

Some Effects of Technological Change on New England Fishermen

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A revised version of a paper entitled *Technological Lead, Occupational Subcultures and Mobility Potential in Two New England Fisheries* presented to the Maritime Session of the 34th Annual Meeting, Society for Applied Anthropology, held March 19-22, 1975, in Amsterdam.

Abstract

New England commercial fishermen are heirs of the most ancient mode of production in human society, that of hunting and gathering. They face destruction of their livelihood because massive technological innovations have provided a capacity for overkill that will lead to extinction of the prey unless corresponding innovations in social control are developed.

Social innovations to conserve and to manage the catch should be coupled with remedial measures to assist displaced fishermen. While this report is not an obituary for U.S. North Atlantic fisheries, it seeks to delineate the potential social and cultural problems faced by policymakers in managing the fisheries.

Displacement from fishing should have differing impacts on those affected. Age, education, non-maritime work experience and willingness to relocate inland are among the variables identified as salient.

While measures to save the fisheries are desirable, contingency planning against possible failure of such measures or for a workforce displaced by management schemes should take into account the mobility potential and occupational culture discussed in this report.

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Crisis in Fishing

Introduction

This is an account of social science research about the occupational world of the commercial fisherman. In 1970 and 1971 we had conducted a study of fishermen in the port of Galilee, Rhode Island, where our findings reflected their confidence, born of success, in the future prospects of their chosen occupation (see Poggie and Gersuny, 1974). From 1972-1974 we expanded our inquiry to include the fisheries of New Bedford, Massachusetts, and Stonington, Connecticut, in order to get a broader picture of our subject by comparing the largest with one of the smallest fishing fleets in New England.

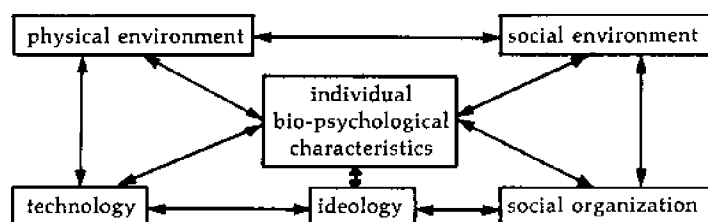
Confidence in the future was less evident at later times in both New Bedford and Stonington. While the fishermen interviewed in these two ports expressed considerable optimism in 1972, their prevailing mood in 1974 seemed to be one of foreboding and gloom. From the New Englander's long-standing image of the ocean as a limitless cornucopia of valuable fish, these fishermen had come to a projection of tomorrow's North Atlantic waters as a vast emptiness, swept clean of fish by the overkill of foreign competitors.

In this report we present a comparison of men at work in both a large fishery (New Bedford) and a small one (Stonington) against a common backdrop of apprehension of ecological "disaster" in the making. Survey findings of work attitudes and perceptions, the significance of kinship and the forms of social interaction and organization will be discussed. This study of contrasts will be followed by an analysis of what is presumed to be the fishermen's shared fate, be it extinction by destruction of their resource base or survival by institution of effective social controls.

Frame of Reference

Expressions of apprehension of impending ecological doom bring into focus the multi-faceted connections between society and nature. Hence the perspective of human ecology is used to guide this inquiry. We are forewarned that "Man can never escape from nature, and even when he 'controls' nature, he is merely making use of the laws of *nature* for his own ends" (Bukharin, 1965:104); but when the laws of nature are transgressed, as in the case of overfishing, nature's vengeance is certain. Thus, nature is

a crucial factor which we ignore at the risk of undermining the validity of social research, and it shares major importance in the framework of human ecology.



It is perhaps a truism that in the human condition everything is connected to everything else. The theoretical scheme of human ecology which is depicted in the diagram above is an aid in understanding the workings of human society in nature, a kind of conceptual "map" that serves to guide the observer along the various, interconnected pathways that have to be considered to obtain an accurate picture of human activities.

In the scheme of human ecology, individual people exist in a variety of interrelated and overlapping contexts. Their social organization consists of ongoing patterns of interaction where persistence of relationships over time imparts a sense of structure to collective life.

The social environment consists of individuals and other social organizations "out there" beyond the boundaries of the organization under study, with which it has certain interchanges. Clearly the distinction between social organization and social environment is analytic and depends on the focus of a particular study in which it must be specified.

By technology we mean those aspects of the culture that serve as a "guidance system" for dealing with the physical environment. Knowledge and implements that embody knowledge, which provide subsistence and other utility from the physical environment, are of course crucial to human adaptation.

By physical environment we mean the habitat of the population in question, characterized by peculiarities of terrain, climate and resources including other life forms.

Ideology refers to beliefs, values and other socially patterned thoughtways. This facet of culture like others reflects and acts upon the other domains in the human ecology model and is in some ways the most recalcitrant in the face of pressures for change.

In social research it is exceedingly important to keep in mind that these various elements have to be taken into account together as an imperfectly interrelated whole in which the state of "adjustment" among the various "boxes" is constantly being disturbed because changes in one are not accompanied automatically and immediately by compensating changes in the others. Strains and contradictions emerge in the system, and their abatement is the focus of a wide range of processes within and among societies, as will be illustrated in the present study.

Our central notion is that because of the interdependence among the domains in the human ecology network, a change in one part necessitates changes in the other parts, but these required adjustments are often delayed. The duration of this condition, which Ogburn labeled *cultural lag*, "... will vary according to the nature of the cultural material, but may exist for a considerable number of years, during which time there may be said to be a maladjustment" (1966:201). There is also the possibility that maladjustment cannot be compensated for and extinction will be the result.

Some of the reasons for such a lag are that when changes occur in technology or the physical environment, compensating innovations in ideology and social organization may be unavailable; habits and traditions may create obstacles to new thoughtways and organizations; in a heterogeneous society, diverse groups will be affected differently by a particular change with the result that people with vested interests who hold power may block adjustments that would be beneficial to others.

Technological Lead

More often than not instances of cultural lag follow technological change that is not accompanied by appropriate adjustments in the other components of the system. This suggests that we might coin the term "technological lead" and that we can profitably examine the nature of technology, the better to understand the maladjustments in general and the one that threatens to destroy the fisheries in particular.

Human life is compounded of a mixture of rational and non-rational elements of varying proportions. In the realm of technology, rationality is most pronounced because, as Davis points out, true technology "... is distinguished by the presence of intrinsic connection between the means employed and the ends pursued" (1948:436), a definition that we take to be synonymous with rationality within the context of an ideology that favors the maximization of production. In other parts of culture and society there is a strong propensity toward the non-rational, seen not only in the persistence of thought and action counterproductive to perceived goals but also in uncertainty and disagreement about what goals are to be pursued. In terms of a connection between means and ends in maximizing production it is clear that a plow is better than a digging stick for cultivating the soil and an otter trawl is more productive than a hook-and-line for catching groundfish. Consensus is much more elusive about the benefit of particular political or religious forms, modes of kinship behavior or styles in the realm of art. This is true in part because many of these non-technological aspects of culture have symbolic and unrecognized functions that vary among individuals, groups and subcultures.

It follows that while there will be speedy adoption of a technological innovation that promises a measurable increase in productivity there will be, in Ogburn's terms, considerable lag in making behavior and thought congruent with the new technology. There will be foot-dragging and dissent not only because divergent interests exist, but because the connection between means and ends is often more tenuous and ambiguous in these domains.

The state of technology is a key determinant of the productivity of labor. Productivity in turn is an indicator of the equilibrium between society and nature in that the ceaseless striving for more effective adaptation to the environment encourages technological change and, thus, is accompanied by increased productivity. Productivity "... is a measure of the mutual interaction between the environment and the system by which the position of the [social] system in the environment is determined, and an alteration of which will indicate inevitable changes throughout the internal life of society" (Bukharin, 1965:113). Yet social change necessitated by technological innovation is often delayed, with attendant strains and conflicts.

Moreover, when the potential for productivity outstrips the resource

constraints of the physical environment, the equilibrium between society and nature is impaired. This occurs in the absence of effective controls on the application of technologies by social organizations. We can think of this as counterproductive productive potential.

Hockett points out that technology which enables human societies to change the physical environment is a double-edged sword:

It is creative in that it builds the kind of world human beings want to live in. It is destructive in that it threatens a kind of world we may not be able to live in at all (1973:97).

The problem is one of controlling the side effects of technological advance; its solution entails alterations in social organization and ideology which are resisted and delayed for reasons already enumerated. It arises because almost every major technological innovation has

... unintended and unforeseen environmental, economic, and political consequences. Time and again, these consequences have canceled out what has been gained in one sphere of life with penalties—such as air and water pollution, disease, and loss of freedom—inadvertently produced in another (Harris, 1971:221).

Without effective controls, modern technology can become a "Frankenstein's monster," and can destroy the very elements of the physical environment to which it is supposed to better adapt human society.

In our own society, the clash between those who hold to the frontier ethic, and perceive nature as a limitless fund from which to draw without putting anything back, and those who subscribe to the environmentalist ethic and perceive the finitude of the earth and society's precarious position upon it, is well known. The outcome is still in doubt, but there has been progress. It is not too farfetched to suppose that there are enough chain saws and other such implements to fell every tree in the United States within a short time. Yet we no longer "mine" our forests, but we farm them with close scrutiny for maximum sustainable yield, and we replant them routinely.

By contrast, beyond the territorial limits of maritime societies (and sometimes within those limits) the frontier ethic of unrestrained application of modern technology to fishing threatens the extinction of the very resource this technology intends to utilize. Despite some efforts—seemingly ineffectual—to achieve supranational social control in order to conserve fish stocks by limiting the catch, the fishermen in our survey are faced with

the occupational fate of the whalers who sailed from these same New England ports in the past. Huge foreign fleets of factory ships and trawlers that dwarf an American "cockleshell" fleet are sweeping the ocean clean and threaten to doom the very pursuit in which they engage. Here is a classic case of dislocation in the system of human ecology!

In effect the technology has become too powerful for the physical environment in the absence of innovations in social organization. (The technology is not inherently harmful, but harmful only within an anachronistic social context.) In order to restore equilibrium in the ecological system, the social organization of international relations would have to be altered to "civilize" the frontiers of the high seas. A major obstacle lies in the realm of ideology in the form of tenaciously held conceptions of sovereignty and nationalism, as well as traditional conceptions of international law. Moreover, the remedies under discussion may in the end be too late. It has been pointed out by others concerned with this question that while

. . . technology can change rapidly, political and social institutions generally change very slowly. Furthermore, they almost never change in anticipation of a social need, but only in response to it (Meadows, et al., 1972:148).

The parallel between New England whalers and fishermen is instructive in any case, because the doom that hangs over the latter long ago befell the former and for identical reasons. Escalation of technological effectiveness has so depleted whale populations that to obtain even decreasing yields required increasing intensity of effort.

The story of the whaling industry . . . demonstrates . . . the ultimate result of the attempt to grow forever in a limited environment. Whalers have systematically reached one limit after another and have attempted to overcome each one by increases in power and technology. As a result they have wiped out one species after another. The outcome of this particular grow-forever policy can only be the final extinction of both whales and whalers (Meadows, et al., 1972:151).

Here is a clear example of man with unbounded faith in technology coming to grief by disregarding the laws of nature.

For commercial fishing there is a choice between tampering with natural limits by destroying fish stocks or by changing the ideological and organizational components in the system of human ecology—the ideological, by accepting new ideas such as rational planning as opposed to shortsighted greed and the organizational by changing the boundaries be-

tween social organization and social environment either through international organization or extension of fisheries jurisdiction. While the outlook for the fisheries we have studied is bleak, a fatalistic posture would be self-defeating. While the problems are urgent, they are not yet irremediable.

This report then is intended as an analysis of the occupational world of commercial fishing. In our data collection we drew on a variety of techniques from the social sciences, including questionnaires, interviews, examination of historical materials and official records, and participant observation. Our findings, which are spelled out in the chapters that follow, are intended to analyze a way of life and a livelihood which has a long tradition as well as great contemporary value. This analysis has a dual purpose: to advance social science insight into the world of work and to contribute to the data base of policymakers in whose hands the future of the fisherman may lie. The social cost of various responses, including doing nothing in the face of the critical problems of ocean fisheries of the United States, can be most accurately assessed when a maximum amount of information is available. Contributions from many disciplines and perspectives are needed toward that end. It is hoped that the present study will add something useful to the enterprise of preserving and strengthening New England's fishing industry.



The Two Populations

Vessel Types and Sizes

New Bedford is the largest New England fishery. At the time of our study it sustained approximately 125 vessels, while Stonington had 30, more than half of which were lobster-pot boats. In the past, New Bedford had many more fishing vessels, but poor fishing and the promise of greater success in the Gulf of Mexico or Pacific Northwest lured many away. Table 1 gives the frequency of vessel types upon which our 21 Stonington and 61 New Bedford respondents worked; however, it should be pointed out that our samples may not be proportionate to the actual number of vessel types in each port.

Table 1. Distribution of sample vessel types by port.

<i>Vessel Type</i>	<i>Stonington</i>	<i>New Bedford</i>	<i>Total</i>
Skiff	1	—	1
Lobster-Pot Boat	7	2	9
Converted Shrimper	—	—	—
Otter Trawler (Eastern Rig)	1	40	41
Otter Trawler (Western Rig)	12	1	13
Stern Trawler	—	3	3
Scallop	—	15	15
<i>All Types</i>	21	61	82

The majority of respondents in New Bedford worked aboard Eastern-rigged side trawlers characterized by an "aft" wheelhouse. Most Stonington respondents sailed on Western-rigged side trawlers. On the latter, the wheelhouse is forward on the deck. Most lobster boatmen came from Stonington, whereas all the scallopers came from the New Bedford fleet, thus demonstrating the variation in fishing styles existing in the two fisheries as well as the fact that the sampling procedure achieved a fairly accurate representation of each kind.

The data in table 2 reveal that New Bedford was not only the larger port in terms of number of vessels, but also in terms of vessel size. This is related to the fact that New Bedford is farther from its fishing grounds than is Stonington.

Table 2. Average vessel size in feet and duration of average voyage in days by port.

Port	Average Vessel Size (in Feet)	Average Trip Duration (in Days)
Stonington	49.4	2.2
New Bedford	79.3	8.2

In addition, the average New Bedford "trip" was substantially longer than that of the Stonington fleet. Thus, New Bedford fishermen experienced a different occupational environment than those from Stonington.

Age

New Bedford fishermen were older with an average age of over 48 years, while those in Stonington averaged 42 (see table 3). Norton and Miller (1966) found that among Boston draggersmen, more than 60 percent were over 54 years old. In our two samples combined only 23 percent were over the age of 55, and most of these were from New Bedford. This is an important consideration in the light of Norton and Miller's (1966) observation that:

A declining number of fishermen in conjunction with an advancing average age is similar to observed short-run personnel behavior in declining industries where older workers are, in effect, trapped in contrast to younger more mobile workers who are able to depart for expanding industries.

Table 3. Distribution of sample fishermen by age group and by port.

Age Group	Stonington		New Bedford		All Ports	
	Frequency	%	Frequency	%	Frequency	%
Under 25	2	10	1	2	3	4
26-35	3	14	7	11	10	12
36-45	9	42	12	20	21	26
46-55	5	24	24	39	29	35
56-65	2	10	17	28	19	23
Over 65	..	..	..	..	..	..
Total	21	100	61	100	82	100
Average age	41.7		48.3		45.0	

Of our two samples, New Bedford fishermen were clearly older, with 28 percent of them over 55 years of age. Stonington had ten percent over age 55; ten percent of the Stonington respondents were under 25 years old compared to only two percent in New Bedford.

Education

Such contrast in average age leads social scientists to believe that educational level may also differ. Table 4 reveals that education not only varied from port to port, but did so in a manner generally consistent with age.

Table 4. Distribution of 82 sample fishermen by educational level and port (percent).

Years of Schooling	Stonington (21)	New Bedford (61)
1-6	10	15
7-9	28	47
10-11	38	16
12	19	20
1-3 College	5	2
Total	100	100

While the New Bedford sample contained a substantial number of individuals who attended or completed high school (36 percent), the majority of respondents (62 percent) went no further than ninth grade. Stonington respondents formed a group in which a majority had at least some high school training. Only five respondents completed high school, however, and only one went on to college. This is comparable to Norton and Miller's (1966) conclusion that "less than one-fifth of Boston's off-shore fishermen have completed high school."

When one adds educational attainment to the relationship which Norton and Miller (1966) found between increasing age and symptoms of decline in the Boston trawler fleet, it seems to follow that the more mobile fishermen are in terms of age and education, the less bound they are to the occupation due to market conditions. Therefore, Stonington fishermen should be less "locked in" to fishing when compared to the older, less educated fishermen of New Bedford who may be occupationally "trapped." We may identify the difference in commitment either as entrapment or as "af-

fective investment" in or "attachment" to a job. The former assigns a passive role to the fishermen inasmuch as he must resign himself to the disadvantages that his age and education reap in the labor market. As affective investment, however, commitment is a dynamic process through which the individual binds himself to the job because of its own characteristics and the meanings that it has for him for other aspects of his life.

Place of Birth

All but two Stonington fishermen were born in New England, and 38 percent were born in Stonington itself (see table 5). When adding this to the fact that Westerly, Rhode Island, and environs are so close as to be indistinguishable from Stonington, one realizes that an overwhelming proportion of the Stonington fleet (67 percent) consisted of indigenous fishermen.

Table 5. Distribution of fishermen's place of birth by port.

Birthplace	Stonington		New Bedford	
	Frequency	%	Frequency	%
Stonington	8	38	..	..
New Bedford	..	..	10	16
Rhode Island	6	29	..	..
Other Connecticut	1	5	..	..
Other Massachusetts	..	..	9	15
Other New England	4	19	3	5
Other U.S.	2	9	9	15
Puerto Rico	..	..	..	..
Canada Maritimes	..	..	8	13
Norway	..	..	13	21
Portugal	..	..	7	11
Other Europe	..	..	2	3
Total	21	100	61	100

New Bedford provided some contrast. Although 36 percent of these respondents were born in New England (16 percent in New Bedford), nearly half were foreign-born. Twenty-one percent came from Norway, 11 from Portugal, and 13 from Canada's Maritime Provinces. This is consistent with New Bedford's historical use of an immigrant labor force to provide the manpower for textile mills. Moreover, the practice of sponsorship still exists among New Bedford fishermen; that is, often a respondent had im-

migrated to the United States when a relative promised him a job on a trawler or scalloper. At the time of the study he was doing the same for another relative.

Ethnicity

As an indication of ethnicity, each respondent was asked whether or not he, his father or his mother spoke a language other than English (see table 6). The term "Yankee" was used to describe those respondents of primarily Anglo-American origin, i.e., those who had no history of non-English languages spoken in the family.

Table 6. Fisherman ethnicity by port.

Ethnic Group	Stonington		New Bedford		Total	
	Frequency	%	Frequency	%	Frequency	%
Yankee	4	19	24	39	28	34
Portuguese	13	62	15	25	28	34
Norwegian	..	..	15	25	15	18
Other	4	19	7	11	11	13
Total	21	100	61	100	82	100

Two ethnic groups predominated in Stonington—Yankee and Portuguese. These two groups contained four fishermen whose families spoke *only* English and ten fishermen whose families spoke *only* Portuguese.

Ethnicity in New Bedford was generally congruent with responses concerning place of birth as reported in table 5. Thirty-nine percent of these fishermen reported having a Yankee background—making this group the largest in the port. Norwegian or Portuguese ethnicity each could be assigned to 25 percent of the New Bedford respondents. However, that these two groups were probably more prevalent than the data show is indicated by the fact that fishermen not able to speak English were not included in the sample.

Income

Income data are included here for descriptive purposes. Respondents were asked a battery of questions concerning their sources of personal

income, whether from fishing, alternate jobs, wife's job, investment or other sources. The results for Stonington respondents, shown in table 7, reveal that for most fishermen, fishing was the *only* source of income. Only four fishermen had other jobs, and four had investments. One interesting observation is that only seven, or 37 percent, of the 19 married fishermen had wives that worked outside the home.

Table 7. Annual income characteristics of Stonington fishermen, 1972.

<i>Income Variable (Net)</i>	<i>Average</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Number</i>
Fishing Income	\$ 9,595	\$3,200	\$18,000	21
Alternate Income	4,000	1,000	7,500	4
Wife's Income	7,185	1,300	28,000	7
Investment Income	2,325	800	3,000	4
<i>Total Income</i>	<i>\$14,060</i>	<i>\$3,200</i>	<i>\$39,000</i>	<i>21</i>

The average net fishing income in New Bedford as shown in table 8 exceeded that of Stonington fishermen by over \$3,000. Also, the maximum net fishing income reported is just short of double the highest fishing income in Stonington. There are some fishermen, characterized by the minimum net fishing income data, who make very little money. That fishermen's wives can make significant economic contributions to the family's income is demonstrated by the fact that one wife reportedly made over \$20,000 dollars. Again this is more than the highest earning Stonington fishermen made.

Table 8. Annual income characteristics of New Bedford fishermen, 1972.

<i>Income Variable (Net)</i>	<i>Average</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Number</i>
Fishing Income	\$12,700	\$ 900	\$31,800	61
Alternate Income	3,927	550	12,000	4
Wife's Income	4,507	1,000	20,032	17
Investment Income	1,623	30	10,000	25
<i>Total Income</i>	<i>\$14,878</i>	<i>\$5,650</i>	<i>\$34,400</i>	<i>61</i>

Of course, differences in fishing income are related to days spent at sea. Stonington fishermen spent an average of 155 days at sea for an income of \$62 per diem, whereas New Bedford fishermen averaged \$66 for each of their 191 days at sea. This meant that New Bedford fishermen earned 32 percent more money while working only 23 percent more days.

Occupational Roles

One other important characteristic in describing our samples of fishermen is occupational role. The traditional "lay" system provides different rewards in the form of income for various new positions. The skipper gets his regular crew share plus 10 percent of the boat share. But income is not the only other factor involved here; owners and skippers tend to be the oldest and most successful fishermen financially and, perhaps, in the eyes of their peers.* The distribution and percent of respondents falling into the three major occupational roles are presented in table 9; some characteristics of this table merit brief explanation. First, separate distinct roles such as cook, engineer and mate, which may be appropriate to New Bedford's fishery, have little meaning for Stonington where roles were largely interchangeable and crew sizes were much smaller. Therefore, occupational role was broken into three categories to permit the best comparison across the two ports.

Second, there were more owner-skippers (those who own all or part of a vessel and regularly act as captain) and skipper-mates (non-owners) represented in the sample than deckhands. In fact, 40 percent of the sample for the ports consisted of respondents from this group.

The situation among Stonington fishermen was somewhat different. In table 1 it was noted that seven respondents worked primarily on lobster-pot boats. Since this mode of fishing is typically a one-man operation, all such subjects were classified as "owner-skippers." Add to this the one fisherman who worked on a skiff, or small open boat, and it appears that the preponderance of this role type in Stonington was representative of the fishing population.

Table 9. Distribution of sample fishermen by occupational role and port.

<i>Occupational Role</i>	<i>Stonington</i>		<i>New Bedford</i>		<i>Total</i>	
	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>
Owner-Skipper	13	62	20	33	33	40
Skipper-Mate	5	24	16	26	21	26
Deckhand	3	14	25	41	28	34
<i>Total</i>	<i>21</i>	<i>100</i>	<i>61</i>	<i>100</i>	<i>82</i>	<i>100</i>

* One must remember that the population is defined as individuals currently fishing and therefore does not include absentee-owners or capital investors.



Fishing as a Way of Life

Social scientists use the concept of subculture to refer to a group which is somewhat but not completely different from the greater culture of which they are a part. This group may be a class, an ethnic population, an occupation or one of a variety of other types of social or cultural units. It differs from its main culture in such characteristics as work patterns, home furnishings, diet, dress, domestic routines, magico-religious ritual, ideology and speech patterns. Without trying to exhaust the possibilities we shall examine some of the important characteristics of the two fishermen populations studied with an eye to how they differed and how they were similar to their landbound counterparts. We shall suggest that fishermen form an occupational sub-culture within the wider American culture.

Kinship and Family

Of fundamental importance to social organization are the institutions of kinship and family. For fishermen these institutions have particular importance. It is through kinship that a good deal of occupational recruitment takes place, and it is through a shift in the wife's role that a fisherman's family functions effectively when he is away.

Table 10. "How did you get into fishing?"

Stonington	No.	%	New Bedford	No.	%
Through kinsmen	15	71	Through kinsmen	36	59
Self-motivation	4	19	Self-motivation	17	28
Friend	2	10	Friend	8	13
	<hr/> 21	<hr/> 100		<hr/> 61	<hr/> 100

As a measure of the influence of kinship on occupational recruitment we asked our respondents to indicate how they got into fishing. The responses (see table 10) show the powerful role of kinship in recruitment in both ports. Of kinsmen, fathers accounted for 60 percent in Stonington and 64 percent in New Bedford. Thus, father-to-son occupational succession was particularly important in these ports; moreover, table 11 shows an even broader network of kinship involvement in fishing.

Table 11. "Do you have other relatives besides your father who fish?"

	Yes	%	No	%
Stonington	15	71	6	29
New Bedford	37	61	24	39

While the majority of our respondents had only one additional relative who fished, some had as many as seven. In Stonington 15 fishermen had a total of 32 relatives in fishing while 37 New Bedford fishermen had 59. Although the kinship network was present in both populations, it was more extensive in Stonington.

In interviews with a number of fishermen the role of a fisherman's wife was emphasized as important to his success. It was stated that a fisherman's wife had to be a special kind of person who could take over many decision-making and family management tasks that ordinarily would be carried out by the father-husband. The reason is that even day-fishermen are away from home and out of communication with home for long periods, particularly during the summer when days and fishing time are longer.

In order to obtain an indication of how wives viewed their husbands' occupation we asked the fishermen to indicate "what their wife's attitude is toward fishing," including what the wife liked the most and the least (see table 12).

Table 12. Wife's attitude toward fishing as reported by husband.

<i>Likes the most</i>	<i>Stonington</i>		<i>New Bedford</i>	
1. Happy doing something I like or that gives me independence	8	42%	2	3%
2. Financial security	7	37%	17	28%
3. Doesn't like anything	3	16%	17	28%
4. Finds fishing interesting	1	5%	1	2%
5. That I can take a block of time off	—	—	10	17%
6. She takes it for granted	—	—	4	7%
7. Don't know	—	—	7	12%
8. Other	—	—	2	3%
	19	100%	60	100%
<i>Like the least</i>				
1. Time away from home	11	58%	44	72%
2. Irregular hours	6	32%	—	—
3. Likes nothing	2	10%	—	—
4. Worries about safety	—	—	5	8%
5. Don't know	—	—	8	13%
6. Other	—	—	2	3%
7. Bringing up children alone	—	—	1	2%
8. Sailing day	—	—	1	2%
	19	100%	60	100%

The answers to these questions clearly show the ambivalent feelings that the wives had toward fishing. On the one hand there were the positive feelings of happiness that the husband was doing something that he liked and that there was a good economic return for his effort. On the other hand, we see the negative view toward the occupation because it took husband away from home or had him keep irregular hours.

The results also show that there was considerably more support of their husbands on the part of Stonington fishermen's wives. In this respect one could argue that the Stonington fishing subculture was better adapted to the fishing occupation. However, it may also reflect the fact that Stonington fishermen who worked on small boats with small crews and who generally returned home each night may have enjoyed their work more than the New Bedford fishermen who worked aboard the large trawlers with a high division of labor and who spent considerably more time at sea. In a recent study by Marshall (1973) who has attempted to measure "emotive commitment to fishing," it would appear that New Bedford fishermen's commitment to fishing was based more on income than on non-monetary rewards.

Material Style of Life

Since the wife's positive attitude toward her husband's work was in good part related to economic return, we analyzed what we call the material style of life of the fishermen's households. We measured the level of material comfort of these households with a Guttman scale analysis of material items in the home. As can be seen in table 13, the general standard of living among these fishermen was quite high. Most were homeowners with a telephone, radio, washing machine, dryer, hi-fi and color TV. A third of the households had air conditioning, two cars, a dishwasher, two baths and eight or more rooms. In comparing the two ports in terms of material style of life, we found that there was no significant difference between them.

In comparison to many blue collar workers on land, it would appear that these fishermen had a significantly higher material style of life. Data from a group of New England textile workers suggest this to be the case (Poggie and Gersuny 1974).

Table 13. Guttman scale of material style of life.

Scale Step	Item Content	Percent of Respondents At and Below This Step	Scale Errors in Step
I	Telephone	100	4
II	Radio, Homeowner & Dishwasher	99	4
III	Hi-Fi	98	4
IV	Lawnmower	95	5
V	Color TV	93	21
VI	Clothes Dryer	76	14
VII	B & W TV	62	19
VIII	Freezer	49	12
IX	2 or More Cars	40	10
X	Air Conditioning	34	8
XI	Dishwasher	28	20
XII	2 or More Baths	18	11
XIII	8 or More Rooms	12	23

Coefficient of reproducibility = .90

As a further indication that these fishermen's incomes were more than adequate to satisfy their material needs, we need only consider the implications of the responses to the question, "If you suddenly inherited \$2,000 what would you do with it?" As shown in table 14 more than half of the respondents in both ports said that they would "bank or invest it." This indicates feelings of material satisfaction. In contrast, when we asked a sample of mill workers from a nearby community the same question, only 15 percent responded in this way (Poggie and Gersuny 1974:83).

Table 14. "If you suddenly inherited \$2,000 what would you do with it?"

	Stonington		New Bedford	
1. Bank or invest	11	52%	35	57%
2. Buy new car	3	14%	1	2%
3. Make boat repairs/buy equipment	3	14%	—	—
4. Pay bills	2	10%	4	7%
5. Make home improvements/repairs	—	—	3	5%
6. Give to kids	2	10%	4	7%
7. Vacation	—	—	7	11%
8. Give to charity	—	—	3	5%
9. Other	—	—	4	7%
	21	100%	61	100%

Perceptions of Work

The common ideas of its members are an important part of any subculture. In order to determine if there were ideas about their work which formed a patterned part of the subculture, we asked two questions to elicit information about perception of work. We asked these fishermen to respond to the questions "What do you feel you get from your work that you could not get from other jobs you could do?" and "What qualities make a man good at your kind of work?"

The responses to the first question indicate that there was indeed a considerable amount of patterning and that these fishermen perceived this work as providing more than "just a way to earn money." Although these men indicated they felt that they were receiving a good income from their work, they also perceived themselves as gaining independence and doing something they liked. There are slight differences concerning perception of work between the two ports. The most notable of these is that 28 percent of the Stonington fishermen mentioned that they felt they were "doing something they liked," while only 14 percent of the New Bedford sample made this statement (see table 15).

Table 15. "What do you feel you get from your work that you could not get from other jobs you could do?"

Responses	Stonington		New Bedford	
Independence	12	23%*	41	30%
Good income	11	21%	41	30%
Doing something I like	15	28%	19	14%
Working outside	9	17%	3	2%
Challenge	4	7%	10	7%
Time off	1	2%	6	4%
Type of work	1	2%	6	4%
Only thing I know	—	—	4	3%
Other	—	—	7	6%
	53	100%	127	100%

The notion that being a fisherman is more than having just an assemblage of skills and a desire to make money is further supported by the responses to the question "What qualities make a good fisherman?" As can be seen in table 16, the attitudinal characteristic was emphasized most; in the view of fishermen from both ports "having the right attitude" was the most important quality for being a good fisherman.

* Percentages are of responses.

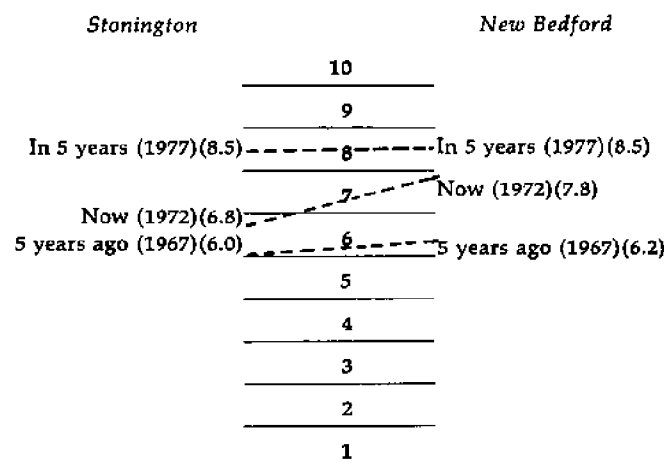
Table 16. "What qualities make a man a good fisherman?"

	Stonington		New Bedford	
Right attitude	14	66%	37	61%
Able to work hard	1	5%	17	28%
Fishing skills	5	24%	3	5%
Don't know	1	5%	2	3%
Start young	—	—	2	3%
	21	100%	61	100%

General World View

World view refers to a person's pattern of attitudes about the world and his place in it. We tried to measure this ideational characteristic by assessing our respondents' feelings of optimism as well as what they felt were the best and worst things that could happen to them. In our informal interaction with fishermen we perceived them as non-alienated, optimistic men who enjoyed their work. Our systematic data on their world view supports this. As a measure of optimism we asked our respondents to look at a diagram of a ten-rung ladder and answer the questions in table 17.

Table 17. Question to measure optimism. Here is a picture of a ladder. Suppose we say that the top of the ladder represents the best possible life for you. Where on the ladder do you feel you personally stand at the present time? Where do you think you stood five years ago? Where on the ladder do you think you will stand five years from now? (Cantril 1963).



Both populations showed a pattern of optimism in that they both felt that their position had improved in the past five years and would continue to improve in the next five.

Responses to the questions "What is the best thing that could happen to you?" and "What is the worst thing that could happen to you?" indicate that continued good health and loss of health made up by far the most salient concerns of the two populations. These were the only highly patterned responses to both questions. There was no strong sense of "escapism" projected in these answers as was the case with mill workers from the same area (Poggie and Gersuny 1974:60).

From these data we conclude that the subculture of fishermen differs sharply from that of blue collar landbound counterparts in that fishermen are highly optimistic and reasonably satisfied with their place in the world.

Conclusion

The data seem to indicate that these fishermen tended to derive much more from their work than income and thought of their work in ways other than as a means of gaining a living. Alienation was not apparent among these men; feelings of optimism and satisfaction with work were common. We have analyzed these fishermen and their families as a subculture within American society. The effects of change caused by forces outside the subculture must be understood in terms of that subculture, and it is to a consideration of these impending changes that we shall now turn.



Alternatives to Fishing

In his treatise on *The Freedom of the Seas* published in 1608, Grotius charged that "If a man were to enjoin other people from fishing, he would not escape the reproach of monstrous greed." The reason this great political philosopher gave for the assertion that ocean fisheries should be an open-access resource was that

... it is most outrageous for you to appropriate a thing, which both by ordinance of nature and by common consent is as much mine as yours, so exclusively that you will not grant me a right of use in it which leaves it no less yours than it was before (Grotius, 1916:38).

The idea that the entry of competitors into a given fishery would not diminish the catch of its original exploiters was consistent with the state of the fisherman's art at the time Grotius wrote and for over two centuries thereafter. The technology of fishing was such that overfishing in most ocean fisheries was not a prospect that entered the debates of statesmen over sovereignty. The technology was consistent with the physical environment in the sense that it did not provide a capability for destroying the resource. Under those conditions, the ideology of open access and the social organization reflecting that ideology produced no strain in the equilibrium of human ecology.

The anarchy of this approach to fishing did not become problematic until mid-twentieth-century technological developments evoked the stark prospect of an end to fishing. The ideology of open access has become an anachronism and in the absence of social organization that can effectively restrain the application of technology, the physical environment will in time cease to yield catches of many species sufficient to justify setting out to sea.

The myth of abundance of the sea's wealth in fisheries can no longer be maintained in the face of the growing record of depletion of stocks and the increasing conflicts over the scarce resources (Christy, 1973: vii-viii).

The reported drop of the U.S. fishermen's share of the catch off southern New England from 100 percent in 1960 to 20 percent in 1970, refuting the premise of Grotius, is attributable to technological development. Moreover, not only the American share but the total catch is diminishing because of overfishing.

Efforts to limit the total catch by international agreement, such as the quotas established by The International Commission for Northwest Atlantic

Fisheries (ICNAF), are difficult, if not impossible, to enforce in the absence of a supranational control agency, as witness the report that fishing effort in the Georges Bank area exceeded the effort appropriate for maximum sustainable yield of groundfish by 31 percent in 1971 and by an estimated 77 percent in 1972 (Christy, 1973:17). The main reason appears to be that self-restraint in exploiting an open-access resource is likely to enrich the competition rather than conserve the resource.

Consequently there is urgent need to restrict access, and this need which can be met through establishment of a 200-mile fisheries management zone in which the United States would exercise exclusive jurisdiction to make possible rational conservation measures in the fisheries off our coast. However, both unilateral establishment of such a fisheries zone by act of Congress and multilateral establishment by international agreement face serious obstacles because conflicting interests, including some that are immeasurably more powerful than the New England fishing interests, are opposed. Nevertheless, the fishermen are strongly committed to this measure and 59 of the 61 New Bedford men we interviewed felt that the 200-mile limit would prevent the destruction of their livelihood and would in fact facilitate a fisheries renaissance.

Because this remedy is not at hand, however, it is necessary to study alternatives to fishing for those who may be displaced. Survey questions addressed to alternative occupational choices may be of some practical value both for organizations of fishermen and for agencies that may have to deal with the problems of ex-fishermen if current trends persist.

In probing attitudes connected with possible loss of opportunities to continue fishing we dealt with two distinct but related processes in social life. The first was migration or geographic mobility which deals with moving to another place in search of employment. The second was social mobility, which means rising or falling on some ladder of rank, be it income, prestige or another value that is unequally distributed in the society.

Responses to lost fishing opportunities in the home port could include moving to another location and/or to another occupation. The former involves moving to another labor market area, defined as a different metropolitan area or, in the case of non-metropolitan residents, a different county from their previous place of residence. The latter often, though not necessarily, involves a change in rank.

Migration is often thought to be a response to adverse factors that "push" people out of their previous locations and attractions that "pull" them to another place. If one's situation is undesirable he may be impelled to move, but if there is no place that is perceived to be potentially more desirable there will be little or no migration. First among push factors contributing to migration, according to Bogue (1969:753) is decline in resources, such as depletion of minerals, forests or agricultural land. People tend to remain in one place as long as their needs are met and when the physical environment no longer supports these needs, they tend to be pushed out. Whether or not they move away depends on the pull of alternative opportunities in other locations.

Those whose needs are met through extraction of a non-renewable resource, such as miners, characteristically face an insecure future as the mine becomes exhausted.

What we are doing as a mine is to liquidate operations, but that, essentially, is what any mining is at the best of times—what you are mining has absolute limits, and so therefore liquidating operations is (sic) the same as mining (Lucas, 1971: 96).

Thus mining is an activity that is associated with ghost towns: a community springs up where prospectors discover a lode of some valuable mineral and dies when the resource base is used up. In Bodie, California, the population reached a peak of 15,000 in the late 1870s and tens of millions of dollars worth of gold were mined until the deposits were exhausted:

Eight people lived in Bodie in 1946; but there is no one in this mummified town today, except in summer. Then a few hardy men live in its barren houses, and curious tourists wander through the empty streets, peering into the brick vault of the bank, photographing the blocks of boarded-up houses and stores, or visiting the small museum. . . . The rotting wooden sidewalks echo their footsteps and the wind carries the sound to the barren hills, whose treasure drew so many men to the high and desolate basin (Wolle, 1955:134).

This poignant evocation of a ghost town of the Old West serves as a cautionary tale for our coastal fishing communities. While the fishermen exploit a *renewable* resource and thus differ fundamentally from miners, the renewability of their resource has limits which, as we have discussed earlier, are governed by natural laws that man violates at his peril. Thus, while New Bedford is a far cry from Bodie, a museum is the principal memento of its whaling fleet. Other examples of renewable resources de-

stroyed for want of conservation, meaning effective social control, can be adduced. In agriculture, the dust bowl, immortalized fictionally in *The Grapes of Wrath*, suffices to make the point.

Miners moving on when deposits become exhausted and Okies fleeing in their jalopies from the dust bowl contributed to the record of labor mobility in the United States. Pushed out by environmental change, they moved on to seek other ways of meeting their needs. If efforts to stop overfishing fail, commercial fishermen will be confronted with the same kind of push. That this prospect is not chimerical but very real is now widely recognized, and in our survey we asked the interviewees a number of questions about what they would do if they could no longer fish, and about moving from their present residence.

Obstacles to Geographic Mobility

Exhaustion of mineral deposits, erosion of topsoil or closing of factories are occurrences that generate a strong push for migration, yet there are few ghost towns compared to the frequency of these contingencies. Not everyone affected by them is equally prone to move. The characteristics associated with differences in readiness to migrate are important in the context of our study. While the list is not exhaustive, the most important factors distinguishing movers from non-movers are age, education, skill and home ownership. The young are more likely to move than the old; the better educated more likely than the less educated; the skilled more likely than the unskilled; and those who do not own their own home more likely than those who do.

Thus in depressed areas where there is a strong push for out-migration, the population that remains is characterized by a disproportionate number of people over 55 years old, with only a grade school education and limited occupational skill. The younger, better educated and more skilled are more likely to leave. At the same time there is less out-migration from many depressed areas than one would reasonably expect because there is a lack of information about opportunities in other labor markets, because ties of community and kinship contribute to inertia and because selling a home in a dying community generally entails a substantial loss (see Lansing and Mueller, 1967:291-322).

Factory Closings and Downward Mobility

Changing jobs often involves changing rank in terms of income and prestige. Individuals change occupations and jobs for many reasons, but in this context we are most concerned with forced changes resulting from the disappearance of an on-going enterprise on which a group of people have depended for their livelihood. There have been a number of studies of the social effects arising from the permanent closing of textile mills, meatpacking plants and other factories, and their findings are instructive.

Upward mobility is represented by increased income, improved occupational position or greater prestige and downward mobility by the opposite effects. Some who fall victim to job loss resulting from permanent factory closings may indeed become upwardly mobile, but more often the experience leaves people worse off than before. This is particularly true in cases of group mobility in which a whole factory population is dismissed en masse, a situation which has been documented in a variety of industries. However, as we shall see, the hardships are not uniformly distributed.

When the manufacture of Packard automobiles stopped in 1956 some 4000 workers lost their jobs. In a survey one year after the shutdown, 48 percent of the Packard "alumni" interviewed had experienced at least six months of unemployment, and a year later 61 percent of workers in another sample survey reported at least six months of idleness in the two years since the factory had shut down. The average hourly wage of those who found new jobs was 14 cents lower than their rate of compensation at Packard. Savings were depleted and purchases of food and clothing were reduced.

That downward mobility after the Packard shutdown was not uniform can be seen from the difference in the average duration of unemployment by age and skill (Sheppard, et al., 1960:21):

Age	Average Months of Unemployment		
	Skilled	Semi-skilled	Unskilled
Under 50	5.6	7.5	11.2
50-64	8.5	12.6	13.8

Similar findings were made in a study of four Armour meatpacking plants that were closed permanently in 1959. The displaced workers ex-

perienced long periods of unemployment and many of those who found jobs had to accept lower wages. Again older workers had greater difficulty in finding work and as a group experienced greater downward mobility than younger workers. The average pay cut for the Armour workers who found new jobs ranged from 41 percent in Oklahoma City to 9 percent in Columbus, Ohio. Double the proportion of workers over the age of 55 compared with those under 35 were out of work for the whole year after the shutdown (Wilcock and Franke, 1963:55).

Very few of the workers displaced from the factories in these studies moved to other labor markets. In the two years after the Packard closing only six percent of the workers left the Detroit area (Sheppard, *et al.*, 1960:73). In the Armour study fewer than four percent of the displaced workers moved more than 100 miles and 80 to 90 percent confined their search for work to their local labor market area (Wilcock and Franke, 1963:69). Age, home ownership and whether or not other family members were employed were some of the reasons advanced for reluctance to move.

Displacement from one's accustomed work often brings downward mobility through loss of income and security. The analogy has been drawn by Sorokin (1927:134) that this happening to individuals is comparable to an individual falling overboard from a ship, and for whole categories, such as the factory employees in the studies reviewed, is akin to shipwreck.

Reacting or Anticipating

There are obviously two ways of dealing with problems—letting events run their course, or by seeking remedies or anticipating certain outcomes and seeking preventive measures. The impact on workers of ghost towns, dust bowls and dismantled factories is instructive for anyone interested in anticipating the impact of unabated overfishing.

The knowledge that the oldest, least educated and most unskilled in these fisheries would be hardest hit, and that home ownership and lack of labor market information are important obstacles to potentially profitable geographic relocation can be applied by relevant agencies in programs to cushion the impact of an end to fishing. This by no means implies a fatalistic acceptance of the notion that fishing is doomed any more than purchase of flight insurance assumes that the plane will crash. Furthermore, the knowledge gleaned from these surveys can be fruitfully combined with

the anticipatory responses of the fishermen in our survey to tailor programs suitable to them.

Mobility Potential

From the review of previous research we know that age, education and skill are important variables affecting the fate of workers whose accustomed source of livelihood is destroyed by technological, environmental or market changes.

With respect to age, we have seen that two-thirds of the New Bedford fishermen were over 45 years old, while only one half of that proportion, 34 percent, of Stonington fishermen were in the 45-and-over bracket. From this it may be inferred that the negative impact of an end to fishing would be more severe in New Bedford than in Stonington; older groups of displaced workers invariably experience longer unemployment, greater loss of earnings when they find alternative employment and greater obstacles in moving to other labor market areas.

Similarly, educational differences figure in the reemployment prospects of workers in depressed areas. If the fisheries in this study were to become depressed areas the fact that 62 percent of the New Bedford group and 38 percent of the Stonington group had had nine years or less of formal schooling would be expected to have consequences in the aftermath if these fleets were to be beached. It should be pointed out in passing that the effects of age and education are not exclusive of one another, since older people generally have fewer years of formal education than younger people in the population at large. However, education is an important factor distinct from age in retraining and reemployment.

With respect to skill, the findings are somewhat ambiguous. In both fisheries, we find a majority who must be considered skilled within the context of the occupation: the skipper or engineer is clearly a skilled member of the crew while the deckhand or cook may be properly classified as less skilled or semi-skilled. In New Bedford, 67 percent were in the more skilled categories, 33 percent in the less skilled, while in Stonington the proportions were 71 percent and 29 percent. However, while the skill requirements of skippers and engineers on fishing vessels may be stringent, the transferability of many of these skills to land employment is problematic. This accounts for the large number of skilled fishermen whose occu-

pational outlook is directed only toward other maritime jobs in the event they can no longer fish. Thus a highly specialized skill may in itself serve as an obstacle to mobility if the object to which that skill is applied were to disappear.

Perceptions of alternative employment, both with respect to changing occupation within one's present location and geographic mobility to another place, are obviously affected by the realities of the social environment. These include the diversity of other economic activities in the given labor market as well as the levels and trends of unemployment, patterns of income distribution and other factors in the economic history of an area. We, therefore, have compared some aspects of the New Bedford and New London (in which Stonington lies) labor markets in table 18.

Table 18. Labor force distribution, 1970.

	New London No.	New Bedford No.	New London %	New Bedford %
Construction	4,348	3,715	6.1	6.0
Manufacturing	24,566	25,440	34.3	41.2
Durable Goods	(16,321)	(9,321)	(22.8)	(15.1)
Transportation, Communication, Utilities and Sanitary Services	3,288	3,314	4.6	5.4
Wholesale and Retail Trade	13,382	11,705	18.7	18.9
Finance, Insurance and Real Estate	2,255	1,666	3.1	2.7
Business and Repair Services	1,368	1,142	1.9	1.8
Personal, Health, Education & Other Professional and Related Services	17,051	10,321	23.8	16.7
Public Administration	3,924	2,627	5.5	4.2
Other Industries	1,438	1,848	2.0	3.0

We found the manufacturing sector to be somewhat larger proportionately in New Bedford than in New London. However, one-third was in durable goods in New Bedford, while two-thirds were in New London. These proportions are indicative of a capital-intensive, higher wage industry in New London and a lower wage level, mostly in the residue of a textile industry long in decline, in New Bedford. The sector of personal and professional services was about half again as large in New London as in New

Bedford, indicating a greater diversity of higher income occupations and a more advanced stage of economic development.

In 1970 the median family income in New London was \$1,039 higher than that in New Bedford (\$8,184 compared to \$7,145), according to census reports.

Up to the time of the interviews, unemployment was consistently higher in New Bedford than in New London. This pattern has continued, and in September 1973 the jobless rate was 6.1 percent in New Bedford and 3.5 percent in New London. New Bedford had been designated as an area of persistent unemployment, while New London was consistently the area of lowest unemployment in Connecticut.

Table 19. Comparison of unemployment rates.

Month	New Bedford (%)	New London (%)	Difference
January 1972	9.6	7.4	2.2
February 1972	10.6	6.4	4.2
March 1972	10.4	6.6	3.8
April 1972	9.8	6.6	3.2
May 1972	8.8	6.6	2.2
June 1972	9.0	7.5	1.5
July 1972	10.9	7.6	3.3

Mobility Potential

Interview samples were divided into two categories in terms of high or low mobility potential based on responses to the question "What would you do if you could no longer fish?" Lower mobility potential was indicated by responses that gave a fishing-related or other maritime occupation, retirement or simply a "don't know" answer. Higher mobility potential was indicated by naming any of a wider range of occupations on shore, such as mechanic, construction or factory worker or small businessman.

We found a significant difference between the mobility potential of New Bedford and Stonington fishermen, one that primarily reflects the difference between the two labor market areas discussed above. Because of the more prosperous and varied economy in the New London-Groton-Norwich metropolitan area, we expected and found a much greater mobility potential reflected in the perceptions of its fishermen than in the New

Bedford group. This again demonstrates the importance of the social environment in shaping the beliefs and attitudes of people in a particular social structure.

Table 20. Inter-port differences in mobility potential.

	Mobility Potential	
	Low	High
New Bedford	42 (70%)	18 (30%)
Stonington	9 (43%)	12 (57%)

$$\chi^2 = 4.86 \quad p < .05$$

Within the two ports we expected to find differences in mobility potential associated with differences in some of the variables discussed in the research literature on social and geographic mobility—especially age, education and skill. While we found some differences in the expected direction, they were not dramatic, i.e., not statistically significant. In both ports, older fishermen had a lower mobility potential than younger men. This is consistent with the general finding that the older a worker is the more restricted his opportunities will tend to be if he is forced to find new employment. In addition to the objective difficulties that older people have in competing with younger ones in many labor markets, the fact that age also affects aspiration levels may exacerbate the difficulties of older displaced workers.

Table 21. Age and mobility potential.

Port	Age	Mobility Potential	
		Low	High
New Bedford	44 and under	11 (61%)	7 (39%)
	45 and over	31 (74%)	11 (26%)
Stonington	44 and under	3 (25%)	9 (75%)
	45 and over	6 (67%)	3 (33%)
NS			

Similarly, those who have only a grade school education are generally hardest hit in depressed areas. However, in this study the differences were trivial even though the fishermen with more years of schooling did give responses that indicated a somewhat greater mobility potential.

Table 22. Education and mobility potential.

Port	Years of Schooling	Mobility Potential	
		Low	High
Stonington	9 or fewer	4 (44%)	5 (56%)
	10 or more	5 (42%)	7 (58%)
New Bedford	9 or fewer	29 (74%)	10 (26%)
	10 or more	13 (62%)	8 (38%)
NS			

With respect to skill level, the expectations based on previous research were not supported at all. There are several possible reasons. Often the lines of demarcation in the crew division of labor were unclear, as one would expect given the small crew sizes. Moreover, the knowledge and skill of skippers and engineers on fishing vessels are most readily transferable into other marine occupations, e.g., merchant marine, sightseeing or tug boat operation, which we subsumed under the category of low mobility potential. Finally, in the Stonington fishery, a large proportion of those fishermen classified as skippers plied their trade in one-man lobster boats.

Table 23. Skill and mobility potential.

Port	Occupational Category	Mobility Potential	
		Low	High
Stonington	skipper, engineer	8 (53%)	7 (47%)
	deckhand, cook	1 (17%)	5 (83%)
New Bedford	skipper, engineer	28 (72%)	11 (28%)
	deckhand, cook	16 (73%)	6 (27%)

On the face of it, we can plausibly define skippers and engineers as representing a higher skill level than deckhands and cooks, but our findings were inconclusive.

Potential for mobility depends in part on the image workers have of their capabilities as well as how they perceive the opportunity structure around them. These images will in turn be shaped in large measure by previous experience. One obvious source of variation in previous experience is age at entry into fishing. Among 41 New Bedford fishermen aged 45 or older, the range of entry age was from 12 to 39. Clearly the range of prior experience in occupations other than fishing would be much wider for a

man who began fishing when he was 39 than it would for one who started as a boy of 12. The earlier the entry into the fishing fleet, the narrower we would suppose the individual's perception of alternative kinds of work.

Among New Bedford fishermen, our findings confirmed that the older a man had been when he entered fishing, the more likely he was to perceive alternatives to fishing that would integrate him into the labor force on shore (Mann-Whitney U Test, $p < .002$). For a number of reasons, including small sample size and possibly characteristics of the local labor market, this relationship did not hold in Stonington.

The same dimension was tested in another way with similar results by looking at the variety of non-maritime experience in the work histories of our respondents. Without controlling the sample for age, we found results in the expected direction in New Bedford but not in Stonington, i.e., that those with more non-maritime work experience had a broader perception of alternatives to fishing than those with little or no such experience.

Table 24. Mobility potential—non-maritime work experience.

Non-maritime Work History		Mobility Potential	
		Low	High
New Bedford	Low	32 (72.3%)	12 (27.7%)
	High	9 (52.9%)	8 (47.1%)
$.20 > p > .10$			
Stonington	Low	6 (37.5%)	10 (62.5%)
	High	3 (60%)	2 (40%)
NS			

A number of questions probed different factors that could be considered plausible obstacles standing in the way of a worker's decision to pull up stakes and move to another community. These included financial cost of moving, leaving friends, leaving relatives and leaving the coastal community.

While in both ports a majority replied that the cost of moving would not be an obstacle, a majority did anticipate that the other three factors would be important to consider when making a decision to move. There is considerable similarity of response between the two ports except that Stonington

fishermen were more concerned about leaving their friends behind than was the case among New Bedford men. Concern for leaving kin was about the same.

Table 25. Obstacles to moving.

Consideration Against Moving	New Bedford		Stonington	
	Important	Not Important	Important	Not Important
Cost of moving	26 (45%)	32 (55%)	9 (45%)	11 (55%)
Leaving friends	33 (57%)	25 (43%)	16 (80%)	4 (20%)
Leaving relatives	37 (64%)	21 (36%)	12 (60%)	8 (40%)
Leaving coastal community	50 (88%)	7 (12%)	14 (70%)	6 (30%)

The only intra-port difference worth noting was related to age where in New Bedford the older men were significantly more concerned about leaving relatives behind than were the younger men. Among the New Bedford respondents aged 45 and over, 74 percent thought kinship considerations were important or very important in moving as compared to 42 percent of the men under 45 ($X^2 = 5.69$ $p < .02$). The older fishermen in Stonington also attached greater weight to kinship than the younger ones, but the difference there was not statistically significant.

There was far greater concern with leaving friends among Stonington fishermen than among the New Bedford group ($X^2 = 3.33$ $.10 > p > .05$). A plausible explanation may be that as a native-born group of long standing in the community, the Stonington fishermen had stronger friendship ties outside their kinship network than the New Bedford fishermen among whom there was a large proportion of foreign-born. In addition, workers in a day-trip fishery have more time on shore to cultivate friendships than workers in a distant-water fishery. In Stonington, 83 percent of the men under 45 attached importance to friendship as a factor to consider in moving as against 75 percent of those aged 45 and over. In New Bedford, the pattern was reversed, with 47 percent of the younger group and 62 percent of the older group expressing this concern.

In addition, 88 percent of the New Bedford sample and 70 percent in Stonington said they considered their attachment to the coastal community as an important factor to be weighed before moving away. The responses betoken a strong attachment on the part of fishermen to their homes close

Two Possible Approaches

to the shore, a potential obstacle to mobility in response to inland opportunities.

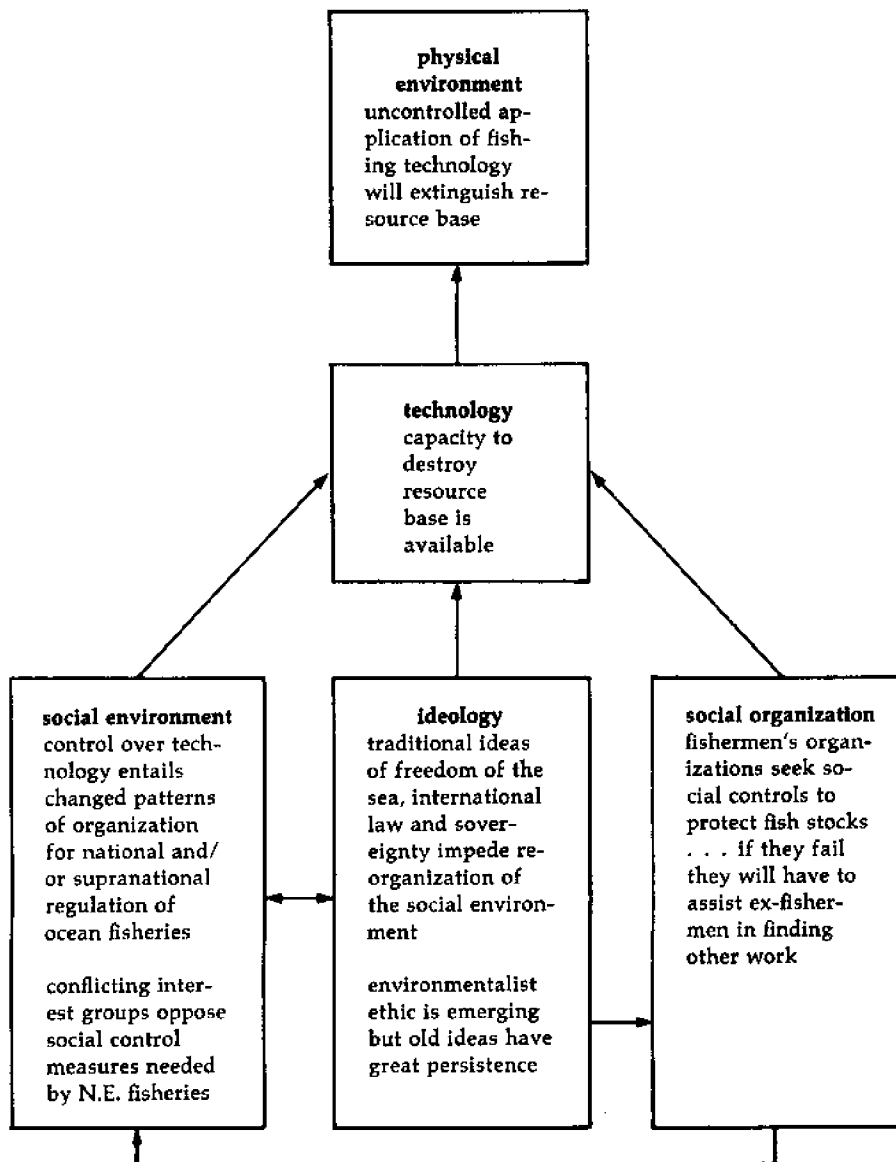
Finally, home ownership often is regarded as an impediment to geographic mobility, especially because widespread economic decline in a community means sellers may have difficulty in finding buyers and getting a fair return. Thus the dream of home ownership sometimes turns into a nightmare or at least a barrier to opportunity. In making estimates of the potential of fishermen for geographic mobility, the high incidence of home ownership must be taken into account. In New Bedford among the fishermen we interviewed, 59 (97 percent) were homeowners and only two (3 percent) were renters, while in Stonington, 17 (81 percent) were owners while 4 (19 percent) rented or lived with a parent. Thus, while the fishermen in large measure discounted the cost of moving as an obstacle to availing themselves of a distant opportunity, the cost of selling a home in a depressed housing market would be a significant factor.

Commercial fishermen in New England are the heirs of an occupational sub-culture of long standing; they are some of the last practitioners of the hunting and gathering mode of production in our industrial society. Thus, preservation of fishing and of the fishermen's way of life seems to be of greater value than is indicated by the size of this occupational group or the present rank of fish in the diets of their countrymen.

Two possible approaches to the crisis in fishing seem to be indicated by our findings. One lies in the direction of preventive measures and the other, in planning for the contingency if these fail. The preventive measures must deal with the complex matter of effectively limiting the catch of the endangered species, both by establishing a 200-mile fisheries zone *and* by controlling the catch of those who have access to that zone. The contingency is to plan programs on behalf of fishermen displaced from their chosen calling either because of limited access or failure of it.

If, as seems likely, fewer New England fishermen will be able to pursue their chosen occupation in the foreseeable future, probably because of overfishing, then steps must be taken to assist those displaced. These might entail improved pensions and a maritime placement program. For example, if the pension share of the New Bedford fishermen's lay were to be raised from its present 1 percent, a policy of early retirement could assist those whose mobility potential is most restricted because of advancing age. To create an effective placement program, lines of communication between the fishing industry on the one hand and shipping companies and maritime unions on the other could facilitate placing the substantial proportion of fishermen who would seek alternative employment in maritime industries.

Loss of our commercial fisheries would be regrettable, and failure to cope effectively with the growing disequilibrium in the scheme of human ecology makes that loss a very real prospect. With the model of human ecology, the interrelated problems can be summarized. Uncontrolled use of fisheries technology violates the natural laws embodied in the reproductive capacity of many species of marine life that are useful to humans. Changes in the social environment are needed to bring the use of technology under control. Long-standing thoughtways impede these changes and, barring dramatic success, the social organization of the fishermen may be confronted with the function of assisting ex-fishermen in search of alternative means of livelihood.



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