

# Duxbury Aquaculture Management Plan

Final Version: Adopted by the Duxbury Board of Selectmen on January 12, 2009

Developed jointly by an *ad hoc* subcommittee consisting of members from

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Duxbury Bay Management Commission (John Brawley)  
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## Goals and Objectives

In 2005 the Duxbury Bay Management Commission (DBMC) developed and released the Draft Duxbury Bay Management Plan (DBMP). This draft plan is considered a living document and contains a review of historical and existing conditions relevant to the function, use, and health of Duxbury Bay. This plan also provides a series of prioritized recommendations for further work to support the facilitation of management decisions relevant to uses and condition of the bay. One specific, high-priority recommendation within the plan is the following:

*Create and maintain an Aquaculture Management Plan. Determine the potential for aquaculture in the bay, and develop guidelines for grant siting and administration including use conflict analysis.*

More recently the DBMC formed joint task force with the Duxbury Shellfish Advisory Committee (DSFAC) to assist the Duxbury Board of Selectmen (BOS) in deciding whether the existing moratorium on new aquaculture leases should be continued, modified, or lifted. The joint task force met for several months throughout 2006 and culminated with a memo and public presentation to the BOS in November 2006<sup>1</sup>. This memo summarized findings related to a series of topics related to the Board's interest in knowing more about the potential for aquaculture in Duxbury's waters. This memo is provided as an attachment to this document (Attachment B). One specific recommendation in this memo was the development of an aquaculture management plan. Four recommendations were provided that support the framework of this document:

1. The BOS should continue the existing moratorium until the DBMC completes a comprehensive Aquaculture Management Plan.
2. The DBMC should form an *ad hoc* committee to develop a draft Aquaculture Management Plan. The committee should include representatives from the DBMC, the DSAC, the Duxbury Shellfish Growers Association, and the Duxbury Agriculture Commission. The draft should be completed in six months and should be based on existing protocol and policies and any relevant recommendations provided within this document and agreed upon by the BOS. The plan would incorporate information on existing permitting processes, shellfish resources (recreational and commercial), and specific recommendations to manage shellfish aquaculture in the bay including information regarding the area and/or number of leases that can support hard and soft structures in Duxbury Bay. The draft plan will then be presented to relevant and

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<sup>1</sup> Report to the Board of Selectmen from the Duxbury Bay Management Commission Concerning Aquaculture. November 27, 2006.

- responsible town committees (e.g., DBMC, Agriculture Commission, Conservation Commission) for review and further development prior to incorporation into the Bay Management Plan. Recommended changes to any town policies on shellfish aquaculture will be made by the DSAC and provided to the BOS as in past instances.
3. The DBMC and DSAC consult jointly with the Duxbury Shellfish Growers Association, the Massachusetts Aquaculture Association, the New England Shellfish Growers Association, the Duxbury Agriculture Commission, and the Division of Marine Fisheries in an effort to determine whether additional leases would stress the existing aquaculture industry or the bay's ecosystem and natural resources.<sup>2</sup>
  4. Until the management plan is completed, exceptions to the moratorium should be considered only when conflicts between conditions imposed by the federal or state government and the Town prevent a license from being viable. However, any further site selection associated with this should be consistent with previous site-selection criteria such as areas utilized by wild shellfish industry, protected resources, and other pertinent factors.

Many topics of varying interest and importance were covered in the joint task force's 2006 memo. This management plan is primarily focused on recommendation numbers 1, 2 and 3 which deal with the existing moratorium on new applications for aquaculture licenses and an exploration into the area and/or number of leases that can support hard and soft structures in Duxbury's waters. This management plan also includes recommendations on the future of the Duxbury aquaculture lease program within the context of the existing size of the industry and the existing uses of the bay by all users. The additional specific recommendations provided by the 2006 joint task force (Recommendations #4 through 13) are beyond the scope of this document. These remaining recommendations are primarily focused on specific regulatory decisions and these should be addressed by the DSAC and the Harbormaster, or appropriate town officers, committees, or commissions (i.e., harbormaster, shellfish constable, BOS, DSFAC, DBMC and others).

Therefore, the purpose of this document is to:

- Provide recommendations that will promote the success and sustainability of the shellfish aquaculture industry;
- Explore and identify current and future shellfish aquaculture industry needs;
- Explore and provide recommendations on the basis for determining the area and/or number of aquaculture leases that can be supported in Duxbury waters.
- Explore any required modifications to the existing licensing and administration process and provide recommendations as appropriate.

This document has the following attachments:

- Attachment A: Duxbury Shellfish Aquaculture Grant Program (Rules and Regulations 7.3)
- Attachment B: November 2006 Report to the Board of Selectmen
- Attachment C: Resource Maps of Duxbury Bay

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<sup>2</sup> Although this DBMC recommendation does not mention the Aquaculture Management Plan *ad hoc* committee the question posed is being addressed in this document.

# 1 Background and Introduction

Aquaculture is defined as a form of agriculture, in both State and Federal laws. Aquaculture in Massachusetts is established under Chapter 130, section 57 of the General Laws of Massachusetts. Section 57 and subsequent sections are quite definitive and complete. In addition, since the waters of Duxbury Bay are Federal waters, both the Army Corps of Engineers and the U.S. Coast Guard also have laws and/or regulations regarding aquaculture within the Bay.

The Town of Duxbury is authorized by the Massachusetts General Laws to grant a shellfish aquaculture license which meets all of the State and Federal laws, to an area of up to 10 acres and for a period of up to 10 years. Currently, Duxbury allows each licensed shellfish aquaculture lease holder a maximum of 3 acres; this limit was proposed in the early days of Duxbury's commercial aquaculture operations when hard clams were the only shellfish being cultured. Duxbury leases new sites for a period of up to 3 years and renews those licenses for a period of up to 10 years if the leaseholder has demonstrated good aquaculture practices and a viable business. License holders are reviewed on a farm-specific basis.

As of 2008 there are 30 licensed aquaculture lease holders in Duxbury<sup>3</sup> associated with a total of 70.67 acres of leased area. This total area comprises 1.27% of the 5,563 acres of Duxbury Bay and the Duxbury portion of Kingston Bay. On January 14, 2005, the Duxbury Board of Selectmen (BOS) imposed a moratorium on the approval of additional aquaculture leases. The basis of that decision was the increasing number of lease applications and the BOS's concern that it lacked sufficient information to decide whether additional leases should be approved. The DBMC and the DSAC created a joint sub-committee to review the moratorium to assist the BOS in deciding whether the moratorium should be continued, modified, or lifted. This sub-committee submitted a report to the BOS in November (2006) that summarized findings and recommendations associated not only with the moratorium on new aquaculture lease applications, but also a series of potential issues associated with multiple user interests in the bay. This document addresses the prior sub-committee recommendations that are relevant to the management of aquaculture in Duxbury; this plan is intended to provide additional, more specific recommendations having to do with the continued success and sustainability of the industry and the effective management and administration of the lease program in the future.

## 1.1 *The Benefits of Aquaculture in Duxbury*

Many coastal commercial and recreational activities face issues associated with limited space and access and Duxbury's commercial aquaculture cannot escape this condition. However, the benefits associated with Duxbury's aquaculture operations are numerous and these should be balanced fairly against the issues and concerns such as those that have been raised in the DBMC sub-committee report. Duxbury currently supports a successful shellfish aquaculture industry that is the end result of many years of hard work, effective planning, innovation, and skill. The Duxbury aquaculture industry is contributing to a nation-wide effort to increase sustainable aquaculture, a position firmly held by the National Oceanic and Atmospheric Administration (NOAA)<sup>4</sup>, the Massachusetts Division of Marine Fisheries (MA DMF)<sup>5</sup>, and the Massachusetts

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<sup>3</sup> There are four individuals who are currently in the process of either finalizing their licenses or relocating at least some portion of their leased (or future leased) area within the bay. However, the total value of 30 licensed individual is assumed to be the total number pending additional, new applicants.

<sup>4</sup> <http://aquaculture.noaa.gov/>

Office of Coastal Zone Management (MA CZM)<sup>6</sup>. Duxbury's farmers contribute directly to the Duxbury community through clearly visible efforts such as the recent Duxbury Oyster Festival where thousands of oysters were donated to support a youth academic scholarship in marine sciences; and numerous additional events where oysters have been complimentary supplied and thoroughly enjoyed by townspeople of Duxbury. There are also imperceptible, yet existent, economic and educational benefits to the town. Duxbury regulations require that all leaseholders be residents of the town. The revenue generated through aquaculture provides family income of which a majority is spent within local community. The industry hires high school and college students as summer employees where they earn decent incomes, spend time on the water, and learn about marine ecology and aquaculture as a business. The aquaculture industry has contributed thousands of oysters toward the town's newly developed recreational oyster fishery which has allowed existing shellfish permit holders to harvest oysters in several specified areas. Several shellfish farmers have received government grants allowing them to conduct scientific studies on shellfish growth, survival, and water quality within the bay. And lastly, the scientific community has identified shellfish aquaculture to typically be a net ecosystem benefit by virtue of increased attenuation and removal of land-derived nutrients, and increased water clarity which is likely to be beneficial to existing and future eelgrass habitat.

The benefits of shellfish aquaculture to Duxbury can be summarized as follows:

**Economic Benefits** – The Duxbury aquaculture industry employs over 30 local residents full time, all year. Economic multipliers for shellfish aquaculture have been estimated by state agencies range between 4.5 and 7.0 in Massachusetts<sup>7</sup>. A significant proportion of money earned by local aquaculture practices is spent in Duxbury and contributes further to local business development and success.

**Environmental Benefits** – Environmental benefits associated with the practice of shellfish aquaculture have been widely reported in coastal management and scientific literature. The primary benefits include (1) clearance of suspended particles from the water column which create conditions conducive to eelgrass survival; (2) removal of organic matter from the water column and enhancing both burial (loss in sediments) and denitrification; which limits and/or reverses the undesirable effects of nutrient enrichment in shallow coastal embayments; and (3) increased structure in normally featureless muddy bottoms has also been shown to support more diverse food webs and provides habitat for juvenile crustaceans and fishes. As an example of these benefits, both the federal and state governments are spending significant funds to develop new oyster beds within the Chesapeake Bay to offset the effects of pollution and run-off which have, along with overfishing, destroyed much of the wild fisheries in the Bay. Section 3.1 identifies additional specific references to environmental benefits related to shellfish farming.

**Community Infrastructure** – Having a strong commercial presence increases, or improves, the likelihood of receiving state and or federal funding for projects such as the dredging of the federal entrance channel and basin. This has been demonstrated in the past and the presence of a commercial fishery in Duxbury will continue to raise the town in priority for state and federal funding.

**Environmental monitoring** – Duxbury shellfish growers have been actively participating in water quality monitoring through association with the Southeastern Massachusetts Aquaculture

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<sup>5</sup> <http://www.mass.gov/dfwele/dmf/information/goals.htm#x>

<sup>6</sup> <http://www.mass.gov/czm/wpmaraqu.htm>

<sup>7</sup> <http://www.mass.gov/czm/wpmecon.htm>

Center (SEMAC) and recently with the Jones River Marine Ecology Center. The DSGA has recently been awarded funding to deploy permanent water quality sensors in the bay to aid in shellfish disease forecasting efforts and overall water condition assessments. The DSGA are stewards of the bay and committed to understanding and improving the bay's ecosystem.

**Recreational Fishery** – Efforts are currently underway between the DSGA and the Duxbury Harbormaster's office to establish a consistent recreational oyster fishery in Duxbury. This effort, which has been successful, will provide opportunity for residents (and non-residents) to harvest their own oysters and will generate revenue for the town. The first recreational fishery was opened in the fall of 2007.

**Safety and Stewardship** – Duxbury shellfish growers are on the water almost every day of the year. They are composed of experienced mariners who are able to assist in emergency and non-emergency situations. Their presence allows them to assist the town<sup>8</sup> in the monitoring of bay activities. However, it must be noted that the increased on-the-water activities associated with shellfish farming has affected demands upon the Harbormaster's office.

**Historical Preservation** – A successful, sustainable aquaculture program in Duxbury ensures the preservation of historical, productive uses of the waterfront. Duxbury has had shellfish farms in the past (1930s).

## ***1.2 The Impacts of Aquaculture in Duxbury***

Aquaculture practices in Duxbury also impose impacts to other bay user groups, public resources, and the town's infrastructure.

**Multiple Uses** – Like most coastal areas in southern New England, Duxbury's waterfront and bay areas support a variety of recreational and commercial uses. However, it should be noted that commercial and recreational access and usage of the town's coastline is currently limited. Boating, both power and sail, is a popular activity, as is sail boarding, kite boarding, rowing, and fishing, to name a few. Striking a delicate balance between these recreational activities and Duxbury's commercial activities, which include lobstering, fishing, wild shellfishing and aquaculture practices, is necessary. It is essential that, as a community, we strive to avoid personal and property damages, not only to the general public but to the aquaculture community as well. Consistent uniform marking systems, public education, and outreach programs are the primary means to enhance the balance among other uses and aquaculture.

Steps have been taken to minimize potential user conflicts. For instance, the DSAC has provided guidance towards preventing nursery racks from being used in a series of new aquaculture leases near Goose Flat (mid/eastern bay), a popular area for windsurfing and kite boarding. Also, the system for marking aquaculture leases and gear was reviewed by the DSFAC and the town rules and regulations were modified to reflect improvements in public safety.

**Public Resources** – The aquaculture industry in Duxbury requires the use of some public resources such as public boat ramps, mooring fields, Harbormaster safety efforts, and parking areas. As the industry grows, the potential for increased truck, trailer, and boat traffic at these locations increases.

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<sup>8</sup> The Duxbury Police and Fire Departments and the Harbormaster's Office.

The majority of Duxbury shellfish farmers use the Mattakeesett boat ramp to access their leases and to load/offload gear and shellfish product. Some use Shipyard beach and Howland's landing. Most lease holders use town landings during the early (am) hours in the warmer months before most other commercial and recreational users are present. In the winter months the aquaculture industry is the primary user group of town landings and the bay. Overall the use of town landings by the aquaculture industry has declined in terms of the number of visits per day. This is because of the use of permitted floating rafts to offload, cull, and bag shellfish which were activities previously performed onshore. These permitted floats are typically located along the outer fringes of the basin flats anchorage, located close to several aquaculture lease areas yet away from high traffic areas of the harbor. Shellfish sorting, rinsing, and packaging are the primary activities occurring on floats (rafts) and are only utilized during daylight hours (note: shellfish harvesting is prohibited prior to ½ hour before sunrise and ½ after sunset).

## **2 Duxbury Shellfish Lease Program**

The Duxbury shellfish lease program is currently in a state of flux because the BOS imposed a moratorium on new applicants on January 14, 2005. Before this occurred, the process for filing an aquaculture lease application was "open" meaning that the town accepted applications and either approved or denied them on a case-by-case basis. Applications were reviewed by the DSAC who would determine whether the potential lease license should be approved or not. This process involved reviewing the applicant's site location, whether conflicts may exist with other commercial, or "wild", shellfish resources, and overall context with respect to public safety and uses. The DSAC would hold a posted public meeting, previously announced in the local newspaper, and solicit feedback from the general public in attendance. Following this procedure a recommendation would be made to the BOS to either approve or deny a given application. The applicant would then go before the BOS in an advertised and posted public hearing to describe the activities of the planned lease site(s) and answer any questions that the BOS or public might have with regard to the application. A representative from the DSAC would usually be present and communicate the committee's recommendations on the application. Then the BOS would provide either an approval as to concept and location to move the application forward or deny the application. The BOS could also table or continue the hearing due to the requirement to attain additional information. An approval from the BOS would then subject the applicant to further reviews and comment from the Massachusetts Division of Marine Fisheries (DMF), the Conservation Commission, the U.S. Army Corps of Engineers (ACOE), other public and private interests as required. Following the review and approval from these entities, the applicant would return to the BOS to request a final, official town approval of the application in the form of a signed license. The typical application process could span six to twenty-four months.

The decision of the BOS to impose a moratorium and initiate a study of the lease program and its potential influence on public resources and activities has resulted in a series of recommendations drafted by the joint task-force assembled by the DBMC (attached) and the creation of this management plan. The next section addresses some relevant recommendations that were presented by the DBMC and also provides recommendations developed by this *ad hoc* committee toward integrating this maturing industry into the existing town resource base and process for licensing of aquaculture leases in the future. The next section also describes needs within the shellfish aquaculture industry that the town should consider in planning the future of the lease program.

### 3 The Future of the Duxbury Shellfish Lease Program

The future of the town's shellfish lease program must balance the pressures of additional lease areas with the continued sustainability of existing lease holders. The decision to impose the moratorium was supported by the growing concern by the BOS that too many leases could be getting approved amid uncertainty of the potential impacts on bay ecology and other bay uses. This section will provide a summary of existing knowledge on these subjects and present recommendations for action or further study where appropriate. Summaries of aquaculture industry needs are also presented and recommendations are provided that span both the responsible management of aquaculture in Duxbury and the requirements to ensure the sustainability of a viable shellfish aquaculture industry.

#### 3.1 Bay Ecology

The question associated with the effects of aquaculture practices on the bay's long-term ecology is currently unanswerable due to the vagueness of such a question and the time and effort it would take to decipher measurable changes. But the general consensus among numerous scientific studies is that estuarine systems along developed shorelines are "healthier" with increased shellfish abundance<sup>9</sup>. In fact, the introduction and enhancement of shellfish populations is being conducted to mitigate the undesirable effects of eutrophication (result of nutrient enrichment) and habitat loss in many estuaries of the U.S. and elsewhere. Without a site-specific study of the bay's capacity to support increasing shellfish populations, it is assumed that the current level of shellfish production in the bay has not resulted in undesirable conditions and that the bay can support more shellfish. It has been and is regularly observed that the introduction of limited structures (e.g., nursery racks) and the presence of oysters in formerly unproductive areas of the bay has resulted in an increase in estuarine species and diversity<sup>10</sup>. Examples of this include baby lobsters using oyster bags for protection and overwintering, sets of wild bay scallops in oyster bags, increased abundance of small eels and other finfish in and around nursery areas.

The health of the bay is of primary interest to the town's aquaculture industry because poor water quality conditions would affect the quality and sustainability of the resource. Potential dangers to the bay and the farmers include bacteria and contaminant runoff from adjacent watersheds, the effects of eutrophication (nutrient over-enrichment), and shellfish disease (dermo, MSX, JOD)<sup>11</sup>. The town's interest in collecting and summarizing historical and current water quality and ecological monitoring work by outside entities along with the development of a volunteer monitoring program will add significantly to the understanding of how vulnerable the bay and its

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<sup>9</sup> Newell, RIE, TR Fisher, RR Holyoke and JC Cornwell, 2005. Pages 93 - 120. In: *The Comparative Roles of Suspension Feeders in Ecosystems*. R. Dame and S.Olenin, eds. Vol. 47, NATO Science Series: IV - Earth and Environmental Sciences. Springer, Netherlands

<sup>10</sup> Dealeris, J.T., B.D. Kilpatrick, and R.B. Rheault. 2004. A comparative evaluation of the habitat value of shellfish aquaculture gear, submerged aquatic vegetation and a non-vegetated seabed. *Journal of Shellfish Research*, Vol. 23, No. 3, 867-874.

<sup>11</sup> These shellfish diseases are composed of naturally occurring microbial parasites that infect only shellfish and are completely nonpathogenic to humans or other animals. These diseases are often exacerbated by overcrowding shellfish (high densities).

resources are to undesirable conditions.<sup>12</sup> In addition to the above, the aquaculture industry is continually susceptible to adverse natural events such as red tide, major storms, and winter ice.

### *Recommendations*

- (1) A citizen's water quality monitoring program was initiated by the DBMC in 2007 and a new task force has been formed to compile historical and existing monitoring information from outside entities (e.g., the MA DMF, MA DEP, UMASS, Center for Coastal Studies, Jones River Ecology Program). The DBMC should continue to support and develop the citizen's water quality monitoring and assessment program and collaborate with the DSAC on the potential need for shellfish disease monitoring.
- (2) The issue of carrying capacity should be considered as a long-term project to be initiated by the DBMC and the DSAC.

## **3.2 Bay Uses**

As described earlier, balancing the needs of the aquaculture industry and the other uses of the bay is of high importance. Public safety, resource protection, and the security of public and private property are perhaps the highest priorities with regard to multiple uses of the bay. The means to preserve both, with regard to aquaculture, is to enhance public awareness of the nature and location of aquaculture practices in the town's waters.

This can be done several ways. It is recommended that maps and descriptions of caution zones within the bay should be developed and made available at key locations in town (Town Hall, Harbormaster's office, town landings, private marinas). Just as responsible mariners study navigational charts prior to going underway on the bay, they should also have access to charts that indicate where aquaculture operations exist. Descriptions of the types of aids to navigation (buoys, markers) that indicate aquaculture lease areas, as specified by the U.S. Army Corps of Engineers and the town, should be provided in such materials. This is not only critical for public safety but also for the safety of the town's aquaculturists who are frequently working on their leased areas. Likewise, the preservation of the aquaculturist's property is to be considered important and the public should be informed of the nature of such property, their specifications, and laws regarding property damage.

### *Recommendations*

- (1) A waterways guide to boaters and other users of the bay should be developed by the DSGA in collaboration with the DBMC to inform and educate the public. Such a guide should include the following descriptions:
  - a. Location of public access areas (landings, ramps, parking);
  - b. Information on tides in the bay (spring vs. neap; mean depths and currents);
  - c. Description of aquaculture lease areas, practices, and laws;
  - d. Delineation of "caution areas" which include shallow waters, bars, rocks, aquaculture lease areas, high traffic zones, and areas utilized by sailing instruction, rowers, and regattas.

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<sup>12</sup> A citizen's water quality monitoring program was established in 2007 by members of the DBMC and the DSGA.



- e. Safety information, including locations and phone numbers of emergency personnel and resources.
- (2) The town should continue to support the introduction of a basic boater education programs. This could take form in several ways and could have several participants (DBMS, DSGA, Long Point Marine, Bayrider, and Bayside Marine).

### ***3.3 Sustainable Aquaculture Practices***

The Town of Duxbury has a history of supporting and encouraging shellfish aquaculture. Therefore, despite the current moratorium on new lease applications, the Town should focus on solidifying the private aquaculture ventures currently underway in Duxbury.

#### **Off-Season Storage**

The common practice of shellfish aquaculture in Duxbury requires the use of nursery and grow-out gear. Typically this gear is used in subtidal and intertidal areas leased by licensed farmers. However, the removal of this gear is necessary in the fall to avoid damage by winter ice, sedimentation, and biofouling. In addition, there are also buoys, lines, and other miscellaneous equipment which need to be stored throughout the year. Many existing farmers have found locations for storing gear within the community. Yet several have had difficulty finding suitable locations. Several local cranberry farmers have offered or leased unused space for aquaculture gear storage, but these opportunities are limited and can vary every year. The town currently leases town-owned land to other agriculture users, most notably cranberry growers. It makes sense for the town to consider expanding its leasing policies to include off-season aquaculture gear storage in appropriate locations. Since the town supports, licenses, and approves leases of shellfish aquaculture in town waters, providing limited access to vacant lands<sup>13</sup> for winter gear storage would mitigate critical needs by licensed farmers and minimize potential conflict with abutters.

#### *Recommendation*

- (1) The DSGA should work with the DSAC to review the ability to develop a winter storage program for existing aquaculture lease holders.

#### **Additional Licensed Area**

The current maximum area that a licensed aquaculture lease can reach is 3 acres. This maximum limit was arrived at arbitrarily in that no specific criteria were used to make this determination. When this maximum area was set the only shellfish culture practices in existence were hard clams (quahog). Oyster cultivation was new and evolving; the best methods to successfully grow shellfish in the bay were unknown at the onset of aquaculture practices in the bay. The practice of oyster grow out on mud flats was experimental at first and significant numbers of oysters were grown in bags within rack systems. The rack systems generally require less area than on-bottom grow-out because of the vertical extent of their use. On-bottom grow-out is now a common practice in Duxbury due to the increased quality of shellfish grown under this condition and the

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<sup>13</sup> For example: on or adjacent to town-owned cranberry bogs, DPW property, and other unused properties.

reduction of risk associated with shellfish disease due to overcrowding<sup>14</sup>. Currently, the 3-acre maximum is risking the overcrowding of shellfish on aquaculture leases and this may increase the risk of disease and decrease the overall quality of shellfish grown (reduced growth rate, multiple-attached oysters, bizarre/unmarketable shapes, etc.). Each summer a new “crop” is taken from the nursery areas (out of racks) and moved to grow-out areas. But for best practices, each annual crop requires its own area. Therefore, shellfish farmers need to rotate each annual crop based on age and marketable size. Although this has been practiced within the existing 3-acre maximum, most farmers have expressed the need for additional area to alleviate the pressures of crowding. In order for farming to work it must be economically viable. Increasing the maximum lease area would alleviate these undesirable conditions and increase the economic viability and sustainability of the industry, particularly for full-time farmers. Maximum area greater than 3 acres is not uncommon. For instance, the current maximum area for shellfish aquaculture in Wellfleet (MA) is 7 acres. In Provincetown there is no stated maximum area but each license applicant is reviewed based on “available acreage”<sup>15</sup>. Increasing the maximum leased area (per individual) would not necessarily increase the number of hard structures (nursery rack systems) from current levels because the additional area would be used for on-bottom grow-out which does not require any manmade structures at all. Conversely, additional area associated with new farms would require additional nursery racks commensurate with the size and scope of planned farm production. Under this scenario of an increased maximum grow-out area for existing licensed farmers, the DSAC would continue to review each specific application and apply the same site-selection criteria that exist now. These include the analysis of potential effects on wild shellfish, existing and historical eelgrass habitat, points and methods for accessing licensed areas, operating plans, potential safety issues, and others.

However, prior to the ultimate decision on whether to increase the maximum potential aquaculture licensed area, the existing moratorium has eliminated the ability of current shellfish farmers to reach the existing maximum area per license holder. These few individuals have expressed the need to do so. Thus, the DSAC should accept any applications by these few existing license holders to increase to the town’s maximum. These would be reviewed in a manner consistent with the previous application process.

Currently (2008) there are 30 aquaculture lease holders (licensed individuals) in Duxbury. There are now 70.67 acres of subtidal and intertidal lands used for shellfish aquaculture. This accounts for approximately 1.3% of the bay area (Duxbury Bay and the Duxbury portion of Kingston Bay). If the current 3-acre maximum were to be attained by all existing license holders then the total acreage would increase by about 19 acres to 90 acres. This would account for about 1.6% of the bay area (see Table 1). For the purpose of comparison, a fully applied 5-acre maximum area would result in a maximum of 150 acres, or about 2.7% of the bay area. Considering that the majority of this additional area would be free of manmade structures, it is a relatively small portion of bay use compared to other uses (e.g., boat moorings, docks, wild shellfish area). The locations of potential areas for expansion of grow-out would need to be determined by the DSAC in reviewing individual license applications such that growth is incremental and controlled.

Number of lease holders	Existing Area (acres)	Max. = 3 acres	Max. = 5 acres
30	70.67 (1.27%)	90 (1.62%)	150 (2.7%)

**Table 1. Current number of lease holders and potential leased areas. The total bay area is 5,563 acres. Values in parentheses are percentage of total bay area.**

<sup>14</sup> Menzel, W. 1991. Estuarine and marine bivalve culture. CRC Press.

<sup>15</sup> [http://www.provincetowngov.org/bl\\_regs/shellfish/aqua\\_grant.PDF](http://www.provincetowngov.org/bl_regs/shellfish/aqua_grant.PDF)

*Recommendations:*

- (1) The BOS should lift the moratorium on applications from existing practicing shellfish farmers to allow consideration of additional area up to the current maximum of 3 acres.
- (2) The DSAC should explore the possibility of increasing the maximum area permitted to each licensed shellfish farmer. This would not automatically allow each lease holder to attain this additional area, but would allow them to apply for more area. The DSAC would review applications, as previously done, on a case-by-case basis and make determinations on the appropriateness of additional area based on existing criteria and responsibilities.

### ***3.4 Licensing of New Aquaculture Areas***

#### **New Applicants and the Development of a Limited Entry Fishery**

Based on the review of the findings and recommendations submitted to the BOS by the (DBMC and DSAC) joint sub-committee (11/27/06, attached) and several months of discussion among the members of this *ad hoc* committee, shellfish aquaculture lease holders, and commercial (“wild”) shellfish industry members we recommend that the existing moratorium on new applications for aquaculture leases be modified simultaneously with the acceptance of the following recommendations:

- (1) The existing shellfish aquaculture community is still in the process of maturing. It is estimated that a period of about three to five years is necessary for individual license holders to reach their full potential due to the time it takes to seed, grow, and harvest shellfish. It should be noted that there are five new licensees who, due to unforeseen but legitimate delays, have not yet begun utilizing their approved areas. The use of the harbor, boat ramps, and parking facilities may increase as the current number of farms mature. It is also assumed that the demand for these resources by non-aquaculture interests will increase significantly as Plymouth County continues to grow and pressure placed upon access areas to the bay will increase. The effects of this growth lag on the bay and town resources are unknown and difficult to project accurately. Therefore, it is thought prudent to monitor and manage this growth prior to introducing additional, new licenses. Therefore, the *ad hoc* committee recommends that the DSAC investigate the development of a new “limited entry” licensing policy for shellfish aquaculture. Such a limited entry system has been adopted by Duxbury for two of its commercial wild fisheries: razor clams and mussels and this practice is widely accepted and applied in other towns (e.g., Provincetown, Wellfleet). Under such a policy, new licenses could be granted as existing license holders leave the industry or are found not to be in accordance with the town’s criteria for minimum levels of investment and production (i.e., those who fail to utilize their aquaculture licenses). A waiting list of individuals could be maintained as is done for the other limited entry license policies in town.
- (2) As the existing shellfish aquaculture program matures, it is recommended that the town use this time to pursue a series of studies that will enable it to make decisions in the future related to aquaculture and coastal use management. These could include evaluations of boat ramp use and channel traffic during peak and off-peak periods,

automobile and trailer parking conditions and capacities, and mooring uses and capacities.

**Attachment A:**

**Duxbury Aquaculture Grant Program Regulations**

# Shellfish Advisory Committee

*Duxbury, Massachusetts*

Alan Hoban, Chairman

Daniel W. Baker, Secretary



## 7.3 Shellfish Aquacultural (“Grant Program”)

### 1. PROLOGUE

The Town of Duxbury (“Town”) advocates the orderly development of aquaculture that is complementary to the continuing development of the Town’s shellfishery as it pertains to Shellfish Aquacultural Grants (“license” or “licenses”). In determining whether to grant a license, the Town is obligated to protect and preserve the existing fisheries and to minimize the impact on other uses of the marine environment. The right of public navigation through a license shall not be infringed upon except in areas containing approved structures that are properly marked according to these Regulations. The size and scope of a license shall co-exist with and not diminish the common property commercial and recreational shellfisheries or other existing water related activities.

### 2. AUTHORITY

2.1. The following Regulations concerning licenses are adopted as part of the Shellfish Management Plan of the Town of Duxbury, pursuant to MGL Chapter 130, Section 57, as amended. Violation of any of the requirements in these Regulations subjects the holder of a license (“licensee”) to review and possible revocation of a license at the discretion of the Board of Selectmen (“licensing authority”).

2.2. A license shall authorize the licensee at all times of the year, in, upon, or from a specific portion of the coastal waters of the Commonwealth, of tidal flats or land under coastal water to:

2.2.1. Plant and grow shellfish, bottom/off-bottom culture;

2.2.2. Place shellfish in or under protective devices affixed directly to the tidal flats or under coastal waters, within boxes, trays, pens, or nets;

2.2.3. Harvest and take legal shellfish;

2.2.4. Plant clutch for the purposes of catching shellfish seed; and grow shellfish by means of racks, rafts or floats.

2.3. The licensing authority shall permit, as a condition of the license, such public uses of said waters as are compatible with aquacultural enterprise.

### **3. PRIVATE PROPERTY RIGHTS**

Licenses granted under these Paragraphs do not convey property rights. Any use of a license for other than digging and taking shellfish upon privately owned property shall not proceed over the objections of the property owner. Pursuant to MGL Chapter 130, Section 57, a license does not impair the private rights of any person. A license does not authorize injury to private property or invasion of private rights. The granting of a license is not a determination of title or ownership of a licensed area. The licensee acknowledges, it is the responsibility of the licensee to obtain permission, if required, from the private property owner before exercising the rights conferred by a license other than for the digging and taking of shellfish.

### **4. COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS**

Approval of a license shall be subject to all federal, state, and local laws and regulations, as in force and as amended from time to time. Compliance with such laws and regulations is required as a condition of a license. Failure to comply with applicable federal, state or local regulations shall be cause to revoke a license. The licensee is expected to be familiar with relevant laws and regulations.

## **5. ELIGIBILITY**

### **5.1. PROOF OF RESIDENCY**

Licenses shall be granted only to residents of the Town who can prove to the satisfaction of the licensing authority that they are, indeed, a bona fide domiciled resident of the Town and have been domiciled within the Town for at least twelve (12) consecutive months prior to the date of the application. All local tax obligations must be paid in full in order for an application to be considered. A licensed area shall be forfeited if the licensee, ceases to be a bona fide domiciled resident of the Town.

## **6. MORATORIA**

The licensing authority may declare a moratorium on the granting of licenses at any time when this action is deemed appropriate and in the best interests of the Town. The licensing authority will consider applications for licenses on a first come first serve basis, within the limitations of acceptable land and water space. Further the licensing authority reserves the right to review the entire Grant Program and may amend these Regulations at any time.

## **7. APPLICATION PROCESS**

### **7.1. FEES**

There shall be a non-refundable application fee of one hundred dollars (\$100.00) of which one dollar (\$1.00) is a recording fee, fifteen dollars (\$15.00) is for advertising in the local paper, and the remainder is for costs incurred in granting the application. In addition, there shall be a renewal fee of twenty-five dollars (\$25.00), and an annual fee of twenty-five (\$25.00) dollars per acre per year. The application fee must be submitted with the completed application form.

### **7.2. APPLICATION SUBMITTAL**

- 7.2.1. The completed application shall be submitted to the licensing authority by United States Postal Service certified mail, return receipt requested.



7.2.2. The application shall be on forms provided by the Town, and shall include a map or plan of the proposed project sufficient to locate the licensed area accurately, and to describe the licensed area in metes and bounds. In addition, at the time of application submittal, the applicant must file with the licensing authority a shellfish development plan (on the form).

7.2.3. All documents in accordance with this paragraph submitted shall be submitted under the pains and penalties of perjury. The Town assumes no responsibility / liability for incomplete or missing attachments.

7.2.4 The applicant shall also submit any other information as requested by the licensing authority.

7.2.5 No application shall be deemed received until all the requirements for submittal of an application have been met.

### 7.3 PUBLIC HEARING AND NOTICE

7.3.1 Following receipt of a completed application, the Town shall establish a public hearing date. No license shall be granted, transferred or renewed until after a public hearing, due notice of which has been posted in three (3) or more public places, and published in a local newspaper by the Town at least ten (10) days before the time fixed for the hearing, stating the name and residence of the applicant or transferee, as the case may be, the date of the filing of the application for a license, transfer or renewal, and the location, area, and description of the proposed or currently licensed area.

7.3.2 The licensing authority shall notify the applicant at least fourteen (14) days prior to the public hearing of the time, date, and place of the hearing.

7.3.3 The applicant will be required to notify all abutters (as certified by the assessors office) and licensee's within seven hundred (700) feet of any point along the perimeter of the requested licensed area by certified mail return receipt requested. The notice to abutters and licensees must be made at least 10 days prior to the public hearing date.

7.3.4 The U.S. Postal Service Receipt for Certified Mail for each notice shall be submitted to the licensing authority at or before the time of the hearing.

## 7.4 LICENSE GRANTING

- 7.4.1 Upon receiving a completed application, the licensing authority shall forward copies of the application to the Shellfish Advisory Committee (“Committee”) for comment. Written comment shall be returned to the licensing authority within thirty (30) days of being received by the committee. In reviewing the application, the licensing authority may consider, but is not bound by, submitted comments.
- 7.4.2 Upon reviewing the application, and following the public hearing, the licensing authority may grant a license with or without conditions or deny a license. Licenses shall be granted or denied in writing within sixty (60) days after receipt of the written application and shall be granted upon forms supplied by the licensing authority and upon such terms and conditions and subject to such terms, conditions and regulations as the licensing authority deem proper, but not so as to impair or to materially obstruct navigational waters, and a license shall describe by metes and bounds the waters, flats or creeks covered thereby.
- 7.4.3 In the event that the licensing authority shall fail to take vote on a license application within sixty (60) days after receipt of the application for a license, such failure shall be considered a approval of the application.
- 7.4.4 Licenses granted by the licensing authority are intended to be on a trial basis. To start, licenses may be granted for a three (3) year period with a compulsory two (2) year review by the licensing authority. Licensees may request, only after the compulsory review, a renewal of a license the third year. Renewal shall be subject to the approval of the licensing authority. The licensing authority and the Committee shall review each license annually to insure a reasonable amount of shellfish has been planted and produced on the licensed area during the preceding year. A licensee may not have interest in more than one (1) license. For the purposes of this paragraph, one (1) license shall be the maximum acreage (singly or aggregate) allowed by law, that may be granted to an individual. Licenses not exceeding (3) three acres in size may be issued.
- 7.4.5 In the event the licensing authority approves the application, but prior to granting a license, the applicant shall request an inspection and certification of the licensed area by the Division of Marine

Fisheries (“DMF”) that the granting of a license and operation thereunder will cause no adverse harm on the shellfish or other natural resources of the Town. Failure of the DMF to so certify shall be deemed a denial of a license.

- 7.4.6 Upon certification by the DMF, the licensing authority may grant a license, provided, however, that no license shall be granted for any areas then or within two years prior thereto, closed for municipal cultivation under provisions of M.G.L. Chapter 130, Section 54.
- 7.4.7 The granting of a license does not relieve the applicant from obtaining any other necessary licenses, approvals, and/or permits prior to conducting operations, including, but not limited to the U.S. Army Corps of Engineers, Massachusetts Department of Environmental Protection, or any division of the same, the Town's Conservation Commission, Board of Appeals or Planning Board, all as may be applicable. Prior to operation, the applicant will be required to have the licensed area surveyed by a registered engineer or a registered surveyor. A recorded plan defining the boundaries of a license, together with a full specific description of the licensed area shall be submitted. Upon completion of the plan, the applicant shall have the boundaries marked as prescribed by Paragraph 8.3.
- 7.4.8 The granting of a license may be conditional upon obtaining all licenses, approvals and/or permits. All licenses, approvals and/or permits required to use a license shall be appended to a license.
- 7.4.9 Licenses pursuant to this Paragraph shall be subject to any rules and regulations promulgated by the DMF, including those concerning the use and scope of predator controls in the intertidal zone, and licenses may be further conditioned by the DMF as they deem necessary and appropriate, including species to be propagated and the source and movement of seed shellfish.

## 7.5 CRITERIA FOR LICENSE GRANTING, RENEWAL AND TRANSFER

In reviewing an application for a new or amended license; or for license renewal or transfer, the licensing authority shall determine whether the shellfish aquaculture plan proposed by the applicant meets all of the requirements of these Regulations and the provisions of MGL Chapter 130; whether the plan proposed by the applicant is designed so as to cause no substantial adverse effect on the shellfish or other natural

resources of Town; whether the granting of a license will not impair the private rights of any person and will not materially conflict with the purposes of these Regulations to protect and preserve the existing fisheries and minimize impact on other uses of the marine environment. Licenses are permissible beyond seven hundred fifty (750') feet from mean high water. This requirement is not applicable in areas that are separated from the shoreline or mean high water line by guzzles or channels containing water at mean low water as interpreted by the licensing authority. Applications cannot be approved if the area conflicts with existing laws or uses. For any renewal, the licensee need not file a new application.

## **8 TERMS OF THE LEASE**

### **8.1 EXCLUSIVE USE**

A licensee, or their legal representative, in accord with the terms set forth in these regulations shall have during the term of a license or renewal thereof the exclusive use of all waters, flats, or creeks described in a license, and the exclusive right to take all shellfish therefrom during the time therein specified, subsequent to the granting of a license or the renewal thereof, as the case may be; provided that this paragraph shall not be construed to authorize any taking prohibited by law.

### **8.2 RIGHT TO TRANSFER AND SUBLEASE**

8.2.1 Licenses are granted to and for the exclusive use of a licensee. Subleasing of the licensed area or portion thereof is prohibited.

8.2.2 Except as provided herein licenses are renewable, heritable and transferable subject to the approval of the licensing authority and pursuant to MGL Chapter 130.

8.2.3 A licensee proposing to transfer his/her license shall first notify the licensing authority in writing that he/she no longer wishes to operate a license and requests a transfer of his/her licensed area to a designated recipient. Such recipient shall thereupon file an application under Paragraph 7 of these Regulations. Thereafter, the application shall be treated, insofar as applicable, as a new application.

### **8.3 MARKING OF BOUNDARIES**

The licensee upon receiving his/her license shall cause the territory covered thereby to be plainly marked out by monuments, marks, or ranges and to mark the license boundaries (**corners**) with stakes. Each boundary stake is to be a plastic pole not higher than 18" above the surface of the licensed area with attached a painted yellow sign, measuring 8" x 10" with two inch block **black** lettering with the words **PRIVATE LICENSE NO. \_\_\_\_\_**". Signage shall be visible at mean low tide only. If rafts or any other floatation devices are allowed and used they will be marked with plastic poles with a sign attached having the same terminology as above. Reflector paint or tape shall be used in a manner as to be visible during hours of darkness. Any such boundary marker shall be subject to the inspection and approval by the Shellfish Constable.

#### 8.4 MARKING AND REMOVAL OF EQUIPMENT

8.4.1 The boundaries of all hard structures and or devises shall be plainly marked with (6") orange buoys every 25 feet to be visible from low tide to ½ tide **only**. Each boundary corner of the area of hard structures and or devises shall be marked with (2) two (6") orange buoys as mandated above. Each (6") orange buoy shall be plainly marked in (white) on (2) sides with the uniform state waterway marking system (symbol) and (wording) for : **BOATS KEEP OUT**.

8.4.2 All gear, tackle or other equipment must be indelibly marked with the number conspicuously placed on each of piece of equipment.

8.4.3 In accordance with M.G.L. Chapter 130, Section 32, if gear, tackle or other equipment leaves the licensed area for any reason and is deposited on the shore, beaches or flats, whether public or private, a licensee must recover the equipment within fifteen (15) days from the time of its deposit without any liability for trespass; provided, that a licensee in so doing does not commit any unreasonable or wanton injury to the property where the equipment is deposited. In the event a licensee does not recover the equipment within fifteen (15) days, the Town shall recover the equipment, at the expense of the licensee.

8.4.4 When a license is terminated for any reason, the licensee shall be required to remove all gear, tackle or other equipment from the licensed area within thirty (30) days of the license termination date. Any and all gear, tackle or other equipment not removed within thirty (30) days may be removed by the Town at the expense of the licensee.

#### 8.5 HEIGHT LIMITATION

No structure or device (except marking buoys, and as otherwise noted in this Paragraph) shall protrude more than eighteen (18") inches above the substrate. Shellfish may be rafted only in those areas so specified in a license. Shellfish rafting in areas outside the limit of any raft area shall be prohibited.

#### 8.6 SET-BACKS AND BUFFER AREAS

No activity shall occur within a distance of twenty-five (25) feet from beds of eelgrass, widgeongrass, or saltmarsh, nor shall such vegetation be damaged or moved. In addition, a buffer area of seventy-five (75') feet shall be maintained between licensed areas.

***Buffer areas, open to anyone and everyone on an equal basis, shall be maintained for access and retrieval of product and equipment. The lessee shall have 15 days to retrieve product and equipment from day of giving Shellfish Constable written notice.***

#### 8.7 MINIMUM PRODUCTIVITY, ANNUAL REPORT, AND REVIEW BY TOWN

8.7.2 An annual review of each license will be conducted by the licensing authority in order to determine substantial use of the lease during the previous year.

8.7.3 If by the end of the third year, a licensee cannot show substantial use of the licensed area during the preceding year, his/her license may be subject to forfeiture. In accordance with M.G.L. Chapter 130, Section 57, for the purpose of this Paragraph, substantial use shall be defined as an expenditure of \$1,500 per acre per year for gear and seed stock specifically for the grant. Such expense shall be exclusive of vehicle / vessel or other business development expenses not specifically related to propagation of aquaculture.

8.7.4 Failure of a licensee to achieve substantial use of the licensed area for three (3) consecutive years thereafter shall result in a forfeit of his/her license. If for any year, a licensee does not meet the substantial use value, then upon written request to the licensing authority the substantial use requirement may be waived at the discretion of the licensing authority for that particular year provided that a licensee can demonstrate to the satisfaction of the licensing authority that the cause of the lower amount produced is the direct result of a natural disaster or other unforeseen cause.

8.7.5 Licensees shall file an annual report with the licensing authority in accordance with the form provided by the licensing authority, submitted no later than December 31 of each year. A licensee shall also submit upon request of the licensing authority receipts, purchase and sale slips, etc., reasonably requested by the licensing authority in support of this paragraph.

## 8.8 PROHIBITIONS

8.8.4 No person shall dig, take or carry shellfish or shells between one-half hour after sunset and one-half hour before sunrise, by any method whatever, from any waters, flats, or creeks as to which a license under these Regulations. A licensee or transferee of a license violating this Paragraph shall forfeit his/her license and all shellfish remaining on the licensed area.

8.8.5 No person shall transplant shellfish seed, seed stock, or stock from any public fisheries within the Town. All seed shellfish transferred to the licensed area shall be obtained from hatcheries certified by the DMF and as approved by the Committee.

8.8.6 No person shall transplant shellfish or shellfish seed to the licensed area until the Shellfish Constable has been notified. Notification shall be in writing at least seven (7) days prior to any transplanting, and shall be attached to documentation of the source and species of the shellfish and copies of permits.

8.8.7 All shellfish harvesting shall be by hand without the assistance of power unless the use of mechanical power is approved by the Committee on a case-by-case basis.

## 8.9 REVOCATION OF LICENSE

8.9.1 Failure of the licensee to comply with the provisions of any rule of regulation, term, condition, statute, or law may result in an order to revoke the license.

8.9.2 Revocation of any license pursuant to Section 8.9.1 shall be preceded by a public hearing held in accordance with the Open Meeting Law. The licensee shall be entitled to be present and have counsel and cross examine any witnesses and present witnesses on his or her behalf.

## **9 OTHER REQUIREMENTS**

### **9.7 AUTHORITY TO INSPECT**

9.7.4 The Shellfish Constable and/or deputies shall have the authority to inspect the licensed area at any time deemed necessary and the inspection may include any and all containers on the licensed area.

9.7.5 The Town reserves the right to obtain samples of any species held in the licensed area for the purpose of certification and testing for disease, and in order to assure that the activities begin performed under the authority of this regulation are in accordance with the terms and conditions described herein.

### **9.8 CHANGES TO THE LICENSE**

9.8.4 Proposed changes to a license and all additions of material investments, which may include, but are not limited to, rafts, floats, racks, cages, trays, nets, etc., must be submitted in writing to the licensing authority.

9.8.5 The licensing authority, in its discretion, will determine if the changes are significant, such that further review is warranted. If the changes are found to be significant, the licensing authority shall hold a public hearing to review the proposed changes, public notice of which shall be given as described in Paragraph 7.3. of these Regulations.

9.8.6 For the purposes of this Paragraph, a significant change shall include, but not be limited to, any amendment of a license which may affect the navigable waters; which changes the form of aquaculture or the category of aquaculture performed by the licensee; and any changes which may impact the marine environment.

9.8.7 Upon review of the proposed changes, the licensing authority may approve or deny the proposed changes.

### **9.9 TOWN REQUIREMENTS AND RECORDS OF LICENSES GRANTED**



9.9.4 The licensing authority shall keep in its office plans showing all licensed areas, and in a book devoted to that purpose only, a record of each license granted and transfers or renewals thereof, which shall include the name and residence of the licensee or transferee, the dates of granting the license, transfer, renewal, and expiration thereof, and a copy of the description of the licensed area.

9.9.5 Each license, transfers, or renewals thereof, shall forthwith after the granting thereof be transmitted by the licensing authority to the Town Clerk, who shall enter the name in a book kept especially therefor in its office.

9.9.6 The records shall be open for public inspection at all reasonable times.

9.9.7 The licensing authority, at the expense of the Town, shall provide application forms for licenses including these Regulations and procedures, forms for transfer or renewal, and for annual reporting.

#### 9.10 LIABILITY OF THE TOWN

9.10.4 The licensee shall not hold the town liable for any damages or injury to the licensed area.

9.4.2 In addition the licensee shall not hold the Town liable for any damage or injury to the licensed area due to any dredging or improvements done in the best interests of the Town. If at any time it becomes necessary to dredge and/or otherwise accomplish maintenance dredging on or within the vicinity of the licensed area to improve or maintain channels for navigation, a licensee agrees not to obstruct the dredging plans and operations. A licensee will have ninety (90) days notice prior to commencement of any dredging operation. Before, during and after dredging operations are completed and if, in the opinion of a licensee, the Shellfish Constable and the state marine biologist, the bottom conditions are considered temporarily unsuitable for planting or maintaining shellfish, immediate and temporary permission for relocation of a licensee's stock shall be reviewed by the licensing authority. In the event that shellfish need to be relocated under these conditions, they shall be relocated at the expense of the licensee. All foregoing Regulations shall apply to any temporary placement of shellfish.

## 10 OTHER

If any provision of these Regulations is declared invalid by any court or tribunal of competent jurisdiction, the remaining provisions of these Regulations shall not be affected.

**The penalty for violations of any of these Regulations shall be a fine not less than twenty five dollars (\$25.00) nor more than two hundred dollars (\$200.00) for each offense and the revocation of license or permit or both.**

**Attachment B:**

**REPORT TO THE BOARD OF SELECTMEN FROM THE  
DUXBURY BAY MANAGEMENT COMMISSION  
CONCERNING AQUACULTURE**

# **REPORT TO THE BOARD OF SELECTMEN FROM THE DUXBURY BAY MANAGEMENT COMMISSION CONCERNING AQUACULTURE**

**NOVEMBER 27, 2006**

## **Background**

On January 14, 2005, the Board of Selectmen (BOS) imposed a moratorium on the approval of additional aquaculture leases. The basis of that decision was the increasing number of lease applications and the BOS's concern that it lacked sufficient information to decide whether additional leases should be approved. The areas subject to existing leases at the time of the moratorium appear in black on Chart 1. At that time, there were 10 lease applications pending. In September 2005, the BOS voted to lift the moratorium to allow pending applications to be processed. While the moratorium was lifted, two existing lease holders filed applications to move the location of their leases resulting in 12 pending applications. The 12 applications were approved by the BOS in September 2005, but some of the leases have not been finally approved by the Town because state and/or federal review is pending. Those leases appear in red on Chart 1.

In order to assist the BOS in deciding whether the moratorium should be continued, modified, or lifted, the Duxbury Bay Management Commission (DBMC) and the Duxbury Shellfish Advisory Committee (DSAC) created a joint sub-committee to review the moratorium. In order to evaluate the current status in the bay, the sub-committee decided that existing data from previous DBMC and DSAC efforts along with some missing data needed to be collected and documented for ongoing use. We chose to represent our data graphically to better understand the overlapping natural resources and uses in the Bay. The 7 charts as listed below represent these data.

Along with preparing a chart of existing and pending leases (Chart 1), the sub-committee has engaged in the following activities:

- Held a series of meetings
- Met with commercial "wild" shellfish industry and collected information to be used in preparing a chart of natural shellfish areas. At this time, further input is needed from the wild shellfish industry before this chart can be finalized. The chart will be appended to this report and provided at a later date. Also attached is a copy of the DFM/CZM shellfish suitability map showing natural shellfish areas (Chart 2).
- Identified areas occupied by eelgrass (Charts 3, 4, and 5). Respectively, these charts show areas of eel grass in 1995 and 2001, and the changes between those dates.
- Determined the location of boat moorings and prepared a chart showing the locations (Chart 6).

- Prepared a composite chart showing shellfish and eelgrass resources, moorings, and leases (Chart 7).

Based upon the information collected, the DBMC makes the following findings:

1. Aquaculture is a viable business in Duxbury that should be encouraged and supported. There are significant benefits associated with aquaculture, including the following:
  - a. Shellfish farming is sustainable because it does not damage the environment;
  - b. Shellfish farming helps to improve water quality because shellfish are filter feeders and remove nitrogen from the bay and improve light penetration that sustains eel grass;
  - c. Nursery racks provide habitat for fish and crustaceans;
  - d. Shellfish farming currently provides local employment for approximately 30 individuals on a full-time basis and 30 on a part-time basis; and,
  - e. Shellfish farming helps to maintain the Town's historic connection to the sea.
2. Based upon a review of existing information, there are remaining areas of Duxbury in the bay that are:
  - a. more suitable than others for aquaculture from a resource perspective;
  - b. not subject to existing leases; and
  - c. not in areas used extensively by boaters.
3. The DBMC does not have any basis for concluding that the density of existing leases poses an environmental or shellfish resource problem for the aquaculture industry, but the DBMC believes that this question warrants study.
4. The greatest potential impact from aquaculture on recreational boating and other uses of the bay comes from the use of nursery racks. These are similar to lobster pots, are placed on the bottom of the bay, and are necessary in the juvenile stage of oysters. Typically the structures are put out in late June and removed in late summer when oysters are large enough to be spread on the bottom of the bay or placed in soft, plastic mesh bags. The potential conflicts are caused by the impact of nursery racks and rack-marking on boating. These conflicts stem from boaters being unable to distinguish the significance of the buoy marking system and the potential for boaters to run into the hard structures on the bottom.
5. Although considerable effort has been made to minimize the impact of lease and bottom structure marker buoys on boating, the number and density of buoys at some locations creates confusion for boaters. In addition, the marking system is not well understood by boaters.
6. In a few locations, nursery racks are made of rebar and are permanently attached to the bottom of the bay.
7. The practice of marking leases with piping or stakes creates hazards to boaters, tubers, and water skiers. This practice also conflicts with shellfish regulations.
8. There is also the potential conflict between leases and board sailing if bottom structures are allowed in the area used extensively by board sailors in the northeast corner of the bay.

9. At present, there is no recreational harvesting of oysters in Duxbury Bay because natural propagation is minimal.
10. The present level of aquaculture has increased the intensity of the use of public landings. The increased use is mitigated to some extent by the fact that a large part of aquaculture activity occurs at low tide while boating activity peaks around high tide.
11. The aquaculture industry in Duxbury is relatively new and is still evolving.

Based upon these findings, the DBMC makes the following recommendations for consideration by the BOS:

5. The BOS should continue the existing moratorium until the DBMC completes a comprehensive Aquaculture Management Plan.
6. The DBMC should form an ad hoc committee to develop a draft Aquaculture Management Plan. The committee should include representatives from the DBMC, the DSAC, the Duxbury Shellfish Growers Association, and the Duxbury Agriculture Commission. The draft should be completed in six months and should be based on existing protocol and policies and any relevant recommendations provided within this document and agreed upon by the BOS. The plan would incorporate information on existing permitting processes, shellfish resources (recreational and commercial), and specific recommendations to manage shellfish aquaculture in the bay including include information regarding the area and/or number of leases that can support hard and soft structures in Duxbury Bay. The draft plan will then be presented to relevant and responsible town committees (e.g., DBMC, Agriculture Commission, Conservation Commission) for review and further development prior to incorporation into the Bay Management Plan. Recommended changes to any town policies on shellfish aquaculture will be made by the DSAC and provided to the BOS as in past instances.
7. Until the management plan is completed, exceptions to the moratorium should be considered only when conflicts between conditions imposed by the federal or state government and the Town prevent a license from being viable. However, any further site selection associated with this should be consistent with previous site-selection criteria such as areas utilized by wild shellfish industry, protected resources, and other pertinent factors.
8. The DBMC and DSAC consult jointly with the Duxbury Shellfish Growers Association, the Massachusetts Aquaculture Association, the New England Shellfish Growers Association, the Duxbury Agriculture Commission, and the Division of Marine Fisheries in an effort to determine whether additional leases would stress the existing aquaculture industry or the bay's ecosystem and natural resources.
9. Both historic and existing eelgrass beds, as shown on the 1995 and 2001 historic eelgrass maps (Charts 3 and 4), be deemed unsuitable for aquaculture, as consistent with existing criteria imposed by the US Corps of Engineers.
10. The aquaculture industry and the DSAC continue to work on a buoy marking system that both provides for the needs of the industry and minimizes impacts on boat traffic.

11. The aquaculture industry and the DSAC seek to modify federal and state license marking systems to eliminate the need to buoy the corners of licenses.
12. Buoys in excess of those required by Duxbury regulations should be prohibited.
13. The DSAC work with the aquaculture industry to determine whether the impact of nursery racks in congested areas could be reduced in the future by relocating the structures to other areas.
14. New permanent nursery racks and new racks constructed of rebar be prohibited on new leases and existing leases where they currently do not exist today.
15. A program be developed to educate the boating public about the location of nursery racks and the buoy marking system. The DBMC suggests that a chart marking lease locations be posted at the Town pier.
16. To minimize potential conflicts between the main channel and the western shore of the bay, it is recommended that there be no additional licenses in the area west of the main channel and north of buoy #10.
17. Bottom structures, such as racks, should be prohibited in the northeast part of the bay used by windsurfers.

Other recommendations:

1. That consideration be given to developing a public oyster fishery in the bay. The goal of the program would be to use the fees from oyster licenses and/or oyster leases to fund the purchase of juvenile oysters.
2. The BOS should direct the aquaculture industry, the DBMC, the DSAC, and the Harbor Master to study a public fishery and report to the BOS with recommendations within six months.

DBMC15D

**Attachment C:**  
**Duxbury Bay Resource Maps**