

Small Fishing Ports in Southern New England

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**John J. Poggie, Jr.,
and Richard B. Pollnac, Editors**

Sociology and Anthropology
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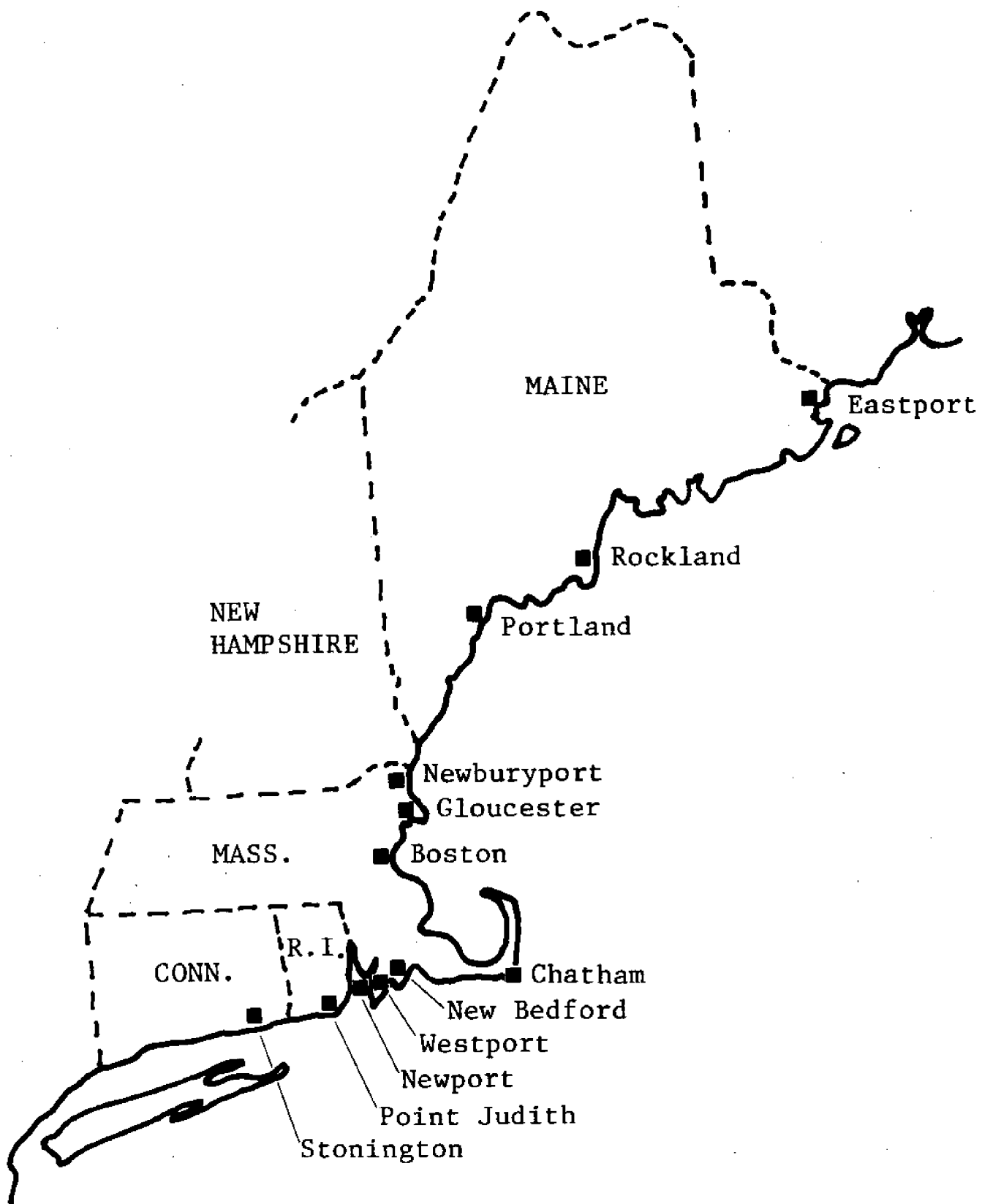
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CONTENTS

Small Fishing Ports: An Introduction	1
I. Newburyport, Massachusetts	5
II. Chatham, Massachusetts	23
III. Westport, Massachusetts	59
IV. Newport, Rhode Island	73
V. Stonington, Connecticut	95
Small Fishing Ports: Some Concluding Observations	111



SMALL FISHING PORTS IN SOUTHERN NEW ENGLAND: AN INTRODUCTION

The New England fishery forms the basis of the oldest commercial enterprise in the United States and, during the seventeenth and eighteenth centuries, was an important element in colonial power. New England's early maritime commerce depended heavily on export trade in salted fish (White, 1954). Massachusetts symbolized the importance of the fishery by hanging a representation of a codfish (the "sacred cod") in the Old State House in 1784 (Morison, 1921).

The earliest New England fishermen fished close to shore, but by the early eighteenth century they began to move farther out, soon reaching the Grand Banks. This offshore fishery was facilitated by the introduction of the schooner. During the nineteenth century, Gloucester was the most important New England fishing port, but in the early twentieth century Boston became the largest producer, and Gloucester's production fell, bottoming out in the 1930s. Gloucester came back in the 1940s, however, and surpassed Boston, leading New England in fish production by 1943. New Bedford, Massachusetts, was a thriving whaling center from the late eighteenth century until the decline of the whaling industry in the late nineteenth century. It did not become an important New England fishing port again until the late 1930s. In the 1960s, however, New Bedford became the leading port in terms of value of catch.

The Rhode Island fishery was historically much smaller than that of Massachusetts and remains so today, producing approximately only one-fourth as much fish. The early period of Rhode Island's fishery (before 1930) has been characterized as a "nearshore fishery" and the latter period as a "trawler fishery" (see Olsen and Stevenson, 1975). Otter trawling began in Rhode Island in the 1930s and expanded rapidly in the late 1940s and early 1950s (Olsen and Stevenson, 1975). In 1957, Rhode Island landed a record 142 million pounds of fish, most of which were industrial (Olsen and Stevenson, 1975). Catches declined in Rhode Island until 1964, rose until 1974, and then once again began a slow decline. The downward trend continues in terms of catch per unit effort.

Today New England fisheries in the aggregate represent a very important part of the total production of fish in the United States. Over 25,000 men operating some 700 vessels (5 tons or more) and 14,000 boats land in excess of 580 million pounds of fish, worth over \$200 million (1977).

Within the region, the state of Massachusetts with its several small ports and its two large ports of Gloucester and New Bedford account for about half the total landings. Maine is second in importance, landing approximately one-quarter of the total; while Rhode Island accounts for about 15 percent, Connecticut and New Hampshire together account for approximately 10 percent. The dollar value of these landings follows the same ranking as poundage.

It is possible to divide New England into two regions: (1) the state of Maine, where total value of landings is dominated by shellfish and lobster (about 70 percent of value of total catch); and (2) the southern New England region, where finfish predominate (about 60 percent of value of total catch). Although other species are taken, cod, haddock, and yellowtail flounder (the so-called "groundfish") are the three species most important in the southern

New England region. The value of these species makes up about two-thirds of the total value of the catch in the region.

As noted above, the southern New England fishing industry is the basis of the oldest commercial activity in the United States. The trade and capital of this fishery were the foundation of the growth of manufacturing in New England. Thus, the industry has an important place in the evolution of the New England economy. Today, because of its unhealthy economic and biological state, and because it is based on one of the few renewable natural resources of New England, the industry is the concern of many people, both in the region and elsewhere in the country.

Although groundfishing predominates when one considers the region from landing statistics, it is important to realize that from the perspective of most fishermen, groundfish are but one part of the total strategy of catch that make up the fishing year and the fisherman's economic viability. It is actually a violation of reality to discuss the "groundfishery" apart from the matrix of other fisheries which make up the adaptive patterns of individuals in the various ports of the region. For this reason we will deal with all fishing activities in our examination of a sample of small ports in the southern New England region.

In other reports (see Miller and Pollnac, 1978; Jessen, 1978; Poggie, 1978) we concentrated on the larger ports in the region. These were Gloucester and New Bedford, Massachusetts, as well as Point Judith, Rhode Island. In terms of the landing statistics, these are very important fishing ports. For example, New Bedford and Gloucester in 1977 landed 78 percent of the total catch of Massachusetts, while Point Judith's landings made up 61 percent of Rhode Island's total catch. From the social and cultural point of view, our studies demonstrate that these ports are very different from each other. Gloucester is a port composed primarily of offshore and inshore finfishing vessels. Fish processing, tourism, and fishing, respectively, are the most important elements in the city's economy. The labor force is composed primarily of Italians of first, second, and later generations. New Bedford's labor force, on the other hand, consists of a mixture of Portuguese, Norwegian, and American fishermen. New Bedford's boats range from large offshore (greater than 150 tons) to small day boats, but the port is dominated by offshore boats fishing for groundfish and scallops. Point Judith is a predominantly non-ethnic port, with a wide mixture of day, short trip, and long trip boats. Because of the differences between these ports, it was observed that responses to management were quite varied. It was determined that if we wished to generate the kind of social and cultural information that would help reduce the most serious consequences of management, we needed to learn more about the full range of variation that exists in the region under study.

Thus, we selected five more ports for study. These are the small ports of Newburyport, Chatham, and Westport, Massachusetts; Newport, Rhode Island; and Stonington, Connecticut. Besides their locational differences (see map), these ports differ in terms of local social and geographical conditions, fishing styles and emphases, as well as a host of other variables. An understanding of the full range of diversity that characterizes the fishing ports of southern New England will make possible a more complete, well-considered assessment of the consequences of policy decisions.

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I. NEWBURYPORT, MASSACHUSETTS

Marc Miller

In this report, Marc Miller describes the highly diversified small-scale fishing fleet of Newburyport, Massachusetts. The study points out the struggle that commercial fishermen have with the problems of winter ice and turbulence, landing and docking facilities, as well as community acceptance. A fact that might affect the future of the industry is that the competing recreational fishery has been more important economically to the community than has the commercial fishery.

LOCAL HISTORY

This section provides an overview of the history of maritime activities in Newburyport, Massachusetts, during the last three centuries. Because the early period has been the subject of numerous volumes by historians and chroniclers, and because there has not been an enduring commercial fishing tradition in this city, review is brief and serves best as a backdrop to sections that follow in which the contemporary setting is described.

The town of Newbury, which lies on the southern side of the mouth of the Merrimack River in northeastern Massachusetts, was incorporated in 1635. For the first half century, local inhabitants depended on livestock and farming for their livelihood. Thus, in 1686 most of the land that was to become Newburyport was tilled by farmers.

In the most well-known historical treatments of Newburyport (e.g., Currier, 1977), there is little mention of, or emphasis placed upon, commercial fishing. During colonial times cod and mackerel were caught by Newbury fishermen and cured. The number of men and vessels involved in ocean fisheries was small, however.

In 1639, the town granted "fishermen's lots" along the Merrimack on the condition that the grantees follow fishing. Estates employed in catching, marketing, or transporting fish were free of duties and taxes. At the same time, citizens were fined if discovered using codfish as manure. The majority of this early fishing activity was concentrated on the Parker River and along the waterways to Ipswich.

In 1641, 300,000 dry fish were reported as having been sent to market, and fishing is said to have commenced in the Merrimack River the following year (Currier, 1977). Salmon were caught with weirs. In 1643, a shortage of corn "forced" people to eat clams, mussels, and dry fish.

Although the Merrimack River was known early as a source of sturgeon and salmon (and, to a lesser extent, bass), these fisheries were virtually exhausted by 1800, when ordinances were enacted to protect these species. Nevertheless, both fisheries fell victim to overfishing and pollution and did not last another hundred years.

The first wharf in Newbury (now Newburyport) was constructed in 1655, and by the latter half of the eighteenth century the port was firmly established as a major center of international commerce. Vessels bearing molasses, sugar,

coffee, and cotton came from the West Indies, wine came from Madeira, salt from Turk's Island on Cadiz, linen from Ireland, gunpowder from Rotterdam, earthenware and carpeting from Dunkirk, and silks and glassware from Bilbao.

In 1764, a portion of Newbury called "the water side" was incorporated as Newburyport. This political division reflected economic interests. The larger Newbury had a population chiefly composed of husbandmen, whereas Newburyport was more dependent upon the enterprises and activities of merchants, traders, and skilled artisans. At the time of its incorporation, Newburyport was bounded by the Merrimack River on the north and by Newbury on the other three sides. With 647 acres of land, 357 dwelling houses, a population of 2,882, and three ships, Newburyport qualified as the smallest town in the Commonwealth.

The favorable location of Newbury on the Merrimack River led, in the latter part of the seventeenth century, to a change in its economic base. Specifically, the local shipbuilding industry prospered and the town began to focus its commercial business interests on international commerce. This, in turn, attracted other industries to Newbury, along with the merchants, seafaring men, and labor forces that were needed.

Oak stands flanked the Merrimack River for 120 miles, beginning at its mouth. Newburyport utilized this timber for shipbuilding (today Newburyport is known as Clipper City) and quickly became the economic center for the entire Merrimack Valley. As such, Newburyport supplied the settlements that developed upstream (e.g., Amesbury, Haverhill, Methuen, Nashua).

As the most important shipbuilding center in New England, Newburyport constructed 427 vessels which cleared or entered customs in Boston and Salem between 1756 and 1765. Ninety vessels were launched in 1772 alone, and 72 vessels were under construction in the summer of 1776 (Labaree, 1962:6). Many of the ships built along the Merrimack were sold in England because of the relatively low American costs.

With independence came economic ruin for many of the Newburyport merchants. Privateering was not profitable for shipbuilders, and after the war few vessels were fit for trading. On top of this, American merchants could no longer expect the international trading privileges they had received under the British Empire. Between 1784 and 1787, only 100 boats were constructed. This was less than the annual rate prior to the war (Labaree, 1962:62).

Newburyport had the greatest number of shipyards and produced the largest number of vessels during the period around the Revolutionary War, but the city's shipbuilding image is more clearly tied to the era of the clipper ships in the mid-nineteenth century. Between 1831 and 1892, over 300 ships were built along the Merrimack in 11 shipyards. Shipbuilding continued to be an active and prosperous industry until 1883. In colonial times, Newburyport relied most heavily on West Indies trade. The city was at its most prosperous, however, during the beginning of the nineteenth century. By 1850, manufacturing was a very important industry. By the second half of the nineteenth century, the Newburyport shipbuilding industry was in definite decline as steam and iron-hulled vessels began to replace those of wood. The last square-rigged vessel built in Massachusetts was constructed in 1883, and the last schooner in 1901.

Turning to the fishing industry, early in the nineteenth century Newburyport had a small inshore fishing fleet that reached its peak in 1834 with 140 vessels, involving between 1,000 and 1,500 men. In 1851, the fleet had

shrunk to 90 vessels and 975 men, and in 1912 only 200 fishermen worked out of Newburyport (Martingale, 1977:120).

In 1847, 4,200 shad were recorded as being taken in one haul of a single seine at the mouth of the river. In 1850, a law was established providing for payment of a bounty to owners of vessels engaged in mackerel fishing if they would shift to cod. A tactic employed by some fishermen involved claiming to be after cod when in fact they were pursuing mackerel. By 1851, 90 vessels measuring 6,012 tons and carrying 985 men were fishing the banks of Newfoundland out of Newburyport.

Newburyport was also for a short period involved in the whaling industry. In 1832, a company was formed to build and outfit whaling vessels for fishing in the Pacific. The company was successful for several years. The ship Merrimac returned from its second trip with 1,300 barrels of sperm and 1,600 barrels of whale oil. Profits, however, did not justify another trip and the whaling enterprise was abandoned.

The beginning of the twentieth century found Newburyport in decline as a commercial center and fishing port. Coal, lumber, and passengers continued to be transported by steamers, schooners, and ferryboats, but the city was forced to rely more heavily on its local factories.

During the first half of the twentieth century, Newburyport struggled economically. It survived as a minor commercial center, due partly to its location on a major highway connecting Massachusetts and Maine.

By the late 1950s, Newburyport faced a severe economic recession and chronic unemployment. This decline was a consequence of the exodus of manufacturing companies out of New England in the 1950s.

Since 1960, and to a large degree because of federal support, Newburyport has begun to recover economically. In 1960, the city established the Newburyport Redevelopment Authority to reconstruct portions of the badly deteriorating business district. Originally, planners called for the demolition and rebuilding of the historic downtown area. Public reaction halted the destruction of historic buildings, and in 1970 planners changed their emphasis to "rehabilitation."

Newburyport has undergone a few physical changes during its history. In 1791, a canal was built through the marshland behind Salisbury Beach in order to connect Hampton, New Hampshire, with the Merrimack River. In bad weather, boats used the canal to reach Newburyport. Some boats crossed the Merrimack and continued down the Plum Island River to reach clam and fish sources in Ipswich lying to the south. The canal was in use for a mere 50 years and then abandoned. Today it is overgrown. From time to time there have been modifications to the Merrimack River which have had minor impact on Newburyport. Numerous locks and canals built around falls upriver have facilitated the movement of oak timber from Bradford and Haverhill. A breakwater and dam from Plum Island to Woodbridge Island was completed in 1831 with federal funds. The breakwater was designed to increase the depth of the water on the bar at the mouth of the Merrimack, but it was unsuccessful and had disappeared by 1900. Finally, interest in navigating the Merrimack and in the transport of coal upriver to Lawrence and Lowell led to the initiation of the construction of two jetties at the river mouth in 1881.

In the late 1970s, Newburyport was working hard to complete the face lift and restoration of the historical downtown business district. The urban renewal project received wide publicity and was the topic of a short film. Many feel that despite many problems the restoration has been more successful

than a similar project in Salem. A major objective of the present Newburyport administration is to increase tourism. To this end, Newburyport promotes itself as a historical and maritime community.

Newburyport is viewed by residents as an attractive community with a historic profile and character. Many of the colonial homes are being restored and land values appear to be rising. Adjectives chosen by citizens in informal interviewing to describe life in Newburyport include the following: "quaint," "safe," "supportive," "small," "traditional," "scenic," and "historic." One young woman said about the city's townspeople:

"They're all very kind and funky. You don't have to be afraid of Newburyport people."

THE CONTEMPORARY FISHERIES AND INFRASTRUCTURE

Physical Environment and Support Facilities

In 1976, the Massachusetts Department of Community Affairs invited communities within the Commonwealth with populations under 50,000 to submit proposals to receive assistance in community planning and resource management. Newburyport was selected as the target community for the study, which was entitled "Planning and Developing Small Harbor Areas." A section of the preliminary study outline follows:

This study will concentrate on methods for maximizing the interface between land and water use in and immediately around a typical small harbor and developing a harmonious integration of commercial, recreational, and environmental activities and concerns within the critical area.

Detailed model harbor designs will be prepared indicating physical interrelationships of land and water use, including such items as land and water circulation, piers, dockage, facilities, warehousing, channeling, and breakwater construction, etc. [Martingale et al., 1977]

The result of this research was a 380-page study of Newburyport, focusing on topics such as characteristics of small harbors, commercial fishing in small harbors, development of the Newburyport/Salisbury harbor, small harbor administration, regulation of Massachusetts harbors, and fishing cooperatives. One research goal was to illustrate, by way of the Newburyport example, development issues and problems (and some possible solutions) common to small ports. In addition, a short commercial fishing survey was conducted.

The following section is a brief report of some of the most salient Newburyport harbor and facility characteristics. For a more detailed treatment of these and related studies, the reader is referred to the Department of Community Affairs study.

The mouth of the Merrimack River lies some 30 miles north of Cape Ann, Massachusetts. Newburyport is located on the southern banks of the river, and faces the town of Salisbury on the northern shore. It seems that Newburyport and Salisbury have very little in common other than the river. Newburyport is the larger of the two, and its inhabitants indicate that they have very little reason to frequent Salisbury. Some residents insist they only cross the river when they want to take advantage of lower grocery prices in nearby New

Hampshire. With the exception of a party boat dock and mooring facility and a public dock, no river-related facilities exist on the Salisbury side of the Merrimack. Although some fishermen approach their boats from the Salisbury side, the vast majority of commercial fishing activity occurs in Newburyport. Salisbury is most popularly known as a resort, boasting a tourist beach facing the Atlantic and a large amusement park complex.

Physical characteristics of the Merrimack River have had considerable impact on the kinds of fishing and recreational activities possible there. The long, sandy arm of Plum Island which virtually landlocks the harbor also protects it from the sea. The Parker River National Wildlife Refuge on Plum Island consists of approximately 6,400 acres of sand dunes, salt marsh and tidal water, freshwater marsh, and glacial upland which are visited by an estimated 275,000 people annually, who enjoy opportunities to swim, hike, bird-watch, sunbathe, and fish. Many are drawn to the northern portion of the island, where summer cottages can be rented and where party boats operate. Plum Island is connected to Newburyport by a bridge, and to more distant cities by the Plum Island airport. It is estimated that there are over 2,000 homes on the island and a year-round population of only 500 families. Indeed, Plum Island residents form a kind of community of their own. As one young woman remarked about living on the island:

"When we leave the island, we say we're going 'into town.'"

Joppa Flats is located on the Newburyport side of the river, near its mouth. This extremely shallow portion of the harbor is the most productive shellfish region. Unfortunately, millions of dollars in local revenue are lost annually because the shellfish are polluted. Although many residents prefer to believe that the pollution sources exist in towns upstream, some studies suggest the problem is at least partly local. Salisbury evidently continues to route untreated sewage into the river. One of the world's few shellfish purification plants exists in Newburyport at Plum Island, but, ironically, local shellfish are too contaminated to be treated.

The Merrimack River is the largest river in eastern Massachusetts. Very shallow intertidal flats and salt marshes are located at the river's mouth, and the natural channel itself is rather narrow. Measurements vary, but at low tides the width of the channel can be considerably less than 200 feet, and the controlling depth between 8 1/2 and 12 feet at the entrance bar and between 6 and 9 feet nearer downtown Newburyport.

The depth of the entrance to Newburyport is certainly a major factor influencing fishing operations. An ebbing tide (not uncommonly, in excess of three knots) in conjunction with the Merrimack current causes "breaking waters" at the mouth of the river when the wind blows from an easterly direction. Local fishermen are very aware of the kinds of problems this presents for both outgoing and returning vessels. As one fisherman commented:

"This is one of the most dangerous entrances on the coast.

But you can play the bars ... what's bad is the jetties. You can't even see the North Jetty, there's nothing on it."

When it is dangerous to negotiate the entrance to Newburyport, returning vessels often retreat and steam to nearby Hampton Harbor, to the north.

Perhaps the factor that has been most influential in inhibiting commercial fishing in Newburyport is the ice that forms upriver and floats toward the Atlantic. Ice formations not only congest the river basin but seriously

damage boats. "Skim ice," only an inch or so thick, presents a lethal cutting edge as it moves seaward. In 1977, several fishermen nearly drowned when this kind of ice silently penetrated the hull of the moored vessel on which they were sleeping. In fact, ice problems are the most frequently given explanations for why Newburyport has not traditionally maintained a fishing fleet. In the past, fishermen have either stopped fishing during the winter months or have moved to other ports (Hampton or Gloucester).

It has been difficult for Newburyport commercial fishermen to find dock accommodations in the Merrimack River. Part of the reason that there are no commercial fishing support facilities in the public domain is that few fishermen have historically operated out of the port. Almost all of the river facilities have been designed with the recreational user or sports fisherman in mind. Newburyport has seven private marinas with slips for over 200 boats and moorings for 150 more. There are also two clubs on the Merrimack. The marinas and clubs are full to capacity during the busy summer months, and generally they do not provide vessels protection from river ice during the winter.

Diesel fuel is available at several of the marinas. In 1978, a city-owned fresh-ice machine was constructed adjacent to the fishermen's cooperative. At the time, no cold storage, filleting, or processing facility existed. In fact, Newburyport had but one fresh-fish retail outlet, and this operation opened only recently.

Until 1978, Newburyport fishermen had no support facilities whatsoever. However, the emergence of a fishing cooperative has alleviated some major problems by building a central landing dock adjacent to marketing facilities and arranging for temporary moorings for commercial boats in the harbor. Fishermen previously landed fish and tied up their boats wherever they could, often at private, party boat, or restaurant docks. Furthermore, an ice plant was recently constructed in Newburyport at city expense, thus severing the dependence of local fishermen on facilities in the nearby ports of Gloucester and Portsmouth.

While the cooperative and ice plant are major improvements and, in fact, symbolize the more or less favorable position of fishermen in Newburyport compared to those in Gloucester and Chatham, local fishermen still face further battles to achieve an acceptable port configuration. Fishermen must continue to convince the city government that the needs of the fleet are of high priority. There are some Newburyport citizens who do not realize that the city has a commercial fishing fleet at all, as is evidenced in the following exchange:

Anthropologist: "Is Newburyport famous for its fishing?"

Citizen: "Yes, mainly its clipper ships."

The future of the fledgling fishing industry will be significantly affected by how the city chooses to allocate the several million dollars granted by the federal government to renovate Newburyport's historical waterfront district. Although the abstract notion of the city supporting a fishing fleet is held by nearly all residents to be an attractive proposition, the reality of fishing-related activities being located in or near the "charming and quaint" downtown waterfront area distresses many. In particular, the tourism and real estate interests may well find broader citizen support as various proposals for commercial fishing in Newburyport are discussed in public meetings.

What is clear, however, is that for the moment at least Newburyport fishermen are in an advantageous position relative to their counterparts in

other New England ports. As implied above, part of the reason for such an enviable situation is to be traced to the fact that the city has never had to contend with much, if any, commercial fishing in its midst. One Newburyport citizen went so far as to suggest that "the reason fishermen are so well liked here is that the locals have never seen one." The marine tradition of Newburyport is anchored in shipbuilding; notably, the elegant clipper ships of the last century. Local fishermen are therefore able to draw on this related and ennobling seafaring heritage for some (though probably not much) symbolic leverage.

Somewhat surprisingly, fishermen in Newburyport seem unaware or at least unconvinced of their relative good standing in the community. To a man, they feel that they are not respected by the local citizens. While this may well reflect a general sense of social stigma many fishermen are said to carry with them on land, there are a few indications that the local fishermen may be on to something more tangible. In particular, a very visible example of the poor treatment Newburyport fishermen expect from nonfishermen is the public bulkhead and dock recently constructed on the waterfront by the city. This facility with a small protected inlet adjoining it, has yet to be made available for use by commercial fishermen, though it sits virtually unused by the public. Fishermen are thus reminded of their tenuous social position in the community every day as they row out to their vessels: these are rafted together beyond the new dock in a makeshift and precarious mooring arrangement.

Fleet Composition and Landings

Currently operating out of the port are eight inshore draggers, seven or eight inshore lobstermen, four gill netters, four eel fishermen, and a fleet of eleven party and charter boats. While estimates are difficult to come by, local residents note that a great many part-time fishermen come to the area to participate in the seasonal giant bluefin tuna fishery.

It is also difficult to estimate the amount or value of fish located in Newburyport. The most complete landing statistics for groundfish and tuna exist in the records of the Tri-Coastal Tuna Cooperative. A National Marine Fisheries Service official indicated that Newburyport figures are lumped together with those of other "minor" ports, and that "97 percent of New England landings are landed at major ports"; e.g., Gloucester, New Bedford, and Point Judith. The Department of Community Affairs report states that fishermen estimate that 50,000 pounds of groundfish are landed per week between December and March. This figure rises to 75,000 pounds for the months of April and November, and the figure is 100,000 pounds per week between May and October. Groundfish are landed in the following proportions: haddock, 13 percent; cod, 62 percent; yellowtail flounder, 25 percent. The yearly value of groundfish is somewhere in the neighborhood of \$1.25 million. It is further estimated that another \$70,000 worth of fish are landed by Newburyport fishermen in other ports. Ex-vessel value of local lobster landings is between \$60,000 and \$70,000. The Newburyport swordfish fleet fishes for five months out of the year and lands 10,000 pounds per week for a total ex-vessel value of \$304,000 per year. The annual value of tuna is an estimated \$325,000 (Martingale, 1977:147-149).

The Fishermen

With the exception of a small number of inshore lobstermen and perhaps a few gill netters, no commercial fleet existed in Newburyport as recently as five years ago. Newburyport does, however, have a rather long history of party boat operations. In the last several years, a small fishing fleet has begun to develop in the port. Initially, these fishermen landed their catch on private piers and docks, and made informal arrangements regarding the selling of the catch. Today, many of the Newburyport fishermen participate in a fishermen's cooperative and conduct landing activities at a single dock. (Adequate mooring facilities, however, continue to be a problem.)

The fishermen of Newburyport are a diverse group of men (there are no female fishermen in the port) who come from a variety of fishing and nonfishing backgrounds. Some of these fishermen are year-round full-timers, and others are not. Some participate in several fisheries throughout the year, while others fish only during a particular season, or fish only for a particular species. Then too, some of Newburyport's fishermen are strongly motivated to increase the scale of their fishing operation, while others are content with the status quo.

One may make the distinction between traditional and nontraditional fishermen in Newburyport. What distinguishes the nontraditional fishermen (other than not having been born into a fishing family and the lack of fishing experience) is their conscious decision to become fishermen. These men have selected an occupation that satisfies a life-style equation. They are fishing because they want to fish, not because they have not considered other alternatives.

The Dragger Fleet

The shallow entrance to Newburyport makes it unfeasible for craft over 65 feet in length to operate regularly out of the harbor. Breaking sea conditions make the entrance difficult to negotiate for boats under 35 feet. This has been one of the constraints limiting the size of the Newburyport dragger fleet.

In 1978, eight inshore draggers fished out of Newburyport. These boats generally sought groundfish in Ipswich Bay. One of these boats, the largest (62 feet), fished offshore during the summer when the weather permitted. A good day for smaller boats was a catch of between 800 and 1,000 pounds. All of the draggers landed fish at the cooperative.

Not all of Newburyport's draggers fish year round, although many would choose to do so if adequate winter facilities existed in the port. In the past, some of these boats have operated out of other ports between November and March. Nearly all of the draggers make some attempt to fish for giant bluefin tuna during the summer months, often operating for weeks at a time out of Provincetown, located on the tip of Cape Cod. The switch to tuna is related to the fact that groundfish move offshore in the summer months. (One of the Newburyport dragger captains reports that he was once strictly a tuna fisherman, but that quota restrictions forced him to turn to dragging.) Rationales for tuna fishing vary from captain to captain. Some fishermen enjoy the challenge and excitement of the struggle, while others merely acknowledge the economic necessity.

"I'm fishing tuna, killing time until groundfishing increases. I hate it."

When groundfish were scarce during one period in the summer of 1978, one Newburyport skipper adapted by dragging for, and selling, the bait that smaller boats use when chumming for tuna. This skipper made it known that bait was available and other fishermen steamed to his floating enterprise. Another dragger skipper ferried tuna from Provincetown to Gloucester during a 1978 groundfish closure, and then turned around and brought bait from Gloucester to the tuna fishermen. Remarking on this adaptation, another fisherman said:

"We try like hell to take care of our own."

The Newburyport dragger fleet is a new one. Perhaps half the boats are owner-operated, the rest are usually leased by the skipper. A possible financial arrangement might have the absentee owner getting "50 percent after expenses." A number of the fishermen fish only on a part-time basis. Crew size varies throughout the year, depending on weather.

Major problems faced by draggers have to do with dockage and moving facilities and the encroachment of recreational users:

"The biggest need in Newburyport is tying-up facilities. I've fished on every dock in the river and now they've got us down in a corner using a mooring. Next year, they'll take those, and then where will we go?"

Some fishermen oppose recreational fishing interests (e.g., charter boats, "rod 'n' reel boats," yachts) that compete with commercial fishermen for tuna in the summer:

"They're the 'toilet fleet.' They just go out and invade an area. It's a slaughter."

"They're the 'weekend warriors.' They want the fun and they also want the 500 bucks."

Newburyport draggersmen, like most New England fishermen, are not enthusiastic about federal management of fisheries and oppose fish quotas. Nonetheless, they favor enforcement of mesh-size regulations.

Lobstering

Seven or eight inshore lobstermen operate out of the Merrimack River. Some fish full time year round, while others pull their gear out during the winter. Some of the lobstermen fish for tuna during the summer, one fishes for whiting in the summer, and two gill net some of the time. All of these lobstermen can fish as many traps as they want under the \$100 state commercial license. Most fish between 150 and 200 traps and report losing 50 to 100 traps a year. In addition to these men, another two dozen small-scale lobstermen have the \$15 license that entitles them to fish 20 traps.

Newburyport lobstermen sell their lobster to a local fish dealer or to local restaurants. Some drive as far as Gloucester for bait. There are no lobster ponds in the Newburyport area, and the Merrimack River is too brackish to permit storage within the port, so many of the lobstermen accumulate

lobster at sea. Unfortunately, this presents opportunities to thieves. As one fisherman complained:

"There are people in fast boats who make a living stealing!"

All of the lobstermen would like to see increased enforcement activity. Some believe that scuba divers have been responsible for some of the poaching. One plan suggested by a Newburyport lobsterman to keep tabs on molesters would call for no trap hauling on Sunday--the day nonfishermen are most active on the water. Rivalry between Newburyport lobstermen themselves are regulated by informal means. At least one man, however, has reported that his lines have been cut.

Newburyport lobstermen, like those in many ports, are divided in their opinion of the merits and disadvantages of metal and wooden traps. One man who fishes over 200 traps, five in a trawl, commented:

"Metal are too expensive. I build my own for one-third the cost. I feel wood outfishes the metal. My wife knits the heads."

Another lobsterman concurred:

"For us, the wood's easier to set and handle."

A metal trap lobsterman argued:

"The metal are easier to transport and seem to fish better. They don't roll in a storm. I've never lost one in a storm. And they're about the same price--16 dollars and 48 cents."

And:

"I don't like metal traps because they go on fishing once you've lost them. They kill a lot of lobsters. But the wire fishes better. I may change from wood."

The controversy will obviously continue with the experiments:

"You see, what will work here will not work in Beverly. They will say they will starve with square traps, they really believe that. And I fished right with them!"

The number of lobstermen in Massachusetts is carefully regulated through a licensing system of limited entry. Newburyport lobstermen do not, therefore, feel pressured by ever-increasing numbers of lobstermen. What they do oppose, however, are the different regulations imposed by New England states to protect and conserve lobster resources. A major problem has to do with the fact that New Hampshire lobstermen and Newburyport lobstermen contend for the same lobster, but play according to different rules.

"If the lobster are under 3 3/16 inches, we have to throw them back, whereas New Hampshire lobstermen get to keep them as small as 3 1/8 inches. The little lobsters we throw back are trained to go into traps. So we lose 'em and they get caught again before they breed. Besides, there's no buoys at sea to tell you where the state lines are. New Hampshire fishermen come into Massachusetts water and take our lobsters. We need wardens. I've been checked four times in 36 years in Massachusetts, yet hundreds of times in New Hampshire."

A related problem is centered on the protection of extra-large lobsters, termed "breeders":

"Massachusetts should follow Maine and have a uniform size to throw back as breeders. Say five or six pounds. Massachusetts is blowing it by not protecting big lobsters. You can't build a future on little lobsters."

Still another problem for Newburyport lobstermen deals with the possibility that Massachusetts may open selected portions of Ipswich Bay inside the three-mile limit to otter trawlers. Lobstermen (and gill netters) have long contended this would be disastrous not only for spawning lobster but for their own fixed gear. Draggers have countered that no scientific evidence exists to support the first claim and that dragging in daylight hours (instead of surreptitiously at night) would lead to less, rather than more, gear destroyed.

Some lobstermen would like to see "the ten potters"--i.e., those without a commercial license--fish in a special area. One man argued as follows:

"They're little operators. They can't handle the trawls of five traps that they snag, and then they cut us away."

Recently, there has been talk of a poundage limit relating to lobster boat licensing. Under a plan of this sort, lobstermen would have to land, for example, 2,000 pounds of lobster a year to qualify for a commercial license. Ironically, this could force some fishermen to increase effort:

"I feel I've got to fish to hold my license."

Gill Netting

According to local sources, the first in the recent wave of commercial fishermen in Newburyport were gill netters. These were followed by longliners and, more recently, draggers. In 1978, four gill netters fished out of Newburyport, two of them operating full time. Gill netters land cod, haddock, and pollock. Average equipment might consist of 3,000 feet of gill net, with the mesh size between six and eight inches. The most popular fishing ground is Jeffrey's Ledge, located 26 miles east of Newburyport. All of Newburyport's gill netters fish for tuna during a portion of the summer.

Because of closures in 1978 in the New England groundfish fisheries, gill netters have had to diversify. Many of these men fish for lobster on a limited basis. Some count on lobster landings for supplemental incomes and are happy with the situation, but some are not:

"It's only temporary and due to the closure. I prefer to gill net."

These sentiments were echoed by another thwarted gill netter:

"This is the first time in three years I've stopped fishing. Because of the quota on groundfish I'll have to try tuna. I don't like tuna fishing. I don't even know how, but I have to...."

It's difficult to speculate on the future of gill netting in Newburyport. Five years ago there were ten gill netters in the port, and during those years ten more have tried and failed. Certainly, certain management regulations in 1978 have both helped and hurt gill netters. Because their gear is fixed--i.e., stationary in the water--gill netters together with longliners

and trap fishermen have at times been permitted to fish while dragger fleets have been forced to stay home. During full closures, of course, gill netters have also been denied the opportunity to fish. Gill netters have also been able to fish inside the three-mile Commonwealth limit--a region denied to draggers.

Greatly offsetting any advantage gill netters may have because of management decisions is the threat and presence of dogfish. Dogfish, a kind of shark, prey on groundfish caught by longlining and gill-netting gear. Some of the gill netters diversify by longlining part of the year:

"Until spring the fish are coming inshore to spawn. When the fish are moving we use nets, when they are feeding we use hooks. In the spring we fish deeper water with longliners until the dogfish come. Then we go after tuna."

The conflict between gill netters and draggers is much the same as that between lobstermen and draggers. Basically, problems arise when draggers foul and damage fixed gear when trawling. The situation in Newburyport is no different from that in many other New England ports. Several Newburyport gill netters point out they lose between \$1,500 and \$2,000 a year as a consequence of dragger interferences. The dragger contention is that gill nets, made of monofilament line, continue to fish after they are lost, and are ecologically unsound. This is denied by gill netters.

Eel Fishing

Several eel fishermen operate in Newburyport and sell their catch to a local eel exporter. Eel fishermen use small skiffs (the ideal boat is a 20- to 22-foot aluminum skiff with a 25-horsepower outboard) and fish between 50 and 200 traps a day. They fish exclusively in the Merrimack River.

Eels (*Auquilla rostrata*) are fished as far as eight miles up the Merrimack River. The best time to catch the eels as they come into the river is an hour before low tide. Eel traps resemble crab traps, and are cylindrical with an inverted tunnel. They are made of half-inch galvanized wire mesh, and are roughly two feet long and a foot in diameter. Traps cost slightly over ten dollars each and are fished in trawls of three to five traps. Eels are said to like the eggs of the female horseshoe crabs (10¢ a pound), which are used with clam heads and shells as bait. One eel fisherman commented on eel behavior:

"For the most part they're kind of friendly. They're timid, want to live in dark places, and go out at night to eat."

Eel fishermen hold their catch two days in order "to purge them and untangle them before they are sold." Fishermen are then paid a bulk price for the live eels. The local eel firm subsequently cools the body temperature of the eels, sorts them, and ships them in boxes live to Holland, Japan, France, and Italy. The Newburyport contribution represents, however, only 15 percent of the company's total volume. The majority of the firm's eels are transported by truck from as far away as New Brunswick and Virginia.

Most eel fishermen do not fish full time. Eel season lasts from April to October or November. In April, ex-vessel prices are as high as 60 cents per pound unsorted. In mid-July, the price drops to between 30 and 40 cents a pound before rising again to 50 cents.

It is estimated that Newburyport had as many as 3,000 eel traps in operation five years ago. Since that time the number has dropped, so that there are now approximately 500 being fished. The primary reason cited for this decrease in effort is that the Merrimack has been overfished. The smallest eels exported for the European table market weigh four ounces, and half the eels caught in Newburyport weigh less than that. One eel fisherman described the present situation this way:

"Right now it's not really a money-making proposition. If you wanted to buy a boat and pots to fish here, you couldn't justify it because so many of the eels are so small."

One possibility for the future involves the farming of eels as is presently done in the Far East. Japan imports eels farmed in Taiwan. If eel farming does become an American reality, it is unlikely to do so in Newburyport. Eels grow faster in warmer water, so eel aquaculture is most likely to be successful in the Southern states.

Tuna Fishing

"I became a tuna fish addict the day I left Gloucester at five and came back at ten-thirty and a guy gave me a check for 2,400 dollars for two tuna fish."

Newburyport (along with several other ports) lays claim to the title of "tuna capital" of New England. The tuna species in question is the giant bluefin tuna. The bluefin is allocated to New England fishermen during the summer months according to a quota system. Weighing between 300 and 900 pounds, bluefin are favorite targets of the so-called "big game" sportsmen as well as commercial fishermen. Until recently, fishermen experienced some difficulty in selling tuna because they were primarily regarded as sports fish:

"In 1973 I got three tuna in one day. Gave one away cut up, and sent two to be sold. I got a bill for three dollars and 98 cents for shipping them--1,100 pounds! In 1972, a friend of mine took six fish to the dump."

Today, however, Japanese demand for "sushi" (a raw tuna delicacy) is high enough to warrant ex-vessel prices of well over a dollar per pound late in the season, when the fat content of the bluefin is high and the quota for the species has been nearly met. The market value of the bluefin, the pleasant summer weather, and the challenge of catching the fish have led to the phenomenon in Newburyport among commercial as well as sport fishermen known as "tuna fever." Literally hundreds of fishing vessels converge on the northwest and southwest corners of Stellwagon Bank to catch the bluefin, and the basic strategy of extravagant chumming has led more than one fisherman to hypothesize that the fish follow the fleet, rather than the reverse.

When "tuna fever" begins in Newburyport, it is said to strike everyone. Virtually all of the port's commercial fishermen spend at least part of the summer fishing for tuna. The number of sports fishermen, part-timers, and one-timers that fish for tuna is impossible to ascertain. Because of their sporadic or seasonal interest in fishing, these noncommercial fishermen are almost invisible, since they do not form tight or enduring social networks.

Their boats too are invisible, since they are kept in private dry storage when not in use. The attraction and romantic lure of the giant bluefin tuna to the recreational fisherman is evident in the following quotation:

"Tuna fishing is more important than everything else in the world. That's all there is."

Bluefin tuna are typically caught in three ways. Sports fishermen use the rod-and-reel method; commercial fishermen either harpoon tuna or, more frequently, use a heavy line with a single hook on the end. To catch a tuna 80 or 90 feet below the surface by the last method requires the following equipment: 500 feet of 5/16-inch cotton line ("potwarp"), a 25- to 30-foot shortline (1/4-inch green nylon line that is difficult for fish to identify), 12-foot stainless-steel leader, and a 2- to 3-inch Japanese hook. The other end of this assembly is attached to a floating "Gloucester ball" buoy. This equipment is stored on deck in a series of plastic milk boxes.

Party and Charter Boats

"The fish caught is secondary. You got to keep the people happy" [Party Boat Captain].

"Unlike commercial fishermen, our fish are in the boat before we leave the dock. Our problem is entertaining" [Charter Boat Captain].

In one important respect, Newburyport differs markedly from other New England ports with commercial fishing fleets. In the last quarter century, Newburyport's economy has depended more on recreational fishermen than commercial fishermen. A major draw of the city has been the opportunity to sports fish, and a considerable portion of the city's economy is tied to the dollars that tourists and residents alike spend on recreational fishing. Martingale (1977:149) estimates that \$335,000 in head fees alone are collected by party and charter boats in Newburyport.

Other than go fishing in his own or a friend's craft, fish from the beach, or charter a boat with a six-passenger limit, the sports angler has two options. He can pay for a position on a party boat (also "head boat," because customers pay by the head) or he can charter a boat as part of a larger group.

While the term "party boat" can generically refer to any number of kinds of boats that take groups of individuals fishing, the term also denotes a particular vessel configuration. Party boats in this second sense are designed in a way to maximize the number of fishing positions, or stalls, along the rail of the boat. Comfort and cleanliness are factors in boat design and maintenance because party boat owners depend heavily on repeat customers.

The difference between a party boat and a charter boat is based on the contractual agreement between boat operator and client. In many cases, the same vessel will operate one day as a party boat and the next as a charter boat. Charters are often arranged months in advance. One charter boat owner reports his October weekends are booked up as early as April. Some owners feel there is more money to be made in party boats than in charter boats. Charter boats become party boats when the daily demand is high.

In 1978 there were 11 party/charter boats in Newburyport. Four of these craft were between 42 and 45 feet in length, six between 60 and 65 feet, and

one 50 feet in length. One additional charter boat was 23 feet long. Crew size (including skipper) varied between two and three persons. Four of these boats took on passengers at Plum Island, and the rest made arrangements to utilize two private docks near the center of town. Several of the men who owned and ran these boats had been at the same location for over 20 years. Kinship is also a factor to be considered in understanding crew composition. Several of the charter/party boats in Newburyport are operated as family businesses; i.e., sons following in their fathers' footsteps.

Charter and party boats depend on tourists for a large percentage of their business. Consequently, boats are run in accordance with the "tourist season" as much as they are with fish species seasons. Generally speaking, these boats are in the water from the beginning of April until sometime in November.

"No one runs after November 1. That's when the public liability insurance runs out."

No boats operate as charter or party boats year round. One of the smaller boats gillfishes during the worst of the winter months.

According to one party boat owner, his clientele breaks into two segments. Customers who want to catch bottom fish--e.g., cod, haddock, cusk, pollock--are usually inclined to fish for a full day offshore (20 miles offshore) on a deep sea boat. The second kind of customer opts for a half-day inshore fishing trip. Reasons for selecting the half-day boat over the full-day boat (or vice versa) are diverse, and include 1) a preference for species found inshore--particularly mackerel, but also flounder, whiting, small cod, and pollock; 2) the lower cost; and 3) the shorter time spent. Many of the older customers who tire easily prefer the half-day boats. On a "fair day," everyone on a party boat will catch at least one fish, and some will catch a dozen or more.

Not all of the customers on a party boat are novice fishermen or tourists. Some of the "regulars" appear every weekend and expect to catch 15 fish. One Newburyport party boat captain claims he can always count on the "same 25 guys here each Saturday." There are also regulars who literally make a living selling the fish they catch daily on party boats. The pressure that these regulars can put on a skipper to find fish is considerable.

It is one party boat owner's opinion that customers on his full-day boat are split in their preference for cod and haddock. He also feels that summer tourists (as opposed to "regulars") want haddock.

Years ago, Newburyport boats chartered for striped bass. Today, only one boat continues to do so. One explanation for this drop is that individual sports fishermen are increasingly using their own boats. Another is that the potential catch is down because of diminished stock!

Perhaps the biggest attraction to recreational fishermen who go out on party boats is the mackerel. It is apparently quite an experience to fish in a school of these fish.

"It's nothing to get 400 to 500 mackerel in the boat. It's the quickness!"

A major difference between the party boat captain and the commercial fisherman centers on uncertainty. Commercial fishermen gamble from day to day, and depend on their knowledge of fish habits and weather conditions for an edge; party boat captains "have the money in the pocket before we got out." Commercial fishermen sell the fish they catch; party boat captains take

clients to the fish and let them keep what they can catch. Party boat captains must have certain social skills to encourage repeat business; these are skills commercial fishermen do not need to acquire. Party boat skippers must satisfy their customers. When fish are abundant, this task can be easy. When they are not, the skipper must simultaneously search for fish and keep the anglers content. As one party boat skipper commented:

"A commercial fisherman couldn't run this operation. We have to be diplomatic."

Sometimes being diplomatic means talking to people, discussing fishing strategies and equipment, and even listening to people. Party boats also sell alcoholic beverages on board (most boats discourage patrons from bringing their own liquor).

An interesting aspect of the party boat industry is that owners are as likely to have business skills and talents (and promotional imagination) as they are to have "fishing knowledge." A man early in his career may lease a party boat to operate or he may be paid a salary. Later he may purchase the boat. Finally, he may purchase additional boats and operate ashore in a tackle shop. He may expand the shop to include all manner of recreational fishing equipment and accessories. As mentioned, he may encourage and help his adolescent children into the business. It is interesting that while family members work first as deck hands and then often rise to the status of skippers, nonfamily crew tend to have much lower commitment.

"A lot of the mates are high school kids. It's unusual to keep a mate more than 2 to 3 years. They move on unless it's a top boat."

A mate's wage is roughly 30 dollars a day. It is possible to supplement this, however, by filleting fish for customers. At 25 cents per fish, this can total between \$30 and \$100 a day.

Several men in Newburyport control small fleets of boats. They must make administrative decisions regarding the best way to maximize returns. It is a poor strategy to operate all boats full day. Some of the larger boats have a passenger capacity of 50 persons. It costs something in the neighborhood of \$160 a day to run a big boat. A common strategy is to run some of the all-day boats only three days a week; e.g., Monday, Wednesday, and Sunday. The break-even point is around 22 customers. The summer of 1978 was not a particularly good one for Newburyport party boaters:

"The money's just not around this summer. We had two and a half bad weeks in August. The Globe says spending is 18 percent off."

Part-Time Fishing

A number of fishermen in Newburyport fish on a seasonal or part-time basis, and regard fishing as their second job. Perhaps half a dozen fishermen in the port depend on fishing for half their income, and several dozen more fishermen make in the neighborhood of \$2,000 per year in supplemental fishing income.

Part-time fishermen, in part due to the nature of their commitment, do not tend to have sophisticated commercial fishing gear or vessels. Most of the men in this category fish alone, or with a crew of one, and employ simple

technologies such as rod and reel and longliners. Some are relatively mobile and operate in other ports, depending on the season:

"Half of my income comes from fishing. I figure I have to catch a certain amount of fish to continue running this shop. I use a rod and reel instead of jigging because it's shallow enough here and it only takes a few turns. Besides, the currents aren't too swift.

"I fish for tuna, bass, and cod. In the spring and fall I'll go bass fishing out of Chatham on Cape Cod, because fishing is better there and they get 20 cents more per pound there. The Merrimack used to be the place for striped bass, but it dried up. Now it's the Cape."

Some part-time fishermen take advantage of opportunities to charter their boats. Charter boat licenses for six or fewer passengers are relatively easy to obtain. In many cases, part-time charterers do little formal advertising (perhaps a few well-placed cards on the bulletin boards of marine supply stores), relying on word of mouth. One man with a 23-foot open skiff explained:

"Yes, I will be chartering next year. I'll have to put up with it. It will be six passengers in the skiff. Rates will be 80 dollars a tide, which is roughly six hours."

A final subcategory of boat owners consists of men who buy small boats as investments, much as they might a pizza parlor or a cleaning company, and let someone else operate it as a charter boat or a tuna boat. Local estimates place the number of Newburyport owners in this category between six and a dozen.

At least one man in Newburyport works part time chartering his small skiff for striped bass and bluefish fishing. Bass are found in the spring and fall in the Merrimack and sometimes are worth as much as a dollar a pound. An estimated 20 percent of one man's charter customers fish several times a week and sell their catch--not uncommonly, between 200 and 300 pounds. (Some local residents claim that 400 to 500 pounds of bass a day could be landed 15 years ago.)

Newburyport's part-time fishermen are adaptive and flexible when it comes to taking advantage of opportunities. This is illuminated in the following anticipatory remark of a part-time charter boat skipper:

"They've been stocking Coho salmon in the river. I see a new fishing coming. I would charter for Coho."

FUTURE OF THE FISHING INDUSTRY

Newburyport differs from other ports in New England in that its commercial fleet is rather newly arrived. Five years ago, few fishermen operated out of the Merrimack River. Today, a fledgling fleet organized by a fishermen's cooperative struggles to secure an economic niche. Fishermen in Newburyport include inshore draggers, inshore lobstermen, freshwater eel fishermen, gill netters, and part-time or seasonal tuna fishermen. Of major importance to the

economy of the city is the party and charter boat sector of the fishing industry. The future of the Newburyport fishery appears to depend on whether or not the recreational fishery maintains its predominant position at the expense of the commercial fishery.

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II. CHATHAM, MASSACHUSETTS

John Jessen and Marc Miller

In this report by Jessen and Miller, Chatham is described as a picturesque port, with tourism its most important industry. Commercial fishing, which follows tourism in importance, is part of Chatham's cultural heritage (and therefore contributes to making Chatham attractive to tourists). Because characteristics of the harbor do not allow the use of large vessels, antiquated fishing techniques such as jigging, longlining, and trapping are predominant. These techniques reinforce the historical image of the town and attract a breed of fishermen who are more interested in sustaining the life-style provided by Chatham than in becoming wealthy.

The town of Chatham is located about 75 miles southeast of Boston, Massachusetts, on the outer side of the elbow of Cape Cod. It was settled in 1656 by a small band of Pilgrims, and incorporated in 1712. Today, Chatham is known for its attractiveness as both a tourist resort and a residential community, for its high-quality fresh fish, and for its commercial fishing fleet. Since the end of World War II, Chatham has experienced rapid growth because of the dramatic rise of the tourism industry. Like many other small Cape Cod communities, Chatham fights to preserve its historical character despite the pressure of the twentieth century.

Tourism and commercial fishing are the primary industries in Chatham. The town has eight churches, a small airport, three banks, two marinas, seven service stations, eleven restaurants, two pharmacies, nineteen hotels and motels (in addition to several dozen "tourist cottage" complexes), thirteen gift shops, five liquor stores, one golf course (private), one museum, seven antique stores, one marine railway, and no fast-food restaurants or major department stores. There is a public library, and an elementary school, a junior high, and a high school. There are five physicians, eight dentists, eighteen attorneys, and twenty real estate offices listed with local telephone prefixes. There are two outlets for fishermen's supplies, three boat yards, three retail and five wholesale distributors of fish products.

ECONOMIC HISTORY AND GROWTH

The earliest economic activities of the settlers on Cape Cod were centered around agriculture, but soon gave way to pursuits more closely tied to the sea (e.g., fishing, whaling, and maritime commerce). Cape Cod prospered until shortly after the Civil War, when competition from areas closer to urban centers, outdated methods of production, developing rival fishing centers, and the decline of whaling contributed to loss of employment and caused the Massachusetts General Court in 1898 to designate Cape Cod a "depressed area."

By the end of World War II, Cape Cod began to experience new growth, and tourism emerged as its dominant industry. One reason for this is that there

are 300 miles of attractive and accessible coastline on Cape Cod. One-third of the nation's population lives within a day's drive from this area.

The population of Cape Cod grew by 500 residents a year in the decade beginning in 1930, by twice that rate in the 1940s, and by 2,400 residents a year in the 1950s. Between 1970 and 1975, population increased by 37 percent; and in 1977 the total population was about 130,000 persons. The summer population (summer residents, overnight visitors, day trippers) is roughly triple that figure (Massachusetts Coastal Zone Management Plan, 1977). In 1963, it was projected that half a million people would be found on Cape Cod on a weekend day in 1980 (Blair Associates, 1963), but that projection was passed by 1978.

Like Cape Cod in general, Chatham has experienced considerable growth. This growth is reflected in the community's population statistics. According to federal and state censuses, the number of year-round residents in Chatham increased 33.2 percent between 1950 (2,457) and 1960 (3,273); 39.1 percent between 1960 and 1970 (4,554); and 54.8 percent between 1970 and 1975 (7,050).

Chatham's population is 99.6 percent Caucasian, with 26.9 percent under 18 years of age, 51.3 percent between the ages of 18 and 64, and 21.8 percent over 65. Of these, 65.2 percent are native-born and reside in their state of birth. This compares with the 6.6 percent listed as foreign-born (U.S. Census, 1970; Massachusetts Census, 1975; Town of Chatham Statistics, 1975).

THE COMMUNITY

Decidedly residential in nature, Chatham is an affluent town with a small labor force and with little inclination toward urban expansion. The people of Chatham basically like the town "the way it is." Chatham is not plagued by many of the problems that beset our major industrial centers and some of our rural communities (e.g., inadequate housing, massive unemployment, social and racial unrest, etc.), and has been able to preserve its historical image. Zoning regulations, for example, have successfully inhibited the kinds of neon advertising and commercial development that characterize many of the other resort areas on Cape Cod. The town is proud of its record in resisting change. Maintenance and security are more constant themes with the city planners than is growth. Education expenditures predominate in the town budget, and the local schools are considered to be among the best on the Cape.

Chatham residents distinguish three groups of people: 1) the tourists, 2) the fishermen, and 3) the retired. Understanding of the attitudes and interests of these groups is a prerequisite to understanding local politics and decisions, and ultimately the future of fishing in Chatham. One resident described Chatham as having "no middle class":

"Ninety percent of the retireds are upper middle class. The poor people are the cops, schoolteachers, and fishermen. There's no middle class here...."

As might be expected, tourists are well treated in Chatham, and considerable attention has been paid by the Chamber of Commerce to their needs and desires. The tourist is encouraged to take advantage of Chatham's sights and services, and is quickly supplied with brochures, maps, and suggestions. A centrally located Information Center provides more specialized assistance. From a retail perspective, virtually every consumer need is anticipated

(bicycle and television rentals, for instance). Tourism is clearly the mainstay of Chatham's economy.

"There are two waves. The July set come from New Jersey, Maryland, and Connecticut. The August set is mostly Massachusetts residents and people from Montreal and New York."

There seems to be no conflict between the other two interest groups in Chatham, the fishermen and the retired. Most of the elders praise the fishermen for their courage and perseverance. However, there is no marriage of interests either. Chatham is rapidly becoming a community for retired people. According to the 1975 state census, one-third of the town's population is over 59 years of age. For obvious reasons, the needs of the older members of the community are different from those actively engaged in the fishing occupation.

The fishermen in Chatham do not have the political control they might wish. As an interest group, they constitute a minority:

"One thing wrong with Chatham is that it's too rich a town. The people who retire to Chatham control it. Most retired people have nothing else to do but get involved. They have the vote...."

The dominance of the retired in civic affairs was commented upon by another fisherman:

"The fishermen aren't too vocal about what they want and they don't show up at town meetings. When I go, there's just a sea of gray hair."

Fishermen are generally considered an important part of Chatham's heritage, as well as an effective drawing card for tourists. If they are not always identified as the most affluent of the town's citizenry, they do not report they are being discriminated against or treated in a patronizing fashion. As a highliner fisherman's wife remarked:

"I've never heard anything bad about a fisherman in 27 years."

Nonetheless, not all of the residents of Chatham are enamored with fishermen or the fishing way of life. "They're boring," was one emphatic comment. On the subject of drinking, a side comment was volunteered:

"Of course you've read about our drinking problem in Chatham? And the fishermen are the worst!"

THE FISHING INDUSTRY

Fishermen

The fishermen in Chatham form a population that is heterogeneous and varied, in terms of preference for a particular method of fishing and in terms of an ideology and life-style.

There are 400 fishermen in the town of Chatham who have state permits to fish commercially. It is difficult to get exact statistics on the number of boats. Estimates of the number of commercial boats in the town range from 106, the number of boats that have permits to use the fish pier, to 204, the

number of boats of Chatham residents who hold town commercial permits. There are approximately 70 boats that are capable of fishing a full season. These would include only those boats big enough to take the rough seas of late fall and early spring. There are an estimated 60 additional boats. These are known locally as the "tin" or "mosquito" fleet, and they include boats owned by fishermen who bring in fish mainly in good weather during the late spring to early fall. In addition, there are about 50 sport fishermen who fish mainly for bass and 25 part-time boats that fish so infrequently that their impact is relatively small. This count is for the port as a whole, including those boats anchored at Aunt Lydia's Cove near the town fish pier; those anchored in Ryder's Cove, north of the fish pier; those in Stage Harbor; those in Oyster Pond; and those kept on trailers.

Chatham is best known as a hook fishery, but this generalization masks the diversity found in the port. While it is true that a majority of the fishermen pursue the same principal species (i.e., cod and haddock), a variety of methods are employed which are distinguishable in terms of cost, division of labor, technique, and strategy. Furthermore, many fishermen participate in several fisheries, depending upon the season.

On the basis of gear type, we might identify Chatham fishermen by the following categories: longliners (8), jiggers (30+), scallopers (8+), lobster-men (8 to 10), trap fishermen (4), Scottish seining (1), Canadian pair seining (2), bass fishermen (2), and shellfishermen (e.g., quahogs, clams). It is likely that in the near future gill netters will emerge as an additional category. These methods of fishing and their importance in Chatham will be discussed later.

It should be noted that these fishermen form a fishing community. Professionally, and to a large degree socially, they share common resources. Their boats are moored in the same areas, they share harbor landing facilities, they compete for many of the same species, and they utilize many of the same community services and resources.

Another way we might classify the fishermen of Chatham is according to their philosophies toward life and toward their work, their values, and their social orientation. We find that just as there is diversity in the kinds of fishing, there are different reasons for fishermen choosing to fish and live in Chatham. A major reason why fishermen stay in Chatham has to do with the life-style that is offered by the community. Life-style refers to a variety of perceived social benefits (and some disadvantages) that contribute to a person's sense of well-being, satisfaction, and identity.

In comparison to the larger and more industrial ports of Gloucester and New Bedford, the economic incentive for participating in the Chatham fishery is low. The scale of operations in Chatham is such that earnings are rarely as great as those recorded in ports with larger landings, effective unions, and bigger boats. Yet the limitations of physical conditions and the marketing potential of Chatham do contribute to a sense of independence perhaps not felt by fishermen in the larger ports. Because the boats are small and the crews are small, and because there is no large corporate ownership or union organizations, Chatham fishermen clearly control their own means of production. Chatham fishermen can realistically view themselves as being self-reliant and independent. Fishing is perceived not as a "job" but as a way of life.

Chatham is not characterized by large, long-established families of fishermen. Although some Chatham fishermen do trace their ancestry to

colonial times, kinship ties do not account for the majority of recruitment into the fishery.

Fishing in Chatham is compatible with a number of modern life-styles that place a premium on self-motivation and independence. Fishermen can view themselves as 1) "hard-working Americans," i.e., politically conservative citizens; 2) "counterculture outlaws," i.e., rebels in the same vein as cowboys, truckers, etc.; 3) "counterculture citizens," e.g., those committed to an ecologically responsible alternative life-style; or as 4) entrepreneurs.

Fishermen with these different social identities exist and work side by side in Chatham. Despite the fact that they are distinguishable by ideology and behavior, these men are tolerant of each other. Part of the reason is that, even collectively, fishermen represent a minority in Chatham. No doubt the small size of the town also contributes to fishermen being less territorial than they might otherwise be.

If there is conflict between fishermen in Chatham, it would have to do with the emergence of the part-time fisherman. To the full-time Chatham fisherman, the part-time fisherman is guilty of upsetting a delicate equation involving the number of fishermen that can be accommodated in the harbor and the availability of fish in the area. Because the initial cost of getting into fishing is low ("All you have to do is get a skiff and an outboard!"), many summer visitors and residents enjoy fishing as easy supplemental income. As one jigger remarked:

"The tin fleet drives us nuts. These guys used to go after bass and found they could make some money. Or their fathers give them a boat and they think they are working. They don't know how to fish or operate a boat ... they follow us around. Maybe 15 out of 100 are legit."

The Chatham fisherman is often his own boss, and if not, he is likely to have an informal contractual understanding with his captain. In comparison with other ports, the situation in Chatham is comfortable (the Chatham fleet is an inshore fleet, returning each night to port), and fishermen seem to be happy and content for the most part.

Like many fishermen, those in Chatham were surprised to learn that the Fishery Management and Conservation Act of 1976 meant the management of the domestic effort in addition to the expulsion of "the foreigners." Chatham fishermen debate the overall effect of the 200-mile legislation. In spite of their objections to fishery quotas and closures, they have had less cause than others to complain. The major reason for this is that the fixed-gear segment of the fishing industry has, on the whole, been less inhibited by management than have other fishing interests (e.g., inshore draggers). Also lessening the sting of federal control has been some evidence that the haddock stock is rebuilding, as reflected in the ratio of haddock/cod landings in Chatham:

"Years ago, if a man got 20 boxes in the winter, 15 would be haddock and 5 cod. Last year, if he got 15, 14 1/2 would be cod. Now the haddock are starting to show again...."

It is ironic that Chatham fishermen have had one of the loudest voices among fishing ports in dealing with the New England Regional Fishery Management Council in their first year of operations. The reason for this is that Chatham hook fishermen are looking out for their own best interests. It is

the Council's mandate to construct fishery management plans and quotas for selected species based on the best available biological, economic, and social data. In such plans, fixed-gear fishermen have been considered independently from mobile and recreational fishermen. Fearful that the Council might neglect or shortchange the fixed-gear interests, several busloads of Chatham fishermen arrived en masse at a monthly Council meeting in Peabody, Massachusetts. Armed with figures and statistics (and placards protecting fishery closures), the Chatham spokesman asked that Chatham fishermen be allotted in 1978 the same 13 percent of the total catch they have historically landed. Central to the Chatham argument was the claim that Chatham was a unique and traditional fishing port with special problems and idiosyncrasies. An understanding of these issues, and of the nature of fishing in Chatham, was appropriate in the preparation of any fishery management plan dealing with fixed-gear fishermen. Impressed by the nearly 100 Chatham fishermen who had traveled over two hours to attend the meeting, the Council acted the next day to recommend to the Secretary of Commerce a quota provision that satisfied the fishermen.

Fishermen in Chatham are apprehensive about the future. Many of the boats in the fleet are not completely paid for, and finances are delicately balanced. One lifetime resident discussed why he recently sold his boat and took a position on a New Bedford oil tanker:

"Fuel prices have doubled and my costs were increasing. I was outfitting my boat with the best equipment. My mortgage payments were 250 dollars a month and I owned most of the boat. I was I was behind on my payments, so the company said they'd help me out. But what they did was raise the payment to 400 dollars. I told them I was quitting and for them to come and get the boat.... I hung up."

(Another fisherman, however, was not sympathetic: "He wasn't much of a worker. He only went out about once a month.")

Increasing operational and financing costs are not the only problems with which Chatham fishermen must contend. The rapidly growing number of fishermen is in itself a problem of pressing proportions. As the Chatham fishing grounds become more and more crowded, competition diminishes expected landings. A strategy employed by some fishermen to offset these losses involves fishing farther and farther away from shore. For small boats with little or no sophisticated electronic equipment, the physical risk associated with such a decision can be substantial. There are also rewards:

"See that guy? That's his third boat in two years and he paid mostly cash. He's crazy. He was fishing ten miles from shore in a 22-foot boat. Made a lot of money, but ..."

Two trends have enlarged the Chatham fleet in the past few years. In the first place, Maine sea scallopers have abandoned their own coastal waters (and low prices) in favor of higher prices and the rich scallop beds off Chatham. In the second place, a considerable number of laymen (urban professionals, ex-college students, etc.) have been attracted to day boat fishing in the port. The primary difference between these two groups is that only the scallopers come to Chatham as established fishermen. These men are taking advantage of an economic opportunity (i.e., the scallop beds), exhibit no clear desire to become a permanent part of the Chatham community, and will

quite likely leave when the fishing picture deteriorates locally or improves elsewhere.

The second group mentioned above do not come to Chatham as professional fishermen and seem to be attracted by the life-style in Chatham as much as by fishing per se. Fishing in Chatham is an easy business to get into. To join the tin fleet of small skiffs powered by outboards (with little electronics) and equipped to jig can cost as little as several thousand dollars. It is a simple matter to follow and copy the more experienced fishermen until some expertise is developed. Many of the recruits are young men with few or no dependents who do not immediately require a substantial income. One such fisherman discussed his initiation:

"I had gotten a divorce in the city and came to the Cape. I had heard you could make money fishing in Chatham. I got into fishing when one day I caught 53 pounds of white perch while I was on a date. I didn't know what to do with it and someone said 'go sell it.' So I did and got 34 cents a pound."

For several reasons, the average fisherman in Chatham cannot expect to realize extremely high economic returns, as he might in a larger or more industrial port such as Gloucester or New Bedford. There appears to be a ceiling on income that is tied to the size and isolation of the harbor. As it stands, Chatham cannot accommodate large vessels. The harbor is too shallow and is plagued by shifting sandbars. Also, the existing mooring, landing, and marketing facilities are limited. Consequently, the trend in Chatham has been toward smaller, faster, more flexible fishing craft. This, in turn, has led to crowding on the fishing grounds:

"I'll tell you what happens. New fishermen come to Chatham and Chatham retires the old ones. There are any number of people born in Chatham who were forced to retire because of the influx of boats. A 20-boat port cannot become an 80-boat port. There's too much concentrated effort."

Although we have little data on the subject, it appears that fishermen in Chatham do not rely on unemployment benefits to supplement their incomes. Whereas fishermen in Gloucester, Provincetown, and New Bedford count on this as a source of income during the leaner winter months, fishermen in Chatham do not. Reasons for this are difficult to specify, but it could be that a cultural value of independence places a stigma on the acceptance of state or federal help.

The Port

The port of Chatham is comprised of many small harbors and inlets. The two largest and most important from a commercial fisheries standpoint are Pleasant Bay harborage near the town pier and Stage Harbor one and a half miles to the southeast. These are the two primary commercial fishing areas of Chatham. These harbors represent two distinct modes of fishing style, dictated in part by environmental limitations but also in part by an unwillingness to change established behavior patterns in favor of new approaches to the fishing endeavor. From Chatham, one can choose to strike out either for the Atlantic Ocean on the east or Nantucket Sound on the south

and west. The Sound is made distinct from the Atlantic by a series of islands. One of those islands (Monomoy Island) begins at Chatham and stretches for a number of miles in a southwesterly direction toward the island of Nantucket. The sea currents have built up this long stretch of sand as part of a semicircle that begins at the northern part of the Cape and flows in a southerly arc to the end of the island. It is the same flow that now encloses Pleasant Bay, a large body of water lying mainly to the north of the town. The bay is enclosed by a sandbar known as Nauset Beach. Not far into the bay, about two and a half miles from the entrance and on the west side, is a small island, Tern Island. Around this island is moored the majority of the Chatham fishing fleet. It is here that the town built its fish pier in 1949, and it is here that the heaviest concentration of commercial fishing activity takes place.

Boats that fish out of Pleasant Bay fish the Atlantic. To get to their fishing grounds, Chatham fishermen must head south from the fish pier and head around the tip of Nauset Beach and then east to the fishing grounds. At the entrance of the bay are the infamous Chatham bars. The bars are shifting sand spits which are a constant hazard to fishermen and others. The Chatham bars more than any other factor in the physical environment influence the style of fishing in port. This influence will be discussed in more detail below.

The Town Pier

The town pier harborage is where most of the commercial fishing activity is centered. The majority of the fishing boats moor here. The town pier has two facilities for unloading and packing fish. There exist bait and gear shanties, a retail fish market, a tourist platform and coin-operated binoculars, and an unloading dock for tractor-trailers. In short, the town pier harborage represents the center of commercial fishing activity in Chatham.

The facilities available to the fishermen at the pier include those leased and maintained by the two major fish buyers in the area: the Chatham Fisherman's Co-op and Old Harbor Fish Company. Both companies sort and weigh the fish brought to the pier, ice and box them, and arrange for the sale of the fish at distribution points in New York and Boston.

Originally designed to accommodate 40 boats, the pier now has 114 landing permits assigned, and it is estimated that over 150 permits will be assigned by the end of the summer. These permits are available to any Chatham resident for a ten-dollar fee and to nonresidents for \$1,000.

Mooring space is also an issue. On the one hand, there is not enough of it and the boats are much too crowded, but mooring the boats rather than having docks and slips available is another problem:

"It's all very quaint that we row out to get to our boats each day, but it's a waste of space and time."

Therefore, two issues are involved here. The first is the limited bulkhead space for boats to unload gear or make repairs. Second is the long unloading time that must be endured at the close of exhausting fishing days. The rules of the pier say that boats which have gone fishing and plan to sell their fish to either one of the buyers at the pier should first radio in the approximate size of their catch. This should be done by two o'clock in the afternoon to allow buyers to estimate the number of boxes to have ready. The

next rule is that all boats that wish to unload their catch that day must be at the pier by 6 p.m. The reason given for this second rule is that it gives the packers enough time to box and ready the fish for the trucks that must leave for New York by 7 p.m.

This second rule, however, has two consequences, both negative from the fisherman's standpoint. The first is that the fishermen have to cross the bars at times when crossing is extremely hazardous. The best time for crossing is when tides are high and the current is slack. With low tides and a strong breeze, the bars can become mighty treacherous, especially for smaller boats. Second, the 6 p.m. deadline means long waits for many of the boats. The unloading procedure is slow, and there is no provision to unload more than one boat at a time:

"I worked a 15-hour day already, and now I gotta wait another two hours before I can even get the fish out of my boat, and then it's another hour before I can get into my car and go home!"

Most fishermen understand the reason for the rule, but their suggestion is usually qualified by one of the following: either enlarge the pier and change the unloading procedure so that the time to unload could be decreased; install a storage freezer so that fish coming in late could be kept overnight; or reduce the fleet of small boats, the tin fleet, which has grown much too large and is making business difficult for the "real" fishermen.

There has recently been some discussion regarding proposals to limit access to the town pier. One plan would allocate a fixed number of permits, first to residents and then to nonresidents with histories of local landings.

The prospects of enlarging the fish pier are difficult to assess. The town, for example, owns none of the harbor land adjacent to the fish pier, and although confiscation by eminent domain has been discussed for 20 years, this possibility seems remote.

It is generally conceded that fishermen in Chatham would benefit by the construction of a large storage freezer and a cutting or filleting plant. (Sometime in the past, Chatham had an option to purchase a freezer, then owned by Ocean Spray, but voters rejected the proposal.) These facilities would obviously give local fishermen more flexibility in marketing their fish, but sentiments of nonfishermen in Chatham (including conservationists, developers, and tourist-industry promoters) are not supportive toward any "industrialization" of the port.

Stage Harbor

There are fewer commercial fishermen at Stage Harbor than at Pleasant Bay. The harbor is really not equipped for commercial fishing. It is primarily a pleasure boat harbor during the late spring to early fall, while in the winter only a few boats are left in the water. Those commercial fishermen who do work out of Stage Harbor must either have unloading facilities of their own or gain use of those private facilities that do exist. There are three private unloading facilities located in the harbor and three marinas for pleasure craft.

The entrance to the harbor is deep enough to permit much deeper drafted boats than the shoal entrance to Pleasant Bay allows. Occasionally larger boats will be seen anchored in the harbor, of a size not possible in Pleasant Bay. These are usually scallop boats from Maine.

Stage Harbor fishermen are primarily trap fishermen. There are a few jiggers that work from skiffs, a few lobstermen, and a few visiting scallop boats from Maine. These boats share the harbor with the trap fishermen. Longliners do not work the Sound. The type of fishing available in the Sound is not suitable for tub trawling, so if a person were interested in doing hook fishing and decided to use Stage Harbor, he would have to make the trip to the Atlantic, where hook fishing is possible. The trip from Stage Harbor to the Atlantic used to take up to two hours. One had to go southwest around Monomoy Island, and then turn east toward the Atlantic. In the days before the high-powered diesels, this journey was quite discouraging. Now the trip is much easier because of the newer boats, and also because a few years ago some enterprising fishermen decided that it would be a good idea to dynamite a channel through the sandbar that makes up Monomoy. However, this has caused serious problems with the sandbar fronting Pleasant Bay.

The Sandbars

The Chatham bars have always been a sore spot in the hearts of the fishermen working from Pleasant Bay. As mentioned earlier, the bars represent one of the primary influences shaping boat types and fishing techniques. Therefore, it has also been a prime determinant in the shaping of fishing attitudes. Recent innovations in fishing technique, such as Scottish seining and Canadian pair seining, can be seen as a major shift in the concept of what type of fishing is possible in Chatham. These exploratory efforts emphasize a desire on the part of some of the fishermen of the port to find other fishing techniques besides the traditional longlining and jigging. This represents a major effort to defeat the limitations of the bars.

Even the most experienced of Chatham fishermen have grounded their boats on the bars. The shoal water that is a result of the bars, depending on tide and wind, can be as little as two to three feet in the channel. Most of the larger Chatham boats draw between three to four feet. The greatest draft for a commercial fishing boat out of the harbor is six feet. Needless to say, there are apprehensive moments coming and going.

Fishermen say that for many years the bars were relatively stable, and that the channel maintained by the incoming and outgoing water currents was stable as well. It used to be that the channel was located close to the Nauset Beach (Atlantic) side of the entrance to the bay. This has changed now, and the change seems to be for the worse. The channel has shifted to the other side of the entrance and it is much more erratic. At last count, 17 major changes of course had to be made in a stretch of water not more than three miles long in order to clear the bars and make it into the Atlantic. And during the month that the research was in progress (May 1978), temporary channel markers had to be installed by the harbor master to alert the boats of a further change in the course of the channel. Many of the fishermen blame the sudden erratic behavior of the movement of the bars to the man-made cut in Monomoy Island not more than a mile out to sea from the entrance to the bay.

Because of the shoal entrance to Pleasant Bay, and due to the convenience which the Pleasant Bay anchorage has meant to the fishermen of Chatham in terms of access to the Atlantic, the boats that use the bay as their staging area have had to be small, shallow-drafted boats. This limitation in boat size is one reason why fishing technique has remained so stable for so many years. The boats are simply not designed for anything much more than tub trawling,

jigging, handlining, and the like. And when they try to innovate, they often take on more than they should. For example, the captain who is trying to make Scottish seining pay is severely limited by the space requirements for the winches and net and in the amount of deck space available for carrying fish.

In August of 1976 the selectmen of Chatham held a meeting, after an inspection of the bars, to determine what could be done to improve navigation into the bay. A meeting was subsequently called between the city, Congressman Gerry Studds, and the Corps of Army Engineers. As an outcome of the meeting, Studds ordered the Corps to do a reconnaissance study to see what could be done about the bars, how much it would cost, and who should pay for the effort. At the time of this report, the Town Report showed no study authorization, although money was available for it.

The Fleet

The boats in Chatham can be divided into two broad categories: "big" boats and small boats. The difference between the two lies in their initial costs, upkeep, and capabilities. The larger boats (over 35 feet) can withstand winds up to 20 knots, and are equipped with electronic devices to aid in navigation and fish finding. In some respects, they are more comfortable. There are over 70 big boats in Chatham. There are approximately 12 sea scallopers, 8 inshore lobster boats, 3 seiners, in addition to 50 hook boats (mostly jiggers, with over a dozen longliners).

There are 30 small boats (under 35 feet) used by residents, and another 60 operated by "week-enders." The small boats are primarily engaged in the cod fishery. Like the majority of Chatham's boats, these fish on a day-to-day basis, returning to port each night. Many of the smaller skiffs are powered by outboard motors, and are not equipped with either sonar or radar. One estimate is that 50 percent of the small boats have fish scanners. This advantage is somewhat offset by the fact that some fishermen follow each other. (One fisherman prefers to unload his catch into the back of a pickup rather than at the fish pier so that no one will follow him.) Including the captain, the average crew size on small boats is two.

The range of the smaller boats can extend from 20 to 50 miles offshore, but most vessels vary under 10 to 20 miles. A number of psychological and economic factors obviously influence any decision to fish far from land.

Fishermen on the small boats often work without the aid of mechanical devices to help them retrieve their lines. A successful fisherman is likely to invest in a winch to make his work easier. It will also help him to handle lobster pots should he choose to diversify.

A small handline trawler might be equipped with up to 12 lines, each with 50 to 150 hooks. Eight to ten of these lines are set and retrieved in an average day.

Because of the limited capacity of small boats, fixed-gear quotas have not been unduly restrictive. As the owner of a 22-foot boat said about the present 13,000-pound-per week quota:

"The quotas haven't bothered me yet. I can't bring in over 2,500 pounds, if that. And that would be rare seven days in a row."

The small boat fisherman finds it to his advantage to supplement his income by participating in a number of fisheries throughout the year. One man, answering a question about what he fished for, said:

"Quahogs, clams, scallops, crabbing, longline, eel trapping, flounder, bass fishing, blue fishing, cod, fluke, and diving."

Although 35 different fish and shellfish species are harvested in Chatham, the port is most dependent upon groundfish. Town figures report 25,454 boxes of fish landed at the town pier last year. Table 1 presents Chatham landings in 1977 in tenths of metric tons (1.016 metric = 1 long ton). An examination of Table 1 shows the importance of cod, haddock, and pollock to Chatham's economy. These species are harvested by longlining, jigging, and seining techniques. Scup, another important species, is landed in quantity by trap fishermen. Lobsters and sea scallops are also very important landings. The relatively low amounts of flatfish (e.g., halibut and flounder species) reflect the fact that Chatham remains predominantly a hook fishery. Recent successes in the port by Scottish and Canadian pair seining fishermen may lead to a more directed effort on flatfish in the future.

Table 2 presents Chatham figures for shellfish landed in 1977 within town limits (i.e., in harbors, flats, bays, etc.).

It can be argued that Chatham has two fisheries: the Atlantic fishery and the Nantucket Sound fishery. These two differ in several respects. Chatham fishermen pursue groundfish, flatfish, and scallops in the Atlantic, whereas

TABLE 1. 1977 Chatham Landings in Tenths of Metric Tons

COD	9,505	WOLFIS	33	SQUETEA	12
HADDOCK	593	MIXED	13	STR BAS	31
REDFISH	0	MIXED	0	STURGEON	0
HALIBUT	50	SEA HER	0	WH PERC	0
SIL H	14	BLUEFIS	299	CLAM S	0
AME PL	94	BONITO	4	QUAHOG	0
SUM FL	136	BUTTER	107	SEA SC	22,624
WIN FL	42	MAKEREL	17	MUSS	0
WIT FL	137	MENHADE	12	OYSTERS	0
YEL	43	SWORDFS	0	CONCH	0
WINDOW	7	TUNA BL	27	PERIW	0
FLOUND	0	TUNA NK	0	SQUID L	22
ANGLER	35	ALEWIFE	0	SQUID I	18
CUSK	164	ATL CRO	0	SQUID N	1
O POUT	0	SEA BAS	88	CRAB RO	0
POLLOCK	710	DOGFISH	0	CRAB JO	0
RED HAK	1	EEL CON	3	CRAB RE	0
SCULP	0	EEL AME	0	LOBSTER	92
SCUP	1,086	SALMON	0	SHRIMP	0
SEA RO	0	SHAD	0	SEA UR	0
TAUTOG	1	SHARK	1	SEA WEE	0
TILE F	423	SKATE U	0	WORMS	0
WH HAKE	204	SMELT	0	WORMS	0

TOTAL: 37,649

Source: NMFS

TABLE 2. Chatham Landings of Shellfish in 1977

Bay Scallops	\$3.15/lb.	137,584 lbs.
Little Neck Clams	.60	259,166
Cherrystone Clams	.20	100,556
Chowders (clams)	.12	50,553
Conches	.15	3,067
Clams (soft-shelled)	.30	10,650
Eels	.55	21,000

\$632,929.00 Wholesale Value

Source: Town Figures

those that work the Sound focus on scup, butterfish, and mackerel. Because different equipment is utilized in the different fisheries, fishermen who fish in one are generally unlikely to fish in the other. Trap fishermen, for example, conduct their activities exclusively in the Sound.

FISHING SYSTEMS

Jigging

There are presently more jiggers in Chatham than any other kind of fisherman. Some who jig are fishermen who have switched to jigging from longlining, usually on a seasonal basis due to the problem of predatory dogfish. The majority of jiggers are, however, young fishermen who have selected that form of fishing because of cost advantages. More and more, those who jig are new recruits to commercial fishing who are attracted by the life-style.

The only equipment necessary for jigging is a boat, an outboard, and a jig. The basic fishing strategy is centuries-old and involves bouncing a weighted three-hooked jig off the ocean bottom. Fixed costs of jigging are low, the work is steady if not extremely lucrative, personal risk is minimized, and the work can be done on a part-time or seasonal basis. For these reasons, jigging is a popular and easily entered form of fishing.

The boats used by jig fishermen are small by commercial fishing standards; most are under 35 feet in length. One fisherman commented on the influx of jigging skiffs:

"The classic boat used to be the 35- to 45-foot trawler, but they now cost too much to operate, particularly when the low price of fish is considered. Now there's a trend to the smaller, faster boats, say a 22- to 25-foot deep-V hull. They can get up and ride on the water."

The chief advantage of the smaller skiffs is that they can get to and from the fishing grounds quickly and escape from approaching bad weather. Old-timers frequently remark how the young fishermen begin their fishing careers with top

equipment, something that they themselves were never able to do 20 years ago. Many who have spent lifetimes exploring fishing grounds object to those in the younger generation who, having followed the old-timers before and taken bearings, race to the grounds in fleet new craft:

"They get out more days than I do. They're so fast. It takes me 45 minutes to get out of the harbor and they're out in 15 to 20."

Others accept this as part of competition: "Well, after all, it's a free sea."

Some of the more expensive jig boats are equipped with fish scanners and other electronics. Few jiggers have radar, and this fact prevents them from fishing at night or in dense fog. Some old-timers take refuge in the fog, using it to cover their trail so they can fish unmolested.

The segment of the Chatham fleet known locally as the tin fleet consists primarily of jiggers who, according to longtime locals, are marginal fishermen. The tin fleet is criticized because jiggers are viewed as supplementing winter incomes (from nonfishing-related work; e.g., schoolteaching, carpentry) with money earned as part-time summer fishermen. Overcrowding in Chatham harbors, and the pragmatics of competition for a scarce resource, cause full-time fishermen to be somewhat antagonistic toward members of the tin fleet. Particularly irritating to locals are part-time jiggers who avoid purchase of a state commercial fishing license yet sell what they harvest:

"What gets me bullshit is guys from Worcester with a 22-foot boat, no license, who fish on the weekends."

The basic difference between jigging and longlining is that the former has one hook apparatus whereas the latter can consist of hundreds of hooks in sequence. The longliner takes advantage of concentrations of fish by fishing strings of baited hooks. The jigger works one hook at a time. (Jigging is the modern equivalent of handlining, the difference being that a synthetic lure is used instead of a baited hook.) Longliners, more than jiggers, attempt to catch fish that are feeding. For this reason, longliners pay more careful attention to tidal phenomena:

"In longlining you have to catch the slack tide, whereas in jigging it only just helps."

Under certain conditions, longlining is more efficient and is less strenuous than jigging. Jigging requires constant attention, whereas a longline is set and then hauled back at periodic intervals.

Almost every fisherman in Chatham knows how to jig. It is the one form of fishing that, should everything else fail, one can fall back on. Scallopers, for example, have been known to switch to jigging in mid-trip after equipment failure. Longliners routinely switch to jigging when dogfish are in the vicinity of the fishing grounds. For Chatham fishermen, dogfish are a big problem. They are known to have infested the local grounds "from the bay mouth to 60 to 70 miles out at sea." The longline fleet has dwindled considerably in the last few years as a direct consequence of prolonged stays by dogfish. The advantage of jigging over longlining is that it is much easier to catch several dogfish and decide to move to other grounds than it is to retrieve and discard hundreds of hooked dogfish on a longline.

There are several dangers in jigging. It is possible, for example, to inadvertently hook oneself. Some claim that fingers can be severely cut if a shark should happen to sharply hit the jig. But perhaps the biggest risk jigging is one chosen by the jiggers themselves. Jiggers fishing far from shore (some venture over 30 miles from port) can easily get lost or capsize in rough seas. Some Chatham jiggers prefer to run these risks rather than fish in what they consider to be overcrowded waters nearer to shore. Generally speaking, and compared to other forms of fishing, most would agree that jigging is one of the safest fishing styles.

The main disadvantage of both jigging and longlining is their reliance on hooks to catch fish. A number of jigger fishermen have indicated they would like to explore the possibilities of dragging (otter trawling) because such a technique allows species that "do not take a hook" to be harvested. There are presently no draggers in Chatham, but the town limit on boat size (50 feet overall, 45 feet waterline) does not preclude such a possibility.

Longlining

As a fishing port, Chatham is an anachronism. In an age of efficiency, Chatham has maintained and preserved its old ways of fishing. Various reasons can be given in favor of maintaining the traditional ways, some of which are quite attractive. Some fishermen claim that longlining (also termed "tub trawling"), for example, is a more ecologically sound practice than dragging. Longlining, it is argued, is more selective in its harvest, taking only fish big enough to swallow the size hook used on the line. Thus, the very old procedure of fishing by longlining has some advantages in a modern world where questions of stock depletion are of utmost importance.

There are various other positive and negative opinions about the desirability of longlining as a fishing technique. One very successful longliner in Chatham had this to say:

"It's the most stable fishing I've seen; we can make it year around. Lobstering is too short of a season. [They] have to do many types of fishing to survive a season; we do just trawling and jigging."

But from another, respected tub trawler:

"Trawling is the stupidest way of catching fish. If I could afford it, I'd rerig the boat...."

And from yet another:

"I would like to get into dragging. Then you wouldn't have this mess to work with all the time. Anytime I go out it costs me 100 dollars to go with the price of bait ... 27 cents per pound for menhaden...."

Others feel that tub trawling is well suited for fishing Chatham waters. Much of the nearby bottom is rocky (hard bottom) and perfectly suited for setting the trawls and catching groundfish.

"Geographically [Chatham] is very nicely located for tub trawling: close to the grounds; hassle-free to sell to the Co-op. Provincetown is a pain in the ass--too far from the grounds and the harbor is horrible."

And another fisherman added: "We fish anything that's hard [rocky bottom], especially in the summer."

Longliners can and do suffer gear loss, which at times is extremely expensive. Gear loss happens basically in two ways. In the first place, a large storm can move the gear out of the area, down the marker buoys, snap lines, and so on, which is much the same that happens to lobstermen. Second, draggers from time to time run over and thereby destroy gear.

Longlines are categorized along with jigs, gill nets, fish traps, and lobster traps as fixed gear. The history of the conflict between fixed-gear and mobile-gear fishermen is a long and involved one. Essentially it arises from the fact that both types of fishermen occasionally compete for the same fishing grounds. Historically they have not done well sharing. Fixed-gear fishermen accuse draggers of destroying their unprotected gear by dragging over it. The fixed-gear fishermen point out that their operations are small, they must work close to shore, and must consistently risk gear loss as a consequence of bad weather. Why, they ask, with the ocean as large as it is, must the draggers intrude? The response has always been that many draggers are small and must also fish inshore, that fuel and operational costs are rising, and that that is where the fish are. The conflict between these two groups has not been totally resolved. Due to successful lobbying on the part of fixed-gear advocates (primarily lobstermen), Massachusetts state law forbids draggers (but not Scottish seiners) from fishing within the three-mile Commonwealth limit. Nonetheless, there are frequent transgressions. In Chatham's case, this problem is not particularly pressing at the moment. The only draggers close enough to the port to interfere are those from Provincetown, and there simply have not been enough fish in the Chatham inshore grounds in the last year to attract these boats.

Trap Fishing

Trap fishing, like longlining, is an old method of fishing. Trap fishermen are known throughout the world and are often associated with subsistence-level fishing activities. In many respects, its reputation for primitiveness is due to the obvious lack of sophisticated materials and equipment needed to catch fish successfully. The fact that it is sedentary is also a factor. Once an adequate spot is located, and as long as that spot continues to produce good catches, there is no reason to move fish traps. Chatham trap fishermen do not have to go far to find fish, nor are there elaborate pieces of electronics that could increase the efficiency of the hunt. The boats that are used are generally small (under 30 feet).

Trap fishermen cannot increase yields by "working harder." If the fish are there and the trap is fishing well, the only extra work possible to increase the catch is to unload the trap faster, and even that effort would have dubious results. Many longliners believe that there is no skill to fishing by trap. They say that there is no hunt, no outwitting the prey, and no challenge.

Chatham trap fishermen fish for mackerel, squid, butterfish, and scup. Trap fishing remains successful for the Chatham fishermen because proportional increases in prices have made up for a decline in fish caught. There are four trap operations left in Chatham. Three out of the four trap fishermen in Chatham belong to the Co-op. The one nonmember quit the Co-op recently.

The small trap fishing boats, which look like overgrown dories with an engine in the center, leave early in the morning and return with their loads between ten and twelve noon. One fisherman interviewed mentioned that his operation was working a total of five traps. When the fish are brought in, they are unloaded at the private piers, where they are weighed and packed into plastic fish barrels. One barrel will hold approximately 150 pounds of mackerel. One hundred barrels of mackerel were unloaded on the day observed, and the trip for that day was marred by a breakdown in the hydraulic system of one of the boats. Large chunks of bulk ice, delivered by truck from a nearby town, are placed in the barrels, one chunk of ice on top of the fish and another at the bottom. The entire barrel is then filled about three-quarters full with seawater. The fish are trucked out to markets in New York each afternoon.

It would not be an overstatement to say that fish trapping is declining in New England. In the state of Massachusetts, there is only one location where fish trapping is maintained as a viable technique of commercial fishing, and that place is Chatham. Outside the state, there are some trap fishermen still operating in Rhode Island and a few off Long Island, New York. Trap fishing used to take place off Provincetown. The reason given for the Provincetown decline is that the traps used there were simply too large to maintain profitably with declining catches and declining prices for such species as mackerel, whiting, tuna, and herring. At the same time, the city of Provincetown was continuing to develop as a tourist center, with land prices increasing steadily. Apparently, many of the trap fishermen found that the property that they owned on the waterfront was more valuable for other uses. Some sold out, while others invested in shoreside businesses like restaurants. In short, the trap fishing in Provincetown declined and is now gone because fishing stocks and prices were too low and land investments were too attractive.

In Chatham, the fishing stocks available to the trapper have decreased along with those in the rest of the New England fisheries. But the Chatham trap fishermen have been able to maintain a profitable venture. This would not be the case if they 1) did not own their own landing facilities; 2) if they were not able to gain access to the best and most convenient trap fishing grounds; and 3) if the town did not have a tight control over development.

Lobstering

There are approximately eight inshore commercial lobstermen operating outside Chatham Bay. Most of these fishermen have been in business for over several years and all of their boats are in the "large" category (over 35 feet). Lobstermen who wish to fish inside the three-mile limit must have a Commonwealth of Massachusetts license. There exists a high demand for these licenses, so there is a very slow turnover of lobster fishermen in Chatham.

The Chatham lobster fishermen do not tie their pots in connected strings. The reason for this is twofold. In the first place, the pots move along the bottom when they are affected by the strong local currents and tides, and a string of traps is more likely to become tangled. In the second place, lobster gear is not as vulnerable to loss through dragger interference if the pots are not linked.

The number of pots per boat varies from 400 to over 600, and the preferred trap is constructed of wood. In most instances, the traps are the rounded, "Anderson" type. Metal traps have been tried and rejected in Chatham. Fishermen contend they "do not fish well." (Metal traps have a higher initial cost, but need less maintenance and have a longer life than the more traditional wooden traps.) It has been estimated that there are 400 to 500 metal lobster traps being used now, whereas the number was close to 1,200 several years ago.

Although lobstering is legally permitted year round, Chatham fishermen first set out in May. The cold weather and the increased likelihood of stormy northeasterly winds in the winter months discourage lobstering from late fall until spring. Time during the layoff is spent repairing and constructing gear, but some lobstermen engage in other forms of fishing; e.g., line trawling, quahogging, and jigging.

Unlike other fishermen, lobstermen in Chatham can be members of the fishermen's co-operative and still retain the option to sell to other buyers. Three of the eight lobstermen are presently Co-op members. Lobstermen standardly unload their own catches and drive them to one of several wholesale outlets or to local restaurants.

Of all the forms of fishing currently being practiced in Chatham, inshore lobstering is perhaps the most economically secure. In the first place, the Commonwealth of Massachusetts strictly regulates the number of inshore lobster licenses. This policy of limited entry protects both lobster and lobstermen from an influx of new fishermen. Second, the relatively short supply of lobster (coupled with its seasonality), in conjunction with high consumer demand, has led to very high market value. Unlike other commercial fishermen, the lobsterman has little difficulty selling his product. Fresh lobster are always in demand by local restaurants as well as wholesale lobster pools. While the captain of an otter trawler with thousands of pounds of dead fish on deck often finds himself at the mercy of the buyer, the lobsterman deals with a species that is considerably smaller in volume (so that he can easily transport it himself in a pickup truck), and still alive.

In the past, lobstermen spent long hours cutting and nailing slats, and sewing heads (entrance netting). Today it is more economical to order from Maine and New Hampshire firms, and most forego the few dollars they could save on a \$15 trap if they assembled it themselves. Some of the lobstermen do, however, make repairs and slight adjustments and modifications of their own, based on their experiences and hunches.

A lobster trap prepared to fish consists of the trap itself (with concrete or brick ballast), line, and a marker buoy. A floating section of polypropylene is attached to the trap so that it does not foul on the bottom or discourage lobster. This is, in turn, tied to a sinking section of line linked to the marker buoy. The second piece is designed to sink so it will not tangle with other buoys or catch in the propellers of boats. An alternative to the use of floating and sinking line is to utilize just the latter with a small styrofoam "centerfloat" in an intermediate position. The marker buoy has a color code (e.g., red and white) to identify its owner. This code must also appear on the owner's boat. The buoy is stamped with the final digits of the lobsterman's Social Security number. All told, the cost of a single trap with line and buoy is roughly \$20. The investment in traps alone for a lobsterman with 600 traps is therefore \$12,000.

Lobster bait includes menhaden, cod heads, and "flats" (fish that have been filleted). In many cases, Chatham longliners make informal agreements to save and exchange fish heads for lobster dinners.

Some of the lobstermen jig in March and April, after the worst of the winter weather (and the freezing of Chatham Bay) has passed. Chatham lobstermen work the hardest between June and October. During the beginning of this period, the lobster "come in from the east," and toward the end they again recede to the deeper offshore waters. The act of lobstering is to anticipate the movements of the waves of lobsters.

An average lobster boat is somewhere around 35 feet in length. There is enough room aboard for 50 to 60 traps at one time. Once all traps have been set in May, they are checked every two to four days; that is, over 200 may be inspected in one day's work. A "good catch" is estimated as being "a pound per trap." To adjust to the migrating patterns of lobster, the traps are all moved to new locations several times during the season.

The greatest risk that the Chatham lobsterman runs (other than there being no lobster in the area) is that his gear might be lost or destroyed. Although interference from draggers can cause gear damage, this has not been a problem in recent years--primarily because, as noted above, draggers have not found fish in abundance inshore. Nor, for that matter, have rivalries between lobstermen resulted in sabotages. Conflicts have never escalated in Chatham (as they have in Maine) to the point where one man has tampered with another's traps.

"I think we're unique in that we are a harmonious group. I've never heard of anyone getting cut out."

The principal cause of gear damage for Chatham lobstermen has always been storms.

Chatham lobstermen usually fish with one crew. Sometimes the crew is paid a flat fee (e.g., \$50) on a day-to-day basis. Another sharing-up arrangement calls for the crew to get 25 percent, the captain 25 to 30 percent, and "the boat" the remainder, after expenses (fuel, bait). This second scheme is more prevalent when the crew has participated in the months of maintenance work prior to actually fishing the traps.

Because of the high marketability of lobster and the limit on participants in the fishing, lobstering has been historically the most stable form of fishing in Chatham. Yet lobstermen by and large are not overly affluent. This has caused some who have studied the economics of lobstering in Chatham to suggest that their capital be used in other ways. This suggestion, however, has had little impact:

"Well, I got \$60,000 invested to get, hopefully, \$13,000 a year. The economists say we're out of our minds, but I like it."

It seems that Chatham lobstermen clearly value features of their social and work environment that are not economic in nature. Briefly, they like the life-style:

"What the hell's money? I went to Florida and was crawling the wall. My wife calls me a workaholic.... I wouldn't retire. Here the work is your hobby. In the coffee shops, they talk about fishing, not tennis."

It is not entirely accurate to suggest that lobstering is not undergoing

changes in Chatham. An obvious trend is toward fishing more traps. As one old-timer remarked:

"Anybody can lobster. Lobstering is bullshit luck now that they have so much gear. There's little intelligence now. The only hard thing is knowing when to move it."

And, as is the case throughout the fishing industry, what new entrants there are to the lobster fishery seem to have strong backing:

"Your age class likes to start at the top with their own boat and lotta gear...."

The successes and disappointments of those engaged in the lobster fishery go in cycles. The last several years for Chatham lobstermen have been good ones, but people remember more difficult times prior to those, and wonder about the future.

Scalloping

Five years ago, there were no sea scallopers working from Chatham, but with the discovery of abundant scallop beds in Nantucket Sound that has changed. The early innovators of scalloping in the area came from outside Cape Cod, particularly New York and Maine. Poor prices were the primary motivating factor causing those scallopers to seek new fishing grounds. In the spring of 1978, there were some 35 Maine scallopers operating in Nantucket Sound and mooring on the Cape. Many of these might be forced from the nearby Saquetucket Harbor so that marinas can accommodate tourist and summer trade. It is speculated that the scallopers will seek refuge in Hyannis.

Chatham fishermen observed the successes and techniques (i.e., the relative advantages and disadvantages of rock drags and chain sweeps and the use of marker buoys) of the Maine scallopers, and a number elected to change from longlining to scalloping. Prerequisites for such a change include a powerful and sturdy craft, a scalloping dredge, winches and wire rope, and an "A-frame" or boom. Some fishermen have pointed out that Chatham, because of town restrictions on boat size and because of the infamous bars, is not an ideal port for scallopers.

"There's money to be made, but the proper boat can't operate here."

In 1978, there were six to eight full-time scallopers in Chatham, and the fact that there had been twice that many the year before does not mean a decrease in popularity. Of the boats that had left the Chatham fleet, one sank (and will be re-outfitted), two were discovered not to be powerful or strong enough to endure scalloping, two collaborated in order to experiment with Canadian pair seining, and only one left because scalloping did not appeal to the skipper.

Certainly by New Bedford standards, Chatham scallop boats are small. They range from a little over 30 feet to only 48 feet in length, with a maximum crew size of four. Maine-style rock drag dredges are more popular than chain sweeps because their parts move independently and only rocks of a certain size can get caught in the dredge (the rock drag climbs over larger rocks).

Scallopers in Chatham (as well as in other ports) are often described as a "different breed of people." The reasons for this have to do with the nature of the fishery, the nature of the work, and the kind of people attracted to both.

Sea scallops (a different and larger species than bay scallops) are found inshore from New Jersey to Maine. As fast as beds are discovered, they are fished, then overfished, and finally abandoned. Some scallopers believe the action of the dredge through the beds is beneficial and is a process of "cultivation." Left alone, the scallops pile on top of each other and overcrowd. The dredge, it is felt, widely distributes seed scallops along the bottom.

Scalloping, compared to other forms of commercial fishing, is strenuous, dangerous, and monotonous. Tows are as short as 20 minutes apart and there is the continual manipulation of heavy machinery. With little doubt, scalloping is the most industrial type of fishing in Chatham. It can also be the most tedious.

A normal crew for a productive scallop operation can be between two and four people. The number depends on the amount of scallops available (whether the beds being worked are rich or not), the size of the boat and the productivity of the skipper, the time of year, and, to an undetermined degree, the social obligations of the boat's owner/skipper. A skipper who consistently is able to get "on top" of scallop beds, whether there is a large boat involved or not, will find that a larger crew is an advantage. A crew of three, which includes the skipper, is able to work the winch, handle the drag, sort the scallops and throw the debris over, reset the drag, shuck and sack the scallops, all without necessitating the skipper coming aft. And in the summertime a larger crew is even more desirable, because the scallops have to be shucked while at sea. But a third or fourth hand is not necessary, even on a boat over 40 feet. Two individuals can handle the work load if the number of scallops brought on board is not overwhelming, or if the scallops are to be shucked ashore.

Scallop shucking is accomplished either on board the boat when at sea or ashore. During the cooler spring months, shoreside shucking can be accomplished in the small shanties located next to the town pier, but in the summer months this is not possible because of the chances of spoilage. It is necessary therefore in the hot times of the year either to shuck while at sea or to take the scallops to a firm specializing in shucking and equipped to do so during the summer. Shuckers, usually women, earn approximately \$.60 per pound of meat. They would rather shuck sea scallops, for there is more meat per scallop in large sea scallops than in the smaller bay scallops. Shuckers refuse to work on scallops that are too small, for the amount of meat that can be extracted per hour is significantly reduced.

The attitude of scallopers toward their work reflects a certain psychocultural adaptation to the work environment. The first thing to be understood is that scallops "migrate" in accordance with changes in water temperature. This means that a trip is not over until a bed of scallops has been located and harvested. The contrast with longlining is obvious--a longliner's day is over when his gear has been retrieved. Scallopers search, and then repeatedly dredge, until the trip has been made. The uncertainty associated with spending up to several days at sea is part of the job. Perseverance is a quality of successful scallop fishermen, and the Chatham scallopers understand the challenges of their work and accept the fact that their income will come in irregularly.

Because there is little variety in the work routine, and because the work is hard, some captains in Chatham have had difficulties retaining crews. Added to the problem is the fact that the scallop beds nearest to Chatham have been

exhausted, and the boats must spend a longer time at sea steaming to more distant fishing grounds. Young men try scalloping because the pay is likely to be good, but soon come to the conclusion that scalloping is somehow different from fishing. In a sense, it is this understanding about commitment that distinguishes the Maine scallopers from other Chatham fishermen. The former make it clear they are in the port for the money, the latter are seeking to maximize a life-style.

The future of scalloping in Chatham is uncertain. Many keep their options open and indicate they intend to return to jigging or longlining when the scallops are gone.

"I'd go Scottish seining if it cost less. I expect to go back to line trawling in a year. I think we'll see more Scottish seiners and less scallopers in the next years."

Of course, money is an important factor in any fisherman's decision regarding the next few years. Financial backing is difficult to obtain these days. One scalloper commented on increasing operational costs:

"My payments are 9,000 dollars a year. I burn 80 gallons of fuel a day at 60 cents a gallon. It costs me 100 dollars to leave the dock, including insurance and wear and tear."

Another continued:

"My dream is gone. My dream was a 127-foot Bender trawler. My dream now is to sell out. I can't generate no local bank interest. Once they find I'm a fisherman they say no. I can't get a 500-dollar loan on 12,000 dollars' worth of equipment. And it's the same in Maine. The banks stink toward fishermen."

Finally, one man generalized about the future of the entire port:

"The way I see it, half these guys are going down the tube. The only way they make it is if they got wives who work. We're holding on by a string."

The Maine scallopers are less flexible and are more likely to leave the port.

"We know they [the town] don't like us. And I'd rather live in Maine. Maybe when the prices there increase ..."

According to the naive concept of Darwin's "survival of the fittest" that many fishermen hold, those boats that have continued scalloping, even now that the beds begin to decline, will eventually make a decent living for themselves. In other words, it is a common belief that once the basic resource--in this case, scallops--grows scarce, those with the knowledge, skill, and desire will be able to stay with the gathering process and make a living. Others who are lacking the essential ingredients--especially, it seems, the desire to get through the hard times--will either drop out altogether or go into some other type of fishery. This is a general idea which is connected to the feeling that there exists a dynamic but stable relationship between the fishermen and the fish.

In short, there is a belief that the system will maintain itself, even though there will be some fish who lose and some humans who lose as well. The system is above everything else, and it will manage to stick around. It might change slightly, but will be around nonetheless.

Scottish Seining

Although long a popular technique in other parts of the world (e.g., Scotland, Denmark, Japan), Scottish seining has never enjoyed great popularity in the United States. Recently, however, a small number of New England fishermen have converted their vessels to this method of fishing, and many more fishermen are watching these innovators and assessing their successes. In June 1978, the port of Gloucester, Massachusetts, had four Scottish seiners. Chatham had one, with another in preparation.

The Scottish seining fishing operation begins with a marker buoy thrown overboard. The buoy is connected to a long "rope" attached to one side of a seining net. The net is set as the boat traces the outline of a teardrop, ultimately returning to the buoy. The net sinks to the bottom, the buoy is recovered, and the boat accelerates, drawing the ropes together and closing the net. One theory to explain the success of this technique is that the vibration of the taut ropes herds fish into the net. Tows take as little as 20 minutes.

The single Scottish seiner in the Chatham fleet had been operating for little more than a year. There was consensus in the port that the captain of this vessel is one of the most successful fishermen in the community. A highliner longliner before turning to seining, this man is also the son of an extremely well known and highly respected Chatham fisherman. His qualifications and background are such that it is difficult to attribute his success at seining simply to a change in gear type. What has occurred is that an outstanding fisherman has been united with a superior piece of equipment.

One advantage of Scottish seining is that a variety of fish species can be landed. Flatfish in particular bring high market prices. Although he has had to learn new fishing grounds in order to harvest flatfish, this captain has found reward. One lifetime Chatham resident admitted he had never seen a grey sole landed in the port until the advent of Scottish seining. Quite naturally, other fishermen have taken an interest in this method.

Advantages of Scottish seining over otter trawling (dragging) are that it is fuel-efficient and that the quality of the fish landed is superior. This latter advantage is due to the fact that the catch remains in the net for a relatively short time. Fuel is saved because a Scottish seiner might tow for half an hour, whereas a small dragger will tow several times that amount of time. But, ironically, quality is not a determinant of market price:

"Because of the design, all of the fish go into the net at once. They are still alive and wiggling when they hit the deck ... more alive than even longlining. But I get the same price as people who are bringing in poorer fish. No one gets paid for quality in the U.S."

Another advantage of Scottish seining over longlining and scalloping is that the work is much less arduous. This does, however, have its consequences:

"There are a lot of unique challenges. The grounds are all new. But it's easy fishing--the only disadvantage is that I'm gaining weight."

Scottish seining was introduced to Chatham in the course of a series of fortuitous events. The captain of the existing seiner in the Chatham fleet

explained that he was simply "very lucky" to be contacted by Bob Taber, who was then with the University of Rhode Island Marine Advisory Service. Apparently on the basis of his expertise and fishing reputation as a successful longliner, this skipper was invited (along with fishermen from other ports) by Taber to tour Europe in order to observe fishing technology. Impressed by Scottish seining (as was Taber), the Chatham fisherman was able to negotiate with the federal government for some assistance to experiment with the method in American waters.

Although a number of Chatham fishermen have shown an interest in Scottish seining after seeing the operation ("Eight or ten of them would change over if they could"), the cost of conversion is in most cases prohibitive. Local estimates are that it would cost from \$40,000 to \$50,000 to make the transition. Cost of conversion is therefore the major obstacle to this type of gear change.

Canadian Pair Seining

The introduction of Canadian pair seining followed closely the onset of Scottish seining in the port. The methods resemble each other, the former involving two boats and the latter one. For the port of Chatham, the introduction of each of these two new techniques was a break with the long-standing tradition of hook fishing. The only other net fishing that has been used extensively over the years is trap fishing. Gill netting has been attempted off and on, but not with any degree of intensity. And it appears that in the future another type of net fishing may be taken up by a fisherman who is now scalloping. This fisherman is seriously thinking about dragging.

Canadian pair seining is a net fishing technique that requires two boats to operate one seine net. The URI Commercial Fisheries Newsletter describes it as, in essence, "a two-boat Scottish seining technique that was developed in Canada in 1969." The operation is such that the seine net is virtually stationary while the boats pull the ends of the net together. It is therefore less of a towing or dragging motion. Instead of a sweep through a school of fish, the fish are landed into the net and gently contained. For this reason, Canadian pair seining as well as its sister seining technique, Scottish seining, is thought to be the perfect substitute for Chatham's longlining.

There are several attractions associated with Canadian pair seining that fishermen in Chatham recognize. These include starting-up costs, the utilization of additional marketable species of fish, a seining operation suitable for small fishing vessels, the potential high efficiency of the technique, and the preservation of good-quality fish.

Chatham fishermen take pride in their reputation for having quality fish and would like to maintain it. Canadian pair seining is one method that promises to do just that. This method of fishing keeps the net in the water for not more than 20 minutes, and there is little movement that could crush the fish once they are in the net. Also, since the boats do not go far offshore (eight miles), the longest period of time that the fish would be iced down on the boat would be 24 hours. Chatham's fresh fish (or day-old fish) reputation would be maintained with the use of Canadian pair seining.

As a fishing technique, Canadian pair seining is much more efficient than longlining or jigging. This greater efficiency can be expressed in two ways. First, as a method of catching fish, seining has a higher probability of larger landings per day than longlining. With longlining, once the trawl has

been set there is little knowledge of how well it is doing until the string has been retrieved. The time and effort between setting, retrieving, rebaiting, and resetting are much greater than with seining. With seining, once a spot shows a measure of unproductivity it is an easy matter to reset in another location. Second, seining will utilize more fish species than longlining. The principal species for longlining are cod and haddock. This is expanded with seining to include several varieties of flounders. When both Scottish seining and Canadian pair seining were introduced into the Chatham fishing industry, the major marketing outlet had to readjust slightly to handle a wider variety of fish. This capability could use the existing resource far more productively.

Finally, the Canadian pair seining operation is attractive because it is easily adopted by a small boat fishery. Unlike some other net fishing techniques, Canadian pair seining does not require large amounts of deck space to store fish. Chatham boats are shallow-drafted because of the shoal waters of the Chatham bars. For this reason, they have limited storage space for gear and catch. The two-boat seining technique saves one boat for the fish, while the other boat handles both fish and net. This effectively increases the handling capacity of both boats.

One additional attraction has to do with the current fish catch quota system. As pointed out by one of the captains engaged in Canadian pair seining, even though there are two boats operating, there aren't two full crews. Instead of eight individuals there are six, but since there are two boats, it is possible for them to catch twice the number of fish allocated to them as a fixed-gear fishery. Theoretically, therefore, if both boats were fishing separately and catching their limits, the total share per crew member would be less than when they are fishing together due to the differential in crew size. The captain hopes that this situation will remain until they are capable of working the seine nets well enough to reach the quota for both boats.

Initial costs associated with entering into Canadian pair seining are relatively light. The small boat operations in Chatham have to be highly flexible, but their flexibility is usually limited to low-cost techniques such as bay scalloping, jigging, and the like. Major gear changes involve output of large sums of capital and are correspondingly more difficult to bring about. For two vessels the cost of switching to Canadian pair seining is not too extravagant.

"The equipment was purchased and installed by the two vessels, at a total cost of around 12,000 dollars. For each boat the equipment consists of 300 fathoms of 7/8-inch seine rope, 300 fathoms of 1/2-inch wire rope, a hydraulically powered drum, mast and boom. In addition, the vessel that handles the net has a power block to facilitate the net handling."

This, of course, does not mention those costs associated with rerigging the boats and the costs encountered during the trial-and-error period that is necessary after the switch is made. The potential for success often balances the learning time required during which it is difficult to break even. This will be discussed fully below.

The difficulties encountered by the Chatham Canadian pair seiners can be divided into two distinct categories. The first is lack of knowledge and lack of examples; the second concerns unknown psychosocial barriers to the two-boat fishing operation.

Only one other boat in Chatham works with a seine net, but it is a Scottish seine and not a Canadian pair seine. Thus, there are no good examples from which the Chatham seining neophytes may gain insights. Learning about the technique is reduced to basic trial and error, and this has lengthened the initial adjustment period. Chatham fishermen are not familiar with net fishing for the most part; therefore, basic net-mending techniques need to be learned. What fishing grounds to use and how to fish them are also unknown. How to set the net, where, when, what effects tides have, and so on--all of these special aspects of the fishing technique are basically learned by trial and error.

There are also psychological and social problems that may be encountered by those fishermen who try Canadian pair seining. Psychosocially, Chatham fishermen are extremely independent. Canadian pair seining breaks that tradition, for it demands the use of two boats and the cooperation of two captains. If independence in decision-making is foremost in importance to most Chatham fishermen, then it might not seem a wise move for them to enter into an unknown fishing technique with another boat, skipper, and crew. This becomes even more critical during the trial-and-error period, when incomes are low and effort extremely high. When fishing alone, it is a simple task to assign blame or praise for the success of a fishing trip. Self-worth and personal esteem are more readily measurable. This becomes more complicated with a two-boat operation.

The trial-and-error learning period associated with Canadian pair seining is a real concern to many Chatham fishermen. The amount of time necessary to learn the new technique means that interested fishermen would have to wait a year or two to see the results of practice gained by those now engaged in the operation. This waiting and watching time would be an investment made before anyone risked the fishing income of two boats. Incomes in the Chatham fishing industry are not extremely high, and a fisherman successful at one type of fishing has to think and weigh the facts available to him before risking an entire season on a completely new method. Fishermen realize from observing the two boats currently struggling with Canadian pair seining that it takes at least one season to gain a reasonable level of competency. They also understand that a year in the Chatham fisheries with a low income can be devastating for a fishing family, let alone two or more. So the attitude toward innovation remains one of caution.

Gill Netting

There are presently no gill netters in the port of Chatham. In the eyes of some fishermen, gill netting is not well suited to the constraints imposed by the physical nature of the local waters. In the first place, strong currents and shoal waters are a handicap for fixed-gear fishermen. The power of the water acts to tangle and dislocate the fish nets. Second, the fish, once they have been entrapped by the gill net, are easy prey for omnipresent dogfish and sand fleas.

Another reason there are no gill netters in Chatham is because of the fishing tradition of the town itself. Historically, Chatham has been a hook fishery, and gill netting is not a traditional or familiar method of fishing. Nonetheless, a number of fishermen do feel that it can be a viable alternative for the future. One crew member of a boat from the nearby port of Harwich expects to outfit a boat of his own. His feeling is that tidal and dogfish

problems can be offset by hauling the gill nets in at six-hour intervals, rather than leaving them at sea for periods of one or two days.

Shellfishing

Shellfishing in Chatham is a popular alternative to finfishing. Many fishermen who have grown up in the area have participated in the various shellfisheries. In contrast to the sea scallopers who utilize heavy machinery and gear to harvest the larger sea scallop, there are many people who support themselves (or have a part-time job) seeking bay scallops, clams, and quahogs (pronounced "ko-hogs").

"Clams and quahogs are two different things on the Cape. Cherry-stones, littlenecks, and chowders are quahogs. Clams means soft-shelled clams and they are found in bottom exposed by the low tides. Quahogs are always underwater."

It is not uncommon to find a shellfisherman who is an ex-fisherman. Some men, dissatisfied with fish quotas, have "retired":

"Thirteen thousand pounds of fish in a week they allow us. Why, we could double that in the summer! Hell, prices have been the same for ten years. Why should I go fishing when I can go shellfishing and get home early?"

When the tide is out, people of all ages can be found raking for soft-shelled clams. Those in search of quahogs stand in shallow water and use a short rake, or employ a skiff and work a longer tool. The work, while strenuous, is not particularly exciting:

"It doesn't take too much sense to pull a bullrake."

The season for bay scallops (November to March) is almost literally over after the first two weeks. Townspeople of every persuasion search for the tasty and valuable bay scallop.

Local shellfishing is an important recreational and income-producing activity for local residents and summer tourists alike. Fishermen who fish offshore most of the spring and summer seldom miss the two-week rush on bay scallops that takes place in the fall. This is an important part of their yearly cash income. According to one estimate, there are 50 to 75 shellfishermen in Chatham who stay in the local waters; that is, they differ from sea scallopers in that they are not equipped to shellfish far off the coast. For some, there is no incentive to do more shellfishing than they do now, but others, especially younger people, consider shellfishing a known and true method of getting money to build careers as fishermen.

The total wholesale value of the shellfish catches for the town demonstrates its importance to the local economy. For the year 1977, the value was \$632,929.

INTERVIEW SCHEDULE DATA

A short interview schedule was administered to 31 captains in Chatham. The schedule was designed to measure selected socio-demographic characteristics. The sample represents about 35 percent of the total number of boats in the

fleet. The sample is not formally stratified, but does include responses from captains involved in every major type of fishing in Chatham (e.g., longlining, jigging, scalloping, Canadian pair seining, Scottish seining, inshore lobstering). Because many of the fishermen we interviewed have tried various kinds of fishing in the course of their careers, some information pertaining to lesser or peripheral fisheries (e.g., striped bass, quahogs, soft-shelled clams) was also collected.

Socio-Demographic Profile of Fishermen

The ages of captains in our sample range from 22 to 63 years, with the median being 35 years. In most cases, the younger captains are less experienced and have smaller boats. The newer fishermen in Chatham are predominantly in their twenties or early thirties, and they are likely to operate small, fast skiffs.

The vast majority of fishermen in Chatham are American-born Caucasians. A number of fishermen, termed "bog Yankees" or "swamp Yankees," can trace their ancestry to the early immigrants who settled the coastal lowlands and cranberry bogs of colonial America. Chatham natives, as well as others born on the Cape, take some satisfaction in labeling themselves "Cape Codders," and this mildly contributes to social status within the community.

Fishermen's fathers were found to form a rather diverse group of professionals and blue-collar workers, including lawyers, postmen, foremen, cobblers, fishermen, and the like. Based on the relatively small number of relatives who also fish (52 percent had no relatives who fish) and father's occupation, it is apparent that Chatham fishermen are not consistently linked to families with a fishing tradition (as are many of the Gloucester Italian-American or New Bedford Portuguese fishermen).

Compared to standards set by other fishing communities, Chatham fishermen are well educated. Nearly every fisherman in the sample had finished high school, and half of them have some college experience. None of the fishermen, however, have had any special training in fishing.

Comparisons of Fishing Methods

As noted previously, in the last few years there have been several changes in fishing in Chatham. These include the introduction of sea scalloping, Canadian pair seining, and Scottish seining. Fishermen responding to the interview schedule were asked to evaluate and compare these three innovative fishing styles with other styles (i.e., inshore lobstering and longlining) traditionally associated with Chatham.

Respondents were asked to rank by order five fishing styles according to seven criteria that fishermen frequently mention as important (see Poggie and Gersuny, 1974). Criteria for the seven separate rankings were 1) earnings, 2) financial risk, 3) personal safety, 4) best future, 5) independence, 6) challenge, and 7) personal satisfaction.

Results are presented in Figures 1 through 5. Each figure indicates the average ranking, according to the specified criterion, for each fishing style. The fishing type highest on each graph is that judged by fishermen to head the ranking; e.g., best earnings, greatest financial risk, greatest personal safety, etc.

Thirty-one fishermen were asked to participate in this task. For a variety of reasons, however, not all were able to complete the rankings. In some cases, the respondents felt they knew too little about a form of fishing to compare it with others. In other cases, the criterion in question could not be meaningfully used to contrast fishing styles. Some fishermen, for instance, judged all fishing styles to be equally "independent." Average rankings are therefore based on less than 31 responses. In Figures 1 through 5, the first number following a fishing style is the average ranking. The second number represents the number of fishermen who ranked that fishing type.

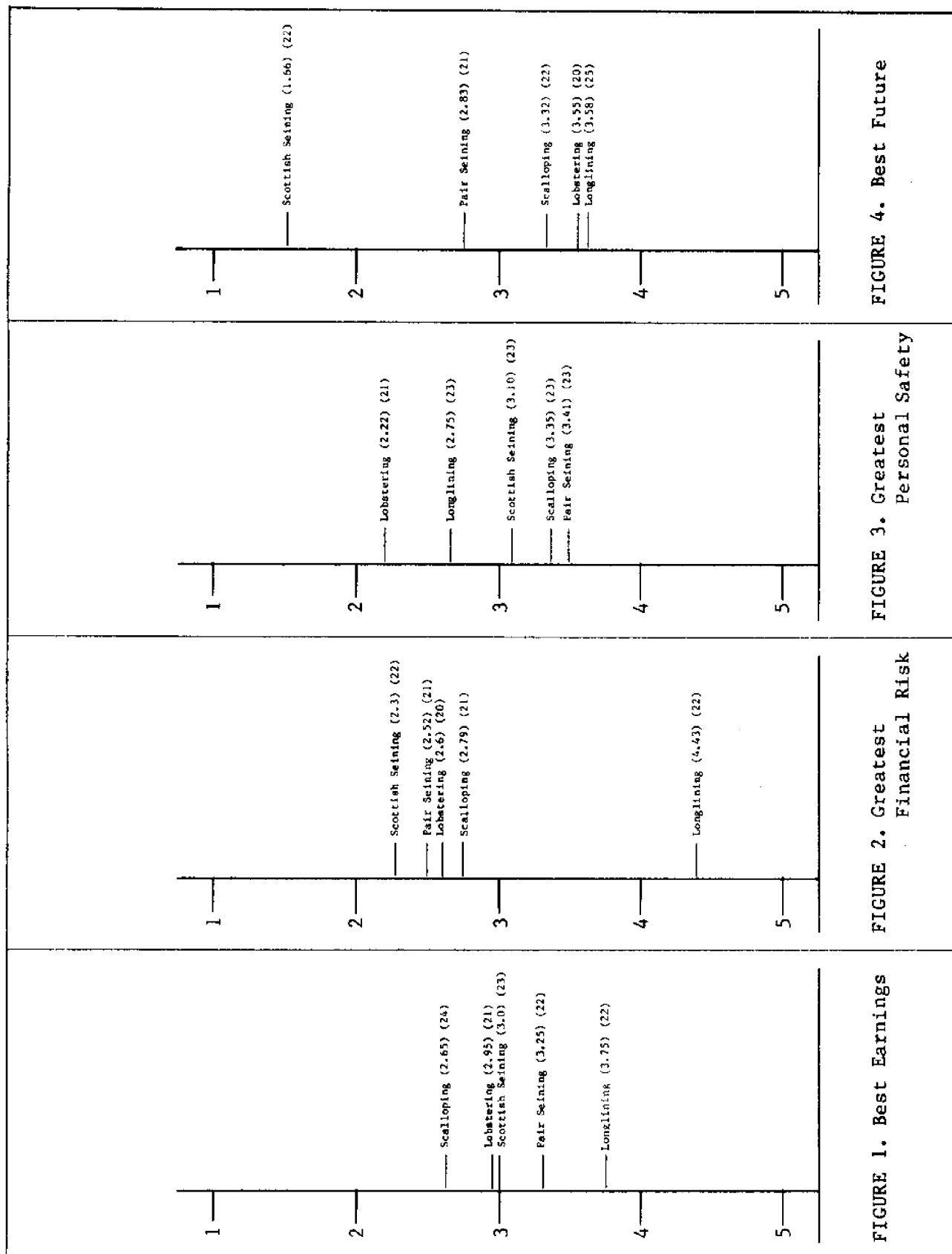
Best Earnings. Figure 1 presents the rankings of fishing styles according to perceptions of best earnings. Sea scalloping heads the ranking, and reflects the recent success of Chatham scallopers. Lobstering is second, probably due to the limited number of local lobstermen and the general high price and demand for lobster. Scottish seining appears very close to lobstering. This reflects the success of a fishing style that many feel has a fine future in Chatham. Pair seining does not appear high on the ranking because the local pair seiners have been in operation for less than one year and have not had the opportunity to show its potential for significant earnings and profits. Longlining appears last on the scale of earnings. This is likely to be related to the relatively small scale of longlining operations.

It is important to note that these rankings reflect fishermen's perceptions of "where the highest earnings were made in the last year." As such, the rankings do not necessarily indicate how steady a form of fishing is, nor do they indicate the long-term availability of a fish species. It is interesting to see that the fishing styles judged highest according to earnings (scalloping and lobstering) are those where the harvested species has a very high market value.

Greatest Financial Risk. Figure 2 presents rankings according to perceptions of financial risk. The strongest finding here is that longlining is clearly at the bottom. This is because longliners have a small capital investment and do not leave their gear at sea for prolonged periods of time. The other fishing styles either require considerable investment, as in Scottish seining, or risk fixed-gear loss, as in inshore lobstering.

Personal Safety. Figure 3 presents rankings for personal safety. While no form of fishing is completely safe, some forms pose lower risks than others. In this regard, lobstermen contending with small winches and longliners using flying hooks face less risk than fishermen operating heavier equipment. Many fishermen in the sample cited the danger of sea scalloping in heavy seas, when the strain on the equipment is severe. A failure under these conditions could cause thousands of pounds of scallops and gear to crash to the deck. Other fishermen pointed to risks longliners and jiggers take when they select to fish far from port in small, uncovered skiffs with little electronic equipment.

The position of pair seining at the bottom of the rankings is quite possibly due to the fact that most fishermen in the sample are unfamiliar with this type of fishing.



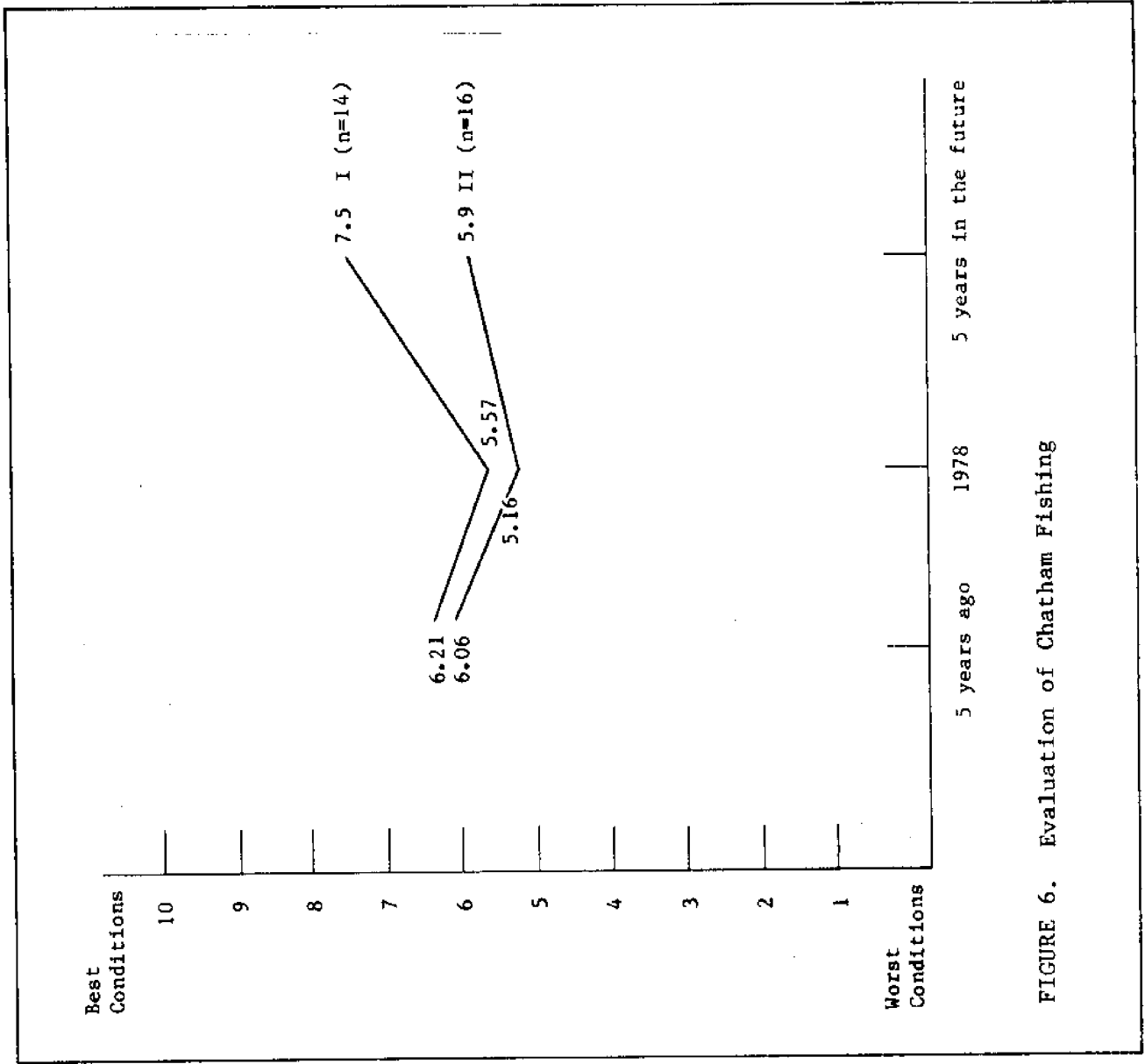


FIGURE 6. Evaluation of Chatham Fishing

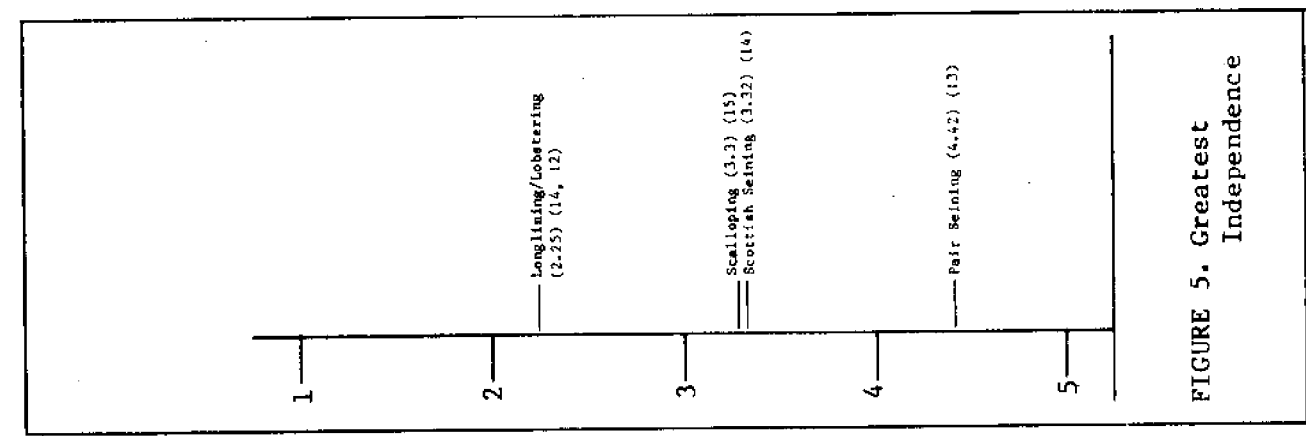


FIGURE 5. Greatest Independence

Best Future. Figure 4 presents results of rankings according to perceptions of best future. Chatham fishermen are obviously impressed by the fleet's single Scottish seiner, and many feel that Canadian pair seining also has potential. Scalloping appears third because fishermen feel that it has "peaked" in Chatham and is therefore likely to experience some decline. Lobstering and longlining appear last in terms of best future. One reason for this may be a realization by fishermen that these fishing styles, although stable and not costly, present problems when there is an attempt to expand the operation. Unlike the lobsterman, the longliner competes with draggers, seiners, and trawlers, and has little influence on the market value of harvested species.

Greatest Independence. Figure 5 presents results of fishing styles ranked according to independence. Although independence is a concept widely associated with fishing, only between one-third and one-half of our sample of 31 fishermen were able to complete this ranking. The reason given most often for not ranking was that they felt all types of fishing were equally independent.

Fishermen who participated in this task responded by defining independence in terms directly related to crew size. Longlining and lobstering are judged most independent because a man can do this kind of work alone. Scalloping and Scottish seining require larger crews. Canadian pair seining appears last on the list because it requires two vessels and considerable cooperation among crews.

Challenge and Personal Satisfaction. We originally sought to have fishermen compare fishing styles in terms of two additional criteria: challenge and personal satisfaction. This goal was abandoned early in the project due to difficulties encountered collecting data. Despite the diversity of fishing styles in Chatham, fishermen are not equally knowledgeable about the different styles. This is particularly true of the newer and more expensive forms of fishing. Few men, for example, have had experience scalloping, pair seining, and Scottish seining. Because of this lack of experience, many fishermen could not evaluate the challenge associated with the fishing styles. For similar reasons, personal satisfaction was difficult to assess.

Evaluation of Fishing in Chatham. A set of several questions focused on Chatham fishermen's perceptions of the overall picture of fishing in the port. Using a ten-point scale (with 10 representing the "best possible" fishing situation, and 0 the "worst"), fishermen indicated their evaluation of Chatham fishing 1) five years ago, 2) in 1978, and 3) five years in the future.

Figure 6 presents results for two groups of fishermen responding to the above questions. The evaluation, while indicating poorer conditions in 1978 than in the recent past, projected improvement in the future. The extent of the improvement depends critically, in the minds of the fishermen, on the success of federal management of the national fisheries. For the question pertaining to the future, half of our sample, Group I, were instructed that they could assume "good federal management and a steady supply of fish." They subsequently responded that the overall picture could be expected to be slightly better within five years than it was five years ago (7.5 to 6.21). Fishermen in Group II received no instruction regarding what they might assume. As a group, these fishermen were somewhat less optimistic than those

in Group I. They indicated that fishing would improve to just slightly below what it was five years ago (5.9 to 6.06).

THE FUTURE

Before assessing the future prospects of fishing in Chatham, it would be helpful to summarize the characteristics of the contemporary fishery and its limitations.

Chatham fisheries are stuck in a pattern of local resource exploitation that creates at worst a "make-do" living situation and at best a stable but moderate income. Chatham fishermen have not shown much diversification (expansion into more efficient fishing techniques) for years. In one sense, Chatham as a fishing port is an anachronism, using modes of fishing that date back hundreds of years. Longlining, jigging (an updated version of handlining), and trap fishing are primary examples of antiquated methods. And since these forms have never been sufficient in and of themselves to guarantee a year's wages (except in one or two declared instances), other forms of income from the sea or land have had to be substituted during particular times of the year. Thus, the fishermen of Chatham have seemed to oscillate from one activity to another within a bounded range of such activities. This oscillating behavior is sustained because of the economic, social, and physical setting of the fishing industry itself, as will be explained below.

Four factors operate to inhibit growth and expansion of the Chatham commercial fishing industry. These are environmental constraints, economic limitations, social and political marginality, and the ideology of fishermen.

Environmental Constraints

The single most salient factor blocking development of the port of Chatham is the treacherous and shifting sandbar configuration located at the entrance to Pleasant Bay. These bars, and the shallow waters of the bays, coves, and channels, limit the number and size of both commercial and recreational vessels. Until these conditions are remedied, Chatham will remain a port of secondary commercial importance.

Technological changes that may and do take place in Chatham fisheries in the meantime are at best interim solutions. New boat designs, such as the marine management boats with a faster, more stable hull, although expensive, will allow expansion into such areas as inshore dragging. But these boats, even if equipped with the new seining gear, are limited in the amount of fish they are able to handle because of the shoal entrance.

Included within environmental constraints are Chatham's harbor facilities. Once safely past the sandbars, Chatham fishermen must face difficulties some feel are as annoying as the bars themselves--the docking and unloading facilities of the town pier. These facilities were originally designed to accommodate a fishing fleet roughly one-third the size of what it is now. As the fishermen increase their demands for mooring space, landing facilities, competitive fuel and supply prices, and access to markets, overcrowding will emerge as a major issue.

Economic Limitations

Many fishermen have chosen to work in Chatham because of the economic ease of entering into the fishery. The statement "It's easy to become a fisherman in Chatham" has real meaning when the port is compared to Gloucester, New Bedford, and even Provincetown. Large amounts of capital and years of experience are not needed to become a full-fledged owner-skipper of a Chatham fishing boat. In fact, the ease of entering the fishery is so obvious that it is currently a curse to all of the "established" fishermen, since it is the cause of overcrowding at the mooring sites and fish piers.

But the ease of entering into the Chatham fisheries can be deceptive if one thinks in terms of fishing as a means of earning a living. Chatham and the surrounding communities are not inexpensive places to maintain a family, purchase land, and build a house. Land prices have escalated far beyond any increase in fishing income. Fish prices have gone up overall, but so have overhead and operating costs incurred day to day by the fishermen. Economically, fishing may remain in the reach of many, but in terms of a viable livelihood, it is severely limited. Simple expansion of the fisheries will not help this situation. Either a more comprehensive marketing and co-operative structure must be created, or the efficiency of the boats must be increased. Economically and politically, both seem rather remote.

Social and Political Marginality

Socially and politically, Chatham fishermen form a distinct community. The majority of Chatham residents are not fishermen, and numerous special interest groups have goals and objectives vis-a-vis the future development of the community. These often run contrary to those of the fishing industry. Tourism, and not fishing, is the primary industry. Because of this, maintenance of the town's picturesque character is of high priority. A purposeful enlargement of fishing facilities, either at the town pier or in Stage Harbor, would add an industrial flavor to the town; the community's zoning codes for waterfront property show that this is not wanted. Commercial development that exists at present may be maintained, but if abandoned, zoning regulations say that the property reverts to residential use only. Industrial expansion for the fishing community is thus severely hampered politically as well. There is a real question as to whether fishermen in Chatham have a sufficient political base to mandate changes necessary for growth in commercial fishing.

Ideology

The commercial fishermen of Chatham are also hindered by their very ideas concerning the type of life-style they wish to develop. Fishermen in Chatham continue to work out of the port because of the atmosphere of the community and the style of fishing available to them. There is an image of a fisherman from Chatham that is embedded in the everyday conversations of the fishermen themselves.

The boats they fish are small, highly flexible, and, unlike large vessels, allow great amounts of independence, even solitude. The fishing techniques used, although antiquated, command respect because of a sense of historic continuity (expressed by the style of the town as well) and the feeling that

the methods are environmentally sound. That Chatham fish are a better product because they are day-old fish, hook-caught, is a myth to everyone but the New York consumer. Chatham fish overall do not command higher prices than other fish, at least not where it counts for the fishermen. Wholesalers and retailers are the sole recipients of any price markups. But the image of the fishermen remains and creates ideals to be sought after in community and work settings. These attitudes relegate fishermen to an economically marginal life-style in a predominantly wealthy community. If the Chatham fishermen wish to continue their life-style (and image), they will find themselves in roles that will continue to make them a politically ineffective voice in the community.

Fishing Innovations

Any introduction of a major change in fishing technology into the port of Chatham, any potential innovative activity, will be limited by the above parameters. The establishment of alternative styles must fit into a social system already very set in its ways and fraught with structures and dynamics that tend to block any advances. Three innovations in fisheries or in fishing techniques were briefly examined in this study. They include scalloping, Canadian pair seining, and Scottish seining.

Scalloping was not hard for Chatham fishermen to accept, for two reasons. First, they knew what scallops were and knew something about how to get them. Bay scalloping is an accepted part-time activity for most Chatham fishermen. And, second, even though sea scalloping was new, the procedures and equipment were not that unfamiliar. The chances of failure were also very slim, due to the abundance of the newly discovered beds. Sea scalloping caught on easily.

Canadian pair seining and Scottish seining are a different matter. Both proclaim to be methods that will maintain Chatham's image in the marketplace. This is important, for if either is to be accepted, the standard of day-old, solid, firm, fresh fish must be maintained as part of the Chatham ideal. But beyond this premise the two techniques differ in acceptability. Each has its own flaws. Scottish seining preserves the independent, rugged image, but might be too costly to consider, especially since the rigging is proving to be too much for the space usually found on Chatham boats. The cost of Canadian pair seining is lower, but independence is sacrificed with the necessity to coordinate two boats. Not only is independence lost, but reliability of earnings is questioned. The success of a boat, when it is fishing alone, is as great as the skill of the captain. With two captains, who does one blame for failure? Whereas Scottish seining is economically questionable, Canadian pair seining is socially and ideologically hampered. Even though there are major economic and technical problems (lack of work space, for instance) with Scottish seining, its maintenance of the fisherman's independence and its avoidance of socially disruptive fishing strategies should gain it an advantage over that of Canadian pair seining.

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III. WESTPORT, MASSACHUSETTS

John Jessen

Fishing has been important throughout the long history of Westport, Massachusetts. Finfish and whales were predominant in the fishery at various times in the past, but today it is inshore and offshore lobstering. John Jessen notes that fishermen follow varying fishing strategies throughout the yearly cycle and rely on a number of species depending on availability. Like many small, attractive New England coastal communities, Westport has long served as a resort for summer recreation, attracting city dwellers and tourists. Pleasure boating and sports fishing are therefore important to the local economy.

In spite of its long history, Jessen indicates, in the minds of the fishermen the future of their industry remains in question. Perceived decline in lobster stocks, concern about regulations and the price of fish, as well as the fishermen's inability to compete with the large vessel fishing communities, all contribute to this uncertainty.

Westport is located midway between the small cities of Fall River and New Bedford, Massachusetts. The city of New Bedford is one of the most developed fishing ports in New England and a center of marine repair facilities. New Bedford is also a magnet for Portuguese and Norwegian immigrants, many of whom work in the fishing industry of that city. Fall River, known for its textile industry, also has a large Portuguese immigrant population.

EARLY HISTORY

Westport, Massachusetts, includes over 53 square miles of farmland. Within the town limits there are three distinct villages that correspond to early settlements. These are the Head of Westport, Westport Point, and Town Center. Before severe disruption by colonists, individual families of three Wampanoag tribes--the Apponagansetts, Acoaxets, and Sakonets--would move to the coastal areas of southeastern Massachusetts and Rhode Island during the summer months. They came to the shores and coastal rivers to forage for shellfish and hunt local game. Previous to the year 1616, between 25,000 and 30,000 Wampanoags were estimated to inhabit the southeastern Massachusetts area, including many in what is known today as the city of Westport. But by the 1620s epidemics, believed to have been brought about by contact with European explorers and colonists, had reduced this population to approximately 8,000. When Bartholomew Gosnold settled on Cuttyhunk Island in 1602, and paid frequent visits to the Westport area, the Indian population was still numerous. But by 1652, when 35 Englishmen from Plymouth Colony purchased the land from the Wampanoag sachem, Wesamaquen (Massasoit), many of the Indians had already perished, leaving the tribes reduced to less than one-third their original numbers.

Richard Sisson and his family were the first settlers to move into Westport. He moved in 1671 to what is known today as the Head of Westport. He and his family came from Portsmouth, Rhode Island, probably in an attempt to find available farmland. Other settlers had already populated some of the land purchased in 1652, known as a whole by the name Acoaxet. Seven years before the Sissons had settled in Westport, large tracts of land known as Apponaganset, Acushnet, and Acoaxet were merged under the name Dartmouth. This land, under the jurisdiction of Plymouth Colony, included what today are the towns of Westport, Fairhaven, Dartmouth, Acushnet, and New Bedford, among others. By 1787 so many settlers had moved into the region that Dartmouth was redivided into three parts, one of which was Westport.

ECONOMIC HISTORY

Early growth of the area is attributed to farming, whaling, fishing, and manufacturing. The first Englishmen in the area were more interested in trapping and fur trading than in fishing or homesteading. But by the 1700s fishing was a major subsistence activity in the Westport area. Local records indicate that by the 1780s cod, caught for commercial purposes, was being salted and preserved near the town's salt works. It could be assumed that a commercial cod fishery had developed much before the 1780s, but there were no specific records found to substantiate this. The whaling trade had already expanded into Westport Harbor by the 1770s, and by 1795 whaling ships were being built and outfitted in Westport. Certainly, therefore, commercial fishing for other sorts of marine life would not have been in its infancy during the latter part of the eighteenth century. After the decline of the whaling era in the late nineteenth century, the commercial fishing industry increased. The fishing and farming population grew in numbers all during the 1800s as Portuguese immigrants began to settle in the area. Sea products at this time were primarily cod, tautog, sea shad, scup, perch, bass, bluefish, pickerel, sturgeon, and mackerel.

Westport also developed as a dairy center. And the industry is still important, owing to the well-drained, moist grazing lands, 180-day growing season, and 40 inches of rain annually. Farms and dairy cattle are evident as one drives through the area.

By the early 1900s, the beauty of the Westport rivers and beaches made it ideal as a summer colony for Fall River, New York, and Boston families. Today this summer resident tradition continues. University students take over the summer homes during school days and thus maintain an additional economic input into the local markets.

As mentioned above, Westport is comprised of three small villages: Town Center, the Head of Westport, and Westport Point. Town Center is the focus of much of Westport's commercial activity. Located there are markets, restaurants, the Town Hall, pharmacies, dentists, the police station, etc. Also located at Town Center is the principal buyer of Westport lobster, five miles from the town docks. The Head of Westport has a slightly less intense focus on commercial activities, although there is a garage for auto repair work, a small grocery store, and so on. Located near the Head of Westport, however, are the main schools, the library, churches, and an industrial site that provides much of its activity. In the south section of the town, two large bays are formed by the east and west branches of the Westport River.

Westport Point is located at the apex of the two bays formed by the rivers. It is at this apex that the town dockage for commercial boats is located. In addition, there is also a post office, a store, and numerous large, old homes used mainly by summer residents.

Even though many people from the nearby cities of Fall River and New Bedford have purchased residences in Westport, the area has yet to be inundated by commuters. One resident, raised in New Bedford, said:

"They haven't found us yet. We're just hard enough to find and to get to that we've remained isolated."

In-migration, however, has been consistent for the past two decades. Between 1960 and 1970, 2,583 persons moved into the town. The overall population has shown major jumps over the last 20 years, as shown in Table 1.

TABLE 1. Westport Population Figures (1970 U.S. Census)

During the decade 1960 to 1970, the population of Westport increased by 3,150 or 47.4%. Since the excess of births over deaths was 567, the net in-migration during the decade was 2,583.

Number of People (1930 as Base Period)

<u>Year</u>	<u>Number</u>	<u>Percent</u>
1930	4,408	100
1940	4,134	93.8
1945	4,748	107.7
1950	4,989	113.2
1955	6,343	143.9
1960	6,641	150.7
1965	8,200	186.0
1970	9,791	221.0
1975	13,301	301.7

Racial Data 1970

<u>Race</u>	<u>Westport</u>		<u>Fall River SMSA</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
White	9,749	99.5	148,762	99.19
Negro	15	.2	512	.34
Other	27	.3	702	.46
Foreign Stock*	--	--	62,269	42.85
Foreign-born	455	4.6	18,503	12.33

*Data on country or origin of foreign stock is not available for municipalities whose population is less than 10,000.

Racially, the town is predominately white, although within the white category there is a mixture of European heritage; notably, Portuguese, English, and Norwegian. The 1970 census shows 99.5 percent of the population to be white, .2 percent black, .3 percent other, with 4.6 percent foreign-born.

There were 2,556 families living in the town in 1970, for which the median income was \$9,577. The 1970 census showed 166 (6.5 percent) families below the poverty level. The median income for these families was \$1,895.

Within the town limits, there are 194 firms. They have a combined total payroll of \$7,773,849 and employ 1,098 persons. Of those people 16 years and older, 61.6 percent are in the labor force. Sixty-one percent of these are male, 39 percent female. Apparels, wood products, service industry machinery, printing, and boatbuilding are the principal manufacturing specialties. The principal farm products include cattle, pigs, poultry, dairy products, and vegetables (potatoes, turnips, tomatoes, corn, and squash).

Westport's land surface is described as gently rolling hills with numerous streams and marshlands. The local weather is typical of New England but moderated by proximity to the ocean. Temperatures range from an average of 29.7°F in January to 72.6°F in July. The average annual precipitation is 46.85 inches, approximately one-fourth of which falls in the form of snow. Hurricanes have twice struck Westport and vicinity in the last 40 years, causing considerable damage to natural and man-made environments.

THE FISHING INDUSTRY

Boats, Buyers, and Fish

Westport is primarily a lobster port. Of the 30 commercial boats working out of the Westport harbor area in 1978, only four did not do lobstering. Of the 26 vessels who did lobstering, more than half (15) set their pots inshore. Of those that went offshore, two were exclusively lobster boats, while the rest combined lobstering with either swordfishing, scalloping, or gill netting.

Inshore lobster boats are small, usually not over 40 feet. Offshore swordfish and lobster boats are all 40 feet or greater, but no boat was said to be over 67 feet. Some of the inshore boats lack most of the sophisticated marine electronic gear that the offshore boats find necessary to carry. Of the inshore boats that do make trips offshore, more electronics have usually been added (e.g., lorans and radars).

Though lobstering was down at the beginning of 1978, by the time of the interviews (late summer) it was enjoying a mild upswing. In 1977, the National Marine Fisheries Service indicated a rounded figure of 239,000 pounds of lobster landed at the Westport docks, making Westport one of the leading lobster ports in mid and southern New England. The value of this catch was estimated at \$473,000. The total amount of lobster harvested by Westport boats is undoubtedly much higher than this figure indicates, for not all boats that operate out of Westport sell to lobster dealers in Westport. This is especially true for the offshore lobster boats, and in fact may apply to them exclusively. The principal ports for selling lobsters for the offshore boats, besides that of Westport, are Newport, Montauk, Menimpsha, and Point Judith.

TABLE 2. Employment Figures for Westport

Employment and Wages in Establishments Subject to Massachusetts Employment Security Law

<u>Classification</u>	<u>Westport</u>					
	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Total Annual Payroll	\$5,603,000	\$5,900,800	\$6,575,000	\$7,483,721	\$8,406,780	\$7,773,849
Average Annual Wage	5,202	5,530	6,043	6,435	6,599	7,080
Number of Establishments	164	166	172	173	191	194
Total Employed	1,077	1,067	1,086	1,163	1,274	1,098
Agriculture, Forestry, Fisheries	9	13	8	10	12	4
Mining	5	4	4	5	4	2
Contract Construction	142	124	123	153	229	220
Manufacturing	168	159	145	159	156	155
Transportation	122	128	123	135	133	125
Wholesale Retail	512	533	566	590	612	456
Finance Insurance	16	15	14	14	28	32
Services	104	90	107	98	99	103

TABLE 2. (continued)

<u>Income of Families</u>	<u>Westport</u>		<u>Fall River S.M.S.A.</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
1970 U.S. Census				
Less than \$1,000	34	1.33	766	1.9
\$1,000 to \$1,999	45	1.76	1019	2.6
\$2,000 to \$2,999	108	4.22	1965	5.0
\$3,000 to \$3,999	112	4.38	1940	4.9
\$4,000 to \$4,999	117	4.57	2020	5.1
\$5,000 to \$5,999	193	7.55	2607	6.6
\$6,000 to \$6,999	131	5.12	2772	7.0
\$7,000 to \$7,999	182	7.12	3339	8.4
\$8,000 to \$8,999	229	8.95	3402	8.6
\$9,000 to \$9,999	220	8.6	3450	8.7
\$10,000 to \$11,999	442	17.29	6018	15.2

At one time, tub trawling for bottom fish was practical, but of those interviewed who had tub trawling experience, only one person had mentioned that they had retained their gear. Gill nets seemed to be a favored guess as to what will supplant tub trawling. Scottish seining was the most desired method by two of those interviewed, and one felt so strongly about the desirability of Scottish seining that he even felt the best boat he could own in the future would be designed after the Scottish seiner Argonaut IV. This was also the only person interviewed who had had any formal training in fishing (two years at the University of Rhode Island).

There are three lobster buyers in Westport, two buying lobster from local boats. The third company trucks their lobsters in from Rhode Island and Maine. Last year, between 20,000 and 30,000 pounds of lobsters were brought into the area by this company and then processed, by treating, cooking, and pasteurizing, into lobster pies, bisques, chowders, and so on. These products, in addition to frozen whole lobsters, are trucked throughout the country, especially to the West Coast.

The two other local buyers, Lee's Wharf and the Westport Lobster Company, buy from local lobstermen. The Westport Lobster Company is the best established and largest lobster company in town. It is located in Town Center, five miles inland from the fishing docks at Westport Point. The company has a retail store that handles a complete line of shell and finfish. Their main business is wholesaling lobster (they also wholesale bay scallops) to such places as Boston, Massachusetts, and Point Judith, Rhode Island. Six inshore boats and four offshore regularly sell to the Westport Lobster Company on a trip basis.

One captain of an offshore boat who did not sell his catch in Westport believed that transporting the lobsters from dockside to the buyer's tanks resulted in a mortality rate that was economically disadvantageous to him. He was much happier selling to other ports, such as Montauk, New York. Another reason given was the mortality rate he would sustain because of the temperature difference between the ocean and bay waters. Water is pumped into the lobster tanks on board the vessel to maintain fresh seawater in the tanks. Upon entering the Westport River harborage, warmer water would be pumped into the tanks. If there is no incoming tide replacing some of the warmer bay water with colder ocean water, the temperature difference is apparently enough to cause some of the lobsters to die. Once a lobster is dead, the meat must be cooked immediately or it will spoil. Since there is no way of telling how long a lobster has been dead, all dead lobsters are discarded.

Other reasons for not selling in Westport included lower prices to fishermen after the tourist season in Westport is over (usually this happens after Labor Day) and a price difference of up to 40 cents per pound between Westport and Montauk. The Westport Lobster Company, as well as Lee's Wharf, noted that the 1978 lobster catch was far below normal for the year. For a trip of three to four days, the offshore boats should have been averaging greater than 3,000 pounds, but in 1978 their average was around 1,500 pounds per trip. This drop was also recognized by the National Marine Fisheries Service's statistical division.

Dock Facilities

The city of Westport maintains a dockage for commercial fishing boats. The dock site is located at the Head of Westport. Neither gas nor diesel are

available at the dock, although both are delivered on order from a supply company not more than two miles away. Water is not available, but electricity is accessible. Plans to furnish the dockage with water have been under consideration. Ice for fishing trips is obtained in New Bedford, since there is no ice supply available to commercial fisheries in Westport.

The dockage can handle at least 30 vessels, depending on vessel size. There is a fee for using the docks. The fee is used for upkeep of facilities and the normal salary of the wharfinger. Because of limited dockage, however, the town now has a rule that only those who live within Westport town limits can dock their boat at the facility. Dockage is also supplied by the people who own and operate Lee's Wharf, a fresh seafood retailer whose dockage is adjacent to the town's. Those lobstermen who usually dock at Lee's also usually sell to them, although it was emphasized by the retailer that the privilege of docking did not bind the boat's catch to them.

Small boat maintenance jobs are handled by the fishermen themselves at dockside. For major repairs and major part acquisitions, the majority of the boats depend on New Bedford dealers and shops. The exception to this is welding work. One of the most respected marine welding companies working in the southwestern Massachusetts area is based in Westport. Tripp's Boat Yard is located across the Westport River (south) from the town docks. Some of the fishermen acknowledged using Tripp's Yard from time to time, but most felt that it was worth taking the short trip to New Bedford because New Bedford boat yards are completely geared to handle commercial fishing vessel problems, whereas Tripp's is mainly a pleasure boat enterprise.

Pleasure boating and sport fishing are major industries in Westport. Sailing vessels and motorized yachts of all sizes find a safe and beautiful anchorage within the Westport River harbor. Most of these vessels tie up at Tripp's Boat Yard, the largest pleasure boating anchorage. Tripp's estimates that 12 to 15 percent of their business is in retail sales of gear and boats, 25 to 35 percent for boat storage, and 35 to 40 percent for dockage and service. They can supply dockside fuel, water, and electricity to 175 vessels permanently docked in front of their storage yard. During the winter, they are capable of storing boats that range up to 50 feet in length, and they have the capacity to handle 300 to 350 boats altogether. Tripp's also has a marine railroad, the only one found in Westport, with a capacity of 19 tons. Only one commercial fishing vessel was located at Tripp's when interviews were being conducted, and another commercial boat had been hauled out for service. When asked if the town's commercial fishermen often did their hull and engine work at Tripp's, the reply was:

"Occasionally, if it's a small job and needs to have immediate attention, they'll have us pull them up. But usually they'll go over to New Bedford where everything they need is at hand. We aren't really rigged up to handle their needs."

Tourists come with the pleasure boats, but unlike other small coastal communities of this sort (e.g., Chatham), Westport does not offer the tourists a picturesque fishing dock or pier. Fishermen per se are not a tourist attraction. And the pleasure boaters, who are on the other side of the river and who enjoy better facilities, stay out of the fishermen's way, to the fishermen's delight.

Regulations

Because of the nature of fishing in this community, no obvious effects of the 200-mile legislation have made themselves apparent to the fishermen. They are not unaware of issues that have surfaced during the New England Regional Fisheries Management Council's tenure, and they are cognizant of possible effects of Council action in the future, but there was no real and immediate concern expressed by the majority of those interviewed.

Over two-thirds of those fishermen interviewed felt the Council has little knowledge of the individual fisherman's plight, and as many felt that the very existence of the Council was not justified in terms of the viability of the fishing industry, and that it only served to create more bureaucracy. The belief among most of the Westport fishermen, a belief reflected by many New England fishermen, was that fishing is a self-regulatory process. Most fishermen recognize the concept of overfishing and the need to preserve breeding stocks, but few fishermen believe that they, as an aggregate, will ever be capable of engaging in conservation through regulation.

A fisherman perceives the relationship that he has with the rest of the industry, especially the stocks, in terms of a simple economic model: if there are fewer fish in the ocean, some type of law of supply will decrease, over time, the number of fishermen as well. Those that are capable of surviving the bad years will do so, and the rest will have to find other ways to make a living. The assumption, of course, is that each one expects that he will have the qualifications necessary to survive the bad years. For fishermen in Westport who can imagine Council regulation in the years ahead on such species as swordfish, sea scallops, and lobsters, this model, that the best survive and I am the best, dictates many of their economic decisions. These can be decisions such as purchasing a new boat, more lobster traps, gearing up for a different fishery, or even moving to a different port. A thorough understanding of the folk beliefs that affect economic behavior in the industry would be of great value in understanding the economic decision-making of fishermen in different ports and fisheries. And this knowledge would also shed light on the seeming irreconcilable differences between different segments of the industry, including the Council.

The lobstermen of Westport operate under a set of regulations issued by the State of Massachusetts. None of those interviewed expressed dissatisfaction with those regulations now in effect, and most were in favor of the proposed increase in legal lobster size. Also, there was unanimous desire to see interstate agreement on regulations. Rhode Island lobstermen are not liked very well, because they are able to fish Massachusetts waters, catch lobsters of smaller size than is allowed under Massachusetts law, and sell the lobsters in Rhode Island, where the size is legal. The Westport lobstermen feel, therefore, that it would be in the best interest of Massachusetts lobstermen, as well as of all lobstermen, to have a uniform set of regulations that would apply to all states involved with the lobster industry. Westport lobstermen do not feel, however, that the Council is the body to handle the lobster issue. They believe that these issues can be handled quite effectively on the state level, and they feel that the Massachusetts Lobstermen's Association, their lobbying body, has the situation well under control or, at the very least, is already working on the matter. As one inshore lobsterman said:

"If that Council ever started to try to regulate lobstering, I think half of the fleet would quit on the spot. I know I would."

In short, the lobstermen would like to see the following regulations adopted or maintained by all of the states involved with the lobster industry: 1) no egg-bearing lobsters taken--no "scrubbing"; 2) a minimum carapace size of 3 3/16 inches to 3 1/2 inches; 3) no claws or tails landed separately--whole lobsters only; 4) and no overall quota.

There are two concerns that seem to be on the swordfisherman's mind. First, that the Federal Aviation Administration (FAA) not try to stop spotter plane activity and, second, that those who wish to longline swordfish in North Atlantic waters be encouraged not to do so. Most of the swordfishermen in Westport do not see themselves as a fishery significant enough to be noticed by the Council in the near future. Additionally, they believe that because of the nature of swordfishing it would be nearly impossible to regulate it anyway. So, even though this segment of the Westport fishery recognizes the existence of the Council and has seen the Council's impact on other fisheries, they too do not perceive the Council as a threat to their part of the ocean. For some swordfishermen, spotter planes have become as necessary a part of their fishing gear as a marker ball or a harpoon. Planes are used to spot the swordfish that have surfaced. The pilots then direct the boats to the fish by radio and, to a degree, help the boats stay on the fish once located. Small, light, and very stable planes are used for spotting.

The trouble with the FAA is over the extra load of fuel these planes carry. Extra fuel extends the amount of time the planes can be in the air for spotting purposes. Also, the extra load of fuel enables the small planes to fly to more distant swordfishing grounds and still be viable as a spotter once at the fishing site. The FAA is understandably worried about the practice of overloading with extra fuel, but it has also recognized, at least temporarily, the necessity for the planes to be capable of flying long distances and of staying in the area for a reasonable length of time. But this means that the swordfishermen of Westport must contend with the FAA and the possibility that the fishermen's craft may not be allowed to continue to fly with extra tanks and fuel. Therefore, they might be forced to invest in planes that can fly the distances and the extended time with a standard load of fuel but at a higher economic cost.

Longlining has both a practical and an aesthetic side to its rejection by the swordfishermen. Apparently, it is not difficult to harpoon a swordfish. The fish do not move away from an approaching boat quickly and they are only a few feet below the surface and easy to see. But there are good harpooners who are recognized as such, and therefore some prestige is accrued by developing this particular talent. Although the swordfish has little chance once the boat has moved into position, there is the possibility that the harpooner will miss and the fish will escape. Also, harpooning allows the fisherman to sight a fish and determine its size. By harpooning, the fisherman can be selective, and so smaller fish are allowed to live, grow, and reproduce.

Longlining for swordfish is not selective in this sense. Longlining also allows predator fish time to scavenge what fish have been caught, and although not all of a caught fish will be eaten, those that have been attacked have less economic value. Longlining also makes overfishing a concern:

"If they start longlining, it'll be overfished. If it's overfished, or even looks like it, watch the feds step in. We don't need that."

Another swordfisherman swore that:

"As long as I have an interest in this boat, no one is going to do any longlining."

Asked whether or not the swordfishermen should organize an association that could set up guidelines for proper species management, and therefore manage themselves before the government felt the need to, the reply was generally negative. Most of the Westport swordfishermen felt that there was no need for regulation at this time, even though most were uneasy over the longlining issue and raised examples of longlining abuse in Southern waters.

There are few Westport fishermen who specialize in one type of fishing. Usually, three or four species of edible marine life will be targeted throughout a fishing year. For swordfishermen, the cold winter months are a time to turn to alternate species. It turns out that swordfish are temperature-sensitive and therefore they are not available during many months of the year (October to April). Although lobsters are available the year round, there are months when lobsters are plentiful and when they are not, as well as months when the risk of gear loss is greater than other months. For the "lean lobster" times of the year (January to April), other fishing activities must be substituted.

For those fishermen in Westport who concentrate on swordfish, the most widely accepted alternative species for the off months is either sea scallops or offshore lobstering or both. Council action of some type concerning sea scallops is therefore likely to affect Westport fishermen to some degree. Among those interviewed, there is the belief that any regulations passed by the Council would not affect them:

"We're little boats. What they're trying to regulate are the big ones out of New Bedford."

However, another person observed:

"What we have to worry about is what they did to the inshore boats fishing cod and whatnot. The small boats are just in the way and they'll try to regulate them out of their way."

On the one hand, Westport scallopers believe that future scallop regulations would not affect them. Since they harvest so few scallops compared to the large boats, they believe that catch limits for them would be absurd. On the other hand, there are Westport fishermen who are cognizant of the inshore/offshore draggerman's arguments over reasonable cod quotas and closures. Even with recognition of the important problem pending between small and large boat fishermen, few Westport fishermen have attended Council meetings or regional hearings. Their reasons are either that they have no time or that the particular meeting was about nothing that concerned them, the latter expressed especially by the inshore lobstermen.

Alternate Species

As explained above, the small boat fishermen of Westport have to rely on several forms of fishing during the year due to varying availability throughout the year. Some of the fishermen who have larger boats can turn from swordfishing to sea scalloping and to offshore lobstering; those with smaller boats cannot take the winter seas and so will fish closer to shore or in the

protected bays. Most of the time, one can predict that the small boat fishermen will turn to bay scalloping or quahogging during the fall and winter months.

Because of the excellent shellfish conditions that Westport exhibits, one would expect that Westport fishermen would be likely to use shellfishing as a means of supplementing their income. Over 70 percent of those fishermen interviewed said that they purchased a commercial shellfish license each year, and that they made it a point of going shellfishing for extra income.

Westport's shellfish constable, Robert Palmer, indicated that keeping up with the demand on the shellfish may not be possible in the future unless there is cooperation between communities and states. Seed stock from hatcheries or polluted rivers is available, but lack of cooperation may hamper attempts to make the best use of these stocks. The point, of course, is that if shellfishing is an integral part of the economy of Westport fishermen, then it becomes necessary to regard the continued maintenance of the shellfish stocks as part of the set of items to be included in the maintenance of the fisherman's way of life, or at least his economic security. The shellfish season for the Westport area extends from November 1st until April 1st. With some overlap at the beginning and end, this season fits nicely into the commercial fishing season, coming in as it does during the slack winter months. If shellfishing were to decline to the point where fishermen would not find it of any monetary benefit, the question would then be: What do fishermen turn to for the money needed during the winter? Seen this way, local shellfishing becomes a very important matter.

The Future

The future for fishing remains a question. Although individuals still earn a living from fishing, the harbor is not suited to handle large vessels, thus excluding Westport from any extensive fishing industry in the future. [Mead, 1976]

The above is a quote from a publication in celebration of the Bicentennial. The statement assumes that viability is in some direct way related to size of vessel. It is the case that today larger vessels, as exemplified by those working out of the nearby port of New Bedford, generally earn larger profits than smaller vessels. Yet to assume that greater profits is the key to the viability of commercial fishing in a small community is to ignore totally the reasons why individuals have chosen the fishing way of life in the first place.

The fishermen interviewed in this study recognize that they might be faced with hard times. They pointed out that many individuals had already sold, or were willing to sell, their boats. Lobstering, they declared, was not as good as in the past and no one felt that it would increase sufficiently to make much difference to their economic future. Several said that they would not recommend fishing to a young man, especially if the young man had a family and wanted to set up house. The cost of getting started would be, for both a fishing enterprise and a new family, too prohibitive. But no fisherman interviewed felt that the port had lost its fishing viability. The majority expressed the desire to have the Army Corps of Engineers deepen and stabilize the harbor entrance, but in most cases that statement did not go along with a

statement that newer, larger, and perhaps more versatile boats were also desired.

Limited entry is one notion that Westport fishermen were not uncomfortable with. And it is perhaps because the concept of limited entry is already in effect in Westport, either in a formal or economic guise. Inshore lobstermen, who form the main body of the Westport fishing fleet, must have a commercial lobster license to set traps legally in state waters. These licenses have been described as "hard to get." Thus, inshore lobstermen are already under a form of limited entry. Offshore lobstermen have an easier time procuring a license, but here limited entry is in the form of initial and continued capital investment. Their boats are larger and need much more elaborate electronics. The gear itself is more expensive and the chance of loss is far greater, especially during winter storms. Lately, because the larger draggers and scallopers have been exploring new fishing grounds (partly because of the low productivity of traditional areas), the chances of losing gear in a draggerman's net has increased. Thus, initial cost and operating costs tend to limit those entering offshore lobstering. And for Westport the availability of dockside facilities and the instability and depth of the harbor entrance also places limits on the number of offshore lobster boats. This is the same for swordfishing boats, for the two tend to be similar in size. It was the swordfishermen that most frequently expressed the desire for some type of limited entry in the future. Basically entrepreneurs at heart, it is often hard for them to want what is essentially a compromise to free enterprise. But they see themselves working with a limited resource, and limited entry is beginning to be one answer for maintaining that resource.

Limited entry also might be, for those who fish out of Westport, a means of preserving a life-style. How they fish and the intensity at which they fish did not seem to be a concern to them. Most find it comfortable. Complaints abound, of course, but despair was not evident. Yet, with an increased awareness of the limitations of the basic resource, there is also an increase in protective behavior in terms of a method (limited entry) that is alien to many of their beliefs. This conflict is most certainly indicative of a small fishing community, but it does not signal the demise of a viable way of life.

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IV. NEWPORT, RHODE ISLAND

John R. Bort

Newport, Rhode Island, is yet another small New England fishing port where tourism is economically more important than commercial fishing. John Bort reports that commercial fishing in Newport ranks a lowly fifth, following the Navy, tourism, light manufacturing, and pleasure boating. Newport differs from the other ports we examined so far in that a large proportion of the fish is landed by offshore boats from other New England ports. For example, almost equal numbers of craft from New Bedford and Newport land fish there during the course of the year. Although Newport has one of the best harbors in the Northeast, it suffers from problems we have found to be common to small ports with a large tourist component: the commercial fishing craft must compete with pleasure boats for available harbor space, and skyrocketing waterfront property values make it difficult for the shoreside component of fishing to expand or even maintain its present level. As Bort writes, "The modern steel stern trawler is viewed as a rusty source of odor and noise and as competition for space."

Newport is the southernmost of three towns on Aquidneck Island.¹ The town is bordered by Narragansett Bay on the west, the Sakonnet River on the east, Rhode Island Sound on the south, and the town of Middletown on the north. The town and the island are linked to the rest of Rhode Island by three bridges. Two of these connect the town of Portsmouth, at the north end of the island, with the towns of Bristol and Tiverton. Roads running the length of the island connect Newport to these bridges. The third bridge connects Newport to the town of Jamestown on Conanicut Island, which is linked with North Kingstown on the mainland by yet another bridge.

The bridge from Newport to Jamestown is Newport's most important link to the mainland. It was completed in 1969. Prior to 1969, the residents had to rely on ferries to get to southern Rhode Island. The first bridge of any type, which connected Tiverton and Portsmouth, was not completed until 1796 (St. Laurent, 1969:35). Ferries have played a major role in the movement of people and cargo between the island and the mainland until very recently. As might be expected, the orientation of the island, and particularly Newport, which is at the ocean-facing end, has been toward the sea.

1

Jeffries (1976) is relied upon for the general outline of Newport's history, with Field (1902) used to fill in the areas Jeffries does not cover fully.

EARLY HISTORY

Narragansett Bay and Aquidneck Island were visited by a variety of early European explorers during the 1500s, but the settlement of the island did not begin until 1638. In that year, the island was purchased from the resident Narragansett Indians for "ten coats and Twenty hoes" (Jeffries, 1976:8).

Settlement originally occurred in the Portsmouth area, but in the following year, 1639, Newport was established. Like many other colonial settlements, Newport's early settlers were individuals whose exercise of political and religious freedoms did not conform to the concepts of established colonies. Groups arriving in Newport included a variety of religious sects which managed to coexist more or less amicably. Of these, one of the more interesting was a Sephardic Jewish community (Gutstein, 1936).

Once established, the town grew rapidly from a population of about 100 in 1640 to 2,500 in 1680 (Jeffries, 1976:11). Along with its brisk population expansion came relatively early commercialization. Newport became an early seat of political and commercial power in colonial America. By the late 1600s, it rivaled settlements such as Boston, Philadelphia, and New Amsterdam (New York) in size and influence. During the 1700s, population continued to expand at a fast pace, reaching 6,200 in 1742 and 11,000 in 1775 on the eve of the Revolutionary War (Jeffries, 1976:33).

Newport reached its present political configuration in 1743, when Middletown seceded from Newport and formed an independent town and the final political subdivision on Aquidneck Island. Until this century, Newport and Providence continued to offer alternate meeting places for the State Assembly.

ECONOMIC HISTORY²

As already noted, Newport grew rapidly and continuously from its earliest settlement until just before the Revolutionary War. The area was endowed with a good harbor and relatively good land. Grain grew well, particularly corn, providing supplemental feed for livestock. A very early trade in livestock, grain, lumber, and fish developed to supply the newly arrived immigrant population.

Newport was very fortunate during its early history. It avoided the conflict and destruction of the early colonial wars which plagued other regions. The Pemaquid Peninsula of Maine, for example, first settled in 1621, had to be abandoned for 40 years in the 1600s because of the Indian hostilities precipitated by the conflicts between the French and English in that region.

2

St. Laurent (1969) provides a detailed examination of the critical period between 1783 and 1820 in which Newport's role as a major commercial center declined. The exceedingly brief consideration presented here is not intended to supply more than a very cursory view of the directions the economy of Newport has followed.

Through the 1600s, Newport prospered and the emphasis of the community gradually shifted away from agriculture toward shipping and trade. At first, the planter-merchants of the area were primarily concerned with the marketing of their own products, but trade in a wide variety of commodities, not locally produced, rapidly increased, as did commerce-related activities. By 1712, the town had over a dozen shipyards and was a major shipping center. As Jeffries (1976:16) puts it, "The whole economic life of Newport's adolescent years depended on shipping." Agricultural products were available for export as well as a wide range of manufactured ones. The manufacturing concerns included tanneries, distilleries, and grist mills. A host of artisans and shopkeepers could be added to the list of trade-related concerns. Cask making and distilling, for example, became major industries. Newport had 22 distilleries by 1769 (Field, 1902:401).

The varieties of trade in which Newport's merchants engaged were highly varied, but of these the most profitable was the slave trade. By the time of the Revolutionary War, it was one of the entire Narragansett Bay area's major forms of commerce (Field, 1902:339). Newport was a leading slave port and market during much of the eighteenth century (Field, 1902:404), and therefore the importance of cask making (as containers for molasses and rum) and distilling is quite understandable. These were logical adjuncts to the immensely profitable slave trade.

The slave trade was banned from Rhode Island in 1784, but Newport merchants continued to have interests in it until 1808, when slave importation into the United States was prohibited. The importance of the slave trade to Newport's wealth and prosperity is difficult to evaluate, but it probably played a critical role in sustaining Newport as a commercial center of importance far out of proportion to its size.

The prosperity of Newport continued for about 160 years; fortunes were made and Newport continued to thrive. The first setback began in the decade before the American Revolution. After the Peace of Paris in 1763, Britain began the imposition of new taxes on her colonies. The most famous of these was the Stamp Act of 1765. During the war with France, colonial merchants had been carrying on an illegal but lucrative trade with the French. With the end of the war, Britain was able to turn her attention to bringing her colonies back into line and raising revenue to replenish a depleted treasury in the bargain. Such measures combined with a faltering slave trade reduced Newport's commercial volume (Field, 1902:402). To a community specializing in trade and commerce, such a reduction had a serious impact.

The American Revolution caused even greater distress. During the Revolutionary War, Newport was a focal point of turmoil, and the area suffered badly as a result. In 1776, when a British fleet occupied the harbor and a British army was quartered in the town, Newport's population dropped to 5,300, less than half that of the previous year (Jeffries, 1976:33). The British withdrew in 1779, to be replaced by a French fleet in 1780-81; although friendly allies, they were still a strain on resources depleted by the British invasion. By June 1781, when the French left, the town was in shambles. Commerce and trade had come to a halt, wharves moldered, and shipping interests had moved to other ports.

A depression from 1786 to 1788 retarded Newport's recovery until the 1790s. From 1790 to 1805, Newport prospered once again as a shipping and trade center at the pre-Revolutionary War level. The beginning of the end for Newport as an international shipping center began around 1805. Trade

restrictions dominated the international economic pattern at the time, and these hurt Newport's shipyard interests. The closure of the United States to the importation of slaves in 1808 did not help Newport's cause and the War of 1812 added insult to injury. British blockades during the war curtailed shipping.

The end of the War of 1812 in 1815 saw Newport financially weakened because of the restricted trade situation. This had effectively lasted from 1807 to 1815. The volume of shipping began to increase in the first part of 1815, but the recovery was abruptly curtailed on September 23, 1815, when a hurricane destroyed much of Newport's waterfront. St. Laurent (1969:63) states, "The terrible destruction caused by the Great Gale played a major role in Newport's decline. It was possible to repair the damage and replace destroyed vessels and buildings but the financial cost was greater than the town could absorb." This view may or may not be entirely accurate. The event undoubtedly hastened the demise of Newport as a major shipping center, but, rather than "financial costs," the reason why Newport did not rebuild the harbor was more likely that the national and international economic situation was going through a reorientation. The year 1815 saw Europe at peace. The Napoleonic Wars were over and American shipping faced stiff competition from European concerns. During the same period, New York emerged as the dominant United States port, stiffening the competition even more. Added to all of this was the loss of the slave trade, which had been a bulwark of Newport's economy.

This was also an era of economic change for the United States. Prior to this time, re-export and carrying trade were the major areas of economic expansion in the United States. By 1820, Newport was feeling the impact of a rapidly increasing trend toward domestic manufacture. This, combined with the pinch of another recession, reduced overseas trade even more. Shipping declined sharply, and Newport never again regained its status as a major commercial center.

During the early 1800s, as Newport was moving off the stage of international influence, other economic ventures were attempted. A small whaling industry was developed, and at its peak 11 ships were active in the industry. Several small steam-powered cotton mills were also established. The whaling industry was never focused in Newport and, aside from nostalgic value, does not figure prominently in the town's history. Manufacturing, although always present in some form, has played a secondary role in the community. The 1800s saw an era of rapid railroad expansion in the United States. The rail system of the Eastern Seaboard connected Boston and New York to a host of manufacturing towns on the mainland. Raw materials and finished products could be moved quickly between areas over the rail system. Newport had to ship by sea; it did not receive rail service until 1863. In an earlier era, its harbor was an asset and its island location only a minor handicap. With fast ground transportation, a good harbor was of far less consequence. Its island location became an impediment, both because of its lack of streams suitable for driving mills and because of its isolation.

At the time Newport was struggling to put the pieces of a shattered commercial economy back together, a pattern of tourism which had begun in the 1700s started to reemerge. Unlike the emergent manufacturing sector, it did not falter and lose out to other regions. In the 1770s, Newport had already gained a reputation for a comfortable summer climate with cooling sea breezes and pleasant scenery. Wealthy Southern planters returned year after year to

escape the heat and discomfort of their homes during the summer.

In the early 1800s, visitors stayed in rooms in private homes rented for the season. By the 1830s, this pattern began changing as hotels were built for the tourist trade (Jeffries, 1976:38). By the 1840s, the era of Newport's tourist hotels was well underway, and the town was well on its way to gaining a reputation as the Queen of Resorts. This is a title which was well deserved until the depression of the 1930s. Newport may no longer have the preeminence it once had, but it is still a major tourist area, with tourism its major industry.

Tourism, which has overshadowed everything else in Newport for a century and a half, has gone through several phases during its long history. The tourist hotels predominated into the 1860s, attracting guests from the urban centers along the coast. Steam ferries called at Newport as early as 1817, and the service expanded through the 1800s. By the late 1800s, large coastal steamers were quite fashionable. These services were essential in maintaining Newport's importance as a tourist center.

A trend toward individual properties and private "cottages" began in the 1830s, accelerating in the latter part of the century. It became very fashionable among the wealthy to own a summer "cottage" in Newport. Many of the ornate mansions in the area today are reminders of that era. Newport near the turn of the century was in some ways more than a summer resort area; it was a major summer social center on the East Coast. The industrial barons of the time as well as the traditionally wealthy congregated in Newport attempting to outdo each other in ostentatious displays of wealth.

The Great Depression marked the end of the era of magnificent mansions and distinguished summer residents. Fortunes were lost as well as some of the properties. Others disposed of their holdings rather than sustain the ever-increasing costs of maintaining and staffing them. The wealthy still patronize the area, to be sure, but the fashion has changed. The display of wealth so popular at the turn of the century is no longer in vogue. Modern, "self-effacing elites," as Harris (1974) calls them, usually do not build elaborate mansions for occasional use.

The contemporary tourist industry tends to cater to visitors of more modest means. Numerous yachting and sailing events such as the America's Cup races attest to the substantial circumstances of many of the people still attracted to the area. The focus of the industry has also shifted, from an extreme emphasis on the summer visitor to an encouragement of tourism throughout the year, although summer is still the peak season. The trend toward entertainment of large numbers of visitors on relatively modest budgets, rather than a smaller number of longer-term wealthy visitors, has brought about a number of changes in the business orientation of Newport. The community offers a range of accommodations to suit nearly anyone. These include modern motels, guest houses, and even campsites. It abounds in small shops oriented toward the tourist trade. The Newport Chamber of Commerce and Historical Society work to develop the attractiveness of the area for tourists. These efforts include seeking federal funds for work on the waterfront, which will encourage merchants to restore buildings of historic and, of course, tourist interest. There is at present nothing to suggest that tourism will not continue as a major thrust of Newport's economic activities.

Tourism is important to Newport's economy, and its physical manifestations are highly visible. It is not, however, the only industry in the area. In

fact, the economy of the Newport area is amazingly diversified.³ The major components can be ranked as follows: 1) U.S. Navy, 2) tourism, 3) light manufacturing, 4) pleasure boating, and 5) fishing.

In the city of Newport, tourism ranks first in importance, but on a county-wide basis the Navy definitely ranks first. Naval influence in the area is great. The East Bay Navy Base has an annual payroll of approximately \$115 million. The local naval base as of June 1978 had a total personnel roster of 7,800, of which 3,700 were civilian employees. In addition to the reserve and active fleets in the area, Newport is the home of various naval command schools and the War College. It also has a Naval Underwater Systems Center (development of missiles and torpedo systems for submarines), which contracted roughly \$33 million worth of development work to civilian companies last year. This adds a substantial boost to local business concerns.

The naval cutback around 1973 definitely hurt the Newport area, but there has been a remarkable recovery. Navy plans in the Newport area are of course unforeseeable, but no great alterations of the current situation loom on the immediate horizon.

Tourism, as noted, is the largest single economic feature in the city of Newport and has a strong influence throughout the country. Under the rubric of tourism is included the vacation trade, conventions, and business seminars. All of these areas have continued to expand in recent years, and the trend is expected to continue.

Closely related to tourism is the pleasure boating industry. During the summer season, the harbor is crowded with pleasure craft of all descriptions. The fact that Newport is a major yachting center is attested to by the world-famous America's Cup races held in the area. Pleasure boating has been increasing in the area every year. Concurrently, the importance of yachting service businesses and pleasure boat manufacturing has increased. There are indications that yachting will continue to increase in importance as will the contribution of yachting-related business to the local economy.

The final major area which can be viewed as a service industry is Newport's retirement community. The area has a large number of retirees (unfortunately, accurate figures are not available). Many naval personnel familiar with the area from periods at the War College or at the command schools have selected it for retirement. These individuals cannot be considered tourists, since they have made Newport their home, but the impact they have on the community is similar in some respects. They bring money into the community in the form of retirement pensions and contribute to the support of many service-oriented businesses as significant consumers. Also, their demands on the community's infrastructure are lower than that of the population in general. Many have mature families and do not require educational or youth-related services.

The components of Newport's economy thus far outlined (Navy, tourism, boating, and retirement community) might all be considered primarily

³Mr. Raymond C. Mills, Executive Vice President of the Newport County Chamber of Commerce, graciously provided the information on the economic complexion of the area.

commercially or service-oriented. With the exception of some boating concerns, none are really oriented toward manufacture. This, of course, underlines the predominance of the service-oriented sector of the economy. Newport has no heavy industry. The area is not, however, lacking in light manufacturing. There are over 50 firms in the surrounding area. These range in size from extremely small, one-man operations, to modest-sized concerns employing several hundred, to the Raytheon Company, based in Portsmouth, employing about 2,000. The total manufacturing labor force is about 5,300. This includes the Middletown and Portsmouth areas as well as Newport.

Viewing the wider area rather than Newport alone probably provides a more realistic picture of the manufacturing situation. Commuting to jobs in nearby areas is a very common practice; hence, the local political boundaries are of very little consequence in terms of labor movement. High property values in the city proper have also tended to prompt manufacturers to locate in less congested and less costly nearby areas. They still depend on labor forces drawn from Newport. Continued expansion of light industry is anticipated and is being actively encouraged by the Chamber of Commerce.

The general picture of the Newport area economy, suggested by the foregoing information and by general comments from people interviewed, is that a relatively diversified situation already exists and promises to become even more broadly based in the future. The Navy still plays a very important role in the economy of the area, but its relative importance has been reduced in recent years. This, in part, occurred involuntarily when the fleet based in the area was reduced. Since the traumatic cutbacks, vigorous, conscious efforts to promote diversification have been undertaken by groups such as the Chamber of Commerce. The goal is to develop a stable economic situation by decreasing dependence on any single or small number of elements.

THE FISHING INDUSTRY

History

Fishing, like agriculture, was an integral part of the economy in the period of Newport's early settlement. Unlike agriculture, which has virtually disappeared, fishing has persisted. Unfortunately, the importance of fishing was overshadowed first by commerce and later by tourism. Extensive and detailed records enumerating the activities of trading ships are available. Similarly detailed information, including photographic records, covers the activities of many notable residents of the tourist era.

It seems that those recording the events of the times paid scant notice to the relatively mundane fishing industry, since more impressive phenomena were vying for their attention. This relative dearth of information can probably be accounted for in part by several factors. The individuals undertaking historical recording are generally identified with the white-collar segment of society. As such, they are socially relatively removed from fishing and fishermen. Also as a consequence, they tend to be relatively uninformed about the industry. The contrast which exists in Newport between the tourist-oriented sector of the economy and the fishermen would tend to sharpen this tendency. An eloquent visiting dignitary is a lot more interesting than dirty, odiferous boats inhabited by men who are not really understood very well.

It is a reasonably safe assumption that during the early period of settlement fishing was an important part of the local economy. It would be surprising if it were not, given the location of the community. Early records mention the fisheries and the drying stations for fish. Letters preserved from the period also frequently, if only briefly and casually, mention the fisheries (Field, 1902). Unfortunately, quantities are rarely mentioned; therefore, developing even a general picture of the scale of the fisheries is virtually impossible. Suffice it to say that its relative importance was on the decline by the 1700s with the rapid development of overseas commerce and the emergence of Newport as a major slave trading and shipping center.

The only early fishery which is relatively well documented is whaling. Whales were taken in Narragansett Bay during the very early colonial period. This was an incidental activity undertaken as opportunities presented themselves. The first ship from the area specifically outfitted for whaling landed its first cargo in Newport in 1733 (Field, 1902:482). By 1785, the whaling fleet included 50 craft, operating from the Rhode Island ports of Newport, Providence, Bristol, and Warren. The number of craft fluctuated, with the peak being reached in the 1830s and 1840s. This was followed by a rapid decline. By the late 1850s, most craft had either moved to New Bedford or entered other pursuits (Field, 1902:482-483).

The whaling industry never did become a major economic force, as it did in New Bedford. Even at the peak of whaling activity, most Newport boats brought in cargoes from foreign ports in addition to whale oil. In many cases, the quantity of whale oil was so small that there is a question as to whether whaling or trading was the primary activity.

The period from 1800 to 1930 has been designated one of "nearshore fisheries" for Rhode Island by Olsen and Stevenson (1975:53).⁴ As the designation implies, this was a period in which the major concentration of fishing effort was in shallow waters close to shore. Most fish, with the exception of menhaden, were taken in staked and floating fish traps. Menhaden were taken with seines. This was also a period in which industrial fish were the focus of effort. In 1889, for example, of the 127 million pounds of fish landed in Rhode Island, 89 percent were menhaden (Olsen and Stevenson, 1975:53). Scup and alewives ranked second and third in importance behind menhaden. During this period, menhaden were taken in incredible numbers all along the New England coast. Menhaden plants that rendered them for their oil dotted the coastline at the turn of the century.

The 1920s and 1930s were years of transition for the fisheries of Rhode Island as well as for those in the rest of New England. The menhaden disappeared from New England waters. Menhaden plants from Maine to Connecticut closed down, and fishermen had to look to other fish stocks.

The period from 1930 to 1973 Olsen and Stevenson (1975:55) refer to as "the trawler fisheries." As inshore menhaden stocks declined, technologies allowing effective pursuit of fish farther from shore became available. During the 1920s, marine diesel engines were introduced, allowing the use of larger and wider-ranging craft. In the early 1930s, the now commonplace otter

⁴Statistics and the general change patterns of the industry are drawn from Olsen and Stevenson (1975).

trawler was introduced, its use spreading rapidly during the following decade. Various refinements in gear and engines have occurred in the intervening years, but the basic fishing principle remains the same today. The otter trawler is by far the predominant fishing vessel throughout New England.

The immediate impact of the introduction of otter trawling was to permit fishermen to pursue fish stocks far offshore, where traps could not be used and seining equipment was not efficient. The most important species originally pursued were whiting and red hake. The poundages of fish landed generally increased until 1957.

In 1957, Rhode Island enjoyed a record 142 million pounds of fish landed. Of this, 68 percent were industrial fish (Olsen and Stevenson, 1975:55). This was followed by a precipitous decline until 1964. After 1964, total fish landings increased, as the result of rapid diversification in species sought and techniques used. Industrial fish have not yet returned to the prominent position they once held.

Several major innovations have occurred in Rhode Island's fisheries during the diversification process. Offshore lobstering began in the early 1960s as trawlers began to exploit stocks in offshore submarine canyons. This has since given way to an offshore lobster trap fishery. Landings reached a dramatic peak in 1971 at 5.4 million pounds and have declined since (Olsen and Stevenson, 1975:108). In 1969, wing trawls, which allowed the effective capture of herring with trawling gear, were introduced. In 1972, pair trawling was introduced and improved effectiveness even more. The result has been a dramatic increase in herring landings since 1969.

The mid-1970s also marked the beginning of an enforced period of diversification for the industry. In spite of gains achieved in the application of other techniques, otter trawling is still by far the predominant method employed. By the 1970s, otter trawling for various species of flounders, particularly yellowtail flounder, had become a mainstay of Rhode Island's fisheries. The yellowtail population has experienced a sharp decline, due, in the view of many, to excessive fishing pressure.

Because of this, Rhode Island fishermen have had to turn to other species. In general, boats have tended to adopt fishing strategies designed to utilize a variety of species rather than rely on any single stock. Boats often pursue several different species during the course of the year and often on the same trip. Diversification and flexibility in fishing is becoming increasingly important as efforts to conserve and replenish stocks are undertaken by federal and state authorities. Quotas and other restrictions on the quantities of various species which can be taken are important for the rebuilding of depleted stocks. Such restrictions can also be disastrous to any fisherman unable to shift his efforts to other fish stocks. He must be able to distribute effort in a manner which keeps the catches of various species within the limits imposed.

The foregoing brief sketch of the major trajectories of Rhode Island's fishing industry tends to reflect the history of Newport's fisheries--with several major exceptions. Rhode Island has two major fishing centers, Point Judith and Newport. It is a reasonably safe assumption that any major trends occurring in state statistics are being represented in either Point Judith or Newport and possibly in both.

Olsen and Stevenson (1975:32) indicate that prior to the development of Point Judith's harbor in 1935, Newport was Rhode Island's predominant fishing port. After that time, Point Judith emerged as an important port, with

industrial fishing (whiting and red hake) providing its mainstay. While Point Judith developed, Newport tended to decline, particularly after World War II. This trend began reversing in the mid-1960s, and by 1971, 57 percent of Rhode Island's food fish and 34 percent of its lobsters were being landed in Newport (Olsen and Stevenson, 1975:32).

The factors responsible for the post-war decline and subsequent revival of Newport's fisheries are far from clear. There are as many theories as there are theoreticians. The more commonly suggested causes of the decline include the following: 1) the increasing importance of pleasure yachting and tourism, which have pushed aside the fishermen; 2) the enticement of fishermen to the services offered in New Bedford and Point Judith; and 3) the competition from foreign fishing vessels (the most common cause given). Suggested reasons for revival include the dissatisfaction with dealers in other ports (particularly New Bedford), and the efforts of Newport dealers to attract fishermen. None of the points except possibly the efforts of dealers suggest themselves as particularly salient. The potential importance of the activities of dealers will be considered in more detail later.

The Contemporary Fisheries and Infrastructure

The Harbor. As Olsen and Stevenson (1975:32) express it, "Newport is blessed with one of the best natural harbors in the Northeast." This statement is a reasonable summary of the harbor's physical qualities. The draft in the harbor south of the Newport Shipyard Company facilities is 12 to 14 feet. North of it, 18 to 20 feet is the rule. Dredging in some areas, particularly near some of the wharves, would be desirable, because some large craft experience difficulties at low tide, but this is not an extreme problem. Ice in the harbor rarely presents difficulties and can be easily controlled. The harbor provides excellent protection from rough weather, with the obvious exception of hurricane conditions such as those which devastated the port area in 1815 and 1938.

Support Facilities. Newport has one wharf area leased by the state from the Newport Shipyard Company available for the use of fishermen. This is a stone-filled wharf of substantial dimensions located adjacent to the marine railway facilities of the shipyard (at the south end of the shipyard facility). Except for electrical outlets to service boats while moored, the wharf has no service provisions. The property was recently leased by the state for 20 years.

Newport also has three private wharves servicing fishermen. Anthony's Seafood and Parascandolo and Sons buy finfish. Anthony's Seafood also buys lobsters, and Aquidneck Lobster's only business is lobsters. All but Aquidneck Lobster provide ice and fuel to fishermen. Ice is supplied to these firms by the Eastern Ice Company, located in Newport. The fourth and final concern is the Tallman and Mack Company, which is a private concern operating fish traps between April and November. They market their own fish but do not purchase fish or provide services to other fishermen.

The wharves of the three concerns that provide services to fishermen are all of modest size and located on the waterfront along Thames Street (Aquidneck Lobster is actually off the new highway constructed for the Treadway Inn). All are equipped to unload, pack, and ship fish. Anthony's Seafood and the Parascandolo company have coolers for holding fish, and

workrooms where fish are unloaded, sorted, iced, and crated for shipment. In addition, Anthony's Seafood has a modest area equipped for processing limited quantities of fish. Aquidneck Lobster has extensive circulating seawater tanks for holding lobsters. Their total capacity is 100,000 pounds of lobsters. All of these concerns have shipping docks on the street side of their facilities where fish can be loaded onto trucks or ice and other supplies unloaded.

The primary berthing areas for fishing craft are along the wharves of the three buyers noted above, in addition to the wharf leased by the state. These are the areas primarily used by the finfishing craft and offshore lobster boats. Some of the small inshore lobster boats also moor at these facilities, but most are scattered either individually or in very small groups all along the extensive waterfront area. The limits of the berthing areas for larger craft are being approached, and congestion exists at all of the wharves. The only reason sufficient space is available is because a large number of craft, primarily from New Bedford, unload and take on supplies but do not tie up in Newport.

As already noted, fuel and ice are supplied by the buyers in Newport. Bait for lobster fishermen comes from a variety of sources. Some comes from local draggers and fish trap operators; the remainder is trucked in as frozen blocks (often ocean perch remains). Lobster fishermen secure bait on an individual basis. Supplies such as foul-weather gear, rope, boats, gloves, etc., are often acquired from the J.T. O'Connell Company in Newport. This company can supply most fishermen's supplies on a special-order basis, but fishermen frequently turn to a variety of suppliers in New Bedford. A wide range of materials are kept in stock by these suppliers, and their prices are reported to be highly competitive.

Newport also has a shipyard, the Newport Shipyard Company. This is not the type of facility fishermen require on a day-to-day basis, but it does make a range of repair and maintenance services readily available. The shipyard has a substantial marine railroad for hauling ships out of the water. The railway is large enough to handle small naval vessels and therefore is large enough to handle any of the craft in the fishing fleet. The services of the shipyard are used by boats from ports throughout the area.

Marketing. In 1971, 57 percent of the food fish and 34 percent of the lobsters landed in Rhode Island were landed in Newport (Olsen and Stevenson, 1975:32). The bulk of the fish are handled by Anthony's Seafood and Parascandolo. Most of the lobsters are handled by Aquidneck Lobster and Anthony's Seafood. Tallman and Mack contributes only a small percentage of the total fish landings. Olsen and Stevenson (1975:32) estimate fish trap landings to contribute only four percent of total landings, which would also include the traps operated by Aquidneck Lobster.

As already noted, the only processing is done by Anthony's Seafood. All of the fish processed is used to meet the needs of the retail outlet owned and operated by Anthony's Seafood. Mr. Anthony Bucolo estimates his retail trade in the neighborhood of \$400,000 annually.

The remainder of the fish landed at Anthony's Seafood and those landed at Parascandolo are packed in ice and shipped to buyers in various locations. Mr. Bucolo indicates that his primary markets are in New Bedford, New York, Philadelphia, and Boston. Mr. Parascandolo indicates reliance on the same major markets, although the specific buyers are not necessarily the same. A

large percentage of the fish go to processors in New Bedford, with the second largest market being New York.

Specific marketing decisions become intricate, but in general they are based on market situations and the volumes of various species being landed. Most marketing relationships between the two buyers in Newport and their outlets are relatively stable. Each markets to approximately 10 to 15 different buyers on a regular basis, with occasional shipments sent to others.

The degree of stability in marketing situations is probably explainable in terms of the long-term stability of both concerns. Anthony's Seafood has been in operation for 21 years. The Parascandolo company has been in business for 30 years in its present form and was actually started about 50 years ago by the father of the present operators. (Aquidneck Lobster is a relative newcomer. It has been in operation for only 15 years.) In short, both are long-standing, reputable firms. In a business notorious for "bad money," financially unsound operations, and outright dishonest business practices, the established reputable supplier is definitely appreciated. Once buyers establish business ties with either of these firms, they apparently tend to try to maintain them.

Both finfish buyers pay for the fish at the time of landing. When the fisherman pulls away from the dock, he has a check for his catch in hand. Prices paid are set to the price on the New Bedford market the day the fish are landed. The practices of paying the same day's price and paying when the fish are landed attract fishermen from other harbors at times. In Stonington, Connecticut, for example, the price received is fixed to the New Bedford price the day after the fish are landed and is usually not paid on the spot but later as a weekly check. The differences at times attracts fishermen from Stonington if they feel the price may be going down the following day. It is also attractive when cash is desired immediately.

The annual pattern of landings goes through a relatively regular cycle, as it does in most ports. The volumes and species of fish being landed change in a predictable manner. The heaviest fishing effort and, consequently, the largest volume of landings occur in the late spring and through the summer. The low point of the season occurs during the rough-weather months of the winter (see Tables 1 and 2 in Appendix). Because a high percentage of the boats landing fish in Newport are large craft working offshore waters such as Georges Bank, the seasonality typically found in landing patterns for inshore craft is less apparent (Table 1). Inshore fisheries depend heavily on spring fish migrations to inshore waters. When fish populations are offshore during other parts of the year, catches decline markedly for inshore craft. Offshore boats can and do pursue fish in distant locations throughout the year. They do not fish with the same intensity during the winter as in other parts of the year, but at least they are not inactive for prolonged periods during the winter, as small inshore draggers often are.

The differences between inshore and offshore fishing patterns, plus the further involvement of offshore lobstering, cause slightly different landing patterns for Anthony's Seafood and Parascandolo. Anthony's Seafood services no inshore draggers but does handle four craft which go offshore lobstering in the fall and offshore dragging during the remainder of the year. This is in addition to three offshore lobster boats and a few inshore boats. The resulting landing pattern, as would be expected, varies from that of Parascandolo, which does not handle lobsters and does land the catches of the eight small draggers operating from Newport.

Between January and April, approximately one-half the landings for Anthony's Seafood are lobsters, the remainder being predominantly yellowtail flounder and cod. Between May and December, flounders, primarily yellowtail and lemon sole, predominate. On an annual basis, lobsters rank highest in dollar value, roughly \$1.5 million and 700,000 pounds. Total finfish volume is roughly \$1.75 million and about 4.5 million pounds.⁵ Mr. Bucolo's operation is relatively distinctive, because only two of the large craft he services on a regular basis are indigenous to Newport. Both of these are owned by Anthony's Seafood. Services are regularly provided to two boats from Newport, three craft from New Bedford, one boat from Point Judith, and one from Gloucester, which moors in Newport much of the time. In addition, three other craft from New Bedford are serviced on a regular basis during the winter. These craft go elsewhere during the summer, and they are replaced by four craft from North Carolina. These boats come to New England waters each summer and operate from Newport between May and October.

The operation is intentionally restricted in size. Mr. Bucolo could undoubtedly expand; he indicates that he has been approached by fishermen on numerous occasions about landing at his facility, but he limits the operation to a size which he feels is optimal for himself and the craft he services. This is roughly ten large craft on a regular basis, plus some occasional landings which can be fitted into the unloading schedule. By holding his operation to this size and working closely with boat captains in matters of scheduling, he feels he is able to deliver a fresher, higher-quality product to his buyers and reduce the time lost by boat owners while waiting to unload.

Information as precise as that for Anthony's Seafood is unavailable for the Parascandolo operation, but it accounts for roughly 65 percent of the finfish landed in Newport (Olsen and Stevenson, 1975:32). Parascandolo does not handle lobsters, but, in addition to servicing large offshore draggers, lands the fish from Newport's small inshore draggers. Industrial fish, primarily menhaden, are also handled by Parascandolo. Parascandolo services the finfish boats in Newport's indigenous fleet, which is to be expected, since Anthony's Seafood does not. In addition, about five craft from New Bedford and five from Point Judith land fish at Parascandolo's on a relatively regular basis. During the summer, four or five "Southern" boats, hailing from ports in the Carolinas, are also regular customers.

To these regular customers of both firms can be added a remarkable number of transient craft from ports all along the New England and mid-Atlantic coastal regions (see Table 2). The largest portion of these vessels call on Newport during the summer months. The boats from Southern waters come to Newport in pursuit of fish, or, as the dockside expression goes, "to follow the fish," when fishing conditions become unfavorable in their home waters during the summer season. Other craft are transient in the true sense of the term (see Table 4). They stop at Newport because it is convenient as they travel up or down the coast.

As indicated in Tables 2 and 4, a large portion of the non-indigenous fleet landing in Newport comes from nearby New Bedford. Almost equal numbers of craft from Newport and New Bedford land fish in Newport during the course of the year (Table 4). Of course, a large percentage of the boats do not land

⁵Information was graciously supplied by Mr. Anthony Bucolo, of Anthony's Seafood.

at Newport on a regular basis. On a month-to-month basis, the number is typically about half as many New Bedford boats as Newport boats (Table 2). The large number of New Bedford craft landing in Newport can be attributed in part to situations in New Bedford, and in part to the behavior of the dealers in Newport. Most fishermen from New Bedford landing in Newport are dissatisfied with the services of dealers in New Bedford. Very common complaints are that fish frequently "shrink" (short-weighing) a lot when they reach the dock, that dealers take advantage of fishermen by downgrading fish of high quality and consequently pay fishermen a lower price for it, and that price-fixing among dealers occurs. To these general complaints are added a variety of individual complaints. These cover a range of situations in which the fisherman feels he was exploited in some way by a dealer or number of dealers. In contrast, the Newport dealers are generally viewed as reputable men who offer the fishermen an honest, straightforward deal--or at least as men who will not take advantage to the same extent as the dealers do in New Bedford.

It is very difficult to gauge how much the presence of the New Bedford boats in Newport can be attributed to factors "pushing" them out of New Bedford and how much can be attributed to considerations "pulling" them into Newport. Impressions, arrived at from conversations with fishermen and the dealers, suggest that the situation in New Bedford is a very strong impetus for seeking other marketing outlets. The selection of Newport as a marketing location seems to have been influenced partially by geography (it is close and has a good harbor) and partially by the dealers. The dealers in Newport are very conscious of the fact that many of the New Bedford fishermen they deal with are in Newport precisely because they were unhappy with New Bedford. To some extent, this fosters something of a "we try harder" attitude on the part of the dealers. The fishermen have already left one marketing situation because they did not like it, and are going out of their way to utilize another. If it does not have something to offer, why put up with the inconvenience of landing in one port and berthing in another?

Total landings for Newport are dominated by yellowtail flounder. In spite of declining catches in recent years, yellowtail flounder still lead the catch figures by a substantial margin in both poundage and dollar value. Fluke and cod are second and third in poundage. Fluke, because of its higher value per pound, has a far higher dollar value than cod. Blackback flounder, even though lower in poundage, also exceeds cod in dollar value. The summary of landing weights and values in Table 3A underscores the heavy emphasis on bottom-dwelling flatfish, or flounders, as they are classified in Newport landing statistics. As a group, this class of fish exceeds the landed weights of all other classes of marine products. In dollar value, it is the single largest class, but it is closely followed by lobsters, which have a very high per-pound value.

The predominance of flatfish can be understood in terms of past patterns of stock availability and market conditions. Market prices for the various bottom-dwelling species are relatively high and stable. These are the species of high consumer demand. Stocks have also been reasonably abundant until very recently (see Olsen and Stevenson, pages 65-72, for detailed information on the various stocks).

As already noted, this pattern is now beginning to change in response to stock depletion and increasing regulations in the industry. Mr. Parascandolo indicates that diversified catch efforts are a rapidly increasing tendency.

Boats, which used to concentrate on the capture of yellowtail flounder almost exclusively, now pursue a far wider variety of species even on a single fishing trip. A boat will, for example, begin a trip by fishing for fluke, then pursue yellowtail flounder, and finish by taking some cod. This strategy requires movement to several different areas where concentrations of the various species are found, but does allow a profitable voyage while remaining within quota limits.

Mr. Parascandolo attributes the increasingly diversified fishing patterns to the imposition of quotas but also notes the dramatic decline in yellowtail flounder landings over the years. He indicates that after World War II his firm would on occasion handle as much as 100,000 to 150,000 pounds of yellowtail flounder on some exceptional days. Now 4,000 to 5,000 pounds are more typical. The decline in landings for some species of fish, particularly yellowtail flounder, could also be an influential factor stimulating more diversified catch efforts.

Lobster Fishing. Lobstering in Newport is sharply divided between the inshore and offshore fisheries. The inshore fleet is very similar to other small craft inshore lobster fleets along the coast. According to National Marine Fisheries Service figures, the total inshore fleet numbers 71 craft. Roughly half are specialized lobster boats and the remainder are skiffs with outboard motors. The skiff fishermen are basically part-time fishermen, as are some of the men with specialized lobster boats. One fisherman estimated that there are around 30 "serious" inshore lobster fishermen in the Newport area. Twenty of the inshore lobster fishermen (ten lobster boats and ten skiffs) market their catches at Anthony's Seafood. Between 12 and 15 lobster boat owners and a few skiff owners (highly variable throughout the summer) sell to Aquidneck Lobster. The remainder sell to small dealers in other areas. The Tiverton area has several popular small dealers patronized by many of Newport's inshore fishermen.

When asked why they chose to sell to dealers in other areas, several lobster fishermen responded that they got both a better price and better treatment than they would have in Newport. It was their view that the two buyers in Newport were only interested in the offshore fishery. They really did not care about the comparatively quite small inshore production. To the buyers, the fishermen claimed, it is more bother than it is worth, since their operations are geared to offshore boats. As a consequence, they do not encourage and may actually discourage the inshore fishermen.

Inshore lobstering, with the exception of a few die-hards, is very seasonal, running from May through November (see Table 1). All of the skiff fishermen and most of the men with lobster boats discontinue operations during the winter season.

The offshore fleet is the real core of Newport's lobster fishery and accounts for the lion's share of the 1.76 million pounds and \$3.5 million worth of lobsters landed last year (see Tables 3 and 3A). It is the single most valuable species landed at Newport. Anthony's Seafood handles approximately 700,000 pounds annually, with Aquidneck Lobster accounting for roughly one million pounds.

Offshore lobstering did not develop until the 1960s and reached a peak in 1971, pushing Rhode Island lobster landings to 5.4 million pounds. It was during the late 1960s that trap fishing supplanted trawling as the primary capture technique used for exploiting the offshore stocks.

The late 1960s and the early 1970s were "boom" years for the offshore lobster fishery. Production per trap reached an incredible 20 pounds on some trips. Since then, production per trip has dropped sharply. Five pounds per trap would now be a much more realistic average. Total production last year was less than half the 1971 peak (Olsen and Stevenson, page 108, Table 3A).

The reduction in catches has produced some rather dramatic changes in the offshore fishery. When the offshore trap fishery began, around 1969 or 1970, there were between eight and ten boats engaged in it. As one lobster fisherman put it, these were the "corporation boats." The boats were very large, corporately owned craft and profits depended on large catches. When catch levels began to drop off, they went out of business. The optimistic overestimation of the potential productivity of the offshore lobster areas prompted miscalculations about the type of craft which could be profitably employed.

As the large craft went out of business, they were replaced by smaller, owner-operated vessels. These craft are generally in the 50- to 80-foot class, rather than the 100 feet of the early boats, and are capable of operating profitably with a much lower catch level. Today the number of offshore lobster craft in Newport is larger than during the peak production years, but the individual size is substantially smaller. There are currently 19 offshore boats operating from Newport, according to National Marine Fisheries Service figures. The figures presented by the two lobster buyers indicate that 30 boats frequently sell lobsters in Newport.

The production pattern for offshore lobstering is similar to the cycle for the inshore areas. During the winter months, production is at its lowest. Only about ten boats fish through the winter season, the remainder tying up for varying lengths of time. Some brave all but the worst weather during January and February, while others lay off for three or four months. To say the least, offshore lobstering during the middle of the winter is uncomfortable and dangerous. Production is also down during this season. The high prices received do tend to offset the lower production and increased gear losses caused by the rough weather. Without the stimulus of high prices, it is doubtful if anyone would operate during the winter. Peak production comes during the fall, after gradually increasing through the summer. Aquidneck Lobster, as an illustration, handles roughly 25 percent of their total annual volume during the months of September and October.

The marketing of lobsters caught off Newport is predominantly to wholesale outlets in neighboring states. (Some are retailed by both buyers, but this accounts for only a small fraction of the total volume handled.) The market pattern varies in a relatively regular pattern through the year and is generally stable from year to year. New York, Connecticut, and Massachusetts are the states of heaviest demand. Massachusetts, which has its own lobster fishery, tends to present a relatively seasonal demand pattern. During the summer season, its own inshore fishery provides a significant portion of the lobsters consumed. This is also the season in which the huge competitive inshore fishery of Maine is in full swing and making inroads into the markets. The result is a relatively low level of demand for Rhode Island lobsters. During the winter season, the inshore fishery declines dramatically in Massachusetts, with a subsequent increase in demand for lobsters landed by Rhode Island's offshore boats. The markets in Connecticut, New York, and points south are farther from the lobster-producing areas of New England and tend to provide a somewhat more consistent demand.

The Future

As in all of New England, the fishing industry of Newport is facing a period of uncertainty. The late 1970s and early 1980s may, indeed, mark a period of major change for all United States fisheries. The enactment of the 200-mile-limit legislation and impending patterns of regulation in the industry will have influences which cannot yet be anticipated.

Because Newport serves a predominantly offshore fleet, it may be more influenced by changing patterns in the industry than most harbors will be. A very large portion of fishermen landing catches in Newport operate outside the three-mile limit of state-controlled waters. Their efforts are therefore under federal jurisdiction. This makes Newport's fishing industry extremely vulnerable to any hardships (but also potentially a significant recipient of windfalls) caused by regulatory patterns imposed at the federal level. If present indications are an accurate gauge, it will be at the federal level that major regulatory/conservation efforts will be undertaken in the near future. Quotas thus far imposed on some species of groundfish have already stimulated a diversified fishing strategy by some fishermen. It is unlikely that future programs will be less influential.

The pattern of regulation which will be imposed and the consequent impact on the industry are at this point unforeseeable. The policies which will be followed are still far from obvious. In many cases, they are probably still unformulated.

Local trends of influence can be more readily appreciated. Newport is faced with a number of situations which may tend to discourage fishing in the future. The underlying basic problem is competition for available harbor and waterfront space by other interests. During the peak of the pleasure boating season the harbor is very congested, making it difficult for fishing vessels to enter or leave the harbor. Dock facilities are also at a premium. Even in the best of times fishermen have inadequate space for berthing and gear storage and handling. Added to the crowding of the harbor and waterfront is the congestion on the streets and roads caused by tourists. It is very difficult at times to get the trucks hauling fish in and out of the loading dock areas. To say the least, the situation is far from ideal.

Space is at a premium in other ways. Property values along the waterfront under the stimulus of the recreational market have reached incredible levels. Operators of a luxury motel might be able to meet current prices, but for fishermen they are impossible. As the situation now stands, there are only two market locations for finfish and two for lobsters. These locations are all prime waterfront locations of tremendous market value. If they are sold, fishing would effectively be pushed out of Newport. Given the very attractive market situation, Raymond C. Mills, of the Chamber of Commerce, suggests that it will probably be simply a matter of time before the properties will be sold. Sooner or later an offer too good to refuse will come along.

The general direction of the community's development does not bode well for the future of fishing. Neither tourists nor pleasure boaters are typically very enthusiastic about sharing a harbor with commercial fishermen. The stereotypic grizzled old man handlining from a dory is romanticized. The modern steel stern trawler is viewed as a rusty source of odor and noise and as competition for space. The fishing industry is far down on the list of economic inputs to Newport, and probably also on the community's list of

priorities. Fishing does indeed add color to the local scene, but too much color is not desired.

A final factor casting doubt over the future of Newport as a fishing port is the composition of its fleet. A large portion of the craft that market in Newport hail from other ports. If, for example, circumstances changed in their home ports and the boats from New Bedford and Point Judith stopped selling in Newport, both Anthony's Seafood and Parascandolo would suffer devastating reverses. It is the large, non-indigenous vessels which account for a very great portion of the volume of both of these concerns. These craft are not overly attracted to Newport as a home port because it lacks the facilities of ports such as New Bedford.

The indigenous fleet appears to be generally on the decline or at least is not showing signs of great vitality. The small inshore dragger fleet, which numbered around 20 boats immediately after World War II, is now down to eight and may get even smaller. Parascandolo is the only buyer who regularly purchases from these craft. The company is not overly enthusiastic about handling the small boats because they account for only a small portion of the company's volume.

The future of the lobster fleet is equally uncertain. Landings of offshore stocks has not been increasing, and boats are going ever farther to find profitable lobstering areas. If the stocks continue to decline, the fleet will probably begin to shrink as a result. Without the offshore fishery, lobstering in Newport would be a very insignificant industry.

APPENDIX

TABLE I. Fishing Trips Made from Newport, 1977

	<u>Total No. of Trips</u>	<u>Lobster Boats</u>	<u>Other</u>	<u>Floating Fish Trap Tenders</u>	<u>Otter Trawlers</u>
Jan.	126	14	1	-	111
Feb.	130	6	2	-	122
Mar.	161	9	4	-	148
Apr.	206	25	2	25	154
May	301	50	7	54	190
June	328	79	6	34	209
July	289	76	8	22	183
Aug.	332	105	13	26	188
Sept.	279	102	6	24	147
Oct.	227	79	7	24	117
Nov.	222	85	1	14	122
Dec.	160	36	-	-	124
Total	<u>2,761</u>	<u>666</u>	<u>57</u>	<u>223</u>	<u>1,815</u>

Data supplied by William Murphy, National Marine Fisheries Service, Newport, R.I.

TABLE 2. Numbers and Home Ports of Boats Operating from Newport by Month, 1977

Home Port	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Newport, R.I.	17	18	19	29	36	37	40	39	42	33	35	36
New Bedford, Mass.	14	16	19	15	17	14	11	13	13	11	6	7
Point Judith, R.I.	0	4	5	1	3	5	2	5	4	4	4	6
Stonington, Conn.	1	2	2	2	2	2	1	1	2	2	1	1
Long Island, N.Y.	5	5	6	6	3	6	2	3	1	2	1	1
Cape Cod Area	1	0	0	0	2	3	3	3	3	3	1	0
New Jersey	0	2	1	2	4	5	6	6	4	4	1	0
Sakonnet Point, R.I.	0	0	0	0	6	6	7	3	4	4	1	3
Gloucester, Mass.	0	1	1	1	0	0	0	2	1	1	1	1
Bristol, R.I.	1	0	0	0	1	1	1	1	1	1	1	1
North Carolina	0	0	1	0	0	1	1	1	1	1	1	1
Virginia	0	0	1	1	2	0	0	0	0	0	0	0
Unknown	1	0	1	1	2	2	4	2	3	3	2	2
Total	40	52	56	57	77	84	78	79	79	69	55	47

Data supplied by William Murphy, National Marine Fisheries Service, Newport, R.I.

TABLE 3. Landings for Newport, 1974-77

Total Landings		
Year	Pounds (Figures in Thousands)	Value
1974	18,625	6,342
1975	17,088	7,802
1976	21,131	9,614
1977	18,410	9,246
Lobster Landings		
Year	Pounds (Figures in Thousands)	Value
1974	1,550	2,420
1975	1,722	3,052
1976	1,847	3,392
1977	1,765	3,513

Data supplied by William Murphy, National Marine Fisheries Service, Newport, R.I.

TABLE 3A. Landings for Newport, 1977

<u>Species</u>	<u>Pounds</u>	<u>Value</u>
	(Figures in Thousands)	
Cod	2,203	465
Cusk	11	--
Haddock	858	223
Hake, White	57	8
Pollock	206	31
Ocean Perch	27	4
Total Groundfish & Ocean Perch	3,362	731
Flounders:		
Blackback	1,766	627
Dab	276	94
Fluke	2,332	1,188
Grey Sole	143	56
Yellowtail	4,669	2,059
Lemon Sole	223	116
Total Flounders	9,419	4,140
Herring	105	8
Swordfish	22	37
Tuna, Bluefin	1	1
Whiting, Round	402	33
Wolffish	3	--
Lobsters	1,765	3,513
Scallops, Sea	92	142
Squid	391	162
Unclassified	1,872	459
Total Food Fish	17,434	9,226
Industrial Fish		
Menhaden	976	20
Total, All Fish	18,410	9,246

Data supplied by William Murphy, National Marine Fisheries Service,
Newport, R.I.

TABLE 4. Number of Boats Landing in Newport (Totals by Home Port)

<u>1977</u>	
<u>Home Port</u>	<u>Number</u>
Newport, R.I.	49
New Bedford, Mass.	45
Point Judith, R.I.	11
New Jersey	12
Long Island, N.Y.	15
Stonington, Conn.	2
Sakonnet Point, R.I.	8
Cape Cod Area	6
Gloucester, Mass.	3
North Carolina	3
Virginia	2
Bristol, R.I.	1
Unknown	2
Total	164

Note: Of the 164 boats landing in Newport in 1977, only 91 had returned to Newport in 1978 as of October 21, 1978.

Data supplied by William Murphy, National Marine Fisheries Service, Newport, R.I.

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V. STONINGTON, CONNECTICUT

John R. Bort

The port of Stonington, Connecticut, has a fishing industry that is at the geographical and economic margins of southern New England. The port has had a past greater than its present, and its future is in considerable question. John Bort describes the decline in lobstering in the port and the attempts by the fishermen to compensate for the loss through crabbing. The most salient issue raised by Bort, however, is that fishing may be economically possible only as long as major capital expenditures are not required. He contends that there is no accumulation of capital; it is used to keep the commercial fishermen in business.

The town of Stonington includes the villages of Mystic, Pawcatuck, and part of Old Mystic, plus the borough of Stonington.¹ The town was originally incorporated in 1662. It is in the southeast corner of Connecticut, bordered by the towns of North Stonington to the north and New London to the west. Its eastern border is the Pawcatuck River, and Fishers Island Sound forms its southern boundary.

The borough of Stonington, incorporated in 1801, is situated on a point of land roughly one-half mile long, extending southward into Fishers Island Sound. The point on which the borough is situated and Wamphassuck to both the east and west form Stonington Harbor. This is the home of Stonington's fishing fleet.

EARLY HISTORY

Historical information on Stonington before European settlement is available and somewhat complex; only the barest simplification will be attempted here. The Pequot Indians had driven out the Niantic population from the area by the 1630s. Pequot power came to an end in 1637, when much of the population was destroyed by combined forces of European and Narragansett Indians led by Captain John Mason. The first European settler, William Cheseborough, arrived in 1649. He was followed by others the next year, and the development of the Stonington area was underway.

Until the 1650s, the area remained a site of border disputes between Connecticut and Massachusetts. After repeated unsuccessful attempts to have the town recognized by either Connecticut or Massachusetts, the inhabitants actually formed their own "republic." This prompted Massachusetts to accept

¹The historical information for Stonington is drawn primarily from Marshall (1973), who conducted a relatively thorough investigation of available materials.

the area (the Pawcatuck region), which was named Southertown. In 1662, the boundary of Connecticut was moved to the Pawcatuck River in a charter granted to John Winthrop by Charles II. Southertown thus became part of Connecticut. The name was later changed to Stonington (Haynes, 1949:15).

The original center of population was farther inland than it is today, but it gradually shifted to the present location on the point as interests in maritime activities increased. Major population expansion on the point did not begin until the 1750s. By 1774, it had reached "upwards of eight families" (Bailey, 1971:117).

ECONOMIC HISTORY

As in so much of New England, fishing has played a major role in the history of Stonington. Other productive pursuits rose and declined, but the fishing industry, in spite of highly variable fortunes, has remained a part of the local scene throughout the community's history.

The continuity in the fishing industry is partially explainable in terms of Stonington's proximity to productive fishing grounds. Block Island Sound is both productive and close, and once out of the Sound, a variety of other productive areas can be found. Various fisheries have developed and declined for a variety of reasons, ranging from diminishing fish stocks to deteriorating markets. More will be presented on the specific chronology of the fishing industry after a brief look at other general economic trends in the area.

Stonington, like the majority of early colonial settlements, had a predominantly agricultural economy. Wheat and corn were its primary crops for about the first 100 years. This was heavily supplemented by the raising of livestock (cattle, sheep, swine, and horses). The thin, rocky soil was not suitable for agriculture, but the local marsh grasses made excellent forage. Also, livestock offered excellent commercial opportunities during the period of early colonial immigration. On immigrant ships space was at a premium, with very little room for livestock. This prompted a brisk demand for livestock and meat by arriving immigrants.

As the focus of immigration moved to other regions and declined locally, stock raising also declined. By the early 1700s, stiff competition from areas such as Maryland and Pennsylvania had also destroyed the wheat economy of the area. In short, very early in its history Stonington lost out to more favored regions in the areas of cereal grain and livestock production.

In response to these reverses, Stonington's farmers turned to dairying; specifically, cheese production. This proved profitable until after the Civil War, when inexpensive Western beef took over as a cheap source of protein in Eastern markets. The decline of the cheese market prompted the development of vegetable gardens and apple orchards. These pursuits were short-lived because of the rapidly developing and massive competition from New York, the Shenandoah Valley, and the Pacific Northwest.

The history of Stonington's agriculture industry seems to be that of an area forever marginal to an expanding national agricultural system. Agriculture is possible in the area, but for virtually every agricultural product there are other areas better suited to its production. Stonington's farmers were always trying to stay one jump ahead of competition as new areas came into production. It also appears that "factor push" rather than "market

pull" has been primarily responsible for the changes which have occurred. Farmers responded to distress in the existing markets rather than to outstanding potential for new markets or technological breakthroughs (as in the Midwestern wheat industry, which rapidly expanded under the dual stimuli of a high market demand and the introduction of the breaker plow, which facilitated cultivation of tough sods).

The character of Stonington's present-day agricultural industry tends to support this interpretation. The mainstay products are turkeys, broilers, eggs, and milk. In contemporary American agriculture, these are among the most "industrial" forms of agricultural production and are the ones least influenced by environmental circumstances. Fowl are raised in controlled environments on prepared feeds, and mechanization of the operation is the rule. Milk production, virtually all grade A if for sale to the public, is a highly rational business, utilizing animals carefully bred for milk production and fed controlled diets of prepared feeds to insure maximum production. Given the poor quality of the soils and the unsuitability of these soils (extremely rocky) for mechanized agriculture, those are probably the only products that could be profitably pursued in the area. Without a relatively large urban market nearby, even these products would fail to make a profit.

These highly refined agricultural pursuits are today faced with problems because it is difficult to attract a labor force. As it has been aptly put by one local resident, "Who wants to work hard for long hours, seven days a week, with no Social Security, no paid holidays, no pension, no fringe benefits whatsoever?" (Haynes, 1969:8). The area's industry is more attractive to labor than is agriculture. Today, agricultural producers are at a dual disadvantage because of the less than bountiful national endowment of the area and also because of competition in the labor market.

Industry and commerce have been present for almost as long as the area has been settled. Trade and industry in many ways have both been responses to economic possibilities and the lack of other alternatives. As already noted, agriculture has been less than lucrative and has definitely not expanded for a long time. Through time, an ever-increasing proportion of the population has come to depend on commercial and industrial activities for their livelihood.

Coastal shipping was Stonington's earliest non-agricultural activity with the exception of fishing. In 1680, the town launched its first boat. Shipbuilding continued until after World War II. Throughout this long history, craft of almost every conceivable type were constructed. Stonington also became a significant seaport by the 1800s, with a port of entry and a customhouse established in the town in 1842 (Crandall, 1962:100). Along with shipping and shipbuilding, Stonington raised generations of seafarers who manned ships that sailed virtually all the seas of the world. It was possible for a ship to have been built in Stonington, be crewed by men from Stonington, and be owned by citizens of Stonington. In short, a commercial maritime emphasis has been present since the earliest settlement.

In addition to trade, there has been industrial production in Stonington from a very early date. The first water-powered grist mill was established in 1660 on the river north of Stonington. By the 1820s, a well-developed manufacturing base had been established (Palmer, 1913:51). Through the 1800s, a variety of manufacturing interests came and went. These ranged from horse-shoe nail manufacture to firearms and textile machinery. The specific mix of manufacturing concerns varied through time, but the general trend was toward increasing employment in the manufacturing sector. An 1893 survey shows 340

workers employed by only four employers in the town (Haynes, 1949:87). In such a small community, this must have constituted a substantial portion of the available labor force.

The period since the turn of the century, and particularly since World War II, has been one of general loss of indigenous industry. A large portion of the population is still employed in the industrial sector but works in other nearby industrial plants. Several of the largest are the General Dynamics Electric Boat Division in Groton (submarine construction and repair); Pfizer (chemicals), also in Groton; Yardney (electrical equipment) and Cottrell (printing machinery), both in Pawcatuck. Both Groton and Pawcatuck are within comfortable (10 to 20 miles) commuting distance of Stonington.

The exception to this trend has been in the tourist industry. The area has become a fashionable location for wealthy urbanites with summer homes. Their presence in the town creates some jobs in the service and retail sectors of the economy. It has also prompted jumps in property values. As one fisherman acidly put it:

"What does some ---- millionaire care if he pays twice what a house is worth, he has plenty of money. So what if it prices the working man right out of the market? He doesn't care."

The same fisherman also claims that 27 millionaires own houses in the borough of Stonington. The large number of expensive private sailing and motor craft in the harbor underlines the "invasion" of the community.

THE HISTORY OF THE FISHING INDUSTRY

As already noted, fishing has been important to Stonington's economy since its earliest settlement. In the late 1700s, advantage was taken of the bounty provision in the Tariff Act of 1785, designed to encourage fishing. When the bounty was increased from five to ten cents per hundredweight, or barrel of fish, fishing was definitely encouraged. By the 1800s, local fisheries were overshadowed by the wide-ranging whaling ships. In the early 1800s, vessels sought seals in the Antarctic, but this soon gave way to whaling. By 1850, whaling was one of Stonington's principal and most profitable industries (Palmer, 1913:55-59). This of course came to a close with the advent of petroleum products.

Whaling was directly responsible for the introduction of Portuguese into the local population. From early settlement until the 1800s, the population was of a predominant "Yankee" background. Because of alternate occupational possibilities, the long, hard voyages of the whaling ships were far from attractive to many of the local men by the mid-1800s. It therefore became a common practice for whalers to leave port with small crews and sign on a full complement in the Azores or Cape Verde Islands. Some of these islanders returned to Stonington with the ships at the end of the voyage and some settled in the community permanently. Some of today's residents can trace the arrival of their forefathers to specific craft. Marshall (1973:58) identifies 46 percent of a sample survey of Stonington fishermen to be of Portuguese descent. In addition to arrivals on whaling craft, other, later immigrants of Portuguese descent apparently were attracted to the area by jobs in various manufacturing plants. The interrelationships between those attracted by industrial employment opportunities and those arriving as seafarers are not

clear, but if the contemporary pattern is a key to the past, early arrivals often attracted friends and businessmen from the "old country." The current population of fishermen is probably drawn from both groups, and both groups have probably fused ethnically.

The ethnicity of the fishing community has apparently faded in recent decades as the second has given way to the third generation of immigrant stock. Surnames have survived, but except for a few older men, the language has not, with the exception of a few words and phrases. As one older fisherman put it:

"Years ago they [the Portuguese] were a separate bunch, like the Italians in other ports. Now with the younger generation it ain't that way anymore."

By the turn of the century, whaling began to fade, and fishing for cod, haddock, herring, and flounder began to increase in importance. These fisheries were not inactive during the 1800s but definitely did take a back seat to whaling.

Around the turn of the century, small single-masted sloops, usually 30 feet in length or under, predominated in Stonington's fishing fleet. Men handlined from these craft for cod and haddock in much the same manner as had been done for centuries. The introduction of the internal combustion engine rapidly changed this pattern. After 1906 and the development of the gasoline marine engine, changes in equipment and methods occurred rapidly. Trawling replaced handlining as the primary technique used. Diesel engines followed in the 1920s, and boats grew larger and engines more powerful.

Bigger, motorized boats allowed the use of larger, more effective trawling (dragging) gear, and also made feasible the utilization of areas further from home on a more regular and sustained basis. The result was a marked expansion of the poundages landed (Marshall, 1973:63).

The fleet suffered a setback in 1938 when a hurricane destroyed many homes and sunk most of the boats in the harbor. The fleet recovered from this but after World War II began to decline rapidly. The factors contributing to this decline are complex, but the port has suffered because of depleted fish stocks and because of competition from nearby ports such as Point Judith and New Bedford, as well as the foreign fleet. It is also at a disadvantage because it is not as convenient to major fishing grounds as other ports. Stonington has further suffered because its shore facilities have not kept pace with changes in the industry. Dock facilities are not well developed, and few services to fishing craft are offered. By 1961, the fleet was reduced to about 10 draggers and a few lobster boats (Bailey, 1971: 132-135). The situation has not changed much since 1961, as the following inventory will indicate.

Erwin Jacobs, president of the Southern New England Fishermen's Association, Inc., and longtime resident of Stonington, estimates that Stonington had a fleet of 60 boats immediately after World War II. He adds that New London has about 20 and the Noank-Mystic area 10 to 15. In all, there were roughly 100 boats in the area. (Several retired Stonington fishermen agree with these estimates.) Today Stonington has 25, three of which are up for sale. New London today has only a couple, and there are probably only three or four boats in the Noank-Mystic area. The entire area has gone from a major fishing area at the end of World War II to one of minor fishing activity today. The magnitude of the decline is even more apparent

when one considers the fact that lobster fishing at the end of World War II was relatively unimportant. The price of lobsters increased dramatically in the post-war years and the lobster fishing fleet grew in response. Roughly half the boats in the area today are lobster fishing boats. The count indicated by Mr. Jacobs applies to finfishing boats only.

In Mr. Jacobs' view, the people who owned dock facilities in the area at the end of World War II failed to keep up with a changing industry. They clung to the role of packers and shippers of fish, while dock operators in other areas expanded and improved facilities and became involved in fish processing. The factors contributing to the decline of the fishing fleet in the area are definitely more complex than simply an unwillingness to change, but, indeed, change to keep pace with the industry did not occur. Stonington has been passed by, with other ports taking over as leaders of the industry.

THE CONTEMPORARY FISHERIES AND INFRASTRUCTURE

Physical Facilities

The segment of Stonington's harbor serving fishermen today can be viewed while standing in one spot. It consists of two wharves. The municipal sewage treatment plant is located on what was once the site of a rail terminal and steamship pier. Stonington's only fish-handling facilities are located in the same area as is its only marine supply vendor.

The wharf area was purchased by the town of Stonington from its last private owner (Anton Longo) for the development of a sewage plant. In the 1960s, the municipality was under pressure to clean up its discharge of raw sewage, which was being piped into the harbor. This has been done. Almost as a by-product in this process, the municipal pier area was developed to its present form.

The area of the combined sewage treatment plant and harbor facility is relatively spacious. Most of it is paved, giving it the appearance of a parking lot. Berthing facilities are located on both sides of the artificial peninsula formed by a land-filled area. Wooden walkways supported by pilings at the sides of the peninsula form the dock facilities where boats may be tied and cargo transferred.

These harbor facilities are leased by the Southern New England Fishermen's Association, Inc. Leases are negotiated on a five-year basis with options for renewal. The Association has now leased the area for 11 years.

The only other dock facility used is adjacent to the municipal facility and is owned by Peter Lesnewski, who leases it to Sandy's Seafood, the only lobster buyer in town. This dock is not in good condition and is used as a mooring area where fishermen pile lobster traps and work on equipment.

Boats are tied along both sides of the municipal facilities and also along the pier owned by Peter Lesnewski. At best, the present dock area must be considered congested. When all of the boats are tied up, there is no room to spare.

At dockside, there is between ten and twelve feet of water, which is barely adequate for the larger draggers. This shallow draft, combined with the rather rickety condition of the wharves, prompts one boat to tie up at the state pier in New London. The owner sells his catch and also obtains fuel and ice in Stonington. The boat is 90 feet long and the owner feels uncomfortable

about the prospect of exposing it to rough weather conditions in Stonington's harbor. According to Allan Ross, manager of the Stonington Fish Company, several other large boats have considered operating out of Stonington but have opted for other ports because of the shallow draft in the harbor and the condition of the docking facilities.

The Southern New England Fishermen's Association would like to see a part of the dock extended and finger piers (a configuration permitting more berthing space) added. This would alleviate present congestion and, they think, encourage additional boats to use the harbor. This possible set of improvements was in the preliminary planning stage at the time of this study. Local residents hoped that some of the work, assuming funding could be secured, could begin within a year, and officials of the Association were working toward this end.

The actual harbor is spacious and reasonably well protected on three sides, the southern exposure being the exception. Two sea walls afford protection to the exposed south-facing mouth of the harbor, but strong southerly winds can still cause difficulties for boats at the docks. (The proposed dock extension would improve this situation.) In spite of this, the harbor is secure under most conditions. During the winter, ice does form but can be controlled with Coast Guard assistance. It poses no handicaps or significant hazards for the boats in the harbor.

Support Facilities

Support facilities for fishermen are very modest. On the municipal pier there is one small building, and about 50 meters from it at the extreme end of the paved area near the closest street is another small tattered-looking building. The structure on the dock is used by the Stonington Fish Company. The building houses a storage cooler for fish, a small office, and a workroom for sorting and crating fish. Loading docks are located on the side of the building away from the water, and a small ice storage shed, ice-crushing machine, and fuel pumps are located on the wharf nearby. The ice and fuel operations are run by the Southern New England Fishermen's Association.

The use of the building near the street is divided between the Stonington Fish Company, which uses part of it for office facilities, and the Noank Marine Supply Company. The Noank Marine Supply Company is operated by Erwin Jacobs and carries a modest variety of items commonly used by fishermen. Larger items are usually supplied on a special-order basis. Some service work such as welding and gear fabrication is also done on a custom-order basis. More complex repairs and services as well as equipment are supplied from surrounding areas such as Mystic, Newport, Point Judith, and New Bedford. Mr. Jacobs states that the fleet in Stonington is too small to support larger sales or repair facilities. Stonington did have more extensive service operations when the fleet was larger, but as the fleet declined, so did the service sector.

The services provided to lobster fishermen are as modest as those for draggers. As noted, Sandy's Seafood is the only buyer, and leases a dock which is used to unload lobsters and to transfer equipment on and off boats. Beyond purchasing lobsters, Sandy's does not provide services to fishermen. Fuel is obtained from the pumps run by the Southern New England Fishermen's Association, and lobster bait is secured on an individual basis. A very large portion of it comes from the draggers operating from Stonington.

Marketing

Just as Sandy's Seafood is the only buyer for lobster, the Stonington Fish Company is the only concern in Stonington which buys fish and scallops. The company is a division of Golden Eye Corporation, which has interests in other areas and other aspects of the fishing industry. These include fillet and frozen fish facilities in New Bedford, lobster interests in Sandwich, Fair Haven, and Vineyard Haven, and a wholesale distribution system in Boston, New York, Philadelphia, and Connecticut. The operation in Stonington is not an isolated concern but is under the primary operating control of the local manager (Allan Ross).

The firm has a use agreement for the facilities with the Southern New England Fishermen's Association, which holds the lease with the town for the use of the dock, as already described. The Stonington Fish Company pays the Association a certain amount, which varies during the year, per pound of fish landed. The arrangement works in such a way that the greater the value and volume of fish handled, the larger the payment. It also avoids penalizing the company during the low-volume periods of the year, since amount of payment is tied to the size of the landings. As already noted, fuel and ice are handled by the Association, which hires a man to attend to these services. Prior to the establishment of the Golden Eye operation in Stonington three years ago, the individual fishermen made their own arrangements for the shipping and sale of their catches. This haphazard method was apparently less than satisfactory. In the opinion of at least one fisherman:

"Having them [the Stonington Fish Company] come in is one of the best things that has happened here recently."

Fishermen indicate that the price of fish (the major species at least) are tied to the prices at the New Bedford market and are consistently three cents per pound lower than at New Bedford to cover shipping costs. The price paid is determined by the New Bedford price the day after the fish are landed.

This leads to some interesting marketing strategies on the part of fishermen on occasion, because at Point Judith or Newport, which are close enough to be reasonable alternatives as sales locations, the price paid is based on the New Bedford price the day the fish are unloaded. At times, fishermen may sell at Point Judith if they feel the New Bedford price is going to drop significantly the following day. This is not a terribly frequent occurrence but one that occurs frequently enough for fishermen to comment on it. By far the most common practice is to market fish to the Stonington Fish Company.

As Allan Ross, the manager, put it, the Stonington Fish Company acts as a shipping and marketing agent for fishermen. No formal agreements exist between fishermen and the company, so fishermen are free to land fish in Stonington or elsewhere as they please. Because of the freedom of choice, Mr. Ross feels, his company must try to find the best markets available for fish. This is its central role. Using connections available through his firm, he tries to find markets for any species and quantities fishermen care to land. He, of course, arranges the details of handling and shipment as a routine part of the operation.

Mr. Ross estimates the volume of fish handled during a year to be around one and a half million pounds. The vast majority of this volume is landed by commercial fishermen. Sport fishermen do account for about 5,000 pounds

annually, mostly striped bass and bluefish, which is rather insignificant when viewed in the context of the overall operation. The Stonington operation is strictly a packing and shipping arrangement. According to Mr. Ross, the volume of fish landed is not presently large enough to warrant the cost of establishing processing facilities.

Fish landed at Stonington find their way to a variety of markets, depending on prices being offered and the quantities of fish being landed. Typically, striped bass, squid, whiting, bluefish, and any other minor catches find their way to the Fulton Fish Market in New York. Blackback and yellowtail flounders account for the largest segment of total landings and form the backbone of Stonington's fisheries. These species usually go to either Point Judith or New Bedford. The destination of the fish is of course partially determined by the price being offered by the various buyers. The volume of fish being shipped is also a major consideration. In general, if the quantity is small, Point Judith would be the probable destination for flounders. Larger quantities tend to go to New Bedford. Also, the larger the quantity being landed, the greater the feasible shipping distance. For example, it might be possible to profitably ship an entire truckload of whiting to Baltimore but not five to six boxes.

The annual pattern of landings goes through a relatively regular cycle, with the volumes and species of fish being landed changing in a predictable fashion. Specific poundage figures are unavailable, but the heaviest landings occur in the early spring and the lowest during the late summer and early fall. As noted, yellowtail and blackback flounders are the most important species landed, with blackbacks second. This is due partially to their availability in the area and partially to the relatively high and stable prices received for these species. As is true throughout most of southern New England, landings of yellowtail flounder have declined in recent years.

The following listing indicates the most important species during various times of the year:

Jan.-March: yellowtails, cod, and other flounders
 April-June: blackbacks
 July-Sept.: flounder, fluke, whiting
 (relatively slack period)
 Oct.-Dec.: scup, flounder

Mr. Ross indicates that future plans for the Golden Eye operation depend on future landings. He would personally like nothing better than to expand the volume of fish landed and develop processing capacities if the volume warranted it. He claims he would be willing to try to develop markets in any way possible. For example, a new marketing strategy based on close coordination between Mr. Ross (or any other manager) and the fishermen is presently being worked out. Whiting are a low-value fish, so it is necessary to catch the market at favorable times to be profitable. Whiting are also a highly perishable fish, so it is essential to coordinate movement from dockside to processing locations. A pattern of coordination has been worked out in which a boat captain who secures a large quantity of whiting will contact Mr. Ross by VHF radio, advising him of the catch before anything is done with it. Within ten to fifteen minutes, Mr. Ross can return the call after contacting buyers to ascertain market potential and advise the captain of the market situation. The captain can then decide if it is worth bringing

in the catch. If the decision is made to bring in a large catch of whiting, Mr. Ross will then arrange to have trucks waiting to carry them to market when the boat arrives at the dock. By closely coordinating efforts, it is possible to derive a profit when it would not otherwise be possible. It also minimizes the potential risk to the individual fishermen. Without such arrangements, bringing in a large catch of whiting means taking a chance that the market will be good enough to warrant the effort.

The marketing situation for lobsters in Stonington is less involved than that for finfish. Lobster fishermen sell their catches to Sandy's Seafood, which handles about 50,000 pounds per year, receiving the current "boat price." The boat price is somewhat below wholesale and tends to be very uniform between buyers in an area. Price differentials encouraging shifting between buyers are quite rare. There are a couple of seafood concerns in Noank which will buy lobsters, and apparently lobster fishermen will occasionally sell to one of them. This apparently infrequent practice occurs for individual personal reasons.

As for most of the New England coast, the price paid for lobsters varies in a relatively regular manner through the course of the year. The price is lowest during the summer, when landings are highest, and highest in late winter, when landings are very low and the stocks built up in lobster pounds throughout New England and the Atlantic provinces of Canada have been sold out. In general, the boat price of lobsters in southern New England tends to be somewhat higher than the price in northern New England and Canada. This is a reflection of the lower shipping costs to the nearby urban markets.

Sandy's Seafood has circulating seawater storage tanks for holding the lobsters purchased. In addition to dealing in lobsters, Sandy's is also a retail seafood market. Some lobsters are therefore retailed here. The remainder are wholesaled to buyers, who eventually distribute them to a variety of markets. Some will find their way into national and international distribution channels, but the majority will go to consumers along the East Coast.

Lobstering in Stonington has declined drastically in the past decade. The decline has been particularly pronounced in the past three to four years. One lobster fisherman summed it up when he said that in 1978 he managed to catch the same poundage of lobsters with 800 traps as he did with 150 traps eight years ago, when he began lobstering. The fact that three lobster boats are presently for sale is also mute testimony to the decline of the lobster population.

The reasons for the decline of lobstering in the area are unknown. Fishermen's views range from blaming the decline on overfishing to attributing it to a natural "cycle" of population increase and decline. The "cycle" theory is based on the idea of a westward migration of lobsters. As part of a natural movement pattern, lobsters are thought to migrate from east to west (northern New England and Canada toward southern New England). Heavy migrations accounted for the abundance of lobsters in the area up until about ten years ago. Since then, migration and, consequently, catches have declined.

Whatever the reason for the decline of the lobster population, it has stimulated the development of a small-scale crab fishery. About a year ago, one of the lobster fishermen, in partnership with another individual who manages the trucking, developed an outlet for rock crabs in Long Island. Crabs are unloaded from lobster boats directly into waiting trucks for

shipment to New York. The catch is handled over the municipal docks and a use fee is paid for the privilege.

At present, only three boats are crabbing, and the prospect of expansion is unlikely. The fisherman who is primarily responsible for the operation says that the buyer in New York is taking about all the crabs he can process and market, so further expansion would require additional markets, which do not exist. He further adds that the only reason the present operation is possible at all is because of the abundance of the crabs; since the crabs are low in value, a large volume is necessary to make the operation profitable. A final factor making the operation feasible is that fishermen can pursue crabs with equipment designed primarily for lobster fishing.² It would not be practical if equipment had to be assembled specifically for crab fishing.

The continuation of the present operation is in doubt. It is only marginally profitable. The organizer says that the reasons he started it in the first place was to take up some of the slack created by a declining lobster industry. If lobster catches decline even more or if crabs begin to decline in abundance, the profitability of the combined operations would be seriously jeopardized. Increasing costs for equipment and supplies relative to returns for products could have the same effect. In general, the costs of equipment and supplies have been increasing more rapidly than the price of lobsters and crabs in the past several years.

Fleet Composition

Stonington's fleet can be logically subdivided in terms of the types of fishing in which the boats are engaged, as indicated by the following listing:

<u>Boats Selling Catches in Stonington*</u>	<u>Number</u>	<u>Average (length in ft.)</u>	<u>Range (ft.)</u>
Lobster boats (inshore day trips)	10	35.6	30-40
Lobster boats (offshore extended trips)	1	50	—
Small draggers**	3	39.3	38-40
Large draggers	9	58.5	52-72
Scallop dredgers	1	90	—
	24	48.3	30-72

*Not all of the boats selling catches in Stonington are berthed there; one scallop dredger is moored in New London, one small dragger in Noank.

**"Small dragger" is here defined as a craft under 50 feet in length, suitable for making day trips. The small draggers operating from Stonington were originally employed as inshore lobster fishing boats and have been converted for dragging. In contrast, the category "large dragger" applies to boats capable of extended offshore trips and are relatively seaworthy craft.

²The crab fishing operations are strictly a supplemental activity and could not exist without lobstering. For small increments of investment in equipment, fuel, and labor, it is possible to capture crabs. Strings of crab and lobster pots are set in the same general areas, so the time and fuel invested in the capture of crabs is minimized.

The divisions listed above also reflect differences in crew composition on the various boats. Inshore lobster boats carry one or two men as do the small draggers. These craft are also in port every night. The large draggers vary somewhat in crew size but usually have four or five men. They also frequently spend the night at sea, and may stay out for a week or more if fishing conditions and weather warrant it. While the 90-foot scallop dredger is capable of extended long-distance voyages, it varies the duration of trips, depending on weather conditions and the availability of scallops. The offshore lobster boat makes trips requiring two nights at sea.

The most striking characteristic of Stonington's fleet is the predominance of wooden craft. The offshore lobster boat is made of steel and several of the inshore lobster boats are of fiberglass construction. Wooden inshore lobster boats are not unusual in New England. Fiberglass construction has become increasingly competitive in recent years, but wood construction is still very common. Many builders of wooden craft are still in operation along the New England coast.

Larger craft, in contrast, have tended to be of steel construction in recent years. The preponderance of wooden construction therefore tends to suggest a relatively old fleet. A quick sample of five large draggers confirms this. Of the five, the newest craft is 19 years old and the oldest 37. The average age is 31.

Needless to say, these old craft are generally well maintained. If they were not, they would have been on the bottom long ago. Even so, the fleet is old; much of it was built either before or shortly after World War II, when New England shipyards were still in operation. The yards have since closed, and the emphasis of the shipbuilding industry has shifted to Southern states, while steel has become the predominant construction material. Along with all these changes have come increasing costs for boats, particularly in recent years. Boat construction is still primarily a custom-work proposition, and as is true for most individually tailored items, production costs have increased dramatically in recent years.

Regardless of the factors involved, replacement of a boat is becoming increasingly expensive. The implications of a trend for an aging fleet such as Stonington's are ominous, and confirmed by at least two of the present large dragger owners. Both flatly state that they are operating the last boats they will own. Both hasten to add that they hope their boats will last for the duration of their careers, but if they do not, they will be unable to afford to replace them. Replacement funds are not being calculated in the costs of operations. No data are available to gauge the status of the various fishing operations, but it is distinctly possible that many of the Stonington owners are not making provisions for the replacement of craft. Fishing is sufficiently remunerative to warrant continued operation as long as major capital expenditures are not required. In effect, capital is being gradually consumed in order to remain in the business. For a capital good such as a boat with a long lifespan, the process is not obvious and the pattern may persist for many years, but eventually the day of reckoning must come. Indirect evidence, such as the decline of the fleet since World War II and the rather poorly developed and static state of facilities in Stonington, tends to support this view.

The Fishermen

A detailed examination of the population of fishermen in Stonington is beyond the purpose of this brief survey of the area. Such treatments are provided by Marshall (1973) and Gersuny et al. (1975), based on detailed information collected in 1971 and 1972. In general, this information still pertains. Slight changes have occurred, but the basic features remain the same.

The most notable changes can easily be explained in terms of major trends or considered as unique cases. For example, the fact that inshore lobster boats are up for sale can be accounted for by the declining lobster population. The scalloper and the offshore lobster boat were not present during Marshall's survey. In both cases, the choice of Stonington as a harbor can be attributed to individual circumstances. Both owners live considerable distances away, and Stonington is the nearest port with suitable support facilities. The fact of the remarkable degree of stability in the fleet is probably the most significant feature of the port in general, indicating a relatively static situation.

In general, the fishing population of Stonington does not seem to be remarkable. Probably its most outstanding feature is that the vast majority reside in the local area, as the following listing indicates. The same basic pattern applies to crews.

<u>Captain's Residence*</u>	<u>Number</u>
Stonington	10
North Stonington	2
Pawtucket	7
Westerly	2
Noank	1
Clinton	1
West Haven	1

*All of these locations with the exception of Clinton and West Haven are relatively near. (Data from a survey done in October 1978 by the author.)

The general character of the harbor area in Stonington tends to suggest a small town of rural orientation. The fishermen know each other very well. The small size of the harbor area and the small number of people involved facilitates frequent interpersonal interaction. The most obvious manifestation of this is a perennial card game in the Noank Marine Supply Company building. Men come and go throughout the day, playing a few hands and discussing the latest news. Less obvious are frequent brief meetings on the docks as boats load and unload cargo. There are many other opportunities to converse, which are taken advantage of, and thus an intense level of interaction is maintained.

The intensity of interaction among local fishermen is such that any stranger is immediately recognized as such on the dock, and after a single day in the area the fact of a researcher's presence is commonly known, as is the basic character of the types of questions he is asking. The grapevine works very rapidly indeed!

The close-knit character of the harbor is probably more characteristic of the relatively small rural harbors of Maine than the large urban ports of southern New England. More precisely, it may be a reflection of size differences. In a large, busy harbor, it is difficult to become personally acquainted with everyone and even more difficult to sustain such acquaintances on a day-to-day basis. This is not true in a small harbor.

THE FUTURE

In all probability, the future of Stonington's fisheries will be directed by forces far removed from the community and beyond its effective control. Most men in the fishing industry of New England are waiting to see what will happen in the near future. Since the passage of the 200-mile bill, uncertainty and confusion have proliferated, particularly since the fall of 1977, when the National Marine Fisheries Service instituted catch quotas. For most fishermen, there is the realization that the day of catch restriction has arrived. In Stonington, as elsewhere, uncertainty of what this will mean is the rule. Conservation of fish stocks is generally viewed as a desirable goal for very pragmatic reasons. Fishermen need fish to stay in business. The concern of fishermen is focused on how conservation is to be effected. Specifically, they wonder if such efforts will have an adverse impact on their operations.

The form conservation measures take could be a major consideration in the future of Stonington's fleet. If regulatory patterns tend to encourage the use of large craft, Stonington could suffer as a result. Bigger ships with enhanced offshore capacities may be a direction in which the industry will tend to move, because foreign competition for offshore stocks has been reduced. If this becomes the trend, the attractiveness of Stonington to fishermen could be reduced. As already noted, Stonington's harbor has a shallow draft. Craft much larger than those already in use would find it unsatisfactory. Another factor is the lack of elaborate cargo-handling facilities. Stonington is not presently equipped to handle large quantities of fish rapidly. To this can be added the lack of berthing space for larger craft.

These potential handicaps can be overcome. Dredging could provide more draft, and additional facilities could be constructed. In and of themselves these are not permanent impediments. The telling considerations may be geographic and sociopolitical. Stonington is not conveniently located to major offshore fishing areas compared to other ports. The additional travel time and consequent costs required to reach offshore areas could discourage operation from Stonington. Stonington is also an area of extensive vacation and retirement home development. Individuals interested in vacationing or retiring in the area enjoy the history and the picturesque setting of Stonington but are not overly appreciative of contemporary fishing operations. Factors such as the possible odor of an expanded commercial wharf and competition for space between commercial and pleasure craft could prompt resistance to any plans for expansion from this segment of the population.

Finally, the potential development of additional facilities in Stonington will hinge on what happens in other ports. Funds for development will have to come from sources other than the fishermen and probably other than local government. This means that the harbor will have to compete for funds at the

state and federal level. Other ports along the New England coast, many larger and more closely located to major fishing grounds, are also in need of improvements. Given limited funds, political complexities, and still undelineated state and federal priorities, the question of how Stonington will fare is unanswerable at the present time.

APPENDIX

Selected Summary Data from Interviews with Seven Stonington Captains Conducted in October 1978

Captains

Age

mean 40.4 range 24-53 years

Education

mean 11.7 range 10-14 years

Place of Birth

Stonington, Conn.	2
Westerly, R.I.	2
Mystic, Conn.	1
Hartford, Conn.	1
Boston, Mass.	1

Father's Occupation

fisherman	2
truck driver	1
bricklayer	1
rigger (shipyard)	1
career Navy	1
school custodian	1

Place of Residence

Stonington, Conn.	3
N. Stonington	1
Pawcatuck, R.I.	3
Westerly, R.I.	1

Jobs Held Other Than Fishing

none	2
rigger (shipyard)	2
welder	1
heavy equipment operator	1
truck driver/painter	1

Types of Fishing Done

dragging	2
dragging/lobstering	2
dragging/swordfishing	1
dragging/lobstering/tuna seining	1
dragging/lobstering/swordfishing	1

Crews

Age

mean 42.3 range 17-51 years

Number of Years with Boat

<u>No. of Individuals</u>	<u>No. of Years</u>
7	1
0	1
2	2
4	3

Crew Size (including captain)

<u>No. in Crew</u>	<u>No. in Sample</u>
5-6	1
4	1
3	3
2	0
1	2

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SMALL FISHING PORTS: SOME CONCLUDING OBSERVATIONS

Although each small fishing port in our sample has its own idiosyncratic characteristics, which we have emphasized in our chapter introductions, the small fishing ports of southern New England appear to be characterized by a single common denominator. That is, we find throughout our sample a conflict between the commercial fishery and the tourist and recreational uses of the sea. These small ports, most of which are "quaintly historical settlements," are attractive loci of summer recreational activities because of their physical beauty and their tempered summer weather conditions. Because of this, tourists and recreational activities add much more to the local economy during the summer months than does fishing. This factor has tended to restrict the development of commercial fishing.

Tourist and recreational activities, however, are not the only factors which have inhibited the expansion of commercial fishing activities in some of these ports. For example, Newburyport and Chatham suffer from limitations due to the natural characteristics of their harbors. Newport, blessed with an excellent harbor, was cut off from major fish markets because of its insular location, being bypassed until recently by major rail and highway routes. By the time adequate transportation linkages were established, tourism and other economic activities had gained a stronghold on the available harbor capabilities. On the other hand, Stonington has suffered because of its distance to the fishing grounds and its proximity to the more highly differentiated port of Point Judith. Westport in the same way has suffered from its proximity to the highly differentiated and developed port of New Bedford.

We also see that each of the ports in our sample contains a different "mix" of fishing strategies, which to a certain extent are dependent on both the local physical and sociocultural environment. These small port fisheries seem to occupy the "ecological niches" left over from the activities of the larger, more industrial ports of the region. In this respect, they serve an important function. For example, Chatham is a place where individuals seeking a highly independent, less intensive style of fishing can carry out their activities. Newport, on the other hand, provides a convenient marketplace for large vessels from other ports which are seeking alternative buyers. It also provides for a good share of the seafood consumed in the gourmet restaurants in the city.

In sum, we may say that the numerous small fishing ports in southern New England provide a kind of "backup" for the industry as a whole. First, as the cost of transportation becomes increasingly prohibitive, they can provide sources of fish for local markets. Second, as the cost of energy reduces the economic efficiency of energy-intensive fishing techniques, low-energy models such as those provided by the jiggers and longliners of Chatham and the trap fishing of Newport are available for use. Third, these diverse ports provide the individual fisherman with a greater opportunity to find a port which satisfies his particular preference for a life-style. Finally, the small-scale fishing port often complements tourist activities by providing fresh seafood products and a certain quaintness that is attractive to visitors and summer residents alike.

