

LOAN COPY ONLY

**SOCIAL IMPACT ASSESSMENT
OF AMENDMENT #5 TO THE NORTHEAST
MULTISPECIES FISHERY MANAGEMENT PLAN:
INTERIM REPORT--MAY, 1993**

Madeleine Hall-Arber, Ph.D.

MITSG 93-25

CIRCULATING COPY

Sea Grant College Program
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139

Grant No: NA90AA-D-SG424

Project No: 92-A-3

~~REG~~ # 3

Related MIT Sea Grant College Program Publications

Survey of Massachusetts fisheries program. Hall-Arber, Madeleine. MITSG 83-26. free.

Conference proceedings--gear selectivity as a management tool. Goudey, Clifford A., Cathryn E. Paterson and Thecla J. Ree, editors. MITSG 86-18. \$5.

Please add \$1 for shipping/handling and mail your check to :
MIT Sea Grant College Program, 292 Main Street, E38-300, Cambridge, MA 02139.

May, 1993

The Human Environment



Social and Cultural Aspects of New England's Fishing Industry

One need only look at the geography of the New England region to make some educated guesses about the fishing industry and the differences that have developed among the various ports. The convoluted coastline of Maine with its plethora of islands, its rocky land and the wealth of the sea life makes it obvious why fishing was a fitting and natural industry to promote since the days of the first settlers.

The richness of sea life is not unique to Maine, of course. The Gulf of Maine, and the Massachusetts, Cape Cod and Narragansett Bays have always been noted for their great biomass of fish, whales and other sea life. Fishing has been a natural and fitting occupation along the entire New England coast.

One should take a step away from the shoreline, however, and consider why and where population centers have developed, how the transportation networks connect the population centers, what the migration patterns of humans and fish have been; even consider the weather, technological development and the ascendancy of other occupations, to gain a better picture of what the New England fishing industry looks like in all its variety.

Management has also affected the way the industry has developed. Before the Magnuson Act extended federal jurisdiction to 200 miles, management in the prime fishing grounds off New England was the responsibility of the International Commission for the Northwest Atlantic Fisheries (ICNAF). The perceived lack of control over foreign fishing led the United States government to establish various programs to aid domestic fishermen (Peterson and Smith:1981).

Among these were programs to supplement vessel construction, loan and marketing programs, development and small business grants, underutilized species development programs, gear research programs and representation on international fishery delegations (Peterson and Smith:1981). Some observers suggest that these aid programs continued too long, causing an inflation of the domestic fleet, and are ultimately responsible for the diminishment of stocks.

Margaret Dewar (1983) suggests that the effort of government to help any troubled industry is rarely successful for a variety of reasons: the nature of the problems is not clear, solutions do not address problems appropriately, no one seriously intended the programs to help, and/or implementation problems often arise. All of these arise in the case of fisheries.

Urban vs rural

Many of the differences among fishing ports can be attributed to differences associated with urban centers and rural areas.

Vessel size and gear shifting:

The urban centers tend to attract large (over 60 feet long) fishing vessels that take 5- to 10-day trips out to fishing grounds on Georges Bank, return to port for 2 or 3 day layovers, load up on fuel and provisions, visit families, perform maintenance work on engines, and return to the fishing grounds. These large vessels tend to maintain one type of gear and concentrate on a few species. As fish has become scarce, some report that trips have lengthened by two to four days and layovers are briefer. Ownership varies. Many are owner-operated, but fleets of two or three large vessels operated by hired captains are not uncommon, and in some ports, fleets of up to seven boats are found.

The rural areas, in contrast, have multitudes of relatively small (under 55 or 60 feet), owner-operated fishing vessels. In the northern part of the region, the small vessels usually take long, but single day trips, leaving in the early hours before dawn and returning in the late afternoon or early evening. These boats fish as close to shore as they productively can, traditionally within 20 miles of shore though the declines in desirable stocks are forcing them farther and farther out. (Peterson and Smith, 1981). The small vessels are often opportunistic, frequently shifting gear and fishing grounds to try to capitalize on availability and price changes. Dewar (1983:24) points out that weather, prices and fish behavior make gear switching a necessity on inshore boats, whereas offshore boats rarely switch gear because of the expense of the conversion.

In some areas, the shifting is seasonal. For example, in Maine, a number of small boats gillnet in the summer and longline in the winter. Other small vessels go lobstering in the summer, while longlining or scalloping, urchining or shrimping in the winter. The choices are very personal, everyone seems to have developed an affinity for one or another type of fishing. Start-up costs and experience also affect the choices. Fishermen may be limited to particular species by their knowledge and/or by compatibility with their gear.

In other areas, the shifting occurs within the same trip. Point Judith boats often seek yellowtail flounder, but if they hear of a school of whiting, they may switch nets to "top off" their trip. The versatility of the fishermen contributes to their self-esteem as well as to the benefit of their "bottom-line."

Differences in gear can play havoc with equitable management and contributes to some conflict among users of different gear making consensus difficult to achieve. Gillnetters, for example, claim to be victims, draggers purposefully go through their gear; while draggers complain that the gillnet users usurp bottom that was traditionally available to draggers. Everyone claims that theirs is a "better gear." Gillnetters point out that they don't require bait, they are size selective, use less fuel and don't tear up the bottom. Longliners say their gear does not affect bottom and is selective. Both deride draggers for pounding the bottom with their heavy doors leaving nowhere for fish to hide. Draggers complain about ghost nets fishing and lost lines and hooks fouling the bottom.

Marketing:

Marketing arrangements vary in both urban and rural areas. Urban centers are of course more apt to have a wider variety of options for marketing. Notably, the most active auctions are held in Portland (Maine), Boston and New Bedford (Massachusetts). In other areas there

are a variety of dealers and trucking options. In some cases there are fishermen's cooperatives and labor unions that affect how fish is handled. Each place has a reputation and associated pros and cons for an individual fisherman.

For example, the Portland display auction appeals to fishermen who want to emphasize quality. The auction also has a reputation for honesty (fair scales and no stealing by employees), but since the catch has to be physically present, there are extra handling costs and a broker is needed if the fisherman doesn't want to spend the time actually selling the fish. New Bedford, on the other hand, has a reputation for a lot of wheeling and dealing and diverting of fish. Moreover, a few processors, the legitimacy of whose operations a few fishermen question, are said to control the waterfront. Yet prices are so high that New Bedford is the number one port in the nation in value of catch.¹ Scallop and yellowtail flounder fishermen naturally benefit from the prices, even if they lose some of their catch in the process.

Where there is a publicly-owned pier, the fishermen are more apt to be free to select a dealer based on price and/or fair-dealing. Where the waterfront is privately-owned, the fishermen is likely to be forced to sell to a particular dealer who in turn provides the fisherman with ice, fuel, bait, and/or credit, in addition to a place to tie-up to unload and/or work on the boat.

Long term relationships with a particular dealer can work to the fishermen's advantage, making their catch the first bought and sold in a soft market, when others without such a relationship have to scramble for buyers and a decent price.² Nevertheless, it is clear that fishermen everywhere face constraints imposed by the harvest of a highly perishable product with wide daily fluctuations in supply and demand, a circumstance that seems to give dealers a wider range of options than it does fishermen.

Marketing naturally affects decisions about the species being sought. Price, availability of the species (to be caught) and proximity to an appropriate market all figure in the decision-making.

In rural areas, the distances to market can be great so prices often reflect the higher transportation costs. Some of the vessels attempt to develop local markets, selling to fish markets and restaurants, particularly in tourist areas, to avoid the problem.

Demographic issues

Education:

Many fishermen started going out in summers with their father or another relative while still in high school. In the generations now at middle-age or nearing retirement, it was not uncommon to quit school as soon as legally possible to go fishing full-time. As fishermen became more sophisticated, that is, as the boats became more capital-intensive and fishing more technically complex, more fishermen completed high school before going full-time. Now most ports boast at least a few college-educated captain/owners.

¹ It should be noted, though, that the value of the New Bedford landings is principally due to the high quantities of scallops and yellowtail flounder, both of which receive high prices. Other groundfish prices tend to be lower than those offered in Boston and Portland.

² Wilson (1980) notes that failure to establish long term relationships with dealers can be detrimental to fishermen.

Nevertheless, the majority of active fishermen are not formally well-educated, but rather are educated "in the school of hard knocks," as one man put it. Consequently, fishermen would generally be at a disadvantage in competition for alternative occupations. When Peterson and Smith (1981) did their research, they found no correlation between education and income from fishing. In other words, lack of formal education did not interfere with making a good living from fishing.

Ethnicity:

Gloucester and New Bedford are the two large ports with strong ethnic affiliations among their fishing populations.³ Probably 80 percent of Gloucester's fishermen are Italian. Although large immigration flows ended in the mid-1970's, there are at least 26 vessels on which only Italian is spoken. Even among the fishermen who arrived at a very young age, Italian is often the first and virtually only language spoken. Some of these men depend on their wives to communicate with the English-speaking population when necessary.

New Bedford has a large Portuguese-dominated offshore dragger fleet and a significant number of Norwegians among their fishermen, particularly captaining scallopers. Among the smaller ports, Provincetown is notable for its Portuguese fleet, although the majority are third- or even fourth-generation by now (Husing, 1980).

The ethnic affiliation is significant primarily because it links the fishermen of these populations through time with fishing communities in Italy, Portugal and the Azores, and Norway. This historical perspective permeates the community and affects the way not only fishing, but all aspects of life are organized. Although individual do not all adhere to the same behavior, as a group, particularly in the Portuguese and Italian communities, choices made regarding education, occupation, marriage, leisure time, etc. reflect the sense of continuity and identification with their ethnic heritage. It's tradition!

In contrast to the offshore dragger fleets, small boat fishing in Gloucester and New Bedford is dominated by those who are usually referred to as "Yankees," those from a mixed ethnic heritage, most of whom come from several generations born in the United States or Canada (Peterson and Smith, 1981:12).

The ethnic affiliations cause the fishing communities in these large population centers to mimic aspects of life in rural communities. For example, it is still as common to find relatives fishing with relatives on Gloucester boats as it is in Stonington, Maine. One of the consequences of this is that when a boat is "put out of business," for whatever reason, an extended family may be affected and there may be fewer relatives with jobs outside the fishing industry that can support those affected.⁴

Along the same lines, many fishermen rely on a pooling of family resources for their initial vessel purchase and for upgrades. This "implies a more resilient ability to endure revenue fluctuations than normal business borrowers, but also implies capital will be slow to leave the industry following a more permanent downturn" (Doeringer et al., 1986:47).

³ See Miller, Marc and Van Maneen's *Boats Don't Fish, People Do* (1979) and Poggie and Richard Pollnac's (1980) for more discussion of ethnicity in these ports.

⁴ The "extended family" includes grandparents, uncles and aunts, nieces and nephews and cousins, "extending" relationships beyond the nuclear family of parents and children. When anthropologists refer to an extended family, we are often interested in those relatives who participate in an exchange of goods and/or services, especially in times of need.

The ethnic differences may also exacerbate problems in attempts to create a unified approach to management among fishermen.

Aside from Gloucester, New Bedford and Provincetown, the majority of ports in New England boast a mixture typical of any New England town. Stonington, Maine, has predominantly a "Yankee" fleet including a number of fishermen of French-Canadian extraction.

Owner-operators

Typically, groundfishing requires a variety of skills from crew members ranging from sorting fish according to species and size, to judging quantities for boxing, to setting and retrieving gear, net-mending, etc. Even more specialized skills such as engine, hydraulics and electrical system repairs are handy. In addition, captains must be able to locate productive grounds and avoid hangs (obstructions that can cause net damage) (Doeringer et al., 1986:66).

Normally, boys start out fishing on a relative's boat for a half-share in summertime while still in school. Those who are interested can learn many skills by watching and asking questions of other crewmembers. The actual operation of the vessel is directed from the pilothouse, however, and the knowledge of navigation and fishing ground location was once a closely guarded secret, controlled by the captain (Also noted by Doeringer et al., 1986:40). Logbooks with hangs and catch notations were often a prized possession handed down from father to son (or between other close relatives).

Though operational issues are still significant and sons can certainly gain an advantage if they are able to obtain historical catch information from their captain-fathers, recent technological advances have made it much easier to navigate and to return precisely to the desired grounds.⁵ Nevertheless, it may be easier for sons of captain-owners to eventually become captain-owners than it is for sons of crewmembers to become captain-owners. (Financial considerations may also play a role in that captain-owners may be in a better position to help their son finance the purchase of their vessel, or may pass the boat on as a part of their son's inheritance.)

Community dependence on fishing:

In many of the rural ports fishing and related businesses provide the main source of income for a majority of the population. Property taxes on fishermen's houses support the schools, mortgages on boats provide income for banks. Fuel companies, ice companies, trucking firms, dealers and processing firms are often community members as well. Although insurance companies, net manufacturers and electronics firms are more often based outside of fishing communities, their agents or dealers often live in the communities.

⁵ There is a literature on "skipper effect" debating the "idea that the skipper's abilities to locate and catch fish determine the size of the catch" (Palsson and Durrenberger, 1990). Where a "skipper effect" exists, as Acheson (1977) found among Maine lobsterfishermen, sons of better skippers might be a step ahead if their father's skills and information are passed on, whereas in Iceland, where the skipper effect is weak according to Palsson and Durrenberger (1990), the inheritance of a boat and habit of taking a certain number of trips might be more significant.

In addition, the spouses of fishermen on small vessels often work in support industries, often cottage industries, such as hook-baiting, shrimp peeling or crab-picking. These support industries also provide employment for handicapped individuals.

In the more urban centers, fishing may play a much smaller role in the community as a whole, but may contribute a vital piece of diversity to the economic structure. Primary production can cushion a town when service industries fluctuate. In three of the major ports, Gloucester, New Bedford and Portland, the quantities and values of the catch are so high that fishing industry is truly a mainstay of their economy.⁶

Falls in catch have already caused some consolidation of support industries. Processing plants have closed in Stonington and Gloucester within the last year. Other service industries are attempting to diversify in order to survive natural and/or management-caused changes in the industry.

The urban centers in general offer more opportunities for alternative employment than do rural areas since they often support various manufacturing processes, construction businesses, etc. "Banging nails" is often referred to as a logical alternative occupation. Of course, such alternatives are less accessible in an economic recession. Other alternative occupations are lacking in many areas because of the limited education of many fishermen and because some employers are reluctant to hire someone who has "been his own boss."

Employment in the tourist industry is seen as unlikely in many instances because the characteristics that make suitable personnel in service positions are perceived as antithetical to values held by many fishermen and their families. Pride and independence, "doing what they want, saying what they want, wearing what they want, etc.," so valued in the fishing community are not particularly valued in service jobs. On the other hand, the quaintness added to a community by the presence of the fishing industry often attracts tourists. Most tourists enjoy seeing a working waterfront, especially if they are able to walk up close enough to talk to the fishermen or others working at the docks.

Organizations:

There are an array of associations for fishermen, most often based on gear type. Most of these organizations have at least one member who actively lobbies for the group and gear type in management fora or even in front of town boards (especially vis a vis waterfront issues). The organizations with higher membership are more apt to have paid staff who can represent them at meetings and consequently, have had a more active voice in the development of the fisheries management plan. Traditionally, it has been the large vessels that are more frequently represented than the small, but a number of organizations representing small boats or a mixture have been faithful attendees and commentators on the proposed plans. Captain-owners are far better represented than crew members.

However, many active fishermen do not feel well-represented. They comment that it is difficult for someone who is not actually fishing to properly understand the active fisherman's perspective. On the other hand, the sheer numbers of meetings and the distances

⁶ Dewar (1983:8) noted, "Troubles of fisheries affect the welfare of many workers and communities. Fishing-related activities could easily have provided between 15 and 20 percent of a coastal town's jobs in the late 1970s. Certainly this many jobs were linked to fishing in the early 1980s."

involved preclude a fisherman attending any but the most important meetings. Unfortunately, some complain, it is impossible to know ahead of time which meetings are going to affect whom the most.

There are several very active wives' associations that cross-cut the associations by gear characteristic of the fishermen's associations. The most prominent are in Maine, Gloucester and Chatham. These associations lobby in management fora, but also serve social functions of supporting each other and organizing festivals as well as promoting seafood consumption.

Only a very few organizations try to represent geographically-dispersed fishermen. Maine Fishermen's Wives, the Maine Gillnetter's Association, and Atlantic Offshore Fishermen's Association are primary examples of those who attempt to do so. Other organizations limit their efforts to their own town and often their own gear type. In each port profile, the numbers of fishermen said to be represented by each group is indicated.

Social service outreach:

Social agencies that reach out to the fishing community exist in New Bedford, Pt. Judith and Gloucester. Substance abuse is their primary concern. In some communities, religious organizations also provide social services. According to some of the social service agencies, signs of substance abuse and anxiety attributed to uncertainty about the impacts of management is already surfacing in these communities.

Lifestyle:

Incomes for fishermen run the gamut from \$10,000 to \$110,000 per year. Estimates are difficult to make and fishermen are notoriously close-mouthed about their incomes. What is certain, however, is that fishermen take a share of the proceeds of the catch after expenses. This form of profit-sharing makes the crewmembers as anxious for a good trip as the captain-owner. It also counterbalances the hierarchical organization of a boat's crew. The crewmember is also rarely on a contract and is able to leave the boat if he is dissatisfied with the income or working conditions. On draggers, the finding of a new site is easiest for skilled netmenders, but good cooks and others with specialized skills are also welcomed.

The greatest differences in income are probably between captain/owners and crewmembers. The owner-operator takes the major risk in the fishing operation, but he can be well compensated since he receives a captain's share and the boat share. Theoretically anyway, a highliner (successful fisherman) captain-owner among the small vessels can bring home a range of income comparable to that of the captain-owner of a large vessel because the small vessel's costs are much lower than that of a large vessel.

The owner-operators are in a tenuous position, however, from the standpoint of credit. Most middle-aged and young captain-owners have very large mortgages on their vessels with their house as collateral. If they lose their boat, they also lose their house, a source of great anxiety among fishermen and their families.

Crewmembers have a wide range of incomes. One described his as "just below the poverty line." He happened to be joking, but one of the service agencies noted that there are fishermen's families receiving assistance (welfare or food stamps).

Some Maine fishermen comment that earlier in their career they could make a living even taking winters off from fishing, just spending the time working on their gear. However,

within the past 10 or 20 years lifestyles have radically changed for fishermen, particularly for those in rural Maine. A decade or two ago it was not unusual to find solid middle-class families living in houses without hot running water or indoor bathrooms. Central heating is still a luxury many live without. For the most part, however, fishing families now want and expect the same level of consumer comfort as the majority of the nation's middle-class. Bathrooms, hot water, trucks, cars, televisions, Nintendo, Pizza Hut, etc. are considered necessities, not luxuries. In consequence, an average, middle-class life style is much more expensive to support than it was in the recent past.

In addition, boats and gear are much more expensive. Almost everyone has more power, safety equipment, electronic and fishing gear than ever before. All costs have gone up.

Nevertheless, there are still fiercely independent individuals and families who pride themselves on limiting their acquisition of goods and comforts, making as much of their gear as they can and being as self-sufficient as possible.

Many fishermen comment that they have been able to make a decent living from the sea, but their wives tend to add that the long hours and danger of their work is barely compensated, particularly if analyzed as an hourly wage. Most fishermen believe that the industry is unfairly accused of being greedy and the sacrifices individuals make that truly benefit the nation are not appreciated.

Fishermen's role in management:

Because of the expense and difficulty involved in "at-sea" enforcement, fisheries management must frequently rely on an honor system, rather than simply relying on a perception of there being a high potential for an enforcement action. For management to be effective, fishermen must believe that the management regulations are appropriate and just for all, so that the majority will abide by the regulations and help bring pressure to bear on those who try to circumvent the rules. Consequently, fishermen's perceptions about management are significant.

As noted above, despite organizational representation, many fishermen do not feel that they have a voice in the process of fisheries management. Since fishermen's time at sea is contingent upon so many variables including weather, vessel conditions, regulations, not to mention more personal issues such as health and family considerations, and since the product of that time is also unpredictable given the mobility of their prey, most fishermen feel compelled to fish as much as possible. Many took time off from fishing to attend the public hearings for Amendment 5 because it was clear that their interests were going to be affected by their responses. That is not so predictable for the average council or subcommittee meetings.

Others have actively participated in industry advisory meetings to try to develop alternatives that fishermen can support. Many have found the process discouraging, however, with divergent views of appropriate measures expounded by the various participants and the slow pace of consensus development.

Many fishermen express a frustration with the system that sets up regulations, but then does not consistently or strictly enforce them. Again and again, fishermen say that if the regulations were enforced across the board, if a few people actually lost their right to fish, that everyone would adhere to the regulations. A true fisherman (one who loves his job) would not be willing to risk violating the regulations if he risked losing his right to fish.

Fishermen commonly assert that they are conservationists at heart, they want to see the fisheries continue for their children and grandchildren. Although quite a few disagree with the biologists about the extent of stock depletion, most agree that there is a problem that needs to be addressed. However, if violations have no serious consequences and it is obvious that others are violating or pushing the limits, then fishermen feel foolish sticking to the letter of the law and suffering economically as well.

Some fishermen believe that pressure on groundfish could be relieved if government would help develop domestic and foreign markets for underutilized species and provide appropriate information to fishermen and dealers trying to supply these markets. One example offered of research useful to businessmen was what time of year herring flats have a fat content of 10-15 percent for sales in Europe.

With a few exceptions, prices for underutilized species are (and always have been) too low to cover fishermen's time and expenses (Peterson and Smith, 1979:51). However, government could aid in marketing efforts and in procurement of "underutilized" species for schools, prisons and armed services, or the Food for Peace program. Others who have managed to develop niches in the underutilized species markets fear government-aided competition, fearing not only a flooding of the market, but also a diminishment of stocks.

Fishermen in rural areas, particularly the small vessels, believe that theirs is a different way of life that is not going to be accommodated by the regional fisheries management system. For example, Stonington (Maine) fishermen lament when the large 90- to 110-foot, New Bedford scallopers come up and fish out scallop beds in a few days that would have supported the little Maine scallopers all winter. But they feel that the dictates of efficiency, and the manipulation of the management process by larger, wealthier communities will disregard the needs of the small fishermen.

A note from the author about methodology

As an anthropologist, I would have liked to spend a year or so actually fishing on draggers and living in the three communities chosen as representative of the New England fishing industry before drawing profiles of the ports and making statements about the likely impacts of changes in management regulations. Unable to do that, I have had to draw on a basic understanding of the day-boat operations obtained from a summer of fieldwork on vessels out of Provincetown in 1975 to interview fishermen's representatives and other knowledgeable people in each of the three ports.

Gloucester and New Bedford, Massachusetts and Stonington, Maine were the ports selected to represent the New England region, supplemented by a few interviews with fishermen and/or their wives from Portland, Maine, Stonington, Connecticut and Pt. Judith, Rhode Island.

The profiles of Gloucester and New Bedford benefit from concurrence with descriptions of these ports in *The New England Fishing Economy* by Peter B. Doeringer, Philip I. Moss and David G. Terkla (University of Massachusetts, 1986). Doeringer et al. point out that "these two ports together account for more than half of New England's large boat fleet, more than one-half of the value of the overall catch and almost two-thirds of New England's fish-processing activity."

In addition to interviews of fishermen's representatives and reviews of published information, I've attended four public hearings, obtained census data, interviewed NMFS port agents and conducted telephone interviews of a random selection of permit holders and/or their spouses, supplemented by face-to-face, informal conversations with fishermen and/or their wives. The results cannot be said to be drawn from a perfectly representative sample of the industry, as it is weighted to the side of organization presidents and/or executive directors and groundfish permit holders, but the views expressed in this report were supported by repetition in conversations with crewmen.

Interviews, whether face-to-face or on the telephone, averaged an hour to an hour and a half and covered operational information about fishing, as well as information about families, education, incomes, lifestyle and views about management.

The next three sections present the port profiles, offering specific information about the factors introduced here. The last section addresses each of the plan's alternatives. It presents what I believe will be the impacts of the proposed measures and, in addition, explains what many fishermen believe the impacts will be.

New Bedford, Massachusetts: A Port Profile

What's it worth? Landings and value:

In 1991 New Bedford, Massachusetts had landings with the highest value of any port in the country. Catches of yellowtail flounder, scallops, cod and other groundfish caught on Georges Bank provided the bulk of the 106.4 million pounds of fish worth \$157.7 million landed in the city (National Marine Fisheries Service, 1992). Ninety percent of the sea scallops landed in New England are landed in New Bedford.

With multiplier effects, the city's economy may benefit from the fishing industry by \$500 million. Approximately 2,000 men are directly employed as fishermen (10 percent of the 20,997 males employed in New Bedford). Thousands of other people are employed in supporting services such as processing, manufacturers of equipment, transport companies, supply houses, oil companies, welders, pipe fitters, stores, settlement houses, etc.

Vessels

NMFS reports that approximately 412 boats land in New Bedford annually, though of these many are transient boats that only land in summer months. The agency estimates that 280 vessels use New Bedford as their home port. Of these, approximately 144 are draggers, the majority of which are large, that is, over 50 gross tons and 75 feet or over. One hundred fifteen of the vessels are large scallopers, usually over 103 feet, with the possible exception of two or three medium size scallopers. These numbers reflect a marked decrease in dragging and significant increase in scalloping since 1985 when Doeringer et al. (1986:35) found that the New Bedford fleet had about 200 draggers and 55 to 60 scallop boats.

In addition, there are a number of gillnetters, a few offshore lobsterboats, tuna fishermen (purse seines), swordfishermen (driftnets) and a few vessels that seek underutilized species such as squid, dogfish, butterfish and whiting.

The size and value of the scallop fishery to New Bedford makes it imperative that some detailing of its organization and operation be considered in the port profile that is otherwise primarily concerned with the groundfishery.

Ownership and operation

About half the vessels are owner-operated. Few people own more than one or two vessels although there is one individual who owns seven scallopers and another who owns seven draggers. There are a number of individuals who own one dragger and one scalloper.

Large draggers ideally carry six men, but many work "short-handed" now with four or five men. The smaller catches require fewer crewmembers to sort, ice, and shovel the fish into the hold. Some fishermen expressed concern about safety noting that only two men are on deck at "set out" and "haul back" when going short, a situation that may have serious consequences on large vessels. In the early '70's many of the vessels carried as many as nine men.

Steaming time for draggers can be anywhere from 6 to 12 hours to reach the shoals or yellowtail flounder areas, 18 to 20 hours to Georges Bank for cod and haddock.

Scallopers generally carry a crew of nine men. A ten- or eleven-member crew is said to be ideal, but owners do not have to file withholding tax if they carry fewer than ten. Some scallopers will increase the numbers of crewmembers during the summer to handle larger catches, a few taking as many as 14 men. On their 10- to 15-day trips, the scallopers steam

18 to 24 hours to Georges Bank (60% of the fleet). Most scallopers lay over three or four days between trips to maintain the vessels, replenish supplies, spend time with families.

A small group of scallopers, 19 boats at most, fish back to back. These usually have three crews for two boats (or four or five crews for three boats) so that when a boat returns and unloads, it can be turned around quickly and leave with a fresh crew.

Crew

Draggers are more inclined to keep the same crewmembers for several years than are scallopers. A dragger may lose one or two members when winter sets in, but the majority will stay at least three to five years. Many young crewmembers try to move up to mate with the goal of eventually buying their own boat. It is not uncommon, however, to find boats with crewmembers who have fished together for over 20 years.

On scallopers, captain and mate or engineer may be related, but the crew tends to be younger and more mobile than on draggers. In addition, there are fewer opportunities for upward mobility than on draggers. Though crewmembers may make a bit more money than they do on draggers (on the average), the work is physically very hard. The gear is heavy, lots of stones and rocks come up in the dredge and have to be removed. The rings have to be replaced on the chain bags and the trips are long. Crewmembers sometimes quit just to take a vacation.

Living conditions on board

Working conditions can be harsh, especially in bad weather, but many of the newer, large vessels have pleasant accommodations for crew with staterooms (two or three men), flush toilets, rugs on the floor, radio, TV, VCR.⁷ Small vessels still make do with bunks, galley and table all together in a cramped space near the bow, and a bucket in the engine room for privacy. Common to both large and small vessels, however, is a shortage of leisure time. Only during long steams to and from the grounds or during meals do fishermen have "time-off," and reading is the primary recreation.

Owner captains increasingly have cellular phones which afford them more privacy (particularly valued for business reasons) than do VHF marine-band radios; however, high service charges limit their use. Many still rely on marine radio-telephone for their calls to shore and the radio talk among boats continues for comradery and security.

Weather

The large size of the vessels allows fishermen to go out in heavier weather than they did traditionally. Lately, the boundaries of fishing weather have been pushed out farther due to the high costs of living, the scarcity of fish, and the prices that have not kept pace with the prices of gear. Scallopers, in particular, will fish worse weather than they used to.

Despite recent implementation of the Vessel Safety Act mandating a sharp increase in safety equipment, fishing vessels and fishermen continue to be lost. Some fishermen cite the pushing of weather limits due to regulations as one of the contributing factors.

Expenses

Fuel, ice, food for crews and replacement gear add up to considerable expense. One of the expenses that is frustratingly high for some owners is the interest on their mortgage. Because of the uncertainty of catch due to diminished stocks and regulatory changes, many

⁷ One observer pointed out that rugs are not simply for "adornment," but contribute to safety.

owners have been unable to refinance vessels bought at 15 percent to take advantage of the much lower interest rates now available.

Insurance rates are also extremely high, often as high or higher than the mortgage. Fishing is a dangerous occupation, particularly on the west coast, and personal injury settlements have been high. Mortgage and insurance on a 70-80 foot, ten-year old otter trawl can run \$6-8,000 per month. Scallopers, with larger crews, may cost \$8-10,000 per month for mortgage and insurance, plus \$900 per month in unemployment tax.

Settlement houses charge \$170-\$200 per month to handle a vessel's taxes, paperwork, checks to crew, etc.

Electronics are relied on to a greater extent than in the past. One fishermen noted that while scanners are not common, most people have Lorans for navigation. His grandfather, in contrast, relied on landmarks to locate his favorite fishing spots, using the techniques of triangulation and dead-reckoning.

Selling the catch

New Bedford has an auction owned by processors and dealers. Like the Boston auction, the dealers bid on the product, sight unseen. In New Bedford, a whole boatload is bought at a time, whatever the mix. Before the 1985 strike by the union, the auction was a public auction, but faced with harrassment (e.g., car-bashing) and demands made by the union, the dealers started their own auction.

The New Bedford auction is said to "set the price or standard," at least for scallops and, probably, yellowtail— it reflects what dealers are selling for and what is bought from outside of New Bedford. Canadian, Chinese, Peruvian, and Icelandic scallops all compete with New Bedford scallops. Groundfish prices may be set by the Boston auction, since it handles larger volumes of groundfish.

New Bedford has over 20 dealers who purchase seafood from fishing vessels. Boats often have a commitment to sell to a specific dealer on a regular basis. Not all vessels "go on the board," i.e., use the auction. Some vessel owners allow their skippers to decide whether to sell at the auction, or sell directly to a dealer.

Among fishermen interviewed, New Bedford has a reputation for wheeling and dealing. Some informants even suggested that there were connections to organized crime among the dealers. Others, however, claimed that this is a stereotype espoused because of some Italian names in the business, a stereotype actually based on the reputation of certain dealers in New York and New Jersey.

A couple of informants were quite open about the power of the dealers in their relationships with fishermen. "Price-fixing and price-cutting are accepted as a way of life, we don't know any other way," one former fisherman said. Two or three dealers are said to control the prices paid to fishermen, getting together at the Seafood Exchange. The dealers bid on the catches, but often pay the fishermen less than bid, claiming that the fish was not first quality. Even if an outraged fishermen has a NOAA inspector certify his catch, the fisherman has no power to force the dealer to pay what he bid. "There are 14,000 pounds of fish on the floor, what's he going to do? Shovel it back into the hold?" queried a fisherman.

The other dealers are bound by the prices set by the powerful dealers otherwise they lose their sales, undersold by the larger dealers. It is clear that fishermen everywhere face constraints imposed by the harvest of a highly perishable product with wide daily

fluctuations in supply and demand, a circumstance that seems to give dealers a wider range of options than it does fishermen.

Asked whether a display auction would solve the problems, one former fisherman maintained that fishermen might lose out because they wouldn't be able to get rid of lower quality fish. (Lower quality fish are often a consequence of weather conditions, if the boat has to lay-to during rough weather, then continues fishing to "make their trip," the fish caught on the first few days is apt to be less than perfect.) The way the market is now organized, the dealer has to take the bad with the good and though it's a gamble, can "cut a deal." This, it was explained, may mean that the bad fish is mixed with the good and sold.

Other arguments against the display auction were that the sheer quantity and variety of fish landed in New Bedford would make it impossible, there's no facility that could handle all the fish and associated truck traffic.

Furthermore, one fisherman who said he has never had a problem with dealers owing to his consistently high quality product, said that most fishermen like the system of selling the whole catch to one dealer, so it can all be unloaded at once, payment is given and the fishermen can go home.

Dockage and use of piers

There has always been a shortage of dock space. Most boats tie up at the five city-owned piers and a number take out (i.e., unload) in New Bedford, but tie-up at the Fairhaven piers. During holiday such as Christmas, New Year's and the blessing of the fleet and during storms, the boats are rafted, tied four or five abreast.

Three hundred boats pay \$250 annually for the right to tie-up at the city piers, but it is "first come, first serve." There is room for 75 vessels to be tied directly to the piers; lighting, but no security is provided. It is nerve-wracking to have a vessel "rafted (i.e., tied up to others) even two or three deep," fears of fire and of damage are high when many vessels are in port at the same time.

Private contractors pay the city \$250 annually for a pier user fee which allows them to service the vessels. This permit entitles them to one unit such as a truck or other vehicle, additional units cost \$50 each.

According to the city regulations, vessels are not allowed to unload to trucks at the city-owned piers, they must unload only to the 15 to 20 processing plants that are clustered at the South Terminal. This limits opportunities to evade the "price-fixing, price-cutting," since fishermen can't unload to trucks that could then transport the catch to Boston, Portland or New York fish auctions and/or directly to smaller markets.

Town's economic base

Moody's 1990 Municipal Credit Report describes New Bedford as a primarily residential community with "a large local fishing industry and a significant manufacturing component [that] add diversity to the economic base." Since 1990, however, New Bedford has lost some of its manufacturing component. Polaroid, which in 1990 was still producing film and was considered by Moody's as a major employer and taxpayer, has closed its plant. Achushnet, a manufacturer of golf balls remains, as does some apparel manufacturing. Moody's report notes that the resident population remains poor and the per capita income has declined relative to the state since 1979. In 1990 the city's debt burden was modest, but Moody's report pointed out that this would be rising significantly due to sewer improvements mandated by the Clean Water Act.

Incomes and standard of living

Skippers used to make up to \$100,000 per year. Now the range is more apt to be \$60-80,000 annually. Deckhands reportedly make anywhere from \$30-50,000 per year on a decent boat.⁸ "Per men," captain, mate, cook and engineer, often receive a stipend for their extra responsibilities. The stipend varies, sometimes it is fixed at \$100 per trip, other times it is a percentage of the catch. As in most fishing communities, the majority of the fishermen's income is not based on a salary, but rather is a share of the proceeds from the sale of the catch after expenses are paid.

As was noted in previous sections, the income of fishermen is based on extremely long hours devoted to a dangerous occupation and does not entail paid vacations, weekends-off or retirement pensions. Nevertheless, many fishermen say fishing provides them with a "good living," one that would be difficult to achieve in another occupation with the same level of satisfaction, particularly given the average educational level.⁹

At one time, New Bedford had a strong fishermen's union. Fishermen could count on social security and a pension when they retired. Because crews were larger, boat owners paid withholding tax for their employees. Now on most boats, crewmembers are considered for tax purposes to be self-employed and thus responsible for paying their own withholding tax. Many young men fail to do so. An organization has recently been formed that is lobbying for changes in the tax regulations that would require withholding on boats with eight or more crewmembers.

As expenses for fishing vessels have increased, crews are bringing home less. Nevertheless, most consider themselves middle-class. The 38,646 households comprising New Bedford's population (fishing and non-fishing included), according to the 1990 U.S. Census data, have a median income of \$22,647. Of the 26,677 that are families, the median income is \$28,373 and non-family households have a median of \$10,179. Per capita income is \$10,923.

Captains and "per men" usually own their own homes or condominium, a car or two, and often a truck. In 1990, the median house price in New Bedford was \$115,900. Crewmembers usually own at least a car. Owners often have large mortgages on their vessels with their homes as collateral.

Some say that the income does not truly compensate for the danger and grueling hours fishermen put in, but that fishing "gets in your blood" and is a satisfying occupation. The struggle with management, however, is causing a lot of discontent and concern. "I hate it, despise it," one fisherman said, "nightmares, headaches, ulcers."

Community Organization: Ethnicity and families

In the dragger fleet, Portuguese predominate. Some are immigrants, others are second generation, but many maintain a strong Portuguese identity.¹⁰ A lack of fluency in English

⁸ In 1979, almost half of the New Bedford fishermen earned \$20,000 or more per year (Doeringer et al. 1986:53).

⁹ Fishing as a "way of life" and satisfactory occupation has been analyzed by several social scientists. See, for example, *The Structure of Job Satisfaction Among New England Fishermen* by Pollnac and Poggie, 1979. For a discussion of differences in satisfaction under different working conditions, see Binkley, 1990. Gatewood and McCay, 1990, analyze different patterns of job satisfaction in New Jersey's diverse commercial fisheries and comment on the implications of these differences for fisheries management.

¹⁰ As described in the Gloucester port profile, some fishermen guarantee jobs for their immigrant relatives, reducing the flexibility in hiring that is otherwise valued in running a fishing boat.

contributes to the formation and maintenance of a close community.(Doeringer et al., 1986:57). Traditionally, family ties among crewmembers were common.¹¹ Brothers, brothers-in-law, cousins, uncles still do fish together if they "get along." However, an awareness of the dangers of wiping out a whole group of men in one family should the vessel go down is a matter of concern to some.

At one time Norwegians dominated the scallop industry and they retain a major presence as captains, while the crews tend to be of a mixed heritage. Now, most scallop fishermen are second- and third-generation American, a mixture of Norwegian, Newfoundlanders, and a few Portuguese. In the summer, fishermen from Maine and various southern states expand the scallop fleet.

Wives and family considerations

Many wives work, though not necessarily in the fishing industry. Wives of Portuguese crewmembers often work in fish processing plants. Second and third generation women are more apt to have jobs as secretaries, teachers, accountants, etc.

Few wives actually "keep the books" as they did in the past, most owners rely on settlement houses to pay crew, taxes, and other bills.

Family ties tend to be maintained and extended in fishing communities, to provide a support network for wives and children of active fishermen. Grandfathers who are retired fishermen often play an important role in their grandchildren's lives, being present for school plays and activities fishing fathers often miss. These networks are perceived as essential to many wives and would make it difficult if not impossible to move to different ports.

Although wives often mention the difficulties involved in raising a family with a fisherman husband-father absent for so much of the time, they also note that there is a measure of independence that is appealing, particularly in contrast to the "catering he expects when he's around."¹²

Fishermen and their families tend to socialize with others in the industry regardless of whether or not they are relatives.

Education and alternative employment

The educational level runs the gamut from grammar school to college- or service academy-educated. However, many in the industry have not graduated from high school. In fact, in 1980, the median level of education was only nine years. Less than ten percent had education beyond high school and two-thirds had not graduated from high school (Doeringer et al., 1986:51).

Until the last few years, the income of fishermen was quite good compared to shoreside jobs, even for those with college education. One fishermen mentioned that 14 years ago he was making \$500 per month in the military service when his cousin showed him a \$1,000 check for a ten-day trip so he decided to quit the service for fishing.

Despite the lowering of incomes in the last two years or so, the lack of alternative employment, particularly in the poor economy of today, keeps young people moving into

¹¹ "Fifty-seven percent of fishermen interviewed in 1978 [in New Bedford] had at least one kinsman among the crew they fished with" (Doeringer et al. 1986:59)

¹² Other positive benefits are noted in Doeringer et al (1986:64) such as "living near the shore," "spontaneity of the unpredictable schedule" and the positive effects fishing has on their husbands.

the fishing industry. While perhaps lower than in the past, incomes for fishermen, crewmembers as well as "per men," are still significantly higher than equivalent jobs ashore. Among successful scallopers, crewmen can make \$35-40,000 per year; skippers make \$70-80,000 annually.

Nevertheless, there are boats barely surviving. One groundfisherman mentioned 10-day trips, 16 hours per day working, and a paycheck of \$85 for the 10 days. The Mariner's Assistance Program tries to help crewmembers of boats that have several poor trips in a row.

The 1990 U.S. Census found that of the 64,554 people in New Bedford over the age of 25 years, 49.7 percent were at least high school graduates and 9.7 percent were at least college graduates. Currently, the trend is said to be towards increased education with parents encouraging their children to prepare for alternative employment. However, New Bedford has lost much of its alternative economic base in recent years. Polaroid, Goodyear, Revere and Continental have all shut down.

Stereotypes of the requirements of crew of the different gear are still told. Scallopers are described as "seafarmers" having "weak minds and strong backs." Draggers are said to require more experienced fishermen, particularly skilled net menders. Also, fishing over the shoals requires "everyone to know what they are doing." The switch to steel-hulled boats has made obsolete the old saying about "iron men on wooden boats," giving way, one informant joked, to "iron boats with foolish men."

The practice of young men fishing with anyone who will take them (usually an uncle, brother or father) on weekends and summer vacations, when they are in high school, often for a reduced share, can "hook" the youth on fishing. Fishing becomes a secure "fall-back" occupation for many.

Fishing attracted many participants because of the "freedom, the money to be made, the independence and the perception that success depended on what one did with oneself." Some fishermen are losing the satisfaction derived from the freedom and independence factors due to the perception of being hemmed in by multiple regulations.

Social welfare issues

Most agree that the fishing community is no different from the larger community. There are some problems, but no worse or better than among other groups. Whether problems will increase with changes in management is difficult to predict. Individuals cope with change in different ways.

Conversation in the bars, coffeehouses and at home constantly revolves around the new management plan. Anxiety is clearly articulated. "Are we going to make it?" is the question everyone discusses.

Broadly generalizing, draggers do not commonly have crewmembers with alcohol or drug problems. One fisherman commented that the Portuguese immigrant population does "drink wine like water" with meals, but alcoholism does not seem to be a common problem.

Scallopers do have a reputation for occasionally attracting young men who are substance abusers, though owners and operators try hard to keep their vessels "clean." The size of the vessels (making it harder to catch abusers), the frequency with which new crewmembers are required (because of their mobility), and the amount of spending money crewmembers have ashore may all contribute to the problem.

One fisherman noted that the drug problem was obvious in as much as 50 percent of the scallop crews. He commented that "their wrecks of cars littered with MacDonald's wrappers," the garbage bags they use as seabags, their disheveled appearance and their "don't give a damn" attitudes all indicate substance abuse by many of the young crewmen.

The difference between scallopers and draggers is that on the former, there is less apt to be the perception of upward mobility. Crew on scallopers are not generally "being groomed" to be captains, while on draggers young fishermen believe they may have an opportunity to become a "per man" or eventually, captain.

Management and enforcement

Some fishermen report violations, but often don't like to do so. Some fear their voice will be recognized, others maintain that there is not a lot of respect for law enforcement because of a perceived lack of fairness.¹³ Complaints are voiced about the frequency with which some boats are boarded and the complete absence of boarding of other vessels.

Some estimate a 70 percent compliance with mesh regulations and higher compliance with closed areas. More people are being caught, so more people comply with the regulations. However, this reported compliance rate is lower than similar data obtained, anecdotal data from Maine and Gloucester.

Scallopers continue to complain about the meat count. Small scallops are plentiful, but the large scallops are not, especially since the Hague line was drawn, designating prime scallop grounds as Canadian. Informants note that the Hague line has hurt international ties among fishermen—fishermen used to put in to Canadian ports occasionally for gear repairs, would meet with the Canadians, sharing cigarettes, liquor and stories.

Other informants offer ecological reasons why limiting a catch to large scallops is poor management: the large scallops are the roe-producers. Better management would be to tie up the boats during spawning periods, because "if the boats aren't fishing they won't be in violation," and limit the size of the drags. That is straightforward management regulation that can "rule itself."

Some informants noted that the majority of scallopers obey the law, but are being hurt significantly by those who cross the line. Among the negative impacts of the illegal catch cited by a leader in a fishermen's organization: It is harder to catch legal size scallops on the American side, but the prices don't reflect the lack of supply because the "outlaw's" catches drive the prices down. Some of the better crewmembers gravitate to the illegal vessels since their shares are larger. All the scallops landed are counted as American, contributing to the definition of overfishing, thus negatively affecting the quantity of allowable catch. The credibility of all fishermen is damaged by the outlaws.

Anecdotes are related about vessels traveling up and down the Hague line for days waiting for the Coast Guard to leave. Others tell of boatowners building up "war chests" to pay their captain's and boat's fines.

More than one fisherman blamed fishermen's greed for the conditions of the stocks. "People never cared about the future, just that one trip [they were making]. They've done everything to violate every law, cheat, smuggle, do anything to make a living. They're

¹³ The lack of participants' aid in pressuring others in the fishery to conform to regulations is a common problem in offshore fisheries. In contrast, Acheson (1982) describes the effective control and management of the inshore lobster fishery by local lobster fishermen through their formation of "harbor gangs."

hungry and greedy people, killing the goose that laid the golden egg." Others disagree, saying that they believe in conservation, but have been discouraged by the lack of enforcement of regulations.

Some blame the government for the programs that have encouraged the entry of more boats and more technically-sophisticated equipment into the fisheries. Guaranteed loans, in particular, are viewed as largely responsible for the overcapitalization in the industry. Before the loan program, a vessel purchaser had to pay 50 percent down, then pay off the boat in five years. With the loan program, buyers only had to put down 12 percent and were given 15 years to pay off the debt at a low interest rate.

Organizations

Fishermen's Legal Action Committee (FLAC) was started in the summer of 1992 to serve the non-owner fishermen and small boat owners in the pursuit of their livelihood. In December the organization had 60 members. It publishes a newsletter and usually has one or two articles in the Barnacle, a local paper for fishermen. The organization is trying to arrange health insurance for members and wants to start a credit union. Paralegals help answer legal questions. One of the issues they are working on is "employee status." Initial efforts include lobbying to change H.R. 2048 so the tax definition of self-employment is moved from boats with nine crewmembers to ones with seven.

Contact: Alan Cass, Box 213, Fairhaven MA 02719. Telephone: 508-998-1329

Mariners' Assistance Program is an offshoot of the New Bedford Child and Family Service established in 1843 to take care of the whalers' orphans. The program provides a wide variety of services to the fishing community including: referrals to drug and alcohol treatment centers; programs for teenage parents; mental health programs; Big Brother and Big Sister; provides financial assistance after two or three "brokers" in a row, i.e., when the boat does not catch enough to pay the crew after expenses; also help with job searches and applications for public assistance and may even provide a ride for doctor visits, etc.

Contact: John Saunders. Telephone: 508-997-6595

New Bedford Seafood Cooperative is owned by 140 fishing boats, most over 60 feet, landing perhaps 80-90 percent of New Bedford's catch. Dragger-owners make up slightly more than half the membership, landing primarily yellowtail caught in southern New England, also landing cod and haddock from Georges Bank. The rest of the membership is primarily made up of scalloper-owners, though there are a few members who own the various other types of vessels that make up New Bedford's fleet.

One-half to three-quarters of the membership of these Massachusetts boat-owners also operate their own vessels.

The cooperative pumps 16 million gallons of fuel into boats, owns barges, trucks.

Contact: John Bullard, NB Seafood Cooperative, Co-op Wharf, New Bedford, MA 02740. Telephone: 508-993-9926

Offshore Mariner's Association represents captains of about 140 fishing vessels, 55 percent groundfishing boats, 45 percent scallopers. Director speaks out for membership at public hearings of Massachusetts Division of Marine Fisheries, the New England Fishery Management Council and various advisory meetings.

Contact: Howard Nickerson, Executive Director, Offshore Mariners' Association, Inc., 114 MacArthur Dr., New Bedford, MA 02740. Telephone: 508-990-1377

Offshore Mariners' Wives Association is a small group of primarily scalloper's captain's wives who organized as a political action committee to help keep fishermen informed and to

help promote fishing in a positive way. The group organizes the Blessing of the Fleet each year.

Contact: Maria Kilshaw, President, Offshore Mariners' Wives Association, 114 MacArthur Dr., New Bedford, MA 02740. Telephone: 508-996-4019

Seafarers International Union, with 450 members, protects fishermen and their families, emphasizing health care. Owners of about 90 draggers and 8 scallopers have a contract with the union. After 120 days fishing, the fishermen and their families receive medical coverage. In addition, after age 60 and ten years fishing, fishermen receive a pension.

Contact: Henri Francois, 50 Union St., New Bedford, MA 02740. Telephone: 508-997-5404

Seafood Dealers Association of New Bedford is a 25-year old association of eight or nine dealers and processors. Attorney Mickelson acts as spokesperson for dealers point of view at Council meetings and congressional hearings.

Contact: Harvey Mickelson, 30 Cornell St., New Bedford, MA 02740. Telephone: 508-993-8800

Gloucester, Massachusetts: A Port Profile

Landings and value:

Gloucester boats landed 107.2 million pounds of fish in 1991, considerably less than the 150.9 million pounds landed in 1983, but the value increased to \$40 million (\$2 million more than in 1983).¹⁵ According to National Marine Fisheries Service (1992), Gloucester still ranks first in New England for poundage landed (eleventh nationally), and tenth place nationally in value. The landings include a variety of groundfish, dominated by cod and pollock. Large quantities of whiting are also landed July through November. Monkfish is an incidental catch.

Vessels

Approximately 120 vessels use Gloucester as homeport according to the NMFS port agents. Of these, there are about 32 large trawlers, 40 gillnetters, 14 medium-sized vessels (including 2 hookers), 25 day boats, 4 purse seiners, 1 scalloper, 1 large hook boat, 3 or 4 scottish seiners and 1 menhaden boat. In addition, in 1992, there are 20 to 36 transient vessels, including six Maine boats in Gloucester for the herring season.

The port agents emphasize the fluidity of the fleet, with a large number of temporary and transient vessels landing in Gloucester on any given day. Their characterization of boat size (i.e., large, medium and small) actually is an indication of fishing patterns rather than tonnage.¹⁶ Large vessels are those that characteristically fish at least 7 to 8 days, have a crew of approximately 6 and generally take 2 trips per month. The medium vessels are those fishing 2 to 4 day trips with one or two day layovers, making at least 4 trips per month, weather permitting. The small vessels are day boats.

Of the transient or temporarily Gloucester-based vessels, the majority come from Maine. The attraction is price and/or that during certain times of the year, draggers catch lobsters which cannot be legally landed in Maine by otter trawlers.

In the last decade, the drop in the numbers of vessels whose homeport is Gloucester has been sharp, in 1983 there were 235 vessels over 5 tons, currently there are fewer than 120 over 5 tons. One of the NMFS port agents noted that 90 boats sank in the '80's. Some of the sinkings have been investigated for insurance fraud. Many of the old, wooden-hulled vessels that sank have been replaced with newer vessels, but the NMFS port agents indicate that the fleet is still relatively old with a number of wooden, Eastern rigs, antiques at 50 years old. The newest vessel is four years old.

A couple of vessels have up-to-date electronics, but most have a minimum due to the expense. The larger, more advanced vessels in New England were built by processors who will not invest in the fishing industry now because of the uncertainty of its future. New, offshore vessels cost in the million dollar range, inshore vessels about \$100,000.

Ownership and operation

A majority of the vessels are owner-operated. At least one individual owns two vessels, operates one. Twenty-eight of the 32 largest draggers belong to the Cape Ann Vessel

¹⁵ Reportedly, some vessels that traditionally landed in Gloucester or Boston are now taking out in Portland, Maine.

¹⁶ The way a fleet is characterized is pertinent to management since regulations are often linked to vessel size (e.g., under 30 feet are exempted), but in fact, the port agents's "size" characterization being based on fishing pattern perhaps more accurately reflects an operational definition of size that is commonly used in the fishing community. This could change if 90 foot vessels start taking day trips to avoid new management regulations.

Association. Twenty-seven of these are owned and operated by Sicilians, all but two owners are immigrants.

Crews, while theoretically composed of 6 members, usually run short one or two men these days, but are fairly stable. The trip lengths widely vary depending on catch. Commonly, port agents and representatives of fishermen say that the large vessels take 7- to 10-day trips, layover 2 or 3 days. A number of the wives say that the boats are currently taking 10- to 12-day trips. Steaming time to Georges is 18-20 hours.

There are 500 to 700 fishermen in town, ages range from 18 to 60 years old. The majority of skippers on the large vessels are fairly young, between 30 and 40 years old, with the exception of the whiting fleet that is said to be composed of fishermen getting ready to retire. The young skippers are just building their homes, investing in their vessels, not planning to leave fishing for 20 years or so.

Selling the catch

Most sell to one or the other of the six or seven fresh fish buyers in Gloucester. Only four of these dealers are capable of handling the largest vessels (take out, store, sell), particularly if more than two come in at one time. The inshore vessels box, unload to trucks and ship directly to New York's Fulton market. The majority of the fish, inshore and offshore, ends up in Boston for auction or is sent to dealers in New York, the rest is sold directly to small processors in Gloucester.

The quantities of fish are still relatively high, although the volume is greatest in the lower valued species. For example, in the winter much of the catch is herring which is shipped to Maine. Whiting also provides a high volume catch during parts of the year. Now that a long-time processor of fish waste is out of business, however, fewer fishermen land the high volume, oily fish that once comprised a large percentage of the catch.¹⁷

Nevertheless, one observer noted that there is an occasional shortage of gurry (fish by-products) needed by the pet food industry that the Gloucester fleet could provide. A group of fishing-related interests is currently involved in efforts to attract development of a state-of-the-art, environmentally sound (and odorless), protein recovery plant in Gloucester to aid in increasing catch and use of underutilized species. Water and sewer systems are viewed as limiting factors, though.

Wheeling and dealing is said to be a part of fish dealing in Gloucester, "as well as everywhere else." Both dealers and vessel-owners can benefit. One scam said to be used to benefit owners is a kickback on the sale of fuel and food. (Since the crew is paid a share after expenses, the price of fuel and food is inflated on paper and the extra given back to the owner under the table.)

Another way the owners can benefit to the detriment of their crew is to borrow money from the dealer and pay back in fish that does not appear on the weighout. Some owners will only sell to dealers for cash, offering more opportunity for manipulation.

The dealers manipulations of price, etc. are similar to those described for New Bedford. One woman complained that a dealer had refused to pay the agreed-upon price to her husband, claiming that the processor to whom he sold had refused part of several catches because they were spoiled, but later the processor contacted the fisherman directly,

¹⁷ The fish waste processing plant was old and for many years was the source of unpleasant odors that permeated the town, leading to citizen's complaints and the levying of fines.

requesting more of his high quality, daily catch. The processor assured the fisherman that he had never turned down his product.

Nevertheless, some say that processors and dealers are more honest than they once were since the fishermen are better educated, more alert to the potential for rigging scales, etc. Fishermen are also said by some to take greater pride in their product and take better care of it than they once did. An increase in attention to quality product and utilization of everything that is caught is "an important factor in the evolution and success of fishery management," said one observer.

Occasionally fishermen complain about dealers and imagine that they can eliminate the middleman. However, one informant pointed out that the dealers have to have a facility to unload and ship the product, sufficient capital to carry accounts, and a sales force.¹⁸

There is potential for growth, at least one informant suggested, in dealing in imported fish. This is not a cash operation, however, and is very different from current fish-dealing practices. The fish is frozen, with a long shelf-life, so it is a business comparable to dealing in other commodities, such as grain.

Dockage and use of piers

Some boats tie-up at the wharves owned by dealers and in return they buy their fuel from that dealer as well as sell their catch to him. Others tie-up at the State Fish Pier for a fee.

Town's economic base:

Although fishing dominates Gloucester's image and attracts tourists, there is a vocal group of waterfront owners who, it is said, would prefer to sell their land for shopping malls and condominiums. However, a large portion of the harbor is designated as working harbor, a marine-industrial zone from which residential building is banned.

Some individuals estimate that at least 40 percent of the community's employment and revenue is dependent on the fishing industry. Although fishermen make up a little less than 10 percent of the employed males in the labor force of Gloucester (about 600 fishermen of 7,290 employed males), fish landings were sold for \$40 million and the multiplier effects are said to triple or quadruple the economic benefits of landings. The multiplier effects include employment in support industries such as suppliers of fuel, ice, food, equipment, transport and processing of product, etc. In addition, property taxes, income tax and federal and state corporate taxes on vessels are generated by the fishing-related businesses.

Others say that most people in the community do not view fishing as an important industry, since they see that the city government has a budget of \$44 million dollars and may employ more people than the fishing industry. Many in the fishing community claim that there has been an influx of people who have little understanding of the fishing industry and its benefits for the community.

Part of the reason for this lack of understanding may be attributable to the fact that the fishing community has traditionally been rather insular, interacting only with others in their business, with little input into broader issues facing Gloucester. Contributing to the

¹⁸ Complaints about middlemen is an international phenomenon, common in both industrial and artisanal fisheries. The United Nations FAO Council's Ad Hoc Working Group on Artisanal Fisheries of the Committee for the Eastern Central Atlantic Fisheries (CECAF) concluded that "the generalized dislike of the middleman [was] usually based on ignorance of their true functions as risk takers and financiers..." (CECAF, 1980:6). Other researchers support the idea that intermediaries perform vital functions (Lofgren, 1982; Pollnac, 1982; Blake, 1977).

insularity of the fishing community is its strong ethnic identity, particularly in the offshore fleet.

Incomes and standard of living

Reports on incomes are highly varied. Some claim that incomes have remained fairly high, at least among the large vessels. These offshore boat crews average \$30-40,000 per year while their captains earn \$50-55,000 annually.¹⁹ The medium and small vessels incomes are more variable. The highliners' crews earn an average of \$20-25,000 and captains earn \$35-40,000 per year, though they can make more if they "hit shrimp." On other vessels, not considered highliners, crews may earn \$15-20,000 annually and captains \$20-25,000.

Vessel owner-operators also have extremely variable income. One wife of an offshore vessel owner-operator noted that their annual income was about \$40,000. In this case, the boat share covers the vessel's mortgage (\$4,000 per month), boat insurance (\$7,000 per month) and the family's health insurance (\$500/month), in addition to the normal operating costs. The owner-operator's income is derived primarily from his portion of the "crew share."

Other informants maintain that fishermen are barely making a living, that the Gloucester fleet is down to "barebones" and the fishermen are no longer "getting rich." Some fishing industry observers agree, pointing out that income figures should be described in terms of an hourly wage and compared with hourly wages of workers in other dangerous occupations to avoid misrepresentation.

Most fishermen do own their own homes if they bought before the market "went out of whack." As elsewhere, the homes have been used as collateral on many vessels. The average house in Gloucester was bought for \$50-75,000 if purchased before the mid-1980's. In 1990, the median house price in Gloucester was \$177,100 according to U.S. Census data. The higher values may have helped to fuel overcapitalization in the fishing fleet, second mortgages offering capital for new high-tech equipment.

Most vessel owners also own trucks and cars and crewmembers own cars. Occasionally, managers and others cite new vehicles as evidence of a thriving industry. Fishermen owner-operators point out, however, that the tax system (i.e., depreciation deduction) dictates the frequency with which a work vehicle is purchased.

Some say that the fishermen who complain that they are not making enough money are probably not working as long or hard as they should. "If you're a fisherman, you should be out fishing, not coming in at one o'clock in the afternoon." Others note that changes in work patterns are affected by fish species, abundance and regulations, as well as changing attitudes towards familial responsibilities. For example, a catch of dogfish requires early afternoon landings for delivery of a quality product.

According to U.S. Census data, the median annual income for the 11,550 households in Gloucester is \$32,690. For the 7,634 of these households that are families, the median is even higher at \$39,827. Non-family household income is much lower at \$17,258 and the overall per capita income is \$16,044 (fishing and non-fishing).

Community organization:

Ethnicity and families

The dominant ethnic group in Gloucester is Italian. Although major immigration waves

¹⁹ In 1980, interviews by Peterson and Pollnac suggested that earnings in excess of \$15,000 to \$20,000 were typical of offshore fishermen in the '70's and '80's (Doeringer, et al, 1986:54).

stopped in the mid-70's, there are still a significant number of fishing community members who immigrated more recently, and many who speak only Italian or Sicilian. Some say that "everyone in Gloucester is related, depending on which village in Italy they (or their parents) came from." In general, interaction among fishing and non-fishing families is limited. In fact, there is little interaction among Italian and non-Italian families, even within the fishing community. One informant maintained that no Italian groundfishermen are in political office and that their wives are to be too busy with care of their families to run for a city office.

In the few fish cutting plants still operating in Gloucester, contract labor is used. This temporary labor force is generally brought in from Lowell or Boston and is often Cambodian or Cape Verdean.

Wives and familial considerations

Kinship is significant in the Italian fishing fleet.²⁰ Relatives often fish on the same boat, contribute to younger relatives' purchases of vessels or new equipment and sponsor new immigrants, guaranteeing jobs on their vessels for the newcomers.²¹

Estimates of the numbers of wives who work varies, but it may be as many as 60 percent. Those with extended families, who can call on their parents to care for their children, find it easier to work. Wives who work frequently do so for the benefits, particularly health insurance.

Some of the wives still keep the books for their husband's vessel, but there are at least six settlement houses in Gloucester. Gloucester fishermen's wives have organized and as a group have played an active role in management council hearings, at least since the 1970's. In addition, they have worked to promote the use of seafood, demonstrating cooking techniques in many public events.

Wife has to be mother and father to the children when her husband is out fishing for ten days at time, yet has to answer to her husband as well. The younger generation of men is said to be more involved with family decision-making.

Fishermen and their families socialize together, particularly within the Italian community. Conversations always revolve around fishing no matter what the occasion for the gathering, weddings, baptisms, etc.

Social welfare issues

Among Italian informants, fears were expressed that the tie-up time will lead to substance abuse among bored fishermen. Wives will be forced to work, to keep up on mortgage payments, so they won't be home to occupy (and watch over) their husbands.²² Fishermen, it is feared, will increase their drinking while socializing at St. Peter's Club. Depression, it is thought, will also be high.

²⁰ Doeringer et al (1986:59) note that "family participation...is commonplace. Sons and nephews are expected to work on the boats, wives help with the accounting, and uncles, fathers and grandfathers provide funding for new boats, as well as advice and representation at shoreside meetings. "

²¹ Doeringer et al (1986:59) point out that these economic guarantees are "legal as well as kinship commitments." Consequently, these limit the flexibility normally associated with decisions about expansion and contraction of the fleet (or even crew size).

²² Since many wives already work, work itself is not a negative consequence, what is feared is that the newly idle men will get into mischief. In addition, the income women earn is already being used so their income will not provide a cushion as fishing diminishes and theirs is the only income in the household.

In the 1970's, Gloucester ranked third in the country in per capita alcohol consumption according to a former bar owner. Nevertheless, social controls are still fairly strong in Gloucester. To date, neither drug use nor domestic abuse has been a major problem in the fishing community according to reports by social service agencies, some fishing families and their representatives. However, a very different view was expressed by the father of a recovering addict who said that drug use is very widespread even in the fishing community.

Others suggest that disillusionment with fishing, making it just another job, is a more likely result of increased regulations. This could lead to fewer people entering fisheries, an indirect effort control, however, the dissatisfaction could also lead to lower standards in hiring.²³

Education and alternative employment

Among the older generation of fishermen still fishing, many left high school to go fishing.²⁴ A number of immigrants completed the fifth grade in Italy, said by some to be roughly equivalent to a high school education. Now, most young people finish high school and several have gone on to college before entering the fisheries. One gillnetter has a Harvard degree, another fisherman has an MBA and more than one is a lawyer.

The 1990 Census found that seventy-five percent of the population of Gloucester over 25 years old had at least graduated from high school and 20.4 percent has at least graduated from college. This places fishermen in the lower educational ranks in the community, making them less competitive for alternative jobs.

It was pointed out that fishermen in their 50's are too young to retire and furthermore, have too many obligations to support with the kind of jobs they might be able to obtain outside of fishing, particularly if they have had only a minimum of formal education.

Despite regulations, the appeal of fishing—freedom to "be my own boss," working outside, making a decent living—proves irresistible to many. Most immigrants wanted their children to be educated and to work in a more prestigious occupation than fishing, but the high cost of college and graduate school, the lack of employment opportunities in today's poor economy, and the decent income still possible in fishing attracts some young people, although not as many as in the 1970's and '80's when fishing was considered a good investment.

There are three fresh-fish processing plants left in Gloucester (Connolly, Star Fisheries and Ocean Crest) plus maybe a few more one- and two-men operations, most owned by people nearing retirement. Fairtry recently closed. Evidently there is insufficient product being sold in Gloucester to keep more processors active. Women (spouses and daughters of fishermen) are often employed in unskilled labor positions in leather goods and frozen fish block processing plants.

Generally, Gloucester is considered an economically depressed area with high unemployment. Tourism provides seasonal work opportunities, but at relatively low wages. However, there are a number of outside agencies expressing an interest in Gloucester's revitalization.

²³ The negative descriptions of some scallop boat crews in New Bedford as drug users with none of the finer qualities normally attributed to fishermen by those in the industry is used as an example of what could happen when fishing "becomes just a job."

²⁴ "In 1980, less than 14 percent of the commercial fishermen had education beyond high school and 43 percent had not graduated from high school" (Doeringer et al. 1986:51)

A group of people in Gloucester are encouraging the community to come up with innovative ways to increase the benefits the city derives from fishing. Some of the ideas center on "value-added" industries that would be eminently suited for the State Fish Pier. For example, deriving pharmaceuticals from sealife, development of new products such as minced fish to replace hamburger and liquid protein additives made from fish, and making fish meal from fish waste processing. Other ideas include providing a base for deep sea mining operations and encouraging recreational fishing with a municipal marina. Aquaculture might also be considered.²⁵

There are constraints on the development of new and related industries. Gloucester has major road access only from the south, the land is dominated by granite ledges and wetlands, the city relies on a surface supply of water, wastewater disposal is a problem and there are no farmlands begging for development.

Management and enforcement

Compliance, reporting violations and sanctions

Reportedly, liners²⁶ have not been used for the last three years. Most of the fishermen are afraid they'll be caught if they cheat and have to pay large assessments. However, some observers say that current fines are just "the cost of doing business" and don't change compliance rates, instead, they suggest, boats that don't comply should be tied up.

Asked whether they would report observed violations, most fishermen or their wives hesitated, then admitted that it would be unlikely. One woman explained that all the fishermen are friends, "they've baptised and confirmed each other's kids." One noted that as times become more difficult, however, as those who "you watch go inside" (e.g., closed areas) are "able to give their wife's diamonds and you aren't..." [Pause indicating that attitudes about reporting violations may change.]

Gear conflict

Gear conflicts occur between gillnetters and draggers in inshore areas particularly.

Organizations

Atlantic Fishermen's Union

*Contact: Mike Orlando, Vice President, 11 Rogers Street, Gloucester, MA 01930
Telephone: 508-283-1167*

Cape Ann Gillnetters Association represents a core of 13 or 14 fulltime boats out of Gloucester, plus another 26 or so who gillnet seasonally (e.g., inshore flounder fishery in the spring). The association is "dormant" until fishery management issues arise that are likely to affect gillnetters.

*Contact: Paul Cohan, President, 79 Livingstone Ave., Beverly, MA 01915.
Telephone: 508-922-3941.*

²⁵ A number of the people involved in these efforts are active fishermen or representatives of fishermen. These developments are viewed as ways to add value to the fishing that does remain, providing employment opportunities that maintain the link with fishing, and in general, help Gloucester remain economically viable as a community.

²⁶ The cod-end, the bag-like portion of a dragger's net, is supposed to be constructed with 5 and 1/2 inch mesh, to allow juveniles to escape. To circumvent this obligation, some fishermen doubled up on the net, sometimes using a smaller mesh net inside the regulation-sized net, or rigging the two nets so that the mesh was effectively smaller.

Cape Ann Vessel Association represents 27 of the largest, offshore trawlers based in Gloucester.

*Contact: Ed Lima, Executive Secretary, P.O. Box 7057, Gloucester, MA 01930
Telephone: 508-281-2203*

Gloucester Fisheries Association represents the interests of land-based operations in fisheries, including dealers and processors.

*Contact: David Sneed, Executive Director, 51 Main St., P.O. Box 539,
Gloucester, MA 01931. Telephone: 508-281-8011*

Gloucester Fisheries Commission, the only municipal fisheries commission in the state, advises the mayor and city council on measures for promotion and protection of the Gloucester fishing industry. In addition to the other associations on this list, members include the Chamber of Commerce, the Fish Pier Advisory Board and four members at-large.

*Contact: Tony Verga, Executive Director, Fitz Hugh Lane House, Harbor Loop,
Gloucester, MA 01930. Telephone: 508-281-9703*

Gloucester Fishermen's Wives Association with 125 members representing wives of both captains and crewmembers, is active on several fronts. The group promotes the use of fish with cookbooks and cooking demonstrations, but more importantly, plays a role in lobbying for the fishermen at national, regional and local levels.

*Contact: Angela San Filippo, President, Gloucester Fishermen's Wives
Association, 3 Beauport Avenue, Gloucester, MA 01930. Telephone: 508-281-
0650*

Gloucester Inshore Fisheries Association (or Fisherman's Wharf Association?) represents the inshore draggers.

*Contact: Joe Testaverde, Executive Director, 39 Mansfield St., Gloucester, MA
01930. Telephone: 508-283-2976*

Seafood Workers Union represents lumpers and Gorton's plant workers.

Stonington, Maine: A Port Profile

What's it worth? Landings and value:

Between 7 and 11 million pounds of fish, plus significant quantities of all other seafood except lobsters and scallops are unloaded at the Stonington pier annually. Lobster is handled by the Stonington Lobster Cooperative and several other dealers.

Vessels

Ten years ago, Stonington, Maine, an island community linked to the mainland by a bridge, was the home port for 10 to 15 small draggers plus a couple of year around scallopers and gillnetters. Only one dragger and five or six fulltime offshore scallopers still operate out of Stonington. In addition, there are 10-15 vessels that gillnet in season (April to November), employing 33 to 60 full-time, "capable, aggressive" fishermen. Most of these vessels switch to longlining in winter, though some continue netting and others go scalloping, urchining or shrimping, while a few go lobstering.

Another 150-200 inshore lobster boats, employing 200-400 fishermen seasonally, also use Stonington as a home port. Many of these switch to inshore scalloping after November 15th, or after the lobster season (whichever is later). As scallops have become harder to find, urchining has filled-in.

Stonington was considered a major scalloping port for many years, but scallops are currently not as abundant and "sets," i.e., new beds of scallops created when scallop larvae settle on appropriate bottom, appear sporadically. Clamming and musseling are also important to Stonington. A couple of vessels drag for mussels, clamming is primarily a shoreside activity. The large number of islands in the vicinity with clam beds gives anyone with boots, a hoe and a strong back some opportunity for fishing. Worming resources are also available, though currently mostly exploited by people from elsewhere who come in to Stonington temporarily.

Ownership and operation

In 1992, most of the commercial groundfish fleet is composed of small, owner-operated, gillnetter/longliners. Weather permitting, many vessels take 13 to 20 hour trips, seven days a week (in season). In summer, some vessels will make five-day trips.

The variety of fishing is significant. Few vessels are able to fish the same thing year round, but a thoughtful, experienced fisherman can make a good living with various combinations of prey. The decisions about what species to seek and what gear to use are very personal, however. Individuals seem to "have an affinity for one or another fishery." In addition, start-up costs and experience affect the choices. Fishermen may be limited to particular species by their knowledge and by compatibility with their vessel or available gear.

Men in their early 50's note that when they were young, even those who were not from a fishing family could get started fishing with a skiff and a few used lobster traps and slowly, with hard work, build up their business. Starting out with only scavenged equipment is not practical now, considerably larger investments are needed.

Young men from the island can still get a start with a co-signer on a mortgage. The co-signer may be a parent, a dealer, friend, or grocery-store owner. One fisherman explained with a quote from his young son: "Ya know, Daddy, it's no fun living here, I don't have one father, I have about 30!" The fisherman noted that children on the island are known and develop a reputation; responsible, hard-workers are recognized. Adults look out for

one another's children and all have someone to talk to, even if their own parent is fishing or otherwise occupied.

One fisherman said that his expenses for an overnight trip run about \$240 for fuel, grub and ice for a 44-foot dragger. Landings vary with the season and other factors, but 1,000 to 1,500 pounds is considered respectable. Weather, however, interferes with his fishing. When the wind is over the 15-25 mph range, he won't go out.

Selling the catch plus dockage and use of piers

A few years ago, a fish pier was built in Stonington that radically changed business arrangements. The pier, a state bond funded project, gave fishermen access to the water independent of any dealer. Prior to the pier's construction, dealers forced fishermen to buy bait (for lobstering) and fuel from them, in addition to selling product to them, in order to have a place to unload, or tie-up while working on the boat. Dealers also extended credit, increasing the hold over individual vessels.

Now, fishermen can make independent arrangements for trucks to come down to their boat to provide services. Some now have trucks pick up their catch and truck it directly to the Portland Fish Exchange (an auction) or to wholesalers in Boston. The four established dealers may be having some difficulty competing with the independent operations, particularly since their overhead is much higher. However, trucking costs for individual fishermen are approximately 5 cents/pound. In addition, auction and brokerage fees are charged, varying according to the species. The established dealers may be able to achieve economies of scale—offering the same services for lower cost since they are dealing in larger quantities.

Fishermen support expenditures on the public pier through fees. Unloading rights are set at \$10 per linear foot, plus \$60 for vehicle parking. Dealers pay low rates, \$200 per truck for product handling; \$100 per truck for servicing vessels. The harbor committee purposely set rates low on the pier to encourage competition. Boats tie up to moorings which cost only \$15 annually for commercial vessels; \$50 for recreational.

Dependence of Stonington on fishing industry

Fishing or fishing-related industries provide well over half the economic base of Stonington. "Don't imagine it would be here [without fishing]," said one interviewee. Besides fishing, a boat yard is one of the two largest employers in the town of 2,500 inhabitants, with about 70 employees, although somewhat fewer are employed in winter. A nursing home provides the steadiest year-around employment, also of about 70 people. *Commercial Fisheries News* employs nine people. In addition, there is some tourism and a summer resident community with related service jobs. Quarrying, which provided the original economic base of the community, provides 10 to 12 other jobs. A sawmill employs three to five people. A sardine factory closed in July 1992, a loss of 50 to 80 jobs. Since then the factory has been purchased by an urchin wholesaler-lobster processor, providing perhaps about 25 jobs.

The closing of the sardine factory was a matter of serious concern since it provided an important source of income for many of the fishermen's wives throughout the winter. It was also significant socially as it provided an opportunity for women to get out of the house and to talk as they worked, an important activity in the maintenance of community relationships. Thirty to forty lobster boats are also serviced by the sardine factory location, so maintenance of the site's water-dependent use was important.

Tourism and an influx of retirees or wealthier (than local residents) property buyers in the last six or seven years has been changing the tax structure of the town. Property was

reevaluated last year and the mil rate went down, but the assessment of property along the shoreline trebled. Much of the downtown property has been purchased by summer residents, so is boarded up in the winter. Affordable housing is sorely needed in the community for young couples.

Efforts to exploit the advantages of tourism can be seen in the introduction of "knick-knacks and other junk" to the hardware store's inventory, and in the efforts of a local contractor to develop a trailer park. Some townspeople believe that the island is not big enough for further development, that it is already "too congested for the natives."

The development has another negative side in that costs for services continue to rise. The island depends on well-water and many of the wells recently had to be replaced. The landfill was closed and a transfer station developed at high cost. Recycling is just getting started. The town is spending \$4 million to put in a sewer for 200 people, generating anxiety about the impacts of the chlorinated effluent on the lobster in the harbor, in addition to the financial burden.

Others suggest that the town must perform a "balancing act" to achieve the right mix of tourism and fishing. "If you take fishing away, the tourists wouldn't come," one fisherman whose wife sells real estate noted. "The only problem with summer people, they turn around and ruin the very reason they came in the first place (e.g., by demanding the same goods and services they are accustomed to at home)," he added. Perhaps some areas of shoreline should be reserved (for fishing) comparable to the green area drawn on Long Island to protect the potato farmers.

Incomes and standard of living

"Like everywhere, fishermen's incomes run the gamut from \$10,000 to \$120,000." A small boat owner noted that captains usually receive about five percent more than crew and have an income range of \$25-30,000.²⁵ Another informant said the range was lower with half the captains earning about \$20,000 and crews earning \$13,000 to \$18,000 annually. Crewmembers sometimes supplement their income with gear repair and/or urchining.

Fishermen form the upper middle-class of people on the island, not including the summer-home-only inhabitants. One fisherman's wife commented ruefully that a large percent of their income, however, was reinvested in the business.

Thirty years ago, fishermen were said to make enough money catching fish and salting it down to tide them over during the winter when they would work on gear. Now, fishermen's income is "just below poverty," one joked. Old fishermen own their houses, having had the help of FHA loans, but young men are living on credit paying for their cars, trucks, houses, boats, insurance, etc. The average, used ranch-style house of 1200 square feet, on an acre or two is said to sell for about \$80,000. New houses tend to be in the \$100-200,000 range.

Life style changes:

One observer noted that the change in fishing routine to a year-around activity can be

²⁵ This figure is not much different from the \$23,380 net income average for full-time fishermen in southern New England noted by Susan Peterson and Leah Smith in *Small Scale Commercial Fishing in Southern New England* (Woods Hole Oceanographic Institution Technical Report, 1981, page 31). Whether or not incomes among the small vessels in southern New England have remained about the same is yet to be determined. Judging from house prices, the cost of living may be a little lower in Maine than it is farther south in the region.

attributed to a change in expectations, specifically, a difference in views about life style. Within the last 30 years there has been a very real shift towards the acquisition of the comforts of modern life that more urban areas have enjoyed for many decades. In Stonington, cold running water and outhouses were not unusual for even those of the solid "middle-class." Central heat is still a luxury. However, bathrooms, hot water, trucks, cars, televisions, Nintendo, Pizza Hut, etc. are now considered necessities. In consequence, an average, middle-class life style is much more expensive to support than it was in the recent past.

In addition, boats and gear are much more expensive. What was a start-up cost of \$30,000 for a 30 foot boat in the 1970's would now easily be \$80-100,000. Everyone has more power, safety equipment, electronics and fishing gear than ever before. All costs have gone up.

There are still fiercely independent individuals and families. For example, one lobsterman was described who still makes his own traps, catches his own bait, and limits his acquisition of goods and modern comforts. Though not a high school graduate, he is a skilled fisherman and good businessman, routinely getting above average prices for his lobsters.

Community organization:

As is common in most of the small towns in Maine, there is a strong attachment to Stonington as a community and islanders would not leave to find jobs elsewhere if they could find employment here.²⁶ Fishermen will travel elsewhere in search of fish, fishing out of South Bristol in the spring, for example, for a month or so, but not moving their residence.

Several informants noted that people look out for each other on the island. It's a small community so people are close. Leisure time, after daily checks on the boat and maintenance (net mending, etc.) usually revolves around family activities or perhaps "having company in."

One change that has occurred over time is a closer link with Deer Isle. The small towns were once great rivals, but now they have a consolidated school, use the same pier, belong to the same organizations, sell fish to the same buyers, etc. Deer Isle once had two ports, but both silted over. The customhouse at one handled record quantities of mackerel in its day.

There is no dominant ethnic or religious group. Various Protestant denominations, several gospel (charismatic?) churches, Catholic (many are descendents from the Italian stone-cutters who came when quarrying was predominant) and a large Latter Day Saints community in Deer Isle are the most evident religious groups.

Education and alternative employment

Most of the gillnetters seem to be in the 22 to 40 years old range with a high school education. Children are still going into the industry as fishing is considered a proud way of life. It can provide a decent living and the freedom it offers is treasured.

In addition, young people want to stay in the area and consistent alternative employment is not available. The factory women are probably not employable in the tourist industry. Referred to as typical "Down Easters," the women are described as accustomed to "say

²⁶ Acheson (n.d.) discusses the critical importance of the community and kinship in small Maine towns in his *Social and Cultural Aspects of the New England Groundfishery*.

what they want, do what they want, wear what they want" and disinclined to "pander to rich outsiders." For now, the former factory women pick crabmeat at home, babysit, knit lobster trap heads or work as cashiers at the local stores to pick up supplemental income.

Social welfare issues

There is no formal organization dedicated to fishing families as there is in some of the larger ports; however a number of informants noted that the islanders look after one another. Although people are very concerned about the potential impacts of the groundfish management plan, their concern is not overtly manifested in alcohol or other substance abuse.

Management and enforcement

Those interviewed all noted that fishermen in Stonington were "conservation-minded." They "see a wrong and try to change it." Some of the fishermen have become frustrated with attempts to inform the "bureaucracy." They believe that Stonington and other rural ports have a "different thinking" than fishermen in Portland and south where, they maintain, the company bottom line is the most important consideration.

"I've preached, hollered and yelled for years now, the size limits on cod and grey sole are too low," said one fisherman. He changed his net to 5 and 1/2 inch mesh seven or eight years ago and currently uses a 6 inch mesh.

Enforcement is viewed as critically important. Fishermen should be licensed so that when they break the law, their license can be revoked, said one informant. "A slap on the wrist" is how many of today's sanctions are regarded.

Fishery regulations have everyone stirred-up. Stonington fishermen don't feel that they have a voice in the process. Part of the problem stems from the difficulty inherent in attending the multitude of meetings, six hours away, that result in plan development. It is difficult for someone who is not fishing to properly represent active fishermen, yet active fishermen cannot take enough time away from fishing to attend so many meetings.

In consequence, the fishermen feel that Maine fishermen cannot work the system in the way that Gloucester and New Bedford or Pt. Judith fishermen do. By in large, Maine fishermen believe that theirs is a different way of life that's not going to be accommodated by fisheries management for the region. For example, large (90-110 feet) New Bedford boats routinely come up and fish out scallop beds within a few days time that the Stonington fishermen lament could have supported 10 or 20 of their boats all winter long.

Maine fishermen would like to see strict conservation measures enacted that would allow fishing to continue forever. However, the measures should be direct physical measures such as closed areas for spawning and juveniles, and limits on sizes of boats, nets, horsepower. Most significant, though, is the enforcement process. Broadly generalizing, a Maine fisherman's inclination is to be law-abiding, if they feel that regulations are being adhered to in the whole region. Those who break the rules should not be allowed to fish again. Real fishermen would then not take the risk of willfully violating the regulations.

Concern about Amendment 5 is compounded by marine mammal regulations. Although one informant claimed that Stonington fishermen rarely have interactions with harbor porpoise since they fish outside the bays where the harbor porpoise tend to congregate, the regulations will cause problems. Another observer noted that Stonington is on the migration route of the mammals and that there is sufficient incidental catch to warrant regulation or changes in fishing.

Comments on catch and gear types (by former lobsterman):

Urchining "saved us last year." This is a considerable change from years past as they were only considered an aggravation when lobstering. The fishing on urchins has probably contributed to increased lobster catch since urchins eat kelp beds which lobsters use as hiding grounds. The reduction in urchins through fishing, resulting in increased kelp beds, is drawing lobsters closer inshore. Depletion of finfish is also contributing to increases in juvenile lobster since there is less competition for food and decreased predation.

Organizations

The annual Maine Fishermen's Forum, produced by a Board of Directors that has representation from all fishing organizations, the University of Maine and *Commercial Fisheries News*, is very popular and provides one opportunity for fishermen to interact and participate in discussions about management, gear, etc.

Island Fishermen's Wives, with 13 members, primarily organizes safety courses and demonstrations, including life raft use and CPR courses. They also provide support services for those who have lost boats. The group sends a representative to the Maine Gillnetters Association meetings and occasionally lobbies on fishing-related issues in different fora.

*Contact: Donna Brewer, President, P.O. Box 293, Stonington, ME 04681.
Telephone: 207-367-5100.*

Maine Fishermen's Wives Association has about 25 members in various ports, though most live around Portland. The organization sends at least one representative to New England Fishery Management Council meetings and fishermen's advisory group meetings.

Contact: Gail Johnson, President, Marine Trade Center, 2 Fish Pier, Portland, ME 04101. Telephone: 207-773-3737

Maine Gillnetters Association, with about 40 vessel owners on its executive committee and general and associate membership of a couple of hundred people (2.5 crewmembers per vessel), is primarily concerned with representing the interests of gillnetters in management discussions (both with regard to groundfish and to marine mammals). Members come from all along the Maine coast.

*Contact: Ted Ames, Executive Director, P.O. Box 317, Stonington, ME 04681.
Telephone: 207-367-5907*

Maine Lobstermen's Association, sells health insurance (family's cost \$560/month) and is involved in the Lobster Institute (for marketing).

*Contact: Pat White, Executive Director, P.O. Box 147, Demariscotta, ME 04543.
Telephone: 207-563-5254.*

Maine Scallopers Association

*Contact: John Jones, President, P.O. Box 404, Stonington, ME 04412.
Telephone: 207-367-5556 ?*

Some Neighboring Ports' Fishing Activities:

Downeast of Stonington, fishing and fishing-related activity is common. Lobster dominates on Swan's Island. Mt. Desert island, despite the tourism attracted to Acadia National Park, has a number of active fishing ports, including Bass Harbor. Winter Harbor has lobstering, scalloping, some urchining and 2 gillnetters. Prospect Harbor has lobstering and a sardine factory; Corea has lobstering and 2 gillnetters. In Milbridge lobstering and scalloping dominate. Jonesport and Beals is a big port with lobstering, scalloping, quahogging, periwinkling, musseling, 6 gillnetters and marine worming (bait). Bucks Harbor and Cutler have lobstering, quahogging, scalloping, and aquaculture. In

Lubec, salmon aquaculture is important, a herring canning factory is in business, urchining, lobstering and hand-lining are also carried out. Another major processing business uses herring scales to put the sparkle in nail polish and the metallic sheen in some paints.

Only in Bar Harbor is there much recreational fishing in addition to commercial fishing.

Aquaculture has been welcomed in areas bordering the Bay of Fundy because the 24 feet tides and fast running currents makes lobstering difficult. Clamming and worming are further inshore than the aquaculture pens, so there has been little gear conflict.

Potential Impacts of Amendment 5 of the Multispecies Plan

The unknowns: qualifying this assessment

Assessment of the potential impacts of Amendment 5 is hampered by a lack of consistent, long-term data collection on the small-scale fleet. Mid-range and small vessels, especially those that fish days and are opportunistic (switching gear and species as the season, availability, and inclination dictate), are particularly underrepresented in the collection of statistics on catch and earnings.

This failing was pointed out by Susan Peterson and Leah Smith in their report, *Small-Scale Commercial Fishing in Southern New England* (1981), but little has been done in the last ten years to remedy this situation. Interviews for this assessment have included some of the under-60-foot vessels that fish days, but should not be construed as truly representative of the group.

Information on the impacts on the large vessels is also biased, emphasizing the views of owner-operators and fishing organizations' representatives. For those who skimmed the first sections of this report, please note that the last portion of the "Human Environment" describes the methods employed for the socio-cultural impact analysis.

Uncertainty leads to anxiety but scientists are optimistic

The socio-cultural impacts of Amendment 5 will clearly not be uniform across the region, across vessel sizes or even across gear types. Nor will the impacts be the same for each community, each generation of fisherman, each ethnic group, and each organization. It is partly this certainty—that the impacts will vary—that creates a tension, an anxiety among all who are involved in the fishing industry.

Anxiety about the likely impacts dominates the conversation and thoughts of fishermen as the Council struggles to achieve an equitable distribution of cut-backs in fishing effort among the disparate elements of the industry. The anxiety affects managers as well who have high hopes, but are not all certain that the proposed measures will constitute an effective management system that allows the industry to survive while stocks rebuild. In contrast, biologists, economists and others who have been analyzing the bioeconomic impacts of the proposed plan firmly believe that if the reductions in effort are made, in five years the landings will be significantly higher than they will be if no regulatory changes are made.

Doom and gloom: realism or a self-fulfilling prophecy?

The effectiveness of any management system depends not only on whether or not the regulations are based on accurate information and proper scientific analysis, but on whether or not the regulations are complied with. In fisheries management, compliance with regulations relies to some extent on voluntary compliance because of the difficulty of enforcing regulations at sea. A common assertion in literature on management is that regulations perceived as fair are more apt to be complied with (Ostrom, 1992; Nielsen, 1992).²⁷ Jentoft and Kristoffersen (1989:363) make the point that "legitimacy is not just a result of the management decision itself, for instance its distributive effects, but...it also matters whether or not the decision-making process is considered to be fair and just." Furthermore, if the regulations are viewed as fair, fishermen are more apt to pressure other

²⁷ Ostrom (1992) noted that fishermen will make a commitment to follow the fair and equitable rules "so long as 1) most similarly situated fishermen adopt the same commitment and 2) the long-term expected net benefits are greater than they would be following a short-term dominant strategy."

fishermen to comply with the regulations, as Acheson (1982) has described in the lobster fishery.²⁸

Decisions about compliance, however, are also affected by a *perception* of what the impacts of that compliance will be on an individual's ability to make a living or survive financially.²⁹ The uncertainty about what the impacts will be at an individual level both in the short term and the long term causes many fishermen to be extremely pessimistic about the impact of the proposed fisheries management measures.

Fisheries biologists and economists use models which predict a gradual dip and then a gradual recuperation of stocks, with landings about 10 percent below what the projected landings would be if no regulatory changes were made (i.e., status quo) for five years, then landings would significantly increase over the status quo. Their financial projections are more optimistic, with total revenues projected as slightly buoyed during the first five years (due to higher fish prices). Otter trawl revenues surpass the status quo after five years, gillnet revenues do so in seven years. Responding to reports of fishermen's fears of fleet decimation through bankruptcy, managers and scientists point to the change in attitude of shrimp fishermen to the Nordmore grate, many of whom predicted failure only to find gradual but sure benefit.

However, these scientists admit that there remains uncertainty. If effort is cut by 50 percent, there is no question in these scientists' minds that the stocks would rebound and landings increase. However, lack of compliance with regulations and/or technological changes in fishing could result in less of a reduction in effort with the consequence of slowing stock recovery. In fact, some scientists recommend a cap on technology upgrades, in addition to the effort reduction measures.

For a variety of reasons, including scientists' mistakes in some previous predictions of stock sizes (e.g., herring) and past experience with regulatory change (e.g., groundfish quotas in the 1970's), many fishermen do not believe that the new regulations will have the positive benefits predicted.³⁰ In particular, fishermen question the prediction that total revenues will increase despite lower landings. Many fishermen simply do not believe that prices will increase sufficiently to counteract the losses in landings because of the potential for imports and because demand is elastic.³¹ In addition, even if prices did ultimately increase or the revenue stream eventually increase, the immediate problem of meeting the monthly mortgage payment is what is significant.

Others believe that while the effects of the plan may be beneficial in the long run, in the short term their own financial stability is viewed as precarious with bankruptcy looming as an all-too-real potential impact. Some managers fear that the anxiety and negativity many fishermen express will lead to a self-fulfilling prophecy of failure. If the regulations are

²⁸ "Management implemented by such fishermen is probably much more effective than when implemented by government officers, since fishermen have their own interests at heart and have their own sanctions for dealing with offenders. Their system is less bureaucratic, has more immediate effect and has few administrative costs" (Lawson, 1984:79). The basis for this argument is in general sociological theory—that when there are strong mores, "public opinion takes care of the control function" (i.e., social control over behavior) (Bouma, 1991:160).

²⁹ What people react to in a situation is "not only the situation as it exists in verifiable, objective form, but also as it seems to be to the persons or groups involved" (*Ibid*:162)

³⁰ Distrust of the National Marine Fisheries Service has a long history, partially chronicled in Boeri and Gibson's (1976) *"Tell it Good-Bye, Kiddo" The Decline of the New England Offshore Fishery*.

³¹ Fishermen suggest that there is an absolute cap on price, particularly for certain species—prices will not continue to rise indefinitely, people will instead use a substitute (e.g., chicken).

ignored or circumvented, the stocks will not rebound, regulations will become more onerous and more business failures will result.

Because management's success is affected by fishermen's perceptions of what the effect of the proposed regulations will be on their lives and businesses, the majority of this section describes the socio-economic impacts principally from fishermen's points of view.

Threat to a "way of life"

"We will be in the hole, out of business, ruined," fishermen say. Indeed, it is inevitable that some fishermen will be bankrupted by the efforts being made to control fishing for long-term viability. Bankruptcy *per se*, however, is not a spectre unknown in the industry. Business failures are common at every step of the way from capture to consumer. The nature of the resource: cyclical supplies, perishable product, multitudes of independent entrepreneurs exploiting their niche, consumers' fancy, even the vagaries of weather affect the success of the various businesses.

Fishermen can face the constraints and hardships imposed by the nature of their business with equanimity as long as they feel free to work hard to overcome the challenges. "Independence" and "freedom" are the most frequently mentioned attributes of fishing that make it a satisfying occupation. Financial rewards are also noted, frequently explaining what initially attracted them, but it is the "way of life" that seems to keep men fishing despite long hours of hard, sometimes dangerous, physical labor and today's uncertain financial reward.

It is that "way of life" that many fear is threatened by management under Amendment 5. Just how to characterize what constitutes the beloved "way of life" and how it is threatened is not easy to convey. It is **not** that fishermen are wedded to the technology or fishing style of a single point in time. Despite a "conservative" reputation, "oh, they just don't want to see change," fishermen as a group are remarkably adaptable.

The old dory fishermen handling hooks on a line off wooden sailing vessels have given way to fishermen wielding nets of complex fibers with hydraulics and high-tech electronics on diesel-powered, steel-hulled vessels. Changes in equipment, in prey, in markets, in costs have all been faced with varying degrees of success. Nevertheless, some aspects of fishermen's lives and jobs have not changed a great deal over time.

The independence and freedom fishermen speak of is both physical and in a sense, metaphysical. Anyone who has stood on a deck of a boat, dwarfed by the enormity of the surrounding waters and sky, blown by the unseen wind, can with the barest glimmer of imagination sense the promise of freedom offered by working at sea. The independence and freedom of an owner-captain to decide when, where, how and for what to fish is replicated by the freedom of crew to choose to go out or not on a given trip and/or to seek a different site, perhaps one higher in the hierarchy (e.g., "per man") or one on a highliner vessel. Captains and crew talk about the "mystique", "magic" and "joy" of fishing.

Fishing has long been the epitome of the American Dream. Immigrants, youth with drive and ambition but lacking in academic skills, and others unable to conform to land-based jobs have sought opportunities at sea and many have had great success. Others, if not high-achievers, have nevertheless been able to provide for themselves and their families with pride. Not everyone achieves the status of captain-owner, but all relish the potential. Furthermore, all have retained the freedom to experiment with different types of fishing, including different gear, different species, different locations, different trip lengths and different degrees of devotion to fishing.

Despite the hierarchical patterns inherent in the fishing community, notable, for example, in the competition to become high-liners and in the organization of crews (captain, "per men, deckhands), there is a strong egalitarian ethic that everyone should have an equal opportunity to catch fish. In fact, this egalitarian ethic promotes a general sense that the range of landings and/or income should be relatively stable among vessels of the same class. This could explain why there are often demands by fishermen for restrictions on innovative gear that results in major imbalances among vessels' landings.

A number of the proposed management regulations, including the moratorium, the individual days at sea and the quota (non-preferred alternative), appear to fishermen to limit the equal opportunity, threatening, thereby, the "way of life." Managers, on the other hand, suggest that this fear is unfounded since the plan's goal is really to put the fishing industry on a sustainable basis, a necessity if fishermen are to maintain their "way of life."

Besides freedom, independence, equal opportunity and the potential to rise in status and position through one's own efforts, another component of fishing as "a way of life" is a sense of community, connecting all fishermen and their families to others in the industry. Although fishermen are in competition with each other and despite serious gear conflicts, fishermen have much in common. In discussions over coffee before heading out, socializing at family or town celebrations, fishermen generally find common ground with each other. Despite many changes in the industry over the years, sons (and occasionally daughters) often follow their fathers' lead, continuing a family tradition of fishing.

In addition, families of fishermen, particularly in the Italian and Portuguese communities, frequently rely on each other for help or moral support when their spouses are at sea. Furthermore, danger unites everyone, the fiercest competitors will help tow disabled vessels or loan a pump or otherwise aid a fellow fisherman.

Until now, the multispecies plan's regulations have only slowly encroached on a captain's freedom to choose. Closed areas, minimum fish sizes and mesh size restrictions have placed boundaries around the decisions about where to go, what and how to catch fish. Though fishermen have complained about regulations, for the most part they have acquiesced to the requisite changes and learned to accommodate to them. The regulations have allowed diversity in the fisheries to continue.

Adjustment to the new package of regulations is likely to be more difficult primarily because of serious financial fears associated with the plan, but also because of the limits on "wiggle room." The restrictions are perceived as more "cut and dried" than in the past, with less potential for bending or circumventing the regulations. Furthermore, the fishermen are hemmed in by regulations limiting access to alternative fisheries.

On the other hand, managers point out that fishermen retain a lot of freedom. They can choose when to take their blocks of time off and, when fishing, they can catch as much as possible, within the bounds of the mesh and minimum size parameters.

Becoming "just another job"

With Amendment 5, the changes are not so gradual, and are more fundamental. It is the package as a whole that frightens some fishermen. Beyond the question of economic survival is a very fundamental fear that fishing will be ruined by the confusion engendered by the complexity and proliferation of the multiple regulations. A number of men proclaimed that they chose fishing in part because they wanted to "get away from it all." "It" being the complexity of life ashore.

Some of the regulations contained in Amendment 5, such as the moratorium, are perceived as limiting the opportunities for the next generation to enter the fisheries or to achieve a higher position in the hierarchy, a perception that may not be borne out in reality because of the availability of permits from those not using them and the potential for inheriting permits.

Others, such as the time-at-sea limitations, may have serious economic consequences in the short term. Managers point out that if the regulations succeed, however, the economic consequences may not be severe in the short run and in the long run, will improve revenues while preserving the fisheries for future generations as well.

Because of the gradual tightening of the regulations, it is likely that the inevitable bankruptcies will not be immediate, but rather will be dispersed over time depending on individual vessel's economic performance and the owner's financial position. For example, vessels that have experienced mechanical problems, straining the financial planning of their owners, may be in a more vulnerable position. Those who are already economically borderline are likely to fail once cuts are implemented.

Those likely to be most severely impacted are middle-aged, vessel owner-operators with mid-sized vessels and limited formal education who are carrying a heavy debt load.³² Initially, if their fishing success is in the median range, a 10 percent cut in effort can probably be absorbed. However, as the cutbacks near the 50 percent range, unless stock abundance rebounds and/or prices leap, fishermen fear that they will not be able to make their mortgage payments and will lose not only their vessels, but also their homes that serve as collateral for the vessels. Their large monthly mortgage payments could not possibly be met by the kind of alternative employment available in most of the communities.

Admittedly, some of these same vessel owner-operators might also be vulnerable if a decline in stocks continued under the status quo (i.e., if there were no changes in management). However, they would have the option to postpone business failures by increasing their effort. The timing of any ultimate failure would depend on how fast the stocks were decimated under the status quo.

Many fishermen say that the government should pick up their mortgage payments, pointing to Canadian welfare payments during the two-year moratorium on cod fishing as an example of a government valuing their fisheries enough to try to rebuild stocks, while protecting fishermen. Other precedents cited include compensation paid to coal miners when the Clean Air Act was implemented. Many fishermen say that they would certainly accept and abide by the regulations if they did not have to worry about their mortgages. Despite the natural wish to be free to choose, most recognize that the condition of stocks could be improved and future generations would benefit. Unfortunately, the Council cannot legislate such compensation. Nevertheless, several Congressmen are considering such legislation.

If owner-captains lose their vessels to banks or to large corporations, even if they are hired to run the vessels, a large measure of freedom and independence will have been lost. Judging from consequences of such ownership in other fisheries (e.g., surf clams-see McCay, et al., 1989; McCay and Creed, 1990; Hall-Arber, 1992), crew will also feel the impacts, in some cases losing their jobs, in others being paid a wage lower than their current (average) share or a lower proportion of the proceeds (share) than they currently receive.

³² Unfortunately, the lack of socio-economic data prevents an estimate of how common this is.

In New England, however, neither banks nor large corporations appear eager to jump into ownership of fishing vessels. Some researchers believe that such scenarios as those that occurred in other fisheries are very unlikely to occur in the New England groundfisheries due to the way the fresh fish market is organized. Even investors have less interest in the fisheries than they did in the past because of the change in tax laws which limit write-offs. Chances are that bankrupt fishermen will sell their permits and vessels to another fisherman rather than non-fishing investors.

Some communities are likely to face a disproportionate share of losses of individual ownership of vessels. For example, Gloucester has a larger percentage of middle-sized vessels than does New Bedford. The mid-size vessels may be at greater risk than either the large vessels that have a history of 200+ days at sea or the small vessels that have lower operational costs.

Rural communities, though they offer fewer alternative job opportunities, have a higher proportion of small vessels that, with lower costs and greater flexibility, have historically been very adaptable in their exploitation of the diversity of species available inshore. This will not hold true, though, if the large vessels start fishing inshore to save steaming time.

History warns that the inshore areas cannot long support the extremely efficient trawlers built for offshore waters. One fisherman pointed out that the large company boats, such as the O'Hara fleet, when forced by the drawing of the Hague line to fish closer to Maine, contributed to today's "hard times" for draggers in the Gulf of Maine. Before the company fleets went out of business, catches for mid-range draggers had plummeted from 2500 pounds per tow to 100 pounds.

Alternatives vary by community and individual's background

When effort is cut, there will be a surplus of labor. Geography plays a part in determining the extent to which a community has alternative employment opportunities for their fishermen. The convolutions of Maine's coastline make industries dependent on road accessibility impractical. Tourism, a seasonal industry, is in many parts of coastal Maine the only major employer outside the fishing industry. Jobs in tourism are not viable alternatives for most fishermen.

Geography also affects Gloucester's options. Accessible only from the south, built on granite, reliant on surface water and with sewage capacity problems, the diversity of Gloucester's industrial base has been limited. Of the three ports considered in the port profiles, only New Bedford is unconstrained by geography. Other factors, however, such as a poor and not well-educated population, polluted harbor, rising debt burden and a manufacturing sector hard hit by recession, may limit New Bedford's economic diversity.

The range of alternative employment available to most fishermen is limited by the average fishermen's lack of formal education.³³ This lack of education crosscuts communities, but is even more pronounced in the communities of recent immigrants, Italian and Portuguese, in Gloucester and New Bedford.

In addition, incomes of fishermen tend to be higher than what they would be likely to find in equivalent shoreside jobs. This is especially true in New Bedford where unemployment is high (relative to the rest of Massachusetts) and where per capita income is low (\$10,923

³³ Lack of formal education and limited experience in other occupations as factors preventing employment in alternative occupations were noted by Peterson and Pollnac in the chapter they authored in Doeringer, et. al. 1986.

per year in 1990). In all three communities described in the port profiles, fishermen usually considered themselves in the middle to upper-middle class compared with others in their town. Whether a retraining program could be developed to teach skills for land-based jobs for equivalent compensation appears unlikely in the current economic climate.

In all of the communities where fishing plays an important role, it is not only direct employment that is threatened by the reductions in effort. Fishing is supported by a whole range of services ranging from provisioners of fuel, ice, bait, food and equipment, to repair services, unloaders and transporters of fish, marketers and processors, insurers and settlement houses. Equipment companies alone provide employment to a whole range of people from high-tech electronics engineers to factory workers constructing fish boxes.

To the extent that fishermen exploit species other than groundfish, some support industries will benefit, such as suppliers of different gear and innovative technology.

The extent of negative impacts on support industries will also depend on how swiftly the stocks rebound, how diversified the companies are and what their individual economic position is. The unknown impacts are a source of anxiety for many in the fishing communities, however, where fishing and fishing-related industries have traditionally served as a stable industry in a generally depressed economy. The uncertainty of demand and lowering of product supplies will decrease the ability of support industries including processors, to engage in long-term planning and may make employment less consistent and the labor force more transient.

The economic recession has also reduced the industrial base of many communities, further limiting alternative employment. All three communities have lost major employers in the past two years. (See port profiles for examples.)

If vessel owners fail to make their mortgages and lose their boats, rural communities like Stonington, Maine, 50 percent of whose economic base depends on fishing, will have a more difficult adjustment than urban communities with a more diverse industrial base. Even the potential for a large corporation purchasing vessels and hiring captains is less likely in rural areas than in urban. If the vessels can hang up until recovery of the stocks with the projected level to slightly increased revenues, the long-term benefit to the fisheries would be shared by the fishing dependent communities.

Impacts on community organization

Fishermen say that they will do whatever they must to keep from failing and losing everything they have worked for. If they need to move to different fishing grounds, change gear, seek different species, they are willing to do so if it appears that by so doing, they can make a living. This flexibility is characteristic of the small boat fleets and has no doubt contributed to their survival. The largest vessels have limited options vis a vis gear or species changes because their high fixed costs limit them to catches with high revenue production. In addition, moratoria in other fisheries may restrain switching.

Moving home ports might also be difficult, since extended familial networks are considered essential to many wives. Again, this is particularly true for the Italian and Portuguese wives, but networks of fishing families are important to all. As discussed above, the community connection is also important to the sense of fishing "as a way of life."

Until recently, most fishermen have been reluctant to report violations of others in their community. This is particularly true within the Italian and Portuguese fishing communities where blood ties, religious ties, language and in some cases, the experience of being immigrants, knits together communities otherwise characterized by high levels of

competition. In the face of potential economic failure, however, there are indications that more pressure may be brought to bear on the outlaws to conform with regulations and reports of violations may increase.

Fishermen's aid in enforcement could have positive benefits in increasing compliance, but negative impacts as well, causing dissension, suspicion and schism in the communities. Already evident is the lack of positive interaction among fishermen who do not belong to the ethnic group dominant in particular communities. Non-members sometimes indicate unjust treatment due to their "outsider" status. The ethnic divisions could be exacerbated by members of one ethnic group reporting only violations by ethnic groups other than their own.

Impacts on the role of fishermen's organizations

The organizations may be faced with greater demands for help, for example, fishermen may request their organizations to play a greater role in promotion of seafood to help increase demand (and prices). The organizations may also have to provide more social services for those who have lost sites or vessels.

Assessing the specifics:

It is the whole package of regulations that will have major socio-cultural impacts. As discussed above, the extent of impact will largely depend on whether or not a sufficient number of owner-operators can survive financially to continue the "traditional way of life" and whether they can cope with the host of regulations. Though economists may correctly project a short-term financial burden that will be overcome by long-term financial benefits, the long term socio-cultural recovery and benefits will depend on how drastic the short term impacts are.

The impacts, however, will also depend on fishermen's perceptions of the fairness of the regulations and their enforcement. Consequently, fishermen's opinions continue to be emphasized in the rest of this assessment. In addition, the disparate impacts on different communities that some alternatives are likely to have are noted.

"Do nothing" option: retaining the status quo

Though communities and fishing-related industries are worried about the potential impacts of the new groundfish regulations, there is often a recognition that it is not simply the new rules that are (or will be) the cause of the fishing industry's problems. Most interviewed note that "something has to be done" to help the industry because of the downturn in groundfish landings.

Fishermen talk with awe about the large size of catches ten or fifteen years ago and with discouragement about the length of time necessary to "make a trip," i.e., cover costs, now. Opinion varies as to how poorly the stocks are currently faring. Some say that scientists' techniques are not appropriate and results unbelievable, especially in the light of a major error in the herring assessment. Others point to the fishermen's perception of fewer fish as due to the larger mesh sizes that result in smaller catches. Nevertheless, most agree that the stocks are not in good shape.

Some fishermen believe that there are factors other than fishing whose impacts have not been wholly acknowledged, factors such as pollution, acid rain, toxic dumping, habitat degradation and disruption of nearshore nursery grounds. While scientists have not been able to correlate impacts of such factors on the major commercial species, with one or two exceptions, a number of scientists do agree that an ecosystem approach might reveal interconnections that affect fish stocks more critically than does fishing effort (Wilson, 1992; Appollonio, 1992).

Regardless of what (or who) is responsible for the stocks' condition, without new regulations (and their enforcement), pressure on the stocks would certainly continue with consequent diminishment of catches, leading to business failures and bankruptcies. Some consolidation of crews has already begun, with most boats fishing "short" a man or two. One fisherman pointed out that in the 1970's his dragger had a five-man crew, including the skipper, but is now down to two. A change to day-fishing from trip-fishing is partly responsible for the diminishment of his catch and consequently crew, but he does admit that there has been a clear, if gradual, fall in his catch since the 1970's.

A number of fishermen with 30-40 years of experience, did note that stock abundance is cyclical and that the downtrends are not unusual. What strikes some of these men as significantly different is that the changes in gear and electronics allow fishermen to fish in spots that may previously have been "regrouping" areas or safe habitat for various species. "There are no hiding places anymore," is a common refrain.

Moratorium

Two distinct opinions exist on the subject of moratoria. One side favors a moratorium as a way to protect those fishermen who are being forced to limit their effort now, so that when the stocks begin to rebound, these fishermen will reap the benefit. This view is shared by many fishermen and managers alike. Economists find it incomprehensible that any fisherman who qualifies would not be in favor of the moratorium.

Another side, however, opposes moratorium for a variety of reasons. Many people in the fishing communities feel strongly that a viable fishery depends on the availability of permits to young fishermen. Without a perceived opportunity for advancement, some fishermen fear that it will be more difficult to hire reliable and skilled crew. This may be a philosophical problem, a reflection of the egalitarian ethic mentioned earlier, rather than an actual one, however, since it is likely that other regulations will lead to fewer boats in the fishery, releasing some experienced crew to the marketplace. If all sites go to experienced crew, however, young men will have fewer opportunities to learn the necessary skills.

Some fishermen philosophically oppose the moratorium, arguing that moratoria reward those who have over-capitalized and damaged the fisheries.

In all ports, the moratoria limit opportunity for those not already vessel owners. For the recent immigrants in Gloucester and New Bedford, this may be perceived as the loss of a part of the American Dream and the fishing "way of life". However, managers argue that in fact, the moratorium is not really a very restrictive measure. Currently, for example, only a quarter of the existing groundfish permits are actually used. Presumably, those who are fishing in other fisheries or who are retiring could agree to sell their groundfish permits to aspiring owner-operators. The costs of the permit would reflect its value so that while permits are relatively plentiful and landings relatively low, the cost of the permit would also be low. When stocks rebound and more people want to jump into groundfishing, the cost of the permit would go up, protecting those already in the fishery from too many new competitors and benefitting those who are retiring.

The proliferation of moratoria in various fisheries could limit the fishermen's flexibility, a serious economic and psychological impediment to those who traditionally shift gear and species depending on season, weather, market conditions and personal circumstances. Rural communities such as Stonington, Maine, may be hardest hit by the moratoria, since it is the small ports that harbor the majority of the "opportunistic" fishermen. Fishermen might not be willing to sell the permits they are not currently using in order to keep their options open. The lack of available permits could then drive the prices up.

Another spectre raised is that if the moratorium results in a loss of industry members, this will lead to less of a voice against oil and gas development and other potentially polluting activities. This is of particular concern in Gloucester where the community in the past has mobilized against proposals to develop the oil and gas reserves believed to exist around Georges Bank, their fishermen's premier fishing grounds.

Effort Reduction

The ultimate 50 percent reduction is fearful to contemplate because the majority of fishermen do not have faith that stock rebuilding and/or price increases will occur fast enough to allow them to survive economically. Part of the reason for the doubt is that many believe enforcement will not be strict enough to ensure compliance and therefore, recovery. Managers point out, though, that the new regulations have been designed to improve enforceability. Some fishermen mention other impediments to recovery such as the impacts of pollution, habitat destruction and changes in water temperature.

If stocks rebound very swiftly, the negative socio-cultural impacts will naturally be cushioned. However, the effects of reduction in the long- and short-term will be determined largely by economics. If ex-vessel prices go up because of the shortage of product, more vessels may be able to survive. However, many fear that imports will fill the niche left by the lower landings, threatening future economic recovery even when stocks have rebuilt.

Boats with low fixed costs (especially, lower mortgages) are generally in a better position than vessels with heavy outstanding mortgages. The vessels with skilled crew and up-to-date electronics may have sufficient capability to maximize the return on their effort. Vessel-owners with other sources of capital may also be reasonably secure, however, vertical integration is not common, most company boats left the fisheries after the Hague Line was drawn.

Vessels that can cut costs may have a better chance of surviving as well. Individual owners have various options, some, for example, will lay off crew, though informants observe that crews are already down to a bare minimum. Where crews are less likely to be reduced because of family connections, such as in Gloucester's Italian fleet and New Bedford's Portuguese fleet, wages or profits may be reduced.

Although some fishermen fear that short-term cost reductions may be taken by lowering maintenance standards with concomitant safety repercussions, managers point out that maintenance may actually increase. With the forced layovers, there will be more time to maintain the vessels and labor will be available, particularly in the communities which have to maintain their crew size due to family considerations. Good fishermen know that in general it is cheaper to maintain equipment than to replace it.

Blocks of time and layovers

Thirty-day blocks out of the groundfishery were considered too long because it would have been difficult to meet mortgage payments and other monthly expenses. The four twenty-day blocks "out" in the first year could be workable for many draggers, partly depending on market conditions and weather.

That non-groundfish species can be caught during the "time out" is considered a mitigating factor, but some fear that the market will be flooded with underutilized species (traditionally a "soft" market), so that the prices will be too low to pay expenses, much less compensate for the lack of groundfish days. In addition, those already fishing underutilized species

want their hard-earned market niche to be protected. Government help to open up new markets is urged.³⁴

Inshore fishermen are concerned that the large off-shore vessels will start fishing closer to shore to avoid wasting potential fishing days in steaming to Georges Banks. Indeed, at least one Gloucester fisherman with a 90-foot vessel mentioned that he is seriously considering giving up trips for a day-boat operation. One man said, "The large boats will fire two guys and do the day boat routine." If diversity in size and operation is valuable to the New England fisheries, the Council may have to ban large vessels from relatively nearshore areas not already restricted by state regulations.

Because of the seven-day notice period, weather could create a problem for the "time out" periods, forcing some fishermen to go out in rougher weather than they normally would.³⁵ This is an extremely serious safety issue as it is believed by many that boats have been lost when they pushed the weather window due to such management controls as opening and closing areas. Perhaps a variance system could be established for hardship cases due to weather constraints, although problems with enforcement could thereby arise.

There is a positive side to the forced layover days for fishing families, offering families of crew a little more certainty in scheduling. Under the current system, family members rarely know in advance how long the vessel will remain in dock between trips.

How the blocks of time out will affect the communities depends largely on whether the vessel-owners opt for tying-up the boat, or for trying for other species or using alternative gear. Some fishermen's wives express a concern about too much forced leisure, with insufficient funds to use the time enjoyably or constructively, that could lead to increased alcoholism and other problems. Social service agencies are already limited by financial constraints on what they can do, increased needs could only exacerbate the problem.

If the vessels choose to tie-up rather than seek other species, it is possible that some costs will diminish. In particular, insurance, a cost rivaling mortgages, could conceivably be reduced. The lack of dock space and security, however, could become a problem in some ports, including New Bedford.

There is not sufficient information to predict what percent of vessels will tie-up versus seek alternative species or gear. Fishermen do not seem to know yet what will work best for their own financial status. There are certainly some fishermen who will fish on any species if at all practicable, regardless of whether or not their financial position demands it, while others claim that they would enjoy some time off (and out of danger) if the financial outcome was the same.

Individual allocations

The freedom to choose when to fish is one of the underlying values that make fishing an appealing occupation despite the ever-present physical dangers. This freedom extends to

³⁴ Congressman Barney Frank whose district now includes New Bedford, has been made aware of this need and is working to address it.

³⁵ As Margaret Dewar (1983) pointed out, gear is always hazardous, but storms increase the risk—lurching boats and slipping gear can knock a man overboard or cut off fingers, arms and legs. Icing and stormy seas make a boat top-heavy or damage it. As landings decrease during stormy weather, prices increase, so some captains try to fish during foul weather (Dewar, 1983:38). In the early 1960s fishermen suffered more injuries on the job than any other group except coal miners. A recent *Boston Globe* article noted that statistically, fishermen have the most dangerous job in Massachusetts (Clay, 1993).

crewmembers as much as to captains, since crewmembers are free not to go out with their vessel on any given trip. Individual allocations allow vessels to retain much of this flexibility that is so highly valued. However, individual allocations work to the advantage of large groundfish boats in urban ports that have a recorded history of 220 days or more of groundfishing. As NMFS acknowledges, due to the inadequate coverage of smaller vessels and ports, small vessels and vessels in rural ports are less likely to have a recorded history of 220 days even if they have actually fished that many.

The freedom to choose when to fish is not easy to relinquish and may be particularly difficult if not everyone in the fleet or region has to do so because some receive individual allocations that allow them to maintain greater freedom (e.g., no forced layover days). Thus, the equal opportunity or egalitarian ethic is thwarted.

Another criticism of individual allocations suggests that they are disliked for their implicit affirmation of what some consider another breach of the egalitarian ethic. Individual allocations are regarded by many fishermen as a reward to those who have most damaged the resource, "the vacuum cleaners." The vessels that have landed the most fish, whether because of working longer hours, greater skill and knowledge, or, as some observers theorize, because of cheating (using liners, poaching in closed areas, etc.), are likely to be the vessels most able to afford the expense of an automatic electronic vessel tracking system. They are also, because of their size and port choice, the vessels most likely to have been interviewed when landing, so have a recorded history, usually of over 200 days.

Even without the moral condemnation implicit in the criticism of extremely effective fishing operations, some observers have suggested that given the current state of the stocks, encouragement of less effective operations would be a benefit, allowing employment to stabilize with the concomitant values of retaining the "way of life" and other attributes of fishing that appeal to many fishermen.

Encouragement of less efficient operations could be achieved by weighting the percent reductions, so that more efficient operations must reduce their effort at faster rate than the less efficient. This could have the added benefit of leading to faster stock recovery. (Precedent for the differences could be drawn from the example of income tax where the wealthy pay a greater share than do the poor.)

Some managers suggest that the individual allocations alternative is equitable, placing the burden equally on all fishing operations, not penalizing those honest, hard-working fishermen that have heavily invested in fisheries in order to do the best job they could. Furthermore, these managers note that the use of VTS, required for individual allocations, will make the percent time reduction certain for the users' vessels and, presumably, will keep these vessels out of closed areas.

VTS-enforced individual allocations will not, though, control other technological improvements that could increase the fishing power on these relatively well-off vessels. Vessels unlikely to request or receive individual allocations fear that those with individual allocations, unconstrained by weather and forced layovers, will manage to counter the 10 percent effort reduction with gear changes, etc. so that future reductions will become even more onerous for the mid-range and smaller vessels.

To the extent that it is the large vessels that will prefer to retain their flexibility with individual allocations and will benefit financially, New Bedford's fleet will be better off than Gloucester's and Gloucester's will be better off than Stonington's.

Possession limits

The anticipated problem with possession limits is, as always, that there will be high-grading and concomitant high levels of discard. The impacts of such practices would diffuse through the fleet by contributing to a slower recovery of stocks. There has not been a strong pro or con reaction to this proposal, however. Nevertheless, possession limits are regarded by many fishermen and managers as necessary to discourage fishermen from targeting groundfish when they are supposed to be "out of groundfishing," while still providing some flexibility. The proposal may also benefit small-scale operators.

Quotas and Days Out

Quota regulations have the greatest impact on small and medium vessels.³⁶ These vessels are most often constrained by weather and other considerations limiting their days at sea. Large vessels are more likely to be able to fish back-to-back, with little time off due to weather or other considerations. Without forced layovers and with only 60-days total "time-out," it is almost a certainty that the large vessels would fish so hard in the first portion of each quarter that the quota would be reached before the end of the quarter and before smaller boats could harvest enough fish to survive economically.

Even the large boats who draw their "block of time-out" in the first month of the quarter would have a better chance of surviving than the small and medium vessels which are constrained by their size and fishing power.

To the extent that this measure insures the survival of large vessels to the detriment of small and medium vessels, the rural fishing communities could be more severely impacted than with the other alternatives. All communities would be affected, however. Small business is traditionally a source of new jobs in our economy. The fishing industry is no exception to this trend. Furthermore, the "boom and bust" cycle of fish supply characteristic of this type of quota management has a negative impact on the quality of product available to consumers.³⁷

The larger vessels need the services of the larger dealers and processors to handle the high volume of product. Smaller processing and marketing companies could lose access to product as the small vessels fail. Even if a small vessel survives, they have less "clout" by virtue of their smaller volume and, given the "wheeling and dealing" prevalent in the fish markets, will surely suffer.

According to a spokesman, Gloucester fishermen would not support the imposition of quotas. They view quotas as too easy to cheat, leading to an increased black market, lying about area caught, mis-identification, discards, high-grading, and other stock damaging practices. New Bedford which traditionally had a strong fishermen's union is said to have favored quotas in the past because, reportedly, they strengthen unions.

Exception for gillnets

The regulations limiting bycatch of marine mammals are expected to severely restrict gillnetters, resulting in *de facto* effort control. Data on gillnet operations, economic, biological and social factors, are extremely limited, so the impact analysis must rely on an even smaller sample than that for other gear.

³⁶ Doeringer et al. (1986:31) point out that "groundfish quotas implemented by the council caused many offshore fishermen to move into areas close to shore once the quotas were met beyond three miles from the coast, thereby interfering with the inshore catch."

³⁷ The west coast's halibut fishery is often cited as an example of a "boom or bust" cycle.

Various effort controls are being considered such as requiring all gillnets to be removed for four days per month. This is considered by gillnetters as too onerous and not comparable to the effort controls on otter trawls. Gillnetters pointed out that it takes 24 hours for a fisherman to determine if he's set on fish, so at best the 4 days of nets out of the water will mean that it will be six days before catch is landed. On that sixth day, prices will drop out of the market.

Another fear is that if gillnets are removed, the bottom will be usurped by others. Trawlers, for example, will claim the grounds where gillnetters have traditionally set nets. Even if a gillnetter can reclaim the bottom, many fear that the trawlers roller gear will spoil the bottom the netters need. The four days out is not sufficient time to switch to using a different gear, principally because of the physical impossibility of fishing with a stack of nets on board. Crews will be lost and bank credit will be lost with such severe cuts in fishing time.

Finally, the 4 day removals will not serve the needs of marine mammal protection. The harbor porpoises are vulnerable during their migration periods in May and November. If time must be taken out, it makes more sense to gillnetters to take a block of time at the beginning or end of their season—making it possible to survive financially and to control mammal bycatch at the same time.

Pair trawling

The huge landings, particularly of haddock, attributed to pair trawls frighten fishermen not participating in the pairs. One 5-day trip brought in 120,000 lbs of haddock. The trawl is only "six inches off the bottom, uses a tiny mesh."

Some fear that any hope of stock recovery will be decimated by pair trawls and urge that the technique be banned before it multiplies.

Participants in pair trawling dispute the extreme views that they are ruining any potential for stock recovery and warn that bans of specific gear are discriminatory. Pair trawling is most popular in the southern part of the region. Gloucester participants have urged that it be banned, but will continue to use the technique if others to the south do so.

Few fishermen are sufficiently altruistic to take unilateral action to limit effort. Equality of opportunity is a basic tenet of fishing as a way of life.

Mesh size/fish size

Fishermen north of New Bedford claim that most everyone is complying with 5.5-inch mesh and most agree that the transition to 6-inch will be tolerable, if annoying, because of the expense and inevitable loss of fish. Some believe that there should not be minimum fish sizes, however, since even with legal nets, some small fish are caught and the discard is wasteful. (A biologist might take issue with that, keeping in mind that the discarded fish at least provide sustenance for the food chain.) Some continue, that if all fish were kept, the vessel capacity would be reached and the trips would be shorter, thus effectively decreasing effort and, in addition, making statistics more reliable. (Managers, however, could point out that a shorter trip does not necessarily result in decreased effort since, for example, a more efficient net would make up for less time. Furthermore, the minimum size regulations are intended to assure that all fish have a chance to spawn before being caught.)

Fishermen from New Bedford and south tend to regard 6-inch mesh as potentially disastrous. Thirty percent or so reportedly already disregard the 5.5-inch mesh regulation. Many of the southern New England fishermen believe that the larger mesh unfairly eliminates a reasonable yellowtail flounder fishery.

The single mesh on board requirement is also viewed in the southern region as severely limiting flexibility, a flexibility that may make the difference in making or breaking a trip. This issue is one that begs for more impartial observation and data. However, the Coast Guard points out that enforcement of mesh size is impossibly hampered by allowing different sizes on board.

Fishermen from areas north of New Bedford agreed with the Coast Guard opinion, independently expressing strong views that one mesh on board is the only feasible way to assure compliance with the 6-inch mesh. A number of fishermen or their spokespersons reiterated that all must face the same regulations, all must have equal opportunity, there should not be exceptions for the southern areas.

Perhaps an entrepreneur could solve the one mesh on board problem by providing a platform (e.g., an old tugboat, trawler or barge) in the small mesh areas for storage of nets, so vessels could stow their large mesh while in the small mesh areas and vice-versa.

One fisherman suggested that the government issue cod-ends, thus standardizing the size and making a large size "easier to swallow" (cod-ends cost about \$1000). Another commented that mesh sizes are impossible to enforce, that tying up vessels is the only solution.

Area closures

In general, fishermen believe in closed areas as a correct and proper management technique as long as the closure is enforced.

In the past there has been outcry against closures that were supposedly for spawning when it was clear to fishermen that no spawning was taking place. In other instances, fishermen have begged for closures for spawning or concentrations of juvenile fish, but the notification requirements were so time-consuming that the eventual closures were ineffective at best. If areas could be closed as soon as spawning or juveniles were located, many believe that the stocks would have a much better chance of rebounding.

National Marine Fisheries Service is making an effort to acquire realtime data and to incorporate it into management procedures. If successful, the closures may indeed become sensitive to the actual presence of spawning or juvenile fish.

One fisherman urged that the area around the lightship be closed for a couple of years due to concentrations of small yellowtail.

Haddock trip limit

Opinions vary though most say a 2,500 pound limit is reasonable.

Mandatory reporting-effort monitoring

Monitoring by VTS is generally considered an intrusion into fishermen's business practices, too reminiscent of "Big Brother" to be popular. The greatest obstacle to its acceptance, however, is the expense. Nevertheless, the larger vessels with a documented history of over 220 days are likely to opt for the VTS rather than take the standard blocks of time and layover days.

It is feared that if the larger vessels with VT systems compensate for the 10 percent per year time-reductions through technological advances, the smaller vessels without VTS will have to bear an increasingly large portion of effort reduction measures. Theoretically, the

smaller vessels will not be able to make the same technological advances, so their time reductions will be a true effort reduction.

Allowing some vessels to take individual days (with the VTS) offers vessels unequal opportunity for fishing. This inequality denotes unfairness to many. Some fishermen say that the transponders should be mandatory, putting every boat on an equal footing, but that the government should pay for them.

Summary

- Most fishermen agree that the conditions of the fish stocks are not as healthy as they should and could be with proper management.
 - Continuation of the status quo would have clear negative socio-cultural impacts stemming from continued diminishment of stocks leading to business failures and bankruptcies.
 - Under the status quo, it would be the smaller vessel owners who would be most severely impacted, limited as they are by weather and power in their ability to increase effort to compensate for decreasing landings. This, in turn, would impact rural communities to a greater extent than urban.
- The socio-cultural impacts of the proposed management measures will depend first and foremost on whether or not the bio-economic impact projections are correct. If the revenues do indeed rise slightly despite lower landings for the next five years and begin to increase beyond the status quo alternative after five years, the negative socio-cultural impacts on social structure and community organization would be limited in the short term. In the long run, the increased landings and financial stability would lead to positive socio-cultural benefits for the fishermen and their communities.
- The majority of fishermen interviewed do not believe that revenues will rise. Rather, they believe that their revenues will fall by 10 percent annually and at the end of five years, they will be making half of what they are currently making at best, or at worst will have lost their vessels, homes and livelihood, thus disrupting family life and the social structure of the community.
 - One reason fishermen do not believe prices will rise significantly is that once prices reach a certain point, imported fish will be able to compete and will fill the niche formerly filled by domestic product.
- If the prices do not rise sufficiently to compensate for the lower landings, it will be the middle-aged, owner-operators of mid-sized vessels who have limited formal education and who are carrying a heavy debt load that will be the most severely impacted under the plan.
 - If the mid-size vessels are unable to survive, Gloucester will face greater losses in the fishing community than either New Bedford which has a majority of large vessels or Stonington which has a majority of small vessels. However, the Gloucester community as a whole would be less devastated than if comparable failures occurred in Stonington since Stonington's economic base is more dependent on fishing than is Gloucester's.
- The positive projections of biologists and economists rely on compliance with the regulations. Compliance depends at least in part on fishermen perceiving the regulations as fair, equitable and as financially survivable.
- Many fishermen fear that the package of proposed regulations will result in an end to "a way of life" as their independence, freedom, equal opportunity, community relationships and their potential to rise in status are compromised.
- The projected increases in revenue despite lower landings are also predicated on some ability of vessel owners to cut labor costs. The resulting "surplus of labor" might

have a better chance of being absorbed in urban communities than in rural. However, the selected urban communities of Gloucester and New Bedford have been hard hit by recession and there is limited job availability in alternative industries. Nevertheless, the rural communities rarely offer more than carpentry and tourism-related jobs as alternatives.

- Access to alternative occupations is limited by fishermen's lack of formal education.
- The appeal of alternative occupations is hampered by their relatively low wages (compared to fishing).
- Fishermen are willing to be flexible, changing fishing grounds, gear, species if they can make a living by doing so.
 - To the extent that fishermen exploit species other than groundfish, some support industries, such as suppliers of gear and innovative technology could benefit.
 - Small vessels tend to be able to be more flexible than large vessels, in part because of the lower costs of equipment (making a changeover financially supportable), and the lower operational costs make it feasible to risk trying something different.
 - Familial considerations make it difficult to change home ports, particularly among the Portuguese and Italians who have already established families. Young, unmarried fishermen, however, may seek opportunities outside their home towns.
- A moratorium is regarded as having positive and negative impacts:
 - Those in favor view the moratorium as a way to protect those fishermen who are sacrificing now so that they can reap the benefits when the stocks rebound.
 - Many fishermen are philosophically opposed to a moratorium.
 - Many fishermen fear the imposition of a moratorium will lead to a form of private ownership of the resource that will limit fishing to those with access to capital, thus eliminating opportunities for many young men.
 - The proliferation of moratoria in various fisheries is viewed as limiting fishermen's flexibility
 - The abundance of groundfish permits that are not currently "being fished" suggests that any significant impact will be delayed at least until the stocks rebound.
- The proposed 50 percent effort reduction is widely feared for its potential negative impact on financial stability.
 - Vessels with low fixed costs, especially low mortgages, are in a better position than those with heavy outstanding mortgages.
 - Potential cost cutting measures include cutting crew size, wages and/or profits
- Blocks of time and layovers may cause a shift of large vessels to inshore waters, a move that would certainly negatively impact small vessels unable to compete with the large vessels and lacking the option to move offshore.
 - Weather may cause problems, particularly in compromising safety.
 - A positive aspect is that families of crew are offered more certainty in scheduling.
 - Tie-ups could result in lower costs such as for insurance.
- Individual allocations are viewed by those with a history of 220 days as having less negative impact than the standard blocks of time and layovers. The negative impact of these allocations lies in part in the perception of inequality and inequity borne by those who do not have a recorded history of 220 days. Those who oppose the individual allocations

feel that these allocations reward those who should instead be bearing a greater proportion of the burden of rebuilding stocks since it was these efficient operators that did the most to damage the stocks.

- To the extent that large vessels choose the individual allocations, New Bedford's fleet will be in a better position than Gloucester's and Gloucester's in a better position than Stonington's.
- Quotas and days out differentially impact large and small vessels. Large vessels, unconstrained by weather can fish as hard as they wish until the quota is reached, potentially leaving small boats with insufficient quota to survive financially.
 - To the extent that this measure insures the survival of large vessels to the detriment of small, the rural fishing communities will be more severely impacted than with the other alternatives.
 - To the extent that this measure impacts small businesses, all communities could be negatively impacted since small business is traditionally a source of new jobs in our economy.
 - The boom and bust cycle of fish supply characteristic of this type of management measure has negative impacts on consumers, leaving them with rare access to fresh product.
 - Stock-damaging practices often associated with quota management would negatively impact stock recovery and thus negative socio-cultural impacts would diffuse through all the communities.
- Mesh size regulation is viewed as the most equitable way to manage fisheries by the majority of fishermen though there is disagreement about what constitutes an appropriate size mesh. The costs of purchasing new cod ends is onerous for some small-scale fishermen, but most can cope with the financial burden.
 - North of New Bedford, most fishermen favor the 6-inch mesh as offering an effective management technique that, if used alone, would allow fishermen to retain their "way of life" while conserving the stocks.
 - New Bedford and south, fishermen fear that a 6-inch mesh will cut back too severely on their catch of yellowtail flounder and other species, so that their financial stability will be threatened.
- One mesh on board regulations would have a differential impact depending on geographical location of the fleet.
 - One mesh on board is also regarded in the southern portion of the region as threatening their "way of life" and financial viability by removing their flexibility in fishing since fishermen tend to switch during a single trip between small mesh species and large mesh species.
 - One mesh on board is viewed as absolutely necessary for mesh size enforcement by both the Coast Guard and fishermen north of New Bedford.
- Proposed area closures are not expected to have negative socio-cultural impacts.
- There is no subsistence fishing in the New England region that would be affected by the plan.
- No change in religion or other socio-cultural values are expected as a result of the plan.

References

- Acheson, James. 1988. *The Lobster Gangs of Maine*. Hanover, NH: University Press of New England.
- _____. 1977. "Technical Skills and Fishing Success in the Maine Lobster Industry" in *Human Ecology* 3(3):183-207.
- _____. *Social and Cultural Aspects of the New England Groundfishery*. Manuscript.
- Appolonio, Spencer. 1992. Personal communication.
- Binkley, Marian. 1990. "Work organization among Nova Scotian offshore fishermen" in *Human Organization*, 49:4:395-409.
- Blake, Bradley. 1977. "Cultural adaptation and technological change among Madras fishing populations" in *Those Who Live From the Sea*, M.E. Smith, ed. St.Paul: West Publishers.
- Boeri, David and James Gibson. 1976. *"Tell it Good-Bye, Kiddo:" The Decline of the New England Offshore Fishery*. Camden, Maine: International Marine Publishing Company.
- Bouma, Donald. 1991. "Understanding Group Life: Ten Contributions of Modern Sociology Stand Out as Helping People to Comprehend Social Roles" in *American Journal of Economics and Sociology* 50(2):157-167 (April).
- CECAF. 1980. *Report of the Ad Hoc Working Group on Artisanal Fisheries*. United Nations Food and Agriculture Organization Interregional Fisheries DEvelopment and Management Program. CECAF/TECH/80/28 (En).
- Clay, Patricia. 1993. Personal Communication.
- Dewar, Margaret. 1983. *Industry in Trouble*. Philadelphia: Temple University.
- Doeringer, Peter B., Philip I. Moss and David G. Terkla. 1986. *The New England Fishing Economy*. Amherst: University of Massachusetts Press.
- Gatewood, John B. and Bonnie McCay. 1990. "Comparison of Job Satisfaction in Six New Jersey Fisheries: Implications for Management" in *Human Organization* 49:1:14-25.
- Hall-Arber, Madeleine. 1992. "ITQs: Solution to the 'tragedy of the commons' or tragedy for the common man?" and "Who owns the clam resource allocations?" in *Commercial Fisheries News* (November).
- Husing, Onno. 1980. *Fisheries, Bureaucracy and the 200 Mile Limit: An Anthropological Study of the Effects of Increased Government Regulation on One New England Fishing Community*. University of New Brunswick, Master of Arts Thesis (unpublished).
- Jentoft, Svein and Trond Kristoffersen. "Fishermen's Co-management: The Case of the Lofoten Fishery" in *Human Organization* 48:4:355-365.
- Lawson, Rowena. 1984. *Economics of Fisheries Development*. NY: Praeger Publishers.
- Lofgren, Orvar. 1982. "From Peasant Fishing to Industrial Trawling: A Comparative Discussion of Modernization Processes in some North Atlantic Regions" in *Modernization and Marine Fisheries Policy*. John R. Maiolo and Michael K. Orbach, eds. Ann Arbor: Ann Arbor Science.
- McCay, Bonnie J., John B. Gatewood and Carolyn Creed. 1989. "Labor and the Labor Process in a Limited Entry Fishery" in *Marine Resource Economics* 6:311-330.
- McCay, Bonnie J. and Carolyn F. Creed. 1990. "Social Structure and Debates on Fisheries Management in the Atlantic Surf Clam Fishery" in *Ocean & Shoreline Management* 13:199-229.
- McGoodwin, James R. 1990. *Crisis in the World's Fisheries*. Stanford, CA: Stanford University Press.

- Miller, Marc and John Van Maanen. 1979. "Boats Don't Fish, People Do": Some Ethnographic Notes on the Federal Management of Fisheries in Gloucester in *Human Organization* 38:377-85.
- National Marine Fisheries Service, 1992. *Fisheries of the United States, 1991*.
- Nielsen, Jesper Raakjaer. 1992. "User-group participation in Fishery Management in Denmark." Paper prepared for The World Fisheries Congress, Athens (May).
- Ostrom, Elinor. 1990. *Governing the Commons*. Cambridge: Cambridge University Press.
- Palsson, Gisli and E. Paul Durrenberger, 1990. "Systems of Production and Social Discourse: The Skipper Effect Revisited" in *American Anthropologist* 92, 130-141.
- Peterson, Susan and Leah Smith. 1981. *Small-Scale Commercial Fishing in Southern New England*. WHOI Technical Report, 81-72.
- Pollnac, Richard. 1982. "Sociocultural Aspects of Technological and Institutional Change among Small-Scale Fishermen" in *Modernization and Marine Fisheries Policy*, John R. Maiolo and Michael K. Orbach, eds. Ann Arbor: Ann Arbor Science.
- Pollnac, Richard and John J. Poggie, Jr. 1979. The structure of job satisfaction among New England fishermen. Anthropology Working Paper no. 31. Mimeo. Kingston: International Center for Marine Resource Development, University of Rhode Island.
- United States Census. 1990.
- Wilson, Jim. 1992. Personal communication.
- _____. 1980. "Adaptation to Uncertainty and Small Numbers Exchange: The New England Fresh Fish Market" in *Bell Journal of Economic Management Sciences* 11(2):491-504.

R **RECEIVED** **D**
FEB 18 1994
NATIONAL SEA GRANT DEPOSITORY
PELL LIBRARY BUILDING
URI, NARRAGANSETT BAY CAMPUS
NARRAGANSETT, R.I. 02882