Fishing Ports of the Mid-Atlantic

by

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1. Introduction

This report is a social and economic profile of the fishing ports and coastal counties of the Mid-Atlantic region. It covers all but one of the states that have representatives on the Mid-Atlantic Fishery Management Council: New York, New Jersey, Delaware, Maryland, Virginia, and North Carolina.[1]

We tried to cover the recreational as well as commercial fisheries. We include descriptions of recreational fishing presence in the fishing ports visited. Our report provides descriptive information on the recreational fisheries, as well as other activities and land use issues in the ports. Our main goal was to study the fishing ports, as such, and thus we were precluded from a quantitative assessment of the recreational fisheries. The commercial weighout data from the National Marine Fisheries Serivce (NMFS) provide the only systematic source of data on a port basis. To compensate, we provide detailed social and cultural analyses of recreational fisheries of Wanchese, North Carolina, and the Manasquan River area of New Jersey.

The sources of information for this report are: (1) federal census and employment data, analyzed for the counties associated with the commercial fisheries of each state; (2) NMFS weigh-out data on 1998 landings, by species, gear-type, and port, together with similar data, by county, from the state of North Carolina; and (3) field visits and interviews, mostly carried out in June and July of 1999 by Marie Cieri and Jamie Gates, graduate students at Rutgers University and the University of Florida, respectively. In a few cases we also used other published studies, as well as information gathered from field visits and interviews done by McCay and Douglas Wilson in 1998 as part of a study of the social and cultural impacts of proposed changes in the management of highly migratory species. Numerous people helped us by explaining the nature of a state's fisheries, by pointing out where the fishing ports actually are (a very difficult task in many places), and by spending time to talk with us on the telephone and in person. We have protected the identities of our informants in the text, making it difficult to thank them properly. Clay Heaton, of the Mid-Atlantic Fishery Management Council, helped us manage the weighout data.

An important context for the study is National Standard 8 of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), which states that:
"Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities."

Section 3(16) of the MSFCMA defines a "fishing community" as:
"a community which is substantially dependent on or substantially engaged in the harvesting or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community."

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[1] Pennsylvania also has a seat on the Council but its commercial fishery, at least in 1998, was limited to a small fishery for horseshoe crabs in Chester County along the Delaware. Consequently, it was not part of this study.

Our approach to identifying fishing communities is to focus on places identified as “ports” by the port agents of the NMFS. We recognize that doing so may not capture the full scope and nature of the communities in which vessels owners, operators, crew and processors work and live, and which are dependent on fisheries to meet their social and economic needs. In many regions, including the Mid-Atlantic, harvesters are often highly mobile, landing fish or shellfish at distant and changing ports. Furthermore, given the high rates of population growth and development in the nation’s coastal regions, coastal municipalities, villages, towns, etc., are increasingly dominated by tourism or suburbanized, making traditional fishing activities appear marginal, despite their long-standing and continuing social, cultural, and economic importance. In addition, riising costs of coastal property and other factors increase the likelihood that people engaged in fishing live and spend their money away from the place where the fish are landed or where they are processed. That is one of the reasons that we limited our use of census and labor data to the counties. We figured that people who worked out of specific port are likely to live somewhere within the county, if not in the town or village identified with the port. (Another reason we provided county-level data is that economists are likely to use county-level data when generating economic impact analyses using programs such as IMPLAN.) We differ, however, from interpretations of National Standard 8 that would preclude the fishing businesses and families of the Mid-Atlantic from the definition of “fishing community” if they happen to work or live in places that have become important bedroom communities or tourist areas. Our delineation of the fishing ports is a start toward identifying the genuine fishing communities of the Mid-Atlantic.

We were unable, within the scope of our project, to do the in-depth community research being carried out in the New England and South Atlantic regions, under the MARFIN program. Our method was similar to the "rapid rural appraisal" approach: after doing a little background research, we visited the places identified to us as fishing ports and talked with people who work in the fisheries in those places. We rarely had more than one day in a place, and thus we could not talk with many people or obtain the kinds and amounts of information that would be required for solid research on the fishing communities. The report can, however, help sketch the outlines of fishing ports and, in some cases, fishing communities, and provide guidance and essential background information for social and economic impact analyses.

The report was done with the idea of eventually being able to identify differing kinds and degrees of vulnerability to regulatory change, following Douglas Wilson's impact assessment for the Highly Migratory Species division of the National Marine Fisheries Service (Wilson and McCay 1998). Analyses of weigh-out data provide information on degrees of dependence on certain species or species complexes, one kind of vulnerability. Census and employment data give an idea of the socio-economic condition of the area, including the cost of living, the likelihood of finding other work, poverty levels, and education levels, all of which may contribute to the vulnerability of communities and individuals.

Our field work paid particular attention to another factor, often neglected in social studies of fishing communities: how much the people and governing bodies of a fishing port support the fishing industry, or, conversely, the land-use pressures against commercial and recreational fishing. This is expressed in land use planning, zoning, variances, and nuisance ordinances. In most places we visited, there is strong economic pressure to convert waterfront properties to residential and recreational uses, making it difficult for commercial fishing operations to expand and, in some cases, even to continue. Service industries are often gone from fishing ports, forcing boat-owners or docks to go far to obtain needed services such as repairs and welding. In some communities, the commercial fishing area has received special zoning protection, and in others it has not. There is also variation in the availability of affordable dock space, whether private or public. In some places there are ordinances against working in certain hours, to protect home-owners nearby. Local support is also expressed in the presence or absence of cultural events, such as seafood festivals and monuments to fishermen, and how the fishing industry is

represented, if at all, in brochures and other materials used by chambers of commerce and tourist offices.

Vulnerability is affected by people's ability to organize and work together for common goals. We regularly asked about associations and other organizations to which fishermen and their families and other workers might belong (generally finding that this remains a weak point for most fishing communities in the region). We also asked about where fishermen "hang out," for coffee or drinks, suspecting that the existence of such places in a fishing port is an indicator of social interaction among fishermen, and thus a basis for potential communication and organization. (It may also be a good indicator of whether a fishing port is also a fishing community). Again, our report can only offer hints; other research must be done to followup on these questions.

We regularly asked certain other questions as well, including the ethnicity and gender of fishermen, dock workers, and packing and processing plant workers. There are very few women engaged in fishing per se, but they do exist and must have important stories to tell. Here and there we were told of ethnic minorities in the fisheries, particularly Vietnamese, although we did not meet any. On the processing and marketing side, major changes seem to have taken place, reflected in increased reliance on recent emigrants from Mexico, Central America, Southeast Asia, and other regions and less involvement of local 'whites' and African-Americans. Again, these are impressions gained from quick visits and interviews that need to be verified and explored in greater depth. Labor is a general issue for the fisheries, one that came up in several contexts, including difficulties in many areas finding people to work on the boats.

Following standard scientific guidelines for protecting the human subjects of research, we have not named our informants or the businesses we observed and visited. We have also tried to protect businesses by not describing in detail the weighout data for very small places or fisheries, although the National Marine Fisheries Service and the states already do this to some degree in their reporting. The field research for this report was supported by a grant from the Mid-Atlantic Fishery Management Council. Analyses of census, employment, and fisheries data and writing were supported by Rutgers University and the New Jersey Agricultural Experiment Station. The authors are, however, fully responsible for errors or misinterpretations.

The report is organized as follows: There is one chapter per state. The introduction includes a table of landings by port or other unit for the state. A demographic and employment profile for a coastal county is followed by profiles of the fisheries, based upon NMFS or, in the case of North Carolina, state data. Where possible, the fisheries are defined by fishing port (in North Carolina these data are only available to the level of county). Tables are presented which summarize all of the fishing gears used in 1998, by percentage of total pounds and value, and the same but only for the major species caught in 1998. Our definition of major is representing at least two percent of the total poundage or value, or both, in 1998. We also summarize total landings and total numbers of species. We then give the results of field observations and interviews, where these are available from fieldwork done in the summers of 1998 and 1999. The selection of sites and interviewees was done through consultation with MAFMC council members, Sea Grant marine advisory agents, fishing industry members, and other knowledgeable people.

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2. New York's Fishing Ports[2]

New York's commercial fisheries are concentrated on Long Island, which extends from Brooklyn, a borough of New York City, to the far eastern ports of Montauk and Greenport. There are also small, but historically and culturally important, fisheries for migratory species on the Hudson River and other rivers. The Great Lakes fisheries are entirely recreational and beyond the scope of this report.

In 1998, almost 55 million pounds, worth over 84 million dollars ex-vessel, and of course much more when multiplied by values created as seafood is processed, distributed, and sold to consumers, were landed in New York and recorded by the NMFS (Table NY1). Apart from the "Other New York" mentioned below, the major contributors to value were "Other Suffolk" (including the many and valuable shellfish and crustacean fisheries of the eastern end of Long Island), and then Montauk and Hampton Bays (i.e. Shinnecock) on the south fork. Other important ports include Greenport, Freeport (and neighboring Point Lookout), and Islip. We visited most of the ports identified in interviews with state officials and local industry personnel. Information on the significant party and charter boat fisheries of New York are available in another report (McCay and O'Neil 1999a).

New York is on the boundary of the New England and the Mid-Atlantic ecological and institutional systems, and the diversity of species as well as fisheries agencies and laws involved is very high. Its fisheries are also difficult to characterize in relation to NMFS weigh-out data and other information because they are quite widely dispersed. There are many well-known ports but large quantities of fish and shellfish are landed elsewhere. In addition, state waters (to 3 nautical miles) are extremely important to the state's fisheries. New York State's data on those fisheries do not include NMFS port codes. Consequently, the category "Other New York" in the NMFS weighout data is very large, accounting for 35% of the value and 23% of the pounds landed in 1998. Many of the fisheries of Long Island and Long Island Sound, particularly for lobsters, are represented in this category and not assigned to particular ports. The category also includes surf clamming and other fisheries that take place exclusively in state waters.

The NMFS weighout category "other New York" represents all landings for which information on the port, or the county, were not included or available. These are mostly landings from state waters for fisheries for which data are collected by the state but also include landings for which the NMFS port agents or contractors could not find information. It is a very large port category, the largest, at 12.6 million pounds or $29.7 million in 1998. These landings were mainly of inshore lobster (60.5% lbs., 90% value), but also surf clams (31% pounds, 8.4% value), and 21 other species, caught in small quantities with gill nets, handlines, pelagic longlines, pound nets, cast nets, diving gear, seines, and "by hand," i.e. hand raking and treading for shellfish. The hard clam fishery is very important in "other New York" as well as "other Suffolk" and "other Nassau." Crabs are very significant in "other New York:" blue crab, plus smaller amounts of lady crab, hermit crab, green crab, jonah crab, and rock crab were taken mostly with otter trawls. This category includes a large handline fishery for bluefish, scup, black sea bass, and especially striped bass.

A note of caution: the landings reported for New York State ports may or may not be all-inclusive. It is always possible that "other New York" landings actually were due to activity from those ports.

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[2] Revised April 20, 2000

Table NY1: Landings by County and Port, New York, 1998

Port Name	County	Pounds	Pounds	Value	Value
OTHER COLUMBIA	COLUMBIA	27,998	0.1%	41,957	0.0%
OTHER DUCHESS	DUCHESS	6,857	0.0%	8,736	0.0%
OTHER GREENE	GREENE	61,425	0.1%	64,948	0.1%
BROOKLYN	KINGS	29,995	0.1%	18,169	0.0%
OTHER NASSAU	NASSAU	595,246	1.1%	3,998,216	4.7%
FREEPORT	NASSAU	1,865,755	3.4%	1,504,849	1.8%
OTHER NY	NOT-SPECIFIED	12,572,737	22.9%	29,761,316	35.3%
OTHER QUEENS	QUEENS	1,369	0.0%	2,044	0.0%
OTHER ROCKLAND	ROCKLAND	9,508	0.0%	14,060	0.0%
OTHER SUFFOLK	SUFFOLK	5,822,837	10.6%	21,833,666	25.9%
MONTAUK	SUFFOLK	12,035,691	22.0%	12,108,833	14.4%
HAMPTON BAYS	SUFFOLK	13,140,570	24.0%	9,662,770	11.5%
GREENPORT	SUFFOLK	7,831,441	14.3%	4,140,488	4.9%
ISLIP	SUFFOLK	204,442	0.4%	539,449	0.6%
MATTITUCK	SUFFOLK	257,040	0.5%	286,569	0.3%
AMAGANSETT	SUFFOLK	250,295	0.5%	234,602	0.3%
SHINNECOCK	SUFFOLK	2,931	0.0%	13,523	0.0%
OTHER ULSTER	ULSTER	15,934	0.0%	21,549	0.0%
OTHER WESTCHESTER	WESTCHESTER	55,495	0.1%	67,075	0.1%
Total		54,787,566	100.0%	84,322,819	100.0%

Note: Shinnecock and Hampton Bays entries refer to the same port.

Nassau County Profile (includes the fishing ports of Mount Sinai, Oceanside, Point Lookout and Freeport) (In this and subsequent chapters, the county profiles are mainly based on 1990 census data plus more recent employment data).

Population
According to the 1990 Census, Nassau County had a population of 1,287,348. Females outnumbered males by a small amount, 3%. Rural areas claimed less than 1% of the population, and no one resided on a farm.

Racial and Ethnic Composition
Eighty-six percent of the Nassau County population was white while 8.6% of the population was black. American Indian and Asian each made up a small percentage of the population. The Hispanic population was also small, at 6%. Of the population, 86.8% was native. Of this 86.8%, 88.9% were born in New York. The largest declared ancestry was Italian (313,289 people) followed by Irish (256,182 people) and German (213,487 people).

Age Structure
According to the 1990 Census, the 25 to 44 year-old age group was the largest. It comprised 31.1% of the population. Of the population, 21.8% was under 18 years of age and 14.2% was over 65 years of age.

Household Composition
There were 431,515 total households in Nassau County. Of these total households, 79.8% were family households and 10.2% were headed by single women. There were, on average, 2.94 persons per household. Of the total households, 17.1% were occupied by householders living alone.

Of the 431,515 occupied housing units, 80.4% were owner occupied and 19.6% renter occupied. Of the 14,777 vacant houses in Nassau County, 2,862, or 19.4%, were used for seasonal, recreational, or occasional use. Median value of owner occupied units was $209,500 and median rent was $678. The homeowner vacancy rate was 1.2% and the rental vacancy rate was 4.1%.

Educational Trends
Of the 881,037 people age 25 or older in Nassau County, 84.2% held a high school diploma or higher, and 30% held a bachelor's degree or higher.

Income
Per capita income for the County was $23,352 in 1989 and median household income was $54,283. Of the 1,267,148 people for whom poverty was determined in 1989, 47,192 people, or 3.7%, were below the poverty line. Of the 47,192 people below the poverty line, 34,902 were 18 years of age or older.

Employment
Of 1,039,774 people 16 years of age or older in Nassau County, 66.6% were in the labor force. Of these, 99.8% were in the civilian work force, of which 4.1% were unemployed. More recent figures for the unemployment for the metropolitan area of Nassau and Suffolk Counties were 3.9% in 1997 and 3.2% in 1998. Overall, unemployment rates were steady throughout 1997 and 1998.

Employment Industries
Of the 661,486 employed persons 16 years of age or older in Nassau County, less than 1% were employed in the agriculture, forestry, and fisheries industries sector. There were 71 fishers in 1990. The largest sector of all was administrative support occupations, including clerical, at 19.7% followed by professional specialty occupations at 17.5%. The next largest sectors were executive, administrative, and managerial occupations; retail; sales; finance, insurance, and real estate; and health services.

Racial and Gender Composition of the Fishing Industry [3]

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[3] *Note: The 1990 census included information on occupation by race and gender. The information is offered here, and elsewhere in the county profiles, with the caution that the information is likely to be a highly inaccurate reflection of actual participation in fishing.*

In Nassau County, in 1990, there were 14 captains or officers of fishing vessels, all of which were white men. There were also 57 occupational fishers, 40 of whom were white males and 17 black males.

Fishery Profile, Freeport, NY:

According to NMFS weighout data (Tables NY-FP1, 2), Freeport and neighboring Point Lookout (included in the Freeport port code) are almost entirely dependent on otter trawl landings (over 89% poundage, 87% value), and the major species are loligo squid and silver hake, with smaller amounts of scup, weakfish, bluefish, butterfish, summer flounder, other flounders, Atlantic mackerel. Gill-nets are used for bluefish, angler, and other species, and there are small handline, pot, pound-net and bay shellfisheries associated with these ports.

Table NY-FP1: Landings by Gear, Freeport, NY, 1998

GEAR TYPE, Freeport, NY	Lbs. %	Value %
Common seine, haul seine	0.3%	0.1%
Gill net, sink, other	7.0%	6.1%
Handline, other	2.5%	3.8%
Pot/trap, lobster, insh nk	0.6%	2.8%
Pot/trap, lobster, offsh nk	0.0%	0.0%
Pots + traps, blue crab	0.0%	0.0%
Pots + traps, conch	0.0%	0.0%
Pots + traps, fish	0.1%	0.1%
Pound net, fish	0.2%	0.2%
Rakes, other	0.2%	0.0%
Tongs & grabs, clam	0.0%	0.0%
Trawl, otter, bottom, fish	89.3%	86.8%

Total landings, rounded 1998: 1,865,800 lbs
Total value, rounded 1998: $1,504,800 dollars
Note: 0.0 = >0.0% but <0.06%

Table NY-FP2: Landings by Major Species, Freeport, NY, 1998

Bluefish	4.6%	2.1%
Butterfish	2.8%	2.6%
Flounder, summer	2.8%	7.9%
Flounder, yellowtail	4.0%	2.3%
Hake, silver	27.4%	16.2%
Mackerel, atlantic	2.5%	0.8%
Scup	4.4%	8.8%
Squid (loligo)	37.3%	39.3%
Weakfish, squeteague	2.7%	2.8%
Lobster	0.6%	2.8%
Sea bass, black	0.8%	1.9%

Number of species: 62

Other species of MAFMC interest by percentage total value 1998: Tilefish (0.1), and Illex squid (0.0). Surf clams are also landed here but are reported as "Other New York."

Field Observations and Interviews, Point Lookout and Freeport, NY, July 1999

Point Lookout

Point Lookout is a small beach town on the south side of Jones Inlet, across from Freeport which is inside the inlet. Fishing boats may move back and forth between Point Lookout and Freeport, hence NMFS' practice of coding both as "Freeport." The main commercial fishing business in Point Lookout is family-run and consists of a wholesale fish market, retail fish market, clam bar and restaurant. The restaurant was started in part because a developer was going to build residential units right out to the waterfront on the land next to the business' dock. The restaurant opened May 1, 1999. Not long ago there was a boatyard across the street where there are now only parking lots and private homes. The clam bar is open from May 1-April 15. The business has freezer space for 15-20,000 lb. of product.

According to one informant there, the business runs two of its own boats while other owner/ operators sell exclusively to it. Each boat has four crew members and multi-species permits. The business also buys from five local gillnetters "every now and then." The informant added that the "boats do better than the docks". The business got its boats through buying from other fleets when others were getting out of the business. He said there are still a handful of vessels from these fleets lying idle in the area. The business has a network of over 100 local restaurants that it wholesales to; the rest of its wholesale product goes to Fulton's Fish Market. Between the four phases of the business they employ 30-35 people at any one time, 10 of those on the fish dock. All the dock's crew and employees live within a couple of miles of the dock.

In June they were fishing primarily for Loligo squid (wholesaling mostly to a fish house in Newark, NJ). They were going out about nine miles for the squid, but they sometimes go out as far as 100 miles when they drag. One boat is out on Georges Bank dragging for groundfish. The gillnetters bring bluefish, sea trout and menhaden to the business. According to the informant, there are a handful of independents in Freeport that sell off the back of their boats (but he couldn't say what size or how many).

Our local informant said they used to have fourteen trawlers tied up in Pt. Lookout and that they used to do a lot of out-of-state business. Now all their sales are local. However, another observer reports that out-of-state boats still land there (winter 2000).

He said the relationship with the community is good there has been no pressure to be off the docks up to this point. He added that he "pounds the people with pro-commercial fishing propaganda." The front of the restaurant menu pays tribute to commercial fishers. However, he thinks that the pressure in the state, including pressure from those that regulate the industry, is to get all commercial fishers off the waterfront.

Point Lookout used to have a seafood festival that was run by the county and the town of Hempstead. This particular business was not involved. The festival ceased operation last year.

There is also a surf clam processing plant on the same road, which has been in the seafood business since the beginning of this century. It handles primarily surf clams caught in New York state waters as well as other shellfish. Several surf clam boats also work out of Freeport.

Freeport

There are three fish docks on Woodcleft Rd., the only commercial fishing area in Freeport. One dock has a small retail shop; only one boat works from the dock. The workers in the retail market were Hispanic (3 workers that day), and there were numerous advertising signs in Spanish. Another of the fish houses had three boats on the dock. Our main informant in Freeport was a fisherman whose boat was tied up at the third dock, which also has a restaurant. He said his father has been fishing for 35 years and has been a central figure in defending the commercial fishing community in the area. He said the fishermen wanted to build a cooperative dock "like down there in Montauk," but the city wouldn't let them. He said his father then fought the city to prevent them from putting condos on the riverfront and was partially successful. He said he and his father are "making enough to get by."

The informant sells mostly to Fulton Fish Market "because they give him high dollar." He used to sell a lot of his catch to the main fish house in Pt. Lookout, and still does when he has high volume, "because [that business] has a lot of outlets."

He said "we'll be out of here in the next five years." He thinks they are developing the area for tourists and pleasure boaters, squeezing the commercial fishers off the docks. As it is there are only three boats (65' plus trawlers) that go out of this port full-time. He mentioned that a reporter from The New York Times comes down every so often to do stories on the commercial fishing in that area and has been fair to "our side of the story."

He said the town is trying to get rid of one local fishing business. He said the freezers and the commercial operations in general are perceived as an eyesore to the way they want the waterfront to develop. In June, major upgrades were being made to the road that ran directly in front of the commercial operations, including new sidewalks that, according to the informant, took away their parking. He said: "They're pushing us out. They're definitely trying to push us out." He's worried about the changes that will be brought on by the new mayor. He expressed a lot of anxiety about the uncertainty of their options for the future of commercial fishing in Freeport.

The city once sponsored a Seafood Festival but it was stopped a year ago. He agreed with the city that it should rather be sponsored by the businesses on the waterfront, since they benefitted almost exclusively from the festival.

Fisheries Profile, Nassau County

Field Observations and Interviews, Oceanside, NY, July 1999

A surf clam boat owner based in Atlantic City, NJ, docks 6 boats of his fleet in Oceanside, NY. They fish for surf clams in New York State waters. Four of these boats were docked in an industrial waterfront area of Oceanside called "Oil City" (no mystery in that name the place is filled with oil tanks as well as lots of scrap metal yards). No one on the property was willing to be interviewed.

A young man at a nearby recreational marina said he thought there is one fisherman who gill nets for blues, bunker and weakfish out of Oceanside as well as a commercial crabber. He also pointed out that there had been a large shark tournament locally the past weekend, during which a record number of sharks had been caught (the tournament was sponsored by the Freeport Hudson Anglers, and this year's was the 27th annual).

Fisheries Profile: Other Nassau County

Other Nassau County landings came to about 595,000 pounds, worth about 4 million dollars, in 1998. Over 93% of the landings were of hard clams (quahogs), soft clams, and oysters, taken in the rich "Oyster Bays" of this county. Gill nets, handlines, and lobster pots were also used for striped bass and other species.

Suffolk County Profile (includes the fishing ports of Montauk, Greenport, Orient/Orient Point, Shelter Island, Fishers Island, Southold, Cochogue, Mattituck, Three Mile Harbor, Amagansett, and Shinnecock/Hampton Bays)

Suffolk County is the eastern half of Long Island and encompasses the major fishing ports: Hampton Bays/Shinnecock, Montauk, and Greenport, as well as numerous smaller ports including Mattituck, Amagansett, and several others that were visited during field work. The fisheries of Suffolk and Nassau counties are highly diverse and also highly dispersed, such that much of what is landed is recorded as "other" rather than assigned to a specific place (this is also done to protect anonymity. Although Suffolk County is being rapidly developed, it remains an important agricultural county, the largest in New York State in dollar terms.

Population
According to the 1990 Census, the total population in Suffolk County was 1,321,864. Females slightly outnumbered males, and 3.7% of the population were classified as rural. This included the 2,070 people who lived in Greenport Village, one of the two fisheries-related places for which independent census data are available. The other is Montauk, not classified as rural. Of the County rural population, less than 1% lived on farms, reflecting the decline of agriculture and the suburbanization and gentrification of the perimeter of the New York-New Jersey metropolitan area.

Racial and Ethnic Composition
In Suffolk County in 1990, 90% of the population was white and 6.6% of Hispanic Origin. 6.3% of the population was black, while small numbers of American Indian and Asian groups were represented. Of the population, 92.1% were native born, 87.9% from the State of New York. The ancestries most reported for the County were Italian (382,394 people), Irish (329,226 people), and German (302,874 people). In Greenport Village the most reported ancestries were Italian; German; and English; and, in Montauk the most reported ancestries were Irish, German, and Italian.

Age Structure
According to the 1990 Census of Suffolk County, the 25 to 44 year-old age group was the largest at 32.9%. 24.7% of the population were under 18 years of age and 10.7% were 65 years of age or older.

Household Composition
In Suffolk County there were 424,719 total households, 80.2% were occupied by families. Of the family households, 82.8% contained married couples and 13.0% were headed by females. 16.0% of the households were occupied by householders living alone.

Of the 424,719 occupied housing units in the county, 80.1% were owner occupied and 19.9% were renter occupied. Median value of owner occupied units was $165,900 and median rent was $696. Of the 56,598 vacant houses, 35,953 were used for seasonal, recreational, or occasional use. Of the 56,598 vacant housing units in the county, 2,755 were in Montauk and 270 in Greenport Village. The homeowner vacancy rate was 1.9% and the rental vacancy rate was 7.0%.

Educational Trends
Of the 855,043 persons 25 years and older in Suffolk County, 82.2% held a high school diploma or higher and 23.0% held a bachelor's degree or higher. The proportions were similar for Greenport Village and Montauk.

Income
According to the 1989 Census for Suffolk County, per capita income was $18,481 and median household income was $49,128. Of the 1,292,665 people for whom poverty status was determined, 4.7% were below the poverty line.

Employment
Of the 1,033,464 persons 16 years and older in Suffolk County, 67.7% were in the labor force. Of those in the labor force, 99.9% were in the civilian labor force, of which 4.8% were unemployed. Unemployment was higher in Montauk, 7.2%, and Greenport Village, 5.4%, than for the entire Suffolk County. More recent unemployment figures for the metropolitan area, including Suffolk and Nassau counties, were 3.9% in 1997 and 3.2% in 1998. Overall, unemployment is steady for 1997 and 1998 in this area.

Employment Industries
Agriculture, forestry and fisheries employed 1.4% of workers 16 years of age or older in Suffolk County. In 1990 there were 755 employed in the fisheries. In Greenport Village and Montauk 3.9% and 8.3%, respectively, were employed in the agriculture, forestry, and fisheries industries sectors. For the Suffolk County administrative support occupations, including clerical was the largest sector, at 17.9%, followed by retail at 16.0%. The next largest industries were professional specialty occupations; executive, administrative, and managerial occupations; sales; precision production, craft, and repair occupations; and educational services.

Racial and Gender Composition of the Fishing Industry
In 1990 there were 101 white male captains or officers of fishing vessels. There were also 654 males, 650 were white and 4 were black, who engaged in fishing as an occupation.

Fisheries Profile, Greenport and Mattituck, N.Y.

Although Greenport and Mattituck are very dissimilar ports, we combine landings information from them to protect confidentiality.

Otter trawl landings are by far the most important, over 95%, and the classic Mid-Atlantic complement of species is found, led by silver hake and loligo squid, but including butterfish, summer and winter flounder, scup, striped bass, angler, and other species. There is also pound-net fishing, haul-seining, gill-netting, handlining, pelagic longlining, lobster and conch pot fishing, and raking for clams and dredging for bay scallops. Tables NY-GP1, 2 provide weighout data for Greenport combined with nearby Mattituck.

Over 90% of the weighout landings attributed to Mattituck came from otter trawl fishing, and the full complement of Mid-Atlantic species were major landings (=>2% value in 1998: bluefish (25%), butterfish (12%), summer flounder (14.5%), scup (4.4%), dogfish 3.1%), lobster and striped bass were also significant, among the 37 species landed. Total landings in 1998 were less than 275,000 pounds. But recall that "Other New York" includes lobster and other landings which probably came from places like Mattituck.

Table NY-GP1: Landings by Gear Type, Mattituck and Greenport, NY, 1998

GEAR TYPE	LBS %	VALUE %
Common seine, haul seine	0.0%	0.0%
Gill net, sink	1.5%	1.4%
Handline	1.1%	2.9%
Longline, pelagic	0.0%	0.1%
Pots + traps, conch	0.0%	0.0%
Pound net, fish	1.8%	3.0%
Trawl, otter, bottom, fish	95.6%	92.5%

Total landings, rounded 1998: 7,831,400 lbs
Total value, rounded 1998: $4,140,500 dollars
Note: Not including "Other New York" landings; here as elsewhere "0.0%" means more than 0 but less than 0.05%

Table NY-GP2: Landings by Major Species, Mattituck and Greenport, NY, 1998

MAJOR SPECIES >2%	LBS %	VALUE %
Bluefish	4.2%	3.1%
Butterfish	1.6%	1.9%
Flounder, summer	1.1%	5.1%
Flounder, winter	2.9%	1.2%
Hake, Red	2.3%	1.5%
Hake, silver	63.3%	46.1%
Scup	0.8%	2.6%
Squid (loligo)	21.6%	27.2%
Bass, striped	0.6%	3.0%

Number of species: 62

Other species of MAFMC interest by percentage value 1998: Atlantic Mackerel (0.1), Black Sea Bass (0.9), dogfish, other (0.1), Dogfish, Smooth (0.0), Tilefish (0.3), and Illex Squid (0.0).

Field Observations and Interviews, Greenport and Mattituck, NY

Greenport, NY

Greenport is the largest fishing center on the north fork of Long Island. One informant, active in regional fisheries management, told us there are 5 large offshore vessels, one medium-sized dragger, two small 40' draggers, 3 trap vessels (with pound nets), probably 4 lobstermen, 4 or 5 people who do conch potting, 4 or 5 gill netters and 25 or so baymen. People from Greenport also own and fish with vessels in other ports. Two sea scallopers owned by a company in Cape May, NJ, use Greenport's docks. There is a lot of overlap often the lobstermen, conchers, gill netters, etc., are the same people, adapting to the seasons and the regulations. Regulations and decline in some species have made a difference. Despite local support, commercial fishing is not nearly as big in Greenport as it was 10 or 20 years ago, he said. Opportunities exist for work at other trades in the region, including a local shipyard, as well as machinist, welding, electrician and similar jobs.

The person we interviewed has been fishing out of Greenport for 27 years and owns 3 boats: a 60' stern dragger and 2 smaller skiffs for bay fishing. He has one deckhand. In the summer he goes for fin fish, and in the winter he changes over to being a bayman who harvests clams and scallops. He also grows oysters. "I do a little bit of everything. You have to, because of the regulations." Like many others, he offloads at several different places. He usually unloads his fish at a seafood dock in Greenport, but sells to a business in Cutchogue. Sometimes he'll unload in Montauk or Stonington, CT, if he is out that way. He said that most of his catches end up at Fulton Fish Market. His dragger is docked behind a local marine supply store which has become, in his terms, a "ship's chandlery for tourists."

In June, the dragger fisherman we talked with was mainly fishing small mesh for squid, though he said he picks up a lot of other species along the way weakfish, bluefish, sea bass, fluke, butterfish, lobster and some whiting. "In eastern Long Island, mixed trawl is what we've

always done." Like other mixed-trawl fishermen of the Mid-Atlantic region, he is concerned that regulations are mostly written for single species, which doesn't mirror the reality of fishing "The fish don't know that. They all swim together." There is a certain amount of each species that is allowable catch in mixed trawl, but this informant said the limits are too low. One consequence of the myriad of regulations and state-by-state quotas for some species is that fishing operations, especially draggers, are pressured to fish in different waters and offload in different ports: "It all depends on what the government allows us to keep it forces us to move around." He said that draggers are the ones that are usually saddled with the most onerous regulations "because we are considered the biggest and ugliest of vessels and because of our by-catch."

The Village of Greenport is said to be "fisherman friendly," generally more supportive of the fishing industry than other communities. There are two municipal docks for commercial fishing one (built 10 to 12 years ago) for the large ocean-going boats and the other for the baymen. Our informant told the story of a local fish plant winning out over the complaints of residents of a nearby condominium development several years ago. The condo residents complained about noise, smells, etc., but the village board upheld the plant's right to operate as it saw fit because it had been there for 100 years while the condominiums had just been built. The board said that the plant must comply with health regulations (some clean-up was mandated), but that it could operate in the middle of the night if it had to (often in order to get the fish to Kennedy Airport so that it could be delivered fresh overseas). The board had previously changed zoning so that no new condominiums could be built in the commercial waterfront district (a second development already existed and was allowed to stay). In general, the village is doing a lot to redevelop the waterfront, replacing "eyesores" such as a restaurant that had burned and a marina that was rotting away with a park. Greenport's waterfront revitalization program, which is the first in the state, includes a clause protecting the commercial docks.

A telephone interview with a village official revealed that each of the commercial docks is zoned "Waterfront Commercial." This allows "most uses related to commercial fishing, often to the exclusion of other uses." In the early 1990s the village removed condomium use from the definition of Waterfront Commercial. They have also restricted the growth of restaurants and hotels on the waterfront. They have made it difficult to put anything residential in the Waterfront Commercial zone and have even made it difficult for non marine related businesses. There are also a number of restrictions placed on the use of land in these areas by a Coastal Zone Management Plan and a Waterfront Revitalization Plan. The municipal government and other influential community members have an expressed agenda of maintaining a working waterfront in Greenport. It is even a part of the Chamber of Commerce's promotional materials, and it fits in with the broader characterization of this town as a "working town" rather than one dependent on tourism for development as more typical on the south fork of Long Island. Offered as proof of their commitment to a working waterfront community is the fact that a number of marine related businesses are there, including a vessel equipment and repair firm, a marine supply, and a sailmaking company. The mayor and trustees of the village were described as wanting to see the village continue in this direction.

There are a couple of charter and party boats in Greenport, but they were not docked in town during the research visit. There are two fishing related companies in one building (127 Sterling St.) near the condominiums on Sterling Street. A local fisherman said that fluke are being raised at one and that the other freezes whiting and sends it overseas.

One of the commercial docks/fish houses is owned and run by a husband and wife. There is also a retail fish market attached to it. The business runs two trawlers, one of which was unloading mostly groundfish, particularly flounder, during the research visit. The informant here said that the retail market has become an important part of the town establishment and that they bought it to "capitalize on our reputation" (they had been very politically active on behalf of the commercial fishing industry). She said they diversified so as not to be dependent on the boats for

their retirement. They had another vessel sink not too long ago. This fish house employs four regular employees, one regular at the dock and three or more part- timers/seasonal help.

The informant said that she, her husband and most of the other fishermen are extremely frustrated because of the heavy regulations and the way they are left out of the management process. She said that management of the industry is "out of control." Her major complaint at this point is that they limit species for the health of the stocks, but when the stocks return, "they don't give anything back."

She mostly buys from bay draggers and hook and liners. She said she buys from 6 fishtrappers, 3 bay draggers (under 60'), and other boats on a regular basis. They work mostly out of her dock. There used to be a large scalloping fleet until scallop regulations from the New England Fishery Management Council in effect shut it down.

The two owners used to be actively involved in a number of fisheries associations, but no longer. They are "burnt out" on the politics game. The informant used to be on a fisheries management advisory board. Her husband has been fishing since he was 12. She said that their political activism was squelched by the regulation of tuna. She said this was a case where they played by the rules and still got shut completely out of the fishery. She went on to challenge the rationale of the management by pointing to lack of attention to the recreational catch. She said (as did others interviewed) that the recreational boats are overfishing fluke(summer flounder). She said that since there is only one quota system for both commercial and recreational fishers, it's ridiculous to even try to make money off fluke as a commercial fisher. Fluke used to be 75% of their income. But fishers can't survive on the current 70 lb. trip limit. She thinks the state should have protected those who were already in the fishery rather than open it up to everyone. She believes that the state fisheries agency's data are highly inaccurate, and that they use NMFS data instead of collecting their own. She said they put pressure on the docks, so dock operators have essentially become enforcement agents. According to her, this has been good in one sense: it has virtually eliminated recreational fishers from selling their catch in her area. But none of the recreational fishers were prevented from buying commercial licenses.

They sell most of their product locally, through the fish market. The rest is sent most often to Fulton Fish Market on consignment. They provide their own ice and cartons and pay for the shipping. She mentioned she had heard that Fulton Fish Market may be have competition for the land they're on in the near future and that one option was for it to move to NJ. She said if it moves to NJ, "the whole East End [of Long Island] will die."

She believes that their position at the dock is safe because the community supports them. She said that Greenport's waterfront revitalization program, which is the first in the state, includes a clause protecting the commercial docks.

When asked about the presence of female fishers, she said that women shouldn't be on the boats for safety reasons. When probed, she also said that women do not go out on the high seas because there are rarely separate quarters for them. She had a problem once with a female researcher who wanted to go out with the men by herself. She thought there might be problems.

Those who sell fish to their market are well diversified. They clam, pound-net, trap, gillnet, drag and go offshore. The business' boats change gear for different levels of trawling (dragging, mid and upper water trawling). She said that the bluefish came in early this year and that porgies were larger than they were last year. Last year they had blowfish and bunker "in droves;" this year they have none of either. The lobstermen tell her that they are having problems with their bait in part because the seal population has increased and is eating it all. Also, their "spring" run of lobster happened in January this year.

Besides the places already mentioned, some commercial boats dock at a fourth location in Greenport (the presence of a deep sea trawler was recorded at the time of the research visit.).

Mattituck Inlet

A lobsterman at Mattituck Creek off East Mill Road said that there are 17 full-time commercial lobstermen working out of this creek. They run boats averaging 35-45'. Most lobster on Long Island Sound. They also do some handlining and gillnetting. There are 3 draggers that also work out of the inlet. A seafood house across the creek has its own dock and advertises a lobster business.

Another marina closer to the mouth of the inlet is a combination commercial and recreational dock with few amenities. This is reportedly the only other place where any commercial fishers docked. We saw one trawler and five boats used for lobstering and gill-netting. At one time Mattituck had much more fishing acvtivity, particularly before 1992, when dragging was sharply cut back by closures of many areas such as western Long Island Sound and zones along the western shore of Long Island and Peconic. These closures affected many places besides Mattituck, and they forced some small dragger operations to move to the open ocean and other fisheries although they may not be set up for them.

Fisheries Profile: "Other Suffolk" and Amagansett, NY

The NMFS data are collected for the port of Amagansett and well as unspecified "Other Suffolk" fishing. "Other Suffolk" probably includes landings from the fishermen at Orient/Orient Point, Shelter and Fisher Islands, Southold, Cutchogue, and many other smaller places in Suffolk County on both the north and the south forks of eastern Long Island including Mount Sinai, mentioned below. We have combined it with information with Amagansett in the discussion below because of the relatively small size of landings in Amagansett, but we will briefly describe Amagansett in terms of its fisheries. We will discuss the larger south fork ports of Montauk and Hampton Bays/Shinnecock separately later in the chapter.

Bay clamming (for hard clams, or quahogs) is the major fishery, representing over 71% of the area's value in 1998. Lobstering is next, 14% of the value. Other important shellfisheries are for oysters, soft clams, horseshoe crabs, blue crabs, and green crabs. Harvesting bay scallops is an important fishery for all east end ports, but landings vary widely from one year to the next. There is tremendous diversity in gears used, bespeaking the mixed bay, sound, and ocean nature of these fisheries. They include handlines, longlines, harpoons, seines, otter trawls, gillnets, pound nets, pots for fish, eels, conch, crabs, and lobster, fyke-nets, cast nets, diving gear, crab and oyster dredges, shovels, rakes, tongs, patent tongs, and "by hand".

Mount Sinai

Mount Sinai is a small lobstering port within the municipality of Brookhaven. It is on the northern side of Long Island, near Port Jefferson on Long Island Sound, in an area known as Cedar Beach. It is one of the numerous ports with access to the lobster fishing grounds of Long Island Sound, and landings data are mostly incorporated in NMFS' "Other New York" code. One state official had told us that this port is as big as some of the lobster ports in Maine. On a Friday afternoon in the summer of 1999, there were 4 lobster boats moored in a harbor dominated by several large recreational marinas. An elderly man who works at the municipal parking lot (Brookhaven/Mount Sinai) said there are 17 lobster boats in all in the harbor. He said there are two people owning 4 boats apiece who sell their catches at a fishing station down the road. The

other lobstermen apparently sell their catches individually. He said these lobstermen had been working out of the harbor for 20 or 30 years and that they are all now middle-aged. He said there also used to be a dragger that worked out of Mount Sinai but that the owner had since gone into clamming. He also said Port Jefferson had some lobster boats and possibly one dragger. There is also an important soft clam fishery in Mount Sinai harbor.

Our informant pointed out that this stretch of Long Island Sound shoreline (Cedar Beach) is a big recreational operation, with 400 slips, 600 moorings and a beach. The non-resident mooring fee is a whopping $55/day, but it only costs the lobstermen $110/season for their moorings.

Orient/Orient Point

We visited both Orient Harbor and Orient Point, at the very tip of the north fork. At the east side of Orient Harbor a man at a recreational marina said there is one fisherman who sets up fish traps around the harbor and a lobsterman who docks his boat on a private pier nearby. Orient Point seemed to be the bigger of the two sites. One of the Greenport informants had said there is a marina there with about 10 charter boats as well as 6 lobstermen, some handliners and some gillnetters. Most of the boats were out during the research visit, but a man at the marina there said that about 12 commercial fishermen work out of Orient Point, mostly lobstermen, and a little handlining is done. He said that all of them live within 10 miles of the Point. Someone else in Orient said he thought there was some gillnetting going on too.

Shelter Island and Fishers Island

One of the Greenport informants said that there are men who gill net, conch and lobster on Shelter Island and that they are mostly baymen. He mentioned one veteran fisherman in particular, who fishes alone on a 40' dragger and who could tell us about the activity on the island. We went over to the island and found from talking to a woman and a hardware and bait store near the ferry dock about the major fishing family on the island and about other well known fishermen. She said that most of the local fishermen work out of town dock on Congdons Creek, which flows into Coecles Harbor on the eastern side of the island. Researchers went there and saw a few boats but no fishermen. There is also a town dock at Shelter Island Heights where a few boats tie up. We were also told that there are about 12 lobstermen at Fishers Island, which we did not visit. There are also two large shellfish aquaculture facilities at Fishers Island.

Southold

Southold is on the north fork, southwest of Greenport and northeast of Cutchogue and Mattituck. We interviewed a fisherman who owns and operates a seafood market at a recreational marina at the east end of town. He's been fishing since 1974 and has had the market for 9 or 10 years. He said he's the only fisherman with a boat in Southold (a 32-footer), and he docks it at the marina as well. He sells his own fish at the market, which he catches in pound nets or traps as they are often referred to here. (He has photos on the wall of pound nets being pulled up with large quantities of fish, but admitted these were taken on the really good days.) He also sells fish, clams and eels that other local fishermen bring in.

He said there are about 35 to 40 mostly inshore fishermen in the Southold area (including Greenport), who keep their boats in many different places in the creeks and bays. Most of them are solo operators and the boats are the size of his or smaller. They do a lot of hard clamming (with rakes) and conching and also get some bluefish and weakfish. He said there is no squid now inshore. Some of the lobstermen in Mattituck and Orient Point sell to him. He also told us that a local fisherman transplants clams he takes "probably from under the Verrazano Bridge" (possibly from New York State's hard clam relay program, allowing the transplant of clams from moderately polluted waters in Raritan Bay, near Staten Island, to clean waters elsewhere in New York).

Few pound-net fishermen are left maybe only 3 in Southold. Our respondent puts his own pound-nets into about 25' of water. He had 7 pound nets out at the time of the interview (he used to have more). His nephew and another man help him. He thinks there are two big advantages to this type of fishing "It's one of the cleanest fisheries there is because it doesn't kill the fish," and "I can go home and sleep at night." He also scallops starting in October. He has 2 small boats besides the 32-footer and a barge. He also hand-lines for striped bass, though the limit in NY State is 104 fish per boat. He catches fish from early April to Thanksgiving and bay scallops and clams from October to April. Besides that, he does some oyster farming too. His cages are just outside the harbor. He said there's been some pirating, but it hasn't been that bad.

He said he doesn't belong to any commercial fishing organizations because "they don't do any good. Fishermen fight amongst themselves and the state loves it." Asked about his feelings regarding regulations, the informant said, "I look at it as Mother Nature, and Mother Nature is doing just fine. It's the regulations that are killing us. There are so many fluke now that you could walk on them."

The market is open year round and the informant's wife runs it. They retail and wholesale clams, mussels and oysters (most of the wholesale product goes to Fulton Fish Market) and just retail other species such as porgies, blowfish and bluefish. He said that the market makes it possible for him to stay afloat financially even though he had to put $13,000 into the business initially "you have to diversify. If I didn't open the store, I would not be in business now." He said that none of the other local fishermen are full-time except ones who run big draggers. When they are not on the water, the fishermen cut grass, paint houses and do any number of other things to keep going. "They've taken so much away," he said. Before opening the market, he was a welder on the side.

He said he's fearful of the impact that new regulations on fish markets could have on his business. He was mostly speaking about new federal regulations of "Hazardous Analysis and Critical Control" (HACCP) that will soon regulate clam wholesalers, but he thinks these will govern retail sales as well in a few years.

He said that he feels pressure being the only commercial fisherman in a marina full of pleasure boats. He reported that the leases for slips are very high but that he's been able to hold

off any inclination the owner might have to raise his rent and effectively push him out because he trades his services with his barge to maintain the floats for the recreational boats.

Cutchogue

There is one large fish house here with a retail market attached. No fish are actually landed in Cutchogue; they are trucked in from other local ports. The fish house also buys fish from the Fulton market in New York City and imports fish and shellfish. It runs a major wholesale distribution business supplying many restaurants and fish markets on Long Island.

According to one of the managers, the business has diversified significantly in the past decade. Local oyster beds were destroyed 5 to 6 years ago by the oyster disease known as MSX. Now a more diversified business is booming and the owners are ready to expand. The informant said he wishes they had built a retail market at least twice the size of their current operatio (which is itself much larger than it was 15 years ago). He said they could easily be doing twice the local retail business they are doing now. They have plans for expanding the retail market in the near future, adding a high dollar "prepared product" wing.

They run 10,000 lb. of flatfish a week through their business. They have 20 trucks that they use to transport their product. This is essentially a seafood wholesale distributor. They have a 25,000-gallon live holding system for lobster. The informant said the lobstermen that sell to them are making "big money" but that it is "like the old wild west out there; you don't mess with someone else's pots!"

They employ 35 full-time people. They have 5 or 6 Guatemalans as regular workers who live in the area. He said they were first hired because they were good cutters, but they continued as good workers in general. He named a number of baymen (3) and lobstermen (4) in the area, only a few of whom are full-time.

Amagansett and Three Mile Harbor

NMFS weighout data from "Amagansett" show the profiles of three traditional, small-scale fisheries of the South Fork of eastern Long Island. But first, to clarify, the town of Amagansett has no dock facilities and thus is not a "port" in the traditional sense. Fish and shellfish are trucked to consignment houses in Amagansett from various locations in the area, including but not restricted to Three Mile Harbor, which is in the town of Springs. (Most fish landed here are sent to Fulton Fish Market). Both Amagansett and Springs are part of the township of East Hampton.

Beach seines, pound-nets, and handlining were the major gear types identified for Amagansett weighout data in 1998. Beach seines are used for bluefish, eels, Atlantic silverside and other species, totalling 6% of the 1998 value. The greatest value (36% in 1998) came from pound-nets or fish weirs. In 1998 41 species were landed in these fish weirs. The landings of pound-nets provide an sample of the biodiversity of the inshore waters as well as the diversity of preferences in local and metropolitan markets. The species included: Bluefish (54%), summer flounder (16%), Loligo squid (6.5%), weakfish (6%), carp (4%), striped bass (3%), scup (2%) and white perch (1.6%). Less than 1% of the poundage were: winter flounder, butterfish, Spanish mackerel, tautog, lobster, black sea bass, Atlantic silverside, skates, dogfish, bonito, Atlantic mackerel, smooth dogfish, crevalle, American shad, albacore tuna, northern puffer, silver hake, sea robins, king mackerel, herring, conger eel, king whiting, oyster toadfish, conchs, periwinkles, menhaden, cunner, crab, tuna (general), blue runner, black drum, triggerfish, angler.

Another traditional fishery, handlining, is about the same in value as pound-nets in Amagansett (34.5%). It is used primarily for scup, striped bass, and bluefish, but 28 other species

were also caught handlining, ranging from small amounts of cod, butterfish, eels, king, Spanish and Atlantic mackerel, and white perch, to larger amounts of summer flounder and dogfish. One of the wholesalers in Amagansett does a significant business in live fish.

Field Observations and Interviews, Three Mile Harbor, July 1999

Three Mile Harbor is one of the small ports from which people often truck their catches to buyers elsewhere, including Amagansett. Fishermen who use Three Mile Harbor may also use the port of Montauk for ice and offloading their catches when fishing east. We saw eight draggers and lobster boats near the head of the harbor, on the east side, on the evening we were there. We spoke extensively to one lobsterman and briefly to several others.

The principal interviewee spoke at length about his operations and what he knew of others out of Three Mile Harbor. He has been lobstering for 18 years, the last 11 out of Three Mile Harbor. Before that, he was a part-timer working out of a small, private inlet. He said that when he first started, the people who already had pots out in an area known as The Race off Fisher's Island would cut his traps. He gradually worked his way into the fishery by getting to the periphery. He says that he now has the prime spots in The Race for 100 of his pots, and that now he will go and cut anybody's traps who get in his way. "It's really an adventure out there," he said with a grim smile.

He lobsters 1,400 pots with two boats and says that he is the smallest operation out there. Most of the lobstermen have upwards of 2,000 pots in the water. He said they are constantly pressured from a local state fisheries enforcement agent, who allegedly focuses on them rather than dealing with the problem they face of lobstermen coming down from Connecticut. Verifying our impression of the close ties between the fisheries of eastern Long Island and New England, this informant also he is trying to get a tuna license so that he can work out of Gloucester, Massachusetts, this fall (a 10-hour sail from the South Fork).

Fisheries Profile, Montauk, NY

Montauk, the largest fishing port in New York, is situated near the eastern tip of the South Fork of Long Island. Otter-trawls and longlines are the principal gear-types, in terms of pounds landed and value (Table NY-M1). Loligo squid and silver hake are the two most important fin-fish caught in 1998, but tilefish also stand out, and swordfish and tuna landings are important as well. Montauk is the leading tilefish port in the U.S., but this fishery has declined greatly. For the past two years (1998-1999) some of the Montauk-based tilefish boats have been unloading their catches in Rhode Island. Nonetheless, tilefish accounted for 21% of the value of landings in this port in 1998 (Table NY-M2). The number of species landed at Montauk is staggering: 90. The methods used to harvest fish and shellfish are diverse, including pound nets or fish weirs, box traps, haul seines, and spears, along with the more usual pots, lines, and trawl nets.

Table NY-M1: Landings by Gear Type, Montauk, NY, 1998

GEAR TYPE	LBS %	VALUE %
Box trap	0.0%	0.0%
Common seine, haul seine	0.0%	0.0%
Gill net, sink	1.2%	1.3%
Handline, other	3.0%	6.6%
Longline, bottom	11.4%	20.9%
Longline, pelagic	3.1%	8.7%
Pot/trap, lobster, insh nk	0.4%	1.3%
Pot/trap, lobster, offsh nk	0.1%	0.4%
Pots + traps, conch	0.0%	0.0%
Pots + traps, fish	0.1%	0.3%
Pound net, fish	0.6%	0.6%
Spears	0.0%	0.0%
Trawl, otter, bottom, fish	80.1%	59.9%

Total landings, rounded 1998: 12,035,700 lbs
Total value, rounded 12,108,800 dollars; 0.0% = <0.06 % rounded

Table NY-M2: Landings by Major Species, Montauk, NY, 1998

MAJOR SPECIES >2%	LBS %	VALUE %
Bass, striped		5.2%
Bluefish	2.1%	0.8%
Butterfish	3.2%	2.0%
Dogfish, nk	2.4%	0.4%
Flounder, summer	2.8%	6.9%
Flounder, winter	3.8%	5.1%
Hake, red	3.2%	1.1%
Hake, silver	31.2%	15.7%
Scup	1.8%	3.6%
Squid (loligo)	24.2%	19.8%
Swordfish	1.0%	3.4%
Tilefish	11.5%	21.2%

Number of species: 90

Other species of MAFMC interest by percentage 1998 value: Atlantic Mackerel (0.3), Black Sea Bass (1.3), Dogfish, NK (0.0), Smooth Dogfish (0.0), and Illex squid (0.0).

Field Observation and Interviews, Montauk, N.Y.

There are three main commercial fishing businesses in the Montauk area, which offload fish which has been packed on the boats (except tilefish and tunas). The fish is sold on consignment, mostly through the Fulton Fish Market in New York City. Another business also operates from these docks, but it mostly retails and has a significant restaurant business. It doesn't buy much from the larger commercial vessels. Dock space is a problem here as elsewhere in the region. There are two town docks, each with the capacity four or more boats; one fishing business has a few dock spaces as well. Otherwise the waterfront is dominated by small marinas that are dedicated to recreational fishing and other boats.

A spokesman for the fish market at the docks said that the lobstermen are really the only commercial fishers he buys from in the area. He said he doesn't have a market for whiting or squid or for many of the other products that the deep sea vessels catch. He buys lobster, swordfish, tuna, flounder and cod from those who can sell it to him. This business wholesales mostly to restaurants in the area. Another informant from the market who used to fish commercially said they import from all over the world.

One of our primary informants in Montauk had his boat tied up at one of the municipal docks. The commercial vessels that use the municipal docks get a break from the town on the dock fees. He is one of the co-owners of the largest local seafood fish houses. He believes that this is the top producing dock in New York. Though it is known as a cooperative, it is actually a corporation with seven owners. There are ten boats that work out of this dock.

One of the captains immediately complained about the regulations. He said he can't keep up with all the paperwork. "I don't mind the cutback, but when will we get any benefit?" he said. He made an interesting comment about those who regulate him. He said, "NMFS is a parasite that is killing its host." This time of year the commercial boats are surviving on whiting and squid. One of the other captains said: "Thank goodness they don't catch squid and whiting on a rod and reel!"

When asked if there has been pressure on the dock for its prime property, the manager of one of the seafood businesses said they have to deal with some of the toughest zoning laws in the state whenever they want to change or expand. But the town has worked with them when they follow the rules. He said they can build on to their docks which they are in the process of doing, but they have to go through a tremendous amount of red tape. They are limited in part by the Wetlands Protection Act as the land adjacent to their property is protected land. But that restriction also protects them from developers pressuring them for their waterfront property. "No one can build community housing or condos in our area." He feels that they are safe from pressures from the city. They own the land and are grandfathered into most zoning clauses that would cause them problems.

The fish dock co-owner who talked with us said his wife runs the business for his two boats. He has five daughters and said he really doesn't want them fishing, not because they are women, but because there is no real future in the business. He said that there had been three women fishing in the area that he could think of including his wife and a longline fisher (see below).

When asked about how many crew were employed in Montauk, he gave the following breakdown: 3 longliners employ 8 per boat (double crew); he employs 10 on his two boats; the two largest vessels (well over 90') each employ 10, and there are also 20 or 30 lobstermen out of Montauk. Other observers report many more boats fishing from Montauk.

In contrast to what one of the other fisherman said, this informant claimed that most of the commercial fishers in the area have "cleaned up their act". Very few are involved with alcohol or drug abuse.

The fish market informant estimated 10 full-time lobstermen in Montauk and around 10 or 20 part-timers. When asked about any land use issues, he confirmed that town ordinances are very strict, making it is very difficult to build. The city owns the docks adjacent to his business. He said there is about two or three years of paperwork that needs to be completed if one wants to build. His perspective on the commercial fishers is that they are doing rather well. He noted the break the town gives them on dock fees. "Everyone pays taxes but they get the benefit." He also said that because of their large operations, the packing house across the harbor owners of the biggest local dock have developed significant leverage in their markets. "It's not a tradition anymore; it's big business. With two full time crews, they fish around the clock."

For the fish market, as distinct from the commercial docks, the busy season is from July 4th into October. Our informant at the market said that the biggest dock won't have much pressure for their land, even though the island on which it is built is a growing residential area. He said the commercial area there is buffered by a few key properties.

Another local dock is a small "freight forwarder." The land it uses is rented from a man who owns a lot of land in the area and also owns a lobster dock in the area and in Maine. He confirmed that they are doing well for themselves. He said, however, that the volume of fish in the area is declining dramatically, mostly due to the regulations. He also believes that the commercial waterfront is disappearing in this area. He strongly feels the pressure from the recreational interests and knows that if he can't keep his business viable, the recreational industry will take

over his lease. He said that the regulations hurt his dock by one million pounds in 1996-97 (the last time he calculated the loss). He said he may need to move into the fish market business and to servicing charter boats (i.e. selling fuel, oil and bait). Like others, he said that the bigger commercial operations are doing well. "It's the little guys that are being knocked out."

The main recreational fishermen's bar is called "Liars."

Tilefishing at Montauk

Our informant about tilefishing is business manager for 2 tilefishing boats that work out of Montauk. She used to manage as many as four boats. She herself went longlining for tilefish on her husband's boat for five years when they were working out of Florida. She stopped when she began having children, but says she misses being out on the water with her husband. As business manager, she prepares gangions for the longline gear (using circle hooks, a relatively new technique), orders supplies, arranges repairs and markets the fish. She also prepares settlements and does bookkeeping and is involved in fisheries management. The boats generally go out for several days at a time, and she says she talks to the captains every day on the sideband in her house to find out what they will need when they get into port. Timing is important because the boats are double-crewed and do not stay in the harbor for significant periods of time.

The boats seek out tilefish at the edge of the continental shelf, around 100 125 miles out, in an area stretching from Rhode Island to central New Jersey. The bait used is mackerel, squid or eel. It is a 12-month fishery for her boats. (She said that winter always used to be the best time to catch tilefish, but that the summer of 1998 was great, the prices were still up, and that it's sometimes hard to predict how it will go from season to season.) She said that the fish that are caught range in size from 2 lbs. to 25 or 30 lbs. (in the past they used to see some 50-pounders). The medium and large fish are worth the most usually the jumbos have such big heads that the price per pound will be lower. Tilefish is the only species they fish for, but they do catch some tuna in the process she said that what happens is that the pelagic tuna sometimes grab onto the bait as the lines are being dropped to the floor of the ocean in order to catch tilefish, which burrow into the bottom.

The two boats she manages off-load at one of the houses in Montauk or at another in Narragansett, RI (where they often end up getting fuel or bait because of lower taxes). The docks provide the trucks needed to ship their fish, though the boats pay for them. The boats she manages almost always sell their fish to buyers at Fulton Fish Market, though she said that sometimes the Canadians come directly to them. In the past, they tried to sell both fresh and frozen tilefish to Japan, but the market preferred "pink" tilefish to the "golden" tilefish of these waters. "It's mostly a Korean thing in the city [New York]" she said. She hasn't seen much fluctuation in price in recent years: "In general, there's less fish, so the prices stay up." She thinks the Fulton buyers are generally fair, at least the ones with whom she has been working.

She said that all the Montauk longliner owner/operators have worked together, been friends, and lived near each other in Montauk for about 15 years. The two boats she manages are steel and as large as 82'; one of the two other Montauk boats is similar but the fourth is only about 55' and is made of fiberglass. She pointed out that whatever quota is set for the Montauk boats, the owners "have every intention of working together to strategize about the fishing and to make sure there's still fish year round. We're in it for the long haul." Each boat has a crew of 4, and she says that double-crewing has made it so that "everyone has a life" the captains and crews know ahead of time when they will be out and when they will be home. She says that with the bigger metal boats weather is rarely a consideration anymore.

She said that all 8 crew members who are with her husband's boat have been working with them for 10 to 15 years and that they all live between Montauk and East Hampton. As she put

it, "we have ten 1099s every year." On the other hand, she said that the other boat she manages can have as many as 18 or 20 a year, and that crew continuity largely depends on whether or not the boat is catching fish. She said that there is a problem finding trained crew members who replace those who leave. As far as getting one's own boat goes, she said: "Because of all the legislation, a young guy is not going to do it. His dreams are cut down right there. The way it is now, the first thing you've got to get are all the permits, if you can, and then you get a boat, whereas in the past the boat was always the first thing you looked for."

She says she loves living in Montauk and that the fishermen are generally respected by the rest of the townspeople. She said that the fishermen are not generally seen as a bad crowd, "even the draggers" (the latter remark is rather ironic, given that one of the dragger captains said that it's the longliner fishermen who drink too much and can be rowdy). She also said that there hadn't been any land use problems because the dock on the west side (where their boats tie up) is zoned for fishing, and she believes condominiums couldn't be built there. She added that there are some cottages on the east side of the harbor that are owned by a fisherman-run packing house, but that they are definitely not high-end and are mostly rented to young people who come to town looking for jobs.

Her husband has also been doing some hard clamming in the bay with his 12-year-old son, who this summer will try to do it on his own. The son said that he and his dad had been bringing in 300-400 lbs./day on the weekends last year. He's hoping he can approach that this year, and also wants to dive for them as well as rake.

On Tilefish Management

Our informant talked at length about the pending tilefish management plan. She showed data that are being used to determine the new tilefishing regulations, which indicate that the 4 tilefishing longliners in Montauk accounted for 78 to 91% of the tilefish caught off the northeastern seaboard of the US between 1988 and 1998. These 4 boats are the biggest producers. Several boats from New Jersey that generally catch significantly less fish than the Montauk boats, and the third tier lists "part-timers." There are only 20 boats total that are involved in the fishery, and she said that 2 are out of Shinnecock and that the other 14 are all part-timers out of Barnegat Light, NJ. Some draggers also bring in tilefish as bycatch she said that this accounts for 4% to 7% of the total tilefish catch.

She and the others involved in tilefishing out of Montauk are in favor of some regulation of the fishery "for our own protection;" they actually had been asking for regulations in the early 1990s. The issues discussed are intensified by efforts to limit entry in the tilefish fishery and in the highly migratory species and shark fisheries, based on recent participation. The four Montauk longline tilefishing boats have specialized in tilefish in recent years, while former tilefishing boats elsewhere, especially Barnegat Light, NJ, have diversified to swordfish and tunas.

She argued that their specialization in tilefish has greatly limited their ability to move from fishery to fishery when dwindling fish stocks or price fluctuations might otherwise have pushed them towards diversification, and the outcome has been lost opportunity to participate in other fisheries, which now have limited entry. She said that her boats had held permits for swordfish, tuna, squid, mackerel, butterfish, lobster and surf clams for as long as they could, but that since the permits are based on historical usage, they no longer qualify for them. She said that this is especially a problem with the swordfish plan that was slated to go into effect this past July 1, which would tie the ability to catch tuna and shark to a history of catching swordfish. Since they have only been catching tuna as bycatch and not swordfish, this regulation would prevent them from continuing to bring in tuna.

Her father had a packing dock in West Sayville, where she worked as a teenager. "I was always on the physical side anyway, doing the packing, and I also worked in landscaping for awhile." Her husband used to be a lobsterman and brought his catches to the dock, and that's how they met. She said that there are no women fishing out of Montauk right now, though occasionally you'll see an inshore dragger making a day trip with a female crew member. She said that there used to be two women who regularly did inshore dragging on their boyfriends' boats, but that they no longer do it.

Fishery Profile, Shinnecock/Hampton Bays, NY

Shinnecock/Hampton Bays is second only to Montauk as a commercial fishing center in New York. The offshore fishing industry in this part of Long Island is concentrated to the west of Shinnecock Inlet, on a barrier island that is just to the south of Hampton Bays. "Shinnecock," as it is known, is part of the town of Southampton. There is a large county-owned dock that is run by the town, where most commercial boats tie-up. The pack-out facilities and their associated docks are on private land, including two private unloading docks and one belonging to the Shinnecock Fishermen's Cooperative. The rest of the land to the east and west of the inlet is a county park. The NMFS codes for this fishery are for Shinnecock and Hampton Bays. We have combined them for this analysis because both refer to the same place (bluefin tuna and other large pelagic landings are collected using the Shinnecock port code, the rest using Hampton Bays).

This is primarily a dragger fishing port, otter trawl landings making up 84% of the poundage and 74% of the value in 1998 (Tables NY-HB1,2). Silver hake (whiting) and Loligo squid made up over 70% of these landings; 66 other species were landed by draggers, including bluefish, butterfish, red hake, and summer flounder. Gill-nets are second in importance, accounting for 12% of the value of landings in 1998. They too had diverse landings, totalling 39 species, led by bluefish (31% of lbs.), angler (28%), and skates (23%). Bottom longlines (7.3% of value) were used for tilefish; pelagic longlines for swordfish and tunas. There is also a diverse assemblage of inshore techniques, including haul seines, pound-nets, pots (for crab, fish, eel, conch, and both inshore and offshore lobster), fyke-nets, and the shellfish techniques of shovels, rakes, and "by hand."

Table NY-HB1: Landings by Gear, Hampton Bays and Shinnecock, N.Y., 1998

GEAR TYPE:	LBS. %	VALUE %
Longline, Bottom	2.9	7.3
Handline	0.1	0.4
Longline, Pelagic	0.3	1.1
Otter Trawl, Bottom	84.3	74.2
Seines, Common and Haul	0.1	0.1
Gillnet, Sink	10.8	11.8
Pound Net, Fish	1.0	1.3
Pots/Traps, Fish	0.1	0.1
Pots/Traps, Eel	0.0	0.0
Pots/Traps, Conch	0.0	0.0
Pots/Traps, Lobster, Offshore	0.0	0.0
Pots/Traps, Lobster, Inshore	0.1	0.3
Shovels	0.0	0.1
By Hand	0.0	0.0
Rakes	0.0	0.0
Pots/Traps, Crab	0.0	0.0
Fyke-Net, Fish	0.0	0.0
Unknown	0.4	3.3

Total Landings by Weight, 1998: 13,143,401 lbs.
Total Landings by Value, 1998: $9,676,293

Table NY-HB2: Landings by Major Species, Shinnecock/Hampton Bays, NY, 1998

MAJOR SPECIES (>2%)	LBS. %	VALUE %
Angler	3.8	8.3
Bluefish	5.2	3.0
Winter Flounder	1.1	2.2
Summer Flounder	2.1	6.8
Yellowtail Flounder	0.9	2.0
Scup	1.5	3.4
Weakfish	2.5	2.1
Dogfish, NK	7.3	1.5
Skates	3.2	1.4
Tilefish	3.0	7.6
Silver Hake	37.5	23.1
Quahog	0.3	2.9
Loligo Squid	22.9	26.9

Total Number: 93

Other species of MAFMC interest, by percentage value, 1998: Butterfish (1.6), Atlantic Mackerel (0.3), Black Sea Bass (0.9), Smooth Dogfish (0.0), Spiny Dogfish (0.0), and Illex Squid (0.0).

Field Observations and Interviews, Shinnecock/Hampton Bays, July 1999

Moving from west to east on the Shinnecock waterfront, the commercial fishing area includes the Municipal Dock, where many of the draggers are tied up; a commercial fish dock; the local fisherman's cooperative; and a marina which serves both commercial and recreational boats. Even as commercial fishing areas go, this one looks as if it was not very well tended, with lots of debris and unused equipment lying around, despite the fact that there is an active industry here. There were also several commercial boats at a recreational dock in Hampton Bays, possibly docked there for repairs. Most of the fish is shipped to Fulton Fish Market, although much squid goes to buyers in New Jersey. Some of the whiting is exported to Spain. There is a largefillet operation with a retail market in Shinnecock. Shinnecock has also been a surf clamming port but demand for clams from New York State waters has been low.

We interviewed a fisherman who is a member of the cooperative's board. He owns a dragger which is tied up at the Municipal dock. Almost everyone else was out because "it was good fishing" that day, but he was in because his boat was being repaired. He said 90% of the catch in Shinnecock is squid, though a couple of boats go offshore and to Georges Bank for whiting.

He said there are 24 slips at the Municipal Dock but only 18 are being used by vessels, the other 6 being in a state of disrepair. The fishermen lease their slips from the town. He explained that the dock had been created as the result of lobbying by one of the fishermen about 12 years ago and was financed by federal, state and local money, but that the town and the county have been fighting over who owns it and should administer it ever since then. He said that whoever is actually in charge doesn't police it and that people leave their garbage there. When

we were there, sections of the large parking lot were being used by dockhands to repair nets and by a welder who our informant said is there all summer fixing dragger doors.

The fish dock next to the Municipal Dock is a private company that sells ice and fuel to some of the fishermen and also has 4 slips for commercial boats. Most of this dock's business consists of packing the catches of four boats with a single owner that dock at the Municipal. This owner is currently bringing in yellowtail flounder (though another informant said he usually fishes for whiting).

The cooperative is a packing dock with about 16 members, mostly owner/operators. There are 10 slips, all used by members. Most of the fish that's brought into the coop is sold to Fulton Fish Market, though some of it goes to local buyers. The informant said that one member is bringing in large amounts of whiting and that right now this is what is supporting the dock in large part. He said the head of the coop owns two boats but doesn't fish himself anymore. There were three dockhands this summer, all of whom were local and of college-age.

He said that the coop buys fuel, ice and other supplies in bulk, which is necessary in order to keep members' costs down. The dock used to be owned by a man who ran a packing house for local fishermen there. There was also a bar upstairs that used to be the local hangout. The informant said that the coop would like to fix up that part of the building and reopen it as a revenue-producer for the coop.

The marina on the other side of the coop is a private fish packer. The owner is a partner in one boat and has other dockage for perhaps 10 boats. If a boat docks there, it has to pack there and buy its supplies there. The Shinnecock fishermen used to make their own nets, but the informant said they now get them from one supplier in Riverhead, Long Island, where they also get a lot of their wire, chains, rain gear, gloves, etc. There are other vendors in Riverhead that they use, and they also now get some of their supplies by mail order and through the Internet.

His estimate is that there are 30 boats working out of Shinnecock. Most are draggers, but there are probably 6 gillnetters that go out on the ocean for monkfish, bluefish and striped bass. He said that there are more gillnetters working out of Shinnecock now than ever before. The smallest draggers are 45-footers. There are 16 boats that are 60-65' which he described as "the most constant" producers, all day boats using two-man crews. The four draggers at the dock adjacent to the Municipal Dock are 80-footers with 3- to 4-man crews. Then there are 4 boats over 90'. He said that one of the boats currently goes tilefishing (though our tilefishing informant in Montauk said there are two tilefishing vessels) in the past it went longlining for tuna and swordfish. Most of the boats were built in the 1970s, during a vessel building boom driven by the IRS Investment Tax credit then available. One big change in Shinnecock is that there are fewer owner/operators than before. According to another observer, this is because the more successful fishermen have acquired more boats and thus must hire captains. It remains a small-business fishery, with little investment by non-fishing entities.

Our Shinnecock informant said that all the docks on the street run on volume, but that the fishermen are doing all right even though there are fewer fish, because prices are up. He described it as "a tight situation," and that if the docks don't stay viable he believes they may be bought by real estate developers. He said that given Long Island's geographical position between New England and the South, the closings on Georges Bank have had a major impact on fishing in Shinnecock.

He works in three or four fisheries a year. Besides squid, he goes out for ground fish or fluke in the winter. He said that all the boats in Shinnecock have northeast multispecies permits. He takes one crew member out on his boat, to whom he pays a share. He said that getting good crew members has become a big problem. "There are better jobs on land less hours and more money so the quality of the crews is going down. Oddly enough, there have been few immigrants so far, only a few on the docks. " He said this is surprising to him given the fact that there are a lot of working class Guatemalans on the east end of Long Island. He said that hirings are mostly done through word of mouth.

At 41, he's in the middle age class for Shinnecock boat owners. He has been fishing for 20 years and has lived in the area all his life. He said that 90% of the Shinnecock fishermen live nearby, mostly in the town of Southampton. He said that a few of the fishermen originally came to Shinnecock from other places farther west: one from Brooklyn, another from the Islips and Fire Island and a third from New Jersey. This was interesting, given information previously gathered that many Montauk fishermen migrated there from points to the west. He called Montauk "a more transient type place." He said there is one woman who has been fishing out of Shinnecock as a crew member for 3 or 4 years.

His father is a bayman who still goes out for mussels, soft clams and razor clams. He describes his father as a real entrepreneur. While he sells some of his harvest to a local fish house or in New York City, he also goes after his own markets, including setting up clam bars for parties (he said his father had roped him into manning one of the clam bars that coming weekend at a television celebrity's house in East Hampton). He said that most of the baymen's boats are docked in back of their houses or scattered at private docks in the area. Here there is a Southampton Town Baymen's Association. In response to the question why he didn't become a baymen as well and instead decided to invest in a bigger boat and offshore fishing, he said: "I wanted to make more money. And sometimes I say to myself, 'I'm not!'" He said that as far as he knew, some baymen are very successful and some struggle a lot financially.

One problem a fisheries management official pointed out is that Shinnecock Inlet has a tendency to silt over, which can almost completely curtail ocean fishing. The coop informant said that, the inlet was formed by a hurricane in 1938, and that commercial fishing started late in Shinnecock relative to other places on Long Island because people had to wait until the inlet stabilized in the '50s before establishing the industry there. The official said that when the inlet silts over now, Shinnecock plummets in importance as far as landings go, whereas it usually vies with Montauk as the most important port on Long Island. The Shinnecock informant said that the last time the inlet closed up the federal government dredged the inlet very quickly. He said that "90% of the reason" for their speed was pressure from the commercial fishing industry. He said that some of the fishermen took a bus down to Washington to prod the government into taking responsibility for the inlet. Other than that, there hasn't been much political activity. "One of our problems is that fishermen don't like to get organized. It is a commercial thing, but it's political too."

He said that the town of Southampton is "generally supportive" of the fishing industry. "Locally, the paper and the politicians understand the need and significance of the fishery, even if it seems really small economically on the local level." On the other hand, he had this to say about state and federal regulations and about the state of the industry in general: "We're not shut down here, but we feel like we're being squeezed out. At the same time, niches are being created to take advantage of higher prices, chasing competition away. I can keep going I haven't invested in a whole lot of extras, in electronics, and the mortgage on my boat is getting paid off. It's never been an easy business. Times have been better, but there are still plenty of people making good money. But we're are all waiting for the straw to break the camel's back. And it's having the effect of keeping younger people out."

Bar\hangout: Fat Lucy's Fish House.

Islip

Weighout data for the port of Islip, like that for Shinnecock, show pelagic longlining for swordfish, tunas (bluefin, big eye, albacore, and yellowfin) plus other species, including dolphin fish. Total landings are little more than 200,000 lbs, worth about $540,000 in 1998. A small amount of dragging and gill-netting, not reflected in the NMFS data for Islip, also takes place here, but fishing activity has declined greatly over the years.

Other New York Fisheries:

Brooklyn

Commercial fish landings in New York City's boroughs have declined markedly over the years. Today landings in Brooklyn were reported in 1998 as less than 30,000 pounds, from otter-trawls (77%), sink gill nets (16%) and handlines. The principal species, out of 17 landed, were butterfish, bluefish, weakfish, and loligo squid. Sports fishing at Sheepshead Bay and other sites, have become more important than commercial fishing.

Columbia, Duchess, Queens, Greene, Rockland, Ulster, Westchester Counties

NMFS has "other" categories for counties where marine and estuarine fishes are landed. Those for Nassau and Suffolk are treated separately above. We lumped the others together; they largely represent estuarine and riverine fisheries. Most of these fisheries are the riverine ones for American shad (85% of pounds, 94% of value). Small amounts of menhaden, blue back herring, winter flounder, weakfish, scup and other species (totalling 10) were reported. The key gear types were drift and sink gill nets, both used for shad. Other gear types, with minor catches, were otter trawls, fyke nets, handlines, and fish pots/traps. The catches in 1998 were very small, totalling less than 200,000 lbs. or $230,000.

3. New Jersey's Fishing Ports

New Jersey is the most densely populated and one of the most industrialized and urbanized states in the nation. Although small in area, it also has a long coastline, about 100 miles, as well as two major tidal rivers, the Hudson and Delaware, and numerous estuaries inside its barrier islands and embayments. Much like New York, its fisheries are found in both urban and rural settings.

Table NJ-1: Commercial Landings by County and Port, New Jersey, 1998

		Landed	Percent	Landed	Percent
Port Name	County	Pounds	Pounds	Value	Value
Unidentified		57120	0.0%	33,600	0.0%
ATLANTIC CITY	ATLANTIC	37281429	19.5%	17,833,492	19.6%
OTHER ATLANTIC	ATLANTIC	1257049	0.7%	2,325,991	2.6%
OTHER BERGEN	BERGEN	**	**	**	**
CAPE MAY	CAPE MAY	87244668	45.6%	25,757,246	28.3%
WILDWOOD	CAPE MAY	6193378	3.2%	3,492,862	3.8%
OTHER CAPE MAY	CAPE MAY	1190767	0.6%	1,296,893	1.4%
SEA ISLE CITY	CAPE MAY	745111	0.4%	1,193,939	1.3%
OTHER CUMBERLAND	CUMBERLAND	4444939	2.3%	5,573,267	6.1%
OTHER ESSEX	ESSEX	**	**	**	**
OTHER HUNTERDON	HUNTERDON	**	**	**	**
OTHER MIDDLESEX	MIDDLESEX	**	**	**	**
BELFORD	MONMOUTH	**	**	**	**
NEPTUNE	MONMOUTH	**	**	**	**
HIGHLANDS	MONMOUTH	**	**	**	**
OTHER MONMOUTH	MONMOUTH	**	**	**	**
Monmouth Co. Total:		*8074562*	*4.2%*	*3796682*	*4.2%*
PT. PLEASANT	OCEAN	31,916,942	16.7%	16,715,450	18.4%
LONG BEACH/BARNEGAT LIGHT	OCEAN	10,032,811	5.2%	10,194,378	11.2%
OTHER OCEAN	OCEAN	985,565	0.5%	1,162,418	1.3%
OTHER SALEM	SALEM	558,844	0.3%	449,561	0.5%
Total:		191,510,458	100.00%	90,919,181	100.00%

*Note: ** indicates that landings data are confidential. The total for Monmouth County ports is given in a separate row.*

Table NJ-1 shows 1998 commercial landings, from NMFS dealer weighout data, for New Jersey's ports, and the counties in which they are found. This report is organized by county, beginning with Monmouth County in the north and ending with Cumberland County in the south. The major fishing ports of New Jersey, from north to south, are Belford, a diversified commercial port with a marketing cooperative; Atlantic Highlands, a charter-boat and party-boat center; Highlands, a small lobstering and clamming port; Shark River (Neptune/Belmar), another small lobstering and recreational fishing port; Brielle, a charter-boat and party-boat recreational fishing center; Point Pleasant Beach, a diversified commercial and recreational port with a marketing cooperative and significant surf clam/ocean quahog activity; Barnegat Light (Long Beach Island),

combining recreational and commercial fishing with a strong tradition of deep-water longlining but now diversified; Atlantic City, a surf clam/ocean quahog port; Sea Isle City, a small, diversified port; Wildwood and Cape May, both commercial and recreational, with significant surf clam and ocean quahog, scalloping, finfish dragging, and other fisheries (the largest port in the state and the site of several large seafood packing and processing firms); and Port Norris, once the center of oystering but now mostly the site of crabbing and finfishing plus oyster and clam processing plants. Small-scale clamming, crabbing, and other kinds of fishing take place from numerous other sites around the 100 miles of New Jersey's coast, and substantial seafood processing can be found in various inland communities.

Monmouth County Profile (includes the fishing centers of Belford, Atlantic Highlands, Highlands, Neptune/Shark River)

Population
According to the 1990 Census, Monmouth County had a population of 553,124. Females outnumbered males by a small amount, about 3%. Rural population comprised 9.6% of the total population, but less than 1% of the total population resided on a farm. Monmouth County is a rapidly growing suburb of the NY-NJ Metropolitan Area.

Racial and Ethnic Composition
Of the population in Monmouth County, 87.4% was white and 8.5% was black. The next largest racial group was Hispanic at 4.1%. There were small numbers of American Indians, less than 1.0%, and Asian, 2.8%. Of the population, 92.5% were native, and of those 61.2% were from New Jersey. The largest reported ancestries for Monmouth County in 1990 were Irish (138,815 people), Italian (115,652 people), and German (110,026 people).

Age Structure
The 25 to 44 year old age group was the largest in Monmouth County comprising 33.2% of the population. In Monmouth County, 24.4% of the population was under the age of 18 and 12.7% was over 65 years of age.

Household Composition
Of the 197,570 households in Monmouth County, 73.8% were family households. Of the family households, 82.7% contained married couples and single females headed 13.3%. There was an average of 2.74 persons per household, however, householders living alone occupied 22.0% of all households.

Of the Counties 218,408 total housing units, 90.5% were occupied according to the 1990 Census. Of the occupied houses, 72.7% were owner occupied and 24.7% were renter occupied. The median value of owner occupied units was $180,400 and median rent was $567. Homeowner vacancy rate was 3.0% and rental vacancy rate was 9.2%. One-unit housing comprised 65.8% of the total, and ten or more units comprised 12.4% of the total.

Educational Trends
Of the persons 25 years of age and older in Monmouth County, 82.8% held a high school diploma or higher and 28.4% held a bachelor's degree or higher.

Income
Per capita income for the County was $20,565, according to the 1989 Census, and median household income was $45,912. Of the 543,183 people for whom poverty status was determined, 5.0% fell below the poverty line.

Employment

Of the persons 16 years of age and older in Monmouth County, 68.1% were in the labor force. Of these, 98.3% were in the civilian labor force, of which 5.2% were unemployed. More recent unemployment figures for the area were 4.8% in 1997 and 4.3% in 1998. Although it appears, according to the more recent figures, that unemployment is slightly higher at the beginning of the year, it is actually rather steady.

Employment Industries
Of the 275,140 employed persons 16 years of age or older, 1.4% were in the agriculture, forestry, and fisheries industries sector. The largest sector was professional specialty occupations at 17.6% followed by retail at 16.7%. The next largest sectors were executive, administrative, and managerial occupations; administrative support occupations; sales occupations; precision production, craft, and repair occupations; and finance, insurance, and real estate. Government workers comprised 15.7% of the working population and 5.8% were self-employed workers.

Racial and Gender Composition of the Fishing Industry
According to the 1990 Census, there were 41 captains or officers of fishing vessels, all white males, in Monmouth County. There were also 142 white men that engaged in fishing as an occupation.

Fisheries Profile, Belford

The fishing port of Belford is on a tidal creek leading out to Raritan Bay and the New York Bays. Its fishery is oriented both to the bay and to the Atlantic Ocean, which is reached by going out around Sandy Hook, a few miles from Belford. Belford and neighboring Port Monmouth were once a large industrial fishing and processing center for menhaden, but the menhaden factory closed in 1982. Menhaden are still caught with small purse-seine boats and pound-nets, primarily for the bait market, and in 1998 they accounted for over 2/3rd of the landings in Belford (Table NJ-B1) Today Belford's fisheries are small-scale and owner-operated; most of the finfish are handled through a fishermen's cooperative, which sells wholesale but also runs a small retail store and restaurant. Lobsters are sold in other ways, including through a local lobster pound. Otter trawl finfishing is the most important activity, accounting for 50% of the landed value in 1998 (Table NJ-B1). It is a multi-species fishery: 42 species were landed in 1998. Major species caught by otter trawlers landing in Belford, by landed value, were summer flounder, Loligo squid, silver hake, winter flounder, spiny dogfish and skates. Lobster pot fishing is third only to purse seining and dragging; it accounted for 17% of landed value in 1998.

In recent years surf clam and ocean quahog vessels have been offloading at Belford, but in 1998 they accounted for less than 4% of the landed value (in contrast to 1992, when ocean quahogs accounted for over 30% of landed value). Crab dredging, in Raritan Bay, is of equal value. The last of New Jersey's pound-nets are in Raritan and Sandy Hook Bays; they accounted for 3.9% of Belford's total landed value in 1998. Some of that was from menhaden but 27 other species were also landed from the pound-nets, notably bluefish, weakfish, summer flounder, and butterfish; small amounts of tuna, skates, shad, tautog. Other fishing techniques used include crab and fish pots, handlining, and diving.

Table NJ-B1: Landings by Gear Type, Belford, NJ, 1998

GEAR TYPE, BELFORD, NJ	Lbs. %	Value %
Diving Gear	0.0	0.0
Dredge, SCOQ	2.7	3.8
Dredge, Crab	2.3	6.1
Hand Line	0.0	0.1
Pots/Traps, Lobster, Offshore	2.0	17.1
Pots/Traps, Blue Crab	0.0	0.0
Pots/Traps, Fish	0.0	0.2
Pound Nets	3.8	3.9
Purse Seine, Menhaden	65.1	18.6
Trawl, Otter, Bottom, Fish	23.9	50.1
Unknown	0.0	0.1

Note: "0.0" means more than 0 but less than 0.05. The figures for landings from which these percentages are derived are not given because they are confidential.

Other Monmouth County Ports

Highlands (at the mouth of two large tidal rivers coming out into Sandy Hook Bay with access to the Atlantic Ocean) and Neptune (in combination with neighboring municipalities which surround the tidal basin known as Shark River) are primarily small lobstering ports, sequestered within summer resort communities. Data for these ports are confidential. Highlands is also the site of bay clam depuration plants, which serve baymen who clam under state permits in Raritan and Sandy Hook Bays and the Navesink River. A small amount of handlining for finfish and potting for rock crab supplements lobstering. Atlantic Highlands is a center for recreational charter and party boat fishing.

Crabbing constitutes most of the landings for the rest of Monmouth County. The winter dredge fishery for blue crabs in Raritan Bay and its tributaries is significant. Clamming is also important. It takes place in the Sandy Hook and Raritan Bays and tidal rivers and is largely dependent on a "depuration" process, located in Highlands, as well as some "relaying" of clams to cleaner waters in south Jersey. Crabbers and clammers, like those involved in other fisheries, live in and around Belford, Highlands, and various municipalities along the shore of Raritan Bay.

Field Observations and Interviews, Belford, NJ, 1998-1999

In this report we feature Belford, the largest fishing center. The report is based on a recent study by Marie Cieri (Cieri 1999). About 150 fishermen work out of the port of Belford, which is on a tidal creek on the south shore of Raritan Bay in east central New Jersey. There are

about 30 fishing vessels in use, ranging from ocean-going steel-hulled trawlers to small pound-netters and clam garvies. Many live in the town of Belford (pop. 4,151, 1990), which is part of Middletown Township, but some live in other parts of the township and other municipalities on the bayshore. The majority of the fishing families live in Belford, and the primary organization that functions on behalf of the fishing community is the Belford Seafood Cooperative. The major fishing enterprises are this cooperative and a lobster business.

Belford became a town in 1891; before that it was part of Port Monmouth, and both became centers of the menhaden processing industry (fertilizer and fish meal), eventually consolidated into one enterprise, just west of Belford harbor in the town of Port Monmouth. It was torn down in 1982. West of the fish plant was housing for migrant workers, most of whom were southern blacks who left after the plant closed. This housing and other cabins and cottages fronting the bay subsequently became homes for clammers, fishermen, and other local workers; the area is now cleared of housing, made up of sandy inclines covered with low scrub growth, which now belongs to Monmouth County. A train connected Belford with New York City until the 1960s, bringing commuters to live in the town. A state highway from the Garden State Parkway, which was completed in 1957, easily reaches the town. This highway bisects the town into a "wet" and a "dry" side. The "wet" side includes extensive undeveloped or partially developed estuarine wetlands, mixed use buildings, and the fishing port. It is also the location of the township's sewage plant and landfill.

Belford fronts on Raritan Bay, which is polluted from industrial and municipal refuse but still provides a rich habitat for shellfish and fishes. The bay's shellfisheries were closed during the 1960s, due to connections to hepatitis epidemics, but today clams can be caught through a special state “relay” and “depuration” programs which ensure that clams are rid of bacterial impurities before being marketed. Raritan Bay and neighboring Sandy Hook Bay are important locations for pound-net fishing, seining for menhaden, and other fisheries, but the fishermen also go out to sea, around Sandy Hook.

The Belford Seafood Cooperative was founded in 1954 by fishermen to leverage higher prices from Fulton Fish Market, the main outlet for their catches. In its early years the coop had approximately 80 members but membership is currently around 60. Non-members working out of Belford harbor can and do sell their catches through the coop. The coop established its own year-round retail market and improved it, adding a restaurant, a few years ago, but most of the catch is still sold at the Fulton Fish Market and other urban fish markets. Its market serves a highly diverse clientele, including small vendors from New Jersey's urban areas and ethnic minorities, including Asian-Americans who come for specialties such as black sea bass. Experiments were recently begun to grow-out black sea bass in seawater pens.

The center of fishing activity is the harbor, formed from the mouth of a meandering creek and a jetty at the edge of the bay. On the west shore of this slip is the coop as well as its retail fish market, a small, inexpensive restaurant, and a parking lot. The creek is very narrow (approximately 75 to 100 feet) and usually packed with about 70 fishing boats ranging in size from about 24' to 80'. On both sides of the creek are small to medium-sized buildings and shacks, mechanical equipment, nets and lobster pots, trucks, and small areas of open land related to commercial fishing, i.e. spaces for repairing and drying nets. South of the coop is a small town dock and parking lot.

The only other retail businesses on the "wet" side of Belford are a bar and eatery near the harbor, a breakfast and lunch restaurant that sells some groceries just across the border in Port Monmouth. There are more businesses on the "dry" side, bordering the state highway. Belford is a working class town ensconced within a more affluent, educated and professionally oriented population, judging from US Census figures. Like other "bayshore" towns of this area, there are substantial numbers of people over the age of 16 listed in the occupational category for

agriculture, forestry, and farming, almost all of whom must be in fishing given the nature of this area: 85 for Belford in 1990 (for the nearby census tracts, which include homes of many of Belford's fishers, the figures were 33 for Leonardo, 50 for Port Monmouth, 42 for Atlantic Highlands, and 39 in East Keansburg).

In the 1980s, the fishing community of Belford, led by a fishermen's wives association, fought gentrification of the port area in order to protect the livelihoods and futures of fishing families. The old menhaden plant property, then the largest vacant waterfront property of the New York bays, was purchased by a developer; eventually part of the property was given to the coop, and some was earmarked for condominium development and New York City ferry service, neither of which has yet come about. Meanwhile the county began buying property along this coast, developing it into a recreational marina, bicycle trails, and new roads. Today, a citizens association cooperates with the fishing community to try to control the nature of development on Belford's waterfront.

A survey done in 1984 (Princeton Economic Research 1985) found high levels of dependence on the fishery; only 25% of those surveyed had had any other work experience. When times are bad, fishermen may "go up the road" to find other employment, but it is relatively unspecialized and unskilled work. The fishing community --defined more in terms of fishing out of the port of Belford than residence in Belford-- has a high degree of relatedness. The 1984 survey found that only 2 respondents (5%) said they had no relatives in the fishery, past or present.

Ocean County Profile (includes Point Pleasant, Brielle, and Barnegat Light)

Population
The total population in Ocean County was 433,203 in 1990. Females outnumbered males by a small amount, 5.7%. Only 20.4% of the population were rural, and less than 1% lived on a farm. Ocean County has grown rapidly from coastal tourism, retirement community development, and general suburban expansion within the NY-NJ Metropolitan Area.

Racial and Ethnic Composition
The main racial group in the county was White, which made up 95.3% of the population. The next largest group was Hispanic, at 3.2%, followed by Black at 2.8%. Small numbers of American Indians and Asians resided in Ocean County. Of the population, 93.4% were native, of which 68.5% were born in New Jersey. The most reported ancestries for the area were Irish (113,220 people), German (109,560 people), and Italian (101,659 people).

Age Structure
The 25 to 44 year old age group was the largest in Ocean County and comprised 28.1% of the total population. Of the population, 22.7% was under 18 years of age and 23.2% was 65 years of age or older.

Household Composition
Of the 168,147 households in the county, 71.8% were family households. Of the family households, 84.5% contained couples and single females headed 12.0%. There was an average of 2.54 persons per household, however, householders living alone occupied 24.9% of the total households.

Of the 219,863 total housing units, 76.5% were occupied. Of the occupied units, 82.9% were owner occupied and 17.1% were renter occupied. Homeowner vacancy rate was 4.4% and rental vacancy rate was 17.3%. Median value of owner occupied housing units was $126,000 and median rent was $578. One unit detached housing comprised 73.1% of the total housing units.

Educational Trends
Of the persons 25 years of age and older in Ocean County, 74.9% held a high school diploma or higher and 15.3% held a bachelor's degree or higher.

Income
Per capita income for the county was $15,598 and median family household income was $33,110, according to the 1989 Census. Of the 426,849 people for whom poverty status was determined, 6.0% were below the poverty line.

Employment
Of the 345,672 persons 16 years of age or older, 194,096, or 56.2% were in the labor force. Of these, 99.3% were in the civilian labor force, of which 5.9% were unemployed. More recent unemployment figures for the area were 4.8% in 1997 and 4.3% in 1998. Although, according to the more recent figures, unemployment appears to be slightly higher at the beginning of the year, it is actually rather steady.

Employment Industries
Of the 181,415 employed persons 16 years of age and older, 1.5% were in the agriculture, forestry, and fishery industries sector. The largest sector of all was retail at 19.5% followed by administrative support occupations, including clerical, at 16.8%. The next largest sectors were sales; precision production, craft, and repair occupations; professional specialty occupations; executive, administrative, and managerial; and service occupations, except protective and household.

Racial and Gender Composition of the Fishing Industry
According to the 1990 Census, there were 36 white male captains or officers of fishing vessels in Ocean County. There were also 267 white males and 1 white female who engaged in fishing as an occupation.

Fisheries Profile, Point Pleasant, NJ

The commercial fisheries of Point Pleasant are third in New Jersey to those of the Cape May-Wildwood area and Atlantic City (Table NJ-1). The weigh-out data include some bayman fisheries (i.e. "by hand" and crab dredge gears), but this is primarily an ocean fishing port, with a long history involving ocean pound-nets and fisheries focusing on the offshore 'canyons' of the region.

The fishing port is actually Point Pleasant Beach, a borough within the larger town of Point Pleasant. Like so many ports of the Mid-Atlantic region, it is inlet-dependent. Ocean-going fishers must pass through the often dangerous Manasquan Inlet, a challenge shared with the recreational fishing community including the party and charter boat businesses of Point Pleasant and neighboring Brielle. This is a highly developed coastal region. Currently there is a wholesale finfish packing dock at Point Pleasant, a fishermen's cooperative. Another dock is primarily used for offloading surf clams and ocean quahogs although finfish may be handled there as well.

The fisheries are very diverse, the classic situation in the Mid-Atlantic. Two stand out in terms of volume and value: otter trawls and gillnetting, the latter particularly important for spiny dogfish as well as bluefish, weakfish, and other species (Table NJ-PP1). But sea scallop dredging is very important, as are surf clamming/ocean quahogging and offshore lobstering. Landings by major species for Point Pleasant are confidential but one can generalize that the most valuable species, in 1998, was angler or monkfish, which was partly incident to the scallop fishery but also caught by specialized gill-netters both local and migrating from other ports in the northeast and mid-Atlantic. Sea scallops were next in terms of ex-vessel value in 1998, followed by Loligo squid, a major focus of the local dragger fishery in the last decade, summer flounder,

also a traditional fishery of the area but sharply cut back by regulations; lobster; spiny dogfish (like monkfish, caught by gill-netters as well as other fishers), and silver hake, or whiting. Whiting was one of the mainstays of this fishery from the 1970s through the 1980s; its availability and abundance have since declined. In terms of pounds landed, menhaden (purse-seined) and surf clams and ocean quahogs were the leading species in 1998, having come to replace the traditional otter trawl finfish fishery in importance over the past decade. Table NJ-PP1 gives landings by gear type.

Table NJ-PP1: Landings by Gear Type, Point Pleasant, NJ, 1998

GEAR TYPE, POINT PLEASANT, NJ:	Lbs. %	Value %
By Hand	0.0	0.0
Dredge, Crab	0.0	0.0
Dredge, Sea Scallop	1.2	10.4
Dredge, SCOQ	51.4	49.9
Gill Net, Drift	1.0	0.7
Gill Net, Sink	11.0	13.5
Hand Line	0.1	0.1
Longline, Pelagic	0.1	0.2
Pots/Traps, Lobster Offshore	0.6	3.5
Pots/Traps, Fish	0.0	0.0
Purse Seine, Menhaden	20.9	3.7
Trawl, Otter, Bottom, Fish	13.6	17.7
Troll Line	0.0	0.0
Troll Line, Tuna	0.0	0.0
Unknown	0.2	0.3

Total Landings, rounded, 1998: 31,916,900 lbs.
Total Value, rounded, 1998: $16,715,400 dollars

Field *Observations and Interviews, Point Pleasant Beach, NJ*

The town of Point Pleasant (pop. 18,177, 1990) is located at the mouth of the Manasquan Inlet at the northern border of Ocean County. The town's economy is geared toward the summer tourist and recreational business. However, it is more than a "beach town", and has a large resident population. It is close to a larger township, called Brick or Bricktown (pop. 66,473, 1990), and across the Manasquan River from Manasquan (5,369, 1990) and Brielle (4,406). The fisheries are concentrated in an area known as Point Pleasant Beach, along a sandy strip which includes restaurants, a fisherman's supply store, small marinas, charter and party boat docks, and two commercial fishing docks.

One of the Cape May seafood businesses has two fishing properties in Point Pleasant, one of which is now used for offloading and trucking surf clams and ocean quahogs. (Each of these docks had been used for finfish until about 10 years ago). From 6 to 10 boats land clams here, according to company personnel interviewed in Cape May. There are 15 crew at the docks and

about 50 on the boats. There is also a new (2000) seafood processing plant, initially shucking surf clams. One existed here two decades ago, part of the early surf clam industry.

A fishermen's cooperative owns two other properties, one for storing and working on gear and some dockage, the other including the coop's offices, gear storage, ice-making, packing house, and a retail store. The cooperative mostly depends on its fourteen or so members, who have older, wooden-hulled vessels, 45-65' in length. They are geared for bottom otter trawling in a mixed-species, diversified fishery. The vessels usually have a two or three man crew, including the captain, who are paid shares of the profits. They are all hired locally. Although there are families with several generations in the fisheries, in recent years crew members are not often related to the captain or owner. Some members of this cooperative and some crew members have been ethnic minorities (Spanish, Portuguese, Chinese, and others). A few women have crewed on these boats. The boats are all owner-operated. They tend to fish in areas of Hudson Canyon called "the Mudhole" or "the Gully." The Mudhole is closer and has a dredged channel, but poor landings, especially of silver hake ("whiting") have forced most to move north into the Gully, where silver hake seem to be more plentiful. The average trip to the Mudhole is one to three days, but for the Gully can last a week.

Most of the draggermen at the cooperative consider themselves loligo squid and whiting specialists, but different species are targeted at different times, depending on the conditions of the ocean, the market, and the preferences of the captain. Squid landings began to overtake silver hake landings in this fleet in 1992 and now account for over 50% of the landed value of Point Pleasant trawlers. At first it was a by-catch while silver hake fishing in the Gully. Now it is targeted by some of the captains. As one captain stated, "You can't help but target squid sometimes, there is so much out there." Squid is sold to local processors. The cooperative is at a disadvantage in marketing squid because members lack freezer boats or refrigerated sea water boats, and thus do not receive the same price that boats so equipped receive, particularly in Cape May.

Summer flounder has long been a mainstay of this fishery, especially in the Mudhole in September and October, as well as other times in New Jersey and New York waters. Because of sharp quota restrictions, it is now a derby-like fishery. It is marketed in the fresh fish markets of New York and Philadelphia, in local restaurants and fish stores, and in the coop's own retail store.

At one time a few trawlers targeted scup (also called porgies), partially because doing so took pressure off a supply-burdened whiting market. (There was also a significant offshore summer flounder fishery in the winter months, for a few boats). Today no vessels target scup but may encounter large schools in the winter. Marketing is similar. Spiny dogfish have emerged as a very important fishery for the draggers and even more so for a gill-net fleet, both local and visiting, which has grown in recent years. Gill-netters have used "runaround" nets for species such as bluefish, Spanish mackerel, little tuna, scup, and weakfish, although this gear did not appear in the 1998 NMFS data. They use drift and sink nets for dogfish, angler, bluefish, weakfish, and other species. Angler, or monkfish, are particularly important. In 1998 local fishermen using sink gill nets caught almost 17 million pounds of monkfish as well as over 8 million pounds of spiny dogfish.

Declining catches and restricted fisheries have hurt this fishing community severely. Many boats have left the fishery and boats are for sale. Existing operations have difficulty investing in major improvements, either to the waterfront properties or to the vessels.

Fisherman's Memorial

The fishing community of Point Pleasant was hard struck by the January 1999 tragedies in the surf clam/ocean quahog fishery. The Adriatic, the Beth Dee Bob, and the Ellie B. all went down during storms that month, as well as another vessel, the Cape Fear, formerly based in New Jersey, up in Buzzards Bay, Massachusetts. Eleven lives were lost. In the aftermath, members of the fishing community, led by the dock managers at the surf clam/ocean quahog dock, began the work of designing and funding a fishermen's memorial, which is being built by a local sculptor and will have the names of many of the fishermen of this part of the coast who lost their lives at sea. The memorial will include the ship's bell of one of the vessels lost in January 1999.

Field Observations and Interviews, Recreational Fishing, Point Pleasant/Brielle area, NJ, July 1998

Funding and time constraints precluded our studying the recreational fisheries as much as the commercial fisheries in the Mid-Atlantic region. However, we are able to discuss some aspects of the recreational fisheries of the Point Pleasant area because of our involvement in a separate study, for NMFS, on the social and cultural dimensions of highly migratory species management (Wilson and McCay 1998). The following is based in part on the results of a meeting with charter and party boat captains, journalists, tackle shop owners, and other interested parties in July 1998.

The Borough of Brielle is located in the southernmost region of Monmouth County, across the Manasquan River from Point Pleasant. Its 1990 population was 4,406, and nearly 50% of the population were over 44, reflecting its role as one of the many Jersey Shore communities attracting retirees. From a fisheries perspective, its bait and tackle shops and charter and party boat fleet, and marinas, may be considered part of the "Port of Manasquan" which involves Brielle, Point Pleasant Beach, Point Pleasant, and Manasquan, centering on both the Manasquan River and Manasquan Inlet.

It is an area where recreational fishermen are as "traditional" as commercial fishermen are. The context of our meeting was a socio-economic study of impacts of proposed alternatives for the management of tuna and sharks (Wilson and McCay 1998). Bluefish management was another topic that loomed large at the time. Other species being managed at state, interstate, and federal levels are also important to the area's recreational fisheries, including summer flounder, tautog, black sea bass, scup, Atlantic mackerel.

The "Port of Manasquan" is one of the most important of the "inlet" ports along the barrier beach complex that makes up the New Jersey coast. It has been a center of both recreational and commercial fishing since the early 1800s. Within the memory of the people we talked with, there were at least 100 working charter boats in the port. Today Brielle has 21 charter/party boats of which 14 are "full-time" headboats. There are 64 charter/party boats in Point Pleasant. The boats usually fish relatively close to shore for fluke, bluefish, and other species. The majority who fish offshore are private boats with or without NMFS angler permits for bluefin tuna.

With regard to the pelagic fisheries, the area has historically, and until recently, been a bluefin tuna port. More generally, New Jersey has had a recreational school bluefin fishery long before longliners, purse seiners and general categories developed their fisheries. In the Brielle/Point Pleasant area, bluefin tuna, particularly the smaller schooling tuna, still remain important for some periods of the year, at least when the northern management area is open for bluefin tuna fishing. According to historical documents found by a respondent, in the 1890s "catboats" from nearby Long Island were engaged in a bluefin tuna recreational fishery. In the 1930s there is documentation of huge catches by boats from ports of northern New Jersey, including Brielle/Point Pleasant. In one month of 1939, the weekly scores of northern New Jersey boats showed 19,998 bluefin tuna. In contrast, in 1998, the entire coast wide quota was 269 MT, or about 19,000 fish, the same amount, and for the whole year, not just one month.

Here, as elsewhere in New York and New Jersey, the highly migratory species fisheries are often known as the "canyon" fisheries, because they take place along the edges and deep waters of the Baltimore and Hudson underwater canyons, as well as around eddies and at the edge of the continental shelf. In the past, we were told, bluefin tuna could be caught on day trips in coastal waters, as well as the canyons, and they were the major source of profit for the charter boat fleet here (and elsewhere in New Jersey and the larger Mid-Atlantic). At one time, the full-time "canyon fishermen" included hundreds of inshore bluefin tuna boats, "6-pack" boats (i.e. smaller charter vessels certified to carry no more than 6 passengers; also known as "uninspected" boats). One respondent recalls, 20 years ago, about 20 miles out in the Hudson Canyon, seeing 300 boats fishing for tuna one night. Now, the boats have to go 80 miles offshore, on two day trips, dealing with the risks of the weather. The canyon fishery is now much farther offshore, and the canyon fisheries for tunas are thought of as extra opportunities for charter boat captains, whose regulars might occasionally ask for offshore tuna trips. Increasingly, the pelagic canyon fisheries out of the port of Manasquan as well as Cape May and other recreational ports are prosecuted by private owners of expensive, large boats rather than for-hire operations. Recent improvements in the U.S. economy have once again fueled investment in expensive offshore fishing boats, and this is a major contribution to New Jersey's economy. The majority of the private boats used and bought in the Cape May area, for example, are built in New Jersey.

It must be emphasized that New York and New Jersey still have viable canyon fisheries, and they are extremely important. The Hudson Canyon offshore fishery, of the Brielle/Point Pleasant fleet, really started 15 to 20 years ago, and they rely heavily on it for the fall fishery. This fishery has diminished, and the smaller, less powerful boats are gone. We were told that now "there's no such thing as owner-operated boats," just the boats of the larger fleets. The smaller boats have difficulty with the offshore, canyon fishery. One respondent said that on a recent Labor Day weekend, there were maybe 100 boats out fishing, but other, less popular nights, only 3 or 4 at the most, and he's often all alone.

Regulations have had a major impact on the charter and head boat business. In 1998 the local charter boats were generally unable to book tuna trips because of bag limits. They ... “can't get people to take the boat out if they're allowed to keep only one fish apiece." Inspected vessels (over 6 passengers) are not allowed to bring in any more than 3 fish/1 trip. “Twelve passenger” boats can not book on bluefin tuna. One of the charter boat owners/captains said his business did a study of the four "busiest captains" of the thirty they have (none are full-time). In 1991 they averaged 30-35 tuna trips each. In 1996 they averaged 10-12 trips. In 1997 they had one trip among the four. None of the captains had booked tuna trips for 1998. One of the captains shared his experience, beginning over 20 years ago in Montauk, New York making shark and tuna charter trips. In 1987, in New Jersey, still almost all charter trips were shark and tuna. But in 1998, he has had only two shark charters, a few more tuna charters. He estimates the business for sharks and tuna is about 10% of what it was before.

Today, bluefish has generally replaced the tunas as the important inshore/offshore recreational fishery in northern New Jersey. This is a major turn around. According to a respondent, in 1949, there were 438 bluefish landed versus 11,000 bluefin tuna, in one week in the northern New Jersey ports. These were mostly schooling bluefin. There are large runs of "school" bluefin tuna out there now, but "you can't catch them and get the trips," that is, you are not allowed to catch enough of them, or with enough certainty, to get people to charter trips in advance. This fishery collapsed, in the late 1960s, after the advent of purse seiners in 1967. Respondents also pointed out that, according to a 1947 tackle shop publication, there were 193 full-time charter boats in New Jersey then, compared with fewer than 50 today. The difference, several people said, was due to "bluefin tuna taken away."

Billfish are more often a by-catch in this fishery, compared with the southern part of New Jersey where they are an important directed fishery and the focus of a major tournament, the Mid-

Atlantic, alleged to be the "richest" marlin and tuna tournament in the world, according to the money paid out, for most of the 1990s. However, even in northern New Jersey billfish are important to the offshore canyon trips. At one time there were inshore trips for white marlin. And, according to a tackle shop owner in Brielle that caters to the offshore sports fishermen, the private boat owners at the Brielle docks want to catch billfish. This is a big part of the tackle shop business, representing a significant profit. Marlin lures cost up to $60, and people usually buy 6 or so at a time. There might be 25 or 30 boats in July and August doing this.

Swordfish has always basically been a commercial fishery in this area. There was a directed recreational fishery out of Shinnecock, New York, a very elite fishery. But now it is a valued and very rare by-catch. Local and other commercial boats landed swordfish, and tunas, in Point Pleasant for some years, particularly when an importer/exporter had a dock there in the 1980s-early 1990s.

There are 8 tackle shops in the Brielle/Point Pleasant area: 5 in Brielle, and others in Point Pleasant, Point Pleasant Beach, and Manasquan. There are two more that service primarily the shore and bank fishermen who fish Manasquan Inlet. Some are heavily dependent on offshore HMS fishing. One respondent says that his business depends on HMS for 70% of its overall sales. The regulatory system has the power to shut them down, and the uncertainties and last minute changes in regulations make it very difficult: "For bluefin tuna, we have to anticipate in November of December for the next year; tackle is ordered, made for us, and by the time the regulations come out--or don't come out, as was the case this year, reverting to last year's regulations--people don't buy the equipment and I still have to pay for it." He and others have requested from NMFS a buy-back similar to what was arranged for the New England commercial fishing fleet. Similarly, in Cape May, tackle shop owners perceive a crisis, and some are considering moving to southern states.

In the Magnuson-Stevens Act's "National Standard 8," on fishing communities, there is no recognition of recreational fishing communities. People interviewed agreed that this was somehow lost in the rush of getting the 1995 Sustainable Fisheries Act through. More generally, there is a tremendous lack of knowledge of the history of these fisheries. And a problem is "that we don't have receipts" to verify how important the catches have been.

The theme of the importance of learning from the fishermen as well as finding ways to respect and use "anecdotal data" came up often in our interviews. A few comments here will indicate the nature of a much longer and more detailed discussion. "This area is the most productive, sailing out of Manasquan Inlet, 50 or 100 miles in any direction." "We know all the canyons, far better than any scientist." "We know, but when we get to these meetings it's ignored, it's almost completely ignored." On yellowfin tuna: "I started the "chunking" fishery out there, in the canyon. You can't go on receipts [to identify what is happening with the fishery]; you have to talk to the people who are there all the time."

The representatives of this sports-fishing community differ from those who advocate solely catch-and-release fishing, or catch-and-release except for tournaments, as for example in Cape May. Instead, they emphasize the importance, among their clients, of bringing fish home to eat and to share with others, and hence the importance of reasonable bag limits to their ability to continue to serve these clients. The Brielle/Point Pleasant fishermen are concerned that many of the recreational fishing representations who have tried to be leaders in conservation have gone too far in the protectionist, rather than conservationist, direction. Yes, they agree, there's the need to be careful, to protect the fish, but what about livelihoods, the business side? The participants frequently stated that the catch-and-release movement was "spearheaded by an elitist few..." against the interests of "hard working, factory, city people" who came fishing "to fill up their bags with fish and bring them home for the neighborhood." However, even very wealthy people want to bring home some of the fish they catch.

Sports-fishing communities, including those who pay for the privilege of fishing, have different reasons for fishing. A news release of a report done in conjunction with the American Sportfishing Association was said to have reduced the recreational fishing experience to opportunities to catch fish and to tell stories. However, in this port, the majority of fishermen also want to bring some fish home, to eat and share, which has increased the negative impact of small bag limits. One of the large party and charter boat fleets in this port estimates that 85-90% of the over 4 million people they have taken out fishing over the years "wanted to walk home with fish." Reducing the experience also marginalizes the interests of people who fish from the banks and shores as well as on party boats and rentals. It also affects tackle shops: "I work behind the counter [at a tackle shop], and I hear it everyday. It's not tangible data, but "tangible impressions." I hear someone talking about bluefin tuna: "I don't bother with that any more, I can't take any home to eat." You can't translate that into tangible data on fish tackle sales, but you know it makes a difference."

Fisheries Profile, Barnegat Light (Long Beach Island), NJ

The fishing port of Long Beach Island is mostly located in the small bayside municipality of Barnegat Light, on this long, densely-developed barrier island on the central New Jersey coast. The commercial fishery has been undergoing a transition from over 20 years of specializing in offshore, deep-water and distant-water longlining. That tradition remains in the importance of bottom and pelagic longline gear (18% of total landed value) and of species such as tilefish, swordfish, and tunas (including big eye, yellowtail, blackfin, and skipjack in 1998) (Table NJ-LBI). (Handlines are also used for big eye tuna as well as for bluefish and other species; troll lines for yellowfin tuna). However, the physical perils of the inlet has kept this a relatively small-boat longliner fleet, and natural and regulatory changes in the species sought have forced people to look for alternatives. An alternative developed over the past decade is sea scalloping and the attendant by-catch of angler. Another is for expansion of the species sought with bottom and pelagic longlines, including sharks and dogfish among others. In 1998 the pelagic longline gear of Long Beach Island caught fully 23 different species, and bottom gear caught 17 species.

Whether transitional adaptation or old stand-by, the gill-net fisheries of Long Beach Island are the most substantial, representing 76% of poundage and 45% of landed value in 1998 (Table NJ-LBI1). The number of species involved is equally impressive: 61 for the drift gill-nets, including mackerel, dogfish, flounders, tunas, weakfish, shad, sharks; 23 for the sink gill-nets. In contrast, otter trawl dragging is minor and only 10 species were landed. Spiny dogfish are a recent focus, representing over one-third of the total landings in 1998.

Table NJ-LBI1: Landings by Gear Type, Long Beach Island, NJ, 1998

GEAR TYPE: LONG BEACH ISLAND, NJ	LBS. (%)	VALUE (%)
Dredge, Sea Scallop	5.7	28.6
Gill Net, Drift	64.0	34.9
Gill Net, sink	11.8	9.8
Handline	0.1	0.1
Longline, Bottom	7.0	6.1
Longline, Pelagic	11.2	19.9
Rakes	0.0	0.2
Otter Trawl	0.2	0.3
Troll Line, Tuna	0.0	0.0
Unknown	0.0	0.0

Total Landings, rounded, 1998: 10,032,800 lbs.
Total Value, rounded, 1998: $10,194,400 dollars

Field Observations and Interviews, Barnegat Light, July 1998

Barnegat Light is one of 11 municipalities on Long Beach Island, a large and heavily developed "barrier beach" island that helps form the seaward boundary of Barnegat Bay, roughly at the center of New Jersey's coast. This small town (population 681, 1990) with less than one square mile in area is located on the northern end of the barrier island. The town is named after its famous lighthouse that guided ships for generations along the New Jersey coast. The name Barnegat originates from “Barende-gat,” a Dutch name meaning “inlet of breakers." Although the town is small, its fishing community has been involved in fish harvesting and marketing worldwide and is active in international tuna and swordfish negotiations via ICCAT (International Commission on the Conservation of Atlantic Tunas). In July 1998 we visited Barnegat Light and talked with a large group of fishing families and local community members in the context of our social and cultural analysis of highly migratory species management (Wilson and McCay 1998).

Barnegat Light is one of New Jersey’s most important ports. Many members of the East Coast’s longline fleet, scallop vessels, and a fleet of inshore gillnetters reside at this port. Recreational and charter boats also utilize and work from this port. The recreational and charter boat fishing industry's landings, percentages, and values were not available at the port or county level.

There are five marinas in Barnegat Light. The two largest docks have 36 full-time resident commercial boats, approximately 40 recreational and charter boats, and some transients. Commercial fishing boats work out of these docks year round. The three remaining docks can each accommodate approximately 30-35 boats, most of which are recreational boats and charter/ party boats, with a few headboats. Most of the recreational and sportfishing fishing boats that utilize this port are here for part of the year, usually from May or June through early October.

One dock is completely occupied by commercial boats, and the owners are also commercial fishermen. These boats include seven scallopers, ten longliners that fish for tuna, swordfish, and tilefish, and about nine inshore-fishing gill net boats. All the boats are privately owned. Three offloading stations are part of this dock. During the slow to steady seasons, five or six locally hired full-time employees, the boat captain and crew perform the offloading. Additionally, dock hands are hired locally for the busy season. The choice for marketing and sale of the fresh fish can either be done by the captain or by the owners of the dock. The owners of the dock sell some of the catch

to fresh fish markets in Boston, Philadelphia, Maryland and New York with the remaining being sold to local restaurants, retailers, wholesalers or at their own fish market, which is open from April to October.

The second of the largest docks accommodates ten commercial boats, fifteen charter boats, and twenty-five recreational vessels. This dock is primarily an offloading facility and can accommodate up to five vessels for offloading. During offloading, there are two people working the docks to help the captain and crew. The marketing and sales of the fish is done by the boat captain, who sells the fresh fish to local fish markets.

Commercial and recreational fishing have a long tradition here. Fisheries development was limited until recently, because in order to reach the ocean, boats had to go through Barnegat Inlet, one of New Jersey's narrow and often dangerous inlets (the "inlet of breakers"). Consequently, most development has been based on beach-oriented tourism. For example, the former fishing community of Beach Haven, on Long Beach Island, now has only private boat marinas and residential condominiums on its waterfront. In 1995, the inlet's fierce currents were tamed by an Army Corps of Engineers project that constructed a south jetty along with a three-quarter- mile beach, a fishing pier, and bird watching opportunities.

The small businesses of Barnegat Light are very reliant on the summer tourist economy and the year round fishing industry. This is apparent with all of the summer and beach houses, the seashore shops and convenience stores along the main boulevard to and through Barnegat Light. The tourist surf shops, souvenir shops, small grocery and convenience stores, fish markets, and even the electronics and repair shops advertise goods and service catering to the needs of their consumers. According to a resident, the commercial fishing industry (including charter and party boats) becomes the stalwart economic sector for the town in the winter through employing as many as 150 local people to work at the marinas. (According to the 1990 census, 12.6% of those employed at Barnegat Light were in fisheries.)

Throughout the interviews and meetings, several citizens and business owners from the Barnegat Light community emphasized the role the fishing industry has in sustaining and preserving their community. The marinas are the major source of taxes for the community, according to representatives of the community's taxpayers association. Two of the five marinas are primarily dependent on the commercial fisheries. An owner of one of the marinas told us that 80% of their overall income comes from the commercial fishing industry, for fuel and other services. Although there is a lot of recreational fishing, the amount of fuel and other services sold to recreational fishermen is tiny compared with what is sold to commercial fishers. One marina owner said that for fuel, the ratio is about 40 or 50 commercial to one recreational. In addition, small businesses are able to stay open all year because of the fishing industry, and this has stabilized the community so that it has the lowest crime rate on the island.

The Barnegat Light port is known for its offshore longliner fishery, and a major offshore pelagic fishing organization, Bluewater Fishing Association, is headquartered here. In 1993 Barnegat Light longliners focused on the tunas (yellowfin, bigeye) for most of the year and swordfish part of the year. A few continued bottom longlining, for tilefish, caught in deep waters of the outer continental shelf and canyons. The longlining tradition derives from a winter handline and longline fishery for cod, which lasted through the first part of this century and was prosecuted by Scandinavian immigrants among others. It may soon end, with stricter regulations on the large pelagic fisheries and a possible government buy-back of longliners.

Barnegat Light is also known as the place where tilefishing was developed. Tilefish were long known by the old-timers of Barnegat Light but markets were poor. In 1969 a captain began tilefishing again. In the early 1970s he and others cooperated in successfully creating a domestic market for tilefish, and this soon emerged as a major focus of the longliners of Barnegat Light, as

well as Montauk, New York and, more recently, Point Judith, Rhode Island. The fleets developed rapidly, attracting even some of the charter boat fishermen. They diversified into pelagic longlining, for swordfish and tunas, as tilefish catch rates diminished. Others moved into sea scalloping.

Although Barnegat Light is mainly a longliner fishing community, there is also a small group of coastal gill-netters plus seven large sea scallopers. And like all ports in the region, it has a significant recreational fishery, with an equally long tradition. The longliner fleet is side by side with the party boats at one of the docks. Indeed, one of the families is involved in both commercial and party boat fishing, including offshore "canyon" fishing for highly migratory species (HMS). The HMS longliner fishery and the scallop fishery are the most important in economic and social terms. Declines in allowable catches, seasons, trip limits, and, for the scallopers, days-at-sea are threatening the fishing community. There are few viable options. According to the mayor, a commercial fishermen himself, "September 30th, it's doomed." That was when the 1998 actions required by the new overfishing requirements came into place for HMS and scallopers.

The regulatory system intensifies economic marketing problems. The manager of a major local fish dock said that the management process creates derby fishing, through the opening and closing of seasons. This means that small businesses such as his have trouble keeping their markets. A good example is the shark management plan, which has two periods, one beginning January 1st, when boats in this area have no access, and the other beginning July 1st, when the rush for sharks results in a glut on the market. This is also true for weakfish and fluke management. Millions of dollars are lost, he said, because of derby fishing.

In terms of loss of revenue due to regulations, one resident commercial fisherman commented extensively on his personal losses due to the 1994 limit of 4,000 pounds per trip for harvesting mako shark. His comments on the economic impact of the shark quota being cut in half were that he lost out on $25,000 in revenue each season. He had other concerns and points to make, and then noted that in his lifetime, he saw the striped bass taken from the commercial fishermen; decline in the marlin, the sturgeon, and now serious cutbacks in swordfish, tuna, sharks, bluefish; and every year more regulations on just about anything the commercial fishermen make a living on. Another resident added that charter/ party boats also suffer when they can not go out to fish. The entire fishing community is impacted. The sentiment of the fishermen seem to be that the federal government needs to let the “hardworking fishermen” make a living or “pay” the fishermen every time they are not allowed to fish for one of their target species.

To the old-timers, the nature of the fishery has changed profoundly in part because of the way regulations are applied, forcing people to specialize in different fisheries, rather than to be able to combine them or switch from one to the other. Now they are "boxed in," which increases pressure on fish. For example, the swordfish fishermen have nothing else to turn to; tuna quotas are way down and the market is poor for some of the tunas; there is a moratorium on tilefishing, hurting the longliners that moved away from that fishery in recent years; and the fishery for monkfish is very poor, with tight restrictions coming on line. Two local boats converted from swordfishing to monkfishing, at great expense, but failed to come in under the deadline for limited entry in that fishery. One option some captains from this port have taken is to go to other countries to fish, but that is not proving sustainable because once they have taught people in those countries, they are typically replaced by lower-cost captains.

Another change in the fishery is that crews, at least for the pelagic longliners and the scallopers, are less likely than before to come from local communities. Local job opportunities in construction and the service industries for tourism compete with working as a deckhand on a fishing boat, particularly with so many restrictions, declining catches, and poor markets, and thus crew come from other regions, where there are fewer opportunities, such as Nova Scotia and some of the southern states.

One sign of change in this fishing community that has intensified in the past 3 to 5 years is the loss of welders, woodworkers, mechanics, and others needed to support the fisheries. There used to be a full-time welder and a couple of part-time welders in Barnegat Light. The full-time welder has been gone for over 4 years. Local carpenters have been gone for about 6 years. Whereas it once took a few minutes or maybe an hour or day to get help, now it can take a week. These services are no longer available in town or even within the region.

Some of the longliners of Barnegat Light have become distant-water operations, going to the Grand Banks of Newfoundland or even the waters off Greenland, as well as the Caribbean, Brazil, and other distant fishing grounds. The owner of one major fleet, of 6 longliners, left Barnegat Light recently. His vessels were among the dozen or so very large longliners that found the trip limit too restrictive and thus left the Atlantic Ocean for the Pacific Ocean.

Others strongly prefer to work closer to home, to take shorter trips. As one of the captains said, "I never wanted to be a gypsy, going to Puerto Rico, Hawaii, to fish." His father, one of the pioneers, explained further, "I never wanted any of our boats to go anywhere but Barnegat Light....We have our own troubles, no need to go someplace else to find it, " referring to troubles with crew, engine break downs, buyers in distant ports. The options of those who resist going to other ports are far more restricted. The new regulation, closing all areas north of 39 degrees north, Toms Canyon to the Hague Line, to pelagic longliner fishing to protect bluefin tuna, is thus very scary to them. Members of this community have been very active in the politics of HMS management, including ICCAT, and are now (1999-2000) trying to get support for a buy-back program for longliners unable to continue.

Taking their boats to distant waters, as has the one fleet owner mentioned earlier, remains an option, but it is very disruptive of family and community --the loss of that fleet has already had major impacts on local businesses. Recognition of the links between the pelagic longline fishery and the community itself is a reason why those who run the fishing docks, together with leaders of the community, are struggling to find ways to deal with problems in the fisheries.

Another concern of local residents is that decline or demise of the commercial fisheries is likely to transform the use of the waterfront, bringing in condominium development where marinas are now, an outcome which many long-term residents find undesirable. Even more, the fisheries are perceived as part of the identity of this community. Hence, that would be "the end of Barnegat Light as we know it." For fishing families, the changes are even more significant. As one said, "There's no future in it," and sons and daughters are being discouraged from going into the business.

The Barnegat Light fishing community is buffeted by regulatory, resource, and market changes. The recession in Japan has immediate and serious repercussions for the longline fishery, severely depressing export markets and causing problems in domestic markets as well, as foreign suppliers of tunas and swordfish turn to the U.S. market. A local importer said that the percentage of overseas fish in the domestic market for swordfish and tunas has gone from 10% to 90% in just a few years. A representative of the longliner fleet observed that even if there are no changes on September 30th, "this fishery is gone," unless there are significant advances made at ICCAT and in the markets.

Another, even larger, regulatory concern is, quite obviously, that they are being tightly regulated when fishers of HMS in other countries are not. A frequent topic of conversation is the apparent poor support of the U.S. for ICCAT, as for example in still allowing quota overages. This ties in with the issue of whether HMS fisheries in the Mediterranean and Eastern Atlantic affect the abundance and condition of fish in the Western Atlantic. The opinions of the people interviewed, as well as the position of the Bluewater Fishermen's Association, which represents most of the longliner fishermen of this coast and is headquartered here, is that "it's one pool." The head of the local taxpayer's association, hearing the local fishing community discuss these problems at our interview,

asked, "With all of these regulations, aren't we making life very difficult while importing the same fish from other countries? Where is the protection of the fish?"

The longliner fishing community is defensive about its practices with regards to by-catch. It is criticized for being "non-selective" and a major source of mortality for bluefin tuna, marlins, undersized swordfish, and other species. In turn, the captains note that when they are out there fishing for two or three weeks at a time, they have a strong economic incentive to key in on the best opportunities for "clean" catches. If they have high by-catches in one area, they move on. The longliners see themselves as beleaguered whipping boys. They are already very vulnerable to losses of life and property at sea (viz. the popular new book, "The Perfect Storm," by Sebastian Junger and the recent loss of a local boat). They are increasingly vulnerable to other threats as well.

Barnegat Light fishing community members interviewed also claimed that the environmental community has not adequately invested in the ICCAT management process, instead seeking to undermine it, relying more on the CITES process. What is needed is concerted effort on all parts to make the international program for HMS management work properly.

Some recognize the need to open up communications with others who fish for the same species, particularly the recreational fishing community spokespeople. The Recreational Fishing Alliance, in this area, is trying to get rid of longlining, but so far they have failed in their attempts to lobby congress for this. They are also concerned that the NMFS allows itself to become politicized in these battles, and they suggest that the science is under-used because of this. Other problems mentioned include discrepancies among the states in rules about selling fish, affecting the sense of inequity that pervades the commercial/recreational dispute.

In closing our meeting with fishers and townspeople in the summer of 1998, one respondent expressed his feeling about the regulations' effects on Barnegat Light in saying ,"For years, we have tried to maintain our town, our community and provide for our people, as opposed to other towns that are more transit towns. The laws seem to sacrifice the maintenance of our town."

Fisheries Profile, Other Ocean County

Ocean County, New Jersey, covers a large region, ranging from Point Pleasant Beach in the north to Long Beach Island and beyond to the south. The "Other Ocean" category encompasses the bayman fisheries in this region, which is made up of barrier islands and a large complex known as Barnegat Bay. It also includes some offshore fisheries from places other than Long Beach Island and Point Pleasant. The bayman fisheries are, as always, for blue crabs and for hard clams (quahogs). Pots are the major way blue crabs are caught; clams are caught with rakes, tongs and "By hand". Fyke nets are minor, for flounders and eels (they are increasingly restricted by regulation). NMFS 1998 weighout data on substantial longline and drift gill-net fisheries and on angler, scallop, tilefish, and bluefin tuna refer to offshore fisheries comparable to and probably associated with those of Long Beach Island.

Atlantic County Profile (including Atlantic City).

Population
According to the 1990 Census for Atlantic County, the total population was 224,327. Rural population comprised 24.2% of the population, although of these only 1.2% lived on farms.

Racial and Ethnic Composition
Of the Atlantic County population, the majority was white, 76.7%, followed by black at 17.4%. Individuals of Hispanic Origin comprised 7.2% of the population. There were also small numbers of American Indian and Asian Individuals. Of the Atlantic County inhabitants, 94.2% were native. Of these, 60% were born in New Jersey. The most prevalent reported ancestries for Atlantic County were German (46,931 people), Italian (46,175 people), and Irish (45,610 people).

Age Structure
The 25 to 44 year old age group was the largest in Atlantic County comprising 33.1% of the total population. Of the population, 22.9% was under 18 years of age and 14.5% was 65 years of age or older.

Household Composition
Of the 85,123 households in Atlantic County 56,576, or 66.5%, were family households. Of the family households, 72.8% contained married couples and 20.6% were headed by single females. There were, on average, 2.56 persons per household, however 26.6% of the total households were inhabited by householders living alone.

Of the counties 85,123 occupied housing units, 64.5% were owner occupied and 35.6% were renter occupied. The homeowner vacancy rate was 4.8% and the rental vacancy rate was 10.6%. The median value of owner occupied housing units was $105,900 and median rent was $503. There were 21,754 vacant housing units in Atlantic County, 11,835 of which were used for seasonal, recreational, or occasional use.

Educational Trends
Of the persons 25 years of age or older in Atlantic County, 72.9% held a high school diploma or higher and 16.4% held a bachelor's degree or higher.

Income
For Atlantic County per capita income was $16,016 and median household income was $33,716. Of the 218,545 people for whom poverty status was determined, 9.4% were below the poverty line.

Employment
According to the 1990 Census in Atlantic County, there were 178,309 persons 16 years of age or older. Of these individuals, 67.7% were in the labor force. Of these, 99.8% were in the civilian labor force, of which 5.5% were unemployed. More recent unemployment figures for the area were 8.3% in 1997 and 8.5% in 1998. There is a seasonal shift in unemployment in this area. For example, in 1998, the unemployment rate was 11.2% in January, from April through October it ranged between 6.4% and 8.6%, and then in January of 1999 it was back up to 10.8%.

Employment Industries
Of the 113,910 employed persons 16 years of age or older, 1.3% were employed in the agriculture, forestry, and fisheries industries sector. The largest sector was service occupations, except protective and household, at 22.7% followed by retail at 16.3%. The next largest sectors were administrative support occupations, including clerical; entertainment and recreation services; personal services; sales; and executive, administrative, and managerial occupations. Government workers comprised 15.2% of the employed persons and there were 6,058 self-employed workers.

Racial and Gender Composition of the Fishing Industry
According to the 1990 Census, there were 8 captains or officers of fishing vessels, all of which were white males. There were also 57 men, 55 White and 2 Black, and 10 women, all white, who engaged in fishing as an occupation.

Fisheries Profile, Atlantic City and Other Atlantic County, N.J.

Atlantic City is better known for casino gambling and its boardwalk than for its status as a fishing port. The fishing port is on the backbay side of the city and is almost entirely given over to surf clam and ocean quahog dredge fishing (Table NJ-AC1). Atlantic City has long been a favored port for this fishery because of ready access to dense beds of clams off the central coast of New Jersey. Ocean quahogging has moved to more northern ports, especially New Bedford, Massachusetts, in recent years; it represented only 11% of the value of Atlantic City's landings in 1998. Other fisheries in Atlantic City are minor. Gears include sink gill-nets, and handlines, and bluefish, black sea bass, weakfish, jonah crab, lobster, and conch predominate.

Table NJ-AC1: Landings by Gear Type, Atlantic City, NJ, 1998

GEAR TYPE: ATLANTIC CITY, NJ	LBS. (%)	VALUE (%)
Dredge, SCOQ	99.9	99.7
Gill Net, Sink	0.0	0.0
Handline	0.0	0.0
Pots & Traps, Conch	0.0	0.0
Pots & Traps, Fish	0.1	0.2

Total Landings, rounded, 1998: 37,338,500 lbs.
Total Value, rounded, 1998: $17,867,000 dollars

Atlantic County, like the other coastal New Jersey counties, has numerous small-scale bay and estuary fisheries as well. By far the most important for this county is the hard clam (quahog) fishery (34% of the landings, 70% of the value for "other Atlantic" in 1998), using rakes, tongs, and "by hand" techniques such as treading. Some of this takes place through clam aquaculture. The other significant species is the blue crab, harvested with pots and dredges (50.5% landings, 25% value). Haul seines, fyke nets, gill nets, handlines, eel pots, and turtle traps are also used for white perch, menhaden, American shad, and many other bay and tidal river species.

Field Observations and Interviews, Atlantic City, NJ, July 1999

Atlantic City is on a barrier beach island, once known for its boardwalk and Miss America pageant and now best known for its casino gambling. On the backbay side of Atlantic City can be found commercial fishing enterprises, almost entirely for surf clamming and ocean quahogging. Some clam docks are on an inlet reached by Rhode Island Avenue, in an area which has recently been redeveloped with up-scale townhouses known as Gardner's Basin. It is zoned "marine commercial."[4] Maryland Avenue runs along a second inlet, the site of another large clam dock, a company that sells bait, tackle and ice, a deep sea and wreck charter boat, a number of run-down buildings and vacant lots, and a restaurant that serves breakfast and lunch. Across this inlet is low-income housing and a playground. The resident population is predominately Black American. Very few members of the fishing industry live here. A marina in the area is a state marina that is leased and operated by one of the casino owners. There is an area zoned "commercial marine" in nearby West Atlantic City, but the only fishing activity evident was a small bait and tackle shop and a marine repair shop.

[4] Marine Commercial is a very broad category and includes all of the following uses: Home Occupations, Rectories, Single Family Detached and Attached, Dry Good Stores, Gift, Novelty & Souvenir, Newspaper and Magazine Stands, Fish and Seafood Stores, Outdoor Restaurants, Restaurants (excluding dance and entertainment), Home Occupation Offices, Gasoline/Diesel, Marine Craft & Accessories Sales & Services and Parking.

Clam Docks

We talked with the owner of one of the clam docks, which abuts a fairly new townhouse development. He owns 6 clam boats here in Atlantic City and 6 in Oceanside, Long Island (which work in the New York state surf clam fishery). Five of the 6 boats in Atlantic City are currently working boats. The sixth is tied up "due to consolidation." The informant started out as a boat captain, bought his own boat, and then began to buy up other boats, doing very well. At the peak he had 16 boats, which he consolidated into 6 because of the 1990 Amendment 8 of the federal Surf Clam and Ocean Quahog management plan, which created individual transferable quotas and allowed holders of quotas to use any boats they wished. (The State of New Jersey also has limited entry management of the surf clam fishery and has allowed some degree of "consolidation").

He was not in favor of Amendment 8 when it was instituted because he thought that jobs would be lost. However he has altered his opinion because this did not happen, at least at his company. The clam boats all still have the same captains and crews, and no one lost their job. The informant has worked with the same number of people for the last 10 or 12 years. Further, since the amendment, clammers are no longer racing to get clams because the boats are safer and "the people are better". Although they used to catch more clams before, the quality is now higher.

According to another informant, a truck dispatcher and former clammer, each boat uses a 4-5 man crew, including the captain. On the dock 5 full-timers, and an extra forklifter when necessary, are always working. This particular fishery has 4 truck bays and is able to unload 2 boats at the same time. The company's boats only go for "clams" (that is, surf clams) now due to more favorable economics. As stated by this informant, "quahog" (or ocean quahog) is "like a dirty word"right now – it is necessary to go much further out to sea to acquire quahogs, which creates wear and tear on the boats, for less money than for surf clams. Further, while it is only possible to harvest 2 to 3 cages of quahogs an hour, 10 to 12 cages of surf clams can be collected in the same amount of time, for the same amount of money, while only venturing out 20 miles. Some independent boats are unloaded at this dock, including quahog boats.

The two major clam docks in Atlantic City both have close ownership ties to companies involved in shucking and further processing. However, the company visited also sells to 8 other companies. (There are nine companies which buy surf clams and/or ocean quahogs, as well as others which purchase shucked clams for further processing). Each company has a preference as to what kind of clams they want. Therefore much effort is given to trying to catch the right kind of clams at the right time. The companies are located along the east coast, from New Bedford, MA, to Norfolk, VA.. Atlantic City, Point Pleasant, and New Bedford are now the major offloading ports for the industry.

The dockworkers work in 2 shifts and may only work from 6 a.m. to 11 p.m. due to a city ordinance. The ordinance went into effect a few years back due to the complaints of local townhouse residents about the noise. Prior to the ordinance, the dockworkers would work all the time. According to an informant, when the townhouses were built in 1994 they replaced a slum, where half of the houses should have been condemned and the street was unsafe at night.

Apart from the noise complaint, the informant is not aware of any tensions with the larger community. He said that one man who moved in claimed he was told that a "green park" was going to be put in across the street. However, he does not think that the fishery is in danger of losing its space; it has been a commercial dock "forever". The dock was used for many types of fishing, then vacated for many years when the fishing industry collapsed, and then bought in 1983 or 1985 for clamming.

The two informants live 35 miles away in the Barnegat Bay town of Manahawkin along with many of the other employees. They are all white males, between the ages of 30 and 60 and have

been with the company for a long time. According to one of the informants there is good job security at the dock; he has been working there since 1984. The owners' children have also worked there, right out of high school.

On the boats, the men are paid on a share per bushel basis. The percentage depends on whether the boat-owners are working shares of the quota which they own or ones which they have leased from others (these shares are represented by tags which are put on the 32-bushel steel cages which hold the surf clams or ocean quahogs). If leased, then the captains, mates, and deckhands get a smaller percentage of the landed value of the clams. Further, how often boats go out depends on the market, which had been particularly slow in the summer of 1999. At this commercial dock the captains basically work to fill orders. There is an in-shore season from October to May 31, in New Jersey state waters. "Offshore" clamming (in federal waters), is done year round.

Employees of the dock visited do not belong to any of the fishing associations. There used to be a bar/hangout nearby, but not anymore. They bring in coffee from a convenience store in the town of Brigantine, on the way from Manahawkin.

A second clam dock in Atlantic City has six boats, all around 79' in length. Each boat has a crew of 3 who are all paid by share per bushel, according to an informant at the dock. This man, who is now working for his third fishery, started clamming in 1989 and lives in Tuckahoe, NJ. He said that the other fishermen at his current fishery, all white males, live in Cape May, Philadelphia, Tuckahoe, and Tuckerton.

Bar\hangout: He said the fishermen go to a local bar in Brigantine.

Gardner's Basin

Gardner's Basin is just adjacent to the clam docks off North Rhode Island Avenue. It is referred to as an historic area in literature regarding Atlantic City, and is now largely devoted to recreation and tourism. Located there are also a new aquarium, the Ocean Life Center, and amphitheater; a small amusement area (rides); pleasure boat slips; a cruise company; a party boat; an antique store; and two cafes.

The structure of a museum called The Lobster Shanty was built in about 1976 by a former fisherman as a place to build his lobster traps and store his equipment. He was born in Atlantic City, gained fishing experience in New Bedford, and then returned to Atlantic City. Since he was injured in 1996, he has turned the Lobster Shanty into a fisherman's museum featuring old photographs and news clippings, stuffed trop0hy fish, old equipment, and a "lighthouse" that he is making outside from clamshells that are decorated by children who visit. The former fisherman also talks to any visitor who wants to hear about the fishing industry in Atlantic City and elsewhere, since he has worked in many ports and fisheries up and down the eastern seaboard.

The city owns the land on which the building stands, and he leases it from the city. He claims that the museum is non-profit, though it is unclear whether it is registered as non-profit or the informant refers to it as non-profit because it makes no money. He says he gets 5,000 visitors a year, and that this is the only commemorative fishing facility in the city.

There are also 6 black sea bass fishermen who tie up at this dock. They go out at 9 a.m. and come in at 1 p.m.. Our informant says they off-load at one location but then drive their catches down to another place to sell them. The informant said their ethnic backgrounds is Irish or perhaps English-- he is of German descent-- and that all of them have second jobs.

Relationships with the Larger Community and the New Jersey Fresh Seafood Festival

One informant said that clamming is the second biggest industry in Atlantic City, after the casinos, and yet the city does not support the fishing industry: "They have no time for the small fries." He continued by stating, "The quality of life is bad here. They don't care. They only care about the gamblers."

The New Jersey Fresh seafood festival, of which a large corporation was the major sponsor, was at Gardner's Basin on June 12-13, 1999 (second weekend in June). At the Atlantic City Chamber of Commerce one staff member said that this is the 10th anniversary of the festival. He made a point to emphasize that the festival generates funds that in part go for developing artificial reefs. He said that there are no commercial fishers involved in the vending at the festival and none of the exhibits are designed around the social or economic aspects of fishing.

Cape May County Profile (includes Lower Township, Middle Township, Wildwood, and Sea Isle City)

Population
According to the 1990 Census for Cape May County, the population was 95,089. Females outnumbered males by 3.9%. The rural population comprised 33.3% of the total population, however only 1.4% of the rural population lived on farms.

Racial and Ethnic Composition
The largest racial group for Cape May County was White, at 92.6%, followed by Black at 5.6%. There were small numbers of American Indian and Asian individuals. The Hispanic population was also small, 2.0% of the total population. Of the population from Cape May County 97.4% were native born. Of those native born, 46.6% were born in New Jersey. The most prevalent ancestries reported for the county were German (29,266 people); Irish (28,231 people); and English (16,022 people).

Age Structure
The 25 to 44 year old age group was the largest comprising 29.0% of the total population. Of the total population, 22.9% were younger than 18 years of age and 20.1% were 65 years of age or older.

Household Composition
Of the 37,856 total households in Cape May County, 67.8% were family households. Of the family households, 80.2% contained couples and 15.1% were headed by single females. There was an average of 2.44 persons per household, however 27.5% of the total households were occupied by householders living alone.

Of the counties 85,537 total housing units, 37,856 were occupied. Of the occupied housing units, 72.0% were owner occupied and 28.0% were renter occupied. Of the 47,681 vacant housing units 36,448, or 76.4%, were used for seasonal, recreational, or occasional use. Homeowner vacancy rate was 5.3% and rental vacancy rate was 37.6%. Median value of owner occupied units was $112,800 and median rent was $474.

Educational Trends
According to the 1990 Census, 74.0% of the population held a high school diploma or higher and 17.2% held a bachelor's degree or higher.

Income
For Cape May County per capita income was $15,536 and median household income was $30,435. Of the 92,271 people for whom poverty status was determined in 1989, 8.3% were below the poverty line.

Employment
The county had 76,104 persons 16 years of age or older, according to the 1990 Census. Of these individuals, 45,452, or 59.7%, were in the labor force. Of the individuals in the labor force, 97.0% were in the civilian labor force, of which 7.5% were unemployed. More recent unemployment figures for the area were 8.3% for 1997 and 8.5% for 1998. This area shows a seasonal shift in unemployment. For example, in 1998, unemployment for January was 11.2%, ranged from 6.4% to 8.6% for April through October, and was back up to 10.8% in January of 1999.

Employment Industries
Of the 40,777 persons 16 years of age or older, 2.1% were in the agriculture, forestry, and fisheries industries sector. The largest sector was retail, at 19.4%, followed by service occupations, except protective and household, at 15.9%. The next largest sectors were administrative support occupations; sales; executive, administrative, and managerial occupations; professional specialty occupations; and precision production, craft, and repair occupations. Government workers comprised 20.2% of the employed population and there were 3,290 self-employed workers.

Racial and Gender Composition of the Fishing Industry
The Census Bureau listed 82 captains or officers of fishing vessels, all white men, for Cape May County in 1990. There were also 274 men, 262 were White and 12 were Black, and 1 white woman who engaged in fishing as an occupation.

Fisheries Profile, Cape May, NJ

Cape May is New Jersey's largest commercial fishing port in terms of landings and value. When combined with neighboring Wildwood (the fishing port is often referred to as "Cape May/Wildwood"), its landings exceeded 93 million lbs., worth over $29 million in 1998.

Draggers, or vessels using bottom otter trawls, account for 69% of Cape May's landings and 70% of its value (Table NJ-CM1). Most are used for a wide variety of finfish species (56). Some are also used for scallops; Cape May has a long history of combined or alternating fin-fishing and scalloping. Squid is very important: In 1998 17% of Cape May's landed value came from Illex squid and another 22% from Loligo squid (Table NJ-CM2). Much of the squid is processed locally as is Atlantic mackerel, caught with draggers and midwater pair trawls. Summer flounder has been a major species but regulations have severely reduced catches (4% landed value in 1998). Scup is another dragger-caught species of historic importance in Cape May; in 1998 it represented 6% of landed value. Cape May is also the home of one of the very few vessels allowed to use purse seines for bluefin tuna in U.S. waters; this vessel lands its catch in Gloucester, MA. The only purse seine landings in Cape May in 1998 were for menhaden, using smaller vessels. Fishing for large pelagics is also done with longlines and troll lines.

Although sea scallop management measures have reduced opportunities for many Cape May fishermen, scalloping remains important. In addition to scalloping with otter trawls, scallop dredges are used, accounting for 15% of the total value of Cape May's landings in 1998. Angler (monkfish) are caught with scallop dredges as well as gill-nets, otter trawls, and scallop otter trawls (1.8% of landed value). Dogfish catches are now relatively small (0.3% of total landings in 1998).

Table NJ-CM1: Landings by Gear Type, Cape May, NJ, 1998

GEAR TYPE: CAPE MAY, NJ	LBS. (%)	VALUE (%)
Handline	0.0	0.0
Longline, Pelagic	0.0	0.3
Otter Trawl, Fish	68.9	61.9
Otter Trawl, Scallop	0.5	7.7
Troll Line, Tuna	0.0	0.0
Gill Net, Sink	0.2	0.5
Gill Net, Drift	0.1	0.1
Purse Seine, Other	0.0	0.0
Purse Seine, Menhaden	23.9	6.7
Dredge, Scallop	0.9	15.4
Menhaden Trawl	3.4	0.6
Pots & Traps, fish	0.1	0.7
Pots & Traps, Conch	0.1	0.4
Pots & Traps, Lobster Offshore	0.2	2.6
Dredge, Crab	0.1	0.3
Dredge, SCOQ	1.4	2.9
Unknown	0.0	0.0

Total Landings, rounded, 1998: 87,244,700 lbs.
Total Value, rounded, 1998: $25,757,200 dollars

Table NJ-CM2: Landings by Major Species, Cape May, NJ, 1998

MAJOR SPECIES: CAPE MAY, NJ	LBS. (%)	VALUE (%)
Atlantic Herring	2.9	1.0
Summer Flounder	0.9	3.9
Lobster	0.2	2.5
Atlantic Mackerel	20.9	8.2
Menhaden	24.1	6.8
Sea Scallop	1.1	21.9
Scup	1.7	6.1
Squid, Illex	34.1	16.9
Squid, Loligo	8.3	22.0
Surf Clam	1.4	2.9
Black Sea Bass	0.4	2.2

Number of Species: 69

Other species of MAFMC interest, by percentage of total value, 1998: Bluefish (0.2), Butterfish (0.5), Smooth dogfish (0.0), Spiny dogfish (0.1), Tilefish (0.0).

Field Observations and Interviews, Cape May (Lower Township), NJ, June 1999

Commercial and recreational fishing docks are scattered around Cape May or, more properly, Lower Township, but centered in an area known as Ocean Drive, a road which leaves the main highway and crosses the marshes toward Wildwood, and Schellenger's Landing, just over a large bridge that connects the mainland with the center of Cape May and its beaches.

Our visit to Cape May reinforced what we later learned at other ports in the Mid-Atlantic region, that commercial fishing businesses and uses of the waterfront are lower priority than recreational and resort-oriented uses within the community. For example, the 1988 "harborfront enhancement" master plan and other documents emphasize "full-service" recreational marinas as "...the most economically viable marina option to both the investor and the community at large." The local Chamber of Commerce carries brochures for local charter and party boat and recreational marinas, as well as restaurants, hotels and bed-and-breakfast accommodations, etc. They could not come up with any information on commercial fishing in Cape May, despite the fact that this is the largest fishing port in New Jersey and one of the largest on the Atlantic seaboard. For this reason, we start with an examination of planning and zoning.

Planning and Zoning

Although the fishing port is known as Cape May, in fact it is not located in the city of Cape May but rather in neighboring "Lower Township," part of Cape May County. The Lower Township planning director stated that the constant association of Cape May and the fishing industry is a sore spot for Lower Township because Lower Township would like to be identified with the fishing community. He said that people realize fishing is an economic boon to the area and that they feel pretty positive about it. He said there are only a few conflicts with people who live near the boats.

The planner said that most conflicts over land use by the fishing industry occur when new residential developments are sited next to fishing areas. The new residents complain about noise and claim that the piling up of gear is unsightly. He mentioned one example, new condos not far from Schellenger's Landing, where a combination fish market, dock, and restaurant and a number of large fishing boats are found.

Private recreational boating and fishing marinas are said to be a powerful political force in the township. In 1989 the planner interviewed said he conducted a study to site a public boat ramp. Planning board members reacted negatively to this proposal to provide free public access when some of the private marinas had launching ramps where people without slips could pay for boat launching. Although he worked with the Army Corps of Engineers and the state DEP to develop plans for five possible sites, and the state itself developed plans for another site, nothing has happened.

Regarding land use conflicts vis a vis wetlands, especially along Ocean Drive, the informant said there has not been a significant amount of conflict, even though there have been several expansions of existing facilities. For example, at one particular Marina, which already had 440 slips (according to manager of a bait and tackle shop at the marina) 380 more slips are being added, but no wetlands are being converted for this. All that was needed to add the slips was a waterfront development permit from the DEP, local permits, and a site plan. The parking lot was already filled in when the wetlands act went into effect in 1972. One large clamming business, (see below), expanded land-wise when processing was added 6 years ago, but once again, the land used was already filled in, according to our informant.

Schellenger's Landing, just over the bridge leading to the city of Cape May, is zoned "marine general business" with allowance for expansion of the marine industrial character. A large restaurant-fish market-packing dock complex has been expanding. It is a very popular place for tourists, who like to look at the fishing boats while they are eating lunch or dinner. Its large parking lot was once the site of another bar and restaurant. We were unable to talk with anyone at this complex. The planner estimated that 500 people work in the company's fishing, processing, fresh fish market and restaurant enterprises.

Next to that complex is a marine railway, which our informant said might have been converted to condos if it were not for the founder's grandson, who modernized in order to be able to

work on steel boats. According to our informant, the founder's grandson was afraid that tourists would be annoyed by his business, but it turns out that they love to watch him power-washing the boats from the porch of the restaurant next door. Other marine-related businesses in and around the landing include two recreational marinas, two marine suppliers, two bait and tackle shops, a whale research center, and a "marlin and tuna club." Also there are a pizza shop, a motel, a bar, a wildlife art gallery, an antique store, two restaurants, and a gasoline station. Some cater to people in the fishing industry and some do not.

Further expansion of the fishing industry, commercial or recreational, is limited by the high cost of land near the waterfront. According to our informant, a 150' x 136' non-waterfront plot, seen on the planning map, that was being offered for $350,000 five or six years ago, would go for $400,000 now. As he put it, "That's awfully expensive to be used to store your fishing equipment." Another informant pointed to vacant buildings nearby, which had been intended for a deli and an antique store. Real estate costs proved too high for businesses like these. Even though there is considerable car and boat traffic at the landing, demand for homes is high. Many of the houses were built with use variances.

Lower Township has three "marine development" zones, located along Ocean Drive at Two Mile Landing and at Shaw Island and Cresse Island adjacent to Wildwood Crest. These areas are currently used by recreational boats. Across from Shaw I. is a new development, where 325 new slips are being put in. It is interesting to note that it was originally planned as a condominium development but now appears to be mainly a marina.

There is also a place off Richardson's Road, adjacent to Rte. 47, where four fishing boats are docked at a small service building. It does not appear as "marine development" on the zoning map, however, our informant knows of it. A woman who lives near where the boats are docked stated that the man who mostly uses them is an elderly fisherman. One of the boats that the elderly fisherman uses is clearly a lobster boat and one resembles a crabber, which is old army green. Two other boats are also docked here.

Cape May City does have several areas with zoning "uses by right" that include fishing-related uses such as piers, launching ramps, boat building and repair, retailing of goods and services oriented to marine or recreational activity, and so forth. None of these apparently hosts commercial fishing businesses, nor does an area zoned "mixed use." It appears that by fishing what is meant in zoning is recreational fishing. A woman in the zoning office said that they do not deal at all with commercial fishing, at least not in the 12 years she has worked there.

There has been a fair amount of friction between the recreational and commercial fishermen, including name-calling, some of which has even been printed in the newspaper. However, some commercial boats are found amongst the various marinas. For example, a lobster boat was docked next to a marina on Shore Drive. Like many vessels in this area, it was registered in Philadelphia. Offshore lobstering is an important fishery even this far south; the owner of this boat reportedly moved here recently and is doing very well. At another marina, a small commercial vessel pulled up to refuel; the men on board had come down from Port Norris and were on their way out to fish with pots for conch. Their season was just beginning.

We visited a complex on a saltwater creek (Mill Creek) that includes a marina, bait and tackle, marine supply, charter boats. The marina itself is small, about 28 slips. Access to this particular area is now difficult for large vessels because of silting, due to the canal built between Cape May and the mainland. (Saltwater intrusion of the water supply is another problem linked to the canal). The marina is one of four owned by the owner of several party boats. Another of the marinas owned by this person has over 400 slips and is still building; it caters exclusively to recreational boats.

Fishing-Related Businesses:

Schellenger's Landing is the most visible center of fishing in the Cape May area. A large restaurant-fish market-packing dock complex is a very popular place for tourists, who like to look at the fishing boats while they are eating lunch or dinner. Its parking lot was once the site of another bar and restaurant. We were unable to talk with anyone at this complex. The planner estimated that 500 people work in the company's fishing, processing, fresh fish market and restaurant enterprises. At the time of our visit, there were 13 fin-fishing, lobstering, and other fishing vessels docked at various sites around the landing, several of which came from Hampton, Virginia and North Carolina ports. Cape May has long been used by fishermen from other states.

Ocean Drive is the location of several important commercial fishing businesses. The first is a company with a long history in the area, as a wholesale distributor, exporter, and processor. The company's "The focus for the past 18-20 years has been on high volume, low value species" such as mackerel, herring, squid and menhaden, according to the person we interviewed, who has been with the company for 25 years. They also deal with a little of everything else.

He said that over the last 15 years there has not been much change within the company except the growth of its processing capacity, mainly within the last five years. The company distributes and exports more than it processes. The processing that does occur involves turning squid into calamari. Otherwise, they check for species, size and quality, and freeze and pack for the market. Our informant said they do very little local business, and that which they do is only in wholesaling. Exports to foreign countries (all frozen) constitute 50% to 60% of their business. He said that the countries vary from year to year, depending on the market. The domestic market is 40% to 50% of the business. Of that, 15% to 20% is made up of fresh fish that goes to Philadelphia, New York, Boston and the Carolinas. The rest is frozen and sent to other processors and distributors throughout the country.

The company has expanded by taking over the Two Mile Landing dock, which is across a 50-cent toll bridge on the way to Wildwood. It is being upgraded and will be used for large, long-range freezer trawlers and freighter vessels carrying mackerel and herring. The company owns only a half share in two boats. It works almost exclusively with independents, most of who have been dealing with the company "for generations." He mentioned one example, a local family of Swedish background. Most of the boats are local, though a few come from the South and from New England.

Fourteen boats work with this company full-time. They are all trawlers, though a couple of boats have the capacity to purse seine as well. All of the boats dock at this company, which provides them with fuel, ice and electricity. The boats are 85' to 145' in size and generally use 3- to 5-man crews except the freezer boats, which have 8 to 9 crew members. They fish as far east as offshore Massachusetts and as far south as North Carolina. They go 40 to 100 miles offshore to as much as 300 fathoms. Our informant said that they are just beginning the Illex squid season, and are also bringing in menhaden.

The company has 75 to 80 employees who are not on the boats. He said they live in towns from Cape May to Bridgeton. The ethnic make-up is approximately 40% Hispanic, 40% white and 20% Asian, black, and other. Most of the Hispanics have been with the company a long time and live in Bridgeton, NJ. He also estimated that 65% to 70% of the workers are male.

This company has been on its property since 1954 and has had some problems with physical expansion due to laws governing conversion of the surrounding wetlands. Our informant said that New Jersey is very strict about this, much more so than most states. He said this was one reason they decided to acquire the dock at Two Mile Landing.

Two Mile Landing has a commercial dock, being upgraded. There is a pleasure boat marina next to this dock, as well as a para-sailing facility and a company that charters pleasure trips. There are also 2 restaurants at the landing, one quite large. An informant at the larger restaurant said that most of their fish and seafood that they serve is local and that the chef buys it from local wholesalers. The local types that they get are flounder, scallops, clams, swordfish, tuna, whole lobsters and mako shark. The crabs they get are from Maryland, the lobster tails are from New Zealand, and the salmon is from Norway. She also mentioned that local people sometimes try to sell to the restaurant directly, but that they “only buy from legitimate places.”

We interviewed the owners of a neighboring and also large seafood company. It has a retail store and a processing factory. The permanent staff numbers about 20 people, mostly local, six to eight of whom work in the retail store/fish market. The rest work in the processing plant. At the time of our visit there were 35 or 40 contract laborers (mostly "Vietnamese") brought in from Philadelphia, as well as four or five African-Americans. The contract laborers had been working consistently for a month, packaging squid, the dominant species being processed here in recent times.

One of the owners said that handling squid as they were was not profitable, not even a "stopgap measure," but the regulations were forcing them to any markets they could. Their traditional dominant markets are squid, flounder, sea bass, porgies and clams/quahogs.

The owners said that they have lost two thirds of their gross volume in the last eight years due to regulations. They said that they can't compete with the prices of the imported, processed product. They believe that other countries are making big money at their expense. They were recently given an extra squid quota in exchange for their cooperation on a change in the season opening for squid. They accepted the quota but said that now their boats are having a problem bringing in the quota because of the poor timing. They complained about how limited their boats have become by the regulations that force them to fish only for certain species in very limited windows of opportunity.

Fifteen boats work for this company. Dealing with the declining volume problem by increasing the number of boats would mean having "...to steal them from other dealers or from other states who are themselves limited." They emphasized that no one is willing to risk building another boat with such a limited, unstable future for the industry looming overhead. The company had recently built a couple of large-capacity freezers and has expanded its dock over the years.

A third commercial fishing business in the Ocean Drive area owns one surf clam/ocean quahog vessel, a freezer trawler, 7 wet boats and 2 refrigerated sea water vessels. Our first informant, who runs the dock, sais that they go for both clams and fin fish, however recently they have been bringing in mainly squid and mackerel. As noted in The New York Times, August 10, 1997, the owner of this company ¨. They also own a freezer trawler, 7 wet boats and 2 refrigerated sea water vessels. Our first informant, who runs the dock, said that they go for both clams and fin fish, however recently they have been bringing in mainly squid and mackerel. As noted in The New York Times, August 10, 1997, the owner of this company "is the only one to work in 7 of the state's top 12 fisheries: clams, squid, scallops, flounder, menhaden, porgie and mackerel." The only fisheries his boats do not engage in are long-lining for tuna and pot fishing.

The company also off-loads about 8 independent boats and has another clam offloading dock in Point Pleasant. According to its owner, at this facility there are 15 shore employees, approximately 20 seasonal packers, and 45 crew on the boats. He tries to keep the crews of the boats small in size, for efficiency, but this increases the problem of finding appropriate, trained workers. The boats range in size from 75’ to 125’ and take crews of 4 to 7. Our first informant said that they have had to hire a number of transients from Virginia (for scalloping) and Massachusetts because it has been getting more difficult to find local workers for the jobs. He added that sometimes the boats cannot go out because they do not have enough properly trained crew

members. Crews are paid by shares, which he said vary. Typical shares are 60/40 and 55/45, boat to crew.

This seafood businessman has been involved in several leadership positions and organizations. Together with representatives of other Cape May/Wildwood businesses, he started and supports the Cape May Seafood Association, which has a director and a budget of about $100,000 a year. It has had problems, including competition with a group called Families and Friends of the Fishermen, which started up early in the 1990s in the wake of ITQs as well as conflicts over horseshoe crabs and menhaden fishing. He recently helped start a state-wide organization, the Garden State Seafood Association, which employs a professional lobbyist in the state capital. He has also been involved in collaborative research among industry, university, and government to improve knowledge about surf clam and ocean quahog stock assessments and gear selectivity for scup and squid fisheries.

According to the owner, this business has had little experience with land-use conflict because it is far removed from the main tourist areas of Cape May. It has been at this location since 1976 and owns 10 acres. However, there have been complaints about tractor trailers and equipment out in the yard creating an eyesore. “If Lower Township enforced the regulations, we would be in trouble for all the s___ lying around.” He said he thinks many people consider the fishing companies “scenic,” but that they are “neither significantly supported by nor discouraged by local policies.”

Regarding the study of fishing communities, the owner was very cynical, stating that it is conducted by the council just to placate communities. He says he wants to help management, but that management is working backwards. He thinks that the only things that constitute the public good vis a vis fishing are preserving biodiversity and keeping seafood affordable for people. He thinks the most important question for management is whether it should be done by input controls (e.g., time and gear management) or output controls (e.g., ITQs).

A large sea clam facility is located on Ocean Drive across from two of the finfish processing companies described above. It bought out another large company in 1994. Until about 1992 this facility was used to steam shuck surf clams and ocean quahogs (mainly the latter), shipping the shucked meats elsewhere for cooking and canning or freezing. It also owned and operated a fleet of vessels. It was expanded and redesigned in 1992 to be a full-scale shucking and processing facility, the ultimate in vertical integration, but engineering problems combined with wastewater management problems led to abandonment of shucking. In 1994 the parent company sold this plant to another company, which also purchased the vessels and some of the ITQ held. The plant now buys shucked meat from other plants and processes ocean quahogs and surf clams in various forms and has begun to diversify into other food products. It now employs about 130 persons in a highly automated process, and the workers are primarily from the local region Two of its five vessels are not being used for clamming; the other three are contracted out to others in the industry.

Party Boats, Charters and Whale-Watching

Cape May has a substantial recreational fishery, both “for-hire” and private boat. We observed four party boats at one of the marinas. Two were specializing in 8 hour trips for black sea bass and flounder, and two were doing 4 hour trips "for just about anything" during our visit in early June, 1999. "Canyon" fishing is also important here, involving long trips out to the waters of Baltimore canyon for pelagics. (The owner of one of the recreational marinas developed a condominium community specifically for private boat owners and customers of charter boats who identify themselves as "canyon" fishers).

Whale watching has emerged as a profitable alternative or adjunct to recreational fishing charters. The naturalist/tour guide on a catamaran run by a whale watching enterprise mentioned

that her family owns the center, and her father used to run a party boat out of Cape May. She said that he decided to get into whale watching because he thought that he would make more money at it, and the business has proven to be very successful. The whale watches run from April 15 – Dec. 1. The boat holds 150 people, and she says they are full or nearly full most of the time. They not only search out whales but also dolphins (she said there are 2,000 dolphins in the area during the summer).

Her boyfriend also owns a 55-foot charter boat. She says that despite the regulations and diminished fish stocks, sport fishing out of Cape May is great because of all the nearby canyons and the different varieties of fish including marlin, shark, tuna, mahi mahi, and some sailfish. She says they mostly do tag and release from her boyfriend's boat. It is her feeling that the regulations are harsher for the charters than for the commercial fishermen.

On the dock there was a group of charter captains drinking beer who were not that interested in talking about the fishing community, but one did say that the people who charter their boats are mostly from Philadelphia.

Our informant also said that there has been some antagonism between the commercial fishermen and the sport fishermen. She did say that she has a good relationship with some of the bunker fishermen, who sometimes tell her where the bunker are running to help her locate whales (whales eat bunker). She also mentioned a story about some ducks she used to feed at the docks. She became very attached to them over time and then all of a sudden they disappeared. She suspects that the Vietnamese fishermen who work on one of the boats docked at Schellenger's Landing killed them and ate them. She is really upset about it.

She said that because of the regulations, fish stocks have been increasing in Delaware Bay. She said that every charter boat and party boat had been fishing in the bay that day, which was June 8th.

She said that most of the fishermen she knows live in Cape May and Wildwood, though some fisherman live as far as one hour north. She said that it is not that expensive to live in Cape May and Wildwood if you are there year-round. She said that while you have to pay $5,000 for a 2-bedroom apartment for the period between June and September, you only have to pay $500-$600/month for the same apartment for the remainder of the year. She also mentioned that there are a lot of family-oriented fishing businesses in the area. "We want it that way. Why would we want anyone else?"

Fishing and the Larger Community

A fisherman's memorial is at the end of Missouri Ave. (off of Pittsburgh Ave.). It portrays a woman and a child looking out to sea. A fishermen's wives organization, now defunct, played a major role in creating this memorial. The inscription says,

"Dedicated to the fishermen lost at sea - 1988
He hushed the storm to a gentle breeze,
And the billows of the sea were stilled"

There is also a bronze plaque for fishermen lost at sea on the Washington St. pedestrian mall.

A Seafood Festival in Cape May had been moribund for a while until it was taken over by the Chamber of Commerce in the mid-1990s. When asked whether the commercial fishers in the area had been involved in organizing or supporting the seafood festival, a representative of the Chamber of Commerce said that there is a "non-existent relationship between us and them. We tried, they tried, but it never worked out." One of the seafood company owners interviewed expressed concern

that such a festival was run to display commercial fishers as a "peep show" for the public, or for preserving some fabricated sense of community heritage, rather than to promote specific products. Besides, he said, fishers need to work for a living and cannot take time for these festivals.

We talked with quite a few people about how the fishing industry connects to the larger community. One, who works at a large seafood company, said that as far as a connection with the larger community is concerned, the fishing industry has "always been a very important and integral part of the community here. But it has also been very unrecognized, more often than not by choice. It's not like New England – people do not think of this as a fishing community… fishing provides a lot of the jobs. If a guy or girl did not mind working hard, they could do super well. Some people used to make a lot of money, and then 80% of them blew it. Now it has changed a lot over the last 6 to 10 years. But still there are some people making money." He thinks that the fishing is coming back in the area, though there are still a lot of problems, "some caused by ourselves, some that we have no control over."

When asked about the fishing industry and tourism, our informant said that most of the industry has been "low key by choice." He said that the one place where tourists have been cultivated is at a company that developed a seafood market and restaurant-bar at its dock. Other businesses "don't encourage the tourist link because there is no real benefit to the company." (A pamphlet This Week in Cape May lists a 45-minute "Fisherman's Wharf Tour" that is scheduled to occur four times in May and June at the above-mentioned dock and fish packing plant. The tours are sponsored by the Mid-Atlantic Center for the Arts in Cape May City.)

Bar/hangout

One of our informants says the bar/hangout is Mayer's Bar behind Captain's Cove. He also said that it used to be a rough place; for example, there was a shooting there involving fishermen in the early 1980s.

A different informant said that the bar/hangout was Carney's, located on Beach Drive, however, she may have been referring to the hangout for the sport fishermen. She said that she and all her friends are members of the Cape May Marlin and Tuna Club, which is a private, non-profit club requiring dues, and that is where they tend to go. She said the bar is "like a family" where people tell lots of fish stories.

Coffee: One of our informants said that the place to get coffee is the Lobster House coffeehouse for both charter and commercial fishermen.

Fisheries Profile, Wildwood, NJ

The fishing port of Wildwood is connected to a very popular tourist beach community. Resident and migratory draggers and clam boats are found in Wildwood. The largest landings come from surf clams and ocean quahogs, both harvested offshore with hydraulic dredges. A processing factory is in Wildwood. The otter trawl fleet accounts for 7% of Wildwood's landings, bringing in summer flounder, Loligo squid, butterfish, Atlantic croaker, black sea bass, weakfish, and other species (Table NJ-WW1). Wildwood also has a small pot fishery, including offshore lobster, conch, and fish pots (6% of value). The fish pots are used mainly for black sea bass. Gill-netting is done for weakfish, black sea bass, and other species. Wildwood also had some pelagic longline landings in 1998, notably swordfish and yellowfin tuna. Other species of Mid-Atlantic Fishery Management Council interest landed in 1998, in small quantities (less than 2% landed value) were bluefish, butterfish, Atlantic mackerel, scup, and dogfish.

Table NJ-WW 1: Landings by Gear Type, Wildwood, NJ, 1998

GEAR TYPE: WILDWOOD, NJ	LBS. (%)	VALUE (%)
Crab Dredge	0.4	0.5
Surf Clam/Ocean Quahog Dredge	86.5	79.0
Gill Net, Drift	1.9	0.8
Gill Net, Sink	0.5	0.4
Handline	0.1	0.1
Longline, Pelagic	0.9	3.9
Pots & Traps, Offshore Lobster	0.8	1.7
Pots & Traps, Conch	0.5	2.0
Pots & Traps, Fish	1.1	2.8
Otter Trawl	7.2	8.6
Unknown	0.0	0.1

Total Landings, rounded, 1998: 6,193,40
Total Value, rounded, 1998: $3,492,900 dollars

Field Observations and Interviews, Wildwood, NJ, June 1999

Wildwood City is just north of Cape May. The commercial fishing industry is at Otten's Harbor, along Montgomery Street. Most of the boats are surf clam and ocean quahog dredge vessels; there are a few finfish draggers.

The fishing-related businesses and other features along the harbor, going from the entrance to the head, are a marine service company, a fishing dock, a lot with trucks, another surf clam dock and associated house; more houses; a bar; more houses; and then a seafood business with an ice and bait house and dock. There are also some buildings for sale and some vacant land. One lot had a sign advertising “750’ on harbor zoned bayfront commercial.”

On the other side of Montgomery Street, in the same geographical order, are a marina which seems to be used for vessel repair; houses; lots with trucks and tractor trailers; and an antique store. Across the harbor are many houses with docks and pleasure boats. At the head of the harbor, is the dock of a sightseeing and marine mammal watching vessel. A seafood market and restaurant/take-out nearby were closed for the season in June, 1999, when we visited. There are other recreational fishing docks in Wildwood but there is far less recreational or commercial activity visible in Wildwood than in Cape May. According to people interviewed at the marine service business, there used to be 20 full-time people working around the harbor in different jobs, but now there were no fish and no jobs. They blamed all of this on the regulations. They said that the real downturn happened about two years ago, i.e. 1997. Three boats that were in the harbor five years ago are gone, one sold off and the other moved to Cape May docks.

We visited the owner of a small dock and surf clamming operation, who formerly owned a seafood company and a larger fishing business. He has fished for 60 years, and his grandfather came from Sweden to Wildwood to fish. Over time, our informant has done fin fishing, clamming, and long-lining for cod. Both of his current boats are used for surf clamming. He indicated that the "golden days" of this harbor was in the 1960s, when the pattern was to clam in the winter and fin fish in the summer. There were party boats in the harbor as well, now gone. Most of the service facilities that provided ice, fuel, and trucking are also gone. He stated that “The bad effects of less fishing and boats trickle down.” There also used to be four bars on the street, but only one remains.

The bay fishery is minor now, too; he mentioned one person who rakes for hard clams and uses pots for crabs.

The smaller of his two surf clam boats takes a crew of 3, while the larger takes a crew of 4. They only go out an average of 2 days/week because they are "plant regulated," that is told by the buyer when to go out. His clams are sold to shucking operations in Delaware or in southern New Jersey, from which the clam products are sold to large food corporations such as Progresso and Campbells.

He said that his crews are "really tight" and have been with him for a long time. One captain has worked for him for 20 years and the other for 10-12 years. He said that his crews live within Cape May County and that most of them have second jobs. For example, two of them are bouncers, one is a painter and one works for a plumbing supply company.

According to this veteran, "the fun's out of it now – you can't catch what you want because of all the rules and regulations." Some of these regulations are needed, but there are contrary effects. For example, no commercial fishing is allowed for striped bass but they eat up blue claw crabs.

We visited the other surf clam/ocean quahog dock, interviewing a manager who has been there since 1965. This company has 4 boats, ranging from 80' to 110'. Three of the boats have 4-man crews and one has a 5-man crew. There are also 2 on-shore employees who run the crane that off-loads the clam cages. The two on-shore employees also engage in other types of dock work. All of the employees are local residents–including close relatives-- who have been with the company for a long time.

In the last five years the business has stayed much the same but market prices for clams have gone down. There was much discussion of the ITQ (individual transferable quota) system for the surf clam and ocean quahog fishery. With ITQs, this company consolidated 9 boats to 4. Total crew employment has declined from about 28 to about 20, and shoreside workers declined from 4 to 2 after ITQs came into effect and this company consolidated. He said that the crews now go out an average of 2 days/week and they are able to survive on that. The company also fishes for ocean quahogs, which are less valuable than surf clams and require going out further. They travel about 60 miles offshore for the quahogs, while going only north to the waters off Margate (Atlantic City area) and Point Pleasant for surf clams. They sell to two processors, one in south Jersey and the other in Delaware.

This informant is not in favor of ITQs. "Before ITQs everybody was more independent. There are also less and less people in it now. More corporations are buying out people and controlling prices more....When it comes down to it, our rights are being taken away economically. When the ITQs came in, I fought them. This isn't a capitalistic country anymore. It's communist.... I didn't like the way they split it [the ITQ allocations] out, even though we were taken care of. I thought that what happened would happen, that there are less people involved and that the big corporations control most of the market and the money." He later clarified what he meant by independent; he said that because the big companies do not want to assume liability for the high risk nature of clamming and fishing in general, the fishermen and their boats are technically still independent, though they are not as independent financially. He went on to say that relatively small businesses like his have it hard. Nonetheless, they intend to stay in clamming. The largest end product of the clams being harvested here is fried clam strips; the media's coverage of public health concerns about fried foods is yet another problem.

The bar on the waterfront at Otten's Harbor, on Montgomery Street, remains the place to hang out; another place is a bar and restaurant on Park Blvd. People get their coffee at the local "Wawa's" convenience store.

Fisheries Profile, Sea Isle City, NJ

Sea Isle City is north of Wildwood, one of the small fishing ports of the coast that is dependent on a dynamic and often problematic inlet for access to the sea. The fishery here is small. In 1998 fewer than 750,000 pounds, and $1.2 million dollars, were reported in the weighout data. There is a small offshore longliner fishery for tunas (mostly big eye, albacore and yellowfin) and swordfish. Otter trawl fishing includes spiny dogfish, skates, angler, and fluke but only 4% of the landed value. More significant are pot fisheries for offshore lobster (6% of value), conch (12%), and fish (12%, mostly black sea bass). Gill-netting represents 12% of the value, particularly for angler (monkfish). We did not visit Sea Isle City for this report but can report that it is primarily a summer beach town.

Fisheries Profile, Other Cape May County

In the creeks and bays along the Atlantic coast of Cape May and around the cape to the Delaware Bay side are numerous small fisheries, coded as "other Cape May." These are the classic baymen or watermen fisheries, based on crustaceans and shellfish: blue crabs and hard clams dominate (66% and 23.5% of landed value, respectively). Horseshoe crabs are also harvested (12% of the 1998 poundage although only 1.6% of the value). There is a small gill-net fishery for species such as weakfish, American shad, and numerous other estuarine and anadromous species. Very small amounts of bluefish, butterfish, and summer flounder were landed in 1998. This fishery is very similar to and intertwined with the "Other Cumberland County" fishery discussed below.

Table NJ-OCM1: Landings by Gear Type, Other Cape May, 1998

GEAR TYPE: OTHER CAPE MAY, NJ	LBS. (%)	VALUE (%)
By Hand	17.9	23.6
By Hand, Oyster	0.1	0.8
Dredge, Crab	1.1	0.7
Gill Net, Drift	2.6	0.6
Gill Net, sink	0.0	0.0
Handline	0.5	0.5
Longline, Pelagic	0.3	0.3
Pots & Traps, Crab	74.8	65.3
Pots & Traps, Eel	2.2	4.0
Pots & Traps, Fish	0.0	0.0
Rakes	0.4	1.5

Total Landings, rounded, 1998: 1,190,800 lbs.
Total Value, rounded, 1998: $3,492,900 dollars

Field Observations and Interviews, "Other" Cape May County, NJ, June 1999

A general feature of the Mid-Atlantic region is the intertwining of bayman, or waterman, activities and offshore fishing. Accordingly, when visiting Cape May county we also interviewed people involved in inshore bayman activities, particularly crabbing and eeling, to provide some sense of the nature of these fishing operations, which are found in many other places as well.

First is a marina on Shore Drive in Lower Township, Cape May. A couple run a small crab shack off the docks at this marina, which was once owned by the wife's father and is now managed by her. They had six crab boxes for storing and breeding live crabs, and for waiting on the shedders.

She said their hope is to eventually be able to rely on this crabbing business for an income (they have another business) and live in the Caribbean Rico part of the year.

She said that crabbing is “an important industry here.” She said that she thinks their live crab tanks are the only ones in the area. Our informant said that the crabbing season opens March 15 in the back bays and April 15 in the bay; it closes again November 15. She said that their catch has been good so far this year, as opposed to last year. She attributes the increase in crab take to the lack of dredging in the bay. The marina runs 30 small slips, probably all for boats less than 30 feet, most of which are rented all year. Only one slip is used for crabbers.

This informant is the person who first told us about the people who are crabbing northwest of Cape May City in the Bidwell Creek area (see below). She estimated that there were 7, including her husband. She also told us about Crab Boy’s fish market on Rte. 47 (see below).

Her husband is one of 7 crabbers who work northwest of Cape May City in the Bidwell Creek area of Middle Township, Cape May County (see below). He has been averaging about 5 bushels a day so far this year, which is good enough for the retail operation but has not allowed them to get into wholesaling yet. She said that her husband crabs about 200 pots inshore and crabs from April to November and clams from November to April. He does some commercial minnowing on the side and also clams, using his feet. Before going into the crabbing business, she said that her husband worked in a kitchen. They sell mostly retail straight from their little store there, but they also wholesale mostly up to a business in Bivalve/Port Norris which buys most of the crabs in this area.

We then talked with a fisherman who also fishes for crabs in the Bidwell Creek area. He and his wife own and operate a fish market in Middle Township. He fishes for crabs and clams and then sells them in their market, which is located in a sparsely developed area of the county. They started the market 4 years ago because he was not able to make a living what he was being paid, wholesale, for his catches by buyers, one of which acts like a monopoly, setting the prices in the area. They not only sell the catches caught by our informant, but also sell the catches from some other crabbers and clammers in the area.

The fisherman says he goes out every day, 5:30 AM to midday, in his 24’ x 8’ boat. He has one helper. He states that ending the day with 10 bushels of crabs is a good day, however there are not many days like that, due to the weather conditions during the winter. His father was a lobsterman in Manasquan, NJ, and therefore he started fishing there when he was a kid. He has been fishing off and on, mostly on, since then with some breaks to join the military and to work as a builder. He is 37 years old, and has been fishing continuously now for 8 or 9 years. He has lived in the area a total of 20 years.

The store was first established as a fish market in 1942, then closed and fell into disrepair. Our informant got some money together and then bought the building and fixed it up himself. The fish market is now open May through September and sells fin fish as well as crabs and clams. The fin fish that are sold are obtained from a wholesaler. They also make and sell their own chowders. Our informant says that he belongs to the Clam Association (Shellfishermen's Association) in Nacote Creek, NJ, and that they are trying to get Governor Whitman and the state to provide funds to subsidize the cultivation of clams, as is the case in Florida. He says that there is no association for crabbers.

A marina on Bidwell Creek in Middle Township is dominated on one side of the creek by pleasure boats, but on other side, near a small bridge, is an area where the fishermen keep their boats and a building where they store their equipment. On a Thursday afternoon there were 11 fishing boats at the marina, most of which looked like crab boats. At the Marina there was also a crabber who was going out to catch horseshoe crabs with a photographer from the Philadelphia Inquirer. They planned to bring the horseshoe crabs up to Dennis Creek where a man from the state DEP was waiting to inspect them. Horseshoe crab fishing has increased greatly in this region over the past decade, mostly for a bait market, and birders and others have pushed for sharp cut-backs in

the fishery.

A worker at a local bait and tackle shop told us that the marina has a new owner who is essentially pushing out the commercial fishermen because he can make more money from pleasure boats. He said that the marina used to have a lot more fishing boats than it has now: "It used to be packed with them." Our informant said that all the crabbers go for more than just crabs; many of the crabbers also have permits for eels, which are used a lot for bait, and other things. However, he said that the bait sold in this shop is not bought from locals and that the bait leaves the area before they can get it. He said that the Cape May area is a big supplier of bait in other parts of the country. He states that the bait from Cape May is sold as far south as Florida.

The owner of the bait and tackle shop said that the store is open from March to Dec. 1 and that he would not be in business without the recreational fishermen, because this is where all of his business comes from. The recreational fisherman are mostly from Philadelphia.

Cumberland County Profile (includes Port Norris, Bivalve and Shellpile)

Population
The total population in Cumberland County, in 1990, was 138,053 people. Of those people, 1,701 lived in Port Norris. In the county females outnumbered males by about 2.4%. Only 25.9% of the population was rural. Out of the 35,776 rural people, 1,566 lived in Port Norris. 2.6% of the county's rural population lived on farms.

Racial and Ethnic Composition
The majority of the population in Cumberland County, 73.5%, was White. The next largest racial group was Black, at 16.9%, followed by Hispanic at 13.3%. There were small numbers of American Indian and Asian residing in the county. Of the population, 95.6% were native. Of the native population, 68.5% were born in New Jersey. The most prevalent ancestries reported were German (26,458 people), Italian (24,670 people), and Irish (19,435 people).

Age Structure
The 25 to 44 year old age group was the largest comprising 31.1% of the total population. Of the population, 26.0% was under 18 years of age and 13.5% were 65 years of age or older.

Household Composition
Of the 47,118 total households in Cumberland County, 74.3% were family households. Of the family households, 72.4% contained married couples and 21.2% were headed by single females. Although the average number of persons per household was 2.79, 21.6% of the total households were inhabited by householders living alone.

Of the County's 50,294 total housing units, 93.7% were inhabited. Of the occupied housing units, 68.5% were owner occupied and 29.5% were renter occupied. There were 3,176 vacant housing units in the county, 45 of which were in Port Norris. Of the 3,176 vacant housing units 654 were used for seasonal, recreational, or occasional use. Median value of owner occupied housing units was $73,900 and median rent in the county was $396. These values were lower in Port Norris, $47,900 and $256 respectively. 64.1% of the total housing units in the county were one-unit detached in model. The homeowner vacancy rate was 1.8% and the rental vacancy rate was 5.0%.

Educational Trends
According to the 1990 Census, of the persons 25 years or older in the county 63.4% held a high school diploma or higher. Further, 10.8% held a bachelor's degree or higher.

Income

Per Capita income for the county was $12,560 and median household income was $29,985. In Port Norris in particular per capita income was $10,401 and median household income was $27,024. Of the 131,390 people in the county for whom poverty status was determined in 1989, 13.0% were below the poverty line.

Employment
Of the 106,501 people in the county 16 years of age or older, 61.9% were in the labor force. Of those in the labor force, 99.8% were in the civilian labor force, of which 7.4% were unemployed. More recent figures for unemployment in the local metropolitan area were 8.6% in 1997 and 8.9% in 1998. There appears to be a seasonal shift in unemployment in the area. For example, in 1998, unemployment was 10.5% in January, ranged from 7.8% to 9.5% in April through October, than went back up to 9.9% in January of 1999.

Employment Industries
According to the 1990 Census, of the 60,937 employed people 16 years of age or older, 2.5% were in the agriculture, forestry, and fisheries industries sector. In Port Norris, 1.4% were in the agriculture, forestry, and fisheries industries sector. In the county the largest sectors were administrative support occupations, including clerical, at 16.2%, followed by retail at 14.1%. The next largest sectors were manufacturing, durable goods; precision production, craft, and repair occupations; service occupations, except protective and household; and professional specialty occupations. In Port Norris the largest sector was also administrative support occupations, including clerical, however it was followed by service occupations, except protective and household.

Racial and Gender Composition of the Fishing Industry
According to the 1990 Census, there were 34 white male captains or officers of fishing vessels in Cumberland County. There were also 68 white males and 5 white females who engaged in fishing as an occupation.

Fisheries Profile, "Other Cumberland,"NJ

The two big fisheries for this region, the center of New Jersey's Delaware Bay fisheries, are for oysters and blue crabs (Tables NJ-CC1, CC2). 1998 was one of the few years in the past decade when oysters were harvested, due to problems with oyster diseases (there is no harvest in 2000 due to the disease 'dermo'). Oysters were taken with dredges, and represented 48% of the landed value. Blue crabs are caught with dredges and pots, and represented 46% of the value in 1998. Both horseshoe crabs and menhaden are also taken in large quantities (4.8% and 11.6% of poundage, respectively), and are the focus of controversy in this area due to their alleged roles for migratory birds and as bait for other fishes.

Table NJ-CC1: Landings by Gear Type, Cumberland County, NJ, 1998

Cumberland County Landings by Gear Type	Percent Lbs.	Percent Value
Handline	0.9	0.6
Gill-net, Sink	2.6	0.9
Gill-net, Drift	5.3	1.4
Pots/Traps, Eels	0.8	1.3
By Hand	11.6	1.4
Dredge, Oyster	15.8	48.0
Dredge, Crab	2.4	1.5
Pots/Traps, Blue Crab	60.6	45.0

Total Landings, rounded, 1998: 4,444,900 lbs.
Total Value, rounded, 1998: $5,573,300

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Table NJ-OCM2: Landings by Major Species, Pounds and Value, Other Cumberland County, NJ, 1998

Cumberland County, Major Species, 1998	Percent Lbs.	Percent Value
Menhaden	4.6	0.5
Weakfish	2.6	1.5
Blue Crab	62.9	46.4
Horseshoe Crab	11.6	1.4
Oysters	15.8	48

Total Species: 19, including MAFMC-managed Bluefish (0.0% value, 1998), Butterfish (0.0), and Summer Flounder (0.0).

Field Observations and Interviews, Port Norris/Bivalve, NJ, June 1999

The port of Bivalve is within Commercial Township. Bivalve and Shellpile are waterfront areas next to the small town of Port Norris, on the Maurice River. The area has a long history as an oystering center, but the oyster populations have declined because of oyster diseases. The infrastructure of the oyster shucking and packing industry is partly used for shucking imported oysters as well as shucking surf clams, which are brought here from other ports. Crabbing, weakfish, and other bay fisheries are now important

The largest businesses in the area are sand and gravel mining companies. Farming is also important. The Rutgers University Haskin Shellfish Laboratory at Bivalve also provides employment. There is one large shellfish company which runs an oyster shucking plant and a large surf clam/ocean quahog shucking operation in Bivalve and a clam shucking operation in nearby Shellpile. There are also several that are named as crab businesses but are far more diversified.

One of the crab businesses buys from crabbers throughout the region, as far as Cape May, being one of the largest crab wholesalers in New Jersey. The owner estimated that 25 to 30 of the crabbers with whom he deals are from the Port Norris area. Another 25 to 30 come from other places, as far as Cape May. He also handles the majority of Delaware Bay oysters. The company owns 7 oyster dredge boats and runs 3 or 4 in any given season (oystering in Delaware Bay is tightly regulated and very seasonal). The company is involved buying horseshoe crabs and menhaden for the bait market, too.

One of the business owners currently has 6 permanent employees, two of whom are Mexicans, and 20 to 25 independent harvesters who regularly fish for him, one of whom is African-American. Some African-Americans also work on the docks, but their numbers are small given the large population of African-Americans in this area. Contract labor is occasionally hired, usually Mexicans (we were told), through the farm labor system of nearby towns or the cities of Camden and Philadelphia.

Another large business is owned by a company headquartered in Connecticut. It involves an oyster packing house, a surf clam shucking house not in use, and the two main marinas in the port, with a total of 300 slips and 150 dry storage spaces. It owns 5 oyster boats and has exclusive arrangements with 4 or 5 other boats. It has 40 permanent employees, most of whom live within about a ten mile radius of Port Norris. In the past, when they had large shellfish shucking operations, upwards of 50 percent of the workers were African-Americans, mostly as shuckers. Now there are only two or three African Americans working for the company.

A third local business, with plants in another South Jersey location and on the eastern shore of Maryland, handles surf clams and ocean quahogs which are trucked in from other ports. In 1999 it was said to have a sizeable Vietnamese workforce. It was not visited in 1999. When visited in 2000, it was evident that the plant is highly automated and thus numbers of employees are relatively low, and in early 2000 this plant was dependent not only on local African-Americans and whites but also prisoners on work-release programs and ex-addicts in a halfway house program. (Its other South Jersey plant in Cape May County relied on contractors for Mexican-American and other laborers to work on shucking and 'squeezing' lines when visited in 2000).

This port has an annual seafood festival called "Bay Day," which is sponsored by the Township and the Delaware Bay Schooner Project, a non-profit organization which has documented the schooners of the oyster fishery, restored one or more of the vessels, and tried to increase education and awareness of the bay. The commercial fishing operations donate product to the festival. The proceeds go to local charities. Although the festival is one indicator of community support for the fisheries, one of the seafood business managers we interviewed described difficulty getting building permits and other local support for expansion or repair of the commercial fishing businesses, as opposed to the recreational marinas. Zoning maps indicate that the waterfront of Bivalve and Shellpile, at Port Norris, is the only area zoned for commercial operations. The area has recently been given special economic development status for revitalization, being one of the poorest in the state. One priority is waste water treatment.

Fisheries Profile, Other New Jersey

Surprisingly, some commercial fishing is reported from the heavily urbanized, industrialized areas of northeastern New Jersey. There is a substantial amount of squid, both Illex and Loligo, as well as some summer flounder landed in (and trucked into) heavily urbanized Essex County, the site of a packing and processing company. Crab pot fishing is found with small landings in urbanized Bergen and Middlesex Counties. At the other side of the state, commercial fishing extends upbay and upriver from Cumberland County, into rural Salem and Hunterdon counties. Hunterdon is the site of one of the last of the river shad seine fisheries (and an annual shad festival). Salem is the home of small-scale waterman fisheries which involve gill-netting for shad, weakfish and other species, harvesting eels and snapper turtles.

4. Delaware's Fishing Ports

The state of Delaware mostly borders on the Delaware Bay and its tributaries. Consequently, its inshore and EEZ ocean fisheries are minor. Its fisheries are "bayman" or "waterman" fisheries. According to a member of the Mid-Atlantic Fishery Management Council and a Sea Grant marine advisory agent in Delaware, gill-netting predominates, and there are no large vessels using gear like otter trawls. According to an official at the state Division of Fish and Wildlife in Dover, there are 120 licensed commercial gill-netters in the state and they all work inshore.

The ports recognized as such by NMFS in Delaware are Lewes, Indian River, and Port Mahon in Sussex County and Bowers Beach and Mispillion in Kent County. Their commercial fisheries are almost entirely focused on blue crab, quahogs (hard clams), and horseshoe crabs. The only exception is Indian River, where there were also significant landings of black sea bass and tautog in 1998. This is the only port we visited. "Other Delaware" is a much larger category, including a wider variety of species. Accordingly, for this report we have combined all Delaware landings (Tables DE1 and DE2). In 1998, Delaware commercial landings totaled almost 8 million pounds, of which 72% were blue crabs, 23% were horseshoe crabs and 6% weakfish. Other important species were striped bass, American shad, black sea bass, and quahogs.

The gear types used by Delaware fishermen are predominately those of "baymen" or "watermen" working the estuary, bay, and tributaries of the Delaware Bay and River, bordering New Jersey. They include:

-- "by hand" (18% of lbs., 3% of value): harvesting horseshoe crabs as they come up onto the beaches to reproduce
– haul seines (<0.2% of value; used upriver for perch, gizzard shad, catfish, and similar freshwater and brackish water species; formerly of importance for shad and sturgeon as well)
– crab dredges (5.7% of value)
– fyke nets for fish and for turtles (mostly for snapper turtles; < 0.1% value)
– gill nets: both drift (4.4% of value) and stake (7.8% of value). Both types are used for weakfish (squeteague) and a large number of other estuarine and upriver species; stake nets are favored for American shad
– handlines (1.9%), mostly for weakfish
– Pots/traps: for lobsters (0.1%); this is a very minor and marginal fishery; this far south, only the offshore fishers have real luck with lobsters
– Pots/traps: for blue crabs (67.6%): the major fishery of Delaware. Much takes place in the Delaware Bay.
– Pots/traps: for conch (1.6%); for fish (3.6%). For fish traps, the most important species is black sea bass; another is the less well marketed "oyster catcher;"
-- Rakes: these, like the "tongs and grabs," are now used for quahogs, or hard clams (Mercenaria mercenaria); in times past they were also used for oysters.

Recreational fishing predominates in Delaware. A survey has not been done in many years, but the Sea Grant marine advisory agent estimated about 80 recreational marinas in the state. He said that probably 30 to 35 of the ones that are in the coastal bays are community marinas, i.e., open only to residents.

Table DE1: Landings by County, Delaware, 1998

Port Name	County	Landed Pounds	Percent Pounds	Value	Percent Value
OTHER KENT	KENT				
BOWERS BEACH	KENT				
MISPILLION	KENT				
	KENT	2564104	32.9%	1843156	33%
OTHER NEW CASTLE	NEW CASTLE	1577376	20.3%	1,466,011	26.2%
OTHER DELAWARE	NOT-SPECIFIED	1900412	24.5%	1,137,546	20.3%
PORT MAHON	SUSSEX				
INDIAN RIVER	SUSSEX				
OTHER SUSSEX	SUSSEX				
LEWES	SUSSEX				
	SUSSEX	1726646	22.1%	1145340	20.5%
Total		7,768,538	100.00%	5,592,053	100.00%

Note: because landings for several ports are confidential, due to the small number of participants involved, we provide data at the county level only.

Table DE2: Landings by Gear Type, 1998, Delaware

GEAR TYPE: DELAWARE	Lbs. %	Value %
Common Haul Seine	0.6	0.2
Dredge, Crab	10.0	5.7
Fyke Net, Fish	0.0	0.0
Fyke Net, Turtle	0.2	0.1
Gill Net, Drift	6.1	4.4
Gill Net, Stake	8.1	7.8
Hand line	2.0	1.9
Pots/Traps, Lobster, Inshore	0.0	0.1
Pots/Traps, Blue Crabs	51.6	67.6
Pots/Traps, Conch	0.6	1.6
Pots/Traps, Fish	1.9	3.6
Rakes, Other	0.9	3.8
By hand	18.0	2.9
Tongs & Grabs, Clam	0.0	0.1

Total Landings, rounded 1998: 7,768,500 lbs.
Total Value, rounded 1998: $5,592,000 dollars

Table DE3: Major Species, Delaware, 1998

MAJOR SPECIES: DELAWARE	Lbs (%)	Value (%)
Bass, Striped	4.4	4.4
Crab, Blue	71.8	71.5
Crab, Horseshoe	23.0	3.8
Quahog	3.9	3.9
Shad, American	2.8	1.0
Weakfish	6.0	6.0

Total Species Landed: 40

Other species of Mid-Atlantic Council responsibility (by percentage total value): Black Sea Bass (confidential), Bluefish (0.2%), Butterfish (0.0%), Summer Flounder (0.5%), Atlantic Mackerel (0.0%), Scup (0.0%), Dogfish (0.1).

Sussex County Profile (includes Indian River, Lewes, and Port Mahon)

Population
According to the 1990 Census, the total population in Sussex County was 113,229. Women outnumbered men by a small percent. Rural population was 85.7% of the population, though only 2.7% lived on farms.

Racial and Ethnic Composition
Of the population in Sussex County, 81.6% were white and 16.8% were black. There were small numbers of American Indians and Asians. The Hispanic population was also very small, at 1.3%. Only 2,063 people in the county were foreign-born, and 53.6 of the native born population was born in Delaware. The most prevalent ancestries reported were English (28,103 people); German (18,655 people); and Irish (18,492 people).

Age Structure
The 25 to 44 year old age group was the largest, at 33,590 people or 29.7%. Population under 18 years of age was 23.9% and 16.7% was 65 years of age or older.

Household Composition
Of the 43,681 households in Sussex County, 73.4% were family households. Of the family households, 58.8% contained married couples and 10.9% were headed by single women. An average of 2.54 people lived in each household, but householders living alone occupied 22.3% of the households.

Of the 43,681 households, 21.4% were renter occupied. There were 30,572 vacant housing units in the county, 18,631 of which were for seasonal, recreational, or occasional use. The homeowner vacancy rate was 4.0% and the rental vacancy rate was 13.0%. The median value of the owner-occupied housing units was $79,800 in 1990 and median rent was $278. One-unit detached housing comprised 57.0% of all housing units and mobile homes and trailers 29.3%.

Educational Trends
In Sussex County, 69.7% of the population, 25 years of age or older, was a high school graduate or higher; 13.0% had a bachelor's degree or higher.

Income
According to the 1989 Census, per capita income for the county was $12,723 and median household income was $26,904. Of the 110,736 people for whom poverty status was determined in 1989, 10.7% were below the poverty line.

Employment
Of the 88,867 people 16 years of age or older in Sussex County, 62.1% were in the labor force. Of these, 99.7% were in the civilian labor force, of which 4.1% were unemployed. More recent unemployment figures for the state of Delaware were 4.0% in 1997 and 3.8% in 1998. The state shows slight seasonal shifts in unemployment. For example, in 1997, unemployment was 5.5% in January, ranged from 3.4% to 4.1% from April through October, and was then back up to 4.6% in January of 1998.

Employment Industries
Of the 52,710 employed people 16 years of age or older, in Sussex County, 3,112, or 5.9% were in the agriculture, forestry, and fisheries industries sector. The largest sector of all was retail at 18.8% followed by precision production, craft, and repair occupations at 15.9%. The next largest occupations were administrative support occupations, including clerical; manufacturing, nondurable goods; service occupations, except protective and household; sales occupations; and construction. Government workers comprised 13.8% of the work force and there were 4,350 self-employed workers.

Racial and Gender Composition of the Fishing Industry
According to the 1990 Census, there were 7 fishing vessel captains or officers in Sussex County, all of them white men. There were also 100 white men who engaged in fishing as an occupation in 1990.

Field Observations and Interviews, Indian River, DE, July 1999

According to the Sea Grant marine advisor, most of the EEZ fishing in Delaware is done out of Indian River Inlet. No more than a dozen or so fishermen use pots for various species, including black sea bass. The boats used are roughly between 30' and 40' in length, and they are also used for ocean gill-netting. At our visit to Indian River Inlet we saw no commercial fishing boats but dozens of recreational boats at marinas at both sides of the inlet. We were told that Indian River, together with nearby Lewes, has the largest charter boat fleet in Delaware. Many "6-pack" charters go out for tuna as well as other species.

On the north side of the inlet, where the Delaware Seashore State Park Marina is located, we talked to a person who runs a "seafood and fish cleaning" business. He once was a commercial fisherman, and the first thing he said to us was, “Years ago there used to be commercial fishing here, but the state eliminated it. They don’t want commercial fishing. They just want private boats.”

He said that there are 340 recreational boats in the marina where he’s located and 92 in the South Side Marina, plus there are marinas for smaller recreational boats up the bay. There is only one active commercial fishing boat left that has been “grandfathered” into the state park marina, a 42-46' vessel used to fish year round in the ocean for lobster, sea bass, or conch. Another, a lobster boat, no longer goes out because of deaths of its owners. The yearly round of the active vessel was described: in March and April he puts in pots for black sea bass. May to mid-June are the best months for that fishery. He then hauls out those pots and puts in other pots for lobster, which picks up in July. . While he’s waiting for the lobsters, he goes out for conch. In September and October, there’s another good run of bass. At the end of October, he’ll bring all his lobster and bass pots in, and for a few months he’ll work on his boat and gear. At one time the captain also used to dredge for crabs in the summer, but hasn’t in recent years.

Our informant told us more about the history of fishing at Indian River Inlet. He started fishing when he was 6, but now his boat and fishing gear are “sitting in the woods. Delaware doesn’t want commercial fishing anymore.” He still has his license, but doesn’t see any way he could still fish. He said that he used to live exactly where the state marina is right now -- there were a couple of hundred houses there, some just shacks and others more permanent, largely inhabited by fishermen and their families. There used to be commercial boats as well as charter boats – “people did one or the other.” The commercial fishermen used nets, hook and line or cod gear (something like longline

rigs, used in the winter). Everything was run by hand. He said he was running his own boat by the time he was 10, mostly catching flounder, which he said was "top dollar" then. He said that commercial fishing was going strong until the mid-'70s, when "the state started to phase it out." Now most of the commercial fishermen are dead, and the ones that are around his age (late 30s, early 40s) went into charter boats or non-fishing occupations. He hasn't put his own boat into the water or set nets for 4 or 5 years. "Three weeks here, 6 weeks there, you just can't make it that way." He thinks that the draggers are the ones responsible for depleted fish stocks but that they don't get the blame generally because they are "out of sight" to the public. "The small gill-netters are in sight here, and when people don't catch fish, they blame it on them."

He's started running a seafood market while he was fishing because he got married and had children. His previous one was on the south side of the inlet and he closed it a few years ago. He started this one on the north side just this season, for tourists, at the request of the state. He buys almost all of his fresh seafood from the boats in West Ocean City, Cape May and Chincoteague, but on the day we were there he had also had snapper from North Carolina, salmon from a NY fish farm, farm-grown clams from Virginia and shrimp from Texas that was fast-frozen on the boat. He also buys from the local fisherman mentioned above. He's really concerned about how high prices are going for seafood caught in this county, saying "at this rate, it's all going to be shipped from other countries."

Other Ports

We did not visit Lewes but were told that it too is a major recreational fishing center, but has some gill-netters and sea bass pot fishermen. In the summer months, it is dominated by recreational fishing but in other seasons there is some commercial activity. There are gill-netters at other places, such as Mispillion Inlet or Slaughters Beach, many of whom are probably part-time, and there are a few sea bass potters as well. Bowers Beach is another site, and like Slaughters Beach is an important charter boat port with a few gill-netters and pot fishermen too.

5. **Maryland's Fishing Ports**

Maryland has two distinct fishing regions: the seaward coast of the Delmarva Peninsula and the Chesapeake Bay. Ocean City, on the sea coast, is the major port for ocean fisheries of the EEZ and of Mid-Atlantic Fishery Management Council concern. Consequently, in this report we focus on Ocean City and the county in which it is found, Worcester County, as well as one Chesapeake Bay port, Crisfield, and its county, Somerset. In reporting fisheries statistics, we distinguish Ocean City and "other Maryland ports." As seen in Table MD1, NMFS weighout data did not distinguish separate ports for over 70% of the poundage and 87% of the value in 1998. Apart from Ocean City, the "ports" are water bodies for which data are provided by the Potomac River Fisheries Commission. The State of Maryland maintains its state fisheries data on the basis of water bodies as well but provides data to NMFS as "unspecified Maryland." Separate information from the State of Maryland is summarized in Tables MD2 and MD3.

Table MD1: NMFS Weighout Landings by County and Port, Maryland, 1998[5]

		Landed	Percent		Percent
Port Name	County	Pounds	Pounds	Value	Value
AQUALAND	CHARLES	1,279,483	2.1%	701,875	1.0%
NEALE SOUND	CHARLES	484,571	0.8%	361,968	0.5%
PICCOWAXEN CREEK	CHARLES	428,061	0.7%	286,753	0.4%
GOOSE BAY	CHARLES	324,395	0.5%	176,002	0.3%
MATTAWOMAN CREEK	CHARLES	222,411	0.4%	131,969	0.2%
NANJEMOY CREEK	CHARLES				
PORT TOBBACO	CHARLES				
WAVERLY CREEK	CHARLES				
SMITH POINT (MD)	CHARLES				
MORGANTOWN	CHARLES				
SANDY POINT (MD)	CHARLES				
MALLOWS BAY	CHARLES				
CHICAMUXEN CREEK	CHARLES				
RIVERSIDE	CHARLES				
CUCKOLDS CREEK	CHARLES				
POPES CREEK	CHARLES				
WICOMICO RIVER (C)	CHARLES				
MARSHALL HALL	CHARLES				
OTHER MARYLAND	**NOT-SPECIFIED**	**42,870,255**	**70.1%**	**57,443,070**	**85.5%**
PISCATAWAY CREEK	PRINCE GEORGE'S				
OTHER PRINCE GEORGE'S	PRINCE GEORGE'S				
SMITH CREEK	ST. MARY'S	1,119,646	1.8%	256,919	0.4%
ST. PATRICK'S CREEK	ST. MARY'S	469,574	0.8%	209,366	0.3%
HERRING CREEK	ST. MARY'S	823,583	1.3%	201,706	0.3%
ST. GEORGES CREEK	ST. MARY'S	318,909	0.5%	174,874	0.3%
WHITE NECK CREEK	ST. MARY'S	244,248	0.4%	135,716	0.2%
ISLAND CREEK	ST. MARY'S	402,962	0.7%	135,166	0.2%

2 Omitted are records for places with pounds or value less than 100,000, to protect confidentiality; in this table these are primarily locations within the jurisdiction of the Potomac River Fisheries Commission.

PINEY POINT	ST. MARY'S				
COMBS CREEK	ST. MARY'S				
BRETON BAY	ST. MARY'S				
ST. INIGOES CREEK	ST. MARY'S				
CANOE NECK CREEK	ST. MARY'S				
COOPER CREEK	ST. MARY'S				
WICOMICO RIVER (S.M.)	ST. MARY'S				
ST. MARY'S RIVER	ST. MARY'S				
POPLAR HILL CREEK	ST. MARY'S				
DUKEHART CREEK	ST. MARY'S				
FLOOD CREEK	ST. MARY'S				
LAKE CONOY	ST. MARY'S				
BLAKE CREEK	ST. MARY'S				
WHITE POINT BEACH	ST. MARY'S				
OCEAN CITY	WORCESTER	11,073,123	18.1%	6,356,802	9.5%
		61,167,928	100.00%	67,189,569	100.00%

Note: Data for ports in which landings were less than 100,000 pounds or dollars are omitted.

Landings data from the State of Maryland provide another view of the social geography of the state's fisheries. Tables MD2 and MD3 summarize landings by water body, with coding that indicates rough approximations of the importance of particular species to landings from a particular water body, whether the oceanside bays, state waters of the Atlantic ocean, a section of the Chesapeake Bay, or one of the tributaries to the bays. Except for summary percentages of landings by water body, precise data were not reproduced here to protect confidentiality.

Table MD-2: State of Maryland Landings Data, 1998, Part I[6]

Location	% Tot.Landings: Total Pounds	Total Dollars	Percent Landings of Species by Area: Blue Crab: Hard	Blue Crab: Soft	Bluefish	Butterfish	Soft Clam
Oceanside Bays	2.1%	1.9%	*****	***	*		
Atlantic Ocean 1-3m	1.5%	0.6%			*	*	
Back River	0.1%						
Big Annemessex River	0.3%	0.8%	***	*****			
Blackwater River							
Bohemia River	0.2%	0.1%					
Bush River	0.3%	0.2%					
Chesapeake Bay & Tributaries:							
North of Worton Pt.	3.0%	2.8%	*****	*			
No.Bay Bridge-Worton Pt.	8.8%	10.0%	*****	*			
North	1.0%	0.5%					
So.Bay Br-Patuxent R.	18.1%	18.2%	*****	*			**
South	13.2%	11.6%	*****	**	*		
Chester River	3.1%	3.3%	****	*			**
Choptank River	8.3%	10.1%	****	*			**
Eastern Bay	1.5%	2.1%	****	*			
Elk River	0.2%	0.1%		*			
Fishing Bay	3.4%	2.5%	*****	*			
Gunpowder River	0.2%	0.2%		*	*		
Herring Bay	0.4%	0.1%					

[3] Source: unpublished State of Maryland Data

Note: a blank cell indicates either no landings at all or landings below .06% of the total for the water body

* = .06-5.0 % of landings for the location

** = 5.1-15.0% of landings for the location

*** = 15.1-25.0% of landings for the location

**** = 25.1-50.0% of landings for the location

***** = 50.1-100.0% of landings for the location.

Honga River	1.5%	1.1%	*****		*		
Hoopers Strait	1.2%	0.3%		*	*		
Little Choptank River	3.5%	5.1%	****		*		
Magothy River	0.2%	0.2%	*****	*			
Manokin River	0.5%	1.1%	***	*			
Miles River	1.0%	1.0%	*****	*****			*
Monie Bay	0.0%	0.0%	*	*			
Nanticoke River	1.6%	1.7%	****				
Northeast River	0.2%	0.1%		*			
Patapsco River	0.2%	0.2%	*****				
Patuxent River	2.7%	2.1%	*****	*			
Pocomoke River	0.3%	0.2%		*			
Pocomoke Sound	1.1%	2.6%	***		*	*	
Potomac River: Main Stem				*****			
Potomac River-Tributaries	8.4%	5.0%	****				
Sassafras River	1.1%	0.5%		**	*		
Severn River	0.3%	0.4%	*****				
Smith Creek	0.0%	0.1%		**			
South River	0.5%	0.4%	*****				
St. Jerome Creek	0.1%			*			
St. Mary's River	0.6%	1.2%					
Susquehanna Flats	0.7%	0.3%					
Susquehanna River	0.4%	0.2%					
Tangier Sound	5.6%	8.6%	****				
Transquaking River	0.1%			*****			
Unknown	1.5%	1.3%	*				
West River				**			
Wicomico River/W.Co.	0.4%	0.5%	****				
Wye River	0.7%	0.7%	*****	****			

Source: unpublished State of Maryland Data
Note: a blank cell indicates either no landings at all or landings below .06% of the total for the water body
* = .06-5.0 % of landings for the water body
** = 5.1-15.0% of landings for the water body
*** = 15.1-25.0% of landings for the water body
**** = 25.1-50.0% of landings for the water body
***** = 50.1-100.0% of landings for the water body

Table MD-3 : State of Maryland Landings Data, 1998, Part II[7]										
Location	*Eel*	*Summer Flounder*	*Atlantic Mackerel*	*Menhaden*	*Oysters*	*Black Sea Bass*	*Striped Bass*	*Smooth Dogfish*	*Spiny Dogfish*	*Other*
Oceanside Bays	*	*		*		*	*	*	*	**
Atlantic Ocean 1-3m		****	*	*			***	*	**	**
Back River	*			*						*****
Big Annemessex River										*
Blackwater River										*****
Bohemia River										*****
Bush River	*						**			*****
Chesapeake Bay & Tributaries:										
North of Worton Pt.										
No.Bay Bridge-Worton Pt.	*				**		**			**
North	**						***			*****
So.Bay Br-Patuxent R.				*	**		**			*
South		*		*	*		**			*
Chester River	*			*	****		**			***
Choptank River	*			*	****		**			***
Eastern Bay	*			*	****		*			*
Elk River					****		*			*
Fishing Bay							*			*****
Gunpowder River	*	*		*	*		**			**
Herring Bay							***			*****
Honga River				****			****			**
Hoopers Strait	*	*		*	*		**			*
Little Choptank River		*		***			****			****
Magothy River	*	*			****		*			*

[4] Source: unpublished State of Maryland Data
Note: a blank cell indicates either no landings at all or landings below .06% of the total for the water body
* = .06-5.0 % of landings for the location;
** = 5.1-15.0% of landings for the location
*** = 15.1-25.0% of landings for the location;
**** = 25.1-50.0% of landings for the location
***** = 50.1-100.0% of landings for the location

Manokin River	**				*					*
Miles River					*					*
Monie Bay	*				*					*
Nanticoke River					*****					
Northeast River	*				****		*			***
Patapsco River							****			*****
Patuxent River							*			*
Pocomoke River	*			*	**		*			***
Pocomoke Sound							****			*****
Potomac River: Main Stem	*				*		*			*
Potomac River-Tributaries					*****					
Sassafras River	*	*		*	**		*			****
Severn River							**			*****
Smith Creek					**		*			
South River					*****					
St. Jerome Creek	*						*			*
St. Mary's River	****			****			****			**
Susquehanna Flats	*	*		*	*****		**			*
Susquehanna River							*			*****
Tangier Sound							*			*****
Transquaking River	*				**		*			*
Unknown										*****
West River	*	*		*	*	*	*****			*
Wicomico River/W.Co.							*****			*
Wye River	**				***		*			

Worcester County Profile (includes the fishing port of West Ocean City and Ocean City)

Population
According to the 1990 Census, the total population in Worcester County was 35,028. Of that population, 5,146 people lived in Ocean City. In Worchester County, males outnumbered females by a small percent. Rural population was 54.6%, although none of the rural population lived in Ocean City. Of the rural population only 4.3% lived on farms.

Racial and Ethnic Composition
In the county, 77.8% of the people were white and 21.3% were black, according to the 1990 Census. There were small numbers of American Indian, Asian, and Hispanic. In Ocean City, 96.3% of the population was white. The number of foreign born individuals in the county was 523, of which 133 were from Ocean City, while 64.2% of the native population was born in Maryland. The most prevalent ancestries reported were English (8,470 people); German (5,993); and Irish (5,652).

Age Structure
In Worchester County, the 25 to 44 year old age group was the largest at 10,688 people, or 30.5%. Population under 18 years of age was 22.0% of the population and 17.3% was 65 years of age or older.

In Ocean City the 25 to 44 year old age group was also the largest at 31.0%, however, only 11.9% of the population was under 18 years of age and 20.9% of the population was 65 years of age or older.

Household Composition
Of the 14,142 total households in the County, 69.3% were family households. Of the family households, 54.8% contained married couples and 11.5% were headed by single women. An average of 2.44 people lived in each household, but householders living alone occupied 24.7% of the households.

Of the 14,142 households, 4,345 were renter occupied. There were 27, 658 vacant houses, 22,899 of which were in Ocean City. Of the 27,658 vacant houses, 25,112 were used for seasonal, recreational, or occasional use. The homeowner vacancy rate was 8.6% and the rental vacancy rate was 9.8%. The median value of owner occupied housing units was $83,500 in 1990 and median rent was $296. One-unit detached housing comprised 34.3% of the total housing units, and ten or more units comprised 36.9% of the total housing units.

Educational Trends
In Worchester County 70.8% of the population, 25 years of age or older, was a high school graduate or higher; 14.8% had a bachelor's degree or higher.

Income
According to the 1989 Census, per capita income for the county was $14,341 and median household income was $27,586. In Ocean City per capita income was $20,570 and median household income was $25,959. Of the 34,401 people in the county for whom poverty status was determined, 11.0% were below the poverty line.

Employment
Of the 28,094 people 16 years of age or older in Worchester County, 64.8% were in the labor force. Of these 99.9% were in the civilian labor force, of which 4.8% were unemployed. More recent unemployment figures for the county are 10.8% in 1997 and 10.4% in 1998. The county shows seasonal shifts in unemployment. For example, in 1998, unemployment was 21.6% in January, ranged from 3.7% to 11.1% from April through October, and then was back up to 17.7% in January of 1999.

Employment Industries
Of the 17,322 employed people 16 years of age or older in Worchester County, 1,014, or 5.9% were in the agriculture, forestry, and fisheries industries sectors. Of these 1, 014 people, 10 live in Ocean City. The census reported a total of 66 people in the fishing industry. The largest sector of all in the county was retail at 22.8%, followed by service occupations, except protective and household, at 15.2%. The next largest occupations were sales occupations; precision production, craft, and repair occupations; administrative support occupations, including clerical; executive, administrative, and managerial occupations; and construction.

Racial and Gender Composition of the Fishing Industry
According to the 1990 Census, there were 33 fishing vessel captains or officers in Worchester County, all of them white men. There were also 33 white men who engaged in fishing as an occupation.

Fisheries Profile, Ocean City (West Ocean City)

Ocean City, on the Atlantic Coast, is the only major port in Maryland engaged in the inshore and EEZ ocean fisheries. It accounts for 18.1% of the pounds landed and only 9.5% of the value landed in 1998 (Table MD1).

The major commercial fishing gears used for landings in Ocean City in 1998 (Table MD-OC1) were:
-- gill-netting, heavily dependent on angler and spiny dogfish, but engaged in a very diversified fishery;
-- surf clam and ocean quahogging, with small by-catches of angler and scallops;
-- bottom dragging with otter trawls, a highly diversified fishery, with strong foci on summer flounder and loligo squid, but also landing 48 other species.

In terms of value, other gear types also emerge as important, namely fish traps and pelagic longlining. Traps are also used for lobster and conch.

Table MD-OC1: Landings by Gear Type, Ocean City, MD 1998

GEAR TYPE: OCEAN CITY, MD	*Lbs. %*	*Value %*
By hand	0.0	0.0
Dredge, SCOQ	56.3	55.8
Gill net, sink	28.1	13.7
Handline	0.0	0.0
Harpoon	0.0	0.0
Longline, pelagic	2.1	11.1
Pots, Lobster Offshore	0.1	0.7
Pots/Traps, Conch	0.9	1.4
Pots/Traps, Fish	2.9	7.4
Otter Trawl, Bottom, Fish	9.5	9.9
Unknown	0.0	0

Total Landings, rounded, 1998: 11,073,123 lbs. (of state total)
Total Value, rounded, 1998: $6,356,802 (of state total)

The major species caught commercially in Ocean City (Table MD-OC2), ranked by 1998 landed value, are:

-- surf clams and ocean quahogs
-- black sea bass caught mostly with fish traps but also gillnets and draggers;
-- angler, caught primarily with sink gillnets but also by the draggers and the clam boats;
-- spiny dogfish, caught primarily by the gillnet fleet and also by draggers.
-- summer flounder, mostly a dragger fishery
-- swordfish, among the species caught with pelagic longlines from this port (tunas are also caught, and big eye and yellowfin tuna each represented over 2% of the total landed value in 1998).

Other species of significance (using the criterion of at least 2% of poundage or value) are:

-- Atlantic croaker and Atlantic mackerel, each caught by draggers and gill-netters
-- striped bass, also caught by draggers and gill-netters
-- lobster, an offshore pot fishery.

Table MD-OC2: Major Species, Landed, Ocean City, MD, 1998

Major Species: Ocean City, MD	Lbs (%)	Value (%)
Dogfish, Spiny	21.6	5.6
Angler	3.8	6.0
Clam, Surf	**	**
Quahog, Ocean	**	**
Sea Bass, Black	2.8	7.1
Flounder, Summer	1.6	5.0
Swordfish	0.7	4.5
Tuna, Big Eye	0.5	2.7
Tuna, Yellowfin	0.5	2.3

Total Species Landed: 69

Note: ** indicates confidential data because fewer than 3 federally permitted dealers involved. Other species landed of MAFMC relevance (by % value): Bluefish (0.3%), Butterfish (**), Atlantic Mackerel (0.5%), Scup (**), Tilefish (**), Loligo Squid (0.8%), Illex Squid (**).

Field Observations and Interviews, Ocean City, MD, July 1999

Ocean City is situated on approximately ten miles of barrier island and is next to an inlet that was created during a hurricane in the 1930s. It is a huge tourist community, with hotels, motels and condos for rent stretching for miles from south to north on the Ocean City peninsula. Ocean City has grown into a major summer resort area in the last twenty to twenty-five years. On the sports fishing side, Ocean City is billed as the "White Marlin Capital of the World", and the waterfront is dominated by recreational marinas. There are several marinas in Ocean City and one in West Ocean City, at the harbor used for commercial fishing. This harbor is directly west of the inlet at the southern end of the city.

Ocean City is the only major ocean fishing community in Maryland, though some of the Chesapeake communities do bring in species of interest to the Council from the bay. It is important to note that the commercial fishing industry in "Ocean City" is actually located in West Ocean City. Parts of the industry at one time were located at the southern tip of Ocean City but no longer are. Tucked away in West Ocean City, just across from the southern tip of the Ocean City peninsula, is the commercial fishing industry, situated primarily on S. Harbor Road just a short distance from Assateague Island and the inlet leading to the Atlantic Ocean. On S. Harbor Road itself, the seafood businesses and boats are on one side of the street and small houses are on the other.

According to one informant, the daughter of a fisherman and employee of a packing house in West Ocean City, the fishing industry here began with fish camps on the northern end of Assateague Island. There they fished with pound nets pulled by horses or by winches, and they had small sheds to sort the catches. A major storm in the 1930s destroyed many of them, but several were moved to West Ocean City when the harbor and inlet was dug out of the marshy, sandy land some years afterwards. A train used to come into Ocean City and would pick up the fish for market. She said that her father was responsible for starting the sea bass, offshore lobster and inshore cod fishery in the Ocean City area. Later it became a center for surf-clamming. At one time there were twenty surf clam vessels over 75 feet docked here, but now there are only four. Today it is a center for surf-clamming, finfish dragging, gill-netting.

One of our informants is a former fisherman and current member of a fisheries management council. He ran a surf clamming boat for 21 years and his father was a surf clammer as well. He said that there used to be close to 20 boats in the Ocean City area and that "there were some tremendous clam landings there over the years." He said that most of the clamming boats that were in West Ocean City are now in New Jersey (primarily in Atlantic City, but also Wildwood and Point Pleasant). After fishing, he owned a couple of ice plants and then turned one into a miniature golf course which he ran until he sold it two or three years ago.

Few of the ocean fishermen of West Ocean City belong to fisheries organizations. There is a statewide organization, Maryland Watermen's Association, based in Annapolis, with a Worchester County chapter, but few of the local fishermen belong, largely because the Association's emphasis has been helping the Chesapeake Bay fishermen. Bay crabbers, clammers and gill-netters far outnumber the ocean fishermen in Maryland. The consequence is lack of representation for the ocean fishermen: "It's disgusting how ill-prepared we are." Another person interviewed commented that the ocean fishermen are not well represented by the Association, and that "We're the last of the line."

There is also concern that when and if aquaculture develops in the region, it will be dominated by the large poultry firms, already well-established in the Delmarva Peninsula region: "The chicken people are here. They haven't been successful yet in moving into aquaculture here, but it will start to happen. Just look at what's happening in the south with catfish and rockfish." (For stories on land use controversies and the link between chicken corporations and aquaculture, he cited the local paper, the Salisbury Daily Times, and the Baltimore Sun.)

Like other places in the Mid-Atlantic, the dealer side of the fishery involves both "packing out" facilities and actual buyers or consignment shippers, sometimes but not always one and the same. There are two active federally permitted dealers in Ocean City, plus one Delaware-based dealer that uses one of the Ocean City dealers to pack out all of his purchases. There are numerous out-of-state federally permitted dealers that use these two docks as packing houses.

One fish packing house in West Ocean City, a family-run business, is the largest.. A long-time employee who is also the daughter of a fisherman spoke to the research team. She said that there are 4 surf clam boats, about 6 dragger/trawlers and at least a dozen smaller boats (up to 50') that gill net for a variety of fin fish species (black sea bass was mentioned) and conch. The company she works for owns 3 of the dragger/trawlers and packs the catches of many of the other boats. She affirmed that this company is the biggest local packing house and that the only other one of any size is next door. She also said there is a small operation down the road that packs surf clams only. She and some of the men on the docks said there is a plan to open another surf clam packing house within the year. (In March 2000 we learned that a vertically integrated sea clam company based in Norfolk, VA, has two of the surf

clam/ocean quahog boats in West Ocean City and its dock is packing out most if not all of the clams offloaded in this port).

The packing house where she works takes in a wide variety of species: surf clams, ocean quahogs, sea bass, flounder, bluefish, croakers, sea trout, lobsters and conchs as well as dogfish and monkfish in the winter and tuna and swordfish in the summer. According to the informant, the most important species for the company are flounder and sea bass among the fin fish and lobsters and conch among the shellfish. She said they are busy all year, since West Ocean City is the only major ocean port between Cape May, NJ and Hampton Roads, VA.

About a quarter of the captains and crews are from out of state, primarily Delaware, but a few are from Virginia. Most of the "locals" live within 30 minutes of the harbor and "on the land side" -hardly any live in Ocean City itself. She said there is no migrant labor to speak of. Occasionally women work on the boats, and the informant told us that the men didn't like it when the first woman went to work on a clam boat 10 to 15 years ago. Apparently there are more women than men in some of the company's positions, namely in the retail market and in flounder filleting (the main processing activity). In total, the company has between 20 and 25 full-time employees.

This company sells a lot of its flounder fillets to restaurants in Ocean City. In fact, most of its restaurant trade is there, with a little in Salisbury, MD, and southern Delaware. Otherwise, what they pack is shipped to New York, Philadelphia, Hampton, VA, and Jessup, MD. The company does little freezing, just some of the winter catch for summer use, "because that's when everybody wants it.". The retail market is open year round and is most active from mid-April to Oct. 1, which is the same for the restaurant trade.

Land use, especially condominium development, is a major issue for the fishing industry in the Ocean City area, as was documented in the 1993 study as well. There we pointed out that the commercial docks are located between a business section and a residential section, and residents are quick to point to violations of zoning. Expensive homes have been built close to the harbor, and past industry practices such as storing gear on property zoned residential have had to stop.

One of our informants said that one of the reasons he converted a 90-year old ice plant to a golf course was that condominium dwellers near the building had begun to complain, bringing the building to the attention of the city, which threatened to condemn the building. The city also rezoned the property from industrial to commercial marine, within which only about 25% of the industrial zone uses are allowed. He said that the condominium owners then began protesting the existence of the golf course.

Our visit coincided with meetings about rezoning the harbor. A major concern on the part of some of the commercial fishers is that the docks will become non-conforming, meaning that any replacement or rebuilding of structures will be impeded. This informant interprets it as part of a larger trend to force out the fishermen. "You'd think we were out to rape the environment or something," he said, offering specific instances of attempts by local residents to stop commercial activities, including a proposal to farm scallops in one of the local bays. Large housing developments have attracted retirees and others with "money and time" who become involved in local environmental issues, often with little knowledge of actual environmental matters. For example, at a hearing on hard clamming that took place earlier in the year, a man from a new development claimed that the fishermen were digging up all of the bottom around Ocean City to a depth of 2 feet. The informant said he "could not hold it in any longer," and so he stood up and said, "I've dredged clams in the bay and ocean from New York to Virginia, and no one digs down to 2 feet. The point is that you dredge as fast as you can, that's the way you have to do it, and you dig down 6 inches at most." He said the man just asserted that he was "full of c___." The city council hasn't been very supportive of the fishing

community, either. One councilman was known for many statements to the effect that "that's our pond out there and they're screwing it up."

The harbor rezoning cited above was the subject of a public hearing the night before the research visit (July 13, 1999). The area in question, on the south side of Sunset Ave and the north side of S. Harbor Road to the east of Golf Course Road, is currently subject to different zonings. The allowable uses for individual parcels have been modified "to accommodate whatever business wants to go in." Another informant said that some people interpret the change as an effort to preserve the commercial fishing industry in West Ocean City and that others see it as having an adverse effect on it in the sense that existing businesses might not be able to alter their physical plant or use. "The bottom line is that they don't want the clam boats unloading here," she said. She added that "the whole deal with zoning is about condos." In the last 10 to 20 years the fishermen have lost three parcels along the waterfront: some houses were built on a lot side, where there used to be a fish house; there's now a bar and restaurant where a clam packing house used to be; and there's a marine engine repair business where boats used to be able to tie up and store equipment. "What we're scared of is that they will make it all into condos," she reiterated. "Lees has done that, places in Florida and New England have done that...If you buy right next to a seafood place, it's like buying next to an airport - you know what's there already. They are basically the ones creating the problem." She doesn't know of any current concrete proposals to this effect, but "lots of times, the way it happens is that you just hear it after the fact."

She also feels that the press hasn't treated the local commercial fishing industry very well, and that it is biased against the fishermen. She said this was fairly apparent at recent rezoning meetings where it seemed that the reporters only wrote about the things they liked and not what really happened in its entirety. (Local papers include the Salisbury Daily Times, the Coastal Dispatch, the Beachcomber Times Press and Ocean City Today.) On the positive side, she thinks that the head of the county commission is listening to both sides and is dealing with the issue in a fair way. She didn't know when a final decision about the rezoning would be made. She said that some tourists do take an interest in the commercial fishing industry there she said they get a lot of calls from out-of-towners asking when the boats will be coming in. She said that company employees will gladly show people around and have hosted some field trips from local schools. Apparently, cruise boats also point out the commercial fishing industry.

As in Shinnecock, NY, Barnegat Light, NJ, Wanchese, NC and other fishing communities that rely on an inlet for access to the sea, West Ocean City has experienced problems with shoaling that can make it impossible for big boats to go back and forth from sea to harbor. But this informant said that the Army Corps of Engineers has been good about keeping the inlet open. She echoed the opinion of people interviewed at these other inlet harbors, that if it were not for commercial fishing, dredging would be way down on the Corps' priority list, and that recreational fishermen thereby benefit from having the commercial fishers around. She also said that there isn't much tension locally between the two camps in any case.

The second packing house takes in local catches and also occasionally works with a tilefish fisher from another port. A couple of fishermen who were hanging out or getting ready to go fishing from this company's docks were the chief informants at this location. The land use issue is very much on fishermen's minds in West Ocean City. One fisherman who owns and operates a trawler from the harbor mostly wanted to talk about land use and about problems with the regulations, the sports fishing industry and other commercial fishermen. Rich people are buying up all the land. It's not only the National Marine Fisheries Service but the local developers are killing us too." He cited the same changes in land use around the harbor that the previous informant had as well as the fear of condominiums being built. He added that the sports fishing boats take up less space in the harbor (diagonal parking vs. the parallel parking that the large fishing vessels do) while they can pay five times as much for it. He also feels that with the ITQ system, all the people in the clam industry are rich and can pay

three times as much as what the other fishing boats can pay for their dock space. Given that dock space is allocated via a system of sealed bids, the clam boats are going to win out, he said. With the new clamming operation that's moving in, with at least a couple of additional big clam boats, he thinks that commercial fishermen like himself are in danger of getting pushed out of the harbor.

This captain used to fish out of Wildwood, NJ, and his family has been in fishing for generations. He moved because he liked it better in the Ocean City area and had been fishing there off and on when he was based in New Jersey. He used to do some longlining, but now mostly drags, and works with one crew member. He usually fishes for flounder, squid and trout. He has a bluefish permit but doesn't target that species because of its low value. For the last couple of months he has been going out for squid but is about to change over to flounder. His estimate of boats that usually work out of the harbor is that there are close to 30 boats that are 60' and under, 4 clam boats and 10 or 12 trawlers or longliners, all of which are over 60'.

He said there are 7 draggers that have flounder permits, and if the quota is divided by that number, it doesn't even come to 100 lb. per boat. So, he ends up doing a lot of fishing for bait as well, mostly skate and horseshoe crabs, though he complained about "the bird lovers" who have restricted the taking of the latter. In the fall he will do trout (weakfish) fishing, though that only came to 21 days last year. He mostly packs at the larger fish house, as do most of the other draggers. He said that most of the sea bass, conch and other gill net catches are packed at the smaller company where he was watching boats unload that day.

According to this informant, most of the fishermen around the harbor are locals, with some coming from Delaware and just a few from Virginia. He himself lives between West Ocean City and Salisbury, MD.

There is no seafood festival in town. The nearest one is in Crisfield, on the Chesapeake Bay (see below). The Harborside Inn is the popular hangout for fishers but there is no special place for coffee in Ocean City.

Fisheries Profile, Chesapeake Bay

Virtually all of the other fishing activity in Maryland centers on the Chesapeake Bay and its tributaries. It is based in numerous small and dispersed landing areas, and focuses on the classic bay fisheries with blue crabs and oysters taking the lead (Table MD-OM1). This is the home of the Chesapeake Bay "watermen." For all ports in Maryland excluding Ocean City, blue crabs represented 71.5% of the value and oysters 12.6% of the value. The only other sizeable fishery in 1998 was for striped bass (5.9% of the value), thanks to the recovery of that species after a long moratorium. True to the tradition of watermen and baymen in the Mid-Atlantic, the diversity of species caught is extremely high: 57 species, ranging from terrapin and snapper turtles, crappies, carp, bullheads, and alewives, to name a few of the brackish water and anadromous species, to soft clams, horseshoe crabs, eels, lobsters, sturgeons, sunfishes, and sharks.

Table MD-OM1: Major Species, Other Maryland Ports, 1998

MAJOR SPECIES (>2%): MARYLAND OTHER THAN OCEAN CITY	Lbs (%)	Value (%)
Bass, Striped	5.6	5.9
Crabs, Blue	61.6	71.5
Croaker, Atlantic	2.4	0.7
Menhaden	8.9	0.7
Oysters	4.9	12.6

Gizzard Shad	3.5	0.9
White Perch	2.9	1.5
Soft Clam	0.4	2.1
Catfish	4.7	1.6

Total Species Landed: 57
Total Landings, 1998: 50,094,300 lbs.
Total Value, 1998: $60,832,500

Species Relevant to MAFMC according to value in 1998: Bluefish (0.1%), Butterfish (0.0%), Summer Flounder (0.2%), Atlantic Mackerel (0.0%), Scup (0.0%), Black Sea Bass (0.0%, Smooth Dogfish (0.0%), Spiny Dogfish (0.0%).

The NMFS weighout data for the Maryland ports beyond Ocean City did not include much information on gear types; 94% of the value and over 85% of the poundage in 1998 was attributed to "unknown" gear types. Accordingly, we do not include information on gear types for Other Maryland ports. However, it is well known that crab pots, trot lines, oyster tongs and rakes, some oyster dredges, and fish pound-nets are important gears, as well as fyke nets, seines, and gillnets.

The field portion of this study did not explore the many waterman communities of Maryland and Virginia because very small quantities are caught of the species of MAFMC concern. To verify this and learn more about the Chesapeake Bay fisheries of Maryland, we visited Crisfield and Cambridge, MD and interviewed Larry Simns, director of the Maryland Watermen's Association. About 6,000 watermen are represented by the Maryland Waterman's Association and about 3,500 of them actively use the organization's services.

According to Simns, Crisfield, Deal Island and Hooper's Island are most likely the places where significant catches of ocean species--trout [weakfish], flounder, croakers and possibly sea bass--are landed. (However, NMFS landings data also show that Chesapeake Bay watermen might bring in significant catches of ocean species to Smith Creek, Island Creek, Herring Creek, Flood Creek, Breton Bay and St. Patrick's Creek). He said that flounder and trout are not caught north of Tilghmans and added that ocean species are brought in on the Virginia side of the Potomac as well. A fish house in Coburn also deals in ocean products. Another informant at a packing house in Cambridge, MD, said that, in his opinion, the best place to go would be Crisfield, given its location on the bay at the southwestern-most corner of Maryland, and he suggested the two fish houses that researchers visited.

Somerset County Profile (includes Crisfield and other ports of the eastern shore of Chesapeake Bay within Maryland)

Population
According to the 1990 Census, Somerset County had a total population of 23,440. Men outnumbered women by about 6%. Rural population was 87.7% of the total population, though only 3.8% of the total population lived on farms.

Racial and Ethnic Composition
Approximately 61% of Somerset's County population was white, according to the 1990 Census. The next largest group was black, at 38.2%. There were small numbers of American Indians, Asians, and Hispanics. Only 219 people in the county were foreign born, and 76.5% of the native population was born in Maryland. The most prevalent ancestries reported were English (4,140 people); German (2,586 people); and United States or American (2,581 people).

Age Structure
The 25 to 44 year-old age group was the largest at 7,477 people, or 31.9%. Population under 18 years of age was 20.2% of the population and 14.9% was 65 years of age or older.

Household Composition
Of the 7,977 households in Somerset County, 70.0% were family households. Of the family households, 72.9% contained married couples and 21.2% were headed by single women. An average of 2.48 people lived in each household, but householders living alone occupied 25.7% of the households.

Of the 7,977 households, 27.8% were renter occupied. There were 1,416 vacant housing units in the county, 445 of which were used for seasonal, recreational, or occasional use. The homeowner vacancy rate was 2.8% and the rental vacancy rate was 5.5%. The median value of owner occupied housing units was $55,600 in 1990 and median rent was $230. One-unit detached housing comprised 82.5% of all housing units and mobile homes and trailers 20.1%

Educational Trends
In Somerset County, 61.2% of the population age 25 or older was a high school graduate or higher; 9.6% had a bachelor's degree or higher.

Income
According to the 1989 Census, per capita income for the county was $10,232 and median household income was $23,379. Of the 19,724 people for whom poverty status was determined, 16.0% were below the poverty line.

Employment
Of the 19,266 people age 16 or older in Somerset County, 51.1% were in the labor force. Of these, 99.4% were in the civilian labor force, of which 8.4% were unemployed. More recent unemployment figures for the county were 9.6% in 1997 and 9.6% in 1998. The county shows slight seasonal shifts in unemployment, however unemployment largely decreased in 1999. For example, in Jan of 1998 unemployment was 12.0%, however in January of 1999 unemployment was only 9.2%.

Employment Industries
Of the 8,962 employed people age 16 or older, 870 or 9.7% were in the agriculture, forestry, and fisheries industries sectors. 278 listed fishing as their occupation. The largest sector of all was retail at 15.6% followed by administrative support occupations, including clerical, at 13.5%. The next largest occupations were service occupations, except protective and household; precision production, craft, and repair occupations; educational services; sales occupations; and professional specialty occupations. Government workers comprised 23.6% of the work force, and there were 1,104 self-employed workers.

Racial and Gender Composition of the Fishing Industry
According to the 1990 Census, there were 265 men and 13 women engaged in fishing as an occupation. Of the 265 men, 232 were white and 26 were black. All 13 women were white.

Field Observations and Interviews, Crisfield, MD, July 1999

Crisfield has a very spacious harbor and lots of docks compared to most of the other fishing ports visited in the Mid-Atlantic region. There are a fair number of recreational marinas and pleasure boats as well. It is evident that African Americans make up a large part of the local population.

All but one of the local packing houses deal exclusively with crabs. Even with the large volume of crabs being taken in, an informant at one of the crab houses said that "crabbing is not like it used to be" in Crisfield. He said there are up to 100 full-timers and part-timers who go crabbing out of Crisfield, especially in the fall. Because the watermen are so scattered around the various inlets of Chesapeake Bay, the crabs used to be brought in via a number of large (70') "buy boats" or "freight boats" that picked up catches from throughout the bay and delivered them to Crisfield. Now there is only one buy boat that works the bay.

One packing house deals with finfish. Our informant, an employee whose son founded the company, said that crabs are the company's biggest product, but it does take in rockfish (striped bass), sea trout, croakers (hardhead), spot and perch. He said that some of this (trout and hardhead) is bycatch in the crab pots. There is some gill netting for ocean species, but that mostly happens in the fall. Tangier Island (Virginia) watermen have pound nets and this is how they catch most of the ocean species. He thought that Tangier Island might be the biggest source of ocean species fished in the bay. He also said that a six-foot tarpon had been caught recently near Tangier Island (probably because the water temperature and salinity of the bay has been high) and that pompano and barracuda are also known to have been caught in the bay (he added that tarpon are often caught off Cape Charles, VA, as well). According to this informant, the Tangier Island watermen send most of their ocean catches to New York because they can get better prices there. When they do come to Crisfield, they usually send the fish in via mail boats. (In February 2000 we also learned from a Tangier Island fisherman that many local men sign onto ocean-going fishing vessels out of Virginia and other ports).

The company has a wholesale and retail market on the highway in town, where it sells ocean species from the bay (about 10% of the business) and other ocean species that are bought elsewhere (usually in West Ocean City, but they often have to go farther afield). Species include tunas, swordfish, grouper, snapper, mackerel and occasionally sturgeon.

In addition to taking in hardshell crabs, this company has a large shedder business; there are 428 "floats" (actually, shedder tanks housed in open-air sheds) that take an average of 300 crabs each. In addition, many of the watermen have their own floats in the creeks or rent floats from this company and then sell the soft shells to the same company when they are ready for market. This dealer also takes in shedders from Delaware Bay (at the time of the research visit, that's where most of the company's shedders were from, even though the informant said they were down in number from last year at the same time).

The company ships live crabs by truck along the eastern seaboard, from Connecticut to South Carolina. It also ships frozen hard crabs and live soft shells nationwide via air freight.

He said that oystering used to be a big industry in Maryland and Virginia, but no longer is because of the depletion of stocks. In fact, much of the Crisfield harbor is built on oyster shells constituting "reclaimed" land.

The informant here said that approximately 15-20% of the Crisfield population is involved in waterman industries, which is much less than in the past. A lot of it is seasonal work; for fish plant workers, it is perhaps only 5 to 6 months out of the year. The company's peak time is early spring through mid-summer, at the beginning of soft crab season and the end of oyster season. At that point, it employs 70 people. Low time is December to March, when there are only 20 to 30 employees. He said that the workers complain a lot about there

being either too many hours to work or too few. When they are laid off, workers generally go on unemployment.

The company no longer engages in crab picking. The informant said that it no longer pays off for the company because 60% of the crabmeat now sold in the US is imported from other countries, where workers are paid a lot less and health standards are lower. He said that a local company just stopped its crab picking operation. Another still picks, but the informant at the crab/fin fish house thinks they won't be able to do it much longer: "you can't buy crabs cheap enough to make it worthwhile." The company in question currently employs 10 to 12 Mexican migrants to do the picking. The informant said he considers crab picking "an art" that used to be done almost exclusively by African Americans.

His son's company employs only local workers, 50-60% of whom are black, but in the future may bring in Mexican migrants because, according to the informant, they have a better work ethic than the locals. Mostly women work on the crabs and fin fish at the company and mostly men work on the oysters. The informant said that men mostly work on the boats because even with hydraulic machinery "it's not women's work."

Like many other people working in commercial fishing, the informant said that the regulations are "destroying his business." He thinks there have always been variations in the number of crabs and other species that are caught in the bay and that this is primarily due to weather and migration patterns rather than overfishing. He talked about the "fishteria(Pfiesteria)" disease scare a few years ago, and feels that "the media and politicians do more damage to the fishing industry than anybody else."

He said it's hard to say how many watermen go in and out of Crisfield, but estimated that 500-600 work in all of Somerset County and on Tangier Island. He said that most of the local boats dock at a marina in town (that is primarily recreational), and the rest of Crisfield's extensive docks are only used by the watermen to unload their catches.

Historically, there's been a lot of conflict between Virginia and Maryland watermen that has even included shootings and killings, according to this informant. An incident that he said happened shortly before the research visit concerned the theft of shedders from Smith Island, Maryland. Rumor had it that someone from Tangier Island (which is in Virginia) did it.

The informant said that there hasn't been much conflict yet in Crisfield regarding waterfront land use, though he can see the possibility of it coming. Recently he had gone to a zoning board meeting where the possibility of rezoning part of the waterfront to build condominiums was discussed. He fears that, if this happens, the crab industry will be in trouble because condo owners will complain about the smell.

The Crisfield Chamber of Commerce sponsors an annual National Hard Crab Derby in September (this year's was the 52nd) during which there are a number of crab races (including the Governor's Cup, where crabs from other states, or local crabs adopted by other states, are pitted against one another).

Hangouts: Gordon's (breakfast, lunch and pool table) and Tities

We were unable to visit other fishing communities of the Chesapeake Bay region during the summer of 1999. In March 2000 we briefly visited several communities on the Eastern Shore of Maryland which are involved in the processing side of the surf clam and ocean quahog industry, including Easton, Nanticoke, and Pocomoke City, Maryland (as well as Milford, Delaware, Norfolk, Virginia, the New Jersey sites noted before, and others, including New Bedford, Massachusetts). Processing is one of the most important ways that Mid-Atlantic federal waters fisheries link to the socio-economics of coastal and inland communities. We had interviews with processing plant managers and tours through the

plants, for a separate study. Future studies of the "fishing communities" of the Mid-Atlantic should include these kinds of communities as well as the "ports" which have been the focus of this study.

6. Virginia's Fishing Ports

Virginia has one of the highest fish landings in the United States, largely because of the menhaden which are landed and processed in Reedville, Northumberland County, on the western shore of the Chesapeake Bay. Virginia is also known for its waterman fisheries for oysters, blue crabs, etc., mainly in the Chesapeake Bay and its tributaries but also in numerous small bays along the Atlantic coast of the southern Delmarva peninsula. There are six major ports where large, ocean-going fishing vessels unload their catches: Hampton, Newport News, Virginia Beach, Seaford, and Chincoteague,. In the U.S. census, the first three are largely within the Metropolitan Statistical Area of Norfolk-Virginia Beach-Newport News. These "Hampton Roads" ports are within a major tourist region, anchored by Chincoteague, Williamsburg, and Virginia Beach. The military is also a large presence, as are numerous heavy and high tech industries. Chincoteague is one of several ports where local seafood businesses depend on migratory fishing vessels from other regions, such as North Carolina or Massachusetts, for landings. The highest value product of the ocean fisheries is the sea scallop; hard clams (quahogs), blue crabs, and oysters are the equivalent in the bays and estuaries. "Shark fishing" for spiny and smooth dogfish and by-catches of angler (monkfish) have emerged in recent years as important fisheries in some ports.

This report first discusses the Hampton Roads region, then York County (including Seaford); followed by two counties on the southern tip of the Delmarva Peninsula (Northampton and Accomack). These account for over half of the state's landings in 1998 (Table VA-1), and virtually all of the ocean-going fisheries as distinct from bay fisheries. We include fisheries data for all other Virginia ports at the end.

Table VA-1: 1998 NMFS Weighout Landings by Port, Selected Virginia Ports[8]

Virginia Landings, 1998 PORT		% of Total, Lbs, not Incl. Northumberland	$ of Total, $, not Incl. Northumberland
Other Northumberland	85.4% lbs, 36.3% value	n.a.	n.a.
Hampton		9.9	11.7
Newport News		7.0	22.6
Virginia Beach/Lynhaven		9.6	6.1
Norfolk		0.6	0.6
Seaford		1.2	7.2
Other York		6.6	4.8
Cape Charles		2.0	1.1
Oyster		1.2	0.8
Other Northampton		7.2	5.2
Wachapreague		0.2	0.3
Chincoteague		1.1	1.1
Other Accomack		12.1	10.6
Rest of Virginia		41.3	47.9

Table VA2 provides NMFS weighout data for Virginia 'ports'. To protect

[5] **Northumberland County is the home of industrial fisheries, the high quantity, low unit value of which distort information information on other fisheries. Accordingly, in this table we report landings data for other ports as percentages of a total that excludes "Other Northumberland".**

confidentiality, landings of less than 100,000 pounds or dollars are not included, but the large number of places with such small landings is an important social fact about the fisheries of Virginia. Like those of Maryland, North Carolina, and parts of New York and New Jersey, they are very small-scale, part of the "waterman" or "bayman" life style. It must be emphasized, however, that landings from fishing operations within the three-mile territorial sea or for fish, such as conch, for which Federal permits are not required, do not always appear in the NMFS weighout data. This information is reported to the Commonwealth of Virginia's Virginia Marine Resources Commission as a condition of state permits (Fricke 1999, see below).

Table VA2: Landings by County and Port, Virginia, 1998

Note: Data for ports with less than 100,000 pounds or dollars in 1998 are omitted.

PORT NAME	COUNTY	LANDED (LBS)	PERCENT (LBS)		PERCENT VALUE
UNIDENTIFIED					
OTHER ACCOMAC	ACCOMAC	10,003,168	1.78%	7,493,144	6.77%
CHINCOTEAGUE	ACCOMAC	900,910	0.16%	788,242	0.71%
WACHAPREAGUE	ACCOMAC	173,012	0.03%	203,653	0.18%
OTHER CHARLES CITY	CHARLES CITY				
OTHER CHESTERFIELD	CHESTERFIELD	582,747	0.10%	133,965	0.12%
OTHER CITY OF CHESAPEAKE	CITY OF CHESAPEAKE				
HAMPTON	CITY OF HAMPTON	8,079,599	1.44%	8,218,162	7.42%
NEWPORT NEWS	CITY OF NEWPORT NEWS	5,742,497	1.02%	15,945,730	14.41%
NORFOLK	CITY OF NORFOLK	497,677	0.09%	405,861	0.37%
OTHER CITY OF PORTSMOUTH	CITY OF PORTSMOUTH	473,699	0.08%	365,002	0.33%
OTHER CITY OF SUFFOLK	CITY OF SUFFOLK	451,158	0.08%	404,930	0.37%
VIRGINIA BEACH/LYNNHAVEN	CITY OF VIRGINIA BEACH	7,811,980	1.39%	4,272,786	3.86%
OTHER ESSEX	ESSEX				
GUNSTON COVE	FAIRFAX				
OTHER FAIRFAX	FAIRFAX				
LITTLE HUNTING CREEK	FAIRFAX				
OCCOQUAN BAY (F)	FAIRFAX				
OTHER GLOUCESTER	GLOUCESTER	10,955,404	1.95%	6,589,134	5.95%
OTHER ISLE OF WIGHT	ISLE OF WIGHT	409,193	0.07%	521,934	0.47%
OTHER JAMES CITY	JAMES CITY	632,278	0.11%	428,778	0.39%
OTHER KING & QUEEN	KING & QUEEN	100,088	0.02%	146,184	0.13%
OTHER KING GEORGE	KING GEORGE	329,908	0.06%	145,482	0.13%
UPPER MACHODOC CREEK	KING GEORGE				
MATHAIS POINT	KING GEORGE				
BARNESFIELD	KING GEORGE				
FAIRVIEW BEACH	KING GEORGE				

POTOMAC CREEK (K.G.)	KING GEORGE				
WILLIAMS CREEK	KING GEORGE				
ROSIERS CREEK (K.G.)	KING GEORGE				
WATERLOO	KING GEORGE				
BELVEDERE BEACH	KING GEORGE				
OTHER KING WILLIAM	KING WILLIAM	125,363	0.02%	103,837	0.09%
OTHER LANCASTER	LANCASTER	3,339,477	0.60%	1,742,170	1.57%
OTHER MATHEWS	MATHEWS	5,470,721	0.98%	3,170,510	2.86%
OTHER MIDDLESEX	MIDDLESEX	1,366,466	0.24%	1,235,115	1.12%
OTHER NEW KENT	NEW KENT				
OTHER NORTHAMPTON	NORTHAMPTON	5,883,586	1.05%	3,649,280	3.30%
CAPE CHARLES	NORTHAMPTON	1,595,605	0.28%	767,279	0.69%
OYSTER	NORTHAMPTON	989,211	0.18%	584,858	0.53%
OTHER NORTHUMBERLAND	NORTHUMBERLAND	479,159,996	85.44%	40,187,290	36.31%
LITTLE WICOMICO RIVER	NORTHUMBERLAND	1,713,138	0.31%	398,510	0.36%
COAN RIVER	NORTHUMBERLAND	647,086	0.12%	353,406	0.32%
HULL CREEK	NORTHUMBERLAND	387,098	0.07%	114,319	0.10%
YEOCOMICO RIVER (N)	NORTHUMBERLAND	100,958	0.02%	108,512	0.10%
MUNDY POINT	NORTHUMBERLAND				
KINGSCOTE CREEK	NORTHUMBERLAND				
HACK CREEK	NORTHUMBERLAND				
THE GLEBE	NORTHUMBERLAND				
KILLNECK CREEK	NORTHUMBERLAND				
OTHER VA	NOT-SPECIFIED				
OTHER PRINCE GEORGE	PRINCE GEORGE				
CHERRY HILL	PRINCE WILLIAM				
OCCOQUAN BAY (P.W.)	PRINCE WILLIAM				
OTHER PRINCE WILLIAM	PRINCE WILLIAM				
QUANTICO CREEK	PRINCE WILLIAM				
OTHER RICHMOND	RICHMOND	383,730	0.07%	287,679	0.26%
POTOMAC CREEK (S)	STAFFORD	497,168	0.09%	261,941	0.24%
WIDEWATER	STAFFORD	234,869	0.04%	128,502	0.12%
OTHER STAFFORD	STAFFORD				
AQUIA CREEK	STAFFORD				
TOLSONS LANDING	STAFFORD				
OTHER SURRY	SURRY				
OTHER WESTMORELAND	WESTMORELAND	1,625,388	0.29%	1,305,308	1.18%
NOMINI BAY	WESTMORELAND	1,146,988	0.20%	255,801	0.23%
MONROE BAY	WESTMORELAND	302,415	0.05%	205,855	0.19%
ROSIERS CREEK (W)	WESTMORELAND				
LOWER MACHODOC CREEK	WESTMORELAND				
KINSALE	WESTMORELAND				
BONUMS CREEK	WESTMORELAND				
RAGGED POINT HOLLOW	WESTMORELAND				
YEOCOMICO RIVER (W)	WESTMORELAND				
CURRIOMAN BAY	WESTMORELAND				
GARDNER CREEK	WESTMORELAND				

MATTOX CREEK	**WESTMORELAND**				
SHANNON BRANCH	**WESTMORELAND**				
JACKSON CREEK	**WESTMORELAND**				
BRANSON COVE	**WESTMORELAND**				
TIDWELLS	**WESTMORELAND**				
HORNER BEACH	**WESTMORELAND**				
CITY OF SEAFORD	**YORK**	**1,009,908**	**0.18%**	**5,092,848**	**4.60%**
OTHER YORK	**YORK**	**5,405,249**	**0.96%**	**3,366,134**	**3.04%**
TOTAL		**560,831,406**	**100.00%**	**110,690,207**	**100.00%**

Source: NMFS Weigh-Out Data.
Note: Data for locations with less than 100,000 pounds or dollars in 1998 are omitted. Some landings from commonwealth waters or unregulated fisheries may not be included.

Norfork/Virginia Beach/Newport News Metropolitan Statistical Area (includes most of the "Hampton Roads" fishing area, including Lynhaven, Hampton, Newport News, Phoebus and Norfolk)

Population
According to the 1990 census, Norfolk, Virginia Beach, and the Newport News Metropolitan area had a total population of 1,396,107. Females outnumber males by a small percentage. Urban population was 94.8% and rural population was 5.2%, though less than 1% lived on farms.

Racial and Ethnic Composition
Of the population, 67.8% were white, followed by black at 28.5%. Individuals of Hispanic Origin, of any race, and Asian each made up approximately 2.5% of the population. There were small numbers of American Indians, Eskimo, and Aleuts. Only 3.5% of the population was foreign born, and of the native population, 40% were born in Virginia. The most prevalent ancestries reported were German (242,781 people); English (216,496 people); and Irish (186,686 people).

Age Structure
The 25 to 44 year-old age group was the largest, at 485,666 people or 34.8%. Population under 18 was 26.4% and 9.0% was 65 or older.

Household Composition
Of the 493,536 households in Norfolk, Virginia Beach, and the Newport News Metropolitan area, 72.6% were family households. Of the family households, 63.5% contained married couples and 18.1% were headed by single women. An average of 2.69 people were in each household, but 21.1% of the total householders lived alone.

Of the 493,536 households, 41.1% were renter occupied. There were 43,565 vacant housing units, 3,197 of which were for seasonal, recreational, or occasional use. The homeowner vacancy rate was 3.3% and the rental vacancy rate was 9.3%. The median value of owner occupied houses was $87,000 in 1990 and median rent was $398.00. One-unit detached housing comprised 56.3% of all housing units and mobile homes and trailers only 3.6%.

Educational Trends

In Norfolk, Virginia Beach, and the Newport News Metropolitan area, 79.1% of the population 25 years or older was a high school graduate or higher; 20.1% held a bachelor's degree or higher.

Income
According to the 1989 census, per capita income for these areas was $13,495 and median household income was $30,841. Of the 1,324,970 people for whom the poverty status was determined in 1989, 151,840, or 11.5%, were below the poverty line.

Employment
Of the 1,062,615 people 16 or older in Norfolk, Virginia Beach, and the Newport News Metropolitan area, 70.5% were in the labor force. Of these, 75.2% were in the civilian labor force, of which 7.2% were unemployed. More recent unemployment figures for these regions were 4.8% in 1997 and 3.5% in 1998. These regions do not show large seasonal shifts in unemployment, although fewer people appear to be unemployed in October through December.

Employment Industries
Of the 698,999 employed people 16 years or older, 7,474, or 1.3% were in the agriculture, forestry, and fisheries industries sector. The largest sector of all was retail, at 20.4%, followed by Administrative support at 15.6%. The next largest occupations were professional specialty occupations; precision product, craft and repair occupations; executive, administrative, and managerial occupations; sales occupations; and service occupations, except protective and household. Government workers comprised 24.5% of the work force, and there were 27,886 self-employed workers.

Racial and Gender Composition of the Fishing Industry
In Hampton, according to the 1990 Census, there were 122 males and no females engaged in fishing as an occupation. Of the men, 87 were white, 4 were black, and 27 were Asian and Pacific Islanders. In Newport News City, there were 24 males and 15 females engaged in fishing as an occupation. Of the men all 24 were white; among the women 4 were white and 11 were black. There were also 8 fishing vessel captains or officers, all white men. In Norfolk, 32 people engaged in fishing as an occupation, all of them were white males. In Virginia Beach City, 62 people engaged in fishing as an occupation, all of them white males. There were also 26 fishing vessel captains or officers, all of them white men.

Fisheries Profile, Virginia Beach/ Lynhaven

Most of the commercial fishing activity in Virginia Beach occurs in the Lynhaven section, along Long Creek, which empties into Lynhaven Bay and eventually Chesapeake Bay. Two active federally permitted dealers in this port also operate as packing houses for two out-or-town dealers. In the past, there also was significant activity at Rudee Inlet on the Atlantic side of the city, but now there are only 3 or 4 commercial boats that work out of there.

The commercial fishery at Virginia Beach/Lynhaven is inlet-dependent and pressured by competition for waterfront from tourist-related development and recreational boaters and fishers. The major gear type used as reported to the NMFS is the sink gill-net, used to catch a large number of species including bluefish, striped bass, Atlantic croaker, summer flounder, shad, dogfish, weakfish and spot (Table VA-VB1). Drift and stake gill nets are also used, the latter for spiny dogfish and bluefish among other species. This is also a center of pot fishing, for blue crabs, eels, conchs (whelks) and fish. The fish catches were mainly black sea bass and tautog. Handlines accounted for 9% of the landed value in 1998, mostly from black sea bass and summer flounder catches, but also striped bass, tautog, tilefish, tunas, and others. Pound nets accounted for 3.3% of the value in 1998; species included striped bass, bluefish, butterfish, Atlantic croaker, summer flounder, Spanish mackerel, spot, and weakfish.

Table VA-VB1: Landings by Gear Type, Virginia Beach/Lynhaven, 1998

GEAR TYPE: VIRGINIA BEACH/LYNHAVEN	LBS. (%)	VALUE (%)
By Hand	0.0	0.0
Common Seine, Haul Seine	0.7	0.7
Dredge, conch	0.3	0.9
Dredge, Crab	0.8	1.0
Gill Net, Drift	1.3	1.0
Gill Net, Sink	70.1	43.3
Gill Net, Stake	0.2	0.1
Handline	2.0	9.2
Pots & Traps, Blue Crab	12.9	18.3
Pots & Traps, Conch	3.7	14.1
Pots & Traps, Eel	0.1	0.2
Pots & Traps, Fish	2.8	7.8
Pound Net	5.1	3.3
Tongs & Grabs, Clam, Patent	0.0	0.0

Total Landings, rounded, 1998: 7,812,000 lbs.
Total Value, rounded, 1998: $4,272,800 dollars

Note: "0.0" means some activity but less than .06%

By species blue crab represented the highest value (19%). Next was black sea bass, which comprised 16% of 1998 landed value, mostly from handlining and fish pots (Table VA-VB2). Gillnetting for dogfish is another very important fishery. Atlantic croaker and striped bass are significant catches from the gill-net, handline, and pound-net fisheries, as is spot. Channeled whelk, caught in conch pots, made up 11% of value. The total number of species, though, is as always in this region very large: 65.

Table VA-VB22: Landings by Major Species, Virginia Beach/Lynhaven, 1998

MAJOR SPECIES: VIRGINIA BEACH/LYNHAVEN	LBS. (%)	VALUE (%)
Striped Bass	4.4	11.0
Blue Crab	13.7	19.1
Atlantic Croaker	**	**
Spiny Dogfish	**	**
Black Sea Bass	4.2	15.6
Spot	14.1	8.8
Channeled Whelk	2.8	11.2
Conch	1.4	5.3
Other Fish, Industrial	2.2	0.3

Number of Species: 65

Note: ** indicates confidential data due to small number of businesses involved.

Other species of MAFMC interest by percentage value, 1998: Bluefish (0.7), Butterfish (0.7), Summer Flounder (0.3), Atlantic Mackerel (**), Scup (**), Dogfish, Other (0.3), Dogfish, Smooth (**), Tilefish (**), Loligo Squid (**).

Field Observations and Interviews, Virginia Beach/Lynhaven, July 1999

In Lynhaven there are three centers of activity associated with packing houses and docking areas. The most extensive docking area is at a predominantly recreational marina off West Great Neck and Buccaneer Roads on Long Creek. There were about 10 commercial boats docked there in July 1999. The packing house is currently run out of a trailer and is owned by two local men. It essentially operates as a cooperative for those who sell there. A local fisherman said that this packing house's goal is to have the boats make as much profit as possible with the company only taking 15% off the top.

The commercial docks as well as the entire marina are owned by a corporation which is currently rebuilding the docks and pouring a concrete boardwalk. The corporation is also erecting a new building that will have the packing house as well as two stores as tenants. The recreational marina is being expanded to 214 slips. When asked if he thought this new arrangement would work for the commercial industry, given the predominance of recreational fishing at this marina and in the area in general, a local fisherman raised his eyebrows and said, "If it doesn't work out, we have no place to go." He thinks that development in the area is out of control. But he does not think they will get shut out completely because the recreational industry needs the commercial boats if Lynhaven inlet is to be periodically dredged by the Army Corps of Engineers." If there is not a certain percentage of commercial boats that use that inlet, local businesses will have to pay to have it dredged.

On the other hand, he feels that the Virginia Beach area is one of the most hostile to commercial fishers. He complained in particular about the gasoline tax that is being planned for the metropolitan area. This will disproportionately hurt businesses like his that consume a lot of gas. He said that homeowners on the other side of the docks are "adamantly against the building of the new marina. I think they use us as a ploy against the owner." At the same time, he mentioned that a reporter from The Virginia Pilot has done a few “nice pieces” on commercial fishers in the area. This informant comes from a fishing family (his father and uncle used to own a construction business and decided to sell in order to establish commercial fishing as a family business). Dogfish comprises about 40% of his catch. “We caught 6 million pounds here in 1996.” He is very worried about the upcoming dogfish regulations. “We do this in order to make money. If we can’t make money, we won’t be into the fishery.” He said they used to fish for shad down along the oceanfront and catch 10 or 12

rockfish(striped bass) a year. They used floatnets that were 300 yards long. He said that now "58% of what we catch is regulatory bycatch. We have to throw it back." He believes, however, that there are more rockfish now than ever before, so many that they are depleting other edible species. He said this causes him to go 30 miles offshore for "horn dog," otherwise he spends too much time taking rockfish out of his nets. It only takes three days to catch the quarterly quota of flounder. For smooth dogfish he uses 6-inch by 90mm mesh, 20-30 mesh deep. He said they save a lot of their winter catch for bait (e.g. sand shark heads).

He complained about the "bad science" being done by those that estimate the stocks. He also complained about the lack of coordination between state and federal regulators. "The federal government is trying to push you back to the bay, where the state has already regulated us out." He fishes 200-300 conch pots in the summer and he tries to have three people on the boat when he fishes conch pots and gillnets. He has five crew members in the winter when he nets for smooth dogfish.

As is the case elsewhere in the industry, it is hard to get and keep a good crew. The same fisherman said, "One guy has been with me for six years, and that's unusual!" He said that all of the captains and crews from their docks are from the local area. He said there was no one who used migrant labor. His father fishes for spot, croaker, trout, striped bass, crab and dogfish. There is one boat that pots for seabass.

He said they are limited in their ability to expand their business or even to switch the type of fishing they do. "It is difficult to transfer permits to a different size boat. Permits can't be transferred for more than a 10% change in length or a 20% change in horsepower." He thinks it is difficult to get fishermen to band together for their own good. He said most are too spread out. He thinks a better strategy would be to take a small amount out of every paycheck in order to pay a lobbyist.

Two more small docks/packing houses are located nearby. The manager of one of them was not willing to be interviewed saying "we'd rather you got your information from the VMRC [the Virginia Marine Resources Commission, which has responsibility for fisheries management in Virginia]." The other principal fish house in Lynhaven has a local retail market and restaurant attached to it. Five boats, each less than 40' in length, were docked there during the research visit.

Local bar/hangout: Reef Restaurant or the Corner Market Restaurant. But, "not too many of us hang out together, and there's not too many to hang out with," according to the same fisherman.

Rudee Inlet

There are only 3 or 4 commercial boats still working out of Rudee Inlet. He said there is one fisherman who hooks and lines and is a retired restaurant owner. An informant at a packing house in Hampton said that recreational interests were successful in forcing most of the commercial fishers out of Rudee Inlet. (Note: in 1993 we reported 24 small lobster boats at Rudee Inlet: p. 19).

Fisheries Profile, Newport News, VA

Sea scalloping is the principal fishery of Newport News, accounting for 72% of landed value in 1998. Scallopers use both dredges and bottom otter trawls (Table VA-NN1). Another fishery is finfish dragging (8.2% of value, 24.5% of landings) for a large variety of species. Summer flounder, angler, and black sea bass are landed in significant quantities (Table VA-NN2). Small scale inshore and bay fisheries are part of the waterman complex. They include

clamming (hard clams or quahogs) and oystering using dredges, patent tongs, tongs and rakes; drift and sink gill-netting; pot-fishing and dredging for crabs (blue crabs were 28% of landings, 7% of value) and oysters; pot fishing for conch and eels and seining.

Table VA-NN1: Landings by Gear Type, Newport News, VA, 1998

GEAR TYPES, NEWPORT NEWS	LBS. (%)	VALUE (%)
Common Seine, Haul Seine	0.0	0.0
Dredge, Clam	0.0	0.0
Dredge, Crab	1.4	0.4
Dredge, Oyster	0.0	0.0
Dredge, Sea Scallop	32.9	59.7
Gill Net, Drift	0.0	0.0
Gill Net, Sink	1.0	0.3
Handline	0.0	0.0
Pots/Traps, Blue Crab	26.4	7.1
Pots/Traps, Conch	0.0	0.0
Pots/Traps, Eel	0.1	0.0
Tongs/Grabs, Oyster	0.5	0.6
Tongs/Grabs, Clam	2.4	6.0
Otter Trawl, Bottom, Fish	26.4	10.3
Otter Trawl, Bottom, Other	0.0	0.0
Otter Trawl, Bottom, Scallop	8.7	15.5

Total Landings, rounded, 1998: 5,742,500 lbs.
Total Value, rounded, 1998: $15,945,700 dollars

Table VA-NN2: Landings by Major Species, Newport News, VA, 1998

MAJOR SPECIES: NEWPORT NEWS, VA	LBS. (%)	VALUE (%)
Crab, Blue	27.7	7.3
Flounder, Summer	19.8	8.6
Quahog	2.4	6.1
Scallop, Sea	34.4	72.1
Sea Bass, Black	2.4	0.9
Angler	7.0	3.0

Number of Species: 59

Other species of MAFMC interest, by percentage value 1998: Bluefish (0.2), Butterfish (0.0), Scup (0.0), Smooth Dogfish (0.0), Tilefish (0.0), Loligo Squid (0.4).

Field Observations and Interviews, Newport News, VA, July 1999

There are 6 commercial fishing businesses in Newport News, all located within or near a seafood industrial park on the city's small boat harbor.

We talked with an employee at one of the packing houses. He said that recently there has been an increase in smaller, faster boats in the Hampton Roads area. Researchers saw more than 25 boats smaller than 40 feet in length docked near the mouth of the harbor. The informant said even the larger boats now often steam out only 20-30 miles before returning back to the dock. The informant used to work at a commercial fish house in Wanchese and established in 1995 the packing house in Newport News where he now works. The business also runs two factory ships off the coast of Argentina. They used to have two longliners, but they were major losses. They have one 120-foot longliner that has been sitting idle at the dock for the past two years.

He said that local trawlers bring him summer flounder, gray trout, croaker, bluefish, sea bass, porgies, squid, Atlantic mackerel, butterfish, and scallops. Most of the landed weight used to be scallops, but this is no longer the case. The boats go out on 30 to 40-mile trips. When scalloping they go for 14 to 15 days. When fishing they go for 7 days. Right now they are going out for day trips because of quota limitations, according to the informant. "They spend more time coming and going than working," he said. At present they pack four of their own trawlers (1 dragger and 3 scallopers) as well as 8 other owner-operated boats. The number of owner-operators that use this particular dock pack varies seasonally. Most of the company's wholesale product is sent to New York, Philadelphia, Baltimore, Boston and Florida. It sells some bait to Japanese markets.

He said there are 50 to 60 boats working out of the Small Boat Harbor that scallop and fluke -- they retool for each season. He estimated that the total catch brought into the harbor is 65% fluke, 25% scallops and 10% bycatch.

An issue identified by this informant is the effect of regulations (and decline in fish catches more generally) on the quality of labor available. He said the packing house no longer stays open long enough to keep good employees. Many of its workers come in "off the street." He blames the regulations for "destroying our business. We've become machines, not a business." He has a lot of people applying for work at the packing house, but he has not had the product to keep them busy.

Getting and keeping good crew is also a problem. He said the captains would rather hire local "drunks" than neophyte fishermen because they've done the work before. "We hire some of the worst that are out there. We could keep them busy if the government would let us." Most captains and crews have other jobs (e.g. carpentry) and fish on other boats. He said that problems with getting good crew have worsened and that they may be more serious for fishing businesses than dealing with the regulations. He added that they can't afford to train new help because they lose productivity when they do this.

His crew members are mostly local. He mentioned a law that prohibits American boats from having more than 25% of their crew as non-US citizens. He did say there are some Mexican captains in the area and 1 or 2 black captains. He said there have been a few female crew in the past. Some women may still be on current crews.

This person wanted mostly to talk about regulations. He said that the biggest problem is the way stock assessments are conducted. He thinks that true stock assessments will never be achieved, but that it's a good way for scientists to keep their jobs. He was frustrated because the "economic impact guys" promised more money per pound with the scallop regulations, but the regulations instead took away their market, and the prices have bottomed out. He was also frustrated by the flounder regulations. Not only is their quota small, but because of the size limitation they are having a hard time catching the portion-size flounder that restaurants want. While imports are not affected by these size regulations, the local flounder caught is too big for the optimal portion size. "It's a crying shame what the government has done," he said. He also believes that scallops from Georges Bank are now

too large to be marketed effectively, after being off limits to commercial fishermen for too long a time. "The economic impact is disastrous," he said.

He thinks there should be a watchdog group over NMFS. He estimated that the NMFS stock assessments are three years behind actual stock fluctuations. He thinks that the current quota system creates a mad-house effect at the packing houses when boats rush after their quotas. "Quotas aren't helping the stocks; they're just causing more to be thrown overboard," he said. He thinks regulators should focus on input rather than output. He said that captains need multiple permits to survive but that the regulations have limited their ability to diversify. He added that boats have had to sit for too long, and that "when they sit, they need more repairs."

Fisheries Profile, Norfolk, VA

The commercial fishery of Norfolk, VA today is actually typical of the more rural waterman communities. Only a few fish houses are left to buy from local fishers; other docks and wholesalers have closed down, and one wholesaler has changed to a retail store and restaurant. The fishery is a small inshore and bay fishery. Principal gears used are crab pots (55% of value), crab dredges (10%), clam patent tongs and rakes (4%), handlines (10%) and sink gill-nets (12%). Other gears are haul seines, conch dredges, and eel and fish pots. Striped bass (10% of value) are caught with gill-nets, handlines and seines, as are Atlantic croaker (4% of value) and other estuarine and anadromous species. The small black sea bass fishery here (2.2% of value) is carried out with handlines, as is the summer flounder fishery (2.1%). Blue crabs make up two-thirds of the value of Norfolk's catch (64%); hard clams or quahogs account for 4%, and conch 4% as well.

Fisheries Profile, Hampton and Seaford, VA

For purposes of discussing fishery landings and preserving confidentiality, we have combined weighout data for Hampton (within the Metropolitan Statistical Area depicted above) and Seaford (within York County, census and employment data for which are offered below). Gear-type data (Table VA-H1) show that sea-scalloping with dredges is the single-most important fishery by value; otter-trawl dragging for finfish is highest for poundage. Some draggers are also used for scalloping. Gill-netting, crab potting and dredging, seining, and tonging for clams are other techniques used in these two ports (Seaford is almost entirely devoted to scalloping, but scalloping is also important in Hampton).

Like Newport News, Hampton and Seaford are important sea scalloping ports near the mouth of Chesapeake Bay. Scallops accounted for 69% of landed value in 1998. In Hampton, a significant portion of the scallops are caught with otter trawls rather than scallop dredges. The sea scallop fleet of Seaford relies entirely on dredges and accounts for virtually all of the landings and landed value there. Besides scallops these dredge-equipped vessels caught large amounts of angler as well as a small amount of summer flounder.

Finfish dragging is also important in Hampton. Species diversity is extremely high. The otter trawl fleet of Hampton takes Illex and Loligo squid, black sea bass (a substantial amount is also caught with handlines); Atlantic mackerel; Atlantic croaker (a large portion was caught by haul seines as well as pound nets and sink gill nets); and angler (although most was landed by scallop dredges and scallop otter trawls). A small amount of pelagic longlining is also done from Hampton, for black tip, mako shortfin and thresher sharks and tuna (big eye, yellowfin, albacore)

The inshore and bay fisheries of Hampton include the pound-net and seine fisheries for Atlantic croaker, gill-netting and handlining, blue crabs, (caught with dredges, pots, and scrapes) and hard clams or quahogs (harvested with patent tongs and crabs). We have

combined the weighout data for Hampton and Seaford to preserve the confidentiality of data for fisheries with few businesses involved. Species diversity in the landings at Hampton and Seaford is extremely high, 79 in 1998 (Table VA-H2). Fourteen had either poundage or value at or above 2% in 1998, led by sea scallops, summer flounder, Illex squid, Atlantic croaker, blue crab, and angler.

Table VA-H1: Landings by Gear Type, Hampton and Seaford, VA, 1998

GEAR TYPE: HAMPTON & SEAFORD	LBS (%)	VALUE (%)
Common Seine, Haul Seine	4.6	0.7
Dredge, Crab	1.6	0.8
Dredge, Scallop, Sea	16.6	57.2
Gill Net, Drift	0.7	0.2
Gill Net, Sink	8.2	2.1
Handline	0.3	0.2
Longline, Pelagic	0.1	0.1
Pots & Traps, Blue Crab	9.2	3.9
Pots & Traps, conch	0.0	0.0
Pots & Traps, Eel	0.0	0.0
Pots & Traps, fish	0.0	0.0
Scrapes	0.0	0.0
Tongs & Grabs, Clam, Patent	0.7	3.4
Otter Trawl, Bottom, Fish	53.5	16.5
Otter Trawl, Bottom, Scallop	4.4	14.7
Otter Trawl, Bottom, Shrimp	0.0	0.0
Pound Nets	0.0	0.0

Total Landings, rounded, 1998: 9,089,500 lbs.
Total Value, rounded, 1998: $13,311,000 dollars

Table VA-H2: Major Species Landed, Hampton and Seaford, VA, 1998

MAJOR SPECIES: HAMPTON & SEAFORD	LBS (%)	VALUE (%)
Angler	3.6	3.1
Crab, Blue	10.8	4.7
Croaker, Atlantic	13.2	2.1
Flounder, Summer	11.1	9.4
Mackerel, Atlantic	**	**
Scallop, Sea	17.3	68.8
Sea Bass, Black	2.9	2.6
Squid, Illex	**	**
Squid, Loligo	3.2	0.9
Other Fish, Industrial	2.1	0.1
Striped Bass	4.8	1.1
Herring, NK	**	**
Herring, Atlantic	**	**
Quahog	1.3	4.2

Number of Species: 79

Note: ** indicates confidential data due to small number of businesses involved.

Other species of MAFMC interest, by percentage value, 1998: Bluefish (0.4), Butterfish (0.1), Scup (0.1), Spiny Dogfish (0.0), Tilefish (0.0).

Field Observations and Interviews, Hampton, VA, July 1999

Hampton is the site of three major fish wholesalers, in the context of recreational fishing, resort homes, and other development. According to one informant in our previous study, five hundred new boat slips were built in the period 1988-1993. A salt pond was dredged for marinas and the sand used for beach nourishment. Developers have built condominiums as well as private homes and marinas. At one time, crab picking and oyster shucking were important, but there is only one crab house left.

We visited one dock/packing house. It has a long history, 82 years in Hampton. On one side of this packing house is a large recreational marina and restaurant. On the other side is "the only crab house left in this city." There are approximately 12 boats of less than 40 feet which pack at this dock. These boats gillnet for spot and other fish in the fall and change gear for conch and crab during the spring and summer.

The fish house does not have its own boats; at the time of the research visit, there were only a few scallop boats docked here and three small trawlers (of the five or six working out of these docks). The company's docks are wedged in between buildings forming part of a busy tourist area. An informant from the company said there has been constant pressure from developers for the use of the dock space. The business is entirely wholesale, and owns 7 tractor trailers that haul fresh fish twice a week from North Carolina to Peoria, IL. The company sends mostly croaker, gray trout, spots, bluefish and flounder. He said that winter used to be the busiest time, but that now there is no one busy time because of the quotas.

We were told that fluke is the single most important fishery there by another employee of the business. At the time of the interview, the fluke fishers were working a maximum of only 30 to 40 days a year, i.e., maybe 20% of what they would normally work,

because of the restricted quota granted to the state. He believes that by not allowing bycatch, the regulators are putting people out of business. They are limited to specific species that they target and cannot build up a history with other species, making it impossible for them to get additional permits. Further, seasonal restrictions do not always correspond with when the fish are in nearby waters. The informant said there are more croaker and rockfish now than ever before. He said the rockfish are decimating the crab industry.

According to this informant, this packing house is pressured to go out of business soon, even though it has been in the same location for 82 years and made extensive additions and improvements in the early 1980s. The last two years have been the worst in the company's history. It made $100,000 less than usual in the past 2 years, and management has had to lay off 50-75 people in that time. They have closed the packing plant. He added that this year the windy conditions actually were as damaging to the business as the regulations. They currently employ 75 people, but submitted 200 W-2 tax forms in 1998 (giving some indication of the turnover). They use a lot of day workers. Workers have a number of other options in this area. There are a lot of government positions (e.g., in the shipyards). Lucent Technologies, Gateway Computers, Canon, tourism, Langley, NASA and other high tech companies have attracted the highly skilled labor. "We've got the bottom of the barrel for day workers," he said.

Some of the crab houses brought in Mexican workers every year, but an activist then fought to enforce a law that required a guarantee of 35 hours per week for migrant labor. This caused many to stop bringing in migrant labor. Half of the packers are women. They are packing squid at present. "The men do the heavier work," he said. Most of the women packers are from Korea. The informant said that blacks, whites and Koreans work there, but no Mexicans.

The issue of regulations is foremost here, as well. "We always need regulations, but it's too much, too quick, and not accurate." This informant said he wishes regulations could be relaxed once the stocks have rebounded. He also believes that states need separate open seasons for each species so that the market is not flooded all at once by different states targeting the same species. (A second person interviewed added comments about the unfairness of some fluke regulations, specifically the rule that if a catch is a certain percentage over the limit, the whole catch will be confiscated rather than just the average.)

He sees the goal of a maximum sustainable yield as problematic because all species cannot reach MSY at the same time. There is a lack of trout at the moment in large part because of the abundance of croaker and rockfish. Species go through peaks and valleys at different times in different areas. He wonders why they don't take comprehensive landings data so that there is a history of a species before it needs to be regulated. He worries about measures like boat buy-backs because a drop in boats means a drop in fish house business. As he pointed out, banks won't continue to loan money to a business in decline. (Although he criticized boat buy-backs he also said it is unfair that the New England fishermen were the only ones to have a boat buy back program). He also worries about imports. The lack of regulations on international companies means lower prices for their products. He feels that US companies can't compete.

Supply and demand, he said, will manage stocks better than any regulations will. "Most watermen don't want to catch the last one," he observed. But he added that the fishermen have "absolutely no cohesiveness. Many watermen can't agree on ice cream." He said they only come to the meetings in a crisis -- they are extremely independent and resent the regulations. At the same time, fishermen feel shut out at management meetings. He said they resent the assumption that they are only acting out of their own interest and therefore should not be taken seriously. He feels that the government works for its own benefit. He said that people in management act like the tail wagging the dog -- they work for the sake of the institution, not for the fish or fishers.

The fish house has lost the business of four trawlers in recent years. One sank and another ran aground. This brought up a discussion of the possibility that some boats sink not because of accidents but as "a way to get out [of fishing] with dignity." He told of one fisher who had his boat towed out to sea and sunk "with great ceremony." He said it was a deeply emotional experience for all involved since you normally fight with your life to save your boat. The man who sank his boat died soon afterwards of a heart attack. The informant thinks it was connected to the trauma of sinking the boat.

Very few young people are going into commercial fishing. The informant said the only ones he knew of were the children of a fishing related business in Newport News and some of the children in a local fishing "clan". He also said that nobody wants to buy a boat and that there's also quite a bit of difficulty in transitioning to a larger boat. He pointed out that it is illegal to transfer permits to vessels that are more than 10% larger or have more than a 10% greater horsepower.

One or two women work on crab boats. There are one or two women that longline (from Florida and New England). The informant said the longliners come for 2 to 3 months in the spring and fall, mostly following swordfish and tuna. There are two or three boats in Hampton with Vietnamese owners, captains and crews.

Hampton is also the northern arm of an important Wanchese-based North Carolina firm. Most of the fleet from North Carolina lands in Virginia when they are unable to get their boats into Oregon Inlet.

At one time fishers used to congregate at a local store, but now there is no particular place where fishermen hang out for coffee or beer.

York County Profile (includes Seaford)

Population
The total population of York County, according to the 1990 Census, was 42,422 people. The ratio of women to men was equal. Rural population was only 27% of the total population; only 52 people lived on farms.

Racial and Ethnic Composition
Of the population, 81.3% was white. The next largest racial group was black, at 15.6%. There was a very small population of American Indians, less than 1%. Only 3.3% of the population was foreign born, and 42.1% of the native born population was born in Virginia. The most prevalent ancestries were English (10,454 people); German (9,671 people); and Irish (6,021 people).

Age Structure
The 25 to 44 year-old age group was the largest, at 14,532 people, or 34.3%. Population under 18 comprised 29.2% of the total population and 7.7% of the population was 65 years of age or older.

Household Composition
Of the 14,474 households, in York County, 11,851, or 81.9% were family households. Of the family households, 86.0% contained married couples and 10.8% were headed by single women. An average of 2.9 people were in each household, but 15.1% of the households were occupied by householders living alone.

Of the 14,474 households, 28.4% were renter occupied. There were 810 vacant housing units in the county, 51 of which were for seasonal, recreational, or occasional use. The homeowner vacancy rate was 2.8% and the rental vacancy rate was 5.6%. The median value of owner-

occupied housing units was $121,600 in 1990 and the median rent was $442. One-unit detached housing comprised 71.8% of all housing units and one-unit attached 9.2%.

Educational Trends
In York County, 88.3% of the population 25 years of age or older was a high school graduate or higher; 28.9% held a bachelor's degree or higher.

Income
According to the 1989 Census, per capita income for the county was $15,742 and median household income was $40,363. Of the 41,798 people that for whom poverty status was determined, 4.8% were below the poverty line.

Employment
Of the 31,434 people in York County 16 years of age or older, 71.9% were in the labor force. Of these, 87.6% were in the civilian labor force, of which 4.4% were unemployed. More recent unemployment figures for the county were 2.7% in 1997 and 2.0% in 1998. This county shows seasonal shift in unemployment. For example, in 1998, unemployment was 2.8% in January, ranged from 1.5% to 2.3% from April through October, and was then back up to 2.5% in January of 1999. Overall, unemployment is low in York County.

Employment Industries
Of the 18,949 people employed over the age of 16 in 1990, 235 people, or 1.2%, were in the agriculture, forestry, and fisheries industries sector. The largest sector of all was professional specialty occupations, at 20.6%, followed by retail at 15.8%. The next largest occupations were executive, administrative, and managerial occupations; administrative support occupations, including clerical; public administration; precision production, craft, and repair occupations; and manufacturing, durable goods. Government workers comprised 27.9% of the work force, and there were 980 self-employed workers.

Racial and Gender Composition of the Fishing Industry
According to the 1990 Census, there were no fishing vessel captains or officers in York County. However, there were 22 men who engaged in fishing as an occupation. Of those 22 men, 19 were white and 3 were black.

Fisheries Profile, "Other York County"

York County is on the southwestern side of the York River, not far from Hampton and from the mouth of the Chesapeake Bay, giving ready access to the ocean as well as the bay and its tributary rivers. Seaford is the major fishing port; its landings are discussed above, together with Hampton's. There are other waterman fisheries out of York County communities as well. The following fisheries information pertains to them.

York County (in which Seaford is located) is the site of a waterman fishery, over 5 million pounds landed in 1998, valued at over $3 million. Crab pots accounted for 69% of that value and oyster and clam tongs and grabs another 12%. Other fisheries include gill-nets for striped bass, Atlantic croaker and other species; seining (including striped bass and croaker); dredging and scraping for clams and crabs, and some oystering and handlining. Very small amounts of bluefish, butterfish, summer flounder, scup, black sea bass, and smooth and 'other' dogfish were landed and recorded in NMFS weighout data in 1998.

Field Observations and Interviews, Seaford, VA, July 1999

There are two active dealers in Seaford, operated by one family, as well as a couple of out-of-town dealers which purchase small quantities from vessels landing at Seaford. This is mainly a scalloping port. As of July 1999 there were 18 scallop boats at the docks of the family, all between 88-96 feet in length. The family owns and runs 6 of the boats. Another family owns and runs 8 others. The remaining four are owner-operated. Each scallop boat carries a crew of 7. The company owners also have three boats in Alaska crewed by men from the Seaford area. They have had boats in Alaska since 1993.

We talked with a principal of the Seaford business, who explained that about twenty years ago his family moved to Seaford from the Gulf of Mexico, where they had been involved in shrimping. Pressure from imports and regulations led them to leave shrimping and enter scalloping. They chose the Seaford area because it was where scallop boats were being built at the time.

The company employs 25+ people. Three people do the accounting, two of whom handle boats only. Therefore staffing overhead is relatively low. This year about 25% of company income is coming from the three boats in Alaska, and from only three months of work. This percentage is actually down from previous years because production on the local scallop boats has improved.

The person interviewed said there is one Hispanic captain. The number of minorities hired as crew depends on the captain. One company boat is run by a Texas captain whose entire 5 or 6 man crew is Mexican or Mexican-American. On six of the boats at least 50% of the crew are from Mexico, Central America or Puerto Rico. One of the company boats in Alaska has three of four brothers from El Salvador. Occasionally there were female crewmembers in the past, but there are none now. Our informant at the company said at least half of those who work out of these docks live in Seaford or other parts of York County.

Crewing is a major problem here as well, exacerbated by the scallop management plan's restrictions on days at sea. "We've just been through four horrible years regarding crew," said the informant. Local captains have not been able to depend on consistency or quality of crews. "It all depends on the captain and how the boat is managed," he said. He added that "What we have here is a glorified part-time job." Scallop fishermen are only allowed on the water for 120 days a year; the informant said that's not enough incentive to keep good crew for the year. Crew size has been cut from a high of 11 to 13 down to 7 (the minimum crew needed for optimal operation with current gear). The informant thinks that the boats are no longer in balance. By this he means that the crews are no longer sufficient to truly do a good job. With a high turnover rate, the good crew cannot develop good relations over time. He believes this is typical of the whole industry. The company's best men go to Alaska to fish. Thirty or more men are gone at present (including several from Cape May, several from Alaska and the rest from Virginia and North Carolina). One of the company boats took off the whole month of May; during which time the whole crew turned over. The informant feels that the fleet has not learned very well how to live with the 120-day limit. He also thinks that most scallopers do not manage their hours or money well.

The "ice boats," or local scallop boats, go out for 12-14 days at a time. Since crews only have 120 days at sea, everyone on a boat tends to be on the same schedule. The informant said many of the independent boats go out early as often as they can early in the season. He said he encourages them to slow down because prices rise as the season wears on.

There used to be 65 to 75 scallop boats in the Seaford area. Currently they scallop anywhere from east or southeast of the Virginia Capes to the Hague line. This past summer, he was starting to see scallops that were too large to market easily. February to August is their busiest season.

Land use is not a major problem here. The area has been zoned commercial, and the informant said most of the current residents knew that when they came 20 years ago. The business has now been around longer than most of the residents. There used to be a crab plant next door, but it closed. There is an industrial welder down the street that services the company's boats and factory. The family had more problems with "concerned neighbors" in the first five years of being at their present location than they have had in the last fifteen years. "At times we were scapegoated. Some complained about the trucks, the traffic." He said that every year management talks to the truck drivers about respecting the residential nature of the surrounding community. Since starting that, "we don't get many phone calls." They "adopted" the road that the business is on and clean it every six weeks.

They just recently started retailing to the local community. It has not been profitable to open an actual retail market, so they sell in small quantities to those who know they're there. They donate 50 tons of ice a year for local functions. They make no financial contributions and do not pretend to compete with the donations from the Coca-Cola factory nearby. Each of the 4 managers may donate one 40-lb. bag of scallops to whomever they wish each year.

The informant has been involved in fisheries management for years but has cut back because he was doing too much traveling. And he felt that there were too many meetings that weren't productive. He said the most active and effective association in the area is the Chesapeake Bay Waterman's Association. He knows of no associations for offshore fishers that are effective, and thinks that there may not even be any active ones.

Northampton County Profile (includes Cape Charles and Oyster)

Population
According to the 1990 Census, Northampton County had a total population of 13,061. Women outnumbered men by 7.2%. The entire population was rural, though only 4.5% live on farms.

Racial and Ethnic Composition
Of the population, 52.7% are white and 46.2% are black. There were small numbers of American Indians and Asian residents. The Hispanic population was also very small at 2.0%. Only 234 people in the county were foreign born, and 79.3% of the native-born population was born in Virginia. The most prevalent ancestors reported were English (2,288 people); United States or American (1,733 people); and Irish (1,064 people).

Age Structure
The 25 to 44 year-old age group was the largest, at 3,455 people or 26.5%. Population under 18 years of age was 25.4% and 19.8% of the population was 65 years of age or older.

Household Composition
Of the 5,129 households in Northampton County, 68.6% were family households. Of the family households, 48.4% contained married couples and 16.1% were headed by single women. An average of 2.5 people were in each household, but 27.8% of the households were occupied by householders living alone.

Of the 5,129 households, 34.3% were renter occupied. There were 1,054 vacant housing units in the county, 344 or which were for seasonal, recreational, or occasional use. The homeowner vacancy rate was 2.1 % and the rental vacancy rate was 7.5%. The median value of the owner-occupied housing units was $47,700 in 1990 and median rent was $151. One-unit detached housing comprised 77.7% of all housing units and mobile homes and trailers 15.0%.

Educational Trends

In Northampton County, 57.3% of the population age 25 or older was a high school graduate or higher; 12.4% held a bachelor's degree or higher.

Income
According to the 1989 Census, per capita income for the county was $10,176 and median household income was $18,117. Of the 12,821 people for whom poverty status was determined in 1989, 3,405, or 26.6% were below the poverty line.

Employment
Of the 10,095 people 16 years of age or older in Northampton County in 1990, 55.2% were in the labor force. Of these, 99.4% were in the civilian labor force, of which 6.9% were unemployed. More recent unemployment figures for the county were 6.6% in 1997 and 5.4% in 1998. The county shows seasonal shifts in unemployment. For example, in 1998, unemployment was 7.6% in January, ranged from 4.0% to 5.2% in April through October, and was then back up to 6.0 in January of 1999.

Employment Industries
Of the 5,160 employed people 16 years of age or older, 660, or 12.8% were in the agriculture, forestry, and fisheries industries sectors. The largest sector of all was retail, at 16.0%, followed by service occupations, except protective and household, at 12.6%. The next largest occupations were professional specialty occupations; farming, forestry, and fishing occupations; precision production, craft, and repair occupations; sales occupation; and health services. Government workers comprised 17.3% of the work force, and there were 784 self-employed workers.

Racial and Gender Composition of the Fishing Industry
According to the 1990 Census, there were 9 fishing vessel captains or officers in Northampton County, all of which were white males. There were 127 men engaged in fishing as an occupation; 99 were white males and 28 were black males.

Fisheries Profile, Northampton County, VA

Northampton County is at the southernmost tip of the Delmarva peninsula. Among its fishing ports are Oyster, inside the barrier islands of the Atlantic coast, and Cape Charles, at the entrance to the Chesapeake Bay, but most of the landings come from smaller sites coded as "Other Northampton" in NMFS weighout data. The fisheries are inshore and estuarine, dominated by blue crabs, Atlantic croaker, hard clams, and horseshoe crabs (Table VA-N2). Weakfish/squeteague and striped bass are among the 45 other species landed commercially in this area of Virginia.

Reflecting the importance of blue-crabs, the most important single gear-type is the blue crab pot (Table VA-N1). Pots are also used for conch, eel, and fish (the 1998 catches of the fish pots were Atlantic croaker and northern puffer, the latter a most unusual specialty). Dredges are used for hard clams, conch, horseshoe crabs, and blue crabs. Scrapes are used for crabs and eels; clams are harvested with patent tongs and "by hand."

Pound-nets are also important, both for crab and for fish. The fish pound nets catch Atlantic croakers, striped bass, summer flounder, weakfish and others, totaling 32 species. Otter trawl and "unknown" constitute the next largest gear types, totaling 8% of value; both were almost entirely horseshoe crab harvests in 1998. Gill-nets are used for a large variety of species; drift gill nets for 30 species, including striped bass, Atlantic croaker, and spot; sink gill nets for 25 species, including American shad and weakfish. The NMFS dealer weighout data used for landings do not completely reflect the active, inshore fishery of Virginia, which is recorded by the State of Virginia. On the other hand, they do indicate the variety of techniques and fisheries.

Table VA-N1: Landings by Gear Type, Northampton County, VA, 1998

GEAR TYPE: NORTHAMPTON CO., VA	LBS (%)	VALUE (%)
By Hand	0.3	2.3
By Hand, Oyster	0.0	0.0
Common, Haul Seine	0.0	0.0
Dredge, Clam	0.3	3.4
Dredge, Conch	0.1	0.3
Dredge, Crab	6.4	7.9
Dredge, Other	0.3	0.1
Gill Net, Drift	6.1	4.9
Gill Net, Sink	4.7	4.4
Gill Net, Stake	0.1	0.1
Handline	0.2	0.4
Pots & Traps, Blue Crab	28.7	33.6
Pots & Traps, Conch	0.4	1.6
Pots & Traps, Eel	0.0	0.0
Pots & Traps, Fish	0.1	0.2
Pound Net, Crabs	0.2	0.6
Pound Net, Fish	24.0	14.7
Scrapes	0.0	0.1
Tongs & Grabs, Clam, Patent	0.0	0.3
Otter Trawl, Bottom, Fish	16.7	13.9
“Unknown” (Horseshoe Crab)	11.4	11.1

Total Landings, rounded, 1998: 8,468,400 lbs.
Total Value, rounded, 1998: $5,001,400 dollars
Note: "0.0" indicates some activity but less than 0.06%

Table VA-N2: Landings by Major Species, Northampton County, VA, 1998

MAJOR SPECIES: NORTHAMPTON CO., VA	LBS. (%)	VALUE (%)
Bass, Striped	1.3	3.1
Crab, Blue	34.9	41.2
Crab, Horseshoe	28.2	25.2
Croaker, Atlantic	21.4	13.1
Quahog	0.5	2.9
Spot	2.4	1.4
Conch	0.8	2.9
Clams, Bloodarc	0.2	2.9
Weakfish	5.1	2.5

Number of Species: 49

Other species of MAFMC interest, by percentage value 1998: Bluefish (0.6), Butterfish (0.1).

The three main commercial ports in Northampton County are Cape Charles, Oyster, and Willis Wharf. Descriptions of these ports, courtesy of Jim Jenretto of Cape Charles (personal communication Feb. 6, 2000), are supplemented by field observations of Oyster.

Cape Charles, VA

The town of Cape Charles is the nearest port to the mouth of the Chesapeake Bay and Atlantic Ocean along the bayside of the Eastern Shore. It is also the only port deep enough for larger fishing vessels such as offshore trawlers and surf clammers. At one time there was a large surf clamming/ocean quahogging fleet operating out of Cape Charles as well as two clam processing plants across the shore in the town of Oyster. One of the processors still owns its docks in downtown Cape Charles. All of the surf clam boats now operate from Ocean City, MD, Atlantic City, NJ, and points farther north along the Eastern Seaboard because of higher yields of usable product from clams in more northerly waters. Presently crabbers, gill-netters, eelers, and fish potters are the primary users of Cape Charles harbor as well as King's Creek Marina on the north side of town. The marina is due to undergo total renovation in the winter of 2000-2001, and the commercial fishermen are concerned that they will not be able to afford to remain there. The renovation is also being protested by one of the largest cultured clam operations on the East Coast, which is located nearby, at the entrance to King's Creek.

Oyster is located approximately 6 miles to the west of Cape Charles on the ocean side of the Eastern Shore. Presently it is home to two seafood buyers but no longer has any operating surf clam processors or their boats. The surf clam industry dominated until a few years ago. Difficulties obtaining permits for processing due to water quality concerns as well as higher clam yields in more northerly waters contributed to the firms' decisions to move boats and processing to other ports, including New Bedford, MA, Atlantic City, NJ, and Mappsville, VA. One of the clam processing plants has been torn down.

During the season, there are 4 or 5 boats in the 35 to 45 foot range that operate offshore in conch (whelk) and spiny dogfish fisheries. However, most commercial fishermen operating from this port work in clamming by hand, dredge, or patent tong, crabbing by potting or dredge, or fishing by handline or gill net. There are also several people involved in the cultured clam industry.

Field Observations and Interviews, Oyster, VA, July 1999

There is a significant amount of clam farming going on in Oyster and the surrounding area. An informant at a local wholesaler in Oyster said there are 40 million clams farmed in "South Bay, the Point, and Plantation Creek." His company employs 8 men, all former watermen. Very few young people are getting in to commercial fishing, we were told. This is mostly a farming area, but being transformed by exurbanites. Many of the houses in the are just outside Oyster are owned by "retirement seekers from New Jersey." The Nature Conservancy has been buying up land in the area as well.

Most of the clam harvesting is done by independents using their feet, or treading. He said there are 10 to 12 boats measuring 16 to 23 feet that usually dock here as well as 30 to 40 foot boats. Oyster used to be the site of a surf clam processing plant but it moved to Massachusetts. Another packing house is across the creek. They buy what little fish is caught in this area -- croaker, spot and especially drum, which is caught in the spring. This used to be a big oyster area. He said it's too cold to fish there in the winter. All of the boats are run by local fishermen. There is one woman who fishes in Oyster.

Willis Wharf, VA

Willis Wharf is another seaside community with strong commercial fishing ties. It also was once the site of a surf clam processing plant and a small fleet of surf clam boats. Now there are two hatcheries for cultured clams as well as at least one seafood buyer. As with Oyster, the commercial fleet consists primarily of boats from 16 to 30 feet long whose purpose

is to participate in the clam, crab, or gill net fisheries. Both of the seaside communities of Oyster and Willis Wharf have been hurt also by the severe decline of the hand harvest oyster industry.

Accomack County Profile (includes Chincoteague and Wachapreague)

Accomack County shares the southern end of the Delmarva peninsula with Northampton County. Wachapreague and Chincoteague are sites of inlets through the barrier island system on the Atlantic ocean side.

Population
According to the 1990 Census, Accomack County had a total population of 31,703. Women outnumbered men by about 5.5%. Rural population was 88.7%, though only 1,079 people lived on farms (3.4%).

Racial and Ethnic Composition
Of the population 64.5% was white, followed by black at 34.5%. There were small numbers of American Indian and Asian residents. The Hispanic population was also very small, at 1.4%. Only 405 people in the county were foreign born, and 70.3% of the native born population was born in Virginia. The most prevalent ancestries are English (6,028 people); United States or American (4,841 people); and German (3,032 people).

Age Structure
The 25 to 44 year-old age group was the largest, at 8,828 people, or 27.8%. Population under 18 years old was 23.7% and 18.5% was 65 or older.

Household Composition
Of the 12,653 households in Accomack County, 69.4% were family households. Of the family households, 75.8% comtained married couples and 18.9% were headed by single women. An average of 2.46 people were in each household, but 27.4% of the total householders lived alone.

Educational Trends
In Accomack County, 59.9% of the population 25 years or older was a high school graduate or higher; 9.2% held a bachelor's degree or higher.

Income
According to the 1989 Census, per capita income for the county was $10,506 and median household income was $20,431. Of the 31,103 people for whom poverty status was determined in 1989, 6,107, or 19.6% were below the poverty line.

Employment
Of the 24,985 people 16 years of age and older in Accomack County, 59.8% were in the labor force. Of these, 98.3% were in the civilian labor force, of which 6.8% were unemployed. More recent unemployment figures for the county were 9.4% in 1997 and 6.6% in 1998. The county shows seasonal shifts in unemployment. For example, in 1998, unemployment was 10.2% in January, ranged from 4.9% to 6.9% from April through October, and then was back up to 9.6% in January of 1999.

Employment Industries
Of the 13,690 employed people 16 years of age or older, 9.1% were in the agriculture, forestry, and fisheries industries sector. The largest sector of all was retail, at 18.7%, followed by manufacturing, nondurable goods, at 15.3%. The next largest occupations were service occupations, except protective and household; precision production, craft, and repair occupations; Administrative support occupations, including clerical; sales occupations; and

handlers, equipment cleaners, helpers, and laborers. Government workers comprised 16.3% of the work force, and there were 1,509 self-employed workers.

Racial and Gender Composition of the Fishing Industry
According to the 1990 Census, there were 25 fishing vessel captains or officers in Accomack County, all of them white men. There were 360 men and 12 women engaged in fishing as an occupation. Of the men, 334 were white and 26 were black. Of the women, all 12 were white.

Fisheries Profile, Accomack County and Chincoteague, VA

The visiting otter trawl fishery accounts for almost half of Chincoteague's 1998 landed value; summer flounder predominates in this fishery and is the leading species for landed value (39%). Like other Mid-Atlantic otter trawl fleets, this one is highly diverse, landing 19 species in 1998, led by summer flounder, black sea bass, and Loligo squid. There is a small drift gill-net fishery for striped bass, Atlantic croaker and other species and a large sink gill-net fishery (27% of Chincoteague's value), mainly for angler, but also spiny dogfish, Atlantic mackerel, and other species. Angler was almost as valuable as fluke in 1998. Some handlining and longlining for tunas and sharks takes place, and in1998 16% of the value came from fish pots, mainly black sea bass. Less than 5% of Chincoteague's fishing activity, in terms of value, came from clamming, crabbing and other estuarine and bay fisheries, which otherwise predominate in the Virginia and Maryland region.

Table VA-AC1 shows 1998 landings and value, broken down by percentage for gear type and major species, combining Chincoteague's landings with those of the many small waterman fisheries of Accomack County, as well as the port of Wachapreague. Seventy-two species were landed in 1998, primarily blue crabs. Crabs are caught with dredges, pots, scrapes, and trot-lines. There is also oystering and hard-clamming. Angler and summer flounder, mainly from Chincoteague's gill-net and otter trawl fisheries, account for 2.2% and 3.8% of the county's total value. Striped bass, Atlantic croaker, and conch are other important species.

The major gear types are crab pots (52.2% of value) and conch and fish pots (4.9%); crab scrapes and dredges. Also important are gillnets (19.8% of value); otter trawls; and "by hand" referring to treading, hand rakes, and other techniques used to harvest hard clams, oysters and horseshoe crabs.

Table VA-CH1: Landings by Gear Type, Accomack County, VA, 1998

GEAR TYPE: CHINCOTEAGUE & OTHER ACCOMACK CO, VA	LBS. %	VALUE %
By Hand	0.5	2.4
By Hand, Oyster	0.0	0.0
Dredge, clam	0.1	0.5
Gill Net, Drift	15.0	7.9
Gill Net, Sink	19.5	11.8
Gill Net, Stake	0.1	0.1
Handline	0.0	0.1
Longline Pelagic	0.0	0.0
Pots & Traps, Blue Crab	45.9	52.2
Pots & Traps, Conch	1.5	3.1
Pots & Traps, Fish	1.2	1.8
Rakes, Other	0.0	0.1
Trawl, Otter, Bottom, Fish	3.3	4.4
Cast Nets	0.1	0.1
Seines	0.7	0.3
Dredge, Conch	1.9	1.5
Dredge, Crab	4.4	4.3
Dredge, Oyster	0.1	0.3
Pots & Traps, Eel	0.0	0.0
Pound Net, Crab	0.1	0.3
Pound Net, Fish	3.2	0.8
Scrapes	2.1	7.3
Tongs & Grabs, Patent	0.1	0.7
Trot Line	0.1	0.1

Total Landings, rounded, 1998: 11,077,100 lbs.
Total Value, rounded, 1998: $8,485,000 dollars

Table VA-AC2: Landings by Major Species, Accomack County, VA, 1998

MAJOR SPECIES: ACCOMACK CO, VA	LBS. (%)	VALUE(%)
Crab, Blue	52.2	63.9
Flounder, Summer	2.4	3.8
Angler	**	**
Bass, Striped	1.5	2.7
Croaker, Atlantic	**	**
Dogfish, Spiny	**	**
Quahog	0.6	3.4
Horseshoe Crab	2.5	1.5
Conch	1.6	3.3
Menhaden	2.8	0.3
Spot	8.2	4.1

Number of Species: 72

Note: ** indicates confidential data due to the small number of businesses involved.

Other Species of MAFMC interest, by percentage value, 1998: Bluefish (0.5), Butterfish (0.1), Atlantic Mackerel (0.1), Scup (0.0), Black Sea Bass (1.7), Tilefish (**), Loligo Squid (**).

Field Observations and Interviews: Chincoteague, VA

Chincoteague is a small Atlantic ocean port on the Delmarva peninsula, within Accomack County. There is little of a resident ocean fleet left, the sea clam vessels having been sold when ITQs came into being in 1990. There is only one resident active dealer, but four out-of-town dealers uses this dock as a packing house. Seasonally, draggers and other fishermen come from other states to land their catches in Chincoteague, and there is a small local inshore and bay fishery as well as shellfish farming.

There are several packing houses in Chincoteague, including a small cooperative. An informant at one of the houses said that as of 1997, they handled thousands of fluke, but regulations on the summer flounder fishery put an end to that business. They now handle shellfish and farm raise oysters. They also wholesale some fluke, conch, and scallops that come in as bycatch. He was born and raised in Chincoteague and has worked at this company for 30 years. His whole family worked as watermen as far back as he knows. He said that sea bass, spot, croaker, crabs, and "swelling toad" (blowfish) have been caught in this area.

Because it is difficult to stay in business working only 4 to 5 months out of the year, they've added a restaurant and seafood bar. They supply most of their own restaurant's needs as well as other restaurants. They supply all of their own clams, oysters, crabs and fish, and purchase scallops, trout, spot, and crab from local fishers. (Much of the crab is imported, because the crab industry is declining as well). He believes that oysters will be coming back soon, after their considerable decline. This business employs 75 to 100 people, including 40 shuckers; this is a decline from 130 to 150 people. Some of the shellfish shuckers are black women, from off the island. There are no women fishers here.

There are 15 to 20 gill-net boats, all ranging from 20 to 30 feet in length, in Chincoteague, as well as visiting draggers from North Carolina. In the fluke season, North Carolina draggers come here to land their fish. Two years ago (1997) there were five draggers from New Bedford. However, because they were not here in 1992, the cut-off data used to determine Virginia's quota, they could not return.

Twenty or more years ago there were 14 oyster shucking houses in the area. There were also "old fishing steamers" docking here with surf clams and ocean quahogs, when the offshore clams were abundant offshore. Now there are hotels built on old oyster lands. People who did well oystering or surf clamming have also gone into the motel business, and one raises clams as well.

Our informant said that it is hard to get young people to work on the water, given the state's licensing system. The "Working Waterman's Card" is easy to get but it takes two years and costs $150 a year to maintain it. It also does not guarantee a species license.

Some fishermen hang out at his bar, the Chincoteaque Inn and the American Legion. They go to Bill's Seafood or the Island Family restaurant for breakfast.

Field Observations and Interviews, Wachapreague, VA, July 1999

The one packing house in Wachapreague is owned by a married couple who had a business in another town before coming here 4 to 5 years ago. They have 6 or 7 boats now that go out 20 to 30 miles for croaker, spot, shark (dogfish), conch, and hard and soft crabs. There once was a clam house here as well. The 1998 NMFS landings for Wachapreague were small, mainly gill-netting for horseshoe crabs and pot-fishing for conch and blue crabs.

Captains and crew on the boats are mostly local. In July, 1999 they were fishing for shark (dogfish). Boats come in from North Carolina to Massachusetts. Currently this business wholesales exclusively and sends it product to other wholesalers by common carrier. Plans call for a retail market in the future.

The boats shift from longlining to gillnetting to conch or crab potting. There are usually three crew per boat, all in their 30s and 40s. There are no female fishers in the area.

Other Observations on Wachapreague

In November 1999 Dr. Peter Fricke, of the Sustainable Fisheries Division of the National Marine Fisheries Service, researched the status of Wachapreague as a "fishing community" under the definition of the Magnuson-Stevens Act. His brief study, done by consulting U.S. Census and state and federal fisheries data and making phone calls to port agents and other knowledgeable persons, shows what can and should be done for individual ports when and if they are identified as critical for particular FMPs. With his permission, we reproduce his report on Wachapreague which was prepared in response to review of the spiny dogfish FMP of the New England and Mid-Atlantic Fishery Management Councils.[9] The level of detail provided here was not possible for our study but should be provided in specific FMPs.

"Wachapreague, VA is a small rural, non-farming community on the Atlantic Ocean side of the Eastern Shore of the Chesapeake Bay. It lies in Accomack County and is approximately 60 miles North of Norfolk, VA and the same distance South of Salisbury, MD. Wachapreague provides a sheltered harbor behind a series of barrier islands lying offshore to the East, and is close to U.S 13, a major highway connecting Norfolk and the Carolinas with eastern Maryland, Delaware and Philadelphia. At the time of the 1990 Census, Accomack County had a population of 31,703 and Wachapreague had 313 residents. The town is incorporated, and has three marinas that provide local moorage. Two of these marinas are privately owned, and in addition to moorings each provides a launching ramp, a bait and tackle shop, and a restaurant. The town owns and operates the third marina, which also has a launching ramp. A fish packing house is located next to the seawall, which provides dockage for four vessels owned by the packinghouse. Other businesses in the community include a grocery and a hotel. Respondents report that employment and commercial activity in the community peak in the summer months. Most businesses are reported to rely on the participants in recreational fisheries for their principal earnings, and the commercial fisheries for a year-round trading base.

Wachapreague, VA at a Glance:

Item	Number	Employment or value
Population*	313 persons	
Households*	159 households	
Pop. Aged >64*	41%	
Workforce*	106 persons	
Live and work in community*	32 persons	

[9] **Peter Fricke. 1999. Communities in the Spiny Dogfish Fishery. Silver Spring, MD: National Marine Fisheries Service, Sustainable Fisheries Division. Draft November 12, 1999**

Household income*		
Transfer income	40 percent	
Earned income	60 percent	
Fishery businesses		
Marinas	3	5 persons FTE**
Bait & tackle	2	4 persons FTE
Boat ramps	3	1 person FTE
Restaurants	3	12 persons FTE
Hotel	1	8 persons FTE
Fish dealers	2	3 persons FTE
Packinghouse	1	8 persons FTE
Grocery	1	3 persons FTE
Commercial boats (all)	25 approx.	(75 persons
Homeported	5	seasonally)
Transients:		15 persons FTE
Other VA.	14	
Out-of -State	6 approx.	
Charter boats (all)	15 approx.	(35 persons
Homeported	7	seasonally)
Transients	8 approx.	9 persons FTE
Recreational boats		
Year-round	40-50 approx.	
Commercial fish landings		
(all)	362,167 pounds	$110,104 (100%)
Dogfish	(100%)	$44,480 (41%)
	236,000 pounds	
	(65%)	

* 1989 Bureau of Census data. All other information is for 1997.
** FTE ~ full time equivalent employees; estimate of year round employment

"Once known as the “flounder capital of the world,” Wachapreague continues to be actively involved in recreational fisheries. The marinas provide some 100 slips between them, with between 40 and 50 private recreational fishing boats moored for the full season. Other transient boats use the marina slips, but the greatest use of the facilities is reported to be by trailerable boats launched from the ramps by fishermen travelling from the Norfolk area, Maryland and Delaware. It was reported that, during the summer flounder season (mid-April to mid-September), parking spaces in the community are non-existent at weekends and on holidays because of street parking by boat trailers and towing vehicles. Seven charter boats were reported to be based in Wachapreague year-round, and another eight to ten charter boats, from as far away as Florida, operated from Wachapreague during the flounder season. The charter and party boats homeported in Wachapreague hold Federal permits for Atlantic tuna angling (5), Atlantic tuna general (1), black sea bass (1), NE Multispecies groundfish (1), scup (1), squid-mackerel-butterfish (1), and summer flounder (1).

"Principal inshore recreational fisheries are for summer flounder (fluke), croaker (hardhead) and spot. Striped bass (rockfish), red drum, black drum and sea trout (weakfish) are also reported to be taken inshore. The offshore recreational fishery (mid-June to mid-September) is for bluefin tuna, yellowfin tuna, dolphin (dorado; mahi-mahi), wahoo, white marlin, blue marlin and sharks. The marinas and local sportfishing organizations sponsored nine recreational fishing tournaments in 1997.

Wachapreague Recreational Fishing Tournaments, 1997

Month	Tournament
April	Wachapreague Marina Spring Flounder Tournament
April	Capt. Zed's Wachapreague Spring Flounder Tournament
June	MSSA Tuna-ment
June	Annual Greater Atlantic Bluefish Tournament
July	Eastern Shore Marlin Club Tournament
August	"Chick-charter" Ladies Tuna Tournament
August	Wachapreague Fall Flounder Tournament
August	Fish for Hope Charity Tournament
September	Eastern Shore Marlin Club Fall Tournament

"The commercial fisheries prosecuted by local and transient vessels are spiny and smooth dogfish, flounder, striped bass (rockfish), weakfish (sea trout), scup, black sea bass, mackerel, butterfish, blue crab, shad, quahogs and clams, conch and whelks. Most vessels using the port facilities are reported to be less than fifty feet in length, and operated by a skipper and a crew of two or three fishermen. In 1997, the Virginia Marine Resources Commission (VMRC) reported that 19 commercial fishermen (watermen) licensed by the VMRC made landings of inshore fish species in Wachapreague. Four vessels are owned by the local packinghouse, and are homeported in Wachapreague. Seasonally, the "conch fleet" of vessels, many homeported at Tangier Island in Chesapeake Bay, lands their catches in Wachapreague. Respondents estimate that of 40 vessels in the conch fleet, some 15 land their catches in the community at one time or another during the season. In the dogfish fisheries, the local gillnet vessels are often joined by 3 or 4 transient vessels from North Carolina and between 5 and 10 vessels from the conch fleet. These transient vessels follow the fishery along the coast from the Hampton Roads to Ocean City, using the ports closest to their fishing grounds.

'In 1997, spiny dogfish comprised 65.2 percent of commercial landings by weight and 40.7 percent by value, of all reported landings at Wachapreague. Other landings are made, such as conch, which are trucked by fishermen to other ports and sold there to dealers. These landings will appear in the port-of-sale's landing data and will not be attributed to Wachapreague. Moreover, landings from fishing operations within the three-mile territorial sea or for fish, such as conch, for which Federal permits are not required, do not always appear in the NMFS weighout data. This information is reported to the Commonwealth of Virginia's VMRC as a condition of state permits.

"Two dealers holding Federal permits operate in Wachapreague. One dealer operates the packinghouse, the second offloads from vessels into trucks for direct delivery to retail establishments or processors in other communities. The packinghouse in Wachapreague holds a range of Federal permits for local fisheries that require them, and most reports of landings are provided by this facility to NMFS. In addition to packing the landings of the vessels fishing in the territorial sea and exclusive economic zone, the Wachapreague packing house also is reported to pack finfish and crab landings from Chesapeake Bay fisheries which are trucked to the facility across the peninsula. The packinghouse is family operated and employs 8 to 10 staff on a seasonal basis. The packed

products are shipped to seafood processors by tractor-trailer. It is reported that a dedicated tractor-trailer hauls dogfish, during the season, to processing plants in Massachusetts.

"Wachapreague is an established community, and recognizes its roots in fisheries and agriculture with an annual community fair and exhibits of old photographs and memorabilia. A preponderance of the County and Wachapreague's residents (79 percent) lived in Accomack County in 1985. However, 70 percent of Wachapreague's residents lived in the same house in 1985 as they did in 1990, in contrast to 60 percent of Accomack County residents. The depth of the roots of the community can be seen in the 1990 Census data.

"Wachapreague has an elderly population compared to Accomack county; 41.5 percent of Wachapreague's residents were over the age of 65 years and only 16.2 percent of the residents under 25 years of age in 1990. In Accomack County residents over 65 years of age formed 18.5 percent of the population, while those under 25 years of age comprised 31.7 percent at the time of the 1990 Census. The residents of Wachapreague are white; in 1990 no members of minority groups lived in the community. In contrast, the white residents of Accomack County formed 65 percent of the county's population in 1990.

"The gender balance of the populations of Wachapreague and Accomack County was similar; 47.5 percent male and 52.5 percent female. However, household composition differed markedly between Wachapreague and Accomack County in 1990, due to the distinctive population age structures. In Wachapreague most residents lived in two-person households (46.5 percent of 159 households) and 34.6 percent of the households had one resident. In Accomack County, 38.7 percent of the 12,646 households had three or more persons living together, 34.1 percent of the residents lived in two-person households while 27.2 percent lived alone.

"Of the 313 persons resident in Wachapreague in 1990, 106 were employed in the work force. Of those employed, 32 persons (30.2 percent) worked in the community. In fact 77.4 percent of Wachapreague's work force were working in Accomack County or Wachapreague itself, while 17 percent worked in Northampton County or the Norfolk/Hampton Roads area to the South. Six persons (5.6 percent of the work force) were employed out of state, in Maryland. In Accomack County as a whole, in contrast, only 13 percent of the work force (13,643 persons) worked in their communities of residence, while 84.5 percent worked within the County. Some 882 persons (6.4 percent of the workforce) commuted south to Northampton County or Norfolk/Hampton Roads, and 1,229 persons (9 percent) worked out of state in Maryland. The employment patterns of commuters in part reflects Wachapreague's location in the southern third of Accomack county and the availability of unskilled and semi-skilled work in the poultry farms and packing houses of the Delmarva Peninsula.

"The educational attainments of the residents of Wachapreague and Accomack County as a whole differed. Of the residents over 25 years of age in Wachapreague (n=262), one-third had not completed high school graduation requirements compared to two-fifths of County residents over 25 years of age (n=21,643). In Wachapreague, 14.1 percent had acquired a tertiary education qualification compared to 13.4 percent of residents of Accomack County over 25 years of age.

"While three of Wachapreague's 313 residents lived on farms, no one declared income from farming in 1990. The 1990 census shows that 8 persons were employed in farming, forestry or fishing industries and 5 in farming, forestry or fishing occupations. Employment in transportation was 12 persons. The census also indicates that 58.5 percent of the Wachapreague work force was in the private-for-profit sector and 21.6 percent was self-employed. Information provided by respondents comports with this census data. Since the majority of fishermen are paid on a "share" basis, they are deemed, for tax purposes, to be self-employed. Employment on the four local commercial vessels would be between 12 and

16 persons, and the local charter fleet of seven vessels would provide seasonal employment for between 14 and 18 persons. Year-round employment at the private marinas was estimated to be 8 persons, with seasonal employment up to 15 persons. The packinghouse was estimated to employ 8 to 10 persons year round, with additional staff hired as necessary. Obviously, County residents would fill some of these jobs, since only 32 Wachapreague residents were reported to work in the community.

"The median income of Wachapreague households in 1989 was $19, 917, while that of Accomack County households was $20,431. The older population in Wachapreague introduced significant differences in the income patterns between community households and County households. Of the 159 households in Wachapreague 59.1 percent (94 households) reported earned income in 1989, compared to 74.3 percent of Accomack County households. In Wachapreague, 36.4 percent of the households received retirement income and 56 percent of households received Social Security payments. In contrast, only 18 percent of Accomack County households received retirement income while 37.3 percent of County households received Social Security payments.

"To summarize, Wachapreague demonstrated in 1990 the profile of a rural town with an older, retired population with some 41 percent of residents receiving income in the form of transfer payments from retirement funds and/or Social Security. Of the employed residents of the town, only one-third works within the community. Thus approximately 70 percent of the working population earned income from sources other than the community's businesses. The businesses of the town are fishery-oriented, with respondents suggesting that direct employment and earnings in the recreational and commercial fishery sectors are split 2:1 between the two sectors. Since the recreational fishery is highly seasonal, peak employment in Wachapreague may exceed 100 jobs at the height of the summer season.

"The dependence of some 20 percent of community households for income earned from fishing related activities indicates that this is a fishery dependent community economically. As noted it is estimated that two-thirds of this income is related to recreational fisheries and one-third to commercial fisheries. The proportion of long-term residents, fishing related community events and activities, and the number of retirees, indicate that the social and cultural needs of the population are satisfied by this water-front community and that fishing, both commercial and recreational, is substantially engaged in by the residents of the community.

"With regard to the dogfish fishery, the packinghouse and its vessels employ some 20 persons. Any changes in the dogfish fishery would directly impact these persons and this business. Alternative employment might be available in an expansion of the services related to the recreational fishery and in charter-boat operations in the long-term, but more likely displaced packing house employees would need to find work in the poultry processing and trucking businesses of Accomack County and the Delmarva Peninsula. For the watermen affected by any changes in the dogfish fishery, the future is less bright. Dogfish make up 65.2 percent, by weight, of the catches landed in Wachapreague, and thus a major portion of the local vessels seasonal round of fishing. The recreational fishery is largely a small-boat and trailer fishery, and future opportunities to enter the seasonal charter fisheries would require a significant upward demand in charter boat services. In a worst case scenario of loss of the dogfish fishery due to stock failure or management action, the community would probably lose a significant portion of its community-based winter employment, and would have to rely on seasonal recreational fishery-related employment and businesses. "

Fisheries Profile, Other Virginia Ports

To this point we have focused on the ports known to be engaged in ocean fisheries, as well as some of the waterman fisheries surrounding them, namely the Delmarva peninsula

counties of Northampton and Accomack and York County on the western shore of Virginia. We here summarize NMFS weigh-out data on the rest of Virginia's fishing communities, which are found up the Potomac River toward Washington, DC, as well as up the York and James Rivers, and which are found on the western shore of the Chesapeake Bay in Northumberland, Middlesex, Mathews, Gloucester and other counties. Note that the State of Virginia's Marine Resources Commission has its own weighout landings data.

Landings are dominated by the menhaden fishery, which provided 92% of the weight of fish and shellfish landed in 1998 and 60% of the value, for this category. Reedsville, VA, (Northumberland County) is the site of a menhaden processing firm, and menhaden are landed at numerous places around the bay. They are caught primarily in purse seines and pound nets. Purse seines accounted for 60% of all landings by value, and fish pound-nets produced 6% of the value.

Blue crabs are next in significance and activity: 4% of the landings and 26% of the value in 1998. The pot fishery is very important. Crabs are also caught in dredges in places such as Cape Henry; in special pound-nets; with scrapes; and with baited trot-lines. Oysters and hard clams or quahogs (total 2.5% of value) are still important, although the oyster fishery has declined greatly, and oyster shucking houses have disappeared from many former sites. In some areas oyster and clam farming is growing. The harvest techniques include treading ("by hand"), dredges, scrapes, and tongs and grabs, patent and other.

Recovery of striped bass (rockfish) in the region is reflected in its value (2.6% of the total). Common or haul seines, fyke nets, pound nets, gill-nets, and handlines are used for rockfish. A similar complex of fishing techniques is used for another species of high value in the region, Atlantic croaker (4% value).

Table VA-O1: Landings by Gear Type, Other Virginia, 1998

GEAR TYPE : OTHER VA	LBS. (%)	VALUE (%)
By hand, by hand, oyster	0.0	0.0
Common, Haul Seine	0.6	1.3
Dredge, Crab	0.3	1.8
Dredge, Other	0.0	0.0
Dredge, Oyster	0.0	0.2
Fyke Net, Fish	0.0	0.0
Gill Net, Drift	0.1	0.5
Gill Net, Sink	0.6	2.8
Gill Net, Stake	0.0	0.1
Gill Net, Other	0.0	0.0
Gill Net, Set/Stake, Sea Bass	0.0	0.0
Handline	0.0	0.1
Longline, Bottom	0.0	0.0
Pots & Traps, Blue Crab	3.8	23.5
Pots & Traps, Eel	0.0	0.3
Pots & Traps, Fish	0.2	0.2
Pound Net, Crab	0.0	0.6
Pound Net, Fish	2.7	5.7
Purse Seine Menhaden	85.6	55.9
Purse Seine, Other	6.0	3.9
Scrapes	0.0	0.1
Tongs & Grabs, Clam, Patent	0.0	1.5
Tongs & Grabs, Oyster	0.0	0.2
Otter Trawl, Fish	0.0	0.0
Trot Line	0.0	0.0

Total Landings, rounded, 1998: 518,622,600 lbs.
Total Value, rounded, 1998: $63,551,500 dollars

Note: The entry "0.0" indicates some activity but less than 0.06 percent.

Table VA-O2: Landings by Major Species, Other Virginia, 1998

MAJOR SPECIES: OTHER VA	LBS. (%)	VALUE (%)
Bass, Striped	0.2	2.6
Crab, Blue	4.1	25.9
Croaker, Atlantic	1.4	4.0
Menhaden	92.3	60.3

Number of Species:62

Other species of MAFMC interest landed in other Virginia ports include Butterfish (0.0% value), Summer Flounder (0.5%, mostly from pound nets), Atlantic Mackerel (0.0), Scup (0.0), and Black Sea Bass (0.0).

7. North Carolina's Fishing Counties and Ports

The commercial fisheries of North Carolina are found in the coastal ports of Wanchese, on Roanoke Island, and Morehead City, Beaufort, Ocracoke, and Hatteras on the Outer Banks. They also take place from various inland communities on the sounds --Pamlico, Albemarle, Core, and others--from which people fish in both the sounds and the ocean. Marine and estuarine commercial fishing is very widespread, including communities in 33 counties of the state (Table NC1). In the 5 counties representing the fishing ports mentioned above (Dare, Carteret, Hyde, Pamlico and Beaufort), 1998 landings ranged from about 10 to over 80 million pounds. These are the counties we studied in some detail; their 1998 landings represented over 70% of the total value for the state. However, in 9 other counties between 1 and 4.5 million pounds were landed, and in 19 more counties the landings were less than 1 million pounds, and in some cases less than 1,000 pounds. We provide brief fisheries profiles for most of these counties. Altogether they accounted for little more than 2% of the total state value. Note that commercial fisheries data are kept on a county basis rather than port basis by the North Carolina Division of Marine Fisheries, the source of the data used, and that many of the data are confidential, due to there being only one or two dealers involved.

An interview with a representative of the state's marine fisheries agency revealed that, like the other Mid-Atlantic states, North Carolina's fisheries are highly diverse, oriented toward the rich estuarine and inshore environments but extending offshore and up and down the coast as well. Diversity includes gear-types used, some of which are unusual in the Mid-Atlantic region. An example is flynetting, which had been used south of Cape Hatteras for catching weakfish and croakers but was banned in certain areas in recent years because of the bycatch of small weakfish. Also typical of Mid-Atlantic fisheries, North Carolina fishers and fishing companies must be adaptable to survive. For example, a company involved with squid joint ventures is now relying heavily on Pamlico Sound haul seiners for much of its fish during the summer months (spot, croaker, Spanish mackerel, some flounder). One outstanding characteristic of North Carolina fishermen is how mobile they are; they not only move from one area of the state to another, as in the case of the inland and inshore fishermen, but also move to various offshore latitudes off the east coast. The ports of Virginia, New Jersey, New York Connecticut, Massachusetts are well known to North Carolina offshore fishers. According to a now-retired fisherman living in Belhaven in Beaufort County, during the '80s he and some other North Carolina fishermen followed summer flounder up the coast to New England, hauling in tremendous catches off Connecticut and Massachusetts, thereby helping to further develop the summer flounder industry in that part of the Atlantic Coast. When the Mid-Atlantic Fishery Management Council's summer flounder regulations were instituted, based on state-by-state quotas, some of these states effectively forced the North Carolina fishers closer to home.

Excellent descriptions of North Carolina's fisheries are available and need not be repeated here in detail (Diaby 1999, North Carolina Division of Marine Fisheries 1993, and references cited below). A major trend has been the increased role of flounders, dogfish and tunas in the value of North Carolina's fisheries (Diaby 1999: 5). Another is the decline of clams and oysters and the increased importance of peeler and soft crabs.. Another generalization is that although the ocean-going fisheries are major producers of seafood and value, the estuarine and riverine fisheries continue to play significant, although changing, roles, and "fishing communities" are found scattered around huge areas of the state. "Traditional" techniques such as pound-nets and haul-seines continue. Thus, although crabbing--with pots, trotlines, and trawls-- is the major activity in the bays and sounds, pound nets are also important. Depending on the time of year, there can be hundreds of pound nets in each of the state's large sounds, there being no limit as yet to this fishing technique.

Table NC1: 1998 Commercial Landings for North Carolina by County (sorted by value)

County	Pounds	Value
Top Five Counties:		
DARE	36,625,788	23,511,472
CARTERET	80,417,358	21,332,074
HYDE	16,079,780	10,921,548
PAMLICO	10,502,333	9,271,847
BEAUFORT	10,146,982	8,035,148
Other Counties with Landings over 1,000,000 Pounds		
ONSLOW	2,667,317	5,219,210
BRUNSWICK	2,998,815	4,849,211
PASQUOTANK	3,823,232	3,498,661
TYRRELL	4,745,545	3,317,877
NEW HANOVER	2,042,012	2,897,820
PERQUIMANS	1,911,045	1,819,884
CURRITUCK	2,080,720	1,813,167
CAMDEN	1,691,873	1,533,701
CHOWAN	1,801,901	918,756
Counties with Landings under 1,000,000 Pounds		
PENDER	*	*
CRAVEN	*	*
WASHINGTON	*	*
BERTIE	*	*
COLUMBUS	*	*
PITT	*	*
HERTFORD	*	*
HALIFAX	*	*
DUPLIN	*	*
LEE	*	*
BLADEN	*	*
MARTIN	*	*
WAKE	*	*
WAYNE	*	*
JONES	*	*
LENOIR	*	*
ORANGE	*	*
ROBESON	*	*
JOHNSTON	*	*
Total	**177,534,701**	**98,940,376**

Source: North Carolina Division of Marine Fisheries Listed in descending order by value of landings
* = Data not shown to protect confidentiality

Some details on the ocean fisheries are in order. The winter trawl fishery is a major producer, from September to April, and involves fishing grounds as far north as New York

(North Carolina Division of Marine Fisheries 1993: 4). Catches are landed at ports from Wanchese to Beaufort-Morehead City, and throughout the Pamlico Sound. Wanchese is, however, the site of the primary landing facilities; in the early 1990s 30-40 vessels offloaded at 6 fish houses (North Carolina Division of Marine Fisheries 1993: 4). Beaufort-Morehead City is the 2nd largest port, with 5-6 fish houses serving 10-15 full-time trawlers. In the early 1990s there were 26 to 32 other trawlers fishing out of both Oregon and Ocracoke Inlets and packing out of ports of Lowland, Vandemere, Bayboro, Englehard, Pamlico Beach and Oriental.

The nearshore flounder segment of this fishery, November through January, is when the mid-Atlantic trawler fleet, and North Carolina, concentrate on summer flounder. Before and after this period, the North Carolina fleet might also engage in two other techniques: deepwater fishing and flynetting. Some traditionally fished for summer flounder off southern New England as well. The deepwater fishery mainly involves boats from Wanchese, as well as Hampton, Virginia, fishing off shoals to the north of Norfolk canyon, targeting summer flounder, scup, and black sea bass. A variety of trawls may be used, including flynets, but flynetting is also seen as a discrete fishery. The flynet is a high-rising trawl, used in deep water for schools of scup but generally used in shallower waters for Atlantic croaker, weakfish, bluefish, and butterfish. Sometimes huge catches are made, requiring the marketing of fish for non-food uses ("scrap fish"), and raising concerns about effects on fish populations.

The importance of an estuarine trawl fishery is unique to North Carolina (North Carolina Division of Marine Fisheries 1993: 29). Most shrimp are caught in estuarine waters, and trawling also takes place for blue crabs. Most brown and pink shrimp are caught in flat otter trawls; white shrimp involve different trawls ("tongue trawls"), and channel nets and butterfly nets may be used on all species. The fishery involves 45-60foot vessels, with single or multiple trawl nets; the larger vessels may stay out on the sound for several days at a time, while smaller ones take daily trips. Crab trawling involves boats 30-50 feet, shrimpers which convert during non-shrimping seasons. Both of these fisheries are receiving increased scrutiny because of by-catch and benthic habitat issues (North Carolina Division of Marine Fisheries 1999).

The ocean sink net (gill net) fishery of North Carolina is also a multispecies fishery, which typically takes place in the winter and spring (December - April), in inshore waters along the beaches, focusing on the wintering grounds for bluefish, weakfish and Atlantic croaker. The fleet is usually found at Hatteras; at the beginning and end of the season, some may also be at Wanchese, and there are crews that fish out of other places as well (North Carolina Division of Marine Fisheries 1993: 37). This fishery rapidly expanded during the late 1980s.

Another important North Carolina fishery is for offshore reef fish, notably black sea bass and other groupers and snappers, as well as porgies, grunts, tilefish, and other species. Wreckfish were important in the early 1990s, too (North Carolina Division of Marine Fisheries 1993: 42), but did not appear in the 1998 landings. There is an important recreational headboat and charter boat fishery, as well as a commercial fishery, using handlines, bottom longlines, and fish traps. The most important ports are Beaufort-Morehead City and Southport. In the early 1990s, approximately 40 full-time commercial vessels landed reef fish and probably twice that many other boats, charter boats in the off-season and non-resident boats (North Carolina Division of Marine Fisheries 1993: 42).

Interview, July 1999

We talked at length with a representative of the North Carolina Department of Environment and Natural Resources, who provided some of the generalizations used above as well as a sketch of regulatory issues.

Before we arrived at the state offices, a number of people had already complained vehemently to us about the summer flounder regulations. The state official said this is

because “anywhere along the water [whether they fish in the sounds, inshore or offshore], *any* fisherman is affected by the summer flounder regulations”. North Carolina apparently has been #1 in summer flounder landings in recent years and has almost 32% of the commercial allocation for the east coast. It has also been #1 in commercial landings of bluefish in the last 5 years, and #2 in spiny dogfish. He said that anyone inshore or offshore can be involved in the bluefish fishery since the blues are found in both the sounds and the ocean. He said that North Carolina also has a significant monkfish fishery, but that state fishermen were closed out of it this year (1999) due to a missed control date. He then reiterated what another individual said about sea scallops and added that the nearest bed, 30 to 40 miles off the North Carolina/Virginia line, had been closed last year.

According to our informant, weakfish are very significant to the North Carolina industry. He also mentioned that squid are taken by just a few people. One of the individuals who takes squid docks his boat in Hampton, VA. This individual had docked at Oregon Inlet, which gives Wanchese boats access to the ocean but reportedly shoals over from time to time. He decided to move his boat after he went aground there.

The case of black sea bass is complicated. North of Cape Hatteras, black sea bass comes under the Mid-Atlantic Fishery Management Council's plan, lumped together with summer flounder and scup. South of the cape, however, it comes under the South Atlantic Fishery Management Council plan as snapper and grouper. The two plans used to have different size limits but now both share a 10” limit. However, while the Mid-Atlantic plan has no creel limit, the southern plan has a 20 fish per day limit. Fishing techniques are also quite different north and south of the cape. There is more trawling than potting for black sea bass north of Hatteras, while the opposite is true south of the cape. Our informant said that the black sea bass fishery is more significant than that for scup, but less significant than either summer flounder or weakfish. For the trawlers, it is often an incidental catch when they go for squid or butterfish.

Socio-Economic Dimensions of the Fisheries

Some families have developed large harvesting, processing and marketing operations, but small-scale owner-operator fishing, often involving members of a household, remains the norm. In more highly developed coastal areas, such as Beaufort and Wanchese, recreational fishing has a major presence as well, and fishing infrastructure competes with that of tourism and housing development.

Fishing is important to North Carolina's economy. Diaby (1999) showed that the 228.5 million pounds of seafood landed in 1997 generated as many as 27,000 direct jobs, in harvesting, processing, wholesale, retail, and food service, and that through its direct and indirect efforts, the commercial harvesting sector alone may have generated about 22,000 jobs in 1997 (Diaby 1999: vi). However, these figures are estimated based on the questionable assumption that the number of "endorsement to sell" (ETS) licenses is a good measure of participation; actual participation is likely to be considerably lower (Diaby 1999: 35).

Diaby's study, which included data from trip tickets, the state ETS licenses, and other sources, also showed average fishing incomes in comparison with average annual wage per worker in each of the coastal counties of North Carolina. In the counties with major fisheries (Hyde, Pamlico, Dare, Beaufort, and Carteret), average income from commercial fishing exceeded the average annual income for all workers (Diaby 1999: 35). This was also true for Tyrell County. In the other counties, income from fishing was considerably lower than the average annual wage per worker; this is interpreted as due to the fact that many commercial fishermen in those counties are part-time, supplementing other jobs or retirement income (Diaby 1999:34). However, there is no question that many North Carolina communities are heavily dependent on fishing. The people who fish and process and market fish live and work

out of the small towns and unincorporated communities that are scattered along the state's estuarine shoreline.

On behalf of a state steering committee set up to make plans for the future during North Carolina's moratorium on entry to the commercial fisheries, anthropologists and others from East Carolina University and Duke University provided a valuable set of data on the socio-economic characteristics of North Carolina fishers. The regions used in their studies, carried out in 1995, were (1) the Albemarle Area (Currituck, Camden, Paquotank, Perquimans, Chowan, Bertie, Washington, and Tyrell Counties); (2) Dare County; (3) Southern Area (Brunswick, Pender, Newhaven, and Onslow Counties); (4) Pamlico Area (Craven, Pamlico, Beaufort, and Hyde Counties); (5) Carteret County; and (6) Inland Counties. Although they cannot be associated with specific ports or, in most cases, specific counties, their data provide valuable information about the social and demographic features of the fisheries and should be key sources for social and economic impact analyses for specific fishery management plans. Only a few generalizations from their reports can be offered here.

According to Johnson and Orbach (1996), who interviewed a sample of 388 people with commercial fishing licenses and/or "endorsements to sell" (ETS), most North Carolina commercial fishermen have highly diversified annual rounds, which often includes shoreside work such as construction or farming. The patterns and combinations vary among regions. For example, in the Carteret County area and the southern area (Onslow, Pender New Hanover, and Brunswick counties), shrimp trawling was the most important but it ranked third in the Pamlico area (Hyde, Beaufort, Pamlico, and Craven counties). Shrimp trawlers in Dare County were unlikely to use crab pots but those of the southern counties did. Some are more vulnerable than others to environmental and regulatory change, too; thus, Johnson and Orbach (1996: 66) noted that fishermen of the Pamlico area were at most risk because they have fewer alternatives available to them.

The commercial fishermen surveyed were 96% male, 97% white/Caucasian, and 2.7% African-American. Part-timers tended to be older than full-timers, possibly because of participation by retirees (Johnson and Orbach 1996: 9). Education levels, family size, average age and years fished, household composition and the role of fishing for households, among other variables, vary greatly among the regions they studied. The heterogeneity found in these and other variables suggests the need for focused, context-specific studies (Johnson and Orbach 1996: 12). It is interesting though that in all of the areas studied families are both dependent on and involved in fishing. Although in all areas the dominant pattern is that the respondent was the only one in the household engaged in fishing (ranging from 58% in the Pamlico Area to 77.4% in the Carteret area: p. 19), a spouse or significant other is involved in from 17% (Carteret) to 21% (Albermarle Area) of the households (p. 20). Similarly high percentages of households have offspring involved. The general pattern is that the most rural areas have the highest participation of family members (spouses and offspring and parents) in the commercial fishing enterprise (p. 20). But another significant feature is that 67% of the respondents' spouses worked either full-time or part-time outside fishing; in this day and age it is very difficult to live on fishing alone.

One important point from these studies that should be taken into account throughout the Mid-Atlantic and South Atlantic regions, is that one cannot always rely on state commercial license data as indicators of how many people are engaged in commercial fishing. In North Carolina, fewer than 10% of the 20,000-plus fishermen in the state who held commercial fishing licenses in 1994 actually sold more than $10,000 worth of seafood annually (Griffith and Rulifson 1996: 2). Some fish primarily for personal consumption or recreation, some have licenses because of tax and other financial benefits which accrue to possessors of commercial licenses, and some hold licenses for future use, even though they may not have ever fished commercially (Johnson and Orbach 1996: ii-iii). A related point is difficulty distinguishing between recreational and commercial activities and motives, as shown in a special study of the undocumented "recreational" shrimp trawl fishery (Griffith and Rulifson 1996). The

classificatory problem has been addressed through research identifying seven categories: full-time, owner-operator fishermen; full-time fleet fishermen; part-time, retired or poor fishermen; part-time fishermen with full-time shore-based employment; professional recreational fishermen (pier owners, charter boat captains); independent recreational fishermen; and recreational fishermen who belong to fishing clubs (Griffith 1996). .

Another lesson from this research is that self-description as "full-time" or "part-time" may be misleading without further information. Johnson and Orbach (1996:21) found that one-third of the "full-time" fishers in the sample reported shore-based work other than fishing. Using 50% and over of income from fishing for "full-time" and under 50% for "part-time" is another way to depict different degrees of dependence on and involvement in fishing, which seemed to come close to regional self-descriptions. As might be expected, people in the more isolated rural areas, such as the Albemarle area, Dare County, and the Pamlico Area, are more likely to depend on fishing for 50% or more of their income than people in the more populated Southern Area and Carteret County (Ibid: 27).

This discussion serves as a reminder that North Carolina fishers, like so many others of the Mid-Atlantic and South-Atlantic, are "watermen" or "baymen," that is, people who find ways to remain in their coastal or estuarine homes by adapting to the challenges and opportunities that come along. Supporting this is another significant finding in North Carolina, that people who leave full-time commercial fishing, however defined, are likely to continue fishing at some level, apparently reluctant to give up the fishing life-style and the income and flexibility afforded. Garrity-Blake (1996), who found and interviewed 30 Carteret County residents reported to have left commercial fishing, found that only 10 had actually stopped fishing: "...ex-commercial fishers of Carteret County are difficult to find" (p. 5). Those who found other primary employment continued to participate in shrimping, mulleting, scalloping, menhaden fishing, etc. from time to time or somehow fit into their regular work schedules. Moreover, almost all respondents, whether or not they still fished, said that they considered themselves "watermen" (Ibid: 2), which suggests unwillingness to give up the possibility of fishing given uncertain and risky futures as well as the essential occupational pluralism of many coastal lifeways.

Dependence on or independence from buyers or dealers is an important social variable. Johnson and Orbach (1996: 39,40) found a very high rate of reported independence but more dependence in Dare and Carteret Counties, which happen to be the sites of some of the state's largest and most influential dealers. Dealers have organized and encouraged large fleets of crabbers in the Albemarle and Pamlico areas and of ocean-going trawlers in Wanchese (Griffith 1996:44). In these and other places fishermen may be dependent on seafood dealers through financing or limited access to ice, mooring space, and other necessities, and relationships between harvesters and dealers can be stable through personal loyalty as well. However, most fishermen have some degree of independence, an essential source of flexibility.

Reinforcing the value on (and providing an explanation for a source of) independence is the fact that that full-time fishers surveyed have largely avoided outside financing for their vessels (Johnson and Orbach 1996: 46). But there is considerable variation. This variation is evident in data on owner/captain and crew. In the northeastern, Albermarle area, the dominant pattern is only one crew member at the most, who is usually a relative or friend, rather than "hired help." In Dare County and the Pamlico Area, hired help is more important, reflecting the existence of larger fishing operations. The Southern Area has more family and friends than hired help, reflecting smaller operations (like those of Albermarle),and Carteret also has bulk of crew either family or friends (Johnson and Orbach 1996: 46).

Another important dimension is the pattern of "historical participation." Johnson and Orbach (1996: 50-57) show 5 year trends for each of the areas studied, distinguishing

between primary and secondary gear types. Pots were the only gear type to experience net increases in all areas over the time studied. The annual rounds are probably the most important but also the most complex attributes of the sociology of fishing. Johnson and Orbach (1996: 57-66) offer a network analysis of fishing rounds which show the network of relations among fisheries per study area. Thus, in the Albermarle Area and Dare County, it can be seen that crab potting is central, but there are different clusters or cliques involving other fisheries (p. 59). Other study areas have different patterns. The details of these patterns are very important for revealing differential vulnerabilities to policy and environmental changes. Thus, for example, in Carteret County shrimp trawling is a central component of almost all other fisheries, such that changes in policy or environment for shrimp trawling will affect those also involved in pound netting, crab trawling, and mechanized clamming (p. 66). Griffith (1996) makes the point that whether crabbing or shrimping appears as the primary fishery, virtually all commercial fishers are involved in gill-netting for some part of their annual rounds.

Another important social dimension is conflict over space (between fixed and mobile gears, especially in areas dominated by crab potting, gill nets, and other fixed gears; or within a gear type, as in many crabbing areas) and between commercial and recreational fishers. Here, too, there is great regional variation (Griffith 1996).

The North Carolina research also focused on the question of alternatives fishers perceive if they were excluded from a fishery (Johnson and Orbach 1996: 73-76). Most would opt to shift to another species; otherwise, the full-time fishers are split between finding temporary work or leaving fishing entirely, while the part-time fishers would opt for leaving entirely (p. 73). The management issue is, of course, the direction of the shift to another species, and in 1996 it appeared to be toward flounder from crab potting in the Albermarle area, with different options and alternatives in other areas. The lesson is how important it is to understand linkages among fisheries, in order to anticipate responses to management by restriction.

Limited entry was the context for the North Carolina studies and the focus of part of the interviews. A major concern was that limited entry gives managers more control, rather than less control (as economists might maintain) over fishermen's lives (p. 76). Although people expressed varying degrees of misunderstanding, suspicion, and distrust of limited entry programs, there was general agreement that this is a good way to go for many of North Carolina's fisheries (p. 87). However, issues of new entrants, competition for space, and overcrowding–all seemingly related to the need for limiting entry–were seen as less problematic than water quality, first and foremost, and second either the lack of fisherman voice in fisheries management or too many fisheries regulations (p. 89). The specifics varied among regions, for example, the fishermen in the Pamlico region more concerned about the discovery of the toxic dinoflagellate *pfiesteria picimorte* than those of Albermalre regions, who worried about discharge from pulp mills and those of almost all regions who were most concerned about the growth of contract hog production and its related pollutants (Griffith 1996: 4).

Johnson and Orbach (1996) also focus on state management questions that focus on crab-potting and gill-netting. The data presented, however, should be incorporated into social and economic analyses of the effects of fishery management alternatives for EEZ species as well, given the linkages between crab-potting, inshore gill-netting and other fisheries in some North Carolina areas.

The rest of this chapter provides census, fisheries, and field information on the major counties and fishing ports of North Carolina, focusing on Carteret, Dare, Hyde, Beaufort, and Pamlico Counties. Some socio-economic and fisheries information is also provided for other coastal and inland counties involved in commercial fishing in 1998.

Wilmington South

We did not visit the area from Wilmington south to the South Carolina border. According to Griffith (1996: 31-35), the fishery is primarily shrimp trawling and gill-netting in a relatively urbanized and rapidly developing region. It has suffered from the collapse of oyster and clam stocks and is subject to pollution and nutrient loading from golf courses, new industries, and the growing hog industry as well as dredging for coastal development. Recreational/commercial conflicts are intense, and the fish houses are overwhelmed by tourist traffic in the summer months. Jet skis and recreational boats often increase crowding problems for fishers. As in other urbanized areas, fishermen often have a long-term strategy of switching between fishing and non-fishing work. Following are brief descriptions of counties in this area based on State of North Carolina fisheries data and other sources:

New Hanover County (pop. 146,601, 1997), the southern stretch of the state's coast, had landings over 2 million lbs. and almost 3 million dollars in 1998, from a wide spread of species, including shrimp, blue crabs and oysters, but also fluke, porgies, sea basses, of Mid-Atlantic concern, as well as spot, groupers, grunts, mullets, and king mackerel (out of a total of 55 species landed). In terms of value, shrimp led at 20%, followed by groupers (18.6%), blue crabs (17%), and king mackerel (10.8%). Oysters and seabasses were also major contributors to the economy. In 1990 145 white males and 2 white females said they were fishers on the census, and 32 white males said they were captains or officers on fishing vessels. In 1997, 548 ETS were issued; the average fishing income was $7,456, compared with $25,067 average annual wage per worker (Diaby 1999: 35).

Onslow County (pop. 147,352, 1997), between Wilmington and Morehead City and encompassing the New River, had total landings in 1998 of 2.7 million lbs. worth over 5 million dollars. 63% of the value came from shrimp and hard clams but the rest was fairly evenly spread over other species: blue crabs, fluke, groupers, kingfishes, mullets, oysters, sea basses, and spot. Similarly, the gear-types are highly varied, including the full array of estuarine techniques as well as spear diving (for groupers, sharks, sea bass, and other species). Hydraulic dredging and "clam trawl kicking" are also significant in this area. The 1990 census showed 189 white males and 35 white females as fishers, and 19 white males as captains or officers on fishing vessels. According to Diaby (1999: 35), there were 707 ETS issued in 1997, and the average fishing income was $9,963, a little more than half the average annual wage per worker, suggesting that fishing tends to be a part-time occupation in this county.

Jones County, upriver from Onslow County, had very small landings. Duplin County, far inland on the NE Cape Fear River, reported a very small amount of shrimp trawling and gill-netting in 1998. In 1990 no one was a fisher in the census.

Carteret Region

Fishing in the Carteret region is influenced by real estate development along the coast and the availability of jobs at the Cherry Point military installation and other areas throughout Morehead City and Beaufort. Consequently, there are many “part-time” but serious fishers who have full-time shore-side jobs and conflicts with full-time fishers. The area also has significant recreational boating and fishing. Griffith (1996: 35-37) found that the principal social problems were conflicts between recreational and commercial fishers and between large and small operators and ‘full-time’ and ‘part-time’ fishers; and real estate development. Commercial fishers tend to have highly flexible, multiple-gear and -target species fishing operations, often with the use of spouses with mates, and to move between casual employment ashore and fishing. Their primary gears are shrimp trawl, gill net, scalop and clam dredge and crab pots, and the principal ecological issues are pollution and nutrient loading, brown and red tides, and pfiesteria.

Carteret County Profile (includes fishing centers of Morehead City, Beaufort, Bettie, Harker's Island, Davis, Stacy, Sea Level, Atlantic, Cedar Island)

Population
According to the 1990 Census, Carteret County had a total population of 52,556 (59,057 in 1997[10]). Of the total population, women outnumbered men by a small percentage. Rural population was 76.4% of the total, though only 402 people lived on farms.

Racial and Ethnic Composition
More than 90% of the county's population was white. The next largest racial group was black, at 8.3%. There were small numbers of American Indian and Asian residents. The Hispanic population was also very small, at 0.8%. Only 596 people in the county were foreign-born, and 64.6% of the native-born population was born in North Carolina. The most prevalent ancestries reported were English (15,151 people); German (8,862); and Irish (8,600).

Age Structure
The 25 to 44 year-old age group was the largest at 16,719 people, or 31.8%. Population under 18 years old was 22.5% and 14.3% of the population was 65 years of age or older.

Household Composition
Of the 21,238 households in Carteret County, 71.9% were family households. Of the family households, 83% contained married couples and 13.2% were headed by single women. An average of 2.43 people were in each household, but 23.9% of the total householders lived alone.

Of the 21,238 households, 25.8% were renter occupied. There were 13,338 vacant housing units in the county, 10,138 of which were for seasonal, recreational or occasional use. The homeowner vacancy rate was 3.4% and the rental vacancy rate was 23.9%. The median value of owner-occupied housing units was $73,100 in 1989 and median rent was $280. One-unit detached housing comprised 50.6% of all housing units and mobile homes and trailers 27.8%.

Educational Trends
In Carteret County, 75.5% of the population 25 years of age or older was a high school graduate or higher; 16.2% held a bachelor's degree or higher.

Income
According to the 1990 Census, per capita income for the county was $13,227 and median household income was $25,811. Of the 51,517 people for whom poverty status was determined in 1989, 5,977, or 11.6%, were below the poverty line. According to Diaby (1999: 35), in 1997 the average fishing income was $21,123, compared with an average annual wage per worker for Carteret County of $18,229 in 1997.

Employment
Of the 41,915 people 16 years of age or older in Carteret County in 1989, 63.6% were in the labor force. Of these, 94.3% were in the civilian labor force, of which 5.2% were unemployed. More recent unemployment figures for the county were 4.4% in 1997 and 4.5% in 1998. The county shows seasonal shifts in unemployment. For example, in 1998, unemployment was 7.7% in January, ranged from 3.1% to 3.6% from April through October, and was then back up to 6.9% in January 1999.

Employment Industries

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[7] ***1997 population figures are from Diaby (1999: 35), based on the July 1997 estimate of the Office of State Planning, Office of the Governor.***

Of the 23,837 employed people 16 years or older, 1,249, or 5.2%, were in the agriculture, forestry and fisheries industries sector. (In 1997, there were 1,951 "Endorsements to Sell" issued by the state; Diaby 1999: 35). The largest sector of all was retail, at 23.6%, followed by sales occupations at 15.3%. The next largest occupations were precision production, craft and repair; service occupations; professional specialty; and administrative support. Government workers comprised 24.1% of the work force [many part-time fishermen are called "Cherry-Pointers" because they work in a military facility at Cherry Point–Garrity-Blake 1996], and there were 2,474 self-employed workers. Generally, Morehead City and Cherry Point in Carteret County provide significant non-fishing jobs for people in coastal communities, possibly accounting for the fact that Carteret County's fishing households sampled had more people working, on the average, than in other areas studied (Johnson and Orbach 1996: 15).

Racial and Gender Composition of the Fishing Industry
According to the 1990 Census, there were 86 fishing vessel captains or officers in Carteret County, all of which were white men. There were 560 men and 31 women engaged in fishing as an occupation. Of the men, 511 were white, 36 were black, and 13 were American Indian. Of the women, 24 were white and 7 were black.

Fisheries Profile, Carteret County, NC (includes fishing centers of Morehead City, Beaufort, Bettie, Harker's Island, Davis, Stacy, Sea Level, Atlantic, Cedar Island)

Carteret County has the largest fishery in terms of poundage and second largest in terms of value in North Carolina (Table NC1). Total 1998 landings were over 80 million lbs, but value was little more than 21 million lbs., largely due to the low value of species such as menhaden and thread herring caught by purse-seining. Other important fisheries were crab-potting, shrimp trawling, fluke trawling, hard-clamming, and the use of pound-nets, sink gill nets, longlines, and other gears for a large variety of finfishes (the total number of species landed was 69) (Tables NC-CC1, 2).

Table NC-CC1: Landings by Gear Type, Carteret County, North Carolina, 1998

GEAR TYPE	LBS. %	VALUE %
Beach seine	0.0%	0.0%
By hand	0.1%	2.0%
Cast net	0.1%	0.0%
Channel net	0.1%	0.5%
Clam dredge (hydraulic)	0.0%	0.7%
Clam trawl, kicking	0.1%	2.2%
Common seine	0.0%	0.0%
Crab pot	6.0%	13.4%
Crab trawl	0.6%	1.4%
Fish pot	0.0%	0.2%
Flounder trawl	2.4%	9.1%
Flynet	0.6%	0.7%
Gigs	0.0%	0.1%
Gill net (drift)	0.1%	0.1%
Gill net (runaround)	0.5%	1.1%
Gill net set (float)	0.4%	1.1%
Gill net set (sink)	3.7%	5.4%
Haul seine	1.7%	2.9%
Longline bottom	0.0%	0.1%
Longline surface	0.1%	0.9%
Other (including conf.)	78.7%	22.8%
Oyster dredge	0.0%	0.1%
Peeler pot	0.0%	0.1%
Pound net	1.0%	5.5%
Purse seine	0.0%	0.0%
Rakes bull	0.0%	0.5%
Rakes hand	0.2%	3.8%
Rod-n-reel	0.8%	5.0%
Scallop dredge (bay)	0.1%	1.1%
Scallop dredge (sea)	0.0%	0.0%
Scallop scoop	0.0%	0.0%
Scallop trawl	0.0%	0.0%
Shrimp trawl	2.4%	16.7%
Skimmer trawl	0.1%	1.1%
Swipe net	0.0%	0.0%
Tongs, hand	0.0%	0.8%
Trolling	0.1%	0.4%

Total landings, rounded, 1998: 80,417,400 lbs.
Total value, rounded, 1998: 21,332,100 dollars

Table NC-CC2: Landings by Major Species, Carteret County, NC, 1998

MAJOR SPECIES >2%	LBS. %	VALUE %
Unclassified shrimp	1.9%	16.7%
Crabs, blue, hard	7.1%	15.4%
Croaker, atlantic	2.7%	3.0%
Flounders, fluke	2.0%	14.0%
Other (including conf.)	78.7%	22.8%
Spot	1.5%	2.4%
Weakfish (seatrout, grey)	1.6%	2.8%
Clam, hard (meats)	0.4%	9.2%
Groupers	0.2%	1.9%

Number of species: 69

Both estuarine and offshore fisheries are found in Carteret County, reflected, for example, in the fact that gear-types included both sea scallop dredges and bay scallop dredges. Table NC-CC3 shows the high diversity of the fisheries of Carteret County by listing the species landed per each gear-type. This table also gives some idea of the large variety of fishing technologies used in North Carolina.

Table NC-CC3: Fishing Gears and Species Landed, Carteret County, NC, 1998. (* = major part of catch)

Seines, Cast Nets, Pound Nets, Etc.

Beach seines: Bluefish, kingfishes (sea mullet), mullets*, pompano, spotted sea trout, Atlantic spadefish, spot.

Common Seines: spot.

Haul Seines: Bluefish, butterfish, cobia, hard blue crab, Atlantic croaker, Atlantic cutlassfish, black drum, red drum, flounders (fluke), harvestfish, hickory shad, kingfishes (sea mullet)*, Spanish mackerel, Atlantic menhaden*, mullets, pigfish, pompano, spotted sea trout, sheepshead, Atlantic spadefish, spot*, swellfishes (puffers), weakfish.*

Swipe nets: Bluefish, black drum, red drum, kingfishes (sea mullet), mullets*, spotted seatrout*, sheepshead, swellfishes (puffers), weakfish.

Purse Seines: Thread herring, Atlantic menhaden.

Cast nets: Shrimp, Spanish mackerel, Atlantic menhaden*, mullets, unclassified fish.

Channel nets: mullet, harvestfish, blue hard crab, shrimp.*

Pound Nets: Bluefish, butterfish*, carp, catfishes, cobia, hard blue crabs, Atlantic croaker, Atlantic cutlassfish, black drum, red drum, flounders (fluke)*, harvestfish, hickory shad, jacks, kingfishes (sea mullet), Spanish mackerel, Atlantic menhaden*, mullets, white perch, pigfish, pompano, spotted seatrout, sheepshead, skippers, Atlantic spadefish, spot, striped bass, swellfishes (puffers), unclassified (industrial/bait), unclassified, weakfish, whelks/conchs.

Pots

Crab pots: blue crabs, stone crabs.

Peeler pots: blue crabs (hard, peeler*, soft).

Fish pots: Amberjacks, bluefish, Atlantic croaker, dolphinfish, groupers, grunts, hakes, hogfish, octopus, pigfish, porgies, sea basses*, snappers, tilefish, triggerfish, unclassified fish.

Gill Nets

Drift Gill-Net: Bluefish*, butterfish, Atlantic croaker, black drum, red drum, flounders (fluke), harvestfish, kingfishes (sea mullet), king mackerel, Spanish mackerel, Atlantic menhaden, mullets*, pigfish, pompano, spotted seatrout, sharks, sharks (dogfish), sheepshead, Atlantic spadefish, spot, unclassified, weakfish.

Run-Around Gill-Net: Bluefish, bonito, butterfish, cobia, Atlantic croaker, black drum, red drum, flounders (fluke), harvestfish, hickory shad, kingfishes (sea mullet), Spanish mackerel, Atlantic menhaden, mullets*, white perch, pigfish, pompano, spotted sea trout*, sharks (dogfish), sheepshead, spot, unclassified, weakfish.

Set Gill-Net (Float): Bluefish *, butterfish, carp, catfishes, hard blue crab, stone crabs, Atlantic croaker, black drum, red drum*, flounders (fluke)*, harvestfish, hickory shad, kingfishes (sea mullet), Spanish mackerel, Atlantic menhaden, mullets*, pigfish, pompano, spotted sea trout, American shad, sharks, sheepshead, skippers, Atlantic spadefish, spot*, striped bass, swellfishes (puffers), unclassified, weakfish, whelks/conchs.

Set Gill-Net (Sink): Amberjacks, anglerfish, bluefish*, bonito, butterfish, catfishes, cobia, blue hard crabs, stone crabs, Atlantic croaker*, black drum, red drum, flounders (fluke), harvestfish, hickory shad, kingfishes (sea mullet), king mackerel, spanish mackerel, Atlantic menhaden, mullets*, octopus, white perch, pigfish, pompano,

porgies, sea basses, spotted seatrout, American shad, sharks, sharks (dogfish)*, sheepshead, skippers, Atlantic spadefish, spot*, striped bass, tuna, unclassified, weakfish*.

Hook and Line Techiques:

Longline–Bottom: Dolphinfish, groupers, sea basses, sharks*, swordfish*, tuna, wahoo.

Longline--Surface: Cobia, dolphinfish, gropuers, king mackerel, sharks*, swordfish*, triggerfish, tuna*, wahoo.

Rod-n-Reel: Amberjacks*, bluefish, bonito, cobia, Atlantic croaker, Atlantic cutlassfish, dolphinfish, black drum, red drum, flounders (fluke), groupers*, grunts, hakes, hogfish, jacks, kingfishes (sea mullet), king mackerel*, Spanish mackerel, octopus, yellow perch, pigfish, pompano, pogies*, scup, seabasses*, spotted seatrout, sharks, snappers*, Atlantic spadefish, spot, swellfishes (puffers), tilefish, triggerfish*, tuna, unclassified, wahoo, weakfish.

Trolling: Amberjacks, bluefish, bonito, cobia, dolphinfish, flounders (fluke), groupers, grunts, jacks, king mackerel*, Spanish mackerel, porgies, sea basses, sharks, skippers, snappers, swordfish, tilefish, triggerfish, tuna, unclassified, wahoo, weakfish.

Trawls/Drag Nets

Shrimp Trawl: Rock shrimp, shrimp*, bluefish, butterfish, cobia, hard blue crabs*, peeler blue crabs, soft blue crabs, Atlantic croaker, Atlantic cutlassfish, black drum, flounders (fluke), harvestfish, kingfishes (sea mullet), king mackerel, spanish mackerel, pigfish, pompano, spotted seatrout, sheepshead, Atlantic spadefish, spot, squid, swellfishes (puffers), triggerfish, unclassified, weakfish, whelks/conchs.

Skimmer Trawl: Shrimp*, hard blue crabs, peeler blue crabs, flounders (fluke), harvestfish, kingfishes (sea mullet)*, king mackerel, spanish mackerel, pigfish, pompano, spotted seatrout, sheepshead, Atlantic spadefish, spot*, squid, swellfishes (puffers), triggerfish, unclassified, weakfish, whelks/conchs.

Flounder trawl: Anglerfish, bluefish, butterfish, Atlantic croaker*, black drum, flounders (fluke)*, flounders (other), harvestfish, kingfishes (sea mullet), porgies, sea basses, sharks, sheepshead, spot, squid, striped bass, swellfishes (puffers), unclassified fish, weakfish, whelks/conchs.

Crab trawls: blue crabs*, shrimp, anglerfish, bluefish, catfish, Atlantic croaker, black drum, red drum, flounders (fluke), kingfishes (sea mullet), spot, swellfishes (puffers), unclassified fish, unclassified shellfish, weakfish, whelks/conchs

Flynets: Anglerfish, bluefish, butterfish, Atlantic croaker*, flounders (fluke), thread herring, kingfishes (sea mullet), sea basses, spot, squid, striped bass*, swellfishes (puffers), unclassified fish, weakfish*.

Shellfish Rakes, Dredges, and by Hand

By Hand: hard clam*, blue hard crab, stone crab, fluke, oysters*, bay scallop, unclassified shellfish.

Hand tongs: Oysters.*

Scallop Dredge--Bay: Bay scallops*, whelks/conchs

Scallop Dredge--Sea: Anglerfish, sea scallops*, sea basses

Scallop Scoop: Bay scallops*

Scallop Trawl: Sea scallops*

Bull rakes: hard clam*, unclassified, whelks/conchs

Hand rakes: hard clam*, flounders (fluke), kingfishes (sea mullet), oyster, bay scallop, sheepshead, spot, unclassified, whelks/conchs

Oyster dredge: oysters

Other

Gigs (fish spears): bluefish, hard clam, stone crabs, Atlantic croaker, black drum, red drum, flounders (fluke)*, mullets, spotted sea trout, sheepshead, spot.

Field Observations and Interviews, Carteret County, July 1999

Morehead City

The commercial fishing industry in Morehead City is centered along the waterfront in the southeast part of town, primarily along Evans St. The packing houses and commercial docks are surrounded by recreational marinas, restaurants, and a few stores that cater to tourists. There is also a new fishermen's memorial on the waterfront. The commercial industry is dwarfed by the large number of recreational docks in town and in Atlantic Beach, just south of Morehead City and accessible via causeway. During our visit there were large signs advertising a King Mackerel tournament and a Big Rock Marlin Tournament.

We visited and interviewed at Evans Street businesses that seemed directly connected with the fisheries. First was a fish market which depends more on a company in Washington DC than on local fishers for product (mostly tuna, wahoo and king mackerel).

Next was a packing and wholesale company which deals in "sushi" grade fish. Our informant was the secretary/treasurer of the company. Their most profitable species is flounder. They also buy and sell other ground fish such as grouper and snapper. They had recently unloaded small quantities of flounder, silver snapper, red snapper, margate, toro and sea bass from local boats, which were stored in one of the company's refrigerated storerooms. Their fish are sold to Japan, and also to sushi restaurants in North Carolina cities. The informant said the company works only with independent boats which sometimes migrate from dock to dock, but which usually come back to the same fish houses. She said that fishing in the area is "very seasonal," which would explain the slowness of activity during our visit.

The informant said that while commercial fishing is big in the area, "the industry is getting depressed here." She cited regulations as the cause and stated that the "small-timers" are the ones who are suffering the most. She said that she and her husband are trying to better fishermen's income by getting them to focus more on sushi-grade fish and to learn how to better preserve fish, by proper chilling and sanitation methods, on the boat after they are caught. This way, even if their catches are smaller, fishermen will get higher prices for sushi-grade fish, and will also be able to stay in business. She said that, for example, fishermen get $.25 to .50 more per pound of sushi-grade flounder than they do for regular flounder. She also said that if their company buys from a particular boat, it usually buys all the fish on that boat "for the convenience of the fisherman." This, however, sometimes makes it hard for the company to distribute the whole catch because of the over-quantity of some species or because of the variable quality of the fish.

According to our informant, the company has another packing house in Beaufort; however, it is going to be shut down. The informant said that they have not yet experienced land use pressure in Morehead City despite the "major commercialism" that has come to the area.

A third business visited was a seafood restaurant and fish market on Evans Street, which appeared to be the major center for retail and wholesale fish transactions. Our informant was one of the three owners who is in charge of the fish market and who employ 4-5 others full-time. On the day we spoke to the informant, the market had a very good selection of fish, most of which came from local boats. Our informant stated that July is the slowest time for fishing in the area. The company does not have its own boats and buys primarily from local owner/operators, 13 of which tie up at the company docks. These boats range in size from 28 to 45 feet. Some of them go to Florida to fish in the winter. The company also occasionally buys tuna, swordfish, and some tile fish from longliners out of Maryland and New York.

The informant said that probably more than 50% of the business is wholesale, and that they send primarily to Jessup Market in Baltimore, Maryland and to Fulton Fish Market in New York. They also supply restaurants in the area. Unlike most other local retail markets, which close during the winter, this one stays open year round. Its busiest time is April through December, and according to our informant, "retail is always good here." He said that both their retail and wholesale income is fairly evenly divided among flounder, grouper, snapper, and croaker. There is a big market for shrimp as well, but our informant said that prices for them go up and down quite a bit. The high time, locally, for getting shrimp is the summer (April to October). After the summer, however, the shrimpers head south. The other species they were selling when we visited, in July, from local ocean boats (labeled as such) were sea bass, king mackerel, and wahoo. Flounder, speckled trout, grey trout (weakfish), bluefish, jumping mullet, hogfish, sea mullet, croaker, and Spanish mackerel were advertised as coming out of the bay. "Imported" species included tuna, salmon, grouper, mahi mahi, swordfish, kingfish, trigger, flounder, live lobsters from Maine, and backfin crab.

A fish house and market have been on the site since the 1920s. Our informant said that the area has not changed that much and that there are no current land use controversies.

There are clearly a lot of recreational marinas and restaurants on the waterfront, however, which may or may not be have been there 20 years ago. He said it would be hard to tear anything down and rebuild in the area because of municipal red tape and high property values. He did note that the sushi fish house is relatively new to the area, located where an older fish market used to be.

We visited the docks of this business. Our informant was a fisherman who captains a "bandit boat." There are 10 bandit boats at the Morehead City waterfront, and our informant pointed out their distinguishing features: a set of 3 to 4 motorized hook and line rigs positioned at the corners of the deck. Each rig is handled by one crew member or by the captain. Most of the boats are 30' to 36', though the biggest is 44'. According to our informant, all of the bandit boats in the area are docked in Morehead City, except for one, which is docked in Beaufort. He said that 3 of the Morehead City boats are docked at private slips rather than at the main waterfront area. On this particular day about half of the bandit boats were at the dock because of high winds.

After stating that "the damn government is trying to put us out of business" with regulations, our informant pointed out that, like rod and reel fishing, bandit fishing "is not indiscriminate" and has almost no by-catch; "99.5% of the catch is sellable." This is because the boats target schools of specific species of fish, mostly groupers and snappers, and use only bait (squid, Boston mackerel, cigar minnows) and techniques appropriate to those species.

He says the boats go 30 to 60 miles offshore, to at least 200 feet of water and sometimes to as much as 750 feet. The boats are usually out for 5 or 6 days at a time. Smaller boats, however, only go out for 3 or 4 days and the one larger boat is out for up to a week. In North Carolina waters they are able to catch 4 different types of grouper that range in weight from 5 to 50 pounds, but they are only able to catch 1 kind of snapper (vermillion), which comes in at 1 to 5 pounds. He and a lot of the other bandit boat fishermen head as far south as Key West in the winter, where they are able to catch American red snapper which weighs anywhere from 6 to 50 pounds. He himself stays in the area for 8 months and sells primarily to the same dealer. In the other months, however, he sells to three other fish houses farther south. This is basically a matter of following the fish because, according to our informant, the overall fishing in North Carolina is better than in Florida due to over-fishing in Florida waters. He said that the prices for grouper and snapper do not vary much, but do slightly depending on size, maybe from $2.40 to 2.90/lb. to the boat. The grouper and snapper apparently do not migrate farther north than the Oregon Inlet. He also reels in some porgies, triggers and wahoos, but said that they are not a mainstay. He does not fish for the sushi market, though he claims his fish is sushi-grade.

Our informant is in his early 40s and only began fishing 12 years ago. He had been a furniture maker in Maryland and engaged in recreational fishing on the side. He said that he got bored with the furniture making and that and had enjoyed fishing much more. He then moved to Morehead City and began working on a head boat for $5/hour. He then worked as a commercial fishing boat crew member before being hired as a captain. He remained a captain until he was able to buy his own boat 4 years ago. "There was a lot to learn to be good at it." The boat that he now owns, a T-Beam, is a 22-year-old boat that he bought from someone who was "more or less" retiring. (Note: reflecting a larger pattern of in-migration to North Carolina from other states, a sizeable percentage of North Carolina's fishers are not native to the state, like this person. According to Johnson and Orbach [1996:8], 21% of the 388 fishers sampled were born in other states).

On an average day, the boat will catch $1,000 worth of fish, or $5,000 to $6,000 on one trip. Last year was not his best year, but two years ago in Florida his boat, with only 3 hands, hauled in $10,000 in three days; this was his best trip ever. Pulling in this amount, however, was unusual. He said that he grosses $100,000/year and nets about $50,000, but

his crewmembers do not make that much. He also said that captains generally get the same share as crewmembers and that there is a share for the owner as well. Therefore owner/operators get two shares.

Although Morehead City is where he is based for the majority of the year, he lives in a motel and his legal address is in Florida where his parents live. He said that Morehead City is a very inexpensive place to live; a two-bedroom apartment would probably rent for $320, which would be less than half of what it would be rented for in Maryland. Still, he said that very few young people are going into fishing in the area "with the restrictions and everything." He said that most of the bandit boat captains and crews are about his age, though a couple of the captains and 6 or 7 of the crew members are under 30. He also said that it is very difficult to recruit and retain crewmembers. He himself has had 7 different crew members in the last 3.5 years, but he also said that some boats have had as many as 50 in that time. He said it all depends on how the captain treats the crew.

In the past, there have been some women who have worked as crew members in Morehead City. However there are not any now. He also said that there are no blacks working on the commercial boats, but that there is one black licensed head boat captain who works as an auxiliary captain on a 100' head boat.

Our informant said that there is a "large history" of commercial fishing in the area and that the long-time residents are supportive of their work. He did say, however, that the newcomers do not realize the extent of what commercial fishermen do and how many people, besides fishermen, are connected to the industry. "If they were to get rid of commercial fishing here, it would affect half the town. Even more in Harker's Island [see below]." He said that while the bandit boats work closely together when they are out on the ocean (e.g., helping each other find fish and assisting when there are breakdowns), the fishermen mostly go their separate ways on land. According to our informant this is because they are not family men, though on Harker's Island "it's a different story."

Although there is a well-known bar hangout, at one of the fish houses mentioned above, one informant said that most people "go their separate ways" after fishing. However, Morehead City has a Blessing of the Fleet the first first weekend in October. And the North Carolina Fisheries Association erected a memorial in Morehead City to fishermen who lost their lives at sea.

Beaufort

The fishing industry in Beaufort is located primarily along the frontage road to Route 70, though some shrimp boats were docked on the other side of Route 70. On the water, and along the frontage road, are four fish houses, one marine service, a boat repair shop, and a boat canvas shop.

The first fish house deals mostly in shrimp during the summer and croaker and trout (weakfish) during the winter. The company does not have its own boats, but one of the owners said there are 5 local boats "we can count on here" that dock at his building and use either shrimping or sink net gear. He said that one of the boats was going out for mackerel this summer and the rest were going out for shrimp. The company has 3 full-time employees and 1 part-time employee, all of whom live in the county and are originally from there. Two of the men working on the chum were black. In the summer, the company sells the shrimp and mackerel it packs to Baltimore and New York.

The second fish house mainly deals with shrimp in the summer and flounder in the winter. The day we visited the main activity was sorting shrimp, which was being done by 6 black employees. The owner's son said that his family formerly raised tobacco.

The third fish house is owned by a major fishery family in North Carolina. Our informant was directing dockhands unloading shrimp from a boat out of Atlantic, NC. She said that the company owns 7 boats, 3 that go for scallops during the summer and flounder during the winter, while the other 4 do shrimping during the summer and flounder and other fish during the winter. "The boats have to be able to convert or they would starve to death," according to our informant. She explained that the shrimpers become draggers by changing their nets and adding dragger doors. "Everyone here does at least two things." She said the company mostly handles shrimp in the summer, and that the shrimp season will extend from April to November "if we're lucky." The boats start going for flounder in October/November and continue until the end of February unless the quota is achieved earlier. They will also go for croakers and trout in the winter.

Much of the company's product stays in North Carolina or goes up to Virginia, though sometimes shrimp is shipped to Canada, "depending on prices and what's available in other states." Our informant said that the company makes more money from flounder and other fish during the winter than it does from shrimp in the summer.

The company has 5 or 6 full-time dock employees, all of whom are locals. Most of the boats have 3-man crews plus the captain, and, unlike many other places there has not been much turnover. For example, one captain has worked with them for almost 40 years. She did say that it has been a little harder for the sea scallop boats to keep crews because scalloping has been bad for the last 8 or 9 years; apparently there are no longer scallops in the immediate area, though there used to be calico scallops. The scallop boats each carry 7 fishermen, and usually go out for 12 days, but sometimes 14, at a time.

She said that the fishermen in the area are able to stay employed through fishing for 10 or 11 months out of the year and they only take off when no fish or shellfish are around to catch. She feels that commercial fishing is very important to the area: "If we ever got shut down, it would have a tremendous impact. But some people don't see it that way." She said that both Morehead City and Beaufort have a Blessing of the Fleet the first weekend in October and a seafood festival that her company usually participates in.

Our informant talked a little about the sinking of the fishing vessel *Josephine* while it was going for flounder in December 1998 and the 4 fishermen who died, whose names would be added to the memorial in Morehead City.

Other Impressions:

Later that night we saw one of the shrimp boats passing by Beaufort harbor and heading into the Newport River, presumably to go shrimping, and the next day we saw 13 shrimp boats working the inland waters of the Neuse River as we were taking the ferry to Beaufort County.

On Route 70 in Beaufort, the Carteret Farm Bureau Services has an impressive outdoor mural showing a fishing scene with the caption: "Helping You Is What We Do Best," highlighting the importance of fishing as well as agriculture to the area.

Bettie/Harker's Island/Davis/Stacy/Sea Level/Atlantic/Cedar Island

A complex of seven communities is situated northeast of Morehead City/Beaufort in a sparsely populated section of Carteret County that has a variety of waterfronts on North River, Core Sound, and Pamlico Sound. We were only able to get to Bettie and Harker's Island on the evening of 7/7/99, but talked with people about some of the other places as well.

Bettie advertises itself as “Gateway to the Original Down East”. Although an informant from Morehead City said there are commercial fishing boats scattered in various places within the town of Bettie, we were unable to see any of them.

Harker's Island is widely known as having a long and important history of fishing. One Morehead City informant estimated 10 to 15 boats doing gill-net and pound-net fishing and shrimping from Harker's Island. Another informant, at the island, said there are sink netters, clammers, shrimpers and crabbers, as well as a packing house. We saw over 15 small fishing boats at Harker's Island Harbor, located at Maxwell and Island Rd., operated by Carteret County Harbor Authority. There were also two gill netters moored off the north side of the island.

In eastern North Carolina, the relatively isolated Stacy/Sea Level/Davis/Atlantic/Cedar Island area, like areas further inland in Pamlico, Beaufort and Hyde Counties, is thought of as a world unto itself. However, every cluster of communities has two or three fish houses that local fishermen can access, according to an informant.

Atlantic has an active fishing community that mostly shrimps in the summer and clams in the winter. Some individuals will also use sink nets in the winter and will go for roe mullet. A Morehead City informant said there are probably 30 clammers in Atlantic, most of whom use 30’ boats. She stated that, “In Atlantic, that’s all people do – fish and clam.” She and her family live in Atlantic, which is also where the company she works for has a second packing house.

Davis is similar to Atlantic, and informants identified a packing house there and estimated 20 forty-foot boats there. Cedar Island is said to be “…the most extreme end. That’s where the fishermen are closest to the roots.” Cedar Island fishermen are reported to do anything and everything they can, from crabbing to shrimping to pound netting to gill netting and to running small trawlers. Although the volume of fish taken in Cedar Island is lower than in some other areas, it is a constant flow, with many people involved in fishing, boats coming and going all the time. An informant from nearby Vandemere said that the lifestyle there as “more hard-bitten” than it is in the Vandemere area: “They work hard, some of them, and live hard,” he said. Cedar Island has a busy, two-man packing house and 3 or 4 docks. Another company, from Vandemere, had a dock on Cedar Island for 2 years but it was too far away to be managed effectively.

Pamlico Area (including Pamlico, Craven and inland counties)

Crabbing is the mainstay of the fisheries of the central part of North Carolina's estuarine system, the Pamlico region. Other fisheries, such as fin-fish gill-netting and pound-netting, tend to be supplementary to crabbing. According to Griffith (1996: 37) fishermen in this area are less flexible in terms of involvement in diverse fisheries throughout the year. Consequently, the major problem appears to have been crowding of crab-fishing grounds. This problem has been intensified by the recent rise of basket and peeler markets, which compete for crabs with shucking houses, and the parallel growth of crab processing as labor shortages have been handled through increased use of foreign workers. Some processors have encouraged the growth of part-time crabbing as well as new fleets including some foreign fishermen. Major social problems identified by Griffith in 1995 included crowding of pots, part-time fishing and the above changes in processors' strategies. Principal ecological problems included perceived overpopulation of striped bass, the effects of oxygen-deficient "dead water" on the crab fishery, and nutrient loading of the Neuse and Pamlico Rivers. The general "earning and coping strategy" identified by Griffith (1996: 37) was intensive, specialized crabbing, as well as peeler operations, but as will be seen below, the fisheries are highly diverse.

Pamlico County Profile (includes Bayboro, Vandemere, Hobucken and Oriental)

Population
Total county population according to the 1990 Census was 11,372, and all of it was classified rural. Farm population was only 178. (1997 population was estimated as 11,973; Diaby 1999: 35).

Racial and Ethnic Composition
Whites numbered 8,362 or 73.5%, blacks 2,951 or 25.9%. Persons of Hispanic origin of any race comprised only .5% of the population. Only 96 people were foreign-born, and only 28 of them were recent immigrants. Percent of the native-born population that was born in North Carolina was 79.3%. The largest number of ancestries reported, 3,217, were a variety of "other". After that, English, United States (or American) and Irish were the largest groups.

Age Structure
The largest age bracket was 25 to 44 years, with 3,182 residents. The next highest was children 5 to 17 years (1,994). There were 1,912 persons 65 and older, which was 16.8% of the total.

Household Composition
Pamlico had an average of 2.49 people per household, with a total of 4,523 households. About 60% of these were households with married-couple families, and 12.1 were classified as "other family, female householder." Householders living alone made up 23.3% of total householders, and about half of these were 65 or over.

Educational Trends
Of the people age 25 and older, 65.9% were high school graduates or higher; 11.6% held a bachelor degree or higher.

Income
According to the 1989 census, per capita income for the county was $10,665 and the median household income was $21,060. Of the 11,217 people for whom the poverty status was determined in 1989, 18.9% were below the poverty level. In 1997, the average fishing income was $37,220, compared with an average annual wage per worker of $17,404 (Diaby 1999: 35).

Employment

Of the 8,960 people older than 16 years of age in Pamlico County, 57.3% were in the labor force. Of the people in the labor force, 98.8% were in the civilian labor force, of which 7% were unemployed. More recent unemployment figures for the county were 4.2% in 1997 and 4.1% in 1998. The county shows seasonal shifts in unemployment. For example, in 1998, unemployment was 6.5% in January, ranged from 2.8% to 4.5% from April through October, and was back up to 5.9% in January of 1999.

Employment Industries
Of the 4,718 people employed over 16 years of age, 9.1% were in the agriculture, forest, and fisheries industries sector. 290 were fishers or fishing vessel officers. (In 1997, there were 463 Endorsements to Sell issued; Diaby 1999: 35). The largest section of all was precision production, craft, and repair occupations at 16.2%, followed by retail at 15.2%. The next largest occupations were professional specialty occupations; administrative support occupations, including clerical; sales occupations; educational services; and service occupations, except protective and household. Government workers comprised 24.6% of the work force, and there were 1,981 self-employed workers.

Racial and Gender Composition of the Fishing Industry
Pamlico County had 251 male and 3 female fishers, according to the 1990 Census. Of the men, 222 were white and 29 were black. All 3 women were white. There were also 36 white male vessel captains or officers.

Fisheries Profile, Pamlico County, NC

Pamlico County (pop. 11,372, 1990) had impressive total landings in 1998 of over 10 million pounds, worth over 9 million dollars. Important fishing centers include Bayboro, Vandemere, Hobucken and Oriental. Fishing takes place in the sounds and tidal rivers as well as coastal marine waters. Crab-potting, shrimp trawling, and flounder trawling are the major fisheries. Blue crabs accounted for 62% of the value in 1998, shrimp 13%, and fluke 19%. Fluke were caught mainly in trawls ("flounder trawls") but also in crab pots, crab trawls, drift or runaround gill-nets, set gill nets (float and sink), haul seines, pound nets, shrimp trawls, and swipe nets. Like other Mid-Atlantic areas, this is a very diversified fishing region, 46 species being landed by 19 different techniques or gears (Tables NC-PC1, 2).

Table NC-PC1: Landings by Gear Type, Pamlico County, NC, 1998

GEAR TYPE	LBS. %	VALUE %
By hand	0.0%	0.0%
Crab pot	72.0%	57.2%
Crab trawl	7.3%	5.5%
Eel pot	0.0%	0.0%
Flounder trawl	8.5%	16.6%
Flynet	0.0%	0.0%
Gill net (drift)	0.0%	0.0%
Gill net (runaround)	2.7%	1.7%
Gill net set (float)	2.5%	3.2%
Gill net set (sink)	0.5%	0.4%
Haul seine	0.0%	0.0%
Other (including conf.)	1.1%	1.4%
Oyster dredge	0.1%	0.3%
Peeler pot	0.0%	0.0%
Pound net	0.0%	0.0%
Rod-n-reel	0.0%	0.0%
Scallop trawl	0.0%	0.3%
Shrimp trawl	5.3%	13.5%
Swipe net	0.0%	0.0%

Total landings, 1998, rounded: 10,502,300 lbs.
Total value, 1998, rounded: 9,271,800dollars

Table NC-PC2: Landings by Major Species, Pamlico County, NC, 1998

MAJOR SPECIES >2%	LBS. %	VALUE %
Unclassified shrimp	4.9%	13.1%
Crabs, blue, hard	78.5%	60.1%
Flounders, fluke	9.4%	19.3%
Mullets	3.0%	1.6%
Crabs, blue, peeler	0.9%	2.1%

Number of species: 46

Field Observations and Interviews, Pamlico County, NC, July 1999

Bayboro

In Pamlico County, we first passed through Bayboro, but there was little perceptible activity going on on a Thursday morning. At the small harbor situated at the head of Bay River (which flows into Pamlico Sound) we saw two fishing boats. The landside portion of the harbor is dominated by the buildings of a seafood company ("Crabmeat, Fish, Shrimp"). There seemed to be some other marine-related buildings in the area, but they were unidentifiable and one was posted with a "For Sale"sign. This was the former site of a small seafood business which now operates out of an old ice plant in Bayboro, where the owner makes and sells nets and has one or two boats involving in shrimping and flounder fishing. There were a number of gill nets and other nets lying around the harbor.

Sources in Vandemere and Hobucken said that one Bayboro company has 3 or 4 trawlers and is only in operation when the boats are fishing in the area, which isn't often because they are gone all winter and run up and down the coast.

Vandemere

Vandemere is a small rural town situated on the north side of Bay River. There are two packing houses, but we were told that the smaller one (fresh and frozen seafood, “serving restaurants all over North Carolina"), has gone out of business. Nevertheless, there were several large boats docked there, including two listing Bayboro as their home port.

We spoke with sons of the owner of the larger fish company in Vandemere, which currently owns 2 trawlers and in the past has owned as many as 12 boats. A fish house has been on the site since 1943; the present owner bought it in 1976 – he had had a fish house at Dawson’s Creek before that. At Vandemere there is a core group of 6 independent trawlers that go shrimping in the summer and who pack at this house. There can be more if the shrimping is good, but it hasn’t been for the last 5 or 6 years. These boats switch gear in winter and then mostly go for summer flounder, which lasts for only 4 to 6 weeks because of the quotas. None of the trawlers they own or work with go after squid, though some of them used to harvest sea scallops.

There are also a number of smaller boats that bring in crabs and oysters, some of which also set gill nets. We were told that 25-30 of them dock at the buildings of this company, and that these boats come from many different places in Pamlico County. The company owns a smaller dock in Hobucken which is mainly used by crabbers (see Hobucken) as well as a shrimp freezing plant in Grantsboro. It used to have a dock on Cedar Island as well.

At the time of our visit, all of the trawlers were shrimping, mostly off South Carolina and Georgia. One trawler was fishing for yellowtail flounder off New York. Our source said that the size of the catches of different species varies from year to year, but usually the mainstays are shrimp, blue crab and summer flounder. All the summer flounder is caught by trawlers in the ocean. The trawlers docked in Vandemere reach the ocean through Beaufort Inlet or sometimes Oregon Inlet. Gill netters bring in southern flounder from the bays and sound, but we were told that it is a small percentage of the company’s overall product. The company also buys southern flounder from pound netters.

Our informant said that crew turnover on the trawlers is a significant problem on certain boats. While the issue used to be “more personal,” it’s now about economics – if the captain and the boat are not good at bringing in fish, the crew won’t stay. He said that most of the trawler crews in the area are local, but that the scallop boats have some men from Hampton, VA, and New Bedford, MA (though there isn’t much scalloping happening in the area now). Local captains are generally in their 40s or 50s and sometimes older, and most crew members are much younger, so there is a generation gap. He said there are some captains who are 25-35 and that they are not nearly as good as the older ones. He also pointed out that there is a "crack" problem among some of the younger fishermen, in a group “that floats around” from one dock to another, but that his company refuses to work with them. Our Vandemere informant said that his company chooses only to work with “a select few,” and, even at that, there is always some level of distrust between dealers and fishermen. When asked about women, he said there are a couple of women in the area who fish occasionally with their husbands.

This company mostly just packs the catches that come in, but it does do a little processing of crabs and of flounder (cutting them into fillets). The only thing done to shrimp is taking off the heads. They used to do a lot of crab picking, but don’t anymore because it’s hard to find people locally who are willing to do it (see below). All the species they handle are distributed both fresh and frozen. The market area is New England to the Gulf of Mexico. They do very little local distribution – just to some North Carolina restaurants, and one truck goes to the Virginia Tidewater and to Ocean City, MD. They send very little to Fulton Fish Market because the dealers there “cut our tickets.” The company exports some of its fresh

flounder for the sushi market, but our informant said that business has been terrible in the last 3 years.

The company works with a minimum of 15 to 20 employees, but at the time of our visit had more than 100 since July is its busiest time because of the shrimping. Our source said that fishing and farming are the only things going on in and around Vandemere, and that his company used to be a large employer of local people, most of whom were black. But now, he said, the younger blacks don't want to pick crabs or work with shrimp in the packing house – they have found other jobs or have migrated out of the area. Because of this and related problems, the company shifted to migrant Mexican labor under the H2B program. Eighty of its employees this summer are migrants, some on visas and some on green cards; 65 are women and 15 are men, and most are between 22 and 30 years old, though there are a few older women and men. Although the company needs some of them year round, the H2B program is only for 9 months. He also said it's "a nightmare" to get approval to bring them in. But the company is now in its 5th year of hiring migrant labor. The company houses the migrants in 6 trailers in Grantsboro, where the shrimp freezing plant is located, and in 2 trailers and a house in Vandemere. Each week, $20 is deducted from each worker's pay for the housing; Don said employers "are not allowed to make a profit off of it."

There is no bar or hangout. We were unable to stay long enough here or in other communities to learn about other institutions, such as churches and civic service organizations, through which people involved in fishing interact.

Hobucken

There are two main areas where fishing boats are docked in Hobucken. One is on the intercoastal waterway, right before the main part of town. We saw a shrimper and two other boats there. There is another commercial dock area near the center of town, right behind the Hobucken Marina grill, where there were a lot of pots and some small commercial boats. The inlet itself is lined by mobile homes. There was also a boat yard in town.

One packing house, one of the older fish businesses in the area, deals with many of the small gill netters. Another offloads about 10 of the 25 crab boats that tie up there. These boats also do some gillnetting and oystering.

We talked briefly to several people, including an elderly, very digruntled fishing vessel owner. He said he's been fishing since 1956 and used to scallop exclusively, but that he's prevented from doing that by overly strict government regulations. Before getting too angry to talk to us anymore, he said that he lives in Hobucken and that 90% of the people there are involved in fishing, but then said that nobody is able to fish out of there anymore because of government regulations.

We were also told about a woman in her 70s who fishes out of Hobucken. She has her own boat and is assisted by a relative.

Hangout: a grill called the Hobucken Marina.

Oriental

Oriental has the only fish house in the area that still does extensive crab picking. – the company employs about 110 pickers, most of whom are migrant laborers from Mexico. There is also a seafood company across the harbor. We did not visit Oriental.

Other Pamlico (Craven and Related Inland Counties)

Craven County (pop. 88,475, 1997), up the Neuse River, had a small crab and fluke fishery, over 800,000 lbs. and 630,000 dollars in 1998. Crab pots and float gill-nets dominated, with a range of techniques, including shrimp and skimmer trawls, trolling, gigs, and hand rakes. Fluke and mullets were also important within a total of 46 species landed. In the 1990 census, an unusually diverse population of fishers was recorded: 41 white men, 17 black men, 12 Asian or Pacific Islander women as fishers, and 13 white men as captains or officers. In 1997 168 ETS were issued, and the average fishing income was $11,556, considerably less than the average annual wage per worker of $24,682 (Diaby 1999: 35).

Wayne and Johnston Counties, far inland on the Neuse River, reported very small landings in 1998.

Wake County, near Raleigh, had virtually no commercial fishing in 1998, although in the 1990 census 6 white males declared fishing as their occupation in the census. The small amounts of fish reported in 1998, with rod and reel, trolling, and other methods, are ocean fishes, including King mackerel, porgies, sea basses, sharks, and snappers.

Pitt County, on the Tar River leading to Pamlico River, has a very small fishery (valued less than $30,000 in 1998), dominated by crab-potting. Some gill-net and trolling and rod-n-reel fishing also take place. In 1990 13 white males were described as fishers in the census.

Eastern Dare/Outer Banks Region (including Belhaven, in Beaufort County, Swan Quarter, Engelhard and Ocracoke in Hyde County, and Wanchese and Hatteras in Dare County on the Outer Banks).

This large and diverse region is the site of both estuarine and offshore, federal waters fisheries (Griffith 1996: 42-44). Fishermen of this region often switch between federal and state waters, and hence they depend on several gears and species through the year. Involvement in federal waters fisheries means there is greater concern about federal fisheries management (especially summer flounder quotas) as well as competition from other states including the movement of Florida net fishermen into the region, after the ban on nets in Florida state waters. Decline in oyster stocks has led to increases in crabbing and netting and increased pressure and crowding in the Pamlico and Currituck Sounds. The Wanchese seafood industrial park is a major marketing center for East coast fisheries, and the fleet of trawlers working out of Wanchese is organized around dealers, whereas elsewhere in the region more independent owner-operator fishing operations prevail. Slip space is limited in some areas, and there is concern here as elsewhere that real estate opportunities will replace commercial fishing space with space for recreation-oriented marinas and condominiums. The earning and coping strategies tend to be highly flexible and diverse; there is also some charter boat fishing.

We continue with our by-county analysis of parts of this region.

Beaufort County Profile (includes Belhaven)

Population
County population acccording to the 1990 Census was 42,283. Females outnumbered males 52.8% to 47.2%. Rural areas claimed 69.3% of the population, urban areas 30.7%. In 1997 the population was estimated at 43,400 (Diaby 1999:35).

Racial and Ethnic Composition

There were 13,194 blacks living in Beaufort, or 31.2% of the population. There were 28,949 whites, representing 68.5% of the residents. There were small numbers of Asians, American Indians and other races, and 197 persons of Hispanic origin of any race. The foreign-born population numbered only 254. Of the native-born population of 42,029, 82.9% were born in North Carolina. The largest declared ancestry was English (8,143); the second largest was United States or American (6,352). "Other" numbered 13,986.

Age Structure
Individuals in the 25 to 44 age group made up 29.3% of the population. The next largest group was 5- to 17-year-olds, at 19.4%. Those 65 or older comprised 14.9% of the population.

Household Composition
There were 16,157 households in the county, with an average of 2.58 persons per household. Family households comprised 73.3% of the total, and, of those, 77.2% housed married-couple families. Of the 3,915 householders living alone, 50% were 65 or over.

Of the 16,157 occupied housing units, 74.1% were owner occupied and 25.9% renter-occupied. Of the 3,441 vacant housing units (comprising 17.6% of all housing units), 55.2%, or 1,900 units, were for seasonal, recreational, or occasional use. The homeowner vacancy rate was 2.1% and the rental vacancy rate was 8%.

Median value of owner-occupied housing units was $52,600. Median rent was $191. One-unit detached homes numbered 12,832, and mobile homes and trailers totaled 5,011.

Educational Trends
People aged 25 and over with a high school or higher diploma comprised 65.9% of the county's population. Only 10.8% held a bachelor's degree or higher.

Income
Per capita income in 1989 was $10,722. Median household income stood at $21,738, while median family income was $26,010. Of the 41,676 persons for whom poverty status was determined, 8,130, or 19.5%, were below poverty level. Of the 5,950 persons 65 years and older for whom poverty status was determined, 29.1% were below poverty level. Of the families with related children under 18 years, 21.6% were below, and for female householders with related children under 18, 54.4% were below. In 1997 the average fishing income was $24,462, compared with an annual average wage per worker of $22,102 (Diaby 1999: 35).

Employment
Of the 32,618 persons 16 years and older, 20,475 were in the labor force, and 20,426 of those were civilians. Of the civilians, 5.4% were unemployed in 1989, but more recent figures show that unemployment in the county has been on the rise. In 1997, the annual rate was 7% and, in 1998, 7.8%. In 1999, unemployment was above 8% in January and July. The county shows month by month variations, some of them large, but these do not seem to be seasonal in nature.

Employment Industries
Agriculture, forestry and fisheries industries employed 5.8% of workers (1,108) aged 16 or over. 147 were in the fisheries. (In 1997 626 ETS were issued; Diaby 1999: 35). The largest sector, finance/insurance/real estate, employed 3,275, or 17.1%, of the work force. Manufacturing of non-durable goods was second, with 3,127 workers.

Racial and Gender Composition of the Fishing Industry
The Census Bureau listed two white male captains or officers of fishing vessels in Beaufort County plus a total of 145 fishers. Of the male fishers, two were black and the rest white. All of

the women were white.

Fisheries Profile, Beaufort County, NC

Beaufort County (pop. 42,283, 1990) is an important fishing county, accounting for over 10 million lbs. and 8 million dollars in 1998 (Tables NC-BC1,2). Bellhaven is the principal fishing port. Blue crabs, caught with pots, trawls, trotlines, and other methods, comprise almost all of the landings and value. Fluke made up over 3% of the value. Shrimp is also important although not shown below because of confidentiality.

Table NC-BC1: Landings by Gear-Type, Beaufort County, NC, 1998

GEAR TYPE	LBS. %	VALUE %
Crab pot	85.6%	82.9%
Crab trawl	10.0%	10.0%
Eel pot	0.1%	0.2%
Fish pot	0.0%	0.0%
Flounder trawl	0.0%	0.0%
Fyke net	0.0%	0.0%
Gigs	0.0%	0.0%
Gill net (runaround)	0.0%	0.0%
Gill net set (float)	1.4%	1.1%
Gill net set (sink)	1.2%	1.9%
Other (including conf.)	1.5%	3.7%
Oyster dredge	0.0%	0.0%
Peeler pot	0.0%	0.0%
Pound net	0.0%	0.0%
Rod-n-reel	0.0%	0.0%
Shrimp trawl	0.1%	0.1%
Trolling	0.0%	0.0%
Trotline	0.0%	0.0%

Total landings, rounded, 1998: 10,147,000 lbs.
Total value, rounded,1998: 8,035,100 dollars

Table NC-BC2: Landings by Major Species, Beaufort County, NC, 1998

MAJOR SPECIES >2%	LBS. %	VALUE %
Crabs, blue, hard	94.4%	89.8%
Flounders, fluke	1.4%	3.1%
Other (including conf.)	1.5%	3.7%

Number of species: 38

Field Observations, Belhaven, NC, July 1999

Belhaven

On the way to Belhaven, we passed by the Cee Bee Marina on the Pungo River, which is “a home sites marina,” one of the many recreational marinas scattered all over the eastern counties of North Carolina.

Belhaven is near the head of the Pungo River, which flows into the Pamlico River and then into Pamlico Sound. There are two places where we saw commercial boats: on Water St.

near the center of town and on Pantego St. a little removed from the center. At the latter, we talked to a woman at a crab company, who said that there used to be a third dock in town, but it had closed awhile ago.

Belhaven is a mixture of middle-class and affluent homes, farming, fishing and other small town industries, and a number of recreational marinas with many large boats. Belhaven is where we were told there would be many pleasure yachts (there were) and some trawlers, but we didn't see many trawlers when we were there – only a shrimper in the town center dock area; another vessels at the Cox Railways and Marina in the same area (and we weren't sure it was an active boat); and another at a crab company (there were a number of other smaller boats docked there as well).

Hyde County Profile (includes Swan Quarter, Engelhard and Ocracoke)

Population
The population of Hyde County is tiny – there were only 5,411 people when the 1990 Census was taken. The entire county was classified as rural, but farm population comprised only 7.7% of the total. The estimated 1997 population was 5,280 (Diaby 1999: 35).

Racial and Ethnic Composition
The main racial groups in the county were white (66.5%) and black (33%). Those claiming Hispanic origin of any race made up only .8% of residents. Only 43 people were born in countries outside the US. Of the native population, 79% had been born in North Carolina. People of English and Irish descent were most prevalent, making up 29.3% of reported ancestries, though the combined category of "other ancestries" accounted for 34.8% of the total.

Age Structure
The two largest age categories in the county were 25 to 44 years (1,554) and 5 to 17 years (1,016). There were 899 persons in the 65 years and older bracket, or 16.6% of the total.

Household Composition
Of the 2,094 households in Hyde County, 1,533 were family households, and, of those, 75.1% were married-couple households, and 20.9% were headed by single females. There were 516 householders living alone, a little more than half of whom were 65 or older, and the person per household average was 2.57.

Of the county's 2,905 total housing units, 27.9% were vacant. Seasonal, recreational or occasional use accounted for 57.1% of these. The renter vacancy rate was 24.6 as compared to the homeowner rate of only 2.1. Of the 2,094 occupied units, 23% were rentals. Median value of owner-occupied units was $43,700, and median contract rent was only $158.

Educational Trends
Educational attainment in the county is relatively low: 60% of persons 25 years and over had a high school diploma in 1989, and only 7.7% were graduated from college.

Income
Per capita income was very low: $9,434. Median household income and family income followed suite at $17,665 and $19,929, respectively. Of the 5,559 persons for whom poverty status was determined, 24% were below poverty level. Of the 186 households with a female head and related children under 18 years, 75.8% were in poverty. The average fishing income in 1997 was $37,693, compared with an average annual wage per worker of $17,476 (Diaby 1999: 35).

Employment

The county had 2,392 people 16 or over in the labor force (and 1,819 people who weren't). Of those in the civilian labor force, 200, or 8%, were unemployed. Most of these (71%) were women. In recent years, the unemployment rate has improved somewhat – it was 6.9% in 1997 and 7% in 1998. Hyde County experiences wide fluctuations in the unemployment rate over the course of a year. For example, in 1998 it was over 15% in January and February and at or below 4% from May through October.

Employment Industries
Of the 2,160 employed workers 16 years and older, the greatest number, 454 or 21%, were engaged in farming, forestry and fishing occupations. (Note that 418 people live on farms, though these are people of all ages and employment status). 242 were fishers. (In 1997 397 ETS were issued; Diaby 1999: 35). The next most prevalent occupations were precision production, craft and repair, administrative support and sales. 18.6% of all workers were self-employed.

The perception we found, in interviews, was this: "If you're not a farmer or fisherman, you work for the courthouse or government."

Racial and Gender Composition of the Fishing Industry
The Census Bureau listed no captains or officers of fishing vessels living in Hyde County in 1989. It did, however, count 242 fishers, of whom 234 were male and 8 female. All of the women were white as were 196 of the men. The other 38 men were black.

Fisheries Profile, Hyde County, NC

Hyde County (pop. 5,411 in 1990) although small in population (reportedly there is only one traffic light in the county) is the third largest fishing county of North Carolina, with total landings over 16 million lbs. and value over 10 million dollars in 1998 (Tables NC-HC1,2). Fishing centers include Swan Quarter, Engelhard and Ocracoke. Blue crabs and fluke are the two most important species in terms of value; dogfish, and Atlantic croaker are also significant, and 56 other species are caught. Gears used are the full array of estuarine and inshore techniques, particularly crab pots and trawls, sink and float set gill nets, shrimp trawls, pound nets, and flounder trawls.

Table NC-HC1: Landings by Gear Type, Hyde County, NC, 1998

GEAR TYPE	LBS. %	VALUE %
By hand	0.0%	0.0%
Cast net	0.0%	0.0%
Crab pot	63.0%	58.4%
Crab trawl	4.4%	3.8%
Fish pot	0.0%	0.0%
Flounders trawl	1.9%	5.0%
Fly net	0.3%	0.6%
Gill net (runaround)	0.4%	0.3%
Gill net set (float)	2.2%	2.9%
Gill net set (sink)	17.8%	12.5%
Haul seine	0.0%	0.0%
Longline bottom	0.0%	0.0%
Longline shark	0.0%	0.0%
Other (including conf.)	5.7%	3.2%
Oyster dredge	0.1%	0.9%
Peeler pot	0.0%	0.0%
Pound net	1.5%	3.6%
Rakes bull	0.0%	0.0%
Rakes hand	0.0%	0.0%
Rod-n-reel	0.0%	0.0%
Shrimp trawl	2.5%	8.5%
Swipe net	0.0%	0.0%
Tongs, hand	0.0%	0.0%
Trolling	0.2%	0.4%

Total landings, rounded, 1998: 16,079,800 lbs.
Total value, rounded,1998: 10,921,600 dollars

Table NC-HC2: Landings by Major Species, Hyde County, NC, 1998

MAJOR SPECIES >2%	LBS. %	VALUE %
Unclassified shrimp	2.3%	8.2%
Crabs, blue, hard	66.2%	58.5%
Croaker, Atlantic	8.3%	4.1%
Flounder, fluke	5.9%	16.0%
Other (including conf.)	5.7%	3.2%
Sharks, dogfish	3.8%	0.8%

Number of species: 62

Field Observations and Interviews, Hyde County, NC, July 1999

Swan Quarter

Swan Quarter in Hyde County had the most visible fisheries activity in any of the inland communities we visited. When we first got into the outskirts of town, we saw one commercial boat docked off Route 45, but then got to Landing Road, where there were at least 50 commercial fishing boats and another 15 recreational boats by mid-afternoon. Many of the shrimpers were in while we were there. However, other boats were out, including multi-species trawler and gill-net operations for spiny dogfish, monkfish, bluefish, and Spanish mackerel. The owner of one of the major seafood companies told us that there were 80 to 90 small boats (25-35 feet) in Swan Quarter, and 12 trawlers larger than 45 feet. The trawlers shrimp and catch fish as by-catch. Some retool for crab. Most do not fish in the ocean. There are also a few pound netters and 3 to 5 gillnetters in the community. We were also told that there is competition between commercial and recreational fishers, but it is manageable: "there's always somebody there to help when you need it."

In Swan Quarter are a number of fish houses and a marine supply store, mostly at what is known as Pamlico Beach. One fish house specializes in soft shell crabs, which it wholesales, primarily to Fulton Fish Market in NY. It employs 11 full time and 3 part time during their peak times. The owner said they work from April through September. In the winter, some oyster, some crew for other boats and some paint houses. Most stay in the community and live off what they made during the summer. The owner also said that 6 to 8 women run their own small crab boats.

The other fish houses are more diversified. The second dock is mainly a shrimp and crab dock; there are two gillnetters who catch a wide variety of species. At the time of our visit focus was on "speckled trout" (a kind of weakfish or squeateaque), which was experiencing the best run in years. The fish that is caught and sold in this area are primarily flounder and speckled trout. Another company does oysters, shrimp and a variety of fish. A third does oysters, shrimp, soft shell crab and fish. Most of the houses cater primarily to the shrimpers, who tend to specialize rather than combine shrimping with flounder fishing, etc.: "Most shrimpers don't retool for flounder in this area because of the cost of retooling." According to another informant, fish are caught mainly as by-catch. Some retool in order to trawl for crab, but most don't go out in the ocean. 99% of these shrimpers live in the area, according to a local informant. The crews are also mostly local. There were only two "migrant workers" that he could think of in the area.

Engelhard

We did not visit Engelhard, although we talked with a local fisherman on the telephone. It is similar to Swan Quarter: in July 1999 a fisherman from Swan Quarter said that the fishermen of Engelhard, which is further to the east/northeast, "get more out of the ocean than we do, but right now they're gettin' the same thing we are." Engelhard, a substantial port not far from Oregon Inlet, services both ocean-going and sound fishermen. Four fish houses purchase shrimp, fish, and crabs, with varying specialties. Some own their own wood- and steel-hulled trawlers. Problems with Oregon Inlet lead some to use Virginia ports during the busy winter trawl fishery.

At times the creek at Engelhard is filled with shrimp draggers, local and from the larger area, as far as Georgia and Florida. An informant who fishes and crabs in the sound said that when the shrimping is good, in the summer at night it can "look like a city on the sound." Although some people specialize in crab-potting, the more usual pattern is to combine different fisheries. Before oysters disappeared from Pamlico Sound, the winter oyster fishery was the mainstay, and in the summers people went crabbing or fishing. Now, someone might be crab-potting in the summer, switch over to peeler pots for peeler crabs,

switch back again, do some sink-netting (gill-netting) in the winter, and perhaps flounder gill-netting in the fall (the flounder gill-net is different from a sink net).

Engelhard is very distant from coastal development, and therefore there are few conflicts with speedboaters, sailors, and recreational fishermen compared with other fishing grounds on Pamlico Sound. A recent issue, according to a fisherman from Engelhard, is the attempt to limit the numbers of crab pots used, following a five-plus year moratorium on crab licenses. Engelhard and some other crabbers have objected because, they suggest, the problem is mostly one of water use conflict with boaters, and that it therefore should be handled at more local levels. Apparently the state has recently established area councils to deal with problems like this. Another recent, and mounting, issue concerning Engelhard and other North Carolina fishermen is the question of the mortality of seabirds and turtles in gill-nets. Gill-netters may have to carry observers from time to time as part of research on the question.

Ocracoke

Ocracoke is a pound-net fishing center. One person interviewed fishes 9 pound-nets and estimated that others in the area fish as few as 4 or 5 and as many as 18 to 20. The pound-nets used in Pamlico Sound are mostly for croaker, butterfish, menhaden, weakfish, and Spanish mackerel. In October and November many on Ocracoke gillnet for roe mullet. Crabbing is also very important. One of the two major packing houses in Ocracoke is a crab company. Three-quarters of the crabbers offload with this company.

A second major business in Ocracoke was built in 1974-75 and purchased by its present owner in 1982. The owner, our informant, was a commercial fisherman and still uses trapnets for flounder in the fall. Once he had a 72 ft. steel hull trawler but now runs a 25 ft. Parker. He traces his roots in fishing to the mid 1700s, on his mother's side, in Ocracoke, and is in the process of turning the business over to his son. Currently he fishes 8 pound-nets and his son fishes 18.

The number of boats that pack out of this business varies seasonally and ranges from 4/5 per day to 30/40 per day. These are all smaller boats (20-28 feet). There is one trawler on Ocracoke island, but it belongs to a retired fisherman and rarely goes out.

All but one of the fishers who pack at this business live on the island. They live all over town and are well integrated into village activities. When the owner of this business bought the place in 1982, he said there were no fishers. By 1985 there were 53 crabbers. Now the island has only 9 or 10 crabbers. He said that "fishing is a young man's game. It's not an old man's game. It's too much hard work!" He believes that the decline in the number of fishers is in part generational: young people are choosing other options that require less work with more steady incomes. But he feels that even those currently fishing have gotten lazy with the increasing price of fish. They don't have to work as hard to make decent money. But those who want to make good money still have to fish as often as possible. He also believes that it is a difficult business to get into because of the high cost of gear. Every fisher now (particularly with the restrictions caused by regulations) has to be as diverse as possible. They have to retool regularly. Pound nets cost anywhere from $2,000 to $10,000 each, depending on whether they are for shallow or deep water use. Crab pots cost at least $20 each; crabbers on the island have anywhere from 300-500 pots each (which are small numbers compared to what we have seen elsewhere).

This informant fears that if a hurricane comes in early October or late September, most of the Ocracoke fishers would be run out of business. 40-50% of their annual gross is done in that time. Because so many are dependent on gear that remains in the water (pound nets and pots), few would be able to afford to replace all their gear at once. Most in Ocracoke had accumulated gear over time; they increased their fishing assets incrementally.

The 1985 hurricane Gloria destroyed many. Most fishers here don't know how to make their own nets; they could save thousands by making their own nets and weights (which is what he and his son do).

The annual round was described to us as follows: February to May, the fishers in Ocracoke gillnet in the ocean. There's limited gillnetting in the Sound for species like speckled trout and mackerel. They put the summer (lighter, shallower) poundnets out in late May/early June for what our source called "seine net fish," or the mid-level fish. It takes one person to set and harvest these nets. They'll fish these poundnets until August. The fall poundnets put out in August have larger mesh (4/5 inch) and take at least two or three people to set and harvest. They fear the loss of dogfish with the new regulations; dogfish helped them a lot in the winter. Roe mullet brings them a good income in the fall. Mullet goes from $.50/lb. in the summer to $1.50/lb for fall roe mullet. But it is the combination of summer and southern flounder that carries the business.

Our informant says there is a big difference between the full time and the part time fishers. There are 30-40 boats in Ocracoke. Most of these poundnet and gill net for mullet at the same time. Crew varies seasonally and by gear. Three to four crew members are crew used when poundnetting; only one crew used when gillnetting for mullet.

Good fishers are grossing in excess of $100,000. Startup costs are very expensive; maintenance costs are not as high. The gear is expensive to buy, but once you have it paid off, you can make good money. But the ones who are making this kind of money are the ones who are out there fishing consistently, day in and day out. Most do not put in that kind of effort. "Guys don't want to work for $200 a day. They'll wait until fishing is good. The guy who wants to make big money fishing must fish consistently."

Our Ocracoke source believes that young people who do not go to college are taking up more attractive jobs on the island. The minimum wage is about $8/hr. What they would be missing, he believes, is "the independence found in fishing. You can be away from telephones and computers. No one knows how relaxing it is to be part of the environment. You become part of mother nature. You can predict the weather by feel. You get a feel for fish patterns."

When asked about the ethnic make up of the local captains and crew, he said that there were "only two Mexicans working on the .... docks [of his company]." He said the crab picking houses have had to go to Mexicans because "Mexicans have a great work ethic" (see Griffith 1996, 2000 for changes in the labor force).

Our informant could think of one woman who fishes on Ocracoke. She fishes during the flounder run. She also gillnets. She hook and lines for tuna, mackerel, and she works at a local restaurant in the summer.

All of the products sold at this company's retail market come from the local area (Morehead City to Wanchese). The only thing brought in are sea scallops. The company does not pack crab; they send their crabs to a related company in Orient for picking.

According to the owner of one of the major Okracoke seafood companies, community support for the fisheries is strong: "Maybe the treehuggers want us out, but the community supports us." There are approximately 700 permanent residents on the island. Commercial fishing is an attraction for the tourists. The business owner allows them to come in and see the commercial packing. He uses the opportunity to educate them on what commercial fishers do. He used to be on the state's Marine Fisheries Council and currently reviews grants for the fin fish advisory committee. He does a lot of public relations work such as speaking to a large group of teachers from local schools to educate them on the commercial fishing industry. His company also donates fish for local fish fries.

One of the people we interviewed complained about “too much politics” in fisheries management and expressed the need for greater industry initiative: "Some hard decisions need to be made and a couple of powerful people in the industry are fighting too hard. The state's gonna come down hard on gear regulations because we don't do it ourselves. We need to determine what our needs are and limit ourselves. If we don't give a little, the Coastal Conservation Association will have everything stopped." One of the statistics he complained about was the measurement of netting. According to this gentleman, regulations are made on the total length of netting that a fisher fishes, regardless of whether all of their netting is in the water at the same time. He wants to see this regulation changed.

April to November is the heavy tourist season, and during that time the 6 to 8 charter boats that operate out of Ocracoke harbor are in business. We were told that there is not much tension between the commercial or recreational fishers here, compared with conflicts within recreational interests.

Ocracoke used to have a crab festival in the spring but it was stopped due to "liability." The cost of insurance was too high for the sponsors.

Dare County Profile (includes Hatteras, Wanchese and Mann’s Harbor)

Population
According to the 1990 census, Dare County had a total population of 22,746. Rural population was 81.4%, although less than 1% lived on farms. The estimated 1997 population was 27,394 (Diaby 1999: 35).

Racial and Ethnic Composition
In Dare County about 95.7% of the population was white. The next largest racial group was black, at 3.6% followed by Hispanic origin, of any race, at almost 1%. There were small numbers of American Indians, Asian, and other races. Of the population in Dare County, 98.7% was native 41.2% born in North Carolina. The most prevalent ancestries reported were Dutch (6,667 people) and German (4,459 people).

Age Structure
The 25 to 44 year-old age group was the largest, at 8,255 people or 36.3%. Individuals under 18 years old comprised 22.4% of the population and individuals age 65 or older comprised 12.5%.

Household Composition
Of the 9,349 households in Dare County, 68.7% were family households. Of the family households, 85.6% were married couples and 10.6% were headed by single women. An average of 2.41 people were in each household, but 24.2% lived alone.

Of the 9,349 households, 28.9% were renter occupied. There were 12,218 vacant housing units in the county, 6,415 of which were for seasonal, recreational, or occasional use. The homeowner vacancy rate was 6.1% and the rental vacancy rate was 58.0%. The median value of owner-occupied housing units was $108,100 in 1990 and median rent was $416.00. One unit detached housing comprised 74.2% of all housing units and mobile homes and trailers 10.9%.

Educational Trends
In Dare County, of people age 25 years and over, 81.0% were high school graduates or higher; 21.4% held a bachelor’s degree or higher.

Income

According to the 1989 census, per capita income for the county was $15,107 and median household income was $29,322. Of the 22,536 people for whom poverty status was determined in 1989, 1,861 people or 8.3% were below the poverty line. In 1997, the average fishing income was $29,296, considerably higher than the average annual wage per worker of $17,989 (Diaby 1999: 35).

Employment
Of the 18,189 people age 16 years or older in Dare County, 71% were in the labor force. Of these, 99.2% were in the civilian labor force, of which 4.5% were unemployed. More recent unemployment figures for the county were 5.4% in 1997 and 5.6% in 1998. The county shows seasonal shifts in unemployment. For example, in 1998, unemployment was 17.6% in January, ranged from 1.3% to 3.5% from April through October, and was back to 14.6% in January of 1999.

Employment Industries
Of the 12,199 employed people age 16 and older, 653 or 5.4% were in the agricultural, forestry, and fisheries industries sectors. 470 were in fisheries. (In 1997, 1,051 ETS were issued). The largest sector of all was retail, at 24.4%, followed by sales occupations at 16.8%. The next largest occupations were precision production, craft, and repair occupations; construction; executive, administrative, and managerial occupations; service occupations, except protective and household; and administrative support occupations, including clerical. Government workers comprised 15.7% of the work force, and there were 1,981 self-employed workers.

Racial and Gender Composition of the Fishing Industry
There were 30 white male vessel captains or officers living in Dare County, according to the Census Bureau. There were also 391 male and 49 female fishers, all of whom were white.

Fisheries Profile, Dare County, NC

Dare County (pop. 22,746, 1990) saw over 36.6 million pounds and 23.5 million dollars from fish and shellfish (and turtle) landings in 1998, the second highest county in the state in terms of pounds and first in terms of dollars (Tables NC-DC1,2). Fishing centers include Wanchese, Hatteras, and Mann's Harbor. Fluke (15%) was second to crabs (40%) in terms of value, but a much wider range of products were significant than in other North Carolina counties, because of the importance of ocean as well as estuarine fisheries. These included bluefish, dogfish, squid, weakfish, anglerfish, king mackerel, sharks, and tuna. The fisheries range from estuarine fisheries (crab-pots, pound-nets, turtle pots, fyke nets, etc.) to offshore longlining.

Table NC-DC1: Landings by Gear Type, Dare County, NC, 1998

GEAR TYPE	LBS. %	VALUE %
Beach seine	1.5%	1.3%
By hand	0.0%	0.0%
Cast net	0.1%	0.0%
Crab pot	30.6%	33.0%
Crab trawl	0.6%	0.5%
Eel pot	0.0%	0.1%
Fish pot	0.1%	0.2%
Flounder trawl	3.3%	7.5%
Flynet	13.2%	7.7%
Fyke net	0.0%	0.0%
Gigs	0.0%	0.0%
Gill net (runaround)	1.0%	1.0%
Gill net set (float)	0.7%	0.8%
Gill net set (sink)	36.4%	22.5%
Haul seine	0.7%	0.5%
Longline bottom	0.0%	0.0%
Longline shark	1.5%	0.8%
Longline surface	2.7%	5.8%
Other (including conf.)	0.6%	0.4%
Oyster dredge	0.0%	0.0%
Peeler pot	1.1%	5.6%
Pound net	2.1%	3.4%
Rakes bull	0.0%	0.0%
Rakes hand	0.0%	0.0%
Rod-n-reel	0.6%	1.4%
Shrimp trawl	0.4%	1.2%
Trolling	2.8%	6.1%
Turtle pot	0.0%	0.0%

Total landings, rounded, 1998: 36,625,800 lbs.
Total value, rounded, 1998: 23,511,500 dollars

Table NC-DC2: Landings by Major Species, Dare County, NC, 1998

MAJOR SPECIES >2%	LBS. %	VALUE %
Anglerfish (goosefish)	1.8%	1.9%
Bluefish	6.4%	2.6%
Crabs, blue, hard	30.1%	27.8%
Croaker, atlantic	18.9%	9.4%
Flounders, fluke	5.2%	15.0%
Mackerel, king	2.0%	4.7%
Sharks	2.7%	1.4%
Sharks, dogfish	10.9%	2.3%
Squid	2.4%	2.0%
Tuna	2.6%	5.2%
Weakfish (seatrout, grey)	4.7%	3.9%
Crabs, blue peeler	0.7%	2.2%
Crabs, blue, soft	1.6%	9.2%

Number of species: 69

Field Observations and Interviews, Dare County, NC, Summer 1998, July 1999

Hatteras

Hatteras and Its Fishery
(Note: This part is based on field research done by Doug Wilson in 1998 for the Highly Migratory Species social impact assessment, Wilson and McCay 1998).

Hatteras Village is a rural community at the southern end of Hatteras Island on North Carolina's Outer Banks, part of Hatteras Township (pop. 2,675 in 1990). Hatteras Island is the "classic example" of a dynamic barrier island, which is bordered by the Atlantic on the east and Pamlico Sound on the west. Noted for it's vast marine resources, the area is also an important point of departure for marine vessels, and has historically been considered a strategic location on the coast of North America during war.

Geographic isolation adds to the local character of Hatteras. Respondents said that it is a place where people feel safe. Some people leave their houses unlocked. It feels safer because it is an isolated island community. A ferry leaves Hatteras to go to neighboring Ocracoke Island. Usage of the ferry is very in the summer when you can bet get cars backed up for a half a mile. The village is quite and insular and "made up of a lot of people who came here to get away from something."

In the 18th century, Hatteras established itself as a seaport community, where activities included whaling and exporting/importing. However, due to the dynamics of the barrier island geography, Hatteras Inlet was closed in 1764, only to be opened up again during a large storm in 1846. Since World War II the economy of the Hatteras community has depended on charter and commercial fishing as the major sources of local income; tourism also serves as an important economic activity.

Seasonal variation in the local economy of Hatteras is due to the presence of three "seasons". In the spring, revenue begins to pick up during weekend and holiday tourism; it is during this period of time (April to May) that approximately 30 boats from the commercial fleet become active in charter fishing. The second season, approximately June through August, begins when schools let out for the year and family vacations are frequent. The third "season" is the fall, when fishing, surfing and windsurfing are the dominant activities.

In Hatteras, 57% of employees are private for profit wage and salary workers. Tourism and recreation are major industries in Hatteras in terms of employment. Commercial fishing is also a major occupation on Hatteras Island, where there are approximately 500 to 600 part and full time commercial fishermen; recreational fishing is a source of seasonal employment. According to the 1990 Census, twenty-one percent of employed persons work for the local (8%), state (7%) or federal (6%) government; these public sector jobs include ferry workers. Self-employed workers make up 16% of the employed work force.

When combined, managerial, professional, technician, and administrative jobs account for nearly half of the occupations reported in the 1990 Census. Farming, forestry and fishing jobs are held by 6% of those employed in Hatteras.

Fishing Related Businesses

In Hatteras there are five seafood wholesalers and one retail market; there are three marinas. Businesses in surrounding communities such as Manteo and Buxton also add to the marine economy. Hatteras Village is almost totally dependent on fishing. While non-fishing tourists, especially windsurfers, are attracted to beaches elsewhere on the island, Hatteras Village's own beaches are less appealing. Tourists come to Hatteras because they want to fish. Our oldest respondent (in 1998) told us that when he was growing up the only thing to do was fish. He remembers one morning, fifty years ago, counting some 260 boats going out of the harbor. They were gillneting for trout and croakers and "caught a lot more fish than is being caught now." The recreational and charter fishing industry's history is just as proud. The wall of one charter boat office is covered with captioned pictures displaying the history of the Albatross Fleet. In 1937, the four sons of a commercial fisherman went into the charter business. Their first sailfish was caught in 1940. Tarpon and dolphin began in 1940. They hired a publicist to spread the word about big game fishing in Hatteras. They caught their first marlin in 1951. In 1952, the first blue marlin was caught by a lady. In 1962, The Albatross III caught a world record, 810 lb blue marlin. The headline on a yellowing copy of a 1958 New York City newspaper article proclaims the shocking news of an "Angler Deliberately Releasing a Blue Marlin!" (Hurley 1958). The angler was Jack Cleveland of Greenwich CT fishing on the Albatross.

Marinas and Charters

As we did for Point Pleasant/Brielle, New Jersey, we offer some detail on the sports-fishing component of Hatteras, which is otherwise not treated in this study. It is based on field research done in 1998 by Douglas Wilson (Wilson and McCay 1998).

A charter boat captain related in 1998 that newcomers are amazed at how good the fishing is. Ditton et al. (1998) did a survey of both private and charter boat anglers in Hatteras in the winter of 1997. Their results support the captain's assertion. They found that of 644 anglers, 46 percent agreed with the statement "I caught more fish than I expected on this trip" and 42 percent agreed that they "could not imaging a better fishing trip." The winter season is bluefin tuna. In early spring they get puppy drum on the beach, and offshore yellowfin tuna, dolphin, wahoo and marlin. Sailfish come in June. In the summer with the warm water they get "all fish": flounder, cobia, speckled trout, drum, wahoo, marlin and sailfish. In the fall are flounders, king mackerel and rockfish.

The marinas are 100 percent fishing related. Over the course of the year most people come to fish with their boats, both trailer boats and over water boats. A marina owner estimates that half of the parties are all men and about half families. The families go to the beach, the shops, and amusements such as go cart tracks. The winter bluefin tuna fishing brings a greater percentage of the trips to the charter fleet In their census of fishing trips during the bulk of the 1997 winter season, Ditton et al. (1998) found only 27 percent of bluefin

tuna fishing trips were in private boats and the rest in charter boats. Ditton et al. (1998) found 51 charter boats in Hatteras in January.

Make up charters, where marinas organize the parties, are becoming more and more common. A captain estimated that his marina did 140 make up charters in the past year. The majority of the charter customers are after a good experience with offshore fishing. One captain, who has been chartering for many years, believes that the motivations of the charter customers are changing. He describes the current group as people who want to get way from city jobs and have fun with something really different. A lot of them are outdoorsmen in other areas. The fishing puts them in touch with wild creatures. The "game hogs," meaning those primarily interested in getting a lot of "meat," have dwindled. He sees the customers as will to accept limits when they are imposed. Often they are more willing to accept limits than people who have fished all their lives. Meat, however, is still an important motivation for all anglers except for billfish anglers. In fact, another captain, who does about a quarter of his business on billfish, sees the growing catch and release ethic as having reduced angler interest in marlins.

Captains say it is very hard to find a year round mate. The college students who work in the summer can make more money when they graduate. It's a good lifestyle for a college student, but to find someone year round they have to like to fish. These are more skilled fishers and they want their own boats. One captain said that "of the boats that are fishing year round, you can bet that the mates that they have are looking for a boat to fish in the future." He estimates that about one in five mates are married and supporting a family.

Changes in fishing affect charter bookings almost instantly. Within a couple of weeks after a fish species is gone the marinas will start to get cancellations. Charter customers show little loyalty to North Carolina as a place to fish. Ditton et al. (1998) found that less than a majority of charter boat anglers (44 percent) opposed restricting NC fishing to benefit other parts of the coast, while a majority of the private anglers (57 percent) opposed the measure. They also found that anglers from NC were more likely to oppose the measure.

Because Hatteras attracts top sport fishers from around the world, the issues of minimum sizes and trophy fish take on special significance. One captain, by his account and that of others, attracts people who come specifically to fish for world records. They are interested in setting records by catching smaller bluefin tuna on fly rods. In 1997 fishing for fish between 27" and 73" was closed on March 2nd. Between, March 5th to March 18th, he had four different groups of people coming to fish for bluefin tuna for world records; and they all canceled because they could not keep a world record fish even if they caught it. Few anglers want to release bluefin tuna. Ditton et al. (1998) found that 60 percent opposed catch and release only for bluefin tuna. Keeping trophy fish "means a lot to someone who has paid a thousand dollars to go out fishing" the marina owner said.

The "charter business is not native sons any more" said one respondent. A captain estimated that where the village had 15 charter boats ten years ago there are now 40. These are the charter boats that stay here all year round. Transient charters come for the "cream of the crop," particularly the bluefin season. Ditton et al. (1998) found 51 charter boats in the village during the 1997 bluefin season. There is tension between the local charter boats and the transient charters because of increased competition for both fish and customers. One new charter boat is a state-of-the-art luxury boat with fish finding electronics, a stereo, a microwave and air conditioning. The locals argue that he could get $1500 a day but instead charges but a little more than the going rate. He has announced that he intends to take business from people. However, they say that the charter fleet has not reached a saturation point and that the customers are still happy. The charter captains say they generally work well together. There is also tension with private recreational fishers who following the charter boats to see where they fish.

Another long-time, local fisherman is running two party boats. He is finding more and more ways to make the party boat a family excursion. He does pirate trips and other special off shore trips. He also does birding trips.

Tournaments

The Hatteras Village Civic Association holds three tournaments a year. Tournaments attract people for the prize money and the social events that surround them. The biggest in the area is the Big Rock tournament the first week in June. The present tournament is three days and many boats fish out of Hatteras. One marina manager, interviewed just after a tournament in May, reported that the tournament attracted 9 boats. This was an increase of a third over the year round boats. Also in May is a tournament at another marina and one at a private club. Tournaments are in May because it is otherwise a slow month. There is also a king mackerel tournament in the fall,

Recreational billfishing in Hatteras is described by respondents as totally catch and release. The only exception, and it is an important one, is large tournaments. There are seven such tournaments in North Carolina that are too large and if these tournaments were not allowed to kill fish it would have a negative impact on all businesses related to recreational fishing. The biggest tournament directly affecting Hatteras is the Big Rock in Morehead City. Many boats in this tournament fish out of Hatteras. The blue marlins being killed in tournaments are 110" inches. Respondents disagree about the affect of a 113' size limit on these tournaments, but 113" inches is tending toward a rare event. It would make it possible that a tournaments would not catch any fish. The tournament at the private club in Hatteras is a total release tournament and has been for five years. However, it is for a trophy only. The organizer says that they lost a few people when they shifted to total release, but they picked up even more. In his estimation, more people don't want to kill than do. The scales at the club are rusted out, they couldn't weigh fish in any case.

The Winter Atlantic Bluefin Tuna Fishery

Perhaps the most pressing issue for highly migratory species in Hatteras is the status of the relatively new winter fishery for bluefin tuna. In their study of the 1997 bluefin tuna fishing season, Ditton et al. (1998) found that bluefin tuna anglers spent $3.6 million dollars in Hatteras in two and one-half months in the 1997 winter season. They estimate that this meant a $7.6 million increase in the output of the Hatteras area economy which supported 170 jobs. Dare County, the lowest level for which North Carolina Employment Security Commission figures are available, had an average of 1963 people on unemployment in the first quarter of 1997. This represents 14 percent of the workforce. In contrast, they had an average of 320 people on unemployment from June through August of 1997. Following these estimates, the bluefin tuna fishery reduced unemployment in Dare County by eight percent. These jobs, however, would tend to be concentrated in the Hatteras area, not spread across Dare County. Although no figures are available just for this area, it is reasonable to conclude that the impact of the winter bluefin tuna fishery on local employment is very substantial. A marina owner reported that his receipts for March 1997 after the quota closed were down $100,000 compared to March of 1996 when anglers could still land bluefin tuna. Unemployment in Dare County in March of 1998, a year when the bluefin tuna had left earlier than in 1997 was 29 percent higher than in March of 1997. Some of this must be attributable to the early disappearance of the fish.

Respondents view and respond to the winter fishery very differently. They even disagree about when it started. One offers this account: "The first year (in her account, 1996) of the winter fishery people did not believe what was happening. They were hesitating making any changes in response to it. Lots of people liked to go away in the winter anyway. The second season people related to it as a bonanza. Lots of investment and talk about expansion. The third season it began to collapse. People had become dependent thinking that

they would always have a twelve month season." Our oldest respondent does not think anything new is going on, he, and several others, think that it is just the natural variation in the presence of fish. Still others are unhappy to see the new influx of tourists. They say only the business people care. The rest of the community was perfectly happy to have a quiet winter and see the tourists go home. Another respondent criticized all the hype. "It is true" she said "that there has been an increase in visitors and money is coming in but the change has not been that substantial. Some articles make it sound like Hatteras was asleep and suddenly woke up. A couple of restaurants and hotels have stayed open but many people in the service industry have remained unemployed."

Those who now have winter jobs, and those who hire them, have different perspectives. One woman now has employment all year round after ten years at a seasonal restaurant job. "Before the bluefin the whole village shut down." One charter captain, who happens to be skeptical about the future of the winter fishery, said that it has had a substantial effect on the life style of the charter boat captains. Before the winter fishery they would live in the winter and early spring on their deposits for the following summer. It also helps employers with their problems finding and keeping employees. Looking for people that can do a job right is always a problem, a marina owner related. Now you can hire people year round. This makes it easier to hold on to good people and avoids the hassle of finding and training people all the time.

Others wonder about the long term effects of these kinds of jobs. One respondent pointed out that these are all service and tourist jobs where people make minimum wage or just above. At the same time rent and property costs are high and are becoming higher as Hatteras become an increasingly popular destination. She is concerned about where the children of working people living here will be able to find a job or a piece of property. Finding a place on Hatteras Island for a low wage worker to live is already difficult. One marina has turned a store room into a dorm for its seasonal workers.

Many people don't think the winter fishery will last. This is particularly true of the fishing professionals. There have been people from other areas who came here because of hype about a year round business. One businessman said that he needs the bluefin tuna to stay around for seven more years to repays the loan he used to buy a fishing-related business two years ago. He had been looking at this deal and decided against it, but a year later, with the bluefin tuna in the picture, he decided that he could make a go of it.

Fishing Association and Small-Boat Mixed-Fishery Concerns

The only active commercial fishing organization is the Hatteras-Ocracoke Auxiliary of the North Carolina Fishermen's Association, which has been organized since 1992. In the current Hatteras fleet there are 35 or so small gill net boats dependent on a very diverse fishery. What disturbs them the most is the possibility of limited entry systems. They fish five or six species a year but do not always fish the same ones every year. What scares them is that they will not be fishing sometime when landings are counted for some system based on current participation.

Field Observations and Interviews, Hatteras, NC, July 1999

Commercial fishing in Hatteras is said to be much like that of Ocracoke in terms of the size and number of boats (30' to 45'). They mostly trawl for shrimp in the summer and "drop net in the ocean for trout" in the winter. A distinction of Hatteras is that its crabbers are said to be more conservative than those on the west banks of North Carolina: Hatteras crabbers have little more than 300 pots apiece whereas on the western banks crabbers do not run less than 1,000 pots apiece. According to one of our informants, the more diversified

nature of fishing in the Hatteras area accounts for the difference: "Our diversity allows us to fish fewer pots."

There are three major sites for fishing boats in Hatteras: two marinas and the docks off Altoona Lane. The docks on Altoona Lane are said to service 20 to 25 crabbers and fishermen, using small boats, up to 35', as well as a couple of larger boats, including a 47' boat used for dogfish by a local fisherman who was fishing up off Massachusetts during our visit. One of the managers of a seafood house here said of the fishermen "They're doing everything they can do to make it. They'll probably be left standing because they do so many different things while inland they only do one or two things." He also said it has been hard to get people to work on the boats or in his fish house because of various regulations.

One of the businesses we interviewed has been in place since 1982. It has experienced a major decline in business from 1994 to 1999, an almost 50% decline. The owner blames this on regulations, in a subtle process: "They take one thing away, then another and another, and finally it all makes a big impact." He says that he's "a believer in the cycle of fish. However, the fishery managers disagree". Still, he insists, "Our fish are coming back now like in '80 and '81. Things like the weather patterns make a big difference in whether there are fish around or not."

He said that he used to go to fisheries meetings all the time but doesn't anymore because "they already have their minds made up." And he has taken to giving money to politicians rather than to fishermen's associations. He feels that the sportsfishermen have more money, and that's why they are winning out. He did say that a state senator from North Carolina has been a champion of the commercial fishermen.

As far as the local community is concerned, he said that it has turned against commercial fishermen in the last 5 or 6 years, primarily because of the ascendancy of tourism. "I'm fighting to stay here, to keep the business viable, what with the mortgage, taxes, all those things." While there obviously have been efforts to preserve wetlands within Hatteras, especially in outlying areas and near the Altoona Lane docks, some large, expensive houses and condominiums have been built on or next to wetland parcels. As he puts it, "There are 20 slips here, and they're probably worth $1,200,000." He sees that pressure is coming to change this area into a residential and/or tourist area. "I don't blame the community. It's changing, but we don't want to change with them," he said.

Another dock in Hatteras is owned by a company based in Wanchese, NC. It is a very small dock, and the dock manager is the major fisherman. He dogfishes in the winter. He leases his boat because, he says, it's too risky to buy it, especially "since we're losin' it" with regards to management of the dogfish fishery. The gillnets they use for dogfish are very expensive. He believes they could have doubled their dogfish catch if they regeared, but won't regear because of the pending regulation. They would have regeared a year ago, but they told them the regulation was coming last year, preventing them from buying new gear then. He said if they had known it wasn't coming until later this year, they would have regeared then, but now it's too late to make it profitable. "They can't put you right out of business, but they'll chisel away at you 'till you can't help but get out of it." "They try to preserve species in the same waters, even when they aren't compatible, even when they eat each other".

This man gillnets for dogfish in the winter. He has 1,300 yards of 4 inch mesh net for croaker. He only sets the small nets twice. He said most fishers in this area do both large and small mesh netting. In the winter they small mesh for croaker and grey trout, but these species are so plentiful then that the fish houses won't buy from the small time fishers. He said that they aren't getting any trout this year anyway; "trout this year are almost non-existent."

He says that the way that the inlet has been changing has greatly reduced their ability to catch fish in the inlet. The deep water channel has shifted parallel to the shore, making it unlikely that fish would travel past the sand bars, into the channel. They usually set the pound nets just off the edge of the deep water channel, and a few stop nets in the channel. They have seen fewer fish since the shift.

The weather had been too windy for the past four weeks. The currents are too strong for the bottom fish. No one had packed here for the past two weeks. There is generally a lull this time of the year(July). "But the longhaulers will pick up soon."

The fishermen's hangout, or where they gather when there are more around, tends to be Oden's dock or Sonny's Restaurant

Wanchese

Wanchese and Its Fishery (Note: this section is based on Wilson and McCay 1998).

In 1990, Wanchese (including the village as well as Nags Head and Roanoke Island) had 1,374 residents. Twenty percent of the community's workers were employed in 'agriculture, forestry and fishing' in 1990, the highest of the coastal communities. The relative absence of seasonal change in population for Wanchese departs from the normal pattern of seasonal variation found in the surrounding communities. Since commercial fishing is central to the economy of Wanchese, it does not see the shifts in population that occur due to tourism in the summer months. Unlike the surrounding communities, Wanchese has very little seasonal variation in employment resulting from tourism; what seasonal fluctuations do exist are caused by the availability of the fisheries resources and are countered by the flexibility and opportunistic nature of the Wanchese fishermen. This flexibility is now being threatened by decline in fish stocks and restrictions on fisheries. However, the tourism industries in the surrounding communities do provide seasonal employment opportunities to residents of Wanchese.

Wanchese is located on the southern part of Roanoke Island, on the northern part of North Carolina's coast. Although ultimately unsuccessful, the first American colony was Roanoke Island; today, a local theater group's re-enactment of this historical event is a popular tourist attraction.

Throughout the nineteenth century, the commercial fishing industry expanded, due in part to the involvement of the first postmaster. This postmaster owned or financed most of the commercial fishing boats in Wanchese; he also established a system of credit for the fishermen at his store, which was paid off when they brought in their catches. During that time, almost all of the residents of Wanchese were commercial fishermen. Today the village still revolves around fishing but has expanded to include processing plants. Though traditionally a commercial fishing community, recent growth in tourism and recreational fishing has sparked competition between the new and the old for a restricted resource.

Wanchese's first fish house was begun in 1936 by the grandfather of the current generation that still runs two fish houses in the community, one of which related this history. His son fished the first trawler in Wanchese in the 1950s. He took a little 65' wooden boat and converted it into a fishing trawler. The grandfather stayed and helped packing boats but he was a gillnetter at heart and would rather be catching fish. In those days they were fishing more in Pamlico and Abermarle Sounds than in the ocean. They beached fished for sea mollusks, trout, croakers, spots, striped bass, and bluefish. In the Sounds they fished croakers, butterfish, Spanish mackerel, spots, and pigfishes. With the trawler they began flounder fishing in the winter. Then they would go offshore and catch some sea bass later in the year. They bought another similar boat and then a WWI converted subchaser. The

subchaser was the first boat to try scalloping. The owner of a third fish house built the first flynet in 1971.

Fishing Associations

Fishing related associations include the Oregon Inlet Users Association and the North Carolina Fisheries Association. The former is involved with supporting the plans for jetties at Oregon Inlet; they are responsible for organizing both the Wanchese Seafood Festival and the Blessing of the Fleet. The latter is a trade organization of seafood dealers and commercial fishermen from the state; two members of the 18 member Board of Directors are from Wanchese.

Fishing Related Businesses

There are approximately 117 small businesses in Wanchese, 44 of which are commercial or charter fishing businesses. Some of the more prominent local businesses are described below. Support industries, such as boat builders and seafood packers, are also of great importance to the commercial fisheries.

Seven families of seafood dealers ring the seafood industrial park and serve as the focus of activity for an estimated 200 fishing families who live in Wanchese as well as fishermen from as far away as New Bedford, MA, and Portland, ME (Griffith 1996: 44). One of the major fish houses, which specializes in scallop and flounder, in the early 1990s had fourteen boats which include trawlers, scallop boats and smaller boats for gill netting as well as two scallop boats in Alaska. (In 1999 this company owend 13 trawlers and 2 freezer boats taht were fishing calico scallops in Argentina.) They have three packaging and processing houses, a fish-packing house and a processing and freezing operation in North Carolina, Virginia and Massachusetts. Seafood is distributed locally and nationally by truck and internationally by air freight. Another of the several major fish houses, which specializes in hooked fish, is an important seafood distributer. While only operating one boat, this company buys regularly from 35 local and over 70 non-local boats. A third fish house, which specializes in bulk fish, packs the fish from its own two vessels; transportation of their product is set up through an agreement with the first company. There are several other seafood businesses in Wanchese as well, some of which own their own trawlers.

The Wanchese Seafood Industrial Park was constructed in 1980 by the state; it is operated by the North Carolina Department of Commerce. According to the brochure put out by North Carolina Power in 1995, the park has, among other features, “30 acres of leasable land,” “a 15-acre deep water harbor,” and “1,500 feet of commercial-style concrete docks.” There are currently seven seafood related businesses located at the park. As of 1999, there were also a number of boat builders and other marine related companies in the industrial park. Most of these businesses build and service high dollar sport fishing boats, yachts, headboats, etc., and have been started, according to one of our informants, only in the 1990s.

Part of the Wanchese Seafood Industrial Park project were plans for inlet stabilization. Originally, the seafood park that now takes up half of the newly expanded Wanchese harbor was voted down by the people in the community. The reason they finally put it in was because of the issue of a jetty for Oregon Inlet, which is the most direct route for Wanchese boats to get to open ocean. The state argued that if they were going to spend a hundred million dollars on a jetty the federal government should dredge the harbor, as part of the agreement of the Mateo (Shallowbag) Bay Project. At that time, the harbor was half as wide as it is now. They dredged it out and piled the spill in the area which is now occupied by the park. They put a cement dock in as well. The state essentially came back to the Wanchese community and said if you want a jetty at Oregon Inlet, you have to have the seafood park first. At first they revolted and then acquiesced because of the importance of the

Inlet. They had been trying to get the jetty since the 1950s. Ironically, they still haven't gotten it jettied.

The industrial park is also the scene of the annual blessing of the fleet, which is put on by the Oregon Inlet Users Association.

Wanchese as a Multispecies Fishery (adapted from Wilson and McCay 1998)

A central fact about fishing in Wanchese is the large number of commercially important species caught. Many respondents interviewed in 1998 emphasized how they have to be versatile to survive, particularly because they face quick changes in water temperatures and other conditions affecting fish availability. They suggest that Wanchese is much more of a mixed fishery than in the north where people can fish the same species year round. Because of the weather, summer is the time that the tunas and swordfish are accessible to the medium sized boats that can both gillnet and longline, and late summer is a slow time for everything else. A captain of one of these medium size boats, however, said that he would prefer to stick with shark fishing year round because of the danger of going for tuna and swordfish farther off shore. They gillnet for dogfish, bluefish, Spanish mackerel, trout, and croakers. The latter two are important in the winter and Spanish mackerel is important in the spring and fall. They bottom fish for bass and grouper. There are a number of gillnet boats that switch over to charter fishing in the summer. Large trawl boats fish for squid in the summer and a smorgasbord of weakfish, croaker, and flounder in the winter. Squid requires them to travel north. There are now less than fifteen of these trawl boats that stay at Wanchese.

The combination of this shifting multispecies fishery and management leads to a complaint voiced by nearly every Wanchese fisher and fish dealer talked to in 1998. Wanchese fishers are used to jumping from species to species, but management causes everyone to jumps at the same time. As one respondent put it "this may be good for a specific species at a specific time but it is not good for the whole system." The price of the fish dives when fishers have to shift their effort all to the same species. Some marginal fishers get driven out when these shifts happen. A respondent associated this observation with the fact that there used to be 7-8 Black fishers, and now there are only two. This effect is especially felt when the fishing is good. Another respondent, a fish dealer, said "We had a tremendous amount of fish this winter, one of the busiest winters in a long time. The price of fish was cheaper all winter because everyone was fishing on the same thing. [My] personal trawlers scalloped and floundered. When floundering closed, we had to flynet, fishing for the same fish as gill netters in small boats. We caught a lot, but got nothing for it. I have 350,000 lbs of croakers left, that were caught in March, frozen."

The closeness of the kinship and other historical networks in the community allows for flexible cooperation that matches the flexibility of the fishery. For example, one fish house provides freight for all the houses on a flexible, contingency basis. Another house has two tractor trailers and if that house has less than 10,000 lbs one day they take their freight on the first house's trucks. Another uses this service when he has under 5,000 lbs, because he has one small truck. The house that provides the freight service used to have seven trucks, however, now they have four.

Issues of Crew and Ownership

Hiring and managing crew is getting increasingly difficult. This is especially true for the larger boats that need people who can stay out longer. There is a lot of turnover in fishing crews, particularly when boats have to shift fisheries and the revenue drops. It used to be that job alternatives, carpentry and building for the tourist industry are common examples, did not pay as well as fishing. This is often no longer the case. Including the captain, gillnet boats take two or three people, smaller longliners take three people, the larger longliners try to have four

but sometimes fish with three. Many respondents reported seeing a trend where those people who are available for this work were transients or people who cannot find employment elsewhere. There have been problems with alcohol, drugs dependability and crew creating trouble in the general community. Several respondents reported that they had or knew of boats that were not fishing specifically because they could not find crew to hire.

Wanchese is a conservative, rural community where major fishing business decisions have hinged on interpretations of how the Sabbath should best be honored. Some boat owners are very disturbed at the prospect of dealing with drunkenness, drugs and theft in crew. This goes beyond simply management headaches. People in Wanchese want, as they have in the past, to give jobs to people who are going to contribute to stable community that reflects their values. One boat owner said "this is what makes me want to quit. I can handle dealing with regulations, I can't deal with the crew. You have to deal with people you wouldn't want to associate with. The good people are just giving it up and trying to find shore jobs." Successful fishers from prominent fishing families are discouraging their children from going into fishing.

Many captains and boat owners are searching for alternatives. Fishing is an industry that allows people to make a good living based on skills and knowledge that do not come from formal education. As one respondent put it, "a guy who's making $1000 a week fishing with no education is not going to get a job on land for $1000 a week." Selling boats is difficult. There are few buyers. Searching for buyers and listing the boat for sale makes it even more difficult to find and keep crew. People are leaving fishing for carpentry and building for the tourist industry. Many go into running charter boats.

Field Observations and Interviews, Wanchese, NC, July 1999

In July 1999 we interviewed the owner of one of Wanchese's seafood businesses. He began his business in 1974. His family has been in Wanchese since before the 1770s, having moved down from Gloucester, Massachusetts. Theirs is one of the five main families in the Wanchese area, "distant enough that our kids can marry."

His fish house has 15 full time employees. 3 drive from Columbia but the rest are all local community residents (Wanchese/Manns Harbor). 90% of their business is packing for wholesale. They process about 5% and freeze about 5% of their product. Most of their product is shipped to Boston, NY, Baltimore, Philadelphia and Atlanta.

Our informant indicated that there are currently approximately 25 trawlers out of Wanchese (over 65 foot). There are approximately 35/40 boats in the 40-60 foot range. Business has declined. In 1983 his company packed 350 boats. In 1981 they packed 52 draggers; in 1998 they packed 2 draggers. He said that they are currently doing about 25% of the poundage that they did in the good years. Half of what he sells is now imported from other regions of the US. He doesn't import from other countries. He does some export of fluke and other sushi-quality fish to Japan.

At first he said that 90% of the people in the Wanchese area are involved somehow in fishing. Later in the conversation, when thinking about all the new businesses moving into the area (particularly a few large pleasure boat builders), he revised his estimate to 50%. He said that most of the crew are from the local area, but when he thought of his own captains and crew, he named places in Maryland, Florida, and Virginia as well as North Carolina. He said that it's almost impossible getting and maintaining quality crew. He said it's almost a worse problem that dealing with the government.

He said that the good fishers are doing alright. Versatility is important. Those who want to make a good living have to be willing to change gear a number of times throughout the

year. He believes that the government does not take into consideration how the fishers' options are narrowed by the regulations. But, he believes that "a good person willing to work will do just as well today as what they would in earlier years." Still, there are few young owner-operators. He said that he cannot encourage his kids to go into commercial fishing, "even though they could make as much money as my daddy could." His father never encouraged him to go into the packing business, and, in fact, was hostile toward other packers before Willie got into it.

When asked about the ethnicity of the captains and crews, our informant said that there are African-American brothers who own three boats in the area. He did not give us details. He also mentioned a captain from Engelhard, an "unbelievably articulate but shy individual," who was praised for his efforts at speaking up at state meetings. He was defending crabbers and shrimpers at one meeting where he reportedly told the MFC that "you'll hurt my people with these regulations." After his stories there wasn't a dry eye in the audience.

In regard to the tension between the commercial and recreational fishing industries, he said: "Less than 3% of US citizens ever catch a fish in the ocean. The American people wouldn't let them put us out of business, especially if they know who that 3% is." This informant takes on public relations opportunities when possible. A major television network was doing a documentary on commercial fishing and was interviewing him the next week.

Our second informant in Wanchese in 1999 was the captain of a fishing vessel and introduced to us as "the most knowledgeable on what the regulations are doing" and well read. He has been fishing for 10 years and is in his late twenties or early thirties. He said that he is the younger of all the captains and that there are two others around his age.

Annual Round: Starting Jan 1, he longlines for shark for 2 months. In March he retools and gill nets in the ocean through April. After a two week vacation, April - June he longlines for tuna. When longlining he uses what he called a Japanese green stick, a straight flexible pole that is raised from the middle of the boat to raise the height of the line into the water. With a float at the end of the longline, hooks are rigged at various lengths in consistent intervals off the back of the longline. In July he goes back to shark fishing "every day until the federal quota is met." August 1 he is home, doing some longlining, but mostly "hanging low." September 1 he is back longlining for big eye tuna. In October he mounts reels for King Mackerel. October through November he reels for King Mackerel, "but the sharks are back and we're not allowed to catch 'em." November he gillnets in the ocean for croaker and bluefish. When gillnetting, he'll also catch bluefin tuna, rockfish, flounder and shark as bycatch. In December some fishers in the area pot for seabass, but this is reserved for those who have a permit. He doesn't have a seabass permit. In the last four years he has fished from Jacksonville, FL to Montauk, NY.

One of the first things this captain said challenged the politicization of the regulatory process: "One day the truth will set you free, without money." He was referring to the politicians for sale to the highest bidder. He complained about one aspect of the current regulations that many others also complained about. He said that he is forced to throw thousands of pounds overboard a year, because he cannot keep more than a certain poundage. He said that last year he had to throw 34-36% overboard. He also complained about a 5% community quota for "public display" on his shark catch. He said that 5% of the state shark quota is reserved for places like public aquariums. He is also worried about a pending croaker plan in the works for next year. He complained about the bad science used in collecting the NMFS data and mentioned poor sampling techniques as his central example. He also complained about the regulatory bureaucracy creating work for itself for the main purpose of maintaining the bureaucracy itself. He worries about the lack of regulations on the recreational industry. "There is no accountability for the recreational industry and the laws continually benefit them.

When criticizing recreational fishers, the captain spoke mostly in the abstract. Yet he spoke kindly of the recreational fishers in Wanchese. "We are blessed to have charter and commercial industries that work together. In the winter, captains run other boats and the crews hire on to commercial boats." He believes that relations between recreational and commercial fishers are worse "up North" and in Florida. According to him, the public perception of fishermen is worse in those areas.

He has been involved in politicking for commercial fishing interests. He made up t-shirts criticizing the sports fishing industry, placing provocative pictures of the waste caused by sport fishing tournaments. He's been handing out these t-shirts and bumper stickers he created since the '97 ICCAT meetings. He said he loves to read "the enemy's propaganda" and to contradict it.

Our third informant in Wanchese is a well-known fisherman who actually docks his boat in Newport News, Virginia, 120 miles away by truck, in order to avoid going in and out of Oregon Inlet, where his boat went aground in 1983. Thus, much of what he had to say about the fisheries applies to fishing out of Newport News, Virginia, as well as Wanchese.

Three-quarters of his year is involved in fishing for Atlantic mackerel, sea herring ("Labrador herring"), and squid (both Loligo and Illex). All of these fisheries are low price, high volume fisheries. His boat carries up to 200,000 lb. with a sea water freezer on board. He said that his boat was one of four boats built as lobster boats in the seventies. All four of these boats are currently doing different kinds of fishing. He made sure to point out the versatility of his boat and how important that was to his survival.

He usually goes out fishing for 2 or 3 days at a time, mostly due to the perishable quality of squid in the heat. He usually lands between 50,000 and 60,000 lbs. of squid per day. He carries up to 200,000 lbs. of mackerel and herring in the winter. He fishes from Cape May to Hatteras. In the summer they go out 100-150 miles. It's mostly the same in the winter, except they may travel further north to intercept the fish earlier. He said that last year the mackerel "put the brakes on in Jersey." The boat normally draws 12 foot but will draw as much as 16 foot when full. Although he no longer longlines, Jimmy said it was his father that brought longlining to Wanchese (swordfish & mako shark)

One thing that keeps his fisheries strong is that a local Wanchese dealer, who also owns two squid-fishing boats, buys squid all year. This keeps the market consistent.

This captain believes that tourism will never hit Wanchese as hard as it hit the outer banks of North Carolina. First, they have no true tourist facilities. Second, the property in Wanchese is handed down through families that have been there for generations. At one time his wife's family owned all the land in the area they now live.

He believes that fishers will always have problems with public relations. "Our independence is going to be our downfall. The recreational industry has more people, money and they are better organized." They count heavily on local political support: "Our county is supportive. We have supportive county commissioners." (In 1998 the theme of commercial and recreational fisheries relationships and public relations was also an important one in Wanchese. A fisher interviewed then, by D. Wilson, was very concerned about the effect of management politics, particularly the increased tension between the commercial and recreational communities, on the community and the people in it. "It's getting worse because of the propaganda... I've never wanted to admit it until now, I won't be fishing in a couple years. One, if you really care about what you are doing, it consumes you. Even though you have groups and organizations, everybody don't represent everybody's interests. You can't be at every meeting. When you look at the schedules of the meetings, you've got to do one or the other. This is a community and it is dividing us and it will get worse. " (Wilson and McCay 1998).

He was just appointed to a major fishery management position and has long been active on advisory committees. He said that most fishers are not very active in the politics of the industry, with important exceptions in the Wanchese area. He says that the North Carolina Fisherman's Association has been very effective, but not in his fishery. "We have been ahead of the regulations in my fishery." Squid already has a limited entry program. But limiting themselves to a specific fishery has disadvantages. "Because we were developing our fishery, the scallop and ground fisheries were closed to us." Because other management plans rely on past landings to determine eligibility for quotas, those who can't show a catch history for a specific species can't acquire part of the quota. "The special species permits limit our flexibility." He noted that Chincoteaque is landing four times the summer flounder they used to because of the way the quotas have been distributed. "This is good for Chincoteaque, but bad for others. The councils need to get away from a state by state management system. The only way to manage effectively is by some kind of flexible individual quota." He acknowledges that with individual quotas there will be big winners and big losers.

The captain is concerned about his son's ability to fish for a living. "That's part of the reason I took the [management] position. If I have to sell out, I'm selling their right to fish." He would have to sell the licenses with the boat and it would be very difficult for his children to get their own licenses. They have to show the landings or they have to buy permits from others who at this point are very reluctant to sell. One person who has developed a good way for young people to get into the business is Larry Simns, director of the Maryland Watermen's Association. He started an apprenticeship program to transfer licenses only to those who are most likely to continue fishing and succeed.

Albemarle Area (Currituck, Camden, Pasquotank, Perquimans, Chowan, Bertie, Washington, Tyrrell and Related Inland Counties)

The primary gears of the fishermen working on the northern and southenr shores of Albemarle sound and its tributaries are gill nets, pound nets, crab pots, and eel pots, and the primary fisheries are flounder, herring, blue crab, and eels. Griffith (1996) found that in 1995 fishermen were concerned about the rising population of striped bass, the role of low oxygen or "dead water" in forcing crowding in crab potting, paper mill discharges, and the need to recognize the importance of Albemarle as a nursery area. Principal social problems were crowding, part-time fishing, theft/destruction of gear, problems with recreational interests, communication problems with state regulators, and the organizion of crabbing fleets by processors. Fishermen are highly independent of the marketing/processing sector, and one of the responses of dealers in this region to difficulty getting supply of crabs was to encourage the development of a substantial Vietnamese presence in the local fisheries (Griffith 1996: 41).

We provide brief sketches of each of the counties of the Albemarle area, which we did not visit during the summer of 1999.

Tyrrell County (pop. 3,672, 1997) is an important fishing area on the southern side of Albemarle Sound, with over 4.5 million lbs., worth over 3.3 million dollars, landed in 1998. Crab-potting dominates (91% poundage, 88.5% value). Fluke are a distant second (5.6%) to crabs in value. Gill-netting, pound nets, fyke nets, and fish, turtle, and eel pots round-out the estuarine assemblage, used to capture 31 species. In 1990 23 white males declared fishing their occupation in the census. We were told by several people interviewed that sizeable numbers of Vietnamese were brought to the port of Columbia in this county to fish for crabs; there are also said to be some Vietnamese on the northern side of Albemarle Sound. According to Diaby (1999:35), in 1997 there were 128 ETS issued, and an average fishing income of $21,097, considerably more than the $16,757 earned by the average wage worker.

Martin County, on the Roanoke River near Albemarle Sound, had a riverine fishery in 1998, using drift and float gill nets for alewives (river herring) and hickory shad. Although few pounds were landed in 1998, in 1990 8 black males declared themselves fishers in this county.

Bertie County (pop. 20,248, 1997), at the western end of Albemarle Sound and up the Roanoke River, had a small fishery in 1998 based on crab pots, fyke nets, gill nets, and pound nets, to harvest 16 species, such as gizzard shad, alewives, eels, catfish, carp, and fluke. In 1990 there were 11 white male and 2 black male fishers in this county. According to Diaby (1999: 35), there were 21 ETS issued in 1997, and the average fishing income was $7,295, compared with $17,795 average annual wage per worker.

Halifax County, up the Roanoke River, had a small beach seine fishery in 1998, which caught mostly spot but also species such as bluefish, butterfish, Atlantic croacker, red drum, fluke, harvestfish, kingfishes, Spanish mackerel, Atlantic menhaden, mullets, pompano, spotted seatrout, sharks, sheepshead, weakfish. In 1990 no one declared fishing as an occupation in the census.

Orange, Lenoir, and Lee are other counties that reported some very small commercial landings in 1998, with values below $1,000.

Fishing in Washington County (pop. 13,297, 1997), on the southern side of Albemarle Sound, is mainly small-scale and dominated by crab-potting (89% lbs.), gill-netting, and pound-netting. Twenty-three species were caught, but none besides blue crabs and fluke were significant in 1998. In 1990 16 white males declared fishing as their occupation in the U.S. Census. In 1997 there were 46 ETS, with average fishing income estimated at $17,189, versus $19,179 general wages (Diaby 1999: 35).

Chowan County (pop. 14,219, 1997), up the Chowan River from Albemarle Sound, had a small inshore fishery for a very diverse set of 36 species, ranging from alewives, mullets and gizzard shad to swordfish and tuna. Fluke represented about one-quarter of the landings, by value; other important species were catfishes, blue crabs, alewives, mullets, white perch, American shad and striped bass. Gears used were similarly diverse, including everything from turtle hooks and fyke nets to surface longlines, but gill-nets, crab pots and pound-nets contributed most to the total value, which came to over 900,000 dollars in 1998 (landings were about 1.8 million pounds). No one was recorded as a fisher in the 1990 census. The Chowan River has been a major site for river herring (alewife) pound net fishing since the 1960s (North Carolina Division of Marine Fisheries 1993: 13). Average income from fishing in 1997 for 81 Chowan County residents with ETS was $13,427, versus $20,544 general average wage (Diaby 1999: 35).

Hertford County (pop. 21,916, 1997), across the Chowan River from Chowan County, had a small riverine fishery in 1998. Techniques included drift gill nets, pound nets, fish pots, and trotlines, and the species included catfish, garfish, striped bass, white perch, gizzard shad, alewives, and mullet. In 1990 2 white males said they were fishers on the census. Average income from fishing in 1997 for 11 ETS was $2,292, showing that fishing is usually part-time here (Diaby 1999:35).

Perquimans County (pop. 10,900, 1997), on the north side of Albemarle Sound, is another crabbing center in North Carolina. Blue crabs were about 75% of the value in 1998. However, gill-nets constituted about one-quarter of the landings and value, which were close to 2 million pounds and dollars in 1998. Fluke made up over 10% of the landings by weight and 20% by value. Only 2 white males declared fishing as their occupation in the 1990 census. Average income from fishing in 1997 was $18,502, for 87 ETS, a little more than the $17,132 average annual wage per worker (Diaby 1999: 35).

Pasquotank County (pop. 34,519, 1997), also northern Albemarle Sound, and the western side of the Pasquotank River, has a very sizeable fishery, valued at almost 3.5 million dollars in 1998. 76% of this value came from crab pots; 19% from sink gill nets. Fluke made up 17.3% of the landings. This is a highly diversified fishery, including beach and haul seines, gill-netting, pound nets, rod-n-reel, and other techniques for 35 species. In 1990 the census reported 42 white males and 7 white females as "fishers." In 1997, according to Diaby (1999:35), the average fishing income of $19,320, for 130 ETS, was similar to the average annual wage of $21,166.

Camden County (pop. 6,308, 1997), on the eastern side of the Pasquotank River, is mostly dependent on crabbing, which accounted for over 98% of its landings of 1.7 million lbs. ($1.5 million) in 1998. There was a small amount of gill-netting, eeling, and trolling for tuna as well that year. Fluke were second to crab in value but accounted for less than 1% of the total. The 1990 census showed no fishers. 51 ETS were issued in 1997, and the average fishing income was $14,153, versus $19,765 average annual wage per worker (Diaby 1999: 35).

Currituck County (pop. 16,571, 1997), on the far northeastern coast of the state and encompassing Currituck Sound, had a sizeable crab and fluke fishery, over 2 million lbs. and 1.8 million dollars in 1998. Blue crabs were worth over 85% and fluke over 12% of the total weigh-out value. The gears ranged from pound nets (2.3%) and pots (80%) to gill nets (10.6%), as well as numerous minor inshore fishing techniques. In the 1990 census 62 white males were listed as fishers. According to Diaby (1999: 35), 212 ETS were issued in 1997, and the average fishing income was $17,134, slightly less than the average annual wage per worker of $18,588.

***Fisheries Profiles: Other North Carolina Counties**:*

Commercial fishing is important in many other North Carolina counties as well. Following are profiles of counties for which landings were reported in 1998, in rough geographical order, from southwest to northeast. Counties where landings were very small in 1998 are signified by full indentations and italics. Population figures for 1997 are from Diaby (1999:35), based on the July 1997 estimate from the Office of State Planning, Office of the Governor. Estimates of fishing income were derived from various sources described in Diaby (1999: 35).

Brunswick, Pender, and related Inland Counties

Brunswick County (pop. 65,200, 1997), at the southwestern end of the coast, has a diversified estuarine and inshore fishery, which yielded almost 3 million lbs and over 4.8 million dollars in 1998 (Tables NC-BC1,2). Shrimp trawls and rod-n-reel account for most of the landings by value; shellfish techniques ("by hand, bull rakes, hand rakes, hand tongs"), crab pots, trolling, and other techniques are also found. The major species by value was shrimp (48%); it was followed by a fairly even representation of porgies, snappers, groupers, hard clams, oysters, spot, triggerfish, and swordfish. In 1990 89 white men and 36 black men, plus 12 white women, claimed the occupation of fisher, and 23 white men were captains and other officers on the census. According to Diaby (1999: 35), there were 688 ETS issued in 1997, and the average fishing income that year was $11,572, comapred with an average annual wage per worker of $23,860.

Pender County (pop. 37,208, 1997), up the Cape Fear River from Wilmington, is the site of estuarine and ocean fisheries, amounting to about $770,000 worth, for 535,000 lbs. in 1998. 19 gear types were used that year, ranging from shrimp trawls and four different kinds of gill-nets to a variety of shell-fishing techniques and small scale nets (butterfly net, cast net, channel net). Shrimp, clams, crabs, and oysters were major. Fluke made up 2.1% of value and porgies 3.2% of value. Other ocean fishes are king mackerel, spot, snappers, and groupers. In 1990 66 white males declared fishing as their occupation. Diaby (1999: 35)

reports 239 ETS issued in 1997, with average fishing income of $8,599 compared with an average annual wage of $19,329.

Bladen County, up the Cape Fear River, was the site of a gill-net fishery, plus a little oystering, haul-seining and crab potting in 1998. Species caught included crabs, spot, shad, croaker, and other bay and estuarine species. The 1990 census showed 8 black men as fishers. Robeson County, far inland up the same river, had a few landings in 1998 as well.

Columbus County, between Brunswick and Bladen Counties and on the Cape Fear River, had a small fishery, mainly oysters but also small amounts of spot, shad, fluke, bluefish, and crabs. It was valued at less than $70,000 in 1998. Techniques include crab pots, gill nets, gigs, and "by hand." The 1990 census showed no fishers as occupational types.

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