Zoning/Designations

The two subject properties are zoned as Marine Commercial (MC) which permits the following uses: marine uses; retail, service, and office; and multi-family residential. The Marine Commercial Zone requires a 25 acre minimum lot area with a maximum impervious surface ranging from 40 to 70 percent depending on the use. Even though the Marine Commercial Zone allows residential development, a deed restriction on these two properties prevents any type of residential development.

The study area is located within the Coastal Metropolitan Planning Area of the Coastal Area Facility Review Act (CAFRA). NJDEP regulates coastal zone activities under N.J.A.C. Section 7:7E, Coastal Zone Management (CZM) Policies. The regulated activities include construction, grading, shore protection structures, and site preparation.

Commercial Operations

The Belford area has a long history of involvement in the commercial fishing industry, with the Belford Seafood Cooperative, one of the few long-standing fishermen's cooperatives on the Atlantic Coast, being founded in 1953. The Co-op and other surrounding seafood businesses are involved in harvesting, processing, and sale of various types of finfish and shellfish. The Co-op consists of about 20 members, plus non-members who work on boats, the docks, and the office; there are also independent fishermen operating out of Belford who market through Shoal Harbor Lobster Company or other channels. In recent years as many as 40 vessels fished from this port; the core fleet consists of small otter-trawlers (for finfish and squid dragging), lobster pot boats, and vessels used for fisheries such as crab dredging in the winter months. The orientation is inshore, the boats rarely going for trips longer than one day.

Figure 3.4: Compton's Creek is used by both fishing boats and ferry service.

Literature Review

In order to contextualize and understand the challenges faced when dealing with economically and environmentally sensitive communities such as the Port of Belford, a review of existing reports pursuant to fisheries, aquaculture, shellfishing, and processing facilities and techniques practiced within the Northeast region and more specifically in New Jersey is provided below. Both past and present land use policies and zoning regulations specific to Middletown and the study area are also included. The literature review in full can be found in Appendix 1. *This section provides a brief overview of prevailing trends throughout the cited literature.*

The challenge in revitalizing the study area is creating a development alternative that respects and helps preserve the Port of Belford and the water-dependent way of life associated with it. The Dunes at Shoal Harbor and the Belford Ferry Terminal are recent developments that have created a significant amount of activity within the area. However, local fishermen are concerned about negative effects to them and their working environment with the increase in property values and other changes that will likely result.

Mixed-use development has been proposed at the study area in the past. A Middletown Township ordinance permits mixed uses that include waterfront oriented activities and public access. The Bayshore Development Corporation previously worked with the Port Authority of New York and New Jersey to rezone the area around the Belford Seafood Co-op to coordinate economic development activities. Several government agencies have expressed interest in the adjacent, underutilized property for fishing-related uses, and therefore it is likely that any redevelopment of this parcel would need to be supportive of fishing activities. In addition, from a larger perspective, the Port of Belford is one of the few—indeed, the last—of the State's ports that is devoted almost exclusively to commercial fishing and marine transportation; such "working waterfronts" have vanished from most ports of the State and the entire Northeast region. They are critical to the survival of important marine industries but almost impossible to restore once replaced by other uses.

A study prepared for the Port Authority of New York and New Jersey in 1985 concluded that the Port of Belford can continue to be an economic engine for the Township if given the right opportunity. In order to capitalize on this potential, an expansion of existing facilities and waterfront improvements such as dredging and bulkhead repair would be necessary. Fishermen have indicated that they would be interested in purchasing larger vessels if such improvements were made. The study also concludes that the port would benefit if enough space was provided for 75 boats. The west bank of Compton's Creek should be used solely for expanded shoreside operations and the east side is limited to berthing activities. Another study prepared for the Port Authority of New York and New Jersey in 2003 examined three possible redevelopment scenarios for the area. The purpose of the study was to examine and evaluate potential ways to implement mixed-use development without adversely impacting the existing marine activities.

Figure 3.5: Deteriorating bulkhead

Total landings at the Port of Belford have decreased considerably over the course of the past two decades in response to factors such as decline in availability and abundance of fish and shellfish and increased state and federal restrictions on fishing. Although some species are in the process of restoration, it is likely that regulatory constraints will remain for some time. In addition, shifts in climatic conditions and seasonal changes in water temperature may cause further challenges to traditional fishing. However, challenges and constraints can be channeled into opportunity if proper mitigation measures are taken. Such measures should include a proactive approach to species diversification and the exploration of new opportunities which in turn will help retain local fishermen.

Public Participation

The planning process has included several formal and informal opportunities for public outreach and involvement:

- Two public meetings at both project initiation and completion which were heavily attended by various residents; business owners; Town, County, and State officials; fishermen; environmentalists; academics; and local press;
- Creation of the Bayshore Study Task Force;
- Periodic meetings with Belford fishermen and property owners;
- Walking tour of the study area with site investigation team and business and property owners; and
- Extensive stakeholder interview process which involved over forty interviews.

Figure 4.1: Meetings with stakeholders helped define and examine possible development alternatives.

Walking Tours

Numerous walking tours of the study area were conducted with the site investigation team and key stakeholders. These outreach events elicited from select stakeholders their observations regarding key assets, resources, constraints, etc. The tours were led by the Berger Team comprised of a fishing industry expert, architect, land use planner, and environmentalist scientist.

Stakeholder Interviews

To help identify the opportunities, challenges, and regulatory conditions for redevelopment of the Port of Belford, the Berger Team conducted a number of stakeholder interviews. In order to maximize this understanding, stakeholders represented a wide spectrum of backgrounds and knowledge of the Belford Seafood Cooperative, existing challenges, niche markets, and government regulations. A summary of interview information by development alternative and entire interviews can be found in Appendix 1. The below provides an overview of those interviewed:

- Property and business owners;
- Civic associations;
- Experts in the commercial fishing industry;
- Experts in the regional seafood wholesale and retail industry;
- Federal, state and local government officials; and
- Select private industries and industry associations.

This list provides an overview of the general topics for which information was sought through the interviews. In actual interviews, some topics received more attention than others and there were other topics that arose.

- Explore the area's commercial fishing niche and the suitability of the subject parcels to fulfill these strategies;
- Discuss commercial fishing industry operating characteristics, market orientations, relocation and expansion plans and adequacy of subject region to meet needs for local skilled and unskilled labor, utilities, access to markets and key materials;
- Determine quality and capacity of existing infrastructure and facilities to accommodate the development alternatives;
- Growth potential for the commercial fishing industry;
- Impact of water quality issues on the feasibility of clam depuration and aquaculture;
- Relationship of the development area to the rest of the Township;
- Identify major competitors;
- Identify potential positive and negative externalities of the development alternatives;

Market & Development Feasibility Analysis

The commercial uses that were examined include: a clam depuration plant, an aquaculture facility, mixed-use recreation/retail destination, and a live fish market. The study identified the siting requirements of each of these alternatives and assessed the relative suitability of the site and region to satisfy these requirements. The analysis considered the match between the use or demand requirements of each development alternative with the site's supply attributes including physical, operational, environmental, labor, market and quality-of-life considerations. The objective of this task is to investigate the requirements of these various development concepts against the inventory of physical conditions and attributes of the site and region.

Clam Depuration

Introduction

The Raritan and Sandy Hook bays are excellent habitat for hard clams (*Mercenaria mercenaria*; littleneck, cherrystone, and chowder clams), because of the particular combination of depth, temperature, salinity, and sediments. The harvesting of shellfish in the bays dates back to the Lenape Indians' practice of treading hard clams (gathering clams by feeling for them with their feet at wading depths). In the 1700s and early 1800s, colonists continued the practice with metal rakes that measured about ten inches wide and were attached to wood handles about six feet long. Today much larger rakes, of the style known regionally as "Shinnecock rakes," are used.

The Raritan and Sandy Hook bays are part of the larger New York-New Jersey Harbor Estuary, a partially enclosed body of water that has water quality problems due to numerous types and sources of pollution. These pollution sources include: sewerage treatment discharges, combined sewer overflows (CSOs) and point and non-point source runoff that affects water quality (Hudson River Foundation 2004). Due to the poor water quality in Raritan and Sandy Hook Bays, the bays are classified as either *Special Restricted* or *Prohibited* for the harvest of shellfish. Harvest of shellfish for human consumption is not permitted in *Prohibited* waters. Clams may be harvested for human consumption from *Special Restricted* waters under the Special Permits program. Clams harvested from waters classified as *Special Restricted* must undergo purification prior to sale for human consumption. This purification treatment may be through the depuration process, or the relay process. Both of these processes provide sufficient time for the clams to purge themselves of harmful bacteria that adhere to their tissue prior to harvest.

Depending on the water quality, there are two types of purification processes that are conducted on shellfish that are not directly harvested from their waters. Depuration is a process of purifying shellfish originating from *Special Restricted* waters where direct harvesting is not allowed. The shellfish are transported to a depuration facility and they are held for a minimum of 48-hours. The shellfish are purified through the process of pumping clean water through the holding containers of shellfish. Shellfish tissue is analyzed after the depuration process is complete. The James T. White clam depuration plant is located in Highlands. Another depuration plant, Clean Water Clams, is located to the south of the Highlands Bridge in Sea Bright. Relay is the

Figure 5.1: Processing hard clams at depuration plant, Source: Certified Clam

other purification process, in which clams are placed in clean (approved for shellfishing) waters in Barnegat Bay for a period of time before going to market. The transplanted clams are held in these waters for a minimum of 14 days, which is required by the National shellfish Sanitation Program (NSSP). States have different holding requirements for transplanted shellfish: New York requires a minimum of 21 days, while in New Jersey, the minimum is 30 days.

The waters off of Belford are classified as Special Restricted for shellfishing (Zimmer 2004). Clams harvested here must be purified by one of the above processes. Clam relay is not a feasible option for Belford due to the lack of clean waters anywhere in the area, and the lengthy minimum holding requirements. Some of the Belford fishermen currently send a relatively small amount of clams to the J.T. White depuration plant. However, during the warmer months, this depuration plant operates at full capacity (240 bushels per day) and cannot accommodate more clams (Certified Clam, personal interview HPP Demo on February 21, 2007).

Thus the Belford fishermen cannot regularly participate in the hard clam fishery. If a depuration plant was built and operated at the Port of Belford, the fishermen would be able to harvest and sell more clams. Therefore, a depuration plant is one of the development alternatives analyzed for the study area.

The feasibility of successfully developing and operating a depuration plant at the Port of Belford depends on the site meeting the physical requirements and the operation of the facility being able to compete in the regional and national market. The development feasibility analysis explored both of these elements through a review of relevant literature, interviews with experts in the field, and a review of market data.

Market Conditions

The seafood industry in the United States is experiencing increasing international competition. For edible fishery products in 2006, the U.S. trade deficit was $9.6 billion (NOAA 2006). Eighty-one percent of seafood consumed in the U.S. is imported (NOAA 2007).

The majority of imports are frozen seafood, however fresh seafood is now heavily imported. Other countries are providing farmed and wild seafood at a lower cost due to many factors, primarily lower operating and transportation costs and less stringent commercial fishing regulations. According to many seafood experts, this trend will continue and domestic seafood production will have to find competitive advantages and develop organized marketing strategies in order to compete in the international market.

The domestic market shows signs of saturation. An examination of hard clam prices over time reveals that the inflation-adjusted wholesale price for producers has not increased. Figure 5.2 shows the U.S. wholesale hard clam prices (blue columns) from New York's Fulton Fish Market from 1991 to 2001. Additionally, the white plotted line shows the Producer Price Index (PPI) adjusted prices for hard

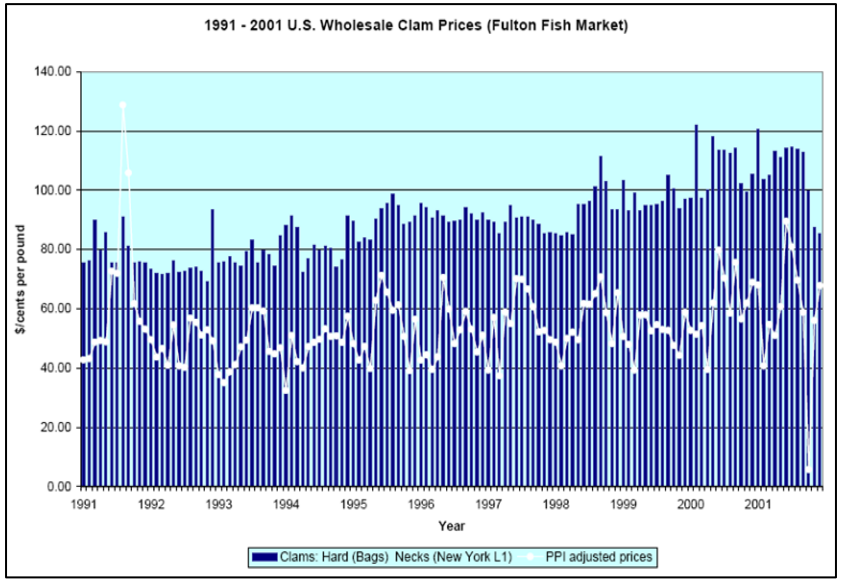


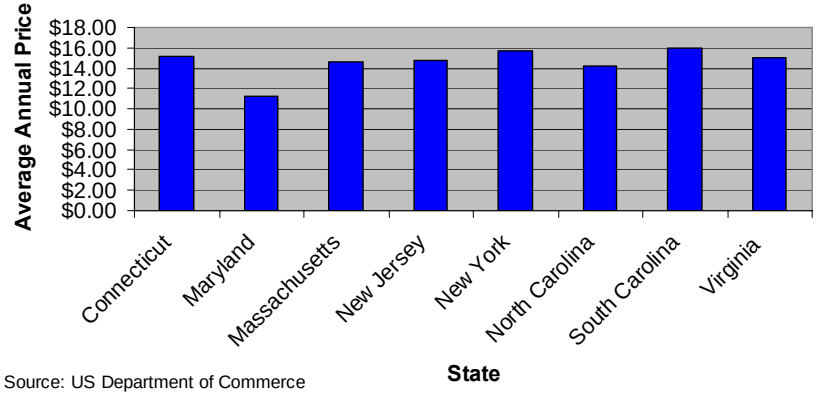
Figure 5.2: 1991-2001 U.S. Wholesale Clam Prices at Fulton Fish Market (Source: NOAA)

clams over this time period. The PPI program measures the average change over time in the selling prices received by domestic producers for their output, in this case, hard clams. While the blue columns represent the wholesale price of the hard clams, the white line represents the inflation-adjusted price received by a specified producing establishment from a specified kind of buyer for a specified product shipped under specified transaction terms on a specified day of the month. The graph shows that the wholesale price of hard clams has risen an average of $20/lb over the decade, the PPI, has generally remained stagnant, with an average price of $50/lb. This is most likely due to reduced demand, imported frozen products, and increasing production costs. This is important to note when considering expansion of the hard clam fishery.

The fresh hard clam market in the New York/New Jersey area contains a large amount of clams from Florida and Virginia farms. These producers are able to harvest more product at a lower cost due to warmer waters (which allow clams to grow to market size more quickly), and cheaper input costs (i.e., land, labor). In addition, due to good water quality they do not have to go through the same extensive purification process (i.e., depuration, relay) that Raritan and Sandy Hook bay clams must undergo.

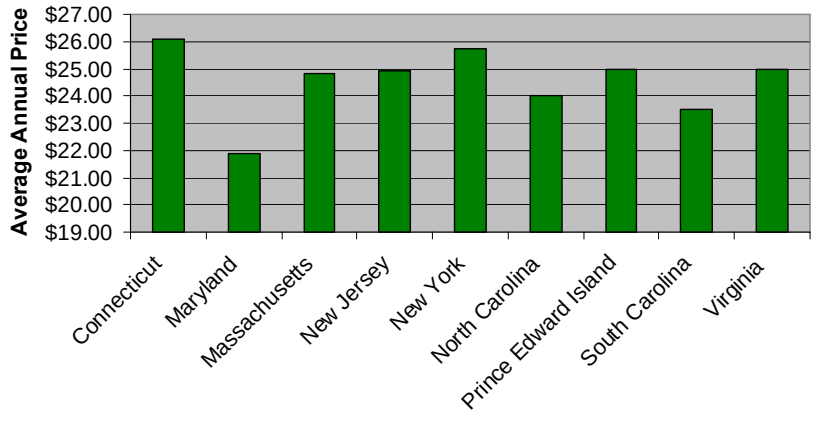
Although New Jersey clam producers are geographically close to the New York metropolitan market and therefore have lower transportation costs, their prices are in many cases above average, as shown in Figure 5.3 through Figure 5.6. The price difference has been confirmed in interviews with clam producers in New Jersey, Virginia, and Florida (see Appendix 1). The main reason for the price difference is that Southern competitors have lower production costs. The need for depuration for

Figure 5.3 Hard Shell Clams at Fulton Fish Market
Chowder 100 Count
Average Annual Price by Location, 2004

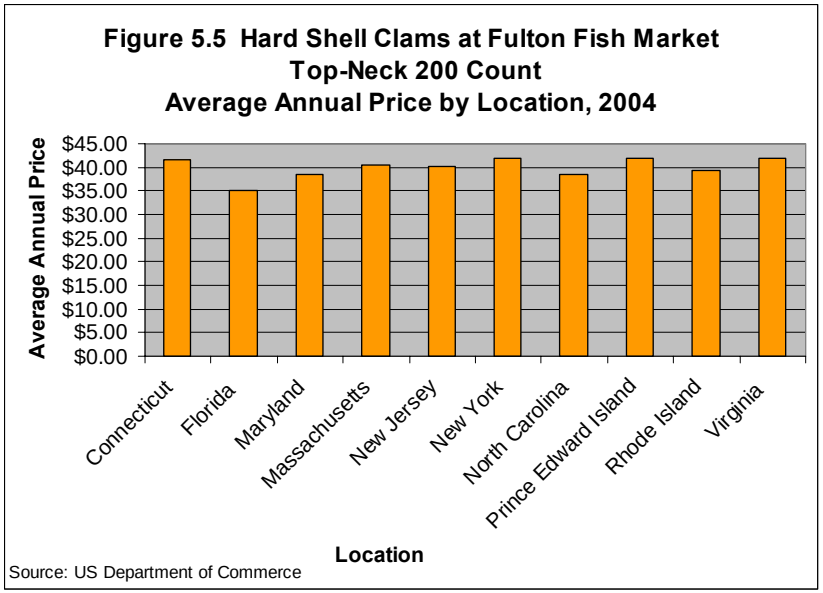


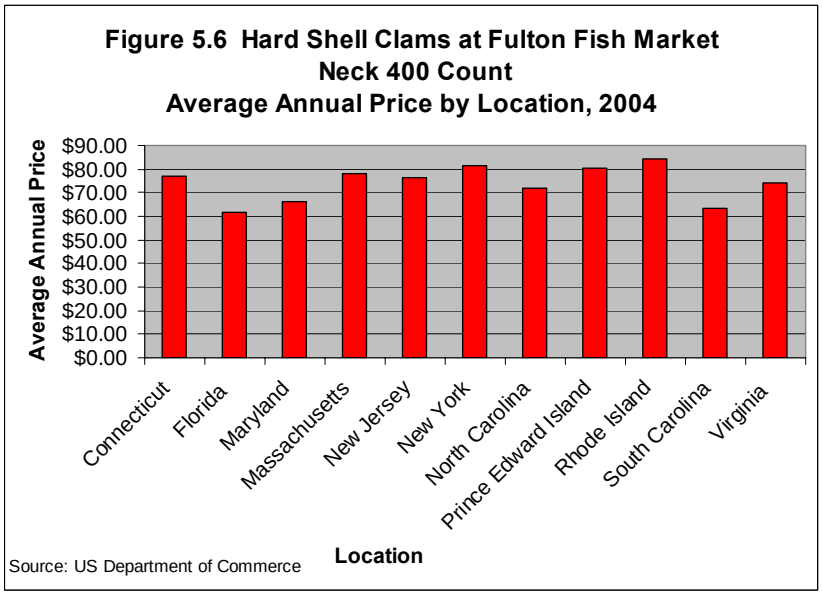
Source: US Department of Commerce

Figure 5.4 Hard Shell Clams at Fulton Fish Market - Cherry 150 Count
Average Annual Price by Location, 2004



Source: US Department of Commerce





Raritan and Sandy Hook bay clams in New Jersey creates costs that producers have to account for in their market price. In interviews, some New Jersey clam producers stated that they are struggling each year to stay profitable while still being able to compete with farmed clams from relatively new producers in Virginia and Florida. According to interviews with representatives from these Southern companies, they are selling more in the NY/NJ region and plan to expand their operations within the region (T. Rasmussen with Cherrystone Aqua Farms, personal interview, March 12th, 2007).

Since New Jersey clam producers are struggling to compete in the regional marketplace, the market impact from a new depuration plant is unclear. There is concern amongst many existing clammers in Northern New Jersey that if a new depuration plant were built it would have a negative impact on the price of New Jersey clams. A market glut of New Jersey clams would most likely result in a sharp downturn in price. It is unclear if a new depuration plant in the region would create a market glut.

While the present classification of the waters of Raritan and Sandy Hook bays is *Special Restricted*, there have been classification upgrades in recent years, and more upgrades may occur. Analysis of water quality data by NJDEP's Bureau of Marine Water Monitoring (Zimmer, B. 2004) indicated that some waters in the bay classified as *Prohibited* had, by 2000, met the water quality criteria of *Special Restricted*. Based on this finding, 5,425 acres in the bays were upgraded from *Prohibited* to *Special Restricted* in 2001 (NJDEP, 2001). As water quality continues to improve in the region, more upgrades may occur. Ongoing water quality monitoring suggests that portions of Sandy Hook Bay may be upgraded to *Seasonally Approved* in the next 5 to 10 years (B. Connell, personal interview, April 23, 2007).

Seasonally Approved areas may be harvested directly for human consumption between November and April, with no requirement for depuration. Upgrading of areas to *Seasonally Approved* status would allow an increase of the hard clam harvest for half of the year, without the need for additional depuration capacity. This underscores the uncertainty of the profitability of building another depuration plant (although it also raises the possibility of expanded opportunities for Belford clammers, the major reason for wanting a clam depuration plant, without the added expenses and risk of such an investment).

Physical Feasibility

The construction and operation of a depuration plant is tightly regulated by NJ Department of Environmental Protection and NJ Department of Health and Senior Services. The purpose of the regulations is to prevent the spread of disease since hard clams, if not properly purified, can pose a significant health risk when consumed. The regulations that pertain to the construction and operation of a depuration plant include: US FDA's HACCP (USFDA 21 CFR 123); Interstate Shellfish Sanitation Conference (ISSC) requirements; and N.J.A.C. 8:21 (Alexander, personal interview April 4, 2007).

Due to the land availability and the strong interest of local fishermen in greater participation in the hard clam fishery, it seems likely that a clam depuration plant could be constructed and operated. Bay waters are of high enough quality (*Special Restricted* or better) to serve as a source of water for a depuration plant. Establishment of a depuration plant would need to be led by a company or person with prior experience in depuration facility operations. In addition, close coordination with the NJ Department of Health and Senior Services would be necessary. The main limiting factors to establishing a depuration plant at Belford are the significant capital costs that would be incurred and the low profitability of depuration overall. Due to the competitive market for clams and lack of growth in prices, securing funding from private sources would be difficult.

Figure 5.7: Purge tanks, Source: Certified Clam

Conclusion

While the physical construction and operation of a depuration plant at the study area seems to be a surmountable challenge, the market indicators for the NJ hard clam industry do not reveal sufficient growth to warrant another depuration plant in the region. These market indicators include: strong competition from Southern States producing farmed clams at a lower price, the lack of growth in the price of clams over time, and the significant capital costs for a depuration plant. The general consensus amongst experts and stakeholders that were interviewed is that a depuration plant at Belford is not financially sustainable (see Appendix 1).

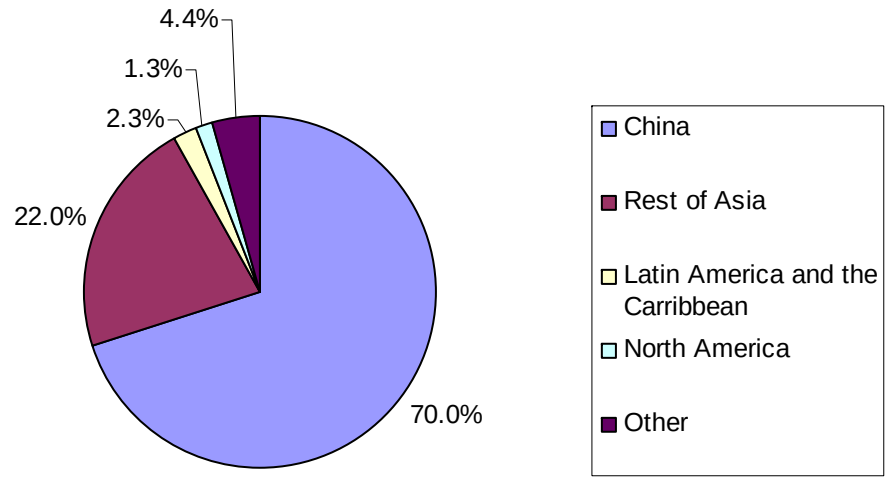
In addition, another depuration plant in the region may have a negative impact on the overall price of a NJ clam. A drop in the price due to excess supply could add to the financial risks involved in clam depuration. Potential upgrades of waters to *Seasonally Approved* status would allow an increase in the harvest without the need for additional depuration capacity.

Aquaculture Facility

Introduction

Aquaculture is defined as "the propagation and rearing of aquatic organisms in controlled or selected environments for any commercial, recreational or public purpose" (NOAA 2007). This practice is becoming more important as increased demand for seafood cannot rely solely on wild harvest without depleting the resource. Many large retail purchasers (i.e., Wal-Mart) are requiring their seafood products to be harvested through aquaculture and/or other sustainable practices. In the U.S., freshwater aquaculture dominates the industry, while the marine aquaculture that does occur domestically is primarily shellfish production. In New Jersey, aquaculture primarily consists

Figure 5.8 2007 Global Aquaculture Production



Source: NOAA Aquaculture Program

of clam and oyster farms in clean waters from Barnegat Bay south to Delaware Bay. Finfish aquaculture in New Jersey is limited to freshwater species, as no marine finfish aquaculture is occurring (J. Myers, personal interview, April 3, 2007).

Market Conditions

Despite the national interest in domestic aquaculture, competition from developing nations has made the economic feasibility of aquaculture in the U.S. very difficult. Developing nations are able to produce fish and shellfish at a low cost and high volume with minimal transportation costs. Contrasted with the higher costs in the Northeast, this has undercut the prices from farmed seafood products in the U.S. (as well as the prices of many wild seafood products, such as shrimp).

As shown in Figure 5.8, China and the rest of Asia produce 92 percent of global aquaculture products. Only 1.3 percent of global aquaculture products are produced in North America (NOAA 2007). The cheaper input costs are the main reason that Asian nations are able to dominate the market. This is similar to many other industries that are struggling with international competition.

Interviews were conducted with various stakeholders involved in aquaculture. These interviews included representatives from aquaculture investment funds who assist companies in branding, sourcing, and brokerage. These representatives explained how financially risky aquaculture operations in the U.S. are due to foreign competition and the lack of capital for start-up companies. They explained that the vast majority of start-up aquaculture operations fail. This is why the investment funds normally only assist existing businesses that are already involved in aquaculture and are looking to expand.

To date, aquaculture has not been conducted on a commercial scale in Raritan and Sandy Hook Bays due to a variety of reasons, primarily water quality, climate, high property values, and the low profitability relative to other land uses. Water quality is the main reason that shellfish aquaculture is not occurring in the bay. Clams or oysters grown in the bay, or in a facility using bay water would still have to go through depuration, adding cost to an already expensive cultivation process. Additionally, there is presently a large hard clam resource in the bay, the harvest of which makes greater financial sense if depuration is available or water quality improves. Moreover, the existence of productive natural shellfish beds, as is characteristic of Raritan and Sandy Hook Bays, usually precludes leasing for aquaculture in New Jersey. Finally, shellfish grown in New Jersey waters tend to have a competitive disad-

vantage with Southern-grown shellfish. Shellfish grown in Southern states reach market size more quickly due to the warmer waters. Most finfish aquaculture production in the U.S. is focused in the Southern states, where it is conducted in ponds and impoundments not subjected to freezing conditions, allowing quick growth to market size. Also, property values in the Southern states are much lower, allowing the cultivated product to be more competitive in the market.

Physical Feasibility

Aquaculture is physically feasible at the Port of Belford. The Bayshore Technology Center's "Proposed Commercial Fishing and Aquaculture Project Feasibility Analysis" produced in 2003 demonstrates how a large-scale aquaculture facility could be constructed in the study area.

The construction and operation of an aquaculture facility is regulated by NJ Department of Environment Protection and NJ Department of Health and Senior Services. The regulations that pertain to the construction and operation include: US FDA's HACCP (USFDA 21 CFR 123); Interstate Shellfish Sanitation Conference (ISSC) requirements; and N.J.A.C. 8:21 (Alexander, personal interview April 4, 2007).

One concern regarding an aquaculture operation at the Port of Belford is the transfer of the skills of the existing fishermen. The operation of an aquaculture facility requires a specialized set of skills that is very different than those of commercial fishing, such as an understanding of fish physiology and pathology, chemical filtration, wastewater treatment etc. Retraining the existing fishermen to work in the facility may require extra start-up time and resources. Some aquaculture consultants who have worked on similar projects stated that this is not always an easy transition and can pose certain challenges (Elliot, personal interview April 6, 2007). Workers in aquaculture may therefore come from the outside or be local people who obtain specialized experience and training at Cumberland County College in South Jersey, which has some aquaculture offerings, or elsewhere in the region, at considerable distance from Belford.

Conclusion

Aquaculture plays an important part in meeting the increased demand for seafood within the U.S. The Bayshore Technology Center's "Proposed Commercial Fishing and Aquaculture Project Feasibility Analysis" produced in 2003 reveals how land-based aquaculture could be physically constructed in the study area to help meet these sustainable goals. However, this study's recommended development option must also be financially and technically sustainable in order for the revitalization of the port to be a success. The development recommendation must produce a self-sufficient business that can operate without dependence on government subsidy. Based on this study, aquaculture on the site is not a feasible option due to the high input costs and financial risks of constructing and operating an aquaculture facility in the face of significant competition from cheaply farmed fish and shellfish from the Southern U.S. and Asia.

Figure 5.9: Self supporting stacked tanks, Source: Marine Biotech

Live Fish Facility

Introduction

The Mid-Atlantic region is experiencing rapid expansion of the live finfish market. While this market is currently dominated by farmed species, tilapia and hybrid striped bass in particular, new and previously underutilized species are being used to meet the strong demand in this market. Live fish sell for two to four times as much as frozen fish (J. Myers, personal interview, April 3, 2007).

This market has traditionally been for the Asian communities in large metropolitan areas but now is expanding to the gourmet restaurants, supermarkets, and seafood markets (Castle 2000). The New York Metropolitan Area has a strong demand for live fish due to the large number of Asian communities and high-end restaurants and markets selling live

fish, and buyers from as far away as Toronto, Canada, look for live fish from this region (L. O'Dierno, personal interview, March 26, 2007). A manager of an Asian food market in Middletown, NJ, explained that his live fish customers are from all ethnicities (Chan, personal interview, May 2, 2007).

The New Jersey Department of Agriculture, in cooperation with Rutgers University and the University of Delaware Sea Grant, is completing a study on the market opportunities in the Northeast for live fish and seafood products. Interviews were conducted with consumers and individuals from various live seafood markets and restaurants in and around New York, Boston, Philadelphia, and Washington D.C. From the market research, the study provides directories of markets and producers and detailed information on consumers' purchasing characteristics and market operations for the live fish industry. One of the major findings of the study was that freshness was the single most important factor influencing consumers' purchasing decisions. This information is useful in better understanding the regional live fish market and assessing the viability of targeting a live fish facility at Belford. In addition, the NJDA project provides more awareness of the potential importance of this industry to government officials and business leaders.

Belford fishermen are already involved in the live fish market on a small scale. These fishermen use trawlers with rockhopper gear to land generally undamaged fish. Live fish can also be harvested in the pound net, gillnet, and trap fisheries, as well as the bottom trawl fishery. They land a variety of live fish including: Blackfish (Tautog), Winter Flounder, Ocean Pout, and a small amount of Black Seabass. Climate controlled holding tanks at the dock are used to hold the live fish until trucks from Asian markets come to pick up the fish. The trucks have large tubs on them, which they fill with chilled water from the fishermen's tanks and then load the live fish. Approximately one truck shipment occurs daily when live fish are being landed (J. Charley and B. Yahara, personal interview, March 11th, 2007).

Fish Species	FROZEN – Price Per Pound	LIVE - Price Per Pound
Hybrid Striped Bass	$1.72	$4.30
Tilapia	$0.88	$2.20
Eel	$2.80	$7.00
Blackfish	$2.20	$5.50
Catfish	$0.52	$1.30
Buffalo	$0.68	$1.70
Big Head Carp	$0.68	$1.70
Lobster	-	$ 8.00

Figure 5.10: Frozen versus live fish prices, 2007 Source: NJ live fish retail markets

Market Conditions

The selling of live fish is a value-added specialty market that has the potential to increase fishermen's earnings without increased catches. With adjustments to fishing practices and facility improvements, fish can be kept live on the boats and transported to live fish holding tanks on the docks and held until they are ready to be transported to the consumer. As shown in Figure 5.10, live fish sell for approximately two to four times the price of frozen fish. Since fishery regulations are the major hindrance to expanding the fishermen's business at Belford, the live fish market would allow them to generate more revenue without more landings.

Most importantly, the market for live fish at Belford has a strong competitive advantage since Belford is geographically close to the

Figure 5.11: Live Fish Retailer, Source: Marine Biotech