 1991, the financial assistance program (reimbursements to local communities for shellfish-related expenditures) was not funded.

Impediments to sound shellfish management at the local level include lack of consistent and reliable catch data and lack of state oversight for management planning. Currently, data on commercial and recreational harvest are collected at the local level, using methods that vary from town to town. Information is often based on personal observations or estimations, reducing its reliability. Catch data are important and can be used to evaluate trends, set quotas, establish economic value, and assist in predicting future populations.

Although the state formerly provided financial assistance to local shellfish programs, there has never been a mechanism to ensure effective management planning. The financial assistance program was simply a reimbursement program open to all coastal communities. Reimbursements were based on available funds at the state level ($300,000 to $400,000 annually) and the expenditures at the local level. At one time, local communities were reimbursed for as much as 50% of their expenditures. More recently, this figure had dropped as low as 15%. In 1989, Buzzards Bay communities received an average of $7,800 (DMF).

Legislation is needed to establish a grant program that provides aid to local communities in management of the resource, and at the same time provides state oversight to ensure effective management planning. A shellfish grant program to foster improved protection of the shellfish resources of the Commonwealth has been introduced in the Massachusetts Legislature.

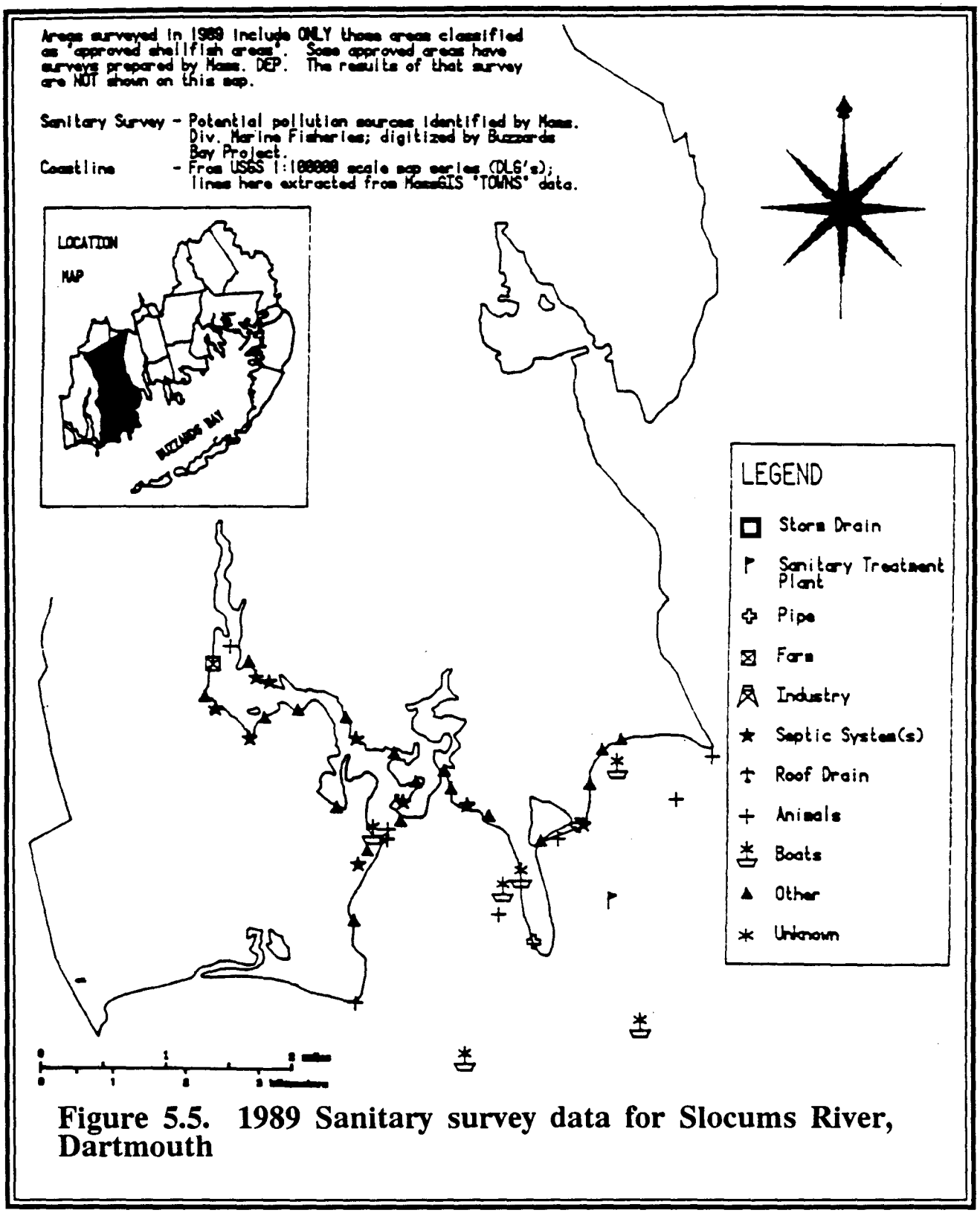

Figure 5.5. 1989 Sanitary survey data for Slocums River, Dartmouth

Shellfish harvesting areas that are subject to intermittent, somewhat predictable, pollution events, such as rainfall, may be classified as conditionally approved. In 1990, only one area in Buzzards Bay, 894 acres in the Westport river, had this classification. Significantly more documentation of water quality conditions surrounding the pollution event is required for conditional approval. A management plan that includes enforcement contingencies and safeguards must be developed and approved by DMF. The process is a very rigorous one. For example, Westport conducted a study to assess coliform levels and sources in the Westport River estuary. This study cost $50,000 and allowed Westport to identify protocols, stations, and sampling frequency for a monitoring program. This effort enabled DMF to allow conditional closures in the Westport River after rain events, allowing greater utilization of the shellfish resources in that estuary. If a town is willing to provide the resources, conditional approval is a way in which productive shellfish areas can be kept open much of the time.

Sanitary survey shellfish bed classification

Approved – any growing area that does not contain pathogens, fecal material, or poisonous substances in dangerous concentrations. Shellfish can be harvested recreationally and commercially.

Conditionally Approved – any growing area that is subject to intermittent pathogen pollution. Shellfish can be harvested only under certain specific conditions.

Restricted – any growing area that indicates a limited degree of pathogen pollution. Shellfish are moderately contaminated and can be harvested by specially-licensed diggers for purification at the state-operated depuration plant.

Conditionally Restricted – any growing area that is subject to intermittent pathogen pollution. Shellfish may be harvested at times when contamination is predictably low.

Prohibited – any growing area that is closed to the harvest of shellfish at all times. Shellfish cannot be harvested under any circumstances.

Major Issues

In order to improve the shellfisheries of Buzzards Bay, state and local governments need to work cooperatively to identify and correct known sources of pathogens impacting all productive shellfish areas. There is also a need for better management to reduce fishing pressure on open areas. The use of the conditional-approval classification standard can increase availability of open areas and better reflect conditions responsible for increased coliform concentrations. Methods for collecting shellfish catch data need to be improved and standardized for both the commercial and recreational shellfisheries. Increased state funding is necessary to carry out the Shellfish Sanitation Program and to continue providing the appropriate level of technical and financial assistance to local communities to enhance resource productivity and improve shellfish management.

As noted in Chapter 4, use of fecal coliform bacteria as indicators of public health risk has raised serious questions. While this indicator has provided reasonable protection from bacterial pathogens, it has not been shown to correlate well with the occurrence of viral pathogens. Despite this, research has not yet provided a better indicator.

Goal

Increase availability of shellfish resources for recreational and commercial uses.

Objectives

1. To keep open all shellfish areas that have not closed and open priority areas that are closed.

2. To enhance efforts to manage shellfish resources at both the state and local levels.

3. To increase the capacity and commitment of municipalities to remediate identified pollution sources and to assist in conducting the sanitary survey program.

4. To increase the ability of DMF to carry out the sanitary survey program and provide technical and financial assistance.

5. To expand the use of the conditionally approved classification for shellfish areas.

CCMP Commitments

Division of Marine Fisheries (DMF)

1. DMF will work to train individuals in each Buzzards Bay town in shoreline surveys and strive to develop long-term cooperative arrangements that ensure consistency of town participation and supplements limited state personnel with local manpower.

Target date: 1991-1993.

2. DMF will encourage Buzzards Bay towns to work cooperatively with them to expand the number of conditionally approved shellfish areas.

Target date: 1991-1993.

Department of Environmental Protection (DEP)

DEP will take enforcement action against significant illegal discharges identified by DMF's sanitary surveys.

Target date: 12/93

Buzzards Bay Municipalities

1. Falmouth, Bourne, Mattapoisett, and Dartmouth have initiated coordinated efforts within their towns to identify and set priorities for illegal discharges that may be affecting shellfish beds.

2. Falmouth, Bourne, Wareham, and Fairhaven have designated individuals with public health jurisdiction to assist DMF in classifying shellfish areas within their jurisdiction.

3. With DMF assistance, Fairhaven and Dartmouth will pursue conditionally approved shellfish areas within their towns.

Target date: 1991

Other Recommended CCMP Actions

1. All other coastal municipalities should correct identified sources of coliforms and pathogens entering the Bay.

Target date: immediately.

This CCMP contains action plans with recommendations to reduce pathogen inputs from major sources including sewage treatment plants, CSOs, stormwater runoff, boat sewage, and septic systems. Based on the sanitary survey reports prepared by the DMF, local communities should begin to prioritize major sources and then take the necessary corrective actions. The major responsibility for this action rests with the board of health and the local shellfish department. Implementation costs will vary widely and are site specific. The Buzzards Bay Project, DMF, and SCS will provide technical assistance on remediation strategies.

The Buzzards Bay Project has identified strategies to finance remediation. See the accompanying document, Financial Management Plan for funding options and cost figures for stormwater treatment, boat sewage solutions, and septic system management.

2. EOEA should increase funding to carry out the Shellfish Sanitation Program.

Target date: July, 1992. Cost: an additional $400,000 annually.

In fiscal year 1988, DMF was given full responsibility for shellfish classification (formerly it was shared with DEP) and the program has become a top priority for DMF. DMF, however, received only half the necessary funding to conduct these activities. Consequently, approximately 420,000 acres have yet to be classified statewide, and as a result, these areas remain closed. In addition, DMF is unable to provide adequate technical assistance to meet the needs of the communities. Full funding of the sanitation program should resolve these problems.

3. All other coastal communities should designate an individual with public health responsibility to assist DMF in classifying shellfish areas within their jurisdictions.

Target date: 1992.

Local communities need to take a greater role in providing assistance to DMF in classifying shellfish areas in an effort to maximize availability of existing shellfish resources. In addition, increased local participation should result in increased enforcement action and remediation of known pollution sources.

4. EPA and FDA should develop a new indicator or suite of indicators to replace fecal coliform as an indicator of human health risk.

Target date: begin immediately.

A new indicator or suite of indicators are needed that will differentiate human sources of pathogenic contamination from animal sources; give protection from viruses as well as bacteria; reflect actual health risk; and be easy and inexpensive to measure.

5. The Massachusetts Legislature should pass legislation to improve financial assistance at the local level.

Target date: 1992. Suggested funding level: $400,000 annually.

Implementation of a shellfish grant program administered by DMF will provide appropriate management oversight at the state level and incentive at the local level to enhance shellfish productivity. For 1988, the landed value of the shellfisheries of the Commonwealth was $18.8 million; this represents an important economic asset. Currently, the Massachusetts Legislature is considering such a bill.

6. DMF should develop standard methods for towns to report commercial and recreational shellfish catch data as a first step in monitoring resource utilization or losses.

Target date: 1993.

DMF and local shellfish authorities should work cooperatively to improve the collection and reporting of shellfish catch data from both the commercial and recreational shellfisheries.