9.0 COMMUNITY PROFILES OF ATLANTIC AND GULF COAST SHARK FISHERIES

9.1 INTRODUCTION

The Magnuson-Stevens Act requires all fishery management plans (FMPs) to include a fishery impact statement which shall assess, specify and describe the likely effects of the measures on fishermen and fishing communities (§303(a)(9)). When establishing a limited access system for the fishery one of the factors that must be taken into account is the cultural and social framework relevant to the fishery and any affected fishing communities (§303(b)(6)).

Similarly, the National Environmental Policy Act (NEPA) requires federal agencies to consider the interactions of natural and human environments by using "a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences ... in planning and decision-making" (NEPA §102(2)(a)). Federal agencies should address the aesthetic, historic, cultural, economic, social, or health effects which may be direct, indirect, or cumulative. Consideration of the social impacts associated with fishery management measures is a growing concern as fisheries experience variable participation and/or declines in stocks.

Social impacts are the consequences to human populations that follow from some type of public or private action. Those consequences may include changes in "the ways in which people live, work or play, relate to one another, organize to meet their needs and generally cope as members of a society ... " (Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, 1994:1). In addition, cultural impacts may involve changes in the values and beliefs that affect the way that people identify themselves within their occupation, their communities, and society in general. Social impact analyses help determine the consequences of policy action in advance by comparing the status quo with the projected impacts. Public hearings, scoping meetings, and Advisory Panel meetings provide input from those concerned with the impacts of a proposed management action.

The Magnuson-Stevens Act outlines a set of National Standards (NS) that apply to all fishery management plans and the implementation of regulations. Specifically, NS 8 notes 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: (1) provide for the sustained participation of such communities; and, (2) to the extent practicable, minimize adverse economic impacts on such communities." (§301(a)(8))

"Sustained participation" is defined to mean continued access to the fishery within the constraints of the condition of the resource (50 CFR §600.345(b)(4)). It should be clearly noted that NS 8 "does not constitute a basis for allocation of resources to a specific fishing community nor for

providing preferential treatment based on residence in a fishing community" (50 CFR §600.345(b)(2). The Magnuson-Stevens Act further defines a "fishing community" as:

> " ... a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, crew, and fish processors that are based in such communities." (§3(16))

While geographic location is an important component of a fishing community, management measures often have the most identifiable impacts on fishing fleets that use specific gear types. In addition, since the species (sharks) in this FMP are highly migratory, fisheries and the people involved may shift among geographic locations to follow the fish. The geographic concentrations of shark fisheries can vary from year to year as the behavior of these migratory fish is somewhat unpredictable. Thus, the relationship between these fleets and geographic fishing communities is not always a direct one; however, it is an important variable for understanding social and cultural impacts. Therefore, the definition of community takes into account both geographic factors and the use of a specific gear type in domestic shark fisheries.

NOAA Fisheries (1994, 2001) guidelines for social impact assessments specify that the following elements are required in the development of FMPs and FMP amendments:

- information on distributional impacts, non-quantifiable considerations such as expectations and perceptions of the alternative actions, and the potential impacts of the alternatives on both small economic entities and broader communities;
- descriptions of the ethnic character, family structure, and community organization of affected communities;
- descriptions of the demographic characteristics of the fisheries;
- descriptions of important organizations and businesses associated with the fisheries; and,
- identification of possible mitigating measures to reduce negative impacts of management actions on communities.

This chapter contains some of the requirements of a social impact assessment. The other requirements are contained in other sections of the document including Chapters 4, 6, and 7.

9.2 METHODOLOGY

For the principal states involved in the fishery, NOAA Fisheries compiled a profile of basic sociological information. From the 255 communities identified as involved in the 2001 commercial fishery, NOAA Fisheries focused on specific towns based on shark landings data, the size of the shark fishing fleet, the relationship between the geographic communities and the fishing fleets, and the existence of other community studies. While the recreational fishery is an important component in the overall shark fishery, participation and landings are not documented in a manner which permits community identification. Only the recreational fishery found in the commercial fishing communities selected has been profiled to provide an oversight of the fishery

because of this lack of community-based data for the sport fishery. The information in this document incorporates by reference the study by Douglas Wilson et al (1998) of the HMS fishery and incorporated in the 1999 HMS FMP and the work of McCay and Cieri (2000) for the Mid-Atlantic Fishery Management Council, "The Fishing Ports of the Mid-Atlantic".

9.3 OVERVIEW OF THE SHARK FISHERY

The shark fisheries of the Atlantic and Gulf coasts, excluding the fishery for dogfish, extend from Maine to Texas, and include Puerto Rico and the U.S. Virgin Islands. The geographic extent of the commercial fishery is large, but in 2001 it was concentrated in the waters off three states; Florida (51.8 percent of landings by weight), Louisiana (16.9 percent) and North Carolina (16.5 percent) (Table 9.1). Four states, Virginia, New Jersey, South Carolina and Mississippi, jointly contributed a further 12.8 percent of the 2001 commercial landings by weight. The remaining fourteen states contributed 1.9 percent of the landings, with none of the individual states reporting commercial landings of more than 30,000 pounds and most much less.

The fishery is notable for the degree of flexibility of the commercial fishing fleet. Of the 582 vessels in the 2001 fleet, 235 (40 percent) held directed fishery permits. The remaining 60 percent of the fleet held incidental catch permits and did not target the shark stocks as part of their seasonal round of fisheries. The incidental catch permits allowed the retention and sale of sharks taken in the course of fishing for other species. Vessels which engaged in the directed fishery for sharks did so on a seasonal basis, depending on area and the length of the fishing season, and fished for other species at other times of the year.

The mobility of the vessels is also noteworthy. Many of the New England and North Carolina vessels were reported to fish as far south as Florida, and Texas vessels fished across the Gulf of Mexico east to Florida. Other commercial vessels had transferred to Florida and were based in Floridian ports year-round. Of these vessels, two Californian communities were the homes of permit owners, one community in Indiana was home to another, and several permits were issued to residents of New York communities adjacent to the St. Lawrence River. In the case of some vessels with incidental permits, it was reported by fishermen that the vessels were sport-fishing or charter vessels and the permits were held so that the fish could be sold to defray the costs of the trip (in 2003, 4 charter vessels also held commercial incidental-take licenses). Due to the results of mobility analyses for VMS (Appendix 4), NOAA Fisheries feels that the most mobile vessel were probably the vessels using pelagic longline, not bottom longline.

The dealers are also highly mobile. Table 9.1 shows the number of dealers who handled shark in each state in 2001. Many of the dealers are licensed to trade in two or more states, and thus the actual number of buyers is estimated to be significantly less than the 247 dealer licenses would suggest. For example, one of the dealers buying sharks in Virginia is based in New York and also buys sharks in Maryland, Delaware, New Jersey, Rhode Island and Massachusetts. Other buyers take incidental catches from vessels they normally service, and may trade as little as 20 pounds of shark in one year.

The recreational fishery for sharks is also diverse and is growing as restrictions on catches of other highly migratory species are imposed. The recreational fishery extends from Maine to Texas and throughout the Caribbean. For many years sharks were viewed as a "trash" fish and a nuisance as they often took other fish as they were hauled in by anglers. Since the 1960s however, there has been increasing interest in catching sharks using light tackle. Because of the light tackle and the danger of boating a shark, catch and release is the practice of most recreational fishermen. The only species usually retained for personal consumption are mako, thresher, and black-tip sharks. Many charter boat operators are promoting light tackle fishing for sharks as a way of building catches for their clients and business for themselves. In 2001 HMS permit requirements were changed from tuna-only to permits required for all HMS species. An indication of the interest in the billfish and shark fisheries is that the number of charter boats with HMS permits increased by one-third between 2000 and 2002 (See Table 9.1a).

While there are a cadre of recreational fishermen who target sharks from private boats and beaches, they are a small number compared to those who catch shark as incidental to their fishing. This is particularly true in the tuna and billfish fisheries in which trolling gear is used, often with live bait. The MRFSS survey does not show species-specific data on recreationally-caught shark and treats all HMS taken in the sport fishery as rare event species.

Information Used in this Assessment

As indicated earlier, the commercial fishery involves some 255 communities. This number is based on places for which commercial landings data is available, places in which licensed shark dealers operate, and places declared on commercial shark fishing permit application forms as the address of the permit holder. From this list of 255 communities, 9 are profiled in this study as being representative of the fishery. They were selected on the basis of involvement with both the commercial and recreational shark fisheries.

To ensure continuity with the 1999 HMS FMP assessment, if a community was selected in 1998, and was described as having a shark fishery, it was selected for this assessment as well. Because of their relatively minimal involvement in the commercial shark fisheries, this study does not include places in Maine, New Hampshire, Massachusetts, New York, Delaware, Maryland, Virginia, South Carolina, Georgia, Alabama, Mississippi, and Texas. One port each in Massachusetts, New Jersey and Florida (New Bedford, Brielle and Islamorada, respectively) which was in the 1998 study has been dropped from this assessment because the reported landings of sharks were insignificant relative to their participation in other HMS fisheries. One community in Florida, Fort Pierce, has been added to the communities profiled because of its relatively high shark landings. Ports selected for detailed study are Barnegat Light, Wanchese, Hatteras, Pompano Beach, Fort Pierce, Madeira Beach, Panama City, Dulac and Venice. For comparative purposes, demographic profiles of states and communities highlighted in the report by Wilson *et al.* (1998) include both 1990 and 2000 Bureau of the Census data.

The Southeast Fisheries Science Center does not report fisheries data by port of landing. For this reason, communities involved in the fisheries from North Carolinas to Texas are identified by the commercial permit data. Other corroborating data has been developed from use of secondary data and from published reports. Information, for communities and states, that was displayed in the 1999 HMS FMP is reproduced in this study for comparative purposes. Unlike the 1998 study used in the1999 HMS FMP, it has not been possible to undertake field research for this assessment.

There are no data available for the numbers of recreational fishermen and their shark landings by community, and thus it is not possible to precisely identify places associated with the recreational fishery. In this assessment, reports of charter fishing operations, fishing tournaments, and related activities have been used to identify the scope of recreational shark fishing for each of the communities described.

9.4 SHARK FISHERY PROFILES BY STATE

9.4.1 Maine

Demographic Profile of State of Maine (source: U.S. Census, 2000)

Population:	1,274,923	100%
Education:		
High school graduates (25 years or older)	742,605	85.4%
Employment:		
Labor force (16 years and over)	659,360	51.7%
Unemployed	31,165	3.1%
Employment in some industry sectors:		
Retail	84,412	13.5%
Manufacturing	88,885	14.2%
Education, health & social services	144,918	23.2%
Arts, recreation, lodging & food services	44,606	7.1%
Farming, fishing, forestry & mining	16,087	2.6%

Field and Stream (2002) has noted that the largest of the mako and blue sharks are found in the Gulf of Maine. Maine has seven commercial vessels with shark fishing permits. Three of these permits are for the directed shark fishery. The State also has seven licensed dealers handling sharks. Maine communities involved with the commercial shark fishery are Cape Elizabeth, Harpswell and Portland (Cumberland County); Southwest Harbor and Winter Harbor (Hancock County); Owls Head and Rockland (Knox County); and Kittery, Milbridge, and Old Orchard Beach (York County). Because of the small numbers of fishermen and dealers/processors in the state, community profiles were not developed.

The small scale of the shark commercial fishery off Maine (See Table 9.2) belies the fact that some of the vessels fish in the shark fisheries in southern waters and make landings in Florida and other states. The incidental nature of shark catches off Maine for the commercial fishery is also true for the recreational fishery; sharks are often taken during tuna fishing trips. There is however a small group of anglers who fish with light tackle for blue shark, mako and porbeagle in the Gulf of Maine. In 2001, an estimated 308,100 sportfishermen made 932,000 fishing trips in marine waters off Maine. Of these anglers, 54 percent were from out of state. The American Sportfishing Association (ASA) estimated that all saltwater recreational fishing in Maine in 2001 generated some $67.8 million in direct and indirect retail sales. Employment in marine recreational fishing services was estimated to be 1,287 jobs (ASA, 2002). An indication of recreational interest in shark fishing is that charter boat operators advertise shark fishing trips from York Harbor, Sheepscot, Casco Bay, Saco Bay, Bath, Damariscotta, and Old Orchard Beach. Some 42 charter/headboats in Maine held HMS permits in 2003. These Maine charter operations are seasonal, typically from Memorial Day to Labor Day, and some of the operators advertise that they move to Florida, or the Caribbean, to run charters during the Florida season from November to May.

9.4.2 New Hampshire

Demographic Profile of New Hampshire (source: U.S. Census, 2000		
Population:	1,235,786	100%
Education:		
High school graduates (25 years or older)	720,233	87.4%
Employment:		
Labor force (16 years and over)	677,190	70.5%
Unemployed	25,500	2.7%
Employment in some industry sectors:		
Retail	89,089	13.7%
Manufacturing	117,673	18.1%
Education, health & social services	130,390	20.0%
Arts, recreation, lodging & food services	45,001	6.9%
Farming, fishing, forestry and mining	5,837	0.9%

New Hampshire's commercial shark fishery is very small and largely incidental to the take of other species (See Table 9.3). The local fishery involves three vessels, one of which has a directed-take permit, and two dealers. The communities involved with the fishery are Hampton Falls, Portsmouth and Rye (Rockingham County), and Dover (Strafford County). Because of the small size of the fishery, community profiles were not developed for New Hampshire ports.

The recreational fishery for sharks in New Hampshire waters is largely incidental, on a very small scale, and similar to that of Maine. Occasionally caught close to shore, most makos are taken in

water reaching depths over 20 fathoms. In 2001, 155,000 anglers made 360,000 fishing trips to the marine waters off New Hampshire. Of these saltwater anglers 48 percent were visitors from out-of-state. It is estimated that these saltwater anglers generated some $59.3 million in direct and indirect retail sales related to their fishing in New Hampshire in 2001. The marine recreational fishing services sector provided some 1,103 jobs in the state in 2001 (ASA, 2002). There are 42 charter boat operators in Portsmouth, Rye, New Castle, Dover, Seabrook and Hampton who held HMS permits in 2003. Many of these charter boats advertise shark fishing trips offshore from June through September, with the best fishing in June and July. Target species for these trips are mako, blue, thresher and porbeagle sharks.

9.4.3 Massachusetts

Demographic profile of Massachusetts (source: U.S. Census 1990, 2000)*

	1990	2000
Population:	6,016,425	6,349, 097
Education:		
High school graduates (25 years or older)	80.0%	84.8%
Employment:		
Labor force (16 years and over)	67.8%	60.4%
Percent of civilian workforce unemployed:	6.7%	3.0%
Main sources of employment:		
Retail	16.0%	11.0%
Manufacturing durable goods	12.0%	12.8%
Health, education and social services	21.2%	23.7%
Arts, recreation, lodging & food services	5.1%	6.8%
Farming, forestry, and fisheries	1.0%	0.4%

* Profiles of States and communities highlighted in Wilson *et al.* (1998) show both 1990 and 2000 Census data for comparative purposes.

Commercial fisheries in Massachusetts are diverse, and range from small-scale inshore small-boat fisheries for lobster and clams, to off-shore scallops, groundfish dragging, and longline fishing for HMS species. In 2001, New Bedford ranked 9th in the United States for the weight of fish landed, and 1st for value with ex-vessel sales bringing in $150,500,000.

In 2001, the Massachusetts commercial landings of sharks occurred in Chatham, Gloucester, New Bedford, Harwich Port, Plymouth, and Scituate. Licensed dealers were active in 15 locations in the Commonwealth. There were 14 vessels with incidental take permits and 6 vessels with directed-take permits for shark in 2001. The landings of shark in 2001 (See Table 9.4) were 27 percent of those in 1996 by weight and 43 percent of the 1996 landings by ex-vessel value.

Marine recreational fishing in Massachusetts attracted an estimated 750,000 anglers in 2001 (NOAA Fisheries, 2002) who made 4,524,000 fishing trips. Some 279,000 (37 percent) of the anglers were from out of state. Direct and indirect retail sales generated by marine recreational fishermen in Masschusetts in 2001 were estimated to be some $320.7 million. The marine recreational fishing industry generated some 5,423 jobs in the Commonwealth in 2001 (ASA, 2002). Shark fishing, largely catch and release using light tackle, takes place in offshore waters. Recreational vessels often travel 50-100 miles out to their fishing grounds and most shark trips are 10-12 hours in duration, with some longer overnight, and two- or three-day trips. There are 332 charter boats/headboats with HMS permits in Massachusetts in 2003. Sharks are usually taken incidental to bluefin tuna fishing, but a number of charter boat operators advertise shark fishing trips. South and east of Cape Cod, the mako, blue and porbeagle sharks of the Gulf of Maine are joined by thresher, dusky, and tiger sharks.

Shark fishing tournaments are promoted, and participated in, by some charter boat operators. Examples of these tournaments include Boston Big Game and Monster Shark Tournaments (Oak Bluffs); Nantucket Angler's Club (Nantucket); Fisherman Outfitter's Cutty Hunk Shootout (Cutty Hunk); and Giant Bluefin Tournament (Hyannis). Charter boat operations which advertise fishing trips for shark are based in Newburyport, Rockport, Gloucester, Boston, Quincy, Chatham, Harwich Port, South Yarmouth, Hyannis, Mashpee, East Falmouth, Oak Bluffs, Edgartown, Vineyard Haven, Menemsha, Mattapoisett, Fairhaven, New Bedford, and Westport Point.

9.4.4 Rhode Island

Demographic Profile of Rhode Island (source: U.S. Census, 2000)		
Population:	1,048,319	
Education:		
High school graduates (25 years or older)	541,487	78.0%
Employment:		
Labor force (16 years and over)	534,353	64.6%
Unemployed	29,859	3.6%
Employment by industry:		
Retail	60,426	12.1%
Manufacturing	82,260	16.4%
Education, health & social services	115,236	23.0%
Arts, recreation, lodging & food services	43,230	8.6%
Farming, fishing, forestry, & mining	2,396	0.5%

The commercial shark fisheries are incidental to other longline fisheries in Rhode Island. There were 12 vessels fishing for sharks in 2001, of which 11 held incidental-take permits. Dealers licensed to handle shark operated in thirteen locations in the state, but the total commercial landings in the state were only 11,787 pounds in 2001 (See Table 9.5). Communities involved

with the commercial fishery included Warwick, Little Compton, Newport, Tiverton, Block Island, Narragansett, Peace Dale, Point Judith, South Kingstown, Wakefield and West Kingstown. (Dealers operated in Little Compton, Newport, Tiverton, Point Judith, and South Kingstown.) Because of the small-scale of the shark fishery in the communities listed, no community profiles have been developed**.**

The recreational fishery for sharks is, like that in the other New England states, largely incidental to the recreational offshore bluefin tuna fishery. In 2001, some 397,000 anglers took 1,496,000 saltwater fishing trips for all species of fish. Of these marine anglers, some 65% were from out-of-state. Retail sales generated by marine anglers in Rhode Island in 2001 are estimated to total $86.2 million and 1,382 jobs were generated in the marine recreational fishing industry (ASA, 2002). Recreational shark fishing from Rhode Island is seasonal between late June and October, with a peak in late August. There are a variety of species available with the most common being mako sharks of 60-100 pounds. After mako, thresher, blue, dusky and sandbar sharks are the most common species caught by anglers. Light tackle is the gear preferred for shark fishing by the charter operators and most private boat fishermen, and catch and release is normal in the fishery.

In 2003, Rhode Island was home state to 93 charter/headboats with HMS permits. Charter operators offering shark fishing trips are based in Block Island, Point Judith, Little Compton, Warwick, West Greenwich, Newport and Westerly. Charter trips for sharks are usually to the deep waters south of Rhode Island and the eastern tip of Long Island, last at least 10 hours and, in August, are often overnight trips. On the ten-hour trips five anglers are usually carried, and the charter fee is of the order of $800. This fee is similar to those charged in the other New England states. Fees for participation in a five-day fishing tournament are of the order of $4,500 for a fully rigged and provisioned boat with skipper and mate (the angler is responsible for the payment of the tournament fees, which can be in excess of $5,000 per angler).

9.4.5 Connecticut

Demographic Profile of Connecticut (source: U.S. Census, 2000)		
Population:	3,405,565	
Education:		
High school graduates (25 years or older)	1,927,961	84.0%
Employment:		
Labor force (16 years and over)	1,765,319	66.6%
Unemployed	92,668	3.2%
Employment by industry:		
Retail	185,633	11.2%
Manufacturing	246,607	14.8%
Education, health & social services	366,568	22.0%
Arts, recreation, lodging & food services	111,424	6.7%
Farming, fishing, forestry, & mining	7,445	0.4%

Connecticut's involvement in the commercial shark fishery is slight. The reported landings are small (See Table 9.6) and only one dealer in the state is licensed to handle shark. One vessel has an incidental catch permit. The communities involved in the commercial shark fishery are New London and Old Lyme. Because of the minimal involvement in the fishery, no community profiles were developed.

Recreational shark fishing is conducted throughout Long Island Sound, but primarily from the eastern ports in the state from which offshore waters can be easily reached. There are 61 charter/headboats in Connecticut which hold HMS permits. Charter boats advertising shark fishing trips operate from Milford, New London, Norwalk, Old Lyme, Saybrook, Stonington and Westport. The recreational fishery is principally a catch and release fishery using light tackle.

9.4.6 New York

Demographic Profile of New York State (source: U.S. Census, 2000)		
Population:	18,976,457	
Education:		
High school graduates (25 years or older)	9,916,212	79.1%
Employment:		
Labor force (16 years and over)	9,046,805	61.1%
Unemployed	640,108	4.3%
Employment by industry:		
Retail	877,430	10.5%
Manufacturing	839,425	10.0%
Education, health & social services	2,039,182	24.3%
Arts, recreation, lodging & food services	611,280	7.3%
Farming, fishing, forestry, & mining	54,372	0.6%

The dollar value of the commercial shark fisheries of New York is approximately 1/1000th of all commercial fishery landings in New York (See Table 9.7). There are 19 vessels with permits in the shark fishery, of which 7 vessels have directed-take permits. Of these vessels at least five also participate in the shark fisheries off New Jersey and Florida. Dealers holding shark licenses operate in 37 locations in New York state. The communities involved in the commercial and recreational fisheries for shark include Freeport, Lawrence, Ammagansett, Brightwaters, East Hampton, East Quogue, Greenport, Hampton Bays, Islip, Montauk, Oakdale, Brooklyn, Riverhead, Seaford, Port Jefferson, Babylon, Hauppauge, Staten Island, Southold, and Wantagh. Since the commercial and recreational shark fisheries are only a very small and geographically dispersed sector of New York's fisheries, individual community profiles have not been developed.

Saltwater recreational fishermen are estimated to number some 514,000 in New York State, of whom 29,000 (6 percent) are visitors from out-of-state. In 2001, these anglers made some

4,624,000 fishing trips. The ASA estimated that, in 2001, saltwater angling generated some $389.3 million in New York state in retail sales and some 5,122 jobs in the marine recreational fishing industry. While there is no information on recreational shark catches, shark fishing by anglers appears to be largely catch and release, using light tackle, incidental to tuna and billfish fishing offshore. In New York state there are 319 charter/headboats with HMS permits in 2003. A number of charter boat operators advertise shark fishing as part of their offerings. For example of the 31 charter boats operating out of Montauk, 21 advertise shark fishing either as an occasional exciting catch or offering shark fishing trips offshore. Montauk is positioned well for offshore trips as it lies only 20-40 miles from the edge of deep water and Gulf Stream eddies. Connecticut and Rhode Island boats on the other hand have to travel at least 60-100 miles to reach the prime fishing waters for tunas and sharks. Another 20 charter boats at ports on Long Island advertise shark fishing opportunities. Principal among these ports are Seaford and Hampton Bays, with 4 vessels each.

9.4.7 New Jersey

Demographic Profile of New Jersey (source: U.S. Census, 1990 and 2000)

	1990	2000
Population:	7,730,188	8,414,350
Education:		
High school graduates (25 years or older)	76.9%	82.1%
Employment:		
Labor force (16 years and over)	64.2%	64.1%
Unemployed	5.7%	5.8%
Employment by industry:		
Retail	5.0%	11.3%
Manufacturing	17.0%	12.0%
Education, health & social services	19.1%	19.8%
Arts, recreation, lodging & food services	6.5%	6.9%
Farming, fishing, forestry, & mining	1.0%	0.3%

In the five-year period, 1996-2001, New Jersey's commercial shark landings fell by approximately 56 percent from 520,000 pounds (260 mt). The landed value of shark taken in the commercial fishery fell by 50.4 percent or almost $200,000. Table 9.8 documents that commercial landings reported during 2001. In 2001, 62 vessels had commercial fishing permits, of which 35 were incidental catch permits, and dealers with shark permits operating in 23 locations in New Jersey ports.

New Jersey communities involved with the commercial fishery include Egg Harbor City (Atlantic County); Englewood (Bergen County); Medford (Burlington County); Cape May, Cape May Courthouse, Ocean City, Sea Isle City, Seaville and Wildwood (Cape May County); Jersey City

(Hudson County); Brielle, Manasquan, and Shark River (Monmouth County); Brick, Forked River, Barnegat Light, Manahawkin, Point Pleasant, Ship Bottom, Tom's River, Town Bank, Tuckerton, Wareton, and West Creek (Ocean County), and Pompton Plains (Passaic County). Of these communities, Cape May and Barnegat Light had the greatest involvement in the fishery, with 7.7 percent and 86.1 percent of commercial landings of shark respectively in 2001. Three dealers and 9 vessels with incidental-take permits operate in Cape May in 2003. In 2003, 10 dealers, 8 vessels with incidental-take permits, and 15 vessels (55 percent) with directed-harvest permits operate from Barnegat Light.

Marine recreational fishing attracted 1,306,000 participants in New Jersey in 2001. They made 7,484,000 saltwater fishing trips during the year. Of these anglers, 543,000 (42 percent) were from out-of-state, and 42,000 from non-coastal counties in New Jersey. The ASA estimated that saltwater angling-related retail sales in New Jersey were some $448.7 million in 2001. The marine recreational fishing industry provided some 7,762 jobs in New Jersey in 2001 (ASA, 2002).

The recreational fishery for sharks is primarily incidental to fishing for tuna and billfish. Some 385 New Jersey charter/headboats hold HMS permits in 2003. Of these party and charter boats some advertise shark trips using light tackle during the summer and early fall (July-October). These trips go offshore between 25 and 60 miles to the heads of the canyons, and thus are full-day or overnight trips. Mako, thresher, blue and dusky sharks are the species most frequently mentioned in charter boat advertisements, often with a note that the mako and thresher sharks are the only ones that "are good for the table."

Communities which have charter boats or tournaments advertising shark as part of their target-catch or "prized" species include Cap May, Point Pleasant, Barnegat Light, Waretown, Sea Bright, Long Branch, Belmar, Brielle, Atlantic City, Margate City, Somers Point, Ocean City, Sea Isle City and Avalon. There is no information available to identify communities involved in the private-boat recreational fishery for sharks.

9.4.7.1 Barnegat Light

Demographic Profile of Barnegat Light (source: U.S. Census, 1990 & 2000)	1990	2000
Population:	681	764
Education:		
High school graduates (25 years or older)	84.9%	92.1%
Employment:		
Labor force (16 years and over)	51.0%	46.9%
Unemployed	1.0%	2.7%
Employment by Occupation		
Managerial/professional	32.0%	40.8%
Technical/administrative	31.0%	36.3%
Precision production, craft & repair	14.0%	11.3%

Barnegat Light has grown and changed in the decade between the 1990 and 2000 Censuses. The changes are reflected in two demographic dimensions. The first is a shift to higher education/higher qualification occupations and the second is a continued shift to an older, retired population. The change in age structure also signifies a change in the workforce and the source of household earnings. In 2000, there were 371 households with an average size of 2.06 persons/household. Of these households, 233 (62.8 percent) received income in the form of earnings, while 202 households (54.4 percent) received income from Social Security. Retirement income was received by 130 households (35.0 percent). For households receiving income from earnings, the average income was $63,373 in 1999[1]. The average Barnegat Light household with retirement income received $22,168 (plus appropriate Social Security payments). In comparison with New Jersey as a whole, employment earnings were less than the state average, while retirement income was above the state average. However, the median household income in Barnegat Light ($52,361) in 1999 was some $2,800 lower than the state-wide median household income.

Barnegat Light is a vacation and retirement destination. Of the 1,207 housing units available in 2000, 64.3 percent (781 units) were vacation homes, and 371 homes were occupied year-round. Some 55 homes were unoccupied at the time of the 2000 census. About one-quarter of the resident population had lived in Barnegat Light for less than five years in 2000, and most of the new

[1] Income and earnings data reported in the decennial Censuses is for the previous year, i.e. the income reported in the 1990 Census is for 1989, for the 2000 Census it is for 1999.

residents moved to the town from other parts of New Jersey. Of the population of Barnegat Light in 2000, 55 percent (430 persons) had been born in New Jersey, while 41 percent were born elsewhere in the United States. There is a "community stickiness" factor among persons resident in Barnegat Light, since 70 percent had lived there prior to 1995, but there is also evidence of change which could affect life-style and the culture of the community. One of the elements of "community stickiness" is that many of the "new" residents are retirees who have converted their former vacation homes to year-round residences.

Age structure of the Population of Barnegat Light (source: Census, 1990 & 2000)

Population by Age	1990		2000	
Total population	681	100%	764	100%
Under 15 years	68	10%	92	12.1%
15 - 44 years	225	33%	185	24.2%
Over 44 years	388	57%	487	63.7%

The Community and Fishing

Prior to 1820, fishing operations and maritime trade were conducted in the small settlements on the mainland inside the chain of islands and sand bars fringing the New Jersey Coast. Barnegat Inlet was one of the important channels to the open ocean, with a sheltered anchorage immediately inside the inlet, and ample resource for a fishing community. A lighthouse was built in 1824 to mark the entrance to the inlet. This lighthouse was replaced in 1855 with the second-tallest lighthouse in the United States which operated until 1927. The building continues as both a community landmark and a navigation mark.

In 1881 the Barnegat City Improvement Company was formed and developed the present-day town as a resort and recreation area, with the town owning all the beaches and dunes. The mix of tourism and fishing has continued to the present. Fishing operations are now linked to their markets by road and there is a tight mesh between the winter and summer economies. Local shops and services are sustained by the fishing activities in the winter months, and it is estimated that the direct employment in fisheries and fishing services was of the order of 52 percent of the civilian workforce of 300 persons in 2000. This number does not agree with the Census Bureau's data of fisheries employment of 6.5 percent, probably due to failure of respondents to complete census forms or undercounting because fishermen were at sea. It is known from HMS permit data that 49 local fishermen work on the vessels with HMS permits.

Fishery-related organizations in Barnegat Light include: Blue Water Fishermen's Association; Forked River Tuna Club; Jersey Devils Fishing Club; Beach Haven Marlin and Tuna Club; Long Beach Island Fishing Club; and United National Fishermen's Association.

There are four full service marinas in Barnegat Light in addition to 44 municipal boat slips and a municipal ramp. The marinas and slips are on the bayside of Long Beach Island and extend southwards some 18 blocks from the inlet. Commercial fishing docks and fishhouses also line Bayview Avenue, but are clustered towards the southern end of the street. Five bait and tackle shops, three of which also provide boat rentals, provide services to local and visiting fishermen. The charter fleet working from Barnegat Light is estimated to be 20 boats, including 11 vessels with HMS permits. In addition there are six headboats, three of which have HMS permits, working from the port. About half this fleet is active year-round in Barnegat Light, while another four vessels at least fish elsewhere in the winter months. One charter boat fishes for tuna off North Carolina in the winter and spring, while three other vessels fish from November through April from ports in Florida.

The commercial fishing fleet is diverse and targets different species as they move through local waters. In 2001, some 40 inshore and offshore boats were based in Barnegat Light, including boats used in the shellfish fishery. Barnegat Light is known for its pelagic longline fishery. The fleet targets yellowfin and bigeye tunas for most of the year and swordfish for part of the year. Pelagic and large coastal sharks are important incidental catches and some species like mako, porbeagle, and sandbar sharks are usually kept and sold. The split season for large coastal sharks impacts this fishery because large coastal sharks are less abundant in the mid-Atlantic during the winter season and the fishery is usually closed by the time the sharks are abundant in the area. A few vessels continue to bottom longline for tilefish in the deep waters of the outer continental shelf and canyons. Some captains from this port have begun to fish off the coasts of other countries. Pelagic longline crews are increasingly from other regions, such as Nova Scotia and some of the southern states. Some of the pelagic longline fishermen from Barnegat Light have become distant-water operators, going to the Grand Banks off Newfoundland, the waters off Greenland, as well as the Caribbean, Brazil, and other distant fishing grounds. The owner of one major fleet (six longline vessels) left Barnegat Light in 1999 to fish for HMS in the Pacific Ocean.

Other captains of pelagic longline vessels strongly prefer to work closer to home or to take shorter trips. The options of those who resist going to other ports are far more restricted. Distant water fishing is very disruptive to families and the community. Some local vessels are now converting from pelagic longline fishing to monkfishing, although many who have tried to convert to other fisheries have failed to meet deadlines for limited entry. Another concern of local residents is that the demise of commercial fisheries is likely to transform the use of the waterfront, bringing in condominium development where marinas are now located, an outcome which many long-term residents find undesirable.

The shark fishery is largely incidental to the bluefin tuna and swordfish fisheries, but there is a seasonal directed commercial fishery for sharks from Barnegat Light. In 2001, the commercial landings of shark in Barnegat Light were 197,667 pounds with a value of $161,881. At that time there were 10 shark dealers buying fish from the 23 shark fishing boats, 15 with directed-fishery permits, working from Barnegat Light.

9.4.8 Delaware

Demographic Profile of Delaware (source: U.S. Census, 2000)		
Population:	783,600	
Education:		
High school graduates (25 years or older)	425,122	82.6%
Employment:		
Labor force (16 years and over)	397,360	65.1%
Unemployed	20,549	3.4%
Employment by industry:		
Retail	43,578	11.6%
Manufacturing	49,720	13.2%
Education, health & social services	73,056	19.4%
Arts, recreation, lodging & food services	28,979	7.7%

The commercial shark fishery in Delaware is based in Sussex County, in the ports of Lewes and Millsboro. One licensed shark dealer and three vessels with incidental-catch permits participate in the commercial fishery. Because of the small number of participants in the fishery, shark catch and landings data is confidential at the state level.

The recreational fishery in Delaware Bay and offshore is popular because of the diversity of species and habitats available to anglers. In 2001, the fisheries attracted 333,000 saltwater anglers of whom 226,000 (68 percent) were from out-of-state. In total the anglers made 1,180,000 fishing trips in 2001 (data from NOAA Fisheries, 2002). The retail sales generated by these anglers in Delaware was estimated to be $48.9 million in 2001 and the marine recreational fishing service sector provided some 724 jobs in Delaware (ASA, 2002).

In 2003, there are 130 charter/headboats with HMS permits operating from Delaware communities. Communities in which these HMS-permitted charter/headboats are registered include Bethany Beach, Cedar Creek, Dagsboro, Dewey Beach, Dover, Fenwick Island, Georgetown, Indian River, Lewes, Long Neck, Middletown, Milford, Millsboro, Ocean View, Rehoboth Beach, and Wilmington. The communities with the greatest concentrations of charter/headboats are Indian River (30 vessels), Lewes (17 vessels), Millsboro (10 vessels), and Wilmington (22 vessels).

9.4.9 Maryland

Demographic Profile of Maryland (source: U.S. Census, 2000)		
Population:	5,296,486	
Education:		
High school graduates (25 years or older)	2,930,509	83.8%
Employment:		
Labor force (16 years and over)	2,737,359	67.0%
Unemployed	128,902	3.2%
Employment by industry:		
Retail	273,339	10.5%
Manufacturing	189,327	7.7%
Education, health & social services	538,350	20.6%
Arts, recreation, lodging & food services	177,341	6.8%
Farming, fishing, forestry, & mining	16,178	0.6%

The commercial shark fishery in Maryland is small scale (See Table 9.9). There are licensed shark dealers operating in 4 locations, and 10 vessels (3 with directed-take permits) involved in the fishery. The Maryland shark fishery is incidental to the offshore longline fisheries, although at least two vessels made shark landings in other states in 2001.

In 2001, some 512,000 Maryland residents were marine recreational fishermen. Another 481,000 out-of-state marine anglers also fished in Maryland. Between them these two groups made some 3.8 million fishing trips for saltwater species (NMFS, 2002). The ASA estimated that some $335.9 million in retail sales was generated by saltwater anglers, and the marine recreational fishing industry provided some 6,981 jobs in Maryland in 2001 (ASA, 2002).

The recreational fishery for sharks is largely offshore, although sharks are found in the lower reaches of the Chesapeake Bay. The offshore fishery takes place at least 15 miles out to sea and charter boats often run 60 to 70 miles offshore to areas of deep water. In Maryland, 155 charter/headboats hold HMS permits in 2003. Of these vessels, 70 (45 percent) are registered in Ocean City. No other community in Maryland has more than six charter and/or head boat vessels registered. Other communities involved include Annapolis, Baltimore, Cambridge, Chesapeake City, Chester, Conowingo, Edgewater, Glen Burnie, Ocean Pines, Pasadena, Pocomoke, Salisbury, Severna, St. Michaels, Stevensville, Tilghman, White Hall, and White Haven. No data is available on charter or private boat catches of sharks, and only 14 charter boats (nine percent) advertise that shark catches are among their offerings.

9.4.10 Virginia

Demographic Profile of Virginia (source: U.S. Census, 2000)		
Population:	7,078,515	
Education:		
High school graduates (25 years or older)	3,801,964	81.5%
Employment:		
Labor force (16 years and over)	3,563,762	64.4%
Unemployed	151,125	2.7%
Employment by industry:		
Retail	389,473	11.4%
Manufacturing	387,104	11.3%
Education, health & social services	626,156	18.3%
Arts, recreation, lodging & food services	245,967	7.2%
Farming, fishing, forestry, & mining	43,425	1.3%

The Virginia commercial shark fishery has licensed dealers operating in 17 locations, with two or more dealers operating in Chincoteague, Hampton, Newport News and Virginia Beach. There are nine vessels in the fishery; five with incidental-catch permits and four operating with directed-take permits. Communities involved in the commercial shark fishery, in addition to those noted above, include Bloxom, Chesapeake, Great Falls, Norfolk, Oyster, Sanford, and Wachapreague. Table 9.10 documents the landings reported in Virginia during 2001. Because of the requirements to keep port or county landings data confidential when there are less than three participants in any sector of the fishery, shark landings data is available only for Virginia Beach. Since the Virginia Beach landings of 18,442 pounds is less than five percent of the commercial shark catches by weight in Virginia, it was deemed that there was insufficient data to permit a community assessment of impacts in Virginia.

In 2001, the Virginia recreational saltwater fishery attracted 1,031,000 anglers, of whom just over 50 percent (520,000) were from out-of-state. It is estimated that these saltwater anglers generated some $246.8 million in retail sales in Virginia in 2001 and their activity provided 4,251 jobs in the marine recreational fishing industry (ASA, 2002). Principal species sought were striped bass, flounder, bluefish, weakfish (sea trout) and drum. Offshore fishing was principally for mackerels, tuna, dolphin fish, and billfish.

The Virginia recreational fishery for sharks is similar to that of Delaware and Maryland. There is a very small directed shark fishery in the private boat sector, but most sharks are taken incidentally to the catch of other species. There are 142 charter/headboats in Virginia with HMS permits. Of these, 38 percent note in their advertisements that they are willing to undertake charter trips for shark fishing or that sharks are taken incidentally as part of the species mix available to anglers. The communities with the greatest number of charter boats with HMS permits were Virginia Beach

(26 percent), Norfolk (24 percent), Chincoteague (12 percent), Wachapreague (9 percent) and Portsmouth (4 percent). The principal shark fishing season for recreational anglers is June through October.

9.4.11 North Carolina

Demographic Profile of North Carolina (source: U.S. Census, 1990 & 2000)

	1990	2000
Population:	6,628,637	8,049,313
Education:		
High school graduates (25 years or older)	70.0%	78.2%
Employment:		
Labor force (16 years and over)	72.4%	65.7%
Unemployed	4.9%	3.4%
Employment by industry:		
Retail	18.9%	11.5%
Manufacturing	31.5%	19.7%
Education, health & social services	23.8%	19.2%
Arts, recreation, lodging & food services	4.4%	6.9%
Farming, fishing, forestry, & mining	3.2%	1.6%

The commercial shark fishery has a distinctive split north/south of Cape Hatteras, reflecting the local oceanographic conditions. The Gulf Stream, as it skirts the Cape Hatteras shoals, is twenty miles offshore. This is the closest it approaches land after leaving the Cape Canaveral area. The waters north of Cape Hatteras are influenced by the cold Labrador Current. The area off Dare and Hyde Counties, NC is where these two water bodies mix and provides very rich fishing grounds. South and west of Cape Hatteras, the coast curves away to the west forming the relatively shoal Carolina Bight. Vessels operating in this area have further to travel from shore to the Gulf Stream and do not enjoy the diversity and richness of the fisheries immediately to the north of Cape Hatteras. The closed area for the shark fishery off North Carolina reflects these local oceanographic and ecological conditions, and will have an impact on the commercial fisheries in particular between Oregon Inlet and Cape Fear. The extent and significance of these impacts on fishery participants and communities cannot be estimated from the information currently available to analysts because of the high degree of mobility of the North Carolina fleet and the diversity of its fisheries. It is likely that the commercial shark fishery off Dare and Hyde Counties will continue to be prosecuted, but north of the closed area. Similarly, the small commercial shark fishery in Onslow Bay is likely to move south of the closed area

North of Cape Hatteras, the 2001 commercial shark landings in Dare and Hyde Counties were 88 percent of the state catch of sharks by weight and 89 percent by value. Licensed shark dealers operate in 52 locations in North Carolina, and 38 commercial fishing vessels have shark permits.

In 2002, of the 19 directed-catch permits, 18 are for vessels fishing from Dare County, north of Cape Hatteras, and 1 vessel is from the Wilmington, NC area. Seven of the 19 incidental-take permits are held by vessels based in Dare and Hyde counties, north of Cape Hatteras, and the remaining twelve vessels are based on the southwest coast of North Carolina.

Communities involved in the shark fishery in Dare and Hyde counties include Buxton, Englehard, Hatteras, Manns Harbor, Manteo, Nags Head, Rodanthe, and Wanchese. South and west of Cape Hatteras, communities involved in the commercial shark fishery include Beaufort, Harkers Island, Morehead City, Oak Island, Salterpath, Southport, Swansboro, and Wrightsville Beach. Table 9.11 documents the landings reported in North Carolina during 2001.

The marine recreational fisheries in North Carolina fall into three groups by species, gear and access. Sharks are, however, an incidental catch in all three fisheries. First, the recreational fishery in the Sounds and behind the barrier islands is typically a small, open boat fishery for flounder, croaker and drum, spot and sea-trout. Striped bass (rockfish) forms an important fishery in Albemarle Sound and around the northern inlets. Second, the inshore and ocean beach fisheries target the same species but also include striped bass, bluefish, and king and spanish mackerel. These inshore fisheries require larger boats and heavier gear, but the boats operate within sight of land. Third, the offshore recreational fisheries target billfish, tunas (bluefin, yellowfin and blackfin), mackerels, dolphin fish (mahi mahi), wahoo, and, in the southwestern area, shark Typically the boats are 22 feet long or longer, electronic navigation systems and powered by an inboard engine. Relatively heavy tackle is used, and fighting chairs for use in billfish and giant tuna fishing are usually installed. The offshore boats normally fish 15 to 60 miles offshore. North Carolina marine recreational fisheries are seasonal, but fishing is year-round as fish species move through the area.

In 2001, NOAA Fisheries estimates that 2,006,000 anglers fished in North Carolina's marine waters. Of these fishermen, some 1,301,000 anglers (65 percent) were from out-of-state and 251,000 anglers were from non-coastal counties in North Carolina. Marine recreational fishing is thus an important element in the life and economies of coastal counties. In 1996, expenditures by saltwater anglers in North Carolina were approximately $673 million, accounting for nearly eight percent of the total U.S. expenditures by saltwater anglers. Saltwater fishing in North Carolina incurred expenditures of nearly $1.3 billion (about five percent of the U.S. total), generated wages and salaries of approximately $357 million and created over 19,000 jobs (ASA, 1997 cited by Wilson, 1998). In 2001, ASA estimated that saltwater recreational fisheries generated some $388 million in retail sales and the marine recreational fishing industry provided some 8,551 jobs (ASA, 2002). Tournaments are big business, but none in North Carolina appear to have categories for sharks.

The recreational catches of shark are largely incidental to other fishing activities. In the area north of Hatteras and around Cape Lookout, recreational fishermen view sharks as a nuisance in their pursuit of other fish, particularly tuna, marlin, and swordfish. Because of this, sharks are normally released alive and not kept. In the recent past, most sharks taken by anglers were killed and

discarded in order to reduce the nuisance factor (Johnson *et al*., 1986). The same Sea Grant-sponsored study by Johnson *et al*. of North Carolina recreational fishermen also found that in 1979 only one offshore angler targeted sharks north of Cape Hatteras, whereas a number did off the Brunswick County coast.

This same pattern is repeated in the charter and head boat fishery. None of the charter vessels operating from Currituck, Dare and Hyde counties in 2003 advertised shark fishing trips, although shark encounters were often mentioned in fishing reports. In Brunswick County, charter boats did advertise shark fishing trips, and Carteret County headboats also mentioned shark as an often-caught species in their advertising. The species caught were dusky, tiger, black-tipped, and sandbar sharks. In 2003, North Carolina had the second largest fleet of charter/headboats holding HMS permits with a fleet of 387. Of these boats, 136 (35 percent) operated from communities north of Cape Hatteras. The closed area off North Carolina will not impact the recreational shark fishery to any great extent. The fishery is largely incidental north of Cape Hatteras and is normally a catch and release fishery throughout the state.

Some of these charter boats were highly specialized, for example seeking only billfish. The vessels specializing in tunas usually began the year fishing off Dare or Hyde counties, and then moved north to operate off New Jersey and then later off Cape Cod. Vessels specializing in billfish fisheries, would fish off North Carolina in the summer months and then head to the Caribbean for the winter season. Other charter boats, and some headboats, would fish in North Carolina waters from April through November, and then travel south to Florida to fish from December through March. From the advertizing materials distributed by charter operations it would appear that from 12 to 15 percent of the fleet changed their operating base during the fishing year.

An unusual feature of the North Carolina charter and head boat fleet is the number of boats built locally. This appears to be particularly true for vessels over 35 feet in length and fishing offshore. Similarly, information about captains and crew of the charter fleet emphasized their local connections, and often relatives of different generations fished together. While this information has not been gathered systematically, it appears that community linkages between North Carolina captains and crews are stronger than those in many of the other states.

9.4.11.1 Hatteras

Demographic Profile of Hatteras Township, NC	(U.S. Census, 1990 & 2000)	
	1990	2000
Population:	2,675	2,596
Education:		
High school graduates (25 years or older)	74.4%	83.3%
Employment:		
Labor force (16 years and over)	1,381	1,433
Unemployed	4.2%	8.3%
Employment by industry:		
Retail	25.9%	14.9%
Manufacturing	4.0%	2.4%
Education, health & social services	18.9%	18.5%
Arts, recreation, lodging & food services	15.6%	13.4%

Hatteras Township includes the villages of Avon, Buxton, Frisco and Hatteras. Hatteras Village is a rural community at the southern end of Hatteras Island on North Carolina's Outer Banks. Hatteras Island is a dynamic barrier island, bordered by the Atlantic on the east and Pamlico Sound on the west. In the 18th century, Hatteras established itself as a seaport community, where activities included whaling and exporting/importing. Since World War II, the economy of the Hatteras community has depended on charter and commercial fishing. There are five seafood wholesalers, one retail market, and three marinas (Wilson *et al*., 1998). Businesses in surrounding communities such as Manteo and Buxton also add to the marine economy. Commercial fishing is a major occupation on Hatteras Island, where there are approximately 500 to 600 part-time and full-time commercial and charter boat fishermen (Wilson *et al*., 1998). The 2000 Census indicates that there are 132 fishing industry employees working for wages in Hatteras Township. Since fishermen are customarily self-employed either as owner-operators of vessels or as crew/independent contractors receiving a share of the catch or tips as payment for their services, Wilson's estimate of 500-600 part-time and full-time commercial and charter boat fishermen is considered to be accurate for 2003.

Tourism and recreational fishing are also major industries in Hatteras in terms of seasonal employment (CNCSS, 1993). There are three economic "seasons" in Hatteras (CNCSS, 1993). In the spring, weekend and holiday travelers cause an increase in revenue; approximately 30 vessels from the commercial fleet become active in charter fishing beginning in April. During the second season, June through August, family vacations provide tourist income. The third season is the fall, when fishing, surfing and windsurfing are the dominant activities.

The year-round population in Hatteras Township (including the villages of Avon, Buxton, Frisco and Hatteras) has decreased during recent years with mortality and out-migration exceeding births and in-migration. The racial composition of the township has not changed between the 1990 and 2000 censuses; the township remains 99 percent Caucasian by race, with European ancestry predominant. The age structure of the population has changed; the population has aged markedly, with consequences for educational attainment and other demographic indicators. In 1990, 36 percent of the population was 45 years or older, while in 2000 some 46 percent of the year-round residents were aged 45 years or older. The number of households has increased from 1,078 (1990) to 1,148 in 2000, while the average size of households has dropped from 2.34 persons to 2.25 persons/household. These trends are consistent with an aging and declining population as "empty-nesters" and retirement couples and widows/widowers make up a higher proportion of households. In 2000, 22.7 percent of Hatteras Township households did not have earnings, and relied on retirement income and Social Security. Per capita income in the township in 1999 was $21,458 in contrast to $12,796 in 1989.

The recreational fishery from Hatteras for sharks is incidental to the catch of other species, with no directed fishing trips. As one charter boat captain notes on his website, "We usually do not target sharks from our area, but we do have to deal with them when the tuna fishing is good. Sharks love to eat helpless tunas on the way to the boat. We usually catch 2 or 3 mako sharks per season, which are excellent eaters, and a hammerhead or dusky thrown in for good measure" (www.firstcrackcharters.com June, 2003). There is no data available on the species, number and weight of sharks taken in the recreational fishery. The recreational fishery for all species is important in economic terms and in effort applied. The closed area off North Carolina will not impact the recreational shark fishery from Hatteras to any extent; the fishery is already an incidental fishery and catch and release is the norm.

The fishery from Hatteras is a year-round activity, subject to weather conditions. The cycle of the offshore fishery begins in December, when giant bluefin tuna are passing through the area through March. This catch and release fishery is followed by the availability of yellowfin tuna, dolphin, and wahoo from March through December. In the summer months, a catch and release fishery for blue and white marlin, swordfish and sailfish takes place between May and September. If ocean conditions are poor, fishermen are able to fish in the sheltered waters behind the barrier islands and in Pamlico Sound for striped bass, drum, sea trout and redfish.

The three marinas each have a charter boat fleet of independent owner/operators, and each maintains a booking and information system for its fleet. The charter boats operate with a captain and mate or crewman, and often have a second, relief captain available for peak seasons when the boat will be making trips every day. The captain takes his profits (pay) from the revenues earned by the boat, and the mate customarily receives a tip of 15-20 percent of the charter fee from the client. In many cases, the boat will retain the sale rights to fish caught by clients and if the right is exercised, the ex-vessel price is apportioned between boat, captain and mate (crew). At the height of the summer season it is estimated that the recreational fisheries and fishing services (marinas, bait and tackle, etc) in Hatteras provide employment for some 205 persons.

The three marinas in Hatteras provide dockage for as many as 56 offshore charter/headboats, some 15 inshore boats that can fish along the coast, and 6 charter boats that fish only in the Sounds. In addition, there are approximately 210 berths for private boats. Some commercial boats use the marinas during the late fall and winter months, but otherwise dock at fish houses and the fishermen's private docks.

9.4.11.2 Wanchese

Demographic Profile of Wanchese, NC (source: U.S. Census, 1990 & 2000)

	1990	2000
Population:	1,374	1,527
Education:		
High school graduates (25 years or older)	67.0%	76.5%
Employment:		
Labor force (16 years and over)	922	799
Unemployed	10.0%	1.8%
Employment by industry:		
Retail	19.0%	11.7%
Manufacturing	16.1%	13.1%
Education, health & social services	23.1%	22.0%
Arts, recreation, lodging & food services	6.1%	7.2%
Farming, fishing, forestry, & mining	20.0%	8.2%

Wanchese is located on the southern part of Roanoke Island, in the northern Outer Banks. This small fishing village is said to have "changed as little as those who have lived here for generations" (Cutchin, 1997). Wanchese's first seafood dealership was opened in 1936 by a family that still operates two seafood businesses in the community. The village continues to revolve around fishing and fish processing. The Wanchese Seafood Industrial Park was constructed in 1980 by the state; it has 30 acres of leasable land, a 15-acre deep water harbor, and 1,500 feet of commercial-style concrete docks, and seven seafood-related businesses. (CNCSS, 1993). The industrial park is also the scene of the annual blessing of the fleet, which is organized by the Oregon Inlet Users Association.

There are approximately 117 small businesses in Wanchese, 44 of which are commercial fishing or charter fishing businesses (CNCSS, 1993). Support industries, such as boat builders and seafood packers, are also of great importance to the commercial fisheries and to the North Carolina charter-boat fishery. There are three major seafood dealers/processors in Wanchese and five smaller ones. Of the major dealers, one dealer specializes in scallop and flounder, and has 14 vessels including trawlers, scallop vessels and smaller vessels for gill netting as well as two scallop vessels in Alaska (CNCSS, 1993). They have three packaging and processing houses, a fish-packing house and

processing and freezing operations (located in North Carolina, Virginia, and Massachusetts). Seafood is distributed locally and nationally by truck and internationally by air freight. The second dealership, which specializes in hooked fish, is an important seafood distributer. While only operating one vessel, this company buys regularly from 35 local and over 70 non-local vessels. The third dealer, 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 Wanchese Fish Company (CNCSS, 1993).

Recent growth in tourism and recreational fishing has sparked competition for a restricted resource. However, commercial and recreational fishermen still see themselves as being part of the same fishing-based community and many come from the same families. Members of the non-fishing public are generally supportive of the fishing industry. Unlike the surrounding communities, and in distinct contrast to Hatteras Township, 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 (CNCSS, 1993).

The population of Wanchese is 98 percent Caucasian, and mostly of European ancestry. There is, like Hatteras, a strong level of "community stickiness" in Wanchese. In 2000, 75 percent of the population had lived in the same house for five years or more, and 89.7 percent had lived in Dare County for five years or more. There has been a shift in the age structure of the population of Wanchese since the 1990 Census. In 1990, 26 percent of the population were under 15 years of age while, in 2000, 18 percent of the population was under 15. The percentage of those between 15 and 44 years of age remained the same, 46 percent, while in 2000 the population of those 45 years and older had risen nine percent to 36 percent.

In 1990, there were 503 households in Wanchese, with an average of 2.69 persons/household. The number of households had grown to 614 in 2000, with an average of 2.49 persons/household. As in Hatteras, this suggests a population with more "empty-nest" and retiree households than before. Some 87.5% of the households received earnings from an occupation or job, while 12.5 percent of the households received retirement income and 20 percent of the households received Social Security payments.

Wanchese is not a community linked to tourism in the way that most other Outer Banks and Dare County communities are. Of the housing stock, only seven percent were vacation properties in 2000. The marinas and boatyards in Wanchese cater to transient boats and the charter boat fleets, but recreational fishing from Wanchese is more likely to be done by local fishermen in the Albemarle, Currituck, or Pamlico Sounds, rather than by tourists fishing offshore in private or charter boats. The reason for this is the distance to Oregon Inlet, and the presence of the Oregon Inlet Fishing Center with extensive recreational boat docks, facilities for charter boats, and launching ramps with large parking areas close to the inlet.

A large number of commercially important marine fish are landed in Wanchese, including inshore and offshore species. Many fishermen emphasized that they have to be versatile due to quick changes in water temperature and therefore in availability of species in the area (Wilson *et al*., 1998). The species that longline fishermen target off the mid-Atlantic coast include swordfish, sharks, and tunas (primarily, yellowfin and bigeye). Although targeting bluefin tuna with longline gear is prohibited, there is an incidental catch allowance of bluefin tuna as part of other fishing operations. Fishermen aboard large longline vessels fish for swordfish, tunas, and dolphin. Because of the weather, tunas and swordfish are accessible to the medium-sized vessels that gillnet for other species and longline in the summer. Respondents explained that they also gillnet for dogfish, bluefish, and Spanish mackerel (in spring and fall), and trout and croaker (in winter). They also bottom fish for bass and grouper. There are a number of vessels that gillnet in some seasons and then switch over to charterboat fishing in the summer. Other fishing activities in Wanchese include trawling trips for squid in the summer, and fishing for weakfish, croaker, and flounder in the winter. Market considerations are crucial in deciding which species should be targeted by longline vessels (Wilson *et al*., 1998).

Researchers found pressure on this sector of the longline fishery to be substantial. Hiring and managing crew for pelagic longline vessels is increasingly difficult, especially for the larger vessels that need people to stay on for longer trips. There is a lot of turnover in fishing crews, particularly when vessels shift to other fisheries and revenue drops. Many of the larger vessels have already left, and experienced fishermen are finding work overseas and other captains and vessel owners are searching for alternatives to commercial fishing. Some have switched to carpentry and building and others have gone into the charter fishing business. Finding alternative permanent work may prove difficult for many fishermen who are highly skilled in their profession but have less formal education than the average worker (Wilson *et al*., 1998).

As conservation restrictions on the take of other HMS species have increased, sharks have become more important in local catches. In 1998, one dealer representative reported that shark (including dogfish), tuna, and swordfish sales now make up 40 percent, 40 percent, and 10 percent of business, respectively, while in the recent past they comprised 25 percent, 50 percent, and 15 percent of business, respectively (Wilson *et al*., 1998).

By regulation, in 1998 there were two six-month seasons for the shark fishery, one that ran from January to June and a second from July to December. Traditionally, fishermen on larger longline vessels went shark fishing from January until the closure of the first half of the shark season, and then fished with pelagic longlines for tunas or swordfish. HMS landed by these vessels supplied the restaurants in the local area with fresh products. Commercial fishermen and dealers did not like the fact that closures of the shark fishery caused all fishermen to shift at the same time from species to species, because it caused prices to drop. Some marginal fishermen are driven out of the market by the low prices associated with these shifts. Shifts in targeted species also required changing gear, which could be expensive (Wilson *et al*., 1998).

In 1998, commercial fishermen in Wanchese indicated, if the shark season were open in September and October, that they would prefer to fish for sharks at that time. Shark commercial retention limits have made shark fishing less economical for larger vessels; many steam north to fish off New York. Some respondents were supportive of limited entry or ITQs in the shark fishery. When questioned about size limits on sharks, fishermen reported concern about increased discards. However, they already prefer larger sharks because they are more marketable, suggesting that size-driven discarding may already be occurring. Participants also reported that prohibition of retaining dusky sharks would have a substantial impact on Wanchese fishermen (Wilson *et al*., 1998; HMS FMP, 1999).

The closed area off North Carolina will impact the commercial shark fishery, but the degree and extent of these impacts on the participants and community of Wanchese cannot be estimated with the information available at this time. Wanchese vessels will be able to continue fishing for sharks in the areas to the north of the closed area and thus effort will probably be displaced to the north of Oregon Inlet. Since the Wanchese vessels engage in a number of fisheries, the community impacts will probably not be significant overall.

9.4.12 South Carolina

Demographic Profile of South Carolina (source: U.S. Census, 2000)		
Population:	4,012,012	
Education:		
High school graduates (25 years or older)	1,981,731	76.2%
Employment:		
Labor force (16 years and over)	1,938,195	62.2%
Unemployed	113,495	3.6%
Employment by industry:		
Retail	217,604	11.9%
Manufacturing	354,386	19.4%
Education, health & social services	339,708	18.6%
Arts, recreation, lodging & food services	155,109	8.3%

The commercial shark fishery in South Carolina involved eight fishing vessels with directed-catch permits and 14 vessels with incidental catch permits in 2001. There were licensed shark dealers operating in 21 locations in South Carolina. Communities involved in the commercial shark fishery were Charleston, Folly Beach, Garden City, Georgetown, Hampton, Ladson, McClellanville, Mount Pleasant, Murrels Inlet, North Myrtle Beach, and Pawleys Island. Some 83 percent of the commercial shark catch by weight was landed in Charleston County, and 14 percent in Georgetown County. While the shark fishery is approximately one percent of all commercial fishery landings by weight in South Carolina (See Table 9.12), it is only half-of-a-

percent in value. Because of the small catches and low value of the fishery, no profiles were made of the South Carolina fishing communities.

Some 481,000 marine anglers fished in South Carolina's waters in 2001. Of these recreational fishermen, 224,000 (47 percent) were from out-of-state and 77,000 (16 percent) were from non-coastal counties within South Carolina. Estimated retail sales generated by the saltwater fishery in South Carolina in 2001 were some $264 million and the marine recreational fishing industry created some5,498 jobs (ASA, 2002). There is no catch and/or landing information available on the private boat recreational fishery for sharks in South Carolina, and anecdotal information suggests that the shark fishery is incidental to other fisheries, and is primarily catch and release.

South Carolina has a fleet of 139 charter/headboats with HMS permits, many of which fish the Gulf Stream for tuna and billfish, dolphin and wahoo, and take shark as incidental catch. There is a directed fishery by charter/headboats for sharks in South Carolina. Shark fishing trips, including night fishing, are offered by a number of charter operators. Shark are taken, in the directed fishery, from near-shore waters, inlets, and from around breakwaters and jetties. Shark fishing is said to be particularly good from May to December, but sharks are available year-round. Principal species targeted are blacktip, hammerhead, lemon, and tiger shark. The IGFA world-record tiger shark was caught off Cherry Grove Beach, SC, near Myrtle Beach. Charter boat operators advertising shark fishing as special trips or part of general near-shore fishing are found in the communities of Myrtle Beach, North Myrtle Beach, Hilton Head, Georgetown, Pawley's Island, Murrell Inlet, Edisto Beach, Isle of Palms, Seabrook Island, Charleston, Mount Pleasant, Beaufort, and Little River.

9.4.13 Georgia

Demographic Profile of Georgia (source: U.S. Census, 2000)

Population:	8,186,453	
Education:		
High school graduates (25 years or older)	4,074,616	78.6%
Employment:		
Labor force (16 years and over)	4,062,808	65.0%
Unemployed	223,052	3.6%
Employment by industry:		
Retail	459,548	12.0%
Manufacturing	568,830	14.8%
Education, health & social services	675,593	17.6%
Arts, recreation, lodging & food services	274,437	7.1%
Farming, fishing, forestry, & mining	53,201	1.4%

Commercial shark fishing in Georgia is a very small segment of the commercial fisheries in the state (See Table 9.13). There are licensed dealers in two locations in McIntosh County, and five vessels with shark permits, of which two vessels have directed-take permits. Georgia communities involved with the commercial shark fishery are Darien and Townsend, both in McIntosh County.

Marine recreational fishing in Georgia attracted 212,000 anglers in 2001, of whom 18 percent (38,000) were from out-of-state, and 43 percent from non-coastal counties. Saltwater angling is estimated to have generated some $57.8 million in retail sales in Georgia in 2001 and some 1,12 jobs in the marine recreational fishing service sector (ASA, 2002). Principal recreational fisheries are for tarpon and snook inshore, and billfish and tunas offshore. Sharks are taken incidental to these fisheries but there are targeted shark fisheries inshore on spinner, sandbar, and lemon sharks.

Twenty-seven charter/headboats held HMS permits in 2003 and were operating from Georgia coastal communities. These communities were Brunswick, Jekyll Island, Marietta, Savannah, Sea Island, Skidaway Island, and St. Simons Island. Savannah had the greatest number of vessels, 12 vessels (44 percent).

9.4.14 Florida

Demographic Profile of Florida (source: U.S. Census, 1990 & 2000)

	1990	2000
Population:	12,937,926	15,982,378
Education:		
High school graduates (25 years or older)	74.0%	79.9%
Employment:		
Labor force (16 years and over)	58.6%	58.1%
Unemployed	6.1%	3.2%
Employment by industry:		
Retail	19.6%	13.5%
Manufacturing	10.5%	7.3%
Education, health & social services	21.4%	18.1%
Arts, recreation, lodging & food services	6.8%	10.5%
Farming, fishing, forestry, & mining	3.1%	1.3%

There were some significant shifts in Florida's economy in the decade between 1990 and 2000. Traditional sectors of the economy, such as retail trade, manufacturing and farming shrank, while employment in the tourist industry, financial and other services grew. In spite of the population growth of nearly 25 percent in the decade, the ratio between those of an age to be in the labor force and those who were active in the labor force did not change significantly. Some 42 percent

of those older than 16 years were not in the labor force. This reflects a continuing population of retired persons. In fact, Florida has a population with more than 40 percent older than 45, and 19 percent less than 15, years of age. In 2000, 24 percent of Florida's households received retirement income and 33 percent received Social Security income. Households in which income was earned through wages or salary were 74 percent of all households in 2000. Average per capita income in Florida in 1989 was $14,698, and this had increased to $21,557 in 1999.

Florida's fishing industry is one of the largest and most diverse in the region. The commercial shark fishing fleet consists of 286 vessels with shark permits. Of these vessels, 147 have incidental catch permits, with 55 operating from East Coast ports and 92 from Florida's West Coast ports. Directed-take shark permits are held by 139 commercial vessels in Florida, with 65 boats working from East Coast ports and 74 based in West Coast ports. Licensed shark dealers operate in 106 locations in Florida, with 47 locations in East Coast communities and 59 locations in West Coast communities. In 2001, the commercial catch of shark was split between the two coasts with 55 percent by weight going to the East Coast ports. The West Coast ports' shark catches were more valuable and received 52 percent by value of the landings in Florida. Table 9.14 documents the landings reported in Florida during 2001.

The East Coast fishery extends from the Georgia state line to Biscayne Bay. The greatest concentration of commercial landings on the East Coast in 2001 (See Table 9.15) was in Brevard County. The second largest landings in 2001 were in St. Lucie County where 29 percent of the sharks, by weight, are landed. Duval County, in the northeast, had the third greatest landings with almost 18 percent of the catch. Fort Pierce (St. Lucie County) had the greatest concentration of vessels, with 19 commercial boats, while Jacksonville (Duval), Dania (Broward) and Port Salerno (Martin County) each had seven vessels. There were, in 2001, 43 East Coast communities involved in the commercial shark fishery.

The West Coast fishery included all of the Florida Keys, the West Coast and the Florida Panhandle. Pinellas County ports handled 48 percent, by weight, and 51 percent, by value, of the shark landings on the West Coast (See Table 9.16). Monroe County (the Florida Keys) ports handled 29 percent of the West Coast landings. Eighteen vessels were based in Panama City, while St. Petersburg was home to 13 vessels. Largo and Key West were each homeport to10 vessels. There were 48 communities involved in the commercial shark fishery on the West Coast of Florida**.**

Florida has the largest marine recreational fisheries in the United States. In 2001, approximately 6,735 saltwater anglers fished in the waters off Florida and made 28,853,000 fishing trips during that year. Of these fishermen, 3,296,000 (49 percent) were from out-of-state. The retail sales generated by these saltwater anglers in Florida in 2001 were estimated to be $2,987.2 million and the marine recreational fishing industry provided some 59,418 job (ASA, 2002). Sharks are an incidental catch for many fishermen, but some private boat fishermen have a directed fishery for sharks, including lemon, hammerhead, sandbar, blacktip and tiger sharks.

The Florida charter and headboat fleet includes 497 boats with HMS permits. While most do not advertise shark fishing trips, their fishing reports make it clear that they encounter and catch sharks on most trips. Some of the charter boat reports also comment on the "good eatin'" value of some sharks, particularly blacktip and lemon sharks. In all there are 110 communities in Florida with charter boats with HMS permits. The greatest concentrations of Florida-based charter/headboats with HMS permits are found in Miami (47), Panama City (44), Destin and Key West (40 each), Canaveral (24), Islamorada (20), Fort Lauderdale (19), Stuart (18), Pensacola (14), Marathon and St. Augustine (13 each), Palm Beach and Ponce Inlet (11 each), and Key Largo (9). It should be noted that the 497 charter boats/headboats reporting home ports in Florida do not include transient vessels that travel to Florida for the winter and spring fishing seasons.

9.4.14.1 Pompano Beach

Demographic Profile of Pompano Beach (source: U.S. Census, 1990 & 2000)

	1990	2000
Population:	72,411	78,191
Education:		
High school graduates (25 years or older)	73.7%	77.2%
Employment:		
Labor force (16 years and over)	55.7%	53.8%
Unemployed	6.3%	3.6%
Employment by industry:		
Retail	18.6%	13.6%
Manufacturing	8.5%	7.1%
Education, health & social services	13.2%	14.9%
Arts, recreation, lodging & food services	8.4%	11.0%

Pompano Beach is small city directly adjacent to Ft. Lauderdale. The Ft. Lauderdale area is known as the "Yachting Capital of the World" and the "Venice of America" because of the vast canal system which extends throughout Broward County and creates 165 miles of waterfront in the region. Recreational fishing is a very important activity in Pompano Beach, mainly targeting billfish. According to Florida's Bureau of Vessel Titling and Registry, in 1996 and 1997 Broward County had 44,151 registered vessels, with 41,393 pleasure and 2,043 commercial vessels. In contrast to many Florida communities, a substantial amount of the recreational fishing industry is supported by local people in addition to tourists; many small fishing tournaments attract about 75 percent local people and 25 percent tourists. Pompano Beach is also a globally important manufacturing center for commercial longlining equipment (Wilson *et al.,* 1998).

Since the 1990 Census, there have been shifts in the ethnic and racial population of Pompano Beach. In 1990, the population was 70 percent Caucasian and 29 percent Black-American. Some 20 percent of the population was of Hispanic ancestry. In 2000, the population consisted of 67 percent Caucasians, 25 percent Black-Americans, and 8 percent of people of other ethnicities. The proportion of the population with Hispanic ancestry had dropped to 10 percent.

The age structure of the Pompano Beach population did not, however, change during the decade. Children under 15 years comprise 15 percent of the population, persons between 15 and 44 years of age form 40 percent of the population, and 45 percent are aged 45 years or older.

The number of households increased from 31,891 in 1990 to 35,917 in 2000. The average household size in Pompano Beach decreased from 2.2 persons/household in 1990 to 2.1 persons/household in 2000. Of the households in 2000, some 69 percent were in receipt of earned income. Some 36 percent of the households received Social Security payments, while 16 percent of households were in receipt of retirement income from pensions. This suggests that some 30 percent of households were retired and living on fixed incomes.

The per capita income for Pompano Beach in 1989 was $17,382, and greater than the state average by $2,684 per annum. In 2000, per capita income in Pompano Beach was $23,938, and greater than the state average income by $2,381.

As a community, Pompano Beach owes its current infrastructure and social and economic lifestyle to the coming of the railroad in 1896 to a small coastal settlement. The proximity of good fishing and other natural resources encouraged the town and region's development as tourism and retirement center. The local chamber of commerce sponsors three marine festivals every year, and describes Pompano Beach as a "haven for boating, fishing and outdoor activities with its beautiful sunny weather...".

Pompano Beach has a proud longlining heritage and there are several successful businesses that are still involved to some degree with the fleet (Wilson *et al*., 1998). This gives the current small vessel fleet and other longline business some networks of support. At the same time, Pompano Beach is now increasingly a recreational fishing community. There is a great deal of tension between the recreational fishermen and the longliners. At the present time, researchers found that the longline fleet is not receiving community support beyond that supplied from within their own industry. Both sides acknowledge a problem with overfished stocks, but each often blames the other side.

Pompano Beach has a small pelagic longline fleet, remnant of a much larger fleet, that mainly targets tunas and swordfish. There is also some shark fishing farther north along the coast. Among the vessels that dock in Pompano Beach are five small (40 to 50 feet), short-trip, year-round longline vessels, and six or seven seasonal longline vessels. Of these, four vessels held incidental-catch permits for sharks in 2001, and another three vessels held directed-catch

permits for sharks. The most intensive local fishing takes place December through April. The longline fleet conducts business with two seafood dealers in Pompano Beach and one in Dania. Swordfish closures have reduced income by shifting effort to less valuable species, such as sharks. The development of the Pompano Beach area for yachting and recreational fishing has made dockage and access to the water more expensive (HMS FMP, 1999).

Wilson *et al.* (1998) noted that commercial respondents reported increased difficulty in getting quality crew. The smaller vessels take two crew plus the captain. Owner-operators often try to have at least one crew member with them consistently, and then find anyone they can for particular trips. The end result of all of these factors has been a substantial reduction of the Pompano Beach longline fleet. Pompano Beach's remaining pelagic and bottom longline fleet is considered, by both its owners and suppliers, to be in major trouble (Wilson *et al*., 1998). Skilled captains were found to be seeking employment in the Bahamas, as well as with the growing longline fleets in South Africa and South America, while the longline supply business has shifted its emphasis to supplying foreign fleets. In the urban economy of Pompano Beach, non-fishing alternatives for fishermen exist. However, unemployment is moderately high and the work force is fairly well-educated, so finding employment could be competitive. Commercial fishing employments alternatives for vessels and crew are minimal because of limited entry programs in other fisheries

9.4.14.2 Fort Pierce

Demographic Profile of Fort Pierce, FL (source: U.S. Census, 2000)

Population:	37,489	
Education:		
High school graduates (25 years or older)	14,108	59.7%
Employment:		
Labor force (16 years and over)	15,681	55.1%
Unemployed	1,382	4.9%
Employment by industry:		
Retail	1,784	12.5%
Manufacturing	1,139	8.0%
Education, health & social services	2,419	16.9%
Arts, recreation, lodging & food services	1,545	10.8%
Farming, fishing, forestry, & mining	1,119	7.8%

Fort Pierce is located in St. Lucie County, a rapidly developing area in South Florida. St. Lucie County is known as a center for citrus growing, particularly grapefruit. Fort Pierce is on the site of an army fort built in 1838, and remained an isolated outpost until the railroad reached the town in 1900. Fort Pierce was incorporated in 1901, and soon developed as a center for industry and

agribusiness. At the junction of the Florida Turnpike and Interstate 95, Fort Pierce is a thriving intermodal transportation center, distribution point, and tourist stop-over point.

Fort Pierce is a community which is in transition. From a predominantly White community in 1950, Fort Pierce had evolved into a community in 2000 in which the White population was less than half the total. The community grew rapidly between 1960 and 1990, from a population of 24,857 to 36,830. This growth has slowed to less than two percent per decade since 1990. These changes reflect, primarily, changes in agribusiness in Florida and, secondarily, the blue-collar, unskilled employment available in the transportation, food processing, and agricultural sectors.

Fort Pierce's population in 2000 was 49 percent White and 40 percent Black-American. No other ethnic or racial groups dominate the remaining 11 percent of the population. People of Hispanic ancestry (both Black and White) comprise 15 percent of the population of Fort Pierce. Children under 15 years of age form 23 percent of the population, 40 percent are aged between 15 and 44 years, while 37 percent are aged 45 or older.

There were 14,407 households in Fort Pierce, with an average household size of 2.56 persons, in 2001. The population is relatively mobile, since only 46 percent lived in the same house in 2000 as they did in 1995. It is also a relatively poor community, with median household income of $25,121 in 2000, and 31 percent of the population living below poverty level. Per capita income in Fort Pierce in 2000 was $14,345, compared to the state-wide average per capita income of $21,557, or $9,593 less than the per capita income in Pompano Beach. These earnings data reflect the unskilled and seasonal nature of jobs in agribusiness, packing plants and transportation businesses in and around Fort Pierce.

Locals refer to Fort Pierce as the "gateway to the Bahamas" because of the number of sport fishing and other vessels which use Fort Pierce as their departure point for the Bahamas and its associated Gulf Stream fisheries for HMS and other species of fish, including shark. In 2003, Fort Pierce hosted 15 fishing tournaments and related marine activities. The city's marina, in conjunction with other marinas and docks along the Indian River, Indian River Lagoon, and Intracoastal Waterway, provides sufficient dockage for recreational boaters and fishermen and for a commercial fishing fleet, principally longliners but also the six vessels which take sharks using gillnets. Nineteen vessels based in Fort Pierce hold HMS commercial permits. Of these permits, eleven are for the directed fishery. This commercial fleet landed 29 percent, by weight and value, of the Florida East Coast shark fishery in 2001, earning some $425,000 in ex-vessel sales.

The commercial fishing fleet in Fort Pierce has grown in numbers the past decade. Many vessels have moved to the community as dock space has been lost to the commercial fleet in ports nearby. Dealers and fish processors have also consolidated buying and packing operations in Fort Pierce because of the high cost of doing business in the tourism-related coastal communities north and south of Fort Pierce.

With the exception of the gillnet fleet unique to Fort Pierce, the commercial fishery is similar to the commercial fishery of Pompano Beach and is principally conducted during the fall and winter seasons. Smaller vessels switch gears and target species throughout the year, while larger vessels move with the fish stocks and retain the same gear configurations.

9.4.14.3 Madeira Beach

Demographic Profile of Madeira Beach (source: U.S. Census, 1990 & 2000)

	1990	2000
Population:	4,225	4,511
Education:		
High school graduates (25 years or older)	83.8%	87.3%
Employment:		
Labor force (16 years and over)	63.1%	61.5%
Unemployed	2.8%	2.7%
Employment by industry:		
Retail	12.7%	11.4%
Manufacturing	12.2%	11.3%
Education, health & social services	9.2%	7.9%
Arts, recreation, lodging & food services	20.2%	21.6%
Farming, fishing, forestry, & mining	0.2%	0.0%

Madeira Beach is part of the Tampa Bay urban complex, one of several beach suburbs of St. Petersburg. The area is the home of the west- central Florida shark bottom longline fleet. Madeira Beach is also home to a thriving recreational HMS fishery. In terms of revenue, tourism is the number one industry in Pinellas County. Annually, four million visitors contribute about two billion dollars to the economy. The tourism industry also employs almost 60,000 of the residents either directly or indirectly, adding up to $720 million in wages (St. Petersburg-Clearwater Visitors Bureau brochure, 1998). The state of the economy since September 2001 has dampened the tourism industry, and Pinellas County Chamber of Commerce reported that the 2002 visitor and expenditure statistics were similar to those of 1998 (PCCC Report, March, 2003).

Madeira Beach's economy has changed with the changing tourism industry. A sign of the times is the renovation of much of the waterfront along St. John's Pass from a working waterfront of docks, fish houses and chandleries to a boardwalk lined with restaurants and boutiques. Many of the slips remaining are assigned to recreational vessel docking and storage. The once-dominant fishing industry is now a shadowy presence in much of Madeira Beach.

The population of Madeira Beach was 99.8 percent Caucasian in 1990 and 97.1 percent Causcasian in 2000. During the decade, the number of people in the population claiming German ancestry rose from 11 percent to 19.7 percent in 2000, although 92 percent of the population of Madeira Beach were born in the United States. The Madeira Beach population aged during the decade. In 1990, 7 percent of the population were children aged 14 years or less; this proportion had dropped to 6 percent in 2000. The proportion of persons aged 15 to 44 years also dropped from 39 percent in 1990 to 36 percent in 2000. The proportion of persons aged 45 years or more grew from 54 percent of the population to 58 percent.

The number of households in Madeira Beach increased from 2,230 in 1990 to 2,528 in 2000, but the average number of persons in a household declined from 1.88 persons in 1990 to 1.78 in 2000. In 2000, almost 28 percent of the housing units in Madeira were seasonal or recreational units vacant at the time of the Census.

Per capita income in Madeira Beach in 1989 was $17,301; in 1999, per capita income had risen to $30,097, some $8,000 more than the state average per capita income and $15,752 more than the average per capita income in Fort Pierce. Individuals living at or below poverty level comprised 9.8 percent of the Madeira Beach population. Some 72 percent of Madeira Beach's households received earnings from wages or salaries. Twenty-three percent of the households were in receipt of retirement funds or pensions, while 31 percent of the households received income from Social Security.

The offshore fishing industry in Madeira Beach started as a bandit (reel fixed to transom) fishery before it shifted to bottom longlining. Grouper is the traditional fishery for the community. In the 1960s, there were two dealers supported by charterboats selling fish and a small commercial fleet targeting kingfish and grouper. Many species that are now sold, such as amberjack, were considered junk fish in earlier years. As demand for seafood began to grow, higher prices accompanied by investment programs led to substantial investment in commercial fishing within this community.

Longline vessels began to target swordfish in the 1970s, using cloth and nylon line before monofilament longlining became widely used. Local availability of swordfish declined quickly and a group of vessels went north to look for fish. On their way back they set longline gear in deep water and caught a significant amount of shark, tilefish and yellowedge grouper; this was how the bottom longline fishery in Madeira Beach began (Wilson *et al*., 1998). Marginal swordfish vessels began to experiment with various techniques such as straight hooks, auto-baiters and circle hooks. The fleet at Madeira Beach is currently 95 percent bottom longline vessels. There are four seafood dealers in this community. One dealer estimated that before restrictions on shark fishing his business used to be 45 percent grouper, 45 percent shark, and 10 percent swordfish and tuna; now it is 75 percent grouper, 10 percent shark and 15 percent swordfish and tuna (Wilson *et al.,* 1998). With the imposition of the live-bait ban in 2000, the swordfish and tuna landings have decreased appreciably.

Sharks and grouper are both caught with bottom longline gear. For this reason, the majority of longline fishermen hold permits for multiple fisheries. The maximum number of trips fishermen can make is about 15 trips a year, as a bottom longline trip lasts some 7 to 14 days. Grouper fishermen are subject to limited access, a minimum size, area restrictions, seasonal closures, and a quota.

Overall, the Madeira Beach bottom longliners are becoming fewer and more isolated from the rest of the fishing community (Wilson *et al*., 1998). Respondents say that antagonism and competition among dealers has gotten worse in recent years as vessels drop out of fishing, often being sold outside of the country. Many of these crews are living trip to trip and often need credit for engine repair, ice, fuel and even household and personal items. Both the fishermen and an engine supplier reported that the commercial fleet is spending more on maintaining existing gear and vessels rather than buying new equipment. Traditional patterns of dealers building relationships by extending services and credit to vessels are giving way to price-based competition to gain access to vessels (HMS FMP, 1999).

Fishermen in this community have experienced restrictions on gear, harvest, and capacity in many of its important fisheries. Wilson *et al.* found that alternative employment outside of the fishery is available through expanding opportunities in the tourism and recreational fishing industries. However, Wilson *et al.* found that this relatively ready supply of alternative employment threatened the stability of the labor pool for the fishing industry. Some reported that the best captains are leaving the country or moving on to other jobs. Like many other fishing communities, the longline fleet in Madeira Beach is experiencing market competition from imports of their target species. Concerns cited by pelagic longline fishermen were the safety of small vessels during winter openings, and the prospect of small vessels having to pay for observers and VMS (Wilson *et al*., 1998; HMS FMP, 1999).

When the shark bottom longline fishery began, it was easy to catch sharks, but the bottom longline fishery has become marginal because of restrictions and the increased distances the fishermen now have to steam (Wilson *et al*., 1998). Members of the fishing and supply industries reported price fluctuations in the shark fishery, which they attributed to the difficulty in maintaining steady supplies under derby-style quota management. The fins bring the most money and are exported to Asian nations. Shark trips have to be kept as short as possible to maintain good quality meat. Respondents suggest that regulations, particularly the 4,000-pound shark commercial retention limit, have turned the fishery into a small vessel fishery. Even vessels measuring as small as 50 feet in length can have difficulty making a profit (Wilson *et al*., 1998). Some fishermen keep both grouper and shark gear on board (HMS FMP, 1999).

In 2001, Pinellas County commercial shark fishermen landed 48 percent of sharks taken commercially on Florida's West Coast. The ex-vessel value of this catch was in excess of $800,000. There were shark dealers at 11 locations in Pinellas County, and 49 commercial vessels in the shark fleet, of which 31 had directed-take permits. Madeira Beach was homeport in 2001 to 8 shark vessels; 3 with incidental take permits and 5 with directed-take permits.

Approximately 50 to 60 charter/headboats participated in the recreational fisheries of Madeira Beach during the 1990s, and more than 48,000 pleasure vessels were registered in Pinellas County (Florida Bureau of Vessel Titling and Registration, 1996 and 1997). Researchers found tension and distance between the recreational and commercial fishing communities to be high, and recreational fishermen tend to maintain that commercial fishing is to blame for the declining shark populations (Wilson *et al*., 1998). Shark fishing is comparatively less important to recreational fishing in Madeira Beach than other HMS, although researchers reported that the local recreational shark fisheries are very healthy (HMS FMP, 1998).

In 2003, there were no charter or headboats with HMS permits calling Madeira Beach their home port. The renewal and renovation of the town's waterfront, particularly on John's Pass, removed many of the berths and infrastructure which supported both the charter boat fleet and the commercial fishing fleet.

There were shark tournaments in Madeira Beach in the past, mostly sponsored by a vessel or engine manufacturer, but they are no longer held. Stores sell very little shark tackle, but some maintain the industry is beginning to come back. The miles-long remainder of the old Sunshine Skyway bridge is now used as a pier for recreational shark fishing. It is estimated that recreational shark fishing in this community is 90 percent catch and release (HMS FMP, 1999).

9.4.14.4 Panama City

Demographic Profile of Panama City, FL (U.S. Census, 1990 & 2000)

	1990	2000
Population:	34,378	36,417
Education:		
High school graduates (25 years or older)	70.0%	79.2%
Employment:		
Labor force (16 years and over)	57.0%	53.9%
Unemployed	8.1%	3.1%
Employment by industry:		
Retail	14.4%	13.8%
Manufacturing	8.0%	7.0%
Education, health & social services	23.6%	22.0%
Arts, recreation, lodging & food services	11.8%	14.2%
Farming, fishing, forestry, & mining	1.5%	0.5%

Panama City is one of the Florida's top fishing centers offering surf fishing, pier fishing, and charter/headboat fishing, according to the Panama City Tour Guide (Panama City/Bay County Chamber of Commerce, 2003). According to the Florida Bureau of Vessel Titling and Registration, the county has a total of 16,865 registered vessels with 15,359 pleasure and 1,433 commercial vessels. Headboats are an important part of Panama City's tourism. People enjoy bringing children along since these trips are shorter than charterboat trips. Panama City is a summer resort, with little tourist activity in the winter, as well as an important commercial fishing port.

During the winter, recreational fishermen target bottom fish and bluefish. In March, the season begins for Spanish mackerel, cobia, snapper, bonito, little tunny, amberjack, snapper, red porgies, rudder fish, blue runner, bluefish, and redfish. By summer, they also fish for king mackerel, dolphin fish, wahoo, little tunny, and barracuda. White marlin, blue marlin, and sailfish are caught recreationally in late summer. Some charter boats will go shark fishing at night for extra income. In September, the fishery is very mixed, and in October, king mackerel and bonito are popular. Tourists are mainly interested in bottom fishing. Motivations have changed; people used to be interested in catching a lot of fish and taking it home to eat or sell, but now people are satisfied to catch anything (Wilson *et al*., 1998; HMS FMP, 1999).

Panama City saw a big change in its demographics in the decade between 1990 and 2000. In 1990, the age profile was typical of a normal "mature" society; by 2000, it reflected significant aging of the population. In 2000, 57 percent of the population of Panama City was 45 years or older, in contrast to 37 percent in 1990. The proportion of the population aged between 15 and 44 years declined from 43 percent in 1990 to 24 percent in 2000. The proportion of the population aged 14 years or younger did not change significantly; it remained at approximately 19 percent of the population.

Panama City had 14,033 households in 1990, and the population grew during the decade to 14,819 households in 2000. The average household size decreased from 2.38 persons in 1990 to 2.30 persons in 2000, indicating that there might be an increase in "empty nesters" and retiree households. Some 12 percent of households (17 percent of individuals) were below the poverty level in 2000. In 1989, the per capita income in Panama City was $12,169 and was significantly lower than the state average per capita income of $14, 698. This situation persisted in 1999, when the Panama City per capita income had increased to $17,830, but continued to be less than the Florida average of $21,557 per capita.

Like Fort Pierce, Panama City is a transportation hub and has an agricultural and industrial base in addition to its fisheries. And like Fort Pierce, Panama City's commerce rests on a supply of unskilled labor able to service agribusiness, transportation services, and the tourism industry. Panama City has two city marinas in addition to private commercial operations. The Panama City marina is located downtown on the Intracoastal Waterway and provides 240 berths for recreational, commercial and charter/headboat vessels. The second municipal marina, St. Andrews, lies on St. Andrews Bay, closer to the Gulf of Mexico, and provides docking and other

facilities for much of the commercial fishing fleet. This fleet is chiefly composed of shrimp boats. Seven charter/headboats are based in the city marinas. While the largest local employers are hospitals and resort hotels, two shipyards between them employed 650 persons in 2003 (Panama City/Bay County Chamber of Commerce, 2003).

In the early 1980s, yellowfin tuna was the main commercial fishery for Panama City from April through December while bluefin tuna were targeted in the winter. Some of the longline vessels shifted from yellowfin tuna fishing to bottom longline fishing for grouper and sharks in 1998, since the latter required fewer crew members (Wilson *et al*., 1998). Some of these vessels targeted dolphin fish in the summer, and swordfish more rarely. In 1998, two of these vessels were owner operated, two were owned by a dealer, three were each owned by a single person who hired a captain, and two others were jointly owned and had hired captains (Wilson *et al*., 1998)

Some pelagic longline fishermen also participated in the reef fish and bottom longline fishery. There were 16 to 19 grouper vessels operating out of Panama City in 1998. One fish trader interviewed by the researchers in 1998 reported that his current business was 87 percent yellowfin tuna and eight percent snapper, with the remainder being a mix of swordfish, bluefin tuna, dolphin, wahoo, sandbar shark, and escolar. He bought from about 10 vessels in 1998, but had bought from 30 vessels a few years ago (Wilson *et al.,* 1998). The prohibition on the use of live bait in 2000 reduced the tuna and swordfish catches of the commercial fleet and increased use of bottom longline for grouper and shark.

While Panama City was developing tourist and recreational fishing industries, the commercial fishermen were becoming fewer and more isolated from the rest of the community. The competition among dealers was perceived as becoming more aggressive in 1997-1998. Traditional patterns of dealers building relationships by extending services and credit to vessels in the shrimp and longline fisheries were giving way to price-based competition to gain access to vessels. Fishermen in this community had experienced restrictions on gear, harvest, and capacity in many important fisheries. Researchers found in 1998 that alternative employment outside of the fishery was available in the developing tourism and recreational fishing industries. However, researchers concluded that this relatively ready supply of alternative employment threatened the stability of the labor pool for the fishing industry (Wilson *et al*., 1998).

Some of the pelagic longline vessels in Panama City switched their gear to target sharks when the shark fishery is open. The Florida bottom longline fleet primarily targets sandbar sharks for their valuable fins. Researchers in 1998 questioned fishermen about the possibility of implementing a minimum size for sharks. Fishermen in this community estimate that a 58-inch size limit would reduce their catch by 40 to 50 percent. The main desire in the shark fleet appeared to be avoiding disturbances in supply. Members of the fishing and supply industries reported price fluctuations in the shark fishery, which they attributed to the difficulty in maintaining steady supplies under derby-style quota management. Other concerns cited in 1998 were safety of small vessels during winter openings, and the prospect of small vessels having to pay for observers and VMS.

Wilson *et al.* (1998) concluded that the overall effect of increased restrictions on the bottom longline fleet would be increased pressure on grouper and yellowfin tuna, increased difficulty in finding and retaining employees, and an acceleration in the rate at which the fleet's vessels and experienced fishermen are moving overseas, especially to Mexico. Increased restrictions on commercial fishing would likely accelerate the decline of that sector relative to the recreational fishery in Florida (Wilson *et al*., 1998).

In 2001, the commercial shark fishery operating from Bay County ports of Panama City, Lynn Haven, Panama City Beach and Southport landed 13,757 pounds of shark with an ex-vessel value of $16,001. There were shark dealers operating in four locations in the county, and 31 commercial shark fishing boats, seven with directed-take permits, divided between the ports. Panama City had the largest fleet with 18 permitted shark vessels, four of which had directed-take permits while the remaining 14 had incidental-take permits.

Shark fishing is comparatively less important to recreational fishing in Panama City than billfish, although some customers are attracted by shark in particular. Researchers reported in 1998 that the recreational shark fisheries of Panama City were very healthy. They found that tension and distance between the recreational and commercial fishing communities in Panama City were high. Recreational fishermen throughout this area tend to believe that commercial fishing is to blame for the declining shark populations (Wilson *et al*., 1998).

An annual shark tournament was held in Panama City from 1980 to 1996. The change that the fishery experienced in that time was dramatic and the organizers felt that the recreational fishery was wasting a lot of fish given the condition of the resource (Wilson *et al*., 1998). This tournament used to draw people from a couple of hundred miles away. One tackle store owner related that only five to 10 percent of his business is now shark related, whereas it used to be close to 80 percent. The increased popularity of catch and release fishing has actually increased tackle sales because a large, offshore private vessel will keep two sets of tackle on board. Recreational fisherman are concerned about the complexity of the management measures for sharks, which vary by species (Wilson *et al*., 1998).

At this time (2003) Panama City has 34 charter/headboats with HMS permits. Sharks are taken incidental to other catches and most vessels practice catch and release, although two websites described sharks as tasty and encouraged anglers to fish for personal consumption. Seven of the charter boat websites surveyed showed offerings for night shark fishing trips.

9.4.15 Alabama

Demographic Profile of Alabama (source: U.S. Census, 2000)		
Population:	4,447,100	
Education:		
High school graduates (25 years or older)	2,173,319	75.3%
Employment:		
Labor force (16 years and over)	2,047,100	59.3%
Unemployed	126,911	3.7%
Employment by industry:		
Retail	233,742	12.2%
Manufacturing	352,566	18.2%
Education, health & social services	370,274	19.3%
Arts, recreation, lodging & food services	122,333	6.4%

Alabama has a small commercial shark fishery based in five communities. Table 9.17 documents the landings reported in Alabama during 2001. The commercial fleet with shark permits numbers six boats in all; three vessels with directed-take permits and three vessels with incidental-take permits. There are licensed shark dealers working in 12 locations in coastal Alabama. The communities involved in the shark fishery are Andalusia, Bayou la Batre, Elba, Elberta, and Lillian.

The marine recreational fishery off Alabama attracted 503,000 anglers in 2001, who made 1,636,000 fishing trips. Of these recreational fishermen, 194,000 (39 percent) are from out-of-state. Another 98,000 anglers (19.5 percent) are from non-coastal counties within Alabama. The estimated retail sales generated by saltwater anglers in Alabama in 2001 were valued at $235.9 million. Some 5,477 jobs were attributed to the marine recreational fishing industry in 2001 (ASA, 2002). Thus recreational fishing off Alabama also benefits the local tourist industry as it does in Florida. Shark fishing is largely incidental to recreational fishing for other fish species.

There are 72 charter/headboats with HMS permits in Alabama. Some 60 percent (43) of these vessels are operated from Orange Beach, while 17 percent are based in Dauphin Island. The communities involved in the Alabama charter/headboat fishery for sharks and other HMS species are Birmingham, Daphne, Dauphin Island, Dothan, Foley, Fort Morgan, Fowl River, Gulf Shores, Mobile, Ono Island, Orange Beach, and Perdido Beach. There is a small directed shark fishery advertized by some of the charter/headboats, but most take shark incidentally to other fish species throughout the year.

9.4.16 Mississippi

Demographic Profile of Mississippi (source: U.S. Census, 2000)		
Population:	2,844,658	
Education:		
High school graduates (25 years or older)	1,280,487	72.9%
Employment:		
Labor force (16 years and over)	1,267,092	58.7%
Unemployed	93,778	4.3%
Employment by industry:		
Retail	138,646	11.8%
Manufacturing	215,203	18.3%
Education, health & social services	236,382	20.1%
Arts, recreation, lodging & food services	97,698	8.3%
Farming, fishing, forestry, & mining	39,473	3.4%

The commercial shark fishery in Mississippi is very small compared to all other commercial fisheries in the state (See Table 9.18). There are 10 vessels with shark permits, including one with a directed-take permit, and shark dealers work from three locations in Jackson County. Communities involved in the commercial shark fishery are Biloxi and Pascagoula.

Mississippi's saltwater recreational fisheries attracted some 311,000 anglers in 2001. Seventy-thousand (23 percent) of these anglers were from out-of-state, and 44,000 (14 percent) were from non-coastal counties within Mississippi. The ASA estimated that marine recreational fishing generated $50.5 million in retail sales in Mississippi in 2001 and some 1,003 jobs (ASA, 2002) Marine recreational fishing in Mississippi has three modes: shoal water fishing along salt-water marshes, behind barrier islands, and in the sounds; near-shore fishing in relatively shallow water out to some 15 miles from shore, including trips to artificial reefs and oil platforms; and offshore fishing in deeper water with HMS species as a target. Sharks are, however, taken in all three modes and it is reported that some are retained for personal use by anglers. There is no detailed data available on catch and effort rates for sharks in the recreational fishery or on retention of catch *versus* catch-and-release of sharks.

There are 27 charter/headboats with HMS permits home-ported in Mississippi ports. The Mississippi Charter Boat Captains' Association advertises "Light tackle bait fish for small coastal sharks during the summer" as part of the attractions of sport fishing off Mississippi (www.mscharter boats.org; June, 2003). The Association also notes that recreational trolling in the wake of commercial shrimp boats will find "Big Sharks". Among the sharks advertised on charter boat websites are requiem, lemon, sandbar, blacktip, and sharpnose sharks. Approximately two-thirds of the 20 websites sampled advertised shark fishing as part of the

charter boats' offerings to clients. Communities involved in the charter and head boat fishery include Bay St. Louis, Biloxi, Ellisville, Gautier, Gulfport, Long Beach, Pascagoula, Pass Christian, and Picayune. Biloxi and Gulfport are each homeport to about one-third of the charter and head boat fleet with HMS permits.

9.4.17 Louisiana

Demographic Profile of Louisiana (source: U.S. Census, 1990 & 2000)

	1990	2000
Population:	4,219,973	4,468,976
Education:		
High school graduates (25 years or older)	68.0%	74.8%
Employment:		
Labor force (16 years and over)	57.8%	58.9%
Unemployed	9.0%	4.3%
Employment by industry:		
Retail	17.5%	11.9%
Manufacturing	12.5%	10.1%
Education, health & social services	25.3%	21.7%
Arts, recreation, lodging & food services	4.7%	9.1%
Farming, fishing, forestry, & mining	5.7%*	4.2%*

Louisiana was second only to Alaska in the quantity and value of its commercial fisheries in the United States in 2001. Venice, LA, ranked third in the United States for quantity of commercial landings, while Dulac, LA ranked fourth in the nation for value of landings. The menhaden fishery is based in Venice, while shrimping is the principal fishery in Dulac. Both of these fisheries have declined during the past two decades, from the peak year of Louisiana commercial landings in 1984 when 1,931,027,000 pounds of fish were landed in the state.

Commercial landings of large coastal sharks in 2001 (See Table 9.19) declined by 15 percent since 1996. The ex-vessel value of the landings declined by 63.5 percent in the same period. In 2001, shark dealers were operating from 17 locations in Louisiana, and the commercial shark fishing fleet numbered 48 vessels. Six of these vessels held directed take shark permits, while 42 vessels held incidental permits. The communities involved in the commercial shark fishery in 2001 included Boothville-Venice, Buras, Chalmette, Cut-Off, Dulac, Galliano, Gretna, Harvey, Houma, Lockport, Metairie, New Orleans, and Thibodeaux. The largest concentrations of shark vessels were homeported in New Orleans (56 percent), Houma (eight percent), and Dulac and Gretna (six percent each).

The recreational saltwater fisheries off Louisiana attracted some 775,000 anglers in 2001, who between them made 3,615,000 fishing trips. Of these anglers, 16 percent (122,000) were from out-of-state, while 8 percent were from non-coastal counties within Louisiana. The ASA estimated that salterwater angling generated some $409.6 million in Louisiana in 2001, and some 7,786 jobs in marine recreational fisheries (ASA, 2002). The center of fishing activity is off the Mississippi delta, and ports like Boothville-Venice, Port Fourchon and Grand Isle with good road access to the metropolitan areas of Baton Rouge and New Orleans, benefit from their access to good bottom-fishing areas and to "blue-water" areas offshore. Sharks are taken in both the bottom-fishery and in the blue-water fishery.

In 2003, there are 88 charter/headboats with HMS permits operating from Louisiana communities. The majority of websites sampled show that sharks are a component of most trips offered by these vessels. There is no detailed information on shark landings in the recreational fishery, nor is there any detailed information on catch and release of sharks. Communities involved in the charter and head boat fishery for sharks include Venice (22 boats), New Orleans (18 boats), Chauvin/Dulac (12 boats), Houma and Baton Rouge (5 boats each); Port Fourchon (4 boats), Grande Isle, Cut-Off, Chalmette, Galvez, Lake Charles, Leeville and Monroe.

9.4.17.1 Venice

Demographic Profile of Venice (Source: U.S. Census, 1990 & 2000)

	1990	2000
Population:	2,743	2,220
Education:		
High school graduates (25 years or older)	43.5%	48.4%
Employment:		
Labor force (16 years and over)	50.0%	53.0%
Unemployed	6.4%	2.0%
Employment by industry:		
Retail	12.5%	13.1%
Manufacturing	7.1%	4.8%
Education, health & social services	8.9%	14.4%
Arts, recreation, lodging & food services	6.9%	10.4%
Farming, fishing, forestry, & mining	22.5%	22.7%

Boothville-Venice is a "census designated place" and the Bureau of the Census statistics include both small communities. Similarly, NOAA Fisheries links Empire and Venice as a single port. Thus, both the port and community are referred to as Venice in this document.

Venice is located about 30 miles south of the parish seat Point à la Hache, which is flanked by eroding wetlands and levees that border the Mississippi River. The unemployment rate is low

compared to that of Dulac, perhaps because Venice has been the epicenter of oil industry activity in Louisiana. The main job opportunities in Venice are oil, seafood harvest and processing and, increasingly, recreational fishing. Venice extends into the Gulf of Mexico close to billfish areas that are frequented by recreational fishermen. Recreational fishing increased steadily there during the 1990s. Animosity regarding competition for fish extends to the political arena, as commercial and recreational fishermen oppose each other on regulatory issues. Commercial fishery participants claim that they are harassed by law enforcement agents, while recreational fishery participants claim that regulations are not enforced in Venice because there are simply not enough agents to cover the area. Among local commercial fishermen, there is a sense that recreational fishermen have helped create a regulatory environment that is pushing commercial fishermen out of business (Wilson *et al*., 1998).

There is no evidence that local residents participate in commercial fisheries for HMS; most of the commercial vessels landing in Venice are home-ported in New Orleans or other Mississippi River towns further upriver from the Gulf of Mexico. Even Louisiana natives who fish for shark with nets in state waters live in neighboring towns, not in Venice. Shrimp is the largest commercial catch bought and sold in Venice, although this fishery has become less profitable since the late 1980s (Wilson *et al*., 1998). The longline fleet is not well integrated into the Louisiana community of Venice. The longline fishermen are mostly "commuters" from towns and cities further inland, such as New Orleans, and most of them are from a different ethnic background, including many Vietnamese-Americans. Due to the language barrier, many of these fishermen do not participate in public fisheries meetings (HMS FMP, 1999).

Venice's population decreased by 24 percent in the decade between 1990 and 2000. In 2000 there were 2,220 residents of the community. The age structure of the population shows, in 2000, that 26 percent of the residents were under 15 years old, 44 percent were between the ages of 15 and 44 years, and 30 percent were 45 years of age or older. In 1990 there were 844 households with an average size of 3.25 people. The number of households had decreased to 746 in 2000 and the average household size had dropped to 2.96 people.

Per capita income in Venice in 1989 was $6,949; this was higher than the per capita income of Dulac ($4,946); but lower than the state average ($10,635). Thirty-six percent of the population of Venice lived below the poverty level. The median household income was $16,250. Eighteen percent of the households in Venice in 1990 received Social Security, averaging $5,433 per year, and 11 percent of the households received public assistance income, averaging $3,301 per year.

In 1999, the per capita income of Venice residents was $13,123, while the per capita income for the state of Louisiana had increased to $16,912. Of the households in Venice, some 18 percent remained below the poverty level in 2000.

In 1998, several dealers in Venice drew 40 percent of their business from the longline fleets. Another dealer drew only about 20 percent from longline vessels. A large wholesaler dealt only in longline catches and purchased fish from three of the four local dealers. In 1997, 60 percent

of this business was tuna, 30 percent shark and 10 percent swordfish. The competition between dealers in 1998 was perceived as becoming more aggressive (Wilson *et al*., 1998). Traditional patterns of dealers building relationships by extending services and credit to vessels are giving way to price-based competition to gain access to vessels.

While pelagic longline fishermen with large vessels work year-round, pelagic longlining in the area tends to intensify in May and ease up during the wintertime. There are four docks in Venice where longline vessels unload. Docks in Venice employ between five and 15 workers on a seasonal basis for unloading vessels and packing seafood, as well as five to eight people year-round. The docks purchase tuna year round, shrimp from May through December, bottom fish such as drum, catfish, and sheepshead, from January through May, mullet (for the roe) from October through December (HMS FMP, 1998).

Researchers in 1998 found that alternative employment outside of the fishery was available. For instance, the oil industry hired unskilled labor from this area in recent years, and employed three percent of the civilian labor force in 2000. The agricultural sector also provides employment opportunities during the off-season for fishing, as reported by one Vietnamese-American captain. However, researchers found that this relatively ready supply of alternative employment threatened the stability of the labor pool for the fishing industry. The Vietnamese-American community has avoided such personnel problems to some extent by relying on tight kinship networks in both fishing and fish buying, although they did report some difficulty in finding captains. The Vietnamese-American community was the only one studied which reported recent investment in new longline vessels. Concerns cited by the fishermen in Venice included the safety of small vessels during winter openings, and the prospect of small vessels having to pay for observers and VMS (Wilson *et al*., 1998)

Other commercial fisheries in the area that could provide alternative employment include pompano in October, mullet from October to January, shrimp from May to December and oysters from January to May (Wilson *et al*., 1998). Wilson *et al.* concluded that the overall effect of increased restrictions on this fleet would be increased pressure on grouper and yellowfin tuna, increased difficulty in finding and retaining employees, and an acceleration in the rate at which the fleet's vessels and experienced fishermen are moving overseas, especially to Mexico.

Recreational fishermen fish from Venice year-round, but are affected by inclement weather during the winter. There are 22 charter/headboats with HMS permits operating out of Venice in 2003. The larger vessels can fish for yellowfin tuna year round, in addition to inshore species like redfish, snapper and speckled trout. Bluefin tuna are found too far away (100 miles offshore) and recreational fishermen are prohibited from directing effort on bluefin tuna anyway. They fish for billfish, particularly blue marlin, from May through November. Blacktip shark was once a popular catch, but recreational fishermen say they are now too small to be an enjoyable catch. There is some animosity between recreational and commercial fishermen which seems to arise from competition for particular species. Charter boats regularly specify sharks as a species available to their clients.

There are only two marinas in Venice that cater to recreational fishermen, although a third parish-run marina offers vessel slips to both recreational and commercial fishermen. One opened in the mid-1980s and offers boat slips, launches, a hoist, a couple of condominiums, baitshop, fuel and ice. It employs 13 people during peak summer months. Most of the marina's business comes from private vessels from New Orleans and border states. Less than one percent of this business consists of charter boats. The other marina opened only a few years ago, offering 120 pre-paid boat slips, a 64-room two-story hotel, condominiums, a dry dock storage facility, fuel and ice. It employs 12 to 15 people in its newly opened hotel and another 15 to 25 in the marina. Eight charter boats operate from the marina, and there is room for 10 more.

Researchers in 1998 reported that the catch and release ethic for billfish was strong among recreational fishermen in Venice, but local billfishing tournaments require that trophy fish be brought to the dock and weighed. Sportfishermen prefer to catch and retain tunas, dolphin fish, and wahoo for consumption, although they voiced support for tag and release programs (HMS FMP, 1999).

9.4.17.2 Dulac

Demographic Profile of Dulac, LA (source: U.S. Census, 1990 & 2000)

	1990	2000
Population:	3,273	2,458
Education:		
High school graduates (25 years or older)	27.0%	39.1%
Employment:		
Labor force (16 years and over)	46.0%	44.9%
Unemployed	17.5%	3.0%
Employment by industry:		
Retail	12.0%	10.3%
Manufacturing	14.0%	10.0%
Education, health & social services	9.8%	8.5%
Arts, recreation, lodging & food services	9.9%	10.7%
Farming, fishing, forestry, & mining	23.6%	25.9%

Dulac is located in the center of Terrebonne Parish, about 15 miles south of Houma, LA. Houma lies at the intersection of the Houma Navigational Canal and the Intercoastal Waterway and serves as the parish seat and a locale of employment opportunities in offshore equipment building for Dulac residents. Terrebonne Parish government is a consolidated government so most data are gathered on a parish-wide basis.

According to the Terrebonne Parish Planning Department in 1998, the parish did not spend much time tracking the importance of the commercial fishing industry, but anecdotal evidence suggests that it is a long-standing and significant part of the community economy. Landings of tunas,

swordfish, and sharks indicate that Dulac is among the most important fishing ports in the state. However, many of the fishermen who target HMS are a commuter population; they land fish in Dulac or purchase fish in Dulac, but they live elsewhere. Three dealers purchase fish from longline vessels; two are owned and operated by first-generation Vietnamese immigrants, and the other is run by a New Orleans native whose father operates a large tuna wholesale company in Venice.

In 1990, the population of Dulac was about 50 percent Caucasian and almost half of the population was Native American (Houma Indian), a tribe not recognized by the U.S. government. Less than two percent of the population was African-American or Hispanic, and less than two percent of the population was Asian/Pacific islander, despite the fact that most of the longline captains who sustain the Dulac commercial industry for tunas, swordfish, and sharks were Vietnamese. Many of the Caucasians in Dulac are of French or French-Canadian ancestry. By 2000, the population of Dulac had declined significantly, and was composed of 54 percent Caucasians, 40 percent Native Americans (Houma), less than one percent Asian, and a smattering of people of other ethnic groupings. Some 31 percent of the population claimed French or French-Canadian ancestry in 2000.

At the time of the Census in 2000, 26 percent of the population of Dulac were children under the age of 15. Some 33 percent of Dulac's population were 45 years of age or older, and 41 percent were between 15 and 44 years of age.

There were 910 households in Dulac in 1990, with an average size of 3.59 persons/household. By 2000 the number of households had decreased to 768 and the average size of each household had dropped to 3.20 persons. At the time of the 1990 Census nearly half of the households in Dulac were living below the poverty level, with a median household income of $12,653. In 2000, median household income in Dulac had increased to $22,900, but more than 30 percent of households continued to live below poverty level.

Per capita income in Dulac in 1990 was $4,946; for the State of Louisiana, average per capita income was $10,635. By 2000, per capita income in Dulac had risen to $8,785, while for the state as a whole, per capita income had risen to $16,912. Employment in Dulac was principally in the fisheries in 2000 with approximately 160 persons (21 percent of all those with employment) working full time or seasonally in fishing activities.

Pelagic longline fishermen in Dulac target yellowfin tuna all year. Swordfish is not targeted by Dulac longline vessels, and incidentally-caught sharks are often discarded (Wilson *et al*., 1998). The competition between dealers was perceived as becoming more aggressive in 1998. Traditional patterns of dealers building relationships by extending services and credit to vessels were giving way to price-based competition to gain access to vessels. Researchers reported, in 1998, that one dock in Dulac employed three to four people, but laid them all off in 1998. That dealer purchased tuna (50 percent), shark (30 percent), swordfish (20 percent), and dolphin, wahoo, and amber jack (20 percent combined). Another dealer employed six or seven people in

1998, all of whom lived in Dulac. Of this dealer's purchases, 60 percent were tuna, 20 percent were swordfish and 20 percent were divided among other pelagic species like shark, wahoo, amber jack. A third dealer employed six Mexican workers, supplemented by local residents on a seasonal basis (Wilson *et al.*, 1998). The pelagic longline fleet has seen reductions in its catches with the prohibition of the use of live-bait in 2000, and this has impacted community employment.

Researchers in 1998 found that alternative employment outside of the fishery was available. For instance, while unemployment in Louisiana fishing communities has been high in the past, the oil industry hired unskilled labor from this area in recent years. In 1990, 33 residents of Dulac worked in the oil fields and a similar number were employed by the oil industry in 2000. The agricultural sector also provides employment opportunities, as reported by one Vietnamese-American captain, particularly during the off-season for fishing. However, this supply of alternative employment threatened the stability of the labor pool for the fishing industry (Wilson *et al*., 1998). This was true for both captain and crew positions, particularly among the non-Vietnamese-American population. The Vietnamese-American community avoided such personnel problems to some extent by relying on tight kinship networks in both fishing and fish buying. The Vietnamese-Americans, however, did report some difficulty in finding captains. The Vietnamese-American community was the only one studied which reported recent investment in new longline vessels. In Louisiana, the impacts of regulation may be felt more intensely by the Vietnamese-American community given the extent of their investment in this fishery (HMS FMP, 1998).

Dulac was also a home port for a limited inshore shark bottom longline fishery in Federal waters in 1998. Blacktip shark was the main catch in this fishery. These fishermen did not fish much during the winter because of the safety concerns of these small vessels (Wilson *et al*., 1998). Typically, sharks are caught between five and 20 miles from shore. Almost all vessels that sell in Dulac are owner-operated. Owners are usually their own captains or they hire a close relative to captain their vessel. Good first mates try to acquire their own vessels. At least five bottom longline vessels were built in 1997 and have been added to the fleet in Dulac. Some participants in the bottom longline fishery for sharks also participated in the reef fish fishery. It would be difficult for shark fishermen to switch into the yellowfin tuna fishery (Wilson *et al*., 1998). The local fishermen, fishing for shark in state waters, use a gill net and fish under a special state licence; longlining for sharks in state waters is banned.

The primary concern of dock owners and seafood processors is the need to have a consistent supply of fish. At one point in the early 1990s, a Dulac dealer was selling 50,000 pounds of shark fillets a week to supermarket chains. In 1998 they were selling much less because the markets did not like the unpredictability of supply (Wilson *et al*., 1998).

9.4.18 Texas

Demographic Profile of Texas (source: U.S. Census, 2000)		
Population:	20,851,820	
Education:		
High school graduates (25 years or older)	9,676,332	75.6%
Employment:		
Labor force (16 years and over)	9,830,559	62.9%
Unemployed	596,187	3.8%
Employment by industry:		
Retail	1,108,004	12.0%
Manufacturing	1,093,752	11.8%
Education, health & social services	1,779,801	19.3%
Arts, recreation, lodging & food services	673.016	7.3%

The commercial shark fishery is a small portion of the commercial fisheries of Texas (See Table 9.20). There are licensed shark dealers operating in 7 locations in coastal Texas, and 16 vessels holding commercial shark permits. Of these vessels, five have directed-take permits. Communities involved in the fishery include Bacliff, Franklin, Friendship, Galveston, Kemah, La Porte, Lumberton, Pearland, Pflugerville, Port Isabel, Santa Fe, and Seabrook. The greatest concentration of vessels is in Kemah, which is the homeport for three vessels. Because of the small size of the fishery, no community profiles were undertaken of Texas ports.

There are no MRFSS data available on the participation, catch and effort in marine recreational fisheries in Texas. The ASA estimated that saltwater angling generated some $622.2 million in retail sales in Texas in 2001 and that there were 13,322 jobs in Texas associated with the marine recreational fishing industry (ASA, 2002). There are 129 Texas charter/headboats which, in 2003, hold HMS permits. Most of these take shark as an incidental catch to other near-shore and offshore fish. Communities involved in the charter and head boat fishery include Port Aransas (38 boats), Freeport (17 boats), Galveston (14 boats), Houston (13 boats), and Port Isabel and Port O'Connor with 7 boats each. Other communities that are home ports for HMS-permitted charter/headboats include Alvin, Aransas Pass, Channelview, Corpus Christi, Dickinson, Friendswood, Helotes, Humble, Ingleside, Key Allegro, La Porte, Lake Jackson, Matagorda, Pasadena, Port Mansfield, Portland, Rockport, Sargent, South Padre Island, and Vidor.

Table 9.1 **2001: Commercial Landings, Dealers and Vessel Permits in the Shark Fishery, by State.** Source: NOAA Fisheries

State	Pounds Landed	$ Value Landed	Dealer N	I-Permit Vessel N	D-Permit Vessel N
Alabama	23,959	13,823	10	3	3
California				2	
Connecticut	*	*	1	1	
Delaware	*	*	1	3	
Florida - East	1,955,996	1,483,246	32	55	65
Florida - West	1,608,858	1,584,675	48	92	74
Georgia	*	*	2	3	2
Indiana				1	
Louisiana	1,164,157	692,989	17	42	6
Maine	8,357	10,640	3	4	3
Maryland	15,857	20,101	3	7	3
Massachusetts	21,290	29,348	14	14	6
Mississippi	119,784	29,937	3	9	1
New Hampshire	*	*	2	2	1
New Jersey	229,602	195,613	16	35	27
New York	28,774	50,481	23	12	7
North Carolina	1,139,070	520,153	53	19	19
Rhode Island	11,787	14,959	12	11	1
South Carolina	142,059	123,073	20	14	8
Texas	11,318	7,761	7	11	5
Virginia	394,590	201,938	7	5	4
Virgin Islands				2	
Total	**6,880,659**	**4,981,911**	N-S	**347**	**235**

* Data is confidential; there are less than 3 licensed shark dealers in the state
N-S = not specified; many dealers operate in two or more states
I-Permit = Incidental take permit; D-Permit = Directed fishery permit

Table 9.1a **Number of Charter/headboats with HMS Permits, by State, 2003.** Source: NOAA Fisheries Permit Files as of June 1, 2003.

State	No. of Charter & Headboats	State	No. of Charter & Headboats
Alabama	72	New York	319
Connecticut	61	North Carolina	387
Delaware	130	Ohio	1
Florida	497	Oklahoma	1
Georgia	27	Pennsylvania	42
Louisiana	88	Puerto Rico	16
Maine	42	Rhode Island	93
Maryland	155	South Carolina	139
Massachusetts	332	Tennessee	1
Michigan	3	Texas	129
Mississippi	27	Virginia	142
New Hampshire	42	US Virgin Islands	7
New Jersey	385	Not Known *	6
		TOTAL	3,144

*Vessels are shown by port of registry; these vessels gave the USCG registration center in Falling Waters, WV as their port of registry.

Table 9.2 **2001 Commercial Fishery Landings in Maine**. Source: NOAA Fisheries.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	239,868,000	251,441,000	100	100
Sharks*	8,357	10,640	<0.01	<0.01

* All sharks excluding dogfish
Percentages are rounded

Table 9.3 **2001 Commercial Fishery Landings in New Hampshire.** Source: NOAA Fisheries.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	18,584,000	17,865,000	100	100
Sharks*	**	**	<0.01	<0.01

* All shark landings excluding dogfish

** Landings data confidential per NOAA rule of <3 entities (e.g. dealers) engaged in the fishery.

Table 9.4 **2001 Commercial Fishery Landings in Massachusetts**. Source: NOAA Fisheries.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	187,861,000	288,263,000	100	100
Sharks*	21,290	29,348	0.01	0.01

* All sharks, excluding dogfish;
Percentages are rounded;

Table 9.5 **2001 Commercial Fishery Landings in Rhode Island.** Source: NOAA Fisheries.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	115,957,000	65,457,000	100	100
Sharks*	11,787	14,959	0.01	0.02

* All sharks, excluding dogfish.
Percentages are rounded.

Table 9.6 2001 Commercial Fishery Landings in Connecticut. Source: NOAA Fisheries.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	18,687,000	30,625,00	100	100
Sharks*	N-S	N-S	<0.001	<0.001

* All sharks, excluding dogfish.
Percentages are rounded.
N-S = Data is not specified per NOAA rule of data confidentiality when there are <3 respondents.

Table 9.7 2001 Commercial Fishery Landings in New York. Source: NOAA Fisheries.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	42,422,000	55,038,000	100	100
Sharks*	28,774	50,481	0.07	0.09

* All sharks, excluding dogfish.
Percentages are rounded.

Table 9.8 2001 Commercial Fishery Landings in New Jersey. Source: NOAA Fisheries.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	168,430,000	109,820,000	100	100
Sharks*	229,602	195,613	0.13	0.18

* All species of sharks, excluding dogfish.
Percentages are rounded.

Table 9.9 2001 Commercial Fishery Landings in Maryland. Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	55,536,000	55,586,000	100	100
Sharks*	15,857	20,101	0.03	0.04

* All sharks, excluding dogfish.

Table 9.10 **2001 Commercial Fishery Landings in Virginia.** Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	561,708,000	119,382,000	100	100
Sharks*	394,590	201,938	0.07	0.17

* All sharks, excluding dogfish.

Table 9.11 **2001 Commercial Fisheries Landings in North Carolina.** Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	139,277,000	90,202,000	100	100
Sharks*	1,139,070	520,153	0.82	0.58

* All species of sharks, excluding dogfish.
Percentages are rounded.

Table 9.12 **2001 Commercial Fisheries Landings in South Carolina.** Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	14,111,000	23,398,000	100	100
Sharks*	142,059	123,073	1.01	0.52

* All sharks, excluding dogfish.
Percentages are rounded.

Table 9.13 **2001 Commercial Fishery Landings in Georgia.** Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	9,036,000	14,752,000	100	100
Sharks*	N-S	N-S	<0.03	<0.01

* All sharks, excluding dogfish.
Percentages are rounded.
N-S Not specified to protect business data confidentiality, per NOAA Fisheries rule

Table 9.14 **2001 Commercial Fishery Landings in Florida.** Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	115,235,000	191,946,000	100	100
Sharks*	3,564,854	3,067,921	3.1	1.6

* All sharks, excluding dogfish.
Percentages are rounded

Table 9.15 **2001 Commercial Fishery Landings in East Coast, Florida, Ports.** Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	37,130,000	48,136,000	100	100
Sharks*	1,955,996	1,483,246	5.3	3.1

* All sharks, excluding dogfish.
Percentages are rounded.

Table 9.16 **2001 Commercial Fishery Landings in West Coast, Florida, Ports.** Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	78,105,000	143,810,000	100	100
Sharks*	1,608,858	1,584,675	2.7	1.1

* All sharks, excluding dogfish.
Percentages are rounded.

Table 9.17 **2001 Commercial Fishery Landings in Alabama.** Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	24,740,000	43,170,000	100	100
Sharks*	23,959	13,823	0.1	0.03

* All sharks, excluding dogfish.
Percentages are rounded

Table 9.18 2001 Commercial Fishery Landings in Mississippi. Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	213,889,000	50,561,000	100	100
Sharks*	119,784	29,937	0.06	0.06

* All sharks, excluding dogfish.
Percentages are rounded

Table 9.19 2001 Commercial Fishery Landings in Louisiana. Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	1,191,460,000	342,748,000	100	100
Sharks*	1,164,157	692,989	0.1	0.2

*** All sharks, excluding dogfish.**
Percentages are rounded

Table 9.20 2001 Commercial Fishery Landings in Texas. Source: NOAA Fisheries, 2002.

Species	Landings Pounds	Landings Value $	Percent Weight	Percent Value
All Species	97,370,000	218,030,000	100	100
Sharks*	11,318	7,761	0.01	0.004

* All sharks, excluding dogfish.
Percentages are rounded.

References for Chapter 9.0

ASA. 1997. Sportfishing in America. Alexandria, VA. American Sportfishing Association.

ASA. 2002. Sportfishing in America: Values of our Traditional Pastime. Alexandria, VA. American Sportfishing Association.

Bureau of the Census. v.d. American Fact Finder: STF1 and STF3 tables for 1990 and 2000. Suitland, MD. U.S. Department of Commerce (www.census.gov).

Culliton, Thomas J. 1998. Population: Distribution, Density and Growth. Silver Spring, MD. NOAA/National Ocean Service (NOAA's State of the Coast report series).

Fisher, M.R. and R.B. Ditton. 1992. A Social and Economic Characterization of the U.S. Gulf of Mexico Recreational Shark Fishery. Marine Fisheries Review 55(3): pp. 21-27.

Hall-Arber, Madeleine et al. 2001. Fishing Communities and Fishing Dependency in the Northeastern Region of the United States. Cambridge, MA. MIT Sea Grant College Program.

NOAA Fisheries. 1999. Final Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks. Silver Spring, MD. U.S. Department of Commerce. National Marine Fisheries Service. Highly Migratory Species Division.

Holland, Steven M. et al. 1999. The Operations and Economics of the Charter and Head Boat Fleets of the Eastern Gulf of Mexico and South Atlantic Coasts. Gainesville, FL. University of Florida (MARFIN report no. NA77FF0553).

Interorganizational Committee. 1994. Guidelines and Principles for Social Impact Assessment. Seattle, WA. National Marine Fisheries Service (NOAA-NMFS-TM-F/SPO-16).

Jepson, Michael et al. 2001. Defining and Identifying Fishing Dependent Communities in Florida. Gainesville, FL. University of Florida.

Johnson, Jeffrey C. et al. 1986. Recreational Fishing in the Sounds of North Carolina: A Socioeconomic Analysis. Raleigh, NC. University of North Carolina Sea Grant College Program (UNCSG-86-12(R/MD-7)).

Longline Fishery Committee. 1997. Briefing Paper Concerning the Pelagic Longline Fishery Off South Carolina: A Special Report to the Marine Advisory Committee. Charleston, SC. SC Department of Natural Resources. Marine Resources Division. Office of Fisheries Management.

McCay, Bonnie J. and Marie Cieri. 2000. Fishing Ports of the Mid-Atlantic: A Social Profile ~ A Report to the Mid-Atlantic Fishery Management Council. Brunswick, NJ. Rutgers University. Department of Human Ecology.

NMFS. 2001. NMFS Operational Guidelines – Fishery Management Process: Appendix 2(g): Guidelines for Assessment of the Social Impact of Fishery Management Actions. Silver Spring, MD. National Marine Fisheries Service.

NMFS. v.d. Fisheries of the United States. Silver Spring, MD. U.S. Department of Commerce. National Marine Fisheries Service (Current Fishery Statistics Series, Nos. 1990-2001).

Thomas, J. Stephen et al. 1995. Gulf Shrimp Fishermen. Mobile, AL. University of Southern Alabama. Department of Sociology (MARFIN report no. NA37FF0049).

Wilson, Douglas et al. 1998. Social and Cultural Impact Assessment of the Highly Migratory Species Fishery Management Plan and the Amendment to the Atlantic Billfish Fisheries Management Plan. Brunswick, NJ. Rutgers University. Department of Human Ecology (NOAA-NMFS-HMS contract report.).