

Chapter 10.
Managing the Bay's Fisheries Resources
Summary of Issues and Recommendations

Shellfishing and finfishing are important and historic uses of the Bay. Traditionally perceived to be a prolific resource, management of the Bay's shellfisheries was focused on issues of access to the resource. Declining harvests and a host of use-related conflicts and issues have broadened management concerns to include the following:

- Recorded harvests of quahogs, scallops, and soft shell clams have declined sharply over the past twenty years. Natural variations in growth cycles, loss of predator equilibrium, over-fishing, and loss of habitat are among reasons cited for the apparent declines in productivity. There is insufficient scientific data to assess reasons for decline, and to develop effective management strategies in light of the apparent trend.
- A number of issues affecting the viability of the Bay's shellfish resources transcend town lines and call for more regional cooperation. These issues include the use of certain fishing techniques, propagation, and sustained fishing of certain areas. Municipal propagation efforts are important to the future the Bay's shellfish resources and require more funding than the towns are currently devoting.
- Shellfish aquaculture is a use of the Bay that is compatible with maintaining good water quality. Demonstrated interest in expanding the area devoted to private aquaculture has raised questions about how an increase in private aquaculture would affect natural resources and interact with other Bay uses.

Recommendations to address these issues include:

- Refine and coordinate shellfish management regulations in the Bay
- Conduct an assessment of the Bay's fisheries to learn more about shellfish and finfish productivity trends
- Increase resources dedicated to public shellfish propagation efforts
- Study shellfish aquaculture siting issues within the fisheries assessment, and use study results to assist towns with siting decisions. Pending the outcome of the assessment, the Town of Orleans is advised to continue the moratorium on new private aquaculture grants in the Bay, and allow expansion or relocation of existing private grants only within the "Aquaculture Grant Area"

10.0 Overview

Naturally occurring shellfish stocks, historically an important and prolific resource of the Bay, are now in a state of apparent decline. Although the precise causes of shellfish harvest declines have not been pin-pointed, new focus is being directed to developing management strategies to ensure the long-term sustainability of these resources.

Because of the historically reliable abundance of shellfish, management of these resources has focused on ensuring easy and equitable access to them by recreational and commercial shellfishermen. Consequently, less management emphasis was placed on actions to ensure the resources' long-term sustainability. The historic focus on access is reflected in local regulations, which stipulate generally low permit fees, relatively few restrictions on access, and limited reporting requirements. More recently, local efforts to manage requests for private grant expansion have revealed a lack of scientific information about how an increase in private aquaculture could affect natural resources or other uses in the Bay.

These issues and trends have prompted the resource management plan to focus on the following issues:

- What research, resources, and management actions are needed to help ensure the sustainability of the Bay's fisheries resources, and how should they be conducted or administered?
- How does private aquaculture affect the Bay's natural resources, and how should requests for additional area for private aquaculture be managed?

10.1 Management Issue: Sustaining the Wild Shellfishery

As discussed in Chapter 4, recent harvest data collected by the towns of Orleans, Harwich and Chatham indicates that the three primary commercial and recreational shellfish species -- quahogs, scallops, and soft shell clams – have experienced a sharp decline over the past decade. Local shellfish officials, and commercial shellfishermen, have offered a number of possible reasons for the decline, including:

- fishing pressure, caused by over-fishing in certain areas, or use of poor techniques;
- juvenile mortality;
- loss of predatory equilibrium;
- environmental stress resulting from the formation of the Chatham breakthrough;
- presence of non-point source pollutants in the water column and bottom;
- natural species growth cycles;
- emergence of alternative species; and
- loss of habitat, primarily eelgrass.

Beyond local knowledge, there is little scientific data available on variations in the productivity of the Bay's shellfish resources. There is inadequate information to determine whether current harvest rates for various species are part of a long-term natural cycle, or whether relatively lower harvests over the past several years reflect environmental or human use factors that threaten the viability of certain species. It is acknowledged that recorded harvests, while perhaps indicative of a downward productivity trend, may overstate the trend by understating actual harvests.

The uncertainty of shellfish resource conditions has placed focus on how the resource is being managed. While the local approach has worked effectively for many years, a number of emerging issues point to the potential benefits of greater cooperation in managing the resource among the Bay towns, and for more research and monitoring of shellfishing activities:

- A number of harvesting techniques are perceived to influence the sustainability of the wild shellfishery, and to require additional research and monitoring. These activities include: salting for razor clams, the catch and release of horseshoe crabs, sustained harvesting in certain areas, and bottom culture aquaculture.
- The delineation of town boundaries is currently difficult to identify, causing confusion among shellfishermen over harvesting rights in certain areas.
- Because many factors that influence the productivity of shellfish resources transcend town boundaries, cooperative efforts could provide substantial benefits to the wild shellfishery Bay-wide.
- Resources currently available for research, management, and propagation of the wild shellfishery are extremely limited. Additional resources, along with cooperative efforts, are needed to ensure the availability of sufficient funds, and to ensure that funds are expended in the most cost effective manner.

These issues and trends point to the need for greater regional cooperation to sustain the Bay's valuable shellfish resources.

10.2 Recommendations to Sustain the Bay's Shellfish Resources

10.2.1 Refine and Coordinate Shellfish Management Policies and Regulations in Pleasant Bay

Summary: Apparent shellfish productivity trends and increased environmental pressures on the resource underscore a need to refine and coordinate local shellfish management regulations. New or revised policies are needed to monitor the status of the Bay's shellfish resources, harvesting methods, production data, propagation techniques, and other issues and activities that may affect the health and productivity of the Bay's shellfish resources. To be effective, these policies should be consistent among the towns of Orleans, Chatham and Harwich which, collectively, manage Pleasant Bay's shellfish resources. Where appropriate, consistent regulatory language should be developed and adopted into each towns' shellfish regulations.

- *Best Management Practices.* Best Management Practices are currently described within each towns' shellfish regulations. Comprehensive Best Management Practices for shellfishing and aquaculture need to be adopted in each town. To accomplish this, the practices as currently defined in local regulations need to be evaluated to ensure that they address the full range of shellfish management issues, and are consistent among the towns. Best Management Practices currently being developed by the aquaculture industry should be reviewed and adopted. Examples where current management practices are not clearly defined regards harvesting of horseshoe crabs, and salting for razor clams. In this and other areas, new performance-based

management practices will need to be developed. The management practices should be designed to promote compatibility with the Bay's natural estuarine conditions, scenic qualities, and other Bay uses. All permit-holders and grant-holders in the Bay should be required to abide by the Best Management Practices.

- *Demarcation of Town Boundaries.* The current demarcation of town boundaries has been identified by local fishermen as being inadequate. Town boundaries need to be evaluated to ensure that boundary definitions are accurate, and that signs and other indicators of town boundaries are adequate to enable license holders to identify their rights to fish in an area.
- *Monitor the Potential for Over-fishing.* Additional measures are needed to address the potential for over-fishing. Examples of possible regulatory options that should be evaluated for adoption by the towns, include: (a) full- or part-time closure of areas; (c) closure of areas for certain species; (d) enforcement of catch limits; and (e) a cap on the number of commercial permits issued.
- *Strengthen Enforcement.* Additional resources are needed to strengthen the towns' abilities to enforce shellfishing regulations. Use of trained seasonal staff with adequate oversight to assist in enforcement efforts should be considered.
- *Permit Fees.* The permit fee schedules of the three towns should be evaluated to assess whether and how variations in permit fees affect shellfishing activity and the sustainability of shellfish stocks. Based on this evaluation, recommendations may be made to the towns concerning the permit fee structure and funding for shellfish management, propagation, and enforcement.
- *Require Catch Reports.* The towns' requirements for permit holders to report harvest data should be strengthened.
- *Monitor Fishing Techniques.* New fishing techniques need to be evaluated for their long term impacts on resources, and should be regulated to protect against possible negative resource impacts.
- *Ensure Adequate Regulation of Non-traditional Fisheries.* Harvesting trends for alternative species (e.g., horseshoe crabs, razor clams, rock crabs, and sea urchins) should be monitored through harvest reporting data. Where necessary, regulatory changes should be recommended to the state Division of Marine Fisheries to ensure that currently unregulated species are adequately protected from improper harvesting practices.

Implementation: The Alliance Steering and Technical Resource Committees would appoint a Pleasant Bay Fisheries Oversight Committee consisting of each towns' shellfish management official, as well as representatives of local shellfish advisory committees, commercial and recreational fishing, marine scientists, aquaculturists, and

fisheries regulators. The Fisheries Committee would serve as a technical resource to the towns, providing information and recommendations concerning these and other issues that affect the sustainability of the Bay's shellfish and finfish resources. The Committee may also promote and conduct research projects. The Committee could act as a liaison with federal, state, and county agencies, and other groups regarding shellfish and finfish management policies and regulations. The Committee would advise the towns on issues concerning shellfish management, but would not replace local authority over the resource.

Funding: Funding to form the Committee is included in the FY 1999 budget for the Alliance. The Committee may also seek funding to further research projects and other activities related to the sustainability of the Bay's shellfish and finfish resources.

Time Frame: The Committee would be formed and commence the evaluation of issues within twelve months of the adoption of the plan by the towns and the state.

10.2.2 Conduct a Fisheries Assessment

Summary: A comprehensive assessment of the Bay's finfish and shellfish resources should be undertaken, either as part of the ecological inventory and monitoring program for the Bay (see 9.2.1), or as a separate study. In some respects, the assessment would serve to update *A Study of the Marine Resources of Pleasant Bay* conducted by the Massachusetts Department of Natural Resources, Division of Marine Fisheries in 1967. Regarding shellfish and finfish resources, the assessment should encompass:

- an inventory of shellfish and finfish species in the Bay;
- measures of the density and productivity of various species;
- measures of the economic values of commercial and recreational fisheries;
- numbers of people involved in recreational and commercial fishing;
- an evaluation of impacts of non-point source pollution within the watershed on water quality and the viability of aquatic species;
- an assessment of the impacts of aquaculture in the Bay (see 10.3.1); and
- an evaluation of impacts on wild shellfish and finfish, including those from the construction, maintenance, or presence of shoreline structures; sustained fishing of marginal stocks; loss of predatory equilibrium; cyclical abundance phenomenon; non-point source pollutants in the water column and sediments; juvenile mortality; environmental stresses; and the productivity of alternative species.

Implementation: The Pleasant Bay Fisheries Oversight Committee would design the scope and work plan for conducting the fisheries assessment. Additional technical expertise may be requested of regional scientific institutions to develop the scope and work plan. Consultant services may be required to conduct the assessment and interpret results.

Funding: Funding to develop the scope and work plan for the assessment is included in the FY 1999 budget for the Alliance. Additional funds needed to conduct the

assessment, either as a component of the inventorying and monitoring program or as a separate study, would be identified by the scope and work plan.

Time Frame: The scope and work plan for the fisheries assessment would be developed within twelve months of the adoption of the resource management plan by the towns and the state.

10.2.3 Enhance Bay-wide Propagation Efforts

Summary: Shellfish management officials, marine scientists, and fishermen involved in the Shellfish and Aquaculture Work Group identified public propagation efforts as being crucial to the sustainability of the resource. Specifically, additional resources, and new practices and policies are needed to strengthen public propagation efforts. Opportunities for cooperative activities among the towns, where they could enhance resource sustainability, should be fully explored and implemented. Specific propagation issues that should be addressed include:

- *Dedicated Fund for Propagation.* Options for increasing the share of funds from commercial and recreational permit fees that are dedicated to shellfish management and propagation should be explored. Chatham's propagation funding system should be reviewed for applicability in the other towns.
- *Selecting Propagation Techniques and Practices.* Presently used propagation techniques should be evaluated, and those techniques with the best chances for success should be recommended to the towns. The potential benefits from experimenting with alternative species, or innovative propagation techniques, should be explored. Opportunities to involve aquaculturists in providing seed and experimenting with new techniques should also be explored.
- *Measuring Success.* Guidelines should be developed for the towns to use in monitoring the success of public propagation efforts.
- *Bay-wide Cooperation.* Options for increasing Bay-wide cooperation on propagation efforts should be explored. This could include participating in a Bay-wide hatchery or other form of cooperation.

Implementation: The Pleasant Bay Fisheries Oversight Committee would review propagation programs and funding options and develop recommendations to the towns. Technical assistance may be requested from regional scientific institutions, and the Massachusetts Division of Marine Fisheries. Implementation of recommendations would involve the towns either independently or cooperatively.

Funding: Funding for the Committee's evaluation of issues is included in the FY 1999 budget for the Alliance. The costs and funding strategies for implementing propagation recommendations would be identified by the assessment of issues and recommendations.

Time Frame: The Committee would begin to evaluate issues and develop recommendations within twelve months of the adoption of the resource management plan

by the towns and the state. Evaluation of issues and development of recommendations, including any consultants studies, may extend beyond that time.

10.3 Management Issue: Managing Private Shellfish Aquaculture Grant Areas

Private aquaculture grants have been cultivated in Pleasant Bay for many decades. Private aquaculture grants now utilize twenty-eight acres of Pleasant Bay in Orleans. A number of Orleans grantholders have expressed interest in expanding existing grants, which could add up to twelve acres to the amount of the Bay used for private aquaculture. Currently, Orleans has in place a moratorium on new private aquaculture grants in the Bay pending the results of the Resource Management Plan. The issue of private aquaculture was the focus of intensive review and discussion throughout the development of the resource management plan. With the public discussion and resource analysis as its basis, the plan's objective with respect to aquaculture is to provide the towns with guidelines to apply in making decisions about the location and amount of private grant area in their respective waters.

Private grantholders in the Bay use essentially the same techniques as those employed for public propagation efforts. However, the public discussion during the planning process highlighted two characteristics that differentiate public and private aquaculture. Cumulatively, private aquaculture grants utilize a larger amount of the Bay than public aquaculture projects. Questions were raised about how increased use of the Bay for private aquaculture could affect natural resource conditions. Some of the resource issues raised are:

- could the area of sandy and muddy tidal flats of the Bay used for private aquaculture displace or disrupt habitats or feeding areas for migratory birds and other species?
- could the use of significant amounts of seed grown in other waters have the potential to introduce disease?
- what impacts could bottom culture aquaculture have on benthic invertebrates?

On the other hand, proponents of aquaculture raised many potential natural resource benefits of aquaculture, including:

- the release of shellfish spat into the wild shellfishery;
- the nursery areas and havens for species of marine invertebrates, finfish, and vegetation provided by netting and bottom boxes;
- water quality benefits because shellfish are plankton and detritus filter feeders.

The analysis and discussion concerning private aquaculture revealed a lack of scientific data available to validate either the impacts or benefits to natural resources from aquaculture activity.

Another characteristic of private aquaculture that differentiates it from public aquaculture is that it constitutes a private use of a public resource. Public aquaculture is

intended to benefit the general public through enhancement of the wild shellfishery for recreational and commercial harvesting. By comparison, private grants provide a source of income for grantholders, and ancillary spending in the community. This characteristic evoked questions about how private grants interface with other uses of the Bay. Specific concerns are:

- could an increased amount of area devoted to aquaculture restrict the amount of area available for boating and other Bay uses?
- could marker buoys and other equipment used in grant areas diminish the Bay's scenic quality?

For their part, private aquaculture grantholders in the Bay highlighted their on-going efforts to avoid intrusions either on views or on navigation.

The extensive public dialogue concerning private aquaculture highlighted the need for more information about how aquaculture affects natural resources, and about how private aquaculture grant areas and other Bay uses interact. This information is needed to guide future decisions about private aquaculture in the Bay. Decisions about the future of aquaculture in the Bay will continue to be determined at the local level. The plan is intended to provide a decision-making framework, and a means of generating information, to guide those local decisions.

Currently, towns' decisions about the placement of aquaculture grants are guided by the laws and regulations administered by Massachusetts Division of Marine Fisheries (DMF). The information and analysis generated through the DMF review process aids towns in assessing the suitability of grant sites, and the possible impacts of grants on the surrounding environment. However, issues not presently addressed through the DMF review process have surfaced as being important to the Bay. These issues include the impacts on marine invertebrates and waterfowl, and the cumulative affects of using a large amount of a specific type of bottom habitat. Information and analysis of these issues, along with those covered by DMF, is needed to ensure that future decisions about siting private aquaculture grants preserve and protect the Bay's natural resources.

10.4 Recommendations to Manage Private Aquaculture Grant Area

10.4.1 Determine the Potential for Aquaculture in the Bay and Develop Guidelines for Grant Siting and Administration

Summary: A study of issues relevant to the future potential for aquaculture in Pleasant Bay should be undertaken in two phases. As noted above, this information would augment information and analysis now being generated in accordance with DMF regulations. Phase I would assess siting issues and identify any areas of the Bay that may be suitable for aquaculture. Phase II would develop guidelines for towns to use in making decisions concerning aquaculture in their respective waters of the Bay. Pending the results of the aquaculture section of the comprehensive fisheries assessment, towns are recommended to govern private aquaculture in accordance with 10.4.2 below.

Phase I would be incorporated into the comprehensive fisheries assessment (see 10.2.2). Issues relevant to aquaculture that would be evaluated in the fisheries assessment are:

- areas of naturally occurring shellfish stocks and shellfish habitats;
- impacts of aquaculture on a range of habitat conditions, such as the potential encroachment on feeding areas for migratory bird species;
- impacts of aquaculture on boating and navigation;
- visual and noise impacts on habitats and species;
- potential propagation benefits to the natural shellfishery; and
- impacts or benefits to water quality.

Based on the evaluation of these issues, Phase II would develop guidelines for the towns to use in siting and administering grants in the study area. Specifically, the guidelines would:

- Identify areas of the Bay that may be suitable for private aquaculture.
- Assess the cumulative impacts on the Bay's habitats and feeding areas resulting from the use of areas deemed suitable.
- Encourage towns to develop and adopt best management practices and minimum performance standards for all grant areas. At a minimum, the management practices and standards should ensure the sustainability of the Bay's resources.

Implementation: The Pleasant Bay Fisheries Oversight Committee would develop the scope and work plan for conducting both phases of the study. Through this process they would work with the towns, private aquaculturists, the Massachusetts Division of Marine Fisheries and regional scientific institutions. Conducting the study may require consultant services (see 10.2.2) .

Funding: Funding to develop the scope and work plan for the phase I of the study is included in the FY 1999 budget for the Alliance. Funding for conducting the assessment (phase I), and developing guidelines (phase II), is expected to come from public or private grant sources. The aquaculture section of the comprehensive fisheries assessment would be updated every five years.

Time Frame: The scope and work plan for phase I would be completed within twelve months of approval of the resource management plan by the towns and the state. Implementation of phase I, and the development of guidelines for the towns (phase II) would be completed within twenty-four months of the adoption of the plan.

10.4.2 Recommendations to Govern Private Aquaculture Grants Pending the Completion of the Aquaculture Assessment.

Summary: Pending the completion of Phases I and II of the aquaculture section of the comprehensive fisheries assessment, the following provisions are recommended to the towns. These provisions may be revised pending the results of the aquaculture section of the comprehensive fisheries assessment.

- Institute a moratorium on the siting or permitting of new private aquaculture grants within the Pleasant Bay Study Area.
- Allow existing private aquaculture grantholders in Pleasant Bay to expand their grants, located within the “Aquaculture Grant Area”, in accordance with all rules and regulations of the Town having jurisdiction, and in accordance with any restrictions placed on individual grants. Expansion is to take place only within the “Aquaculture Grant Area” (see following figure).
- Allow existing private aquaculture grantholders with grants located in Pleasant Bay outside of the “Aquaculture Grant Area” to expand in accordance with all rules and regulations of the Town having jurisdiction, and in accordance with any restrictions placed on individual grants. Expansion is to take place only within the “Aquaculture Grant Area” (see following figure).
- Allow the relocation of an existing grant in Pleasant Bay to an area within the “Aquaculture Grant Area”. No existing grant may relocate to another area of the Bay outside of the “Aquaculture Grant Area” (see following figure).
- Maintain and properly mark a navigable passage within the “Aquaculture Grant Area” eastward and northward from Little Pleasant Bay to the vicinity of Pochet Neck, and southward through Broad Creek (see following figure).

Implementation: The provisions concerning the expansion or relocation of existing private grants will remain under the jurisdiction of the Town of Orleans.

Funding: No funding is required to implement the recommended provisions.

Time Frame: The recommended provisions should be implemented upon adoption of the resource management plan by the towns and the state.