

6.0 COMMUNITY PROFILES

This Chapter identifies and describes the HMS fishing communities as required under the Magnuson-Stevens Act and other laws. This Chapter consolidates all of the communities profiled in previous HMS FMPs or FMP amendments and updates the community information where possible. Of the communities profiled in this chapter, ten were originally selected due to the proportion of HMS landings in the town, the relationship between the geographic communities and the fishing fleets, the existence of other community studies, and input from the HMS and Billfish Advisory Panels. The remaining 14 communities, although not selected initially, have been identified as communities that could be impacted by changes to the current HMS regulations because of the number of HMS permits associated with these communities, and their community profile information has been incorporated into the document. See section 9.2.2 for more information regarding the current HMS community selection process.

6.1 Introduction

The Magnuson-Stevens Act requires, among other things, that all FMPs include a fishery impact statement intended to assess, specify, and describe the likely effects of the measures on fishermen and fishing communities (§303(a)(9)).

The National Environmental Policy Act (NEPA) also 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” (§102(2)(A)). Moreover, agencies need to address the aesthetic, historic, cultural, economic, social, or health effects, which may be direct, indirect, or cumulative. Consideration of social impacts is a growing concern as fisheries experience increased participation and/or declines in stocks. The consequences of management actions need to be examined to better ascertain and, if necessary and possible, mitigate regulatory impacts on affected constituents.

Social impacts are generally the consequences to human populations resulting from some type of public or private action. Those consequences may include alterations to the ways in which people live, work or play, relate to one another, and organize to meet their needs. In addition, cultural impacts, which may involve changes in values and beliefs that affect people’s way of identifying themselves within their occupation, communities, and society in general are included under this interpretation. Social impact analyses help determine the consequences of policy action in advance by comparing the status quo with the projected impacts. Community profiles are an initial step in the social impact assessment process. Although public hearings and scoping meetings provide input from those concerned with a particular action, they do not constitute a full overview of the fishery.

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)). See also 50 CFR §600.345 for National Standard 8 Guidelines.

“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))

The National Standard guidelines expand upon the definition of a fishing community, and state that, “A fishing community is a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries-dependent services and industries (for example, boatyards, ice suppliers, tackle shops)” (50 CFR §600.345(b)(2)).

NMFS (2001) guidelines for social impact assessments specify that the following elements are utilized in the development of FMPs and FMP amendments:

1. The size and demographic characteristics of the fishery-related work force residing in the area; these determine demographic, income, and employment effects in relation to the work force as a whole, by community and region.
2. The cultural issues of attitudes, beliefs, and values of fishermen, fishery-related workers, other stakeholders, and their communities.
3. The effects of proposed actions on social structure and organization; that is, on the ability to provide necessary social support and services to families and communities.
4. The non-economic social aspects of the proposed action or policy; these include life-style issues, health and safety issues, and the non-consumptive and recreational use of living marine resources and their habitats.
5. The historical dependence on and participation in the fishery by fishermen and communities, reflected in the structure of fishing practices, income distribution and rights.

6.2 Summary of New Social and Economic Data Available

The following reports were published in 2007:

- Allen, S., and A. Gough. 2007. Filipino Crew Community in the Hawai'i-Based Longline Fishing Fleet. *NAPA Bulletin* 28: 87-98.
- Bavinck, M., & Monnereau, I. (2007). Assessing the social costs of capture fisheries: An exploratory study. *Social Science Information*, 46(1), 135-152.
- Blount, B.G., and K.R. Kitner. 2007. Life on the Water: A Historical–Cultural Model of African American Fishermen on the Georgia Coast (USA). *NAPA Bulletin* 28:109-122.
- Blount, B. G., and A. Pitchon. (2007). An anthropological research protocol for marine protected areas: Creating a niche in a multidisciplinary cultural hierarchy. *Human organization*, 66(2), 103-111.
- Chevront, B. 2007. A State-Managed Program for Conducting Interviews with Commercial Fishermen. *NAPA Bulletin* 28:99-108.
- Christensen, V., K.A. Aiken, and M.C. Villanueva. (2007). Threats to the ocean: On the role of ecosystem approaches to fisheries. *Social Science Information*, 46(1), 67-86.
- Clay, M., and Julia Olsen. 2007. Defining Fishing Communities: Issues in Theory and Practice. *NAPA Bulletin* 28:27-42.
- Doulman, D. J. (2007). Coping with the extended vulnerability of marine ecosystems: Implementing the 1995 FAO code of conduct for responsible fisheries. *Social Science Information*, 46(1), 189-237.
- Garcasha-Quijano, C. (2007). The state and small-scale fisheries in Puerto Rico. *American Anthropologist*, 109(2), 407-408.
- Hamilton, L.C. 2007. Climate, fishery and society interactions: Observations from the North Atlantic. *Deep Sea Research II* 54:2958-2969.
- Impact Assessment, Incorporated (IAI). 2007. Preliminary assessment of the impacts of Hurricane Katrina on Gulf of Mexico coastal fishing communities. Prepared for the U.S. Department of Commerce, NMFS, Southeast Regional Office, St. Petersburg, Florida. Contract number WC 133F-06-CN-0003.
- Ingles, P., and H. McIlvaine-Newsad. 2007. Any Port in the Storm: The Effects of Hurricane Katrina on Two Fishing Communities in Louisiana. *NAPA Bulletin* 28:69-86.
- Johnston, R. J., D.S. Holland, V. Maharaj, and T.W. Campson. (2007). Fish harvest tags: An alternative management approach for recreational fisheries in the U.S. Gulf of Mexico. *Marine Policy*, 31(4), 505-516.
- Kitts, A., P. Pinto da Silva, and B. Rountree. (2007). The evolution of collaborative management in the northeast USA tilefish fishery. *Marine Policy*, 31(2), 192-200.
- Maiolo, J.R. 2007. Influencing Fisheries Management: Multitasking For Maximum Effectiveness. *NAPA Bulletin* 28:14-26.
- Marshall, N.A. 2007. Can policy perception influence social resilience to policy change? *Fisheries Research* 86:216-227.

- National Oceanic and Atmospheric Administration. 2007. Introduction to stakeholder participation. NOAA Coastal Services Center, Charleston, SC. 15 pp.
- NMFS 2007. Analysis of the expected economic effects of the August 5 closure of the 2008 red snapper recreational fishery in federal waters of the Gulf of Mexico. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Regional Office. 37 pp.
- NMFS. 2007. Report to Congress on the impacts of Hurricanes Katrina, Rita, and Wilma on Alabama, Louisiana, Florida, Mississippi, and Texas. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Silver Spring, MD. 133 pp.
- Norman, K., J. Sepez, H. Lazrus, N. Milne, C. Package, S. Russell, K. Grant, R.P. Lewis, J. Primo, E. Springer, M. Styles, B. Tilt, and I. Vaccaro. 2007. Community profiles for West Coast and North Pacific fisheries—Washington, Oregon, California, and other U.S. states. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-85, 602 p.
- Paolisso, M. 2007. Cultural Models and Cultural Consensus of Chesapeake Bay Blue Crab and Oyster Fisheries. NAPA Bulletin 28:123-135.
- Jepson, M., and S. Jacob. 2007. Social Indicators and Measurements of Vulnerability for Gulf Coast Fishing Communities. NAPA Bulletin 28: 57-68.
- Sepez, J., K. Norman, and R. Felthoven. 2007. A Quantitative Model for Ranking and Selecting Communities Most Involved in Commercial Fisheries. NAPA Bulletin 28:43-56.
- Wakeford, R.C., D.J. Agnew, and C.C. Mees. (2007). Review of institutional arrangements and evaluation of factors associated with successful stock recovery plans. CEC 6th Framework Programme No. 022717 UNCOVER. MRAG Report, March 2007. 58pp.
- Webster, D. G. (2007). Leveraging competitive advantages: Developing countries' role in international fisheries management. *The Journal of Environment & Development*, 16(1), 8-31.

6.3 Methodology

6.3.1 Previous community profiles and assessments

NMFS contracted with Dr. Doug Wilson, from the Ecopolicy Center for Agriculture, Environmental and Resource Issues at Rutgers, the State University of New Jersey, to help develop the community profiles and social impact assessments for the 1999 HMS FMP and Amendment 1 to the FMP for Atlantic Billfish. Dr. Wilson and his colleagues completed their fieldwork in July 1998. This study covered Atlantic HMS commercial and recreational fisheries extending along the Atlantic and Gulf coasts from Maine to Texas and in the Caribbean. The study investigated the social and cultural characteristics of fishing communities in five states and one U.S. territory: Massachusetts, New Jersey, North Carolina, Florida, Louisiana, and Puerto Rico. These areas were selected because they each had important fishing communities that could be affected by the 1999 FMP for Atlantic Tunas, Swordfish, and Sharks and the 1999 Atlantic Billfish FMP Amendment 1, and because they are fairly evenly spread along the Atlantic and

Gulf coasts and the Caribbean. The study compiled basic sociological information from at least two coastal communities for each state or territory. These locations were visited for further analysis. In the 1998 study, towns were selected based on HMS landings data, the relationship between the geographic communities and the fishing fleets, and the existence of other community studies. The information in this document incorporates by reference the Wilson *et al.*, (1998) study of the HMS fishery and the work of McCay and Cieri (2000) for the Mid-Atlantic Fishery Management Council, “The Fishing Ports of the Mid-Atlantic.”

Additionally, this Chapter uses the information gathered under the contract with the Virginia Institute of Marine Science (VIMS) at the College of William and Mary to re-evaluate several of the baseline HMS communities (Kirkley, 2005). The VIMS study gathered a profile of basic sociological information for the principal states involved with the Atlantic shark fishery. From the 255 communities identified as involved in the 2001 commercial fishery, Amendment 1 to the 1999 HMS FMP 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, the VIMS study did not profile the shark recreational fishery because participation and landings were not documented in a manner that permits community identification. The Wilson *et al.*, study selected only the recreational fisheries found within the commercial fishing communities for a profile due to the lack of community-based data for the sport fishery. To the extent that it is available, the information on the HMS-related recreational fisheries has been incorporated into the community profiles.

6.3.2 Information Used in this Assessment

Following the Consolidated HMS FMP, which published in 2006, NMFS contracted MRAG Americas, Inc. to create a report updating current HMS fishery community profiles. The report utilized HMS permit information and U.S. census data to rank communities according to the percentage of HMS permits, by permit category, in relation to their overall population, based on a methodology described by Sepez *et al.* (2005). Communities that met the mean percentage for at least one permit category were included and community profile information was created or updated accordingly. The report identified 14 communities that have not previously been included (Wakefield, Rhode Island; Montauk, New York; Cape May, New Jersey; Ocean City, Maryland; Atlantic Beach, Beaufort, and Morehead City, North Carolina; Apalachicola, Destin, and Port Salerno, Florida; Orange Beach, Alabama; Grand Isle, Louisiana; and Freeport and Port Arkansas, Texas), along with 10 communities that had been included in previous SAFE reports (Gloucester and New Bedford, Massachusetts; Barnegat Light and Brielle, New Jersey; Hatteras Village and Wanchese, North Carolina; Islamorada and Madeira Beach, Florida; and Dulac and Venice, Louisiana). This list did not include four communities that had been included in assessments since the 1999 HMS FMP (Fort Pierce, Panama City Beach, and Pompano Beach, Florida; and Arecibo, Puerto Rico). All communities that have been identified by MRAG Americas, Inc. and ones that have been evaluated in the past are included in this assessment to update the most recent community profile information available and to ensure continuity with the 1999 HMS FMP and previous amendments.

The communities that are profiled are not intended to be an exhaustive list of every HMS-related community in the United States; rather the objective is to give a broad perspective of representative areas. The demographic profile tables in this chapter were modified from previous documents to include the same baseline information for each community profiled, and use both 1990 and 2000 Bureau of the Census data for comparative purposes. A profile for the U.S. Virgin Islands could not be created because the 1990 Census data were not available, and only some of the demographic information was available for 2000. Additionally, a descriptive profile for the Virgin Islands has not been developed for any previous HMS-related actions. The descriptive community profiles in this chapter include information provided by Wilson, *et al.* (1998) and Kirkley (2005), Impact Assessment, Inc. (2004, 2005), and recent information obtained from MRAG Americas, Inc. (2008). In this chapter, the community descriptions are organized by state.

This assessment also reviewed the available information on location of HMS permit holders to provide information about residence and to identify additional HMS-related fishing communities that may be profiled in the future. Four regional maps were created using Geographic Information Systems (GIS) to identify the communities where angling, charter/headboat, HMS dealer (tunas, shark, and swordfish dealers combined), commercial tuna (all gear categories combined), directed and incidental shark, and swordfish (directed, incidental, and handgear permits combined) permit holders reside. This permit holder information should continue to assist in identifying recreational industry community profiles in future assessments.

While geographic location is an important component of a fishing community, the transient nature of HMS may cause the permitted fishermen to shift location in an attempt to follow the fish. Because of this characteristic, management measures for HMS often have the most identifiable impacts on fishing fleets that use specific gear types. The geographic concentrations of HMS fisheries may also fluctuate from year to year, as the behavior of these migratory fish is variable. The relationship between these fleets, gear types, and geographic fishing communities is not always a direct one; however, they are important variables for understanding social and cultural impacts. As a result, the inclusion of typical community profiles in HMS management decisions is somewhat difficult, as geographic factors and use of a specific gear type have to be considered.

Several other chapters in this SAFE report include information that addresses the requirements described Section 6.1 and that is an integral part of this social impact assessment and fishery impact statement. Please refer to the summary of regulatory actions in Chapter 1, description of the fisheries in Chapter 4, the economic evaluation in Chapter 5, and the permit data in Chapter 9.

6.3.2.1 Community Impacts from Hurricanes

The impacts of both Hurricane Katrina (late August 2005) and Hurricane Rita (September 2005) have yet to be fully realized, but have had a devastating effect on many Gulf of Mexico communities. NMFS has conducted assessments of the commercial and recreational fishing sectors, as well as the coastal communities and the supporting marine infrastructure (NMFS, 2005). Economic losses to the commercial fishing industry in Louisiana and Mississippi from

Hurricane Katrina are estimated to be 13. billion and 484 million dollars, respectively (Impact Assessment, 2007).

Storm surge and/or broken levies destroyed many of the Gulf communities, such as Venice, Louisiana and areas south of Belle Chasse (Ingles, pers. com.). Many individuals involved with HMS fisheries, and their families, have lost their homes and have been displaced or are living in temporary structures with no electricity or running water and only minimal monetary assistance from Federal Emergency Management Agency (pers. com. with affected fisheries participants). In some instances, vessels have become the primary residence because their homes were destroyed. Rebuilding has been challenging because many people did not have insurance prior to the hurricanes. Those with insurance found that it covered only wind and not water damage. And others with basic coverage found that it was not enough to cover the boat, business, and home. As a result, the rebuilding after the hurricanes has added to the gentrification in many of the communities (Ingles, pers. com.).

In addition to their homes, the storms had a devastating impact on fishing vessels in the Gulf region. These impacts include, vessels sunk, displaced, piled up, or completely destroyed (Ingles, pers. com.). Even though some vessel did survive the hurricanes, there was a major impact to the supporting infrastructure that the commercial industries rely upon (*e.g.*, seafood dealers, processors, suppliers) and anglers require to go fishing (*e.g.*, bait shops, marinas, etc.) (NMFS, 2005). Where vessels escaped relatively unscathed by the hurricanes, but lost the supporting infrastructure to continue landing in their usual ports, fishermen chose to land their catch in Gulf ports located further west where the damage was not as great (Ingles, pers. com.).

The pelagic longline fishery was significantly impacted by the hurricanes since about 60 percent of the Eastern pelagic longline vessels were in the Gulf region when the hurricanes arrived (National Fishermen, 2006). The number of sets made in 2005 declined compared to 2004 with a majority of that decline attributable to the Gulf of Mexico area (National Fishermen, 2006). About 22 percent of the active PLL fleet showed no activity during third quarter of 2005, likely due to the impact of Hurricane Katrina; and about 14 percent of the active fleet showed no activity in the fourth quarter, possibly a result of Hurricane Rita. More than half the longline vessels operating out of Louisiana were fishing again by March 2006 with the remainder of the vessels severely damaged or being used for housing, rather than fishing (National Fishermen, 2006). Fuel costs are fairly consistent across the Gulf of Mexico; therefore, limiting travel to fishing grounds and to offload catch is important in keeping fuel costs down. Loss of infrastructure to support commercial fisheries operations may force fishermen who cannot afford to travel far from home to land fish to relocate to areas where they can reduce their travel expenses. (Ingles, pers. com.).

While the impacts of Hurricanes Katrina and Rita were devastating to many Gulf communities, at least half of the inactive permit holders in the second half of 2005 had renewed their permits as of March 2006 (Preliminary Logbook Data, 2005). Though this does not necessarily indicate that these vessels are actively fishing, it at least indicates that the permit holders are hopeful about using the permits again. According to interviews conducted by Ingles and McIlvaine-Newsad (2007), many individuals that were displaced from commercial fishing and related activities in the Louisiana area by the hurricanes plan to return to the fishing industry.

In comparing areas in Louisiana damaged by Hurricanes Katrina, the Empire-Venice area received more damage than the Grand Isle area; therefore, recovery in Empire-Venice should be slower than in Grand Isle (Ingles and McIlvaine-Newsad, 2007).

Hurricanes Gustav and Ike caused damage to Gulf Coast communities in 2008, with damage to the fishing industry in Louisiana estimated to be \$300,000,000 (Times-Picayune, 2008). Impacts to fishing communities along the Texas coast, particularly in the Galveston area where Hurricane Ike made landfall, still need to be thoroughly evaluated. These impacts, along with high fuel costs and a slowing economy, may detrimentally affect HMS fishery operations in this region.

6.4 United States Demographic Profile

In 1990, the United States had a total population of 248.7 million (Table 6.1). The population increased to 281.4 million in 2000. Throughout the previous decade, the population was roughly half female and half male. Individuals between 20 and 44 years of age comprised the largest proportion of the population in both 1990 and 2000. The dominant race was white. Ninety-two million total households, in 1990, grew to 105.5 million households in 2000. The average household and family size remained about the same between the two decades. The number of high school graduates, ages 25 and older, increased between 1990 and 2000 by about five percent (Table 6.1). Between 1990 and 2000, the total number of business establishments in the United States increased from 6.2 to 7.1 million. While unemployment decreased by half in 2000, the individuals below the poverty line decreased by less than one percent. In 1990, employment in farming, fishing, forestry, and mining industries accounted for 3.3 percent collectively; whereas in 2000, collective employment in these industries accounted for less than two percent.

Table 6.1 Demographic Profile of the United States. Source: U.S. Census, 1990 and 2000.

Demographics	1990	2000
Total Population	248,709,873	281,421,906
Sex		
Male	48.7%	49.1%
Female	51.3%	50.9%
Age		
< 20	25.6%	28.6%
20 - 44	43.2%	36.9%
45 - 64	18.6%	22.0%
> 65	12.6%	12.4%
Race		
White	80.3%	75.1%
Black or African American	12.1%	12.3%
American Indian and Alaska Native	0.8%	0.9%
Asian	2.8%	3.6%
Native Hawaiian and Other Pacific Islander	0.1%	0.1%
Other	3.9%	5.5%
Household		
Total	91,947,410	105,480,101
Family households	70.2%	68%
Nonfamily households	29.8%	32%
Average household size	3	2.59
Average family size	3.16	3.14
Housing Occupancy		
Total housing units	102,263,678	115,904,641
Vacant housing units	10.1%	9.0%
Housing Tenure		
Owner-occupied housing units	64.2%	66.2%
Renter-occupied housing units	35.8%	33.8%

UNITED STATES	1990
Population:	281,421,906
Education:	
High school graduates (25 years or older)	75.2%
Economic Characteristics	
Labor force (16 years and over)	65.3%
Unemployed	6.3%
Median Household Income	\$ 30,056
Individuals below the poverty line*	13.1%
Employment in some industry sectors:	
Managerial/professional	26.4%
Technical, Administrative, & Sales	31.7%
Construction, Production, Maintenance, & Transportation	26.2%
Farming, fishing, forestry, & mining	2.5%
Industry	
Farming, fishing, forestry & mining	3.3%
Construction	6.2%
Manufacturing	17.7%
Wholesale trade	4.4%
Retail	16.8%
Education, health & social services	23.3%
Arts, recreation, lodging & food services	1.4%

6.5 State and Community Profiles

6.5.1 Maine

Between 1990 and 2000, the population in the state of Maine increased by about 4.6 percent (Table 6.2). The number of high school graduates, ages 25 years and older, has increased over the past decade. The unemployment rate decreased, while the percentage of individuals below the poverty line remained the same. Employment in the farming, fishing, forestry, and mining industries remained about the same with education, health, and social services industries providing the greatest source of employment for the state's residents.

As of August 2008, three commercial shark and three commercial swordfish fishing permits were issued in Maine (Table 6.52 and Table 6.53), along with 439 commercial tuna permits (Table 6.50). Maine also has eight licensed dealers for tunas, sharks, and swordfish; ten of the dealers reside in Portland (Table 6.51 and Figure 9.12). Maine has the third greatest number of commercial tuna permit holders with 10.2 percent of the total (Table 6.50).

Vessels homeported in Maine sometimes participate in shark fisheries in southern waters and make landings in Florida and other states; therefore, landings are not always indicative of a community's involvement in a fishery. Sharks are often taken incidentally during tuna fishing trips. The incidental nature of shark catches off Maine in the commercial fishery is also true for the recreational fishery. There is, however, a small group of anglers who fish with light tackle for blue shark, mako, and porbeagle in the Gulf of Maine. To date, no HMS-related community profiles have been developed for the State of Maine, as there are no significant concentrations of HMS-related fisheries in any particular community.

In 2007, an estimated 447,000 sportfishermen made 1,222,000 fishing trips in marine waters off Maine (NMFS, 2008-U.S. Fisheries). Of these anglers, about 58 percent were from out of state. Less than two percent of the HMS angling category permit holders live in the state of Maine (Table 6.48 and Figure 9.9). The American Sportfishing Association (ASA) estimated that all saltwater recreational fishing in Maine in 2006 generated almost \$76 million in direct and indirect retail sales. Employment in marine recreational fishing services was estimated to be 1,192 jobs (Southwick Associates, 2007). An indication of recreational interest in shark fishing is that charterboats advertise for shark fishing trips from York Harbor, Sheepscot, Casco Bay, Saco Bay, Bath, Damariscotta, and Old Orchard Beach. Eighty-eight charter/headboats in Maine held HMS permits as of May 2008 (Table 6.49 Number and Percentage of HMS Charter/Headboat Permits by State and Country as of May 2008.). 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.

Table 6.2 **Maine Demographic Profile.** Source: U.S. Census, 1990 and 2000.

Maine	1990	2000
Population:	1,227,928	1,274,923
Education:		
High school graduates (25 years or older)	78.8%	85.4%
Employment:		
Labor force (16 years and over)	65.6%	65.3%
Unemployment Rate	6.6%	4.8%
Median Household Income	\$27,854	\$37,240
Individuals below the poverty line*	10.8%	10.9%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	2.8%	2.6%
Construction	7.3%	6.9%
Manufacturing	19.7%	14.2%
Wholesale trade	3.6%	3.4%
Retail	18.4%	13.5%
Education, health & social services	24.8%	23.2%
Arts, recreation, lodging & food services	0.9%	7.1%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

6.5.2 New Hampshire

New Hampshire's population increased by about 10.3 percent between 1990 and 2000 (Table 6.3). The number of high school graduates, ages 25 years and older, increased slightly. The unemployment rate decreased, while the percentage of individuals below the poverty line remained the same. Employment in the farming, fishing, forestry, and mining industries declined by six percent with education, health, and social services industries continued to provide the greatest source of employment for the state's residents.

New Hampshire's commercial shark fishery is very small, with only 2 commercial permits issued in 2008 (Table 6.52), and largely incidental to the take of other species. Only one commercial swordfish permit was issued in New Hampshire in 2008 (Table 6.53). There are 5 HMS dealers in the state of New Hampshire (Table 6.51). New Hampshire has the seventh greatest number of commercial tuna permit holders (Table 6.50). Slightly greater than one percent of the angling category permit holders reside in New Hampshire (Table 6.48). Because of the relatively small size of the HMS fisheries, 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 shortfin makos are taken in water reaching depths over 20 fathoms. There are 67 charterboat operators in Portsmouth, Rye, Seabrook, Hampton, as well as a few other towns, that held HMS permits in 2008 (Table 6.49). Many of these charterboats 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.

In 2007, 173,000 anglers made 538,000 fishing trips to the marine waters off New Hampshire (NMFS, 2008). Of these saltwater anglers, approximately 36 percent were visitors from out-of-state. In 2006, it is estimated that saltwater anglers generated over \$43 million in direct and indirect retail sales related to their fishing in New Hampshire (Southwick Associates, 2007), and the marine recreational fishing services sector provided for 661 jobs.

Table 6.3 New Hampshire Demographic Profile. Source: U.S. Census, 1990 and 2000

New Hampshire	1990	2000
Population:	1,109,252	1,235,786
Education:		
High school graduates (25 years or older)	82.2%	87.4%
Employment:		
Labor force (16 years and over)	71.9%	70.5%
Unemployment Rate	6.2%	3.8%
Median Household Income	\$36,329	\$49,467
Individuals below the poverty line*	6.4%	6.5%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	1.5%	0.9%
Construction	7.1%	6.8%
Manufacturing	22.5%	18.1%
Wholesale trade	4.0%	3.6%
Retail	17.6%	13.7%
Education, health & social services	22.6%	20.0%
Arts, recreation, lodging & food services	1.2%	6.9%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

6.5.3 Massachusetts

Commercial fisheries in the Commonwealth of Massachusetts are diverse, and range from small-scale inshore small-boat fisheries for lobster and clams, to offshore scallops, groundfish dragging, and longline fishing for HMS species. In 2007, New Bedford, Massachusetts ranked ninth in the United States for the weight of fish landed, and first for value with ex-vessel sales, bringing in 268 million dollars (NMFS, 2008). In the same year, Gloucester ranked fifteenth in weight of fish landed and fourteenth in ex-vessel value. Due to the number of HMS permit holders and the relative importance of commercial and recreational fisheries to the Commonwealth, community profiles for both New Bedford and Gloucester were originally developed for the 1999 HMS FMP and have been included below.

The population in the Commonwealth of Massachusetts increased from 6 million people to 6.3 million people from 1990-2000 (Table 6.4). The majority of individuals 25 years and older have a high school diploma and/or a graduate level degree. The percentage of employed individuals and individuals below the poverty line has remained about the same from 1990-2000,

but there has been a slight decline in the unemployment rate, almost two percent. Employment in the farming, fishing, forestry, and mining industries has declined over this time period. The arts, recreation, lodging, and food services industries are the only industries that expanded.

Massachusetts holds the greatest number of commercial tuna permits with 1,897 vessels permitted in 2008 (Table 6.50). Massachusetts is ranked fourth in the greatest number of swordfish permit holders, with over seven percent of the total swordfish permit holders residing in Massachusetts in 2008 (Table 6.53). In addition to swordfish, there are 17 directed and incidental shark permit holders (Table 6.52). Boston has the greatest concentration of HMS permitted dealers with New Bedford and New York City in second and third for the greatest number of HMS dealers (Figure 9.10 and Table 6.51).

Table 6.4 Massachusetts Demographic Profile. Source: U.S. Census, 1990 & 2000

Massachusetts	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%	66.2%
Unemployment Rate	6.7%	4.6%
Median Household Income	\$36,952	\$50,502
Individuals below the poverty line*	8.9%	9.3%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	1.2%	0.4%
Construction	5.5%	5.5%
Manufacturing	18.1%	12.8%
Wholesale trade	4.1%	3.3%
Retail	16.2%	11.0%
Education, health & social services	28.0%	23.7%
Arts, recreation, lodging & food services	1.1%	6.8%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

In 2007, marine recreational fishing in Massachusetts attracted an estimated 1,308,000 anglers making 4,710,000 fishing trips in both state and Federal waters (NMFS, 2008). Approximately, 36 percent of the anglers were from out of state. Direct and indirect retail sales generated by marine recreational fishermen in Massachusetts in 2006 were estimated to be \$494.6 million (Southwick Associates, 2007), and the marine recreational fishing industry provided for 9,279 jobs during that time. Recreational shark fishing, largely catch-and-release using light tackle, takes place in offshore waters (NMFS, 2003). These vessels often travel 50-100 miles out to their fishing grounds and most shark trips are 10-12 hours in duration, with some trips extending to up to three days. Massachusetts residents held 649 charter/headboat permits in 2008 (Table 6.49), the second most in the country. Sharks are most often taken incidentally in the recreational bluefin tuna fishery, but a number of charterboat operators advertise directed shark fishing trips. The target shark species South and East of Cape Cod are shortfin mako, blue, and porbeagle sharks.

HMS fishing tournaments are promoted, and participated in, by some charterboat operators (NMFS 2003). 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). Charterboat operations advertising shark fishing trips 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.

6.5.3.1 Gloucester, Massachusetts

Gloucester is a community which has one of the richest fishing traditions in the United States. Established in 1623, it is the oldest functioning fishing community in the country, is home to Gorton's, the largest frozen seafood company in the United States, and has many community landmarks based around fishing (MRAG Americas, Inc., 2008). Commercial and recreational fishermen both target HMS, mainly focusing on swordfish and tunas.

In 1990, the population of Gloucester was 28,716. There was a minimal population increase of approximately 1,500 individuals between 1990 and 2000 (Table 6.5). Forty percent of the population was between the ages 20-44 years old in 2000. The median age of the Gloucester population has increased by five years, rising to 40 years old in 2000. There is a slightly larger percentage of females in the Gloucester population, 48 percent males to 52 percent females. In 2000, the number of households was two and half times greater than in 1990, but the total number of housing units increased only slightly, from 13,125 to 13,958.

A greater percentage of the 16 years and older population was an active part of the labor force during 2000 (Table 6.5). While the percentage of unemployed declined, the percentage of individuals below the poverty line increased from 1990-2000. The greatest source of employment in 1990 was the technical and administrative industries. In 2000, 36 percent of the population was employed in the managerial and professional industries. The number of businesses engaged in the forestry, fishing, hunting, mining, and agriculture industries declined over the last decade from 3.9 percent to 2.5 percent. The greatest percentage of businesses was engaged in education, health, and social service.

Fishermen that identify Gloucester as their home port hold a large number of General category commercial tuna permits, with 145 permits issued in 2007, and recreational HMS Angling category permits, with 145 issued in 2007 (Table 6.55; MRAG, 2008). The Atlantic bluefin tuna purse seine fishery lasts for a short period of time each year and is limited by regulation to five vessels. One purse seine vessel operates out of Gloucester. The economic health of the purse seine fishery is heavily dependent on bluefin tuna availability, prices and, concomitantly, on the value of the Japanese yen. Finding crew is not a problem; many of the current crew members have had their berths for years. The owner and many of the crew of purse seine vessels, even some who do not reside in the community, are well-integrated through kinship ties into the fishing community. They see themselves as responsible for creating the bluefin tuna fishery and the fleet enjoys the respect of the extended fishing communities in Gloucester (Wilson *et al.*, 1998).

There are also a large number of HMS dealers in the Gloucester area, licensed to purchase and sell tuna, sharks, and swordfish (Figure 9.12 and Table 6.55). There were 12 tuna dealer permits issued in the Gloucester in 2006 (Table 6.55). Bluefin tuna dealers in Gloucester work with a large number of vessels of various types, including purse seine vessels. Most bluefin tuna are sold on consignment, and some dealers give a minimum guarantee on fish they take. Personal networks are very important and the competition can be intense. During the bluefin tuna season, some transient dealers come to Gloucester.

Table 6.5 Demographic Profile of Gloucester, Massachusetts. Source: U.S. Census, 1990 and 2000.

Demographics	1990	2000	Gloucester, Massachusetts	1990	2000
Total Population	28,716	30,273	Population:	28,716	30,273
Sex			Education:		
Male	48.2%	47.9%	High school graduates (25 years or older)	75.6%	85.7%
Female	51.8%	52.1%	Economic Characteristics		
Age			Labor force (16 years and over)	62.6%	66.1%
Median Age	35.5	40.2	Unemployed	4.5%	3.2%
< 20	25.2%	23.9%	Median Household Income	\$ 32,690	\$ 47,722
20 - 44	39.3%	34.4%	Individuals below the poverty line	7.5%	8.8%
45 - 64	20.2%	26.1%	Employment in some industry sectors:		
> 65	15.4%	15.6%	Managerial/professional	26.8%	36.1%
Race			Technical/administrative	28.0%	25.4%
White	99.4%	97.0%	Construction, Production, Maintenance, & Transportation	2.8%	21.4%
Black or African American	0.2%	0.6%	Farming, fishing, forestry, & mining	13.0%	2.0%
American Indian & Alaska Native	0.1%	0.1%	Industry		
Asian	0.2%	0.7%	Forestry, fishing, hunting, mining, and agriculture	3.9%	2.5%
Other	0.1%	0.5%	Construction	5.5%	7.1%
Household			Manufacturing	22.1%	16.7%
Total	11,550	29,913	Wholesale trade	4.7%	3.6%
Family households	66.1%	62.7%	Retail trade	16.2%	10.8%
Nonfamily households	33.9%	37.3%	Education, health & social services	14.1%	20.2%
Average household size	2.49	2.38	Arts, recreation, lodging & food services	1.4%	9.2%
Average family size	3.11	3.00			
Housing Occupancy					
Total housing units	13,125	13,958			
Vacant housing units	11.8%	9.8%			
Housing Tenure					
Owner-occupied housing units	57.8%	59.7%			
Renter-occupied housing units	42.2%	40.3%			

Commercial rod and reel tuna fishing (with General category permits) as well as recreational rod and reel tuna fishing (with Angling category permits) drive a large shoreside economy, including the sale and repair of tackle, vessels, and engines, and the sale of supplies such as bait and ice. The rod and reel fishery also supports general tourist services such as restaurants and hotels. This community is competing with many other possible tourist destinations for tuna fishermen, increasing their dependence on the recreational bluefin tuna fishery as a prominent attraction. Vulnerabilities stem from the seasonal nature of tuna fishing in Gloucester and the general dependence of tuna fishing on the health of the economy. According to those interviewed, seasonality makes business planning, as well as finding and retaining trained employees, more difficult (Wilson, *et al.*, 1998).

Gloucester commercial landings of HMS in 2006 were heavily weighted towards swordfish, which made up over 60 percent of the total HMS catch (Table 6.54). Tunas made up approximately 28 percent of the total HMS landings, with bigeye tuna making up the majority of the catch followed by albacore, yellowfin, and bluefin tuna, respectively. The remainder of HMS landings came from shortfin mako shark (Table 6.54; MRAG Americas, Inc., 2008).

The bluefin tuna rod and reel fishery attracts wealthier fishermen than the fisheries for many other species. The bluefin tuna fishing experience is not always a family activity, but it is often the attraction that brings an adult, and hence the rest of the family, to the community. It attracts experienced and amateur fishermen alike, as well as adventure seekers who are often outdoors enthusiasts in other arenas. Gloucester used to have an annual bluefin tuna tournament organized by the largest of the recreational marinas. However, limited availability of fish has canceled the tournament in past years (Wilson *et al.*, 1998). In 2008, a tag and release tournament to contribute to bluefin tuna research was established (University of New Hampshire, 2008). Most fishing tourists who come to Gloucester are from the northeastern United States. These “weekend warrior” bluefin tuna fishermen have an important impact on the community’s economy, particularly weekend fuel sales (Wilson, *et al.*, 1998).

The Gloucester charter fleet follows a standard policy that, when a commercial size class bluefin tuna is landed, the fish belongs to the vessel and the charter for the day is free, because the vessel operator may sell the fish to the dealer (Wilson *et al.*, 1998). Serious customers want to target bluefin tuna, even though there is a low probability that they will catch them. When the General category is open, charter captains will often take an extra mate and fish for bluefin tuna without paying passengers, as they believe that having amateurs on board reduces their chances of landing a bluefin tuna.

According to Wilson *et al.*, only one of the three retail tackle shops in Gloucester specializes in offshore fishing. Eighty-five percent of its business is related to both commercial and recreational bluefin tuna fishing. Bluefin tuna and shark fishing gear is very expensive; reels cost \$800 to \$1,000 and are useful for shark and bluefin tuna only. Fishermen in Gloucester often choose high quality gear and show little concern about price (Wilson *et al.*, 1998).

6.5.3.2 New Bedford, Massachusetts

New Bedford is a long and narrow city along the coast of southern Massachusetts, facing the city of Fairhaven across the water. New Bedford faces problems associated with its urban setting, such as low education levels and high unemployment. The working waterfront and its industry have become increasingly important economically as the manufacturing base of the city has declined. With multiplier effects, the city’s economy may benefit from the fishing industry by \$500 million (Wilson *et al.*, 1998). Thousands of people are employed in supporting services such as processing, manufacturers of equipment, transport companies, supply houses, oil companies, welders, pipe fitters, stores, and settlement houses. Once the “whaling capital of the world,” New Bedford still possesses one of the largest fishing fleets in the eastern United States (NOAA, 1996). New Bedford ranked ninth in the United States for the weight of seafood landed in 2007, and first in value with ex-vessel sales bringing in 268 million dollars (NMFS, 2008). Ex-vessel sales have been driven by the scallop industry, where landings and prices have been high over the last several years (NMFS, 2008).

New Bedford has learned a great deal about how to survive crises in fisheries. In the 1980s, high landings created a booming fishing industry, which led to investments in new vessels and technology. Depleted fish stocks and increasing Federal regulations in the 1990s resulted in

lower catches and a government-funded vessel buyback program to reduce overfishing and offer struggling fishermen a financial incentive to leave the fishery (MRAG Americas, Inc., 2008). Seventy-two vessels were purchased during the buyback, but because there were no restrictions on inactive vessels, the buyback resulted in 62 additional vessels becoming active fishery participants (Georgianna and Shrader, 2005). Many of the members of the New Bedford fishing community are descended from Portuguese fishing families and kinship networks are an extremely important influence on employment patterns in the fishing industry (NMFS, 1999a). These families are very close and many trace their lineages back to fishermen in Portugal. The Fishermen's Family Assistance Center opened in 1994, with help from the Federal government, in response to the collapse in the groundfish fishery. Thirty-two vessels in New Bedford were removed through the buyback program. With help from the Center, ex-fishermen are finding jobs, particularly in the marine trade, computer, and trucking industries. The marine trade jobs tend to be in New York, New Jersey, and Massachusetts. Other industries in New Bedford have been supportive of the fishermen through the crisis and extended family networks have helped minimize social impacts (Wilson, *et al.*, 1998).

Between 1990 and 2000, New Bedford experienced a decrease in its population of over 6,000 individuals, from 99,922 in 1990 to 93,768 in 2000 (Table 6.6). The median age of the population increased slightly, from 33 to 36 years old. The 2000 age distribution was relatively similar to the age distribution in 1990 with the greatest percentage of individuals in the 20 to 44 years age group. The percentage of females in the population is larger than the percentage of males in both 1990 and 2000 by 6 percent. The number of total households increased by 42 percent in the last decade, which could be attributed to an increase in the number of non-family households.

The number of high school graduates increased by almost 8 percent in the 1990s (Table 6.6). The size of the 16 year and older labor force increased, and the percentage of unemployed declined, but the percentage of individuals below the poverty line increased by almost 4 percent. A large percentage of New Bedford residents are employed in the construction, production, maintenance, and transportation industries. This was a significant increase over the last decade in this sector, where the greatest percentage of employment was in the technical, administrative, and sales industries throughout the 1990s. The percentage of businesses engaged in the forestry, fishing, hunting, and agriculture industries declined by almost a third throughout the 1990s. In 2000, the major industries were manufacturing and education, health, and social services.

Table 6.6 Demographic Profile of New Bedford, Massachusetts. Source: U.S. Census, 1990 and 2000.

Demographics	1990	2000	New Bedford, Massachusetts	1990	2000
Total Population	99,922	93,768	Population:	99,922	93,678
Sex			Education:		
Male	46.7%	47.1%	High school graduates (25 years or older)	49.7%	57.6%
Female	53.3%	52.9%	Economic Characteristics		
Age			Labor force (16 years and over)	52.1%	57.7%
Median Age	32.6	35.9	Unemployed	7.2%	5.0%
< 20	29.1%	27.4%	Median Household Income	\$ 22,647	\$ 27,569
20-44	35.4%	35.6%	Individuals below the poverty line	16.8%	20.2%
45- 64	18.0%	20.1%	Employment in some industry sectors:		
> 65	17.4%	16.7%	Managerial/professional	17.0%	20.8%
Race			Technical, Administrative, & Sales	27.2%	23.6%
White	87.8%	78.9%	Construction, Production, Maintenance, & Transportation	2.6%	34.9%
Black or African American	3.8%	4.4%	Farming, fishing, forestry, & mining	11.9%	1.0%
American Indian and Alaska Native	0.4%	0.6%	Industry		
Asian and Pacific Islander	0.3%	0.7%	Forestry, fishing, hunting, mining, and agriculture	3.16%	1.1%
Other	7.6%	9.5%	Construction	6.1%	7.1%
Household			Manufacturing	27.8%	20.7%
Total	38,646	91,782	Wholesale trade	4.3%	4.4%
Family households	69.0%	63.1%	Retail trade	17.0%	12.1%
Nonfamily households	31.0%	39.9%	Education, health & social services	15.4%	20.9%
Average household size	2.59	2.40	Arts, recreation, lodging & food services	0.7%	7.4%
Average family size	3.15	3.01			
Housing Occupancy					
Total housing units	41,760	41,511			
Vacant housing units	7.1%	8.0%			
Housing Tenure					
Owner-occupied housing units	43.8%	43.8%			
Renter-occupied housing units	56.2%	56.2%			

Commercial HMS landings in New Bedford consist of swordfish, tunas, and shark. Swordfish was the highest landed HMS by weight in 2006, followed by yellowfin tuna and bigeye tuna (MRAG Americas, Inc., 2008; Table 6.54). Bluefin was landed in the lowest volume among all tuna species, although it is the highest value tuna species. The majority of sharks landed were shortfin mako sharks, with hammerhead (unidentified), tiger, silky, and sandbar sharks comprising about 16 percent of shark landings (MRAG Americas, Inc., 2008; Table 6.54).

New Bedford also has a large number of residents with a commercial tuna permit (Table 6.56 and Figure 9.7). All pelagic longline vessels that land HMS in New Bedford are large “distant water” vessels. The fleet consists of large vessels that follow swordfish throughout their migrations. These vessels make long trips, are relatively expensive to operate, and are highly specialized to distant water fishing (*i.e.*, they have large holds and additional fuel capacity). Respondents to the Wilson *et al.* study report that these large distant water vessels have developed a minimal history in other U.S. fisheries, though it is fairly easy for both the vessels and captains to find work in foreign longline fisheries. Many of these vessels already moved from the Atlantic Ocean to the Pacific Ocean, and others are currently for sale (Wilson *et al.*, 1998). In summer months, the remaining large distant water vessels fish on the Grand Banks and land swordfish in New England and Canadian ports.

While some members of the distant water fleet, their suppliers, and their customers live in the New Bedford area, the distant water fleet is not attached to a geographical community in the same sense as other fleets. Participants in this fleet tend to be fairly isolated within the

communities where they live, even when those communities are strongly integrated fishing communities like New Bedford. The wives of captains and crew who participate in the distant water fishery generally do not know each other well. New Bedford has a fishermen's wives association but it is mainly for older Portuguese women whose husbands are scallopers and draggers "who do only 14-day trips" (Wilson *et al.*, 1998). New Bedford respondents not associated with the distant water fleet report that they see it as socially distant from the rest of the community. This isolation from other fishing people, and the length of the trips, has placed a strain on the family life of participants.

The distant water fleet has used its longer reach to recruit crew members from overseas, particularly the West Indies, thus avoiding crew supply problems typical of other sectors of the longline fleet. The range of these vessels over many different waters makes them particularly dependent on the skill and experience of their captains. New Bedford does not offer these captains alternative employment outside of the fishing industry at comparable income levels (Wilson, *et al.*, 1998).

When fishing is disrupted through closures, the dealers experience large labor fluctuations. Even the increased reliance on imports has not completely solved this problem. When they make an effort to buy from U.S. vessels in distant waters, special arrangements and timing are required to get the fish to market and maintain vessels. The fishermen have to unload close to an international airport with lift capacity, which in the Caribbean means San Juan. The dealers have to hire people to unload any vessel landings in San Juan, and send supervisors so that the fish is kept cold, weighed properly and counted correctly. Then they need to arrange for cargo departure and negotiate freight weight. These activities can be easily disrupted by short notice of seasonal closures and other regulatory decisions.

Of the five entities that are authorized to fish in the bluefin tuna purse seine fishery, four are associated with New Bedford while the fifth has been associated with Gloucester. Of the four that are associated with New Bedford, one is a resident while the three others are non-residents. All four land their catch in New Bedford and have crew members who live in the city. The owners and many of the crew of the purse seine vessels, even some who do not reside in the community, are well integrated through kinship ties into the fishing community. They are generally thought of as being responsible for creating the bluefin tuna fishery, and the fleet enjoys the respect of extended fishing communities in New Bedford (Wilson *et al.*, 1998). Many of these crew members are family and almost all have been with these vessels for a long time. The average age is considerably older than that of most fishing crews. When the vessels are tied up, the crew members collect unemployment and do odd jobs. In recent years, there have been reduced landings of bluefin tuna in the purse seine fishery, and to date in 2008 there have been no landings.

The recreational tuna fishing industry in New Bedford is a highly diverse one, with an increasing emphasis on providing an enjoyable fishing experience for all ages. Fishery participants feel that bluefin tuna fishing is an adventure, and the prize is an important aspect of the experience. It attracts experienced and amateur fishermen alike, as well as adventure seekers who are often outdoors enthusiasts in other arenas. Most charterboats in the New Bedford area are owner-operated. Respondents report that it can be hard to find suitable crew members

because the business is seasonal and they are unwilling to hire unemployed commercial fishermen (Wilson *et al.*, 1998).

Recreational fishing in these communities drives a much larger economy, including the marine trades (*e.g.*, tackle, vessels, engines), suppliers of bait and ice, and general tourist services such as restaurants and hotels. These communities are competing with many other possible tourist destinations, increasing their dependence on large, well-known fish that act as prominent attractions. Economic vulnerabilities stem from the seasonal nature of recreational fishing in these communities and recreational fishing's general dependence on the health of the economy. The seasonality of this fishery makes business planning, as well as training and keeping employees, more difficult. Respondents emphasized that these communities depend on potential customers' expectation that they will have a reasonable chance to land a fish (Wilson *et al.*, 1998).

Shark tournaments are also an important component in promoting business in the New Bedford area, attracting numerous repeat customers. They bring in curious people because sharks are considered a dangerous and exciting fish. Recreational shark fishing in New Bedford is mainly catch-and-release (Wilson *et al.*, 1998). However, respondents argue that New Bedford is not the appropriate area for catch-and-release tournaments, because the length of the trip (100 miles) makes taking observers impractical. Although shark fishing is comparatively less important to recreational fishermen in this community, some customers are attracted by the particular challenge of shark fishing.

6.5.4 Rhode Island

Rhode Island's population increased from just over one million people in 1990 to 1.1 million people in 2000 (Table 6.7). The percentage of individuals 25 years and older with a high school diploma and/or some graduate level degree has increased by three percent. The percentage of employed individuals and the unemployment rate declined slightly, but the number of individuals below the poverty line increased from 9.6 percent to almost 12 percent. Employment in the farming, fishing, forestry, and mining industries has declined with the education, health, and social services industries providing the greatest employment opportunities in 2000. Due to the relatively low involvement in the HMS fisheries in the past, there are no community profiles describing the relationship of HMS fisheries to any Rhode Island communities.

Over four percent of the commercial tuna permit holders reside in Rhode Island (Table 6.50) with a concentration of permit holders residing in Wakefield (Figure 9.7). In 2008, seven shark permit holders and 18 swordfish permit holders are located in the state of Rhode Island (Table 6.52 and Table 6.53). Communities involved with the commercial fisheries are Warwick, Little Compton, Newport, Tiverton, Block Island, Narragansett, Peace Dale, Point Judith, South Kingstown, Wakefield and West Kingstown. Rhode Island also has 47 HMS dealers, operating in Newport, Point Judith, Middletown, Wakefield, Narragansett, Peace Dale, South Kingstown, and Block Island (Table 6.51 and Figure 9.10).

Table 6.7 Rhode Island Demographic Profile. Source: U.S. Census, 1990 and 2000

Rhode Island	1990	2000
Population:	1,003,464	1,048,319
Education:		
High school graduates (25 years or older)	72.0%	78.0%
Employment:		
Labor force (16 years and over)	66.1%	64.6%
Unemployment Rate	6.6%	5.6%
Median Household Income	\$32,181	\$42,090
Individuals below the poverty line*	9.6%	11.9%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	1.3%	0.5%
Construction	5.7%	5.4%
Manufacturing	22.7%	16.4%
Wholesale trade	3.7%	3.4%
Retail	17.5%	12.1%
Education, health & social services	25.0%	23.0%
Arts, recreation, lodging & food services	1.2%	8.6%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

In 2007, approximately 400,000 anglers took 1,545,000 saltwater fishing trips for all species in Rhode Island (NMFS, 2008). Of these marine anglers, about 57 percent were from out-of-state (NMFS, 2008). As of May 2008, 507 Rhode Island residents held an HMS angling category permit (Table 6.48). It is estimated that saltwater anglers generated over \$128 million in retail sales, and the marine recreational fishing industry provided 2,127 jobs in Rhode Island in 2006 (Southwick Associates, 2007). Recreational shark fishing from Rhode Island is seasonal between late June and October, with a peak in late August (NMFS 2003). A variety of shark species are available with the most common being shortfin mako sharks between 60-100 pounds. After shortfin 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 Rhode Island, the number of charter/headboat permit holders increased from 94 in 2003 to 142 in 2008 (Table 6.49). 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 with five anglers onboard, the average fee was on the order of \$800 in 2003 (NMFS, 2003). This fee is comparable to those charged in the other New England states. Fees for participation in a five-day fishing tournament are on 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).

6.5.4.1 Wakefield, Rhode Island

Wakefield, RI was considered a Census Designated Place (CDP), and was combined with several other small villages for the 2000 census. The community had 8,468 people in 2000 (Table 6.8), and lacks any substantial commercial fishing infrastructure; therefore, commercial fishing generally takes place in neighboring Narragansett and Point Judith (MRAG Americas, Inc., 2008). The charter fishing fleet is based at the Snug Harbor Marina, and there are several marinas that cater to the recreational fishing industry in the area. Although there are HMS commercial fishing and dealer permits attributed to Wakefield, no commercial HMS landings were recorded in 2006 (MRAG Americas, Inc., 2008). According to MRAG Americas, Inc. (2008), in 2006, the permits issued in the highest number in Wakefield was the HMS angling category permit, HMS General category, and charter/headboat permits, respectively (Table 6.57).

Table 6.8 Demographic Profile of Wakefield, Rhode Island

Factor	1990	2000
Total population	7134	8468
Gender Ratio M/F (Number)	3368 / 3766	3958 / 4510
Age (Percent of total population)		
Under 18 years of age	25.06	2401
18 to 64 years of age	59.94	4945
65 years and over	15	1122
Ethnicity or Race (Percent)		
White	6631	90.3
Black or African American	182	2
American Indian and Alaskan Native	257	3.1
Asian	64	1.2
Native Hawaiian and other Pacific Islander		<0.1
Some other race	0	0.6
Two or more races		2.8
Hispanic or Latino (any race)		1.6
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	3.9	3
Percent high school graduate or higher	62.6	89.8
Percent with a Bachelor's degree or higher	22.7	41.9
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	3.7	5.9
And Percent who speak English less than very well		1.2
Household income (Median \$)	39,500	50,313
Poverty Status (Percent of population with income below poverty line)		5.4
Percent female headed household	4.3	13.1
Home Ownership (Percent)		
Owner occupied		71.3
Renter occupied		28.7
Value Owner-occupied Housing (Median \$)	143400	151,700
Monthly Contract Rent (Median \$)	530	427
Employment Status (Population 16 yrs and over)		
Percent in the labor force		70.4
Percent of civilian labor force unemployed		3.2

Factor	1990	2000
Occupation** (Percent in workforce)		
Management, professional, and related occupations		42.2
Service occupations		23.3
Sales and office occupations		21.2
Farming, fishing, and forestry occupations		0.7
Construction, extraction, and maintenance occupations		5.6
Production, transportation, and material moving occupations		6.9
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining		1.2
Manufacturing		9.4
Percent government workers		23.9

6.5.5 Connecticut

Connecticut's population has increased by 3.5 percent between 1990 and 2000 (Table 6.9). The percentage of individuals 25 years and older with a high school diploma and/or a graduate level degree has increased by about five percent. The percentage of employed individuals has declined, and correspondingly, the unemployment rate and individuals below the poverty line have increased over the past decade. Employment in the farming, fishing, forestry, and mining has declined with the education, health, and social services industries providing the greatest employment opportunities in 2000.

In general, Connecticut's involvement in the commercial fishery has been minimal. There are 140 commercial tuna permit holders living in the state in 2008 (Table 6.50) with three shark and three swordfish permit holders (Table 6.52 and Table 6.53). Only three HMS permitted dealers are located in Connecticut in 2008 (Table 6.51). The communities involved in the commercial shark fishery are New London and Old Lyme. Due to the relatively minimal involvement with HMS fisheries, there are no community profiles for the state of Connecticut.

In 2007, approximately 363,000 anglers took 1,579,000 saltwater fishing trips for all species in Connecticut (NMFS, 2008). Of these marine anglers, about 17 percent were from out-of-state. In 2008, 857 Connecticut residents held an HMS angling category permit (Table 6.48). It is estimated that saltwater anglers generated over \$125 million in retail sales, and the marine recreational fishing industry provided 1,881 jobs in Connecticut in 2006 (Southwick Associates, 2007). 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. The number of charter/headboats permit holders in Connecticut has increased from 62 in 2003 to 114 in 2008 (Table 6.49). Charterboats 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.

Table 6.9 Connecticut Demographic Profile. Source: U.S. Census, 1990 and 2000

Connecticut	1990	2000
Population:	3,287,116	3,405,565
Education:		
High school graduates (25 years or older)	79.2%	84.0%
Employment:		
Labor force (16 years and over)	69.0%	66.6%
Unemployment Rate	5.4%	5.3%
Median Household Income	\$41,721	\$53,935
Individuals below the poverty line*	6.8%	7.9%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	1.3%	0.4%
Construction	5.9%	6.0%
Manufacturing	20.5%	14.8%
Wholesale trade	4.2%	3.2%
Retail	15.4%	11.2%
Education, health & social services	24.8%	22.0%
Arts, recreation, lodging & food services	1.1%	6.7%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

6.5.6 New York

The state of New York's population increased by nearly one million people in the decade between 1990 and 2000 (Table 6.10). The percentage of individuals 25 years and older with a high school diploma and/or some graduate level degree has increased by about five percent. The percentage of employed individuals has declined slightly, while both the unemployment rate and individuals below the poverty line have increased over the past decade. Employment in the farming, fishing, forestry, and mining industries has declined with the education, health, and social services industries providing the greatest employment opportunities in 2000.

Fifteen and seventeen HMS shark and swordfish permits were issued to New York addresses in 2008, respectively (Table 6.52 and Table 6.53). In addition to the shark and swordfish permit holders, there are also 261 commercial tuna permit holders in New York (Table 6.50). New York has the third greatest number of HMS dealer permit holders (82 total) with a large concentration of dealers located in New York City and the surrounding areas (Table 6.51 and Figure 9.10). The communities participating in the shark commercial and recreational fisheries 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.

Table 6.10 New York Demographic Profile. Source: U.S. Census, 1990 and 2000

New York	1990	2000
Population:	17,990,455	18,976,457
Education:		
High school graduates (25 years or older)	74.8%	79.1%
Employment:		
Labor force (16 years and over)	63.6%	61.1%
Unemployment Rate	6.9%	7.1%
Median Household Income	\$40,927	\$43,393
Individuals below the poverty line*	13.0%	14.6%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	1.3%	0.6%
Construction	5.2%	5.2%
Manufacturing	14.7%	10.0%
Wholesale trade	4.2%	3.4%
Retail	14.9%	10.5%
Education, health & social services	27.9%	24.3%
Arts, recreation, lodging & food services	1.5%	7.3%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

In 2007, 1,067,000 anglers took 6,218,000 saltwater fishing trips for all species of fish in both state and Federal waters off of New York (NMFS, 2008). Residents of New York State made up approximately 86 percent of the recreational marine anglers during that time. In 2008, New York had the fifth greatest number of HMS angling category permit holders with 2,025 permitted vessels (Table 6.48) and a large concentration of these anglers residing in New York City (Figure 9.9). It is estimated that recreational saltwater angling in the state of New York generated over \$373 million in retail sales and 6,396 jobs in 2006 (Southwick Associates, 2007). Shark fishing by anglers appears to be largely catch-and-release, using light tackle, and tends to be incidental to tuna and billfish fishing offshore. In New York State, 369 charter/headboats were permitted for HMS fishing in 2008 (Table 6.49). A number of charterboat operators advertise shark fishing as part of their offerings. A large percentage of the 41 charterboats operating out of Montauk 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.

6.5.6.1 Montauk, New York

The village of Montauk is the largest commercial fishing port in New York, mainly due to its location to important commercial and recreational fishing grounds, along with its harbor that provides a large natural protective barrier (MRAG Americas, Inc., 2008). Population increased from 1990 to 2000, and 23 percent of the Montauk population of 3,851 residents in

2000 were of Hispanic decent, which is nine percent higher than the national average (MRAG Americas, Inc., 2008; Table 6.11). Fishing is closely tied to the community, which holds a number of fishing-related events such as the blessing of the fleet and multiple fishing tournaments. Shark tournaments primarily target blue, shortfin mako, and thresher sharks. There are a number of commercial pelagic longline vessels that fish for tuna and swordfish, but the commercial HMS fishery in Montauk is limited by dock space, which is increasingly utilized for recreational purposes. Regulations implemented in 2004 to reduce sea turtle bycatch and bycatch mortality, require pelagic longline fishermen to use circle hooks and have specific sea turtle handling and release equipment onboard. Other changes resulting from the Consolidated FMP in 2006, require that vessel operators actively participating in HMS gillnet, pelagic longline, and bottom longline fisheries attend a safe handling and release workshop. Commercial landings of HMS in 2006 consisted of approximately 3,000 lb of tunas (yellowfin, bigeye, and albacore), 848 lb of swordfish, and 157 lb of shortfin mako shark (MRAG Americas, Inc., 2008; Table 6.54). According to MRAG 2008, over half of the HMS permits issued in 2006 in Montauk were recreational HMS angling category, slightly over 20 percent were charter/headboat, and the rest were various commercial permits (Table 6.58).

Table 6.11 Demographic Profile of Montauk, New York

Factor	1990	2000
Total population	3,001	3,851
Gender Ratio M/F (Number)		1976/1875
Age (Percent of total population)		
Under 18 years of age		20
18 to 64 years of age		65.5
65 years and over	14.9	14.5
Ethnicity or Race (Percent)		
White		87
Black or African American		0.9
American Indian and Alaskan Native		0.1
Asian		0.8
Native Hawaiian and other Pacific Islander		<0.1
Some other race		9.8
Two or more races		1.4
Hispanic or Latino (any race)		23.9
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	7	7.6
Percent high school graduate or higher	88.5	84
Percent with a Bachelor's degree or higher	25.7	24.8
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	17.6	30.3
And Percent who speak English less than very well	8.2	15.6
Household income (Median \$)	31,849	42,329
Poverty Status (Percent of population with income below poverty line)	2.9	7.7
Percent female headed household	6.7	8.7
Home Ownership (Percent)		
Owner occupied		65.7
Renter occupied		34.3
Value Owner-occupied Housing (Median \$)		290,400
Monthly Contract Rent (Median \$)	804	863

Factor	1990	2000
Employment Status (Population 16 yrs and over)		
Percent in the labor force	70.1	61.5
Percent of civilian labor force unemployed	5	7.7
Occupation** (Percent in workforce)		
Management, professional, and related occupations	23.5	20.3
Service occupations		23.3
Sales and office occupations	25.7	27.9
Farming, fishing, and forestry occupations	9	5.8
Construction, extraction, and maintenance occupations		19
Production, transportation, and material moving occupations		3.6
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining	8	6.1
Manufacturing	1.8	2
Percent government workers	8.4	11.8

6.5.7 New Jersey

Between the 1990 Census and the 2000 Census, New Jersey's population increased from 7.7 million people to 8.4 million people, respectively (Table 6.12). The percentage of individuals 25 years and older with a high school diploma and/or some graduate level degree has increased by about five percent. The percentage of employed individuals has declined slightly, while the unemployment rate remained about the same and individuals below the poverty line increased over the past decade. As with many of the other states, employment in the farming, fishing, forestry, and mining industries has declined, whereas the education, health, and social services industries provided the greatest employment opportunities in 2000.

While both Barnegat Light and Brielle have already been profiled for HMS fisheries, NMFS may want to also consider an HMS profile for Cape May due to the number of HMS angling, charter/headboat, shark and swordfish permits located in the community.

In 2008, there were 292 commercial tuna permit holders in the state of New Jersey (Table 6.50). New Jersey has the second greatest number of shark permit holders living within the state, second to Florida (Table 6.52) with significant concentrations of shark permit holders living in Barnegat Light and Cape May (Figure 9.4). New Jersey is also home to 50 swordfish permit holders (Table 6.53) with many of these permit holders in Barnegat Light and Cape May (Figure 9.1 and Figure 9.2). Thirty-eight HMS dealers are also located in New Jersey (Table 6.51).

Marine recreational fishing attracted 1,427,000 participants to New Jersey in 2007 (NMFS, 2008). Of the 7,436,000 recreational saltwater fishing trips taken in 2007, approximately 36 percent were from out-of-state anglers. In 2008, New Jersey had the third highest number of HMS angling category permit holders at 3,200 (Table 6.48) with large concentrations of these anglers residing in Point Pleasant Beach, Brick, Toms River, Forked River, and Tuckerton (Figure 9.9). It is estimated that recreational saltwater fishing industry in New Jersey generated retail sales over \$643 million and provided approximately 9,912 jobs in New Jersey in 2006 (Southwick Associates, 2007).

Table 6.12 New Jersey Demographic Profile. Source: U.S. Census, 1990 and 2000

New Jersey	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)	67.4%	64.1%
Unemployment Rate	5.7%	5.8%
Median Household Income	\$40,927	\$55,146
Individuals below the poverty line*	7.6%	8.5%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	1.2%	0.3%
Construction	6.0%	5.6%
Manufacturing	16.9%	12.0%
Wholesale trade	5.4%	4.4%
Retail	15.2%	11.3%
Education, health & social services	23.4%	19.8%
Arts, recreation, lodging & food services	1.7%	6.9%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

The recreational fishery for sharks is primarily incidental to fishing for tuna and billfish. New Jersey ranks third in the number of HMS charter/headboats permit holders with 553 permitted vessels in 2008 (Table 6.49). Many of the angling communities are also home to the charter/headboat permit holders, but also Cape May, and Ocean City (Figure 9.8). Of these party and charterboats, some advertise shark trips using light tackle during the summer and early fall (July-October) (NMFS, 2003). These trips go offshore between 25 and 60 miles to the heads of the canyons, and thus are full-day or overnight trips.

6.5.7.1 Barnegat Light, New Jersey

Barnegat Light is one of eleven municipalities on Long Beach Island, a large “barrier beach” island that helps form the seaward boundary of Barnegat Bay. This small town measures less than one square mile and is located on the northern end of the barrier island. The town is named after its famous lighthouse that guided ships for generations along the New Jersey coast. This lighthouse was replaced in 1855 with the second-tallest lighthouse in the United States operating until 1927 (NMFS, 2003). The building continues as both a community landmark and a navigation mark. The name Barnegat originates from “Barendegat,” a Dutch name meaning “inlet of breakers” (NMFS, 1999a). 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 (NMFS, 2003). 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. In 1995, the infamous inlet’s fierce currents were tamed by a \$45 million Army Corps of Engineers project that constructed a South jetty along with a three-quarter-mile beach and a fishing pier (NMFS, 1999a).

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 and 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 2.05 persons per household (Table 6.13). 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 (NMFS, 2003), and 130 households received retirement income (35.0 percent). For households receiving income from earnings, the average income was \$63,373 in 1999¹. 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 1990 was some \$2,800 lower than the statewide median household income.

Table 6.13 Demographic Profile of Barnegat Light. Source: U.S. Census, 1990 and 2000.

Demographics	1990	2000
Total Population	681	764
Sex		
Male	52.0%	50.9%
Female	48.0%	49.1%
Age		
Median Age	50.9	54.9
< 20	12.8%	15.4%
20-44	29.8%	20.9%
45-64	27.0%	29.4%
> 65	30.4%	34.3%
Race		
White	99.6%	98.3%
Black or African American	0.4%	0.5%
American Indian and Alaska Native	0.0%	0.0%
Asian and Pacific Islander	0.0%	0.6%
Other	0.0%	0.4%
Household		
Total	342	371
Family households	62.0%	62.0%
Nonfamily households	38.0%	38.0%
Average household size	1.99	2.05
Average family size	2.42	2.60
Housing Occupancy		
Total housing units	1,167	1,207
Vacant housing units	71.0%	69.3%
Housing Tenure		
Owner-occupied housing units	82.6%	87.9%
Renter-occupied housing units	17.4%	12.1%

Barnegat Light, New Jersey	1990	2000
Population:	681	764
Education:		
High school graduates (25 years or older)	84.9%	92.1%
Economic Characteristics		
Labor force (16 years and over)	52.6%	46.9%
Unemployed	0.5%	1.2%
Median Household Income	\$ 37,955	\$ 52,361
Individuals below the poverty line	7.2%	4.7%
Employment in some industry sectors:		
Managerial/professional	32.4%	40.8%
Technical, Administrative, & Sales	31.4%	23.3%
Construction, Production, Maintenance, & Transportation	10.4%	16.4%
Farming, fishing, forestry, & mining	13.9%	6.5%
Industry		
Forestry, fishing, hunting, mining, and agriculture	12.6%	8.2%
Construction	12.6%	10.3%
Manufacturing	7.4%	4.8%
Wholesale trade	1.3%	1.7%
Retail trade	21.0%	9.2%
Education, health & social services	7.4%	16.8%
Arts, recreation, lodging & food services	2.9%	11.0%

Barnegat Light is a vacation and retirement destination. Of the 1,207 housing units available in 2000, 781 units (64.3 percent) were vacation homes, and 371 homes were occupied year-round (NMFS, 2003). Some 69.3 percent of the 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 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

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.

born in New Jersey, while 41 percent were born elsewhere in the United States (Table 6.13). 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 that could affect the lifestyle and 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.

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 (NMFS, 2003). 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 52 percent of the 300 person civilian workforce in 2000 had direct employment in fisheries and fishing services. 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.

There are five marinas in Barnegat Light in addition to 44 municipal boat slips and a municipal ramp (NMFS, 2003; MRAG Americas, Inc., 2008). There are approximately 36 fulltime resident commercial vessels that dock at the two largest marinas (MRAG Americas, Inc., 2008). The three remaining docks cater mainly to recreational vessels, with each dock able to accommodate 30 to 35 vessels (MRAG Americas, Inc., 2008). Recreational boats generally stay for only part of the year, usually from May through October (MRAG Americas, Inc., 2008). 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 eight vessels with HMS permits. About half this fleet is active year-round in Barnegat Light, while the other vessels at least fish elsewhere in the winter months. Some of the boats fish for tuna off North Carolina in the winter and spring, while others fish from November through April from ports in Florida.

One dock is completely occupied by privately-owned, commercial vessels, including seven scallopers, ten longliners that fish for tunas, swordfish, and tilefish, and about nine inshore net vessels. Three offloading stations are part of this dock. Five or six locally hired full-time employees, the vessel captain, and the crew perform the offloading. Additional dock hands are hired locally for the busy season. The owners of the dock sell some of the catch to fresh fish markets in Boston, Philadelphia, Maryland, and New York with the remaining being sold to local restaurants, retailers, wholesalers or at their own fish market, which is open from April to October (McCay, 1993).

Some of the fisheries 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.

The Barnegat Light port is known for its pelagic longline fishery. Today, 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 shortfin mako and porbeagle sharks are usually kept and sold. There are a large number of residents that hold a commercial permit for sharks (22 permits Table 6.52) and swordfish (19 permits; Table 6.59). In 2006, 313,030 lb of tuna was commercially landed, with yellowfin tuna comprising 65 percent of that total (MRAG Americas, Inc., 2008; Table 6.54). Other HMS landings in 2006 consisted of swordfish (146,859 lb) and sharks, primarily shortfin mako (13,660 lb) (MRAG Americas, Inc., 2008; Table 6.54). During the winter, 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) has left Barnegat Light to fish for HMS in the Pacific Ocean (Wilson *et al.*, 1998). Regulations implemented in 2004 to reduce sea turtle bycatch and bycatch mortality, require pelagic longline fishermen to use circle hooks and have specific sea turtle handling and release equipment onboard. Other changes affecting the HMS pelagic longline fleet resulting from the Consolidated FMP in 2006 require vessel operators to attend a safe handling and release workshop. According to MRAG Americas, Inc. 2008, over 75% of HMS permits issued in 2006 to Barnegat Light were strictly commercial, with recreational angling and charter/headboat permits comprising less than 25 percent of the total (Table 6.59).

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 that many long-term residents find undesirable.

6.5.7.2 Brielle, New Jersey

Brielle is located in the southernmost region of Monmouth County, and borders the Manasquan River of central New Jersey. For the purposes of this document, the community will include Brielle/Point Pleasant. This is an area where recreational fishermen are as traditional as commercial fishermen, and recreational fishermen have been distressed about the management of tunas and sharks.

Brielle experienced a modest population increase between 1990 and 2000 from 4,406 to 4,893 individuals (Table 6.14). The percent of males and females remained virtually unchanged between 1990 and 2000 with 48 percent of the population comprised of males and 52 percent females. The age distribution of the Brielle population remained virtually the same for the past decade. The age distribution is fairly even between the under 20 years old, 20-44, and 45-64 years old. The over 65 year olds are the smallest age group, comprising approximately 18

percent of the total population. Whites accounted for over 93 percent of the population in both 1990 and 2000. The percent of other races, however, declined between 1990 and 2000. The largest industry in 1990 was retail trade (21.4 percent), which dropped significantly by 2000 (7.3 percent). In 2000, the largest industries in Brielle were education, health, and social services. In both 1990 and 2000, the greatest source of employment was managerial and professional related jobs. Employment in the farming, fishing, forestry, and mining declined from 6.8 percent in 1990 to 0.7 percent in 2000.

The Brielle/Point Pleasant port is one of the most important inlet ports along the barrier beach complex that makes up the New Jersey coast. It has been a center of both recreational and commercial fishing since the early 1800s. It is estimated that up to 100 working charterboats used this port historically. Today, it is estimated that there are 17 charter/headboats utilizing three marinas in the area (MRAG Americas, Inc., 2008). The majority of vessels that fish offshore are private vessels. It is reported that although these vessels actively fish for tunas and are thus required to have an Atlantic tunas permit, many of these vessels do not hold the necessary permit.

New Jersey, and in particular Brielle, recreational fishermen (private and charter/headboats) have historically targeted school bluefin tuna (measuring 27 inches to less than 47 inches). There is documentation back to the 1890s regarding the bluefin tuna recreational fishery. According to respondents in the Wilson *et al.*, study, New Jersey vessels landed nearly 20,000 bluefin tuna during one month in 1939.

Table 6.14 Demographic Profile of Brielle, New Jersey. Source: U.S. Census, 1990 and 2000.

Demographics	1990	2000
Total Population	4,406	4,893
Sex		
Male	48.2%	47.4%
Female	51.8%	52.6%
Age		
Median Age	42.7	42.9
< 20	23.2%	25.2%
20 - 44	28.6%	27.9%
45 - 64	29.1%	29.1%
> 65	19.2%	17.8%
Race		
White	93.8%	93.1%
Black or African American	5.4%	3.5%
American Indian and Alaska Native	0.8%	0.1%
Asian and Pacific Islander	0.0%	0.7%
Other	0.0%	2.7%
Household		
Total	1,735	1,938
Family households	74.6%	73.0%
Nonfamily households	25.4%	27.0%
Average household size	2.54	2.52
Average family size	3.00	3.00
Housing Occupancy		
Total housing units	1,986	2,123
Vacant housing units	12.6%	8.7%
Housing Tenure		
Owner-occupied housing units	82.3%	83.4%
Renter-occupied housing units	17.7%	16.6%

Brielle, New Jersey	1990	2000
Population:	4,406	4,893
Education:		
High school graduates (25 years or older)	91.3%	94.8%
Economic Characteristics		
Labor force (16 years and over)	58.6%	59.4%
Unemployed	4.4%	2.1%
Median Household Income	\$ 53,485	\$ 68,368
Individuals below the poverty line	2.3%	3.9%
Employment in some industry sectors:		
Managerial/professional	44.7%	56.0%
Technical, Administrative, & Sales	31.5%	21.8%
Construction, Production, Maintenance, & Transportation	0.9%	11.3%
Farming, fishing, forestry, & mining	6.8%	0.7%
Industry		
Forestry, fishing, hunting, mining, and agriculture	1.6%	0.7%
Construction	5.9%	7.4%
Manufacturing	11.7%	8.4%
Wholesale trade	6.7%	2.5%
Retail trade	21.4%	7.3%
Education, health & social services	18.7%	23.1%
Arts, recreation, lodging & food services	2.1%	7.8%

Here, as elsewhere in New York and New Jersey, HMS fisheries often take place in the “canyons” and around eddies and at the edge of the continental shelf. In the past, bluefin tuna

could be caught on day trips in coastal waters, rather than the canyons, and they were the major source of profit for the charter/headboat fleet here (and elsewhere in New Jersey and the larger Mid-Atlantic). Today, the canyon fisheries for tunas are thought of as additional opportunities for most charter/headboat captains, who regularly take clients fishing for bluefish, fluke, or other tunas.

At one time, the full-time canyon fishermen included hundreds of inshore bluefin tuna vessels, and “six-pack” boats (smaller vessels certified to carry no more than six passengers; also known as uninspected vessels). Respondents to the 1998 Wilson *et al.* study indicated that they must steam 80 miles offshore to reach the canyons, and are therefore limited by weather. A similar trend is found in Cape May, New Jersey, where anglers fish in the Baltimore Canyon. The Hudson Canyon offshore fishery started 15 to 20 years ago, and the Brielle/Point Pleasant fleet rely heavily on the canyon for the fall fishery. This fishery has diminished, and the smaller, less powerful vessels are gone. The majority of the private vessels purchased in the Cape May area are built in New Jersey; therefore, these purchases contribute to the local economy. There are eight tackle shops in the Brielle/Point Pleasant area.

Charter/headboat captains indicate that in 1998, they were generally unable to book tuna trips, because passengers do not like to take trips when the bluefin tuna retention limit is low or when retention is prohibited. One of the charterboat owners said that in 1991, the four busiest captains averaged 30 to 35 tuna trips each, but that the average number of trips dropped to approximately 12 in 1996 (Wilson *et al.*, 1998). The argument for more liberal retention limits includes the idea that it is necessary to keep people interested in the gambling aspect of the fishery. Although people may not actually land more fish, customers are attracted by the possibility. Charterboat captains emphasize that reasonable recreational retention limits are important to their clients, who wish to bring fish home to eat and share with others.

Due to landings restrictions on bluefin tuna, bluefish generally replaced the tunas as the important inshore/offshore fishery in northern New Jersey. The Brielle/Point Pleasant charter/headboat fishermen, like most other people involved in the sport fisheries, would like to see the economic value of their fisheries documented. In this light, a recent study done in Virginia found that 30 percent of the fisheries income in the state came from the offshore recreational fisheries. Respondents emphasized that the figure is likely to be much larger for New Jersey (Wilson *et al.*, 1998).

Sharks are comparatively less important to recreational fishermen in Brielle than bluefin tuna. Sharks play an important role in the fishing industry, and, while other fish may be available, some customers are attracted by sharks in particular. Shortfin mako sharks have the greatest economic importance to the recreational fishery in New Jersey. Mako tournaments are popular and several impose catch restrictions on participants. Researchers reported that the shark fishery in Brielle is being strongly affected by a decrease in its historical tuna fishery and is therefore more vulnerable to negative impacts.

Charter/headboat permits made up approximately 60 percent of the HMS fishing permits issued in Brielle in 2006, and the other 40 percent of fishing permits are almost split evenly between recreational and commercial permits (MRAG Americas, Inc., 2008; Table 6.60). The

MRAG Americas, Inc. (2008) study did not attribute any commercial HMS landings to Brielle in 2006.

6.5.7.3 Cape May, New Jersey

Commercial fishing is the second largest industry behind seasonal tourism in Cape May (MRAG Americas, Inc., 2008). It is the largest commercial fishing port in New Jersey, and one of the largest on the East Coast (MRAG Americas, Inc., 2008). A variety of HMS are landed commercially in Cape May, with yellowfin tuna, swordfish, and bigeye tuna comprising the highest landings in 2006 (Table 6.54). Other tunas (*i.e.*, albacore, bluefin) and a variety of sharks (*i.e.*, sandbar, blue, shortfin mako, tiger, and hammerhead *sp.*) were also landed in Cape May during 2006. The 2000 U.S. census recorded the Cape May population at 4,034 residents, which was slightly lower than the 1990 population (Table 6.15). There are numerous charter fishing vessels in the area, with 88 HMS charter/headboat permits issued to Cape May addresses in 2006, but the vast majority (over 79 percent) issued to the area were recreational angling permits (Table 6.61). There are also several fishing tournaments that take place from June through August, which target HMS species (MRAG Americas, Inc., 2008). Although there are diverse recreational and commercial fishing sectors, both are feeling pressure from dwindling waterfront resources, as much of the area is being sited for residential purposes (MRAG Americas, Inc., 2008).

Table 6.15 Demographic Profile of Cape May, New Jersey

Factor	1990	2000
Total population	4,668	4,034
Gender Ratio M/F (Number)		1,987/2,047
Age (Percent of total population)		
Under 18 years of age		16.3
18 to 64 years of age		55.2
65 years and over	25	28.5
Ethnicity or Race (Percent)		
White		91.3
Black or African American		5.3
American Indian and Alaskan Native		0.2
Asian		0.4
Native Hawaiian and other Pacific Islander		<0.1
Some other race		1.3
Two or more races		1.5
Hispanic or Latino (any race)		3.8
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	3.8	2.6
Percent high school graduate or higher	84.4	87.6
Percent with a Bachelor's degree or higher	25.2	30.8
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	4.7	8.9
And Percent who speak English less than very well	0.7	2.9
Household income (Median \$)		33,462
Poverty Status (Percent of population with income below poverty line)		9.1

Factor	1990	2000
Percent female headed household		7
Home Ownership (Percent)		
Owner occupied		56.8
Renter occupied		43.2
Value Owner-occupied Housing (Median \$)		212,900
Monthly Contract Rent (Median \$)		564
Employment Status (Population 16 yrs and over)		
Percent in the labor force	63.8	57.5
Percent of civilian labor force unemployed	2.7	3.8
Occupation** (Percent in workforce)		
Management, professional, and related occupations	40.9	33.7
Service occupations	16.9	21
Sales and office occupations	26	33.3
Farming, fishing, and forestry occupations	2.1	0.9
Construction, extraction, and maintenance occupations		5.9
Production, transportation, and material moving occupations		5.2
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining	1.7	0.4
Manufacturing	5.5	2.4
Percent government workers	26.5	20.2

6.5.8 Delaware

Between 1990 and 2000, Delaware's population increased by 15 percent (Table 6.16). The percentage of individuals 25 years and older with a high school diploma and/or a graduate level degree has increased by about five percent. The percentage of employed individuals has declined slightly, while both the unemployment rate and individuals below the poverty line increased over the past decade. As with many of the other states, employment in the farming, fishing, forestry, and mining industries has declined, whereas the education, health, and social services industries provided the greatest employment opportunities in 2000.

Table 6.16 Delaware Demographic Profile. Source: U.S. Census, 1990 and 2000

Delaware	1990	2000
Population:	666,168	783,600
Education:		
High school graduates (25 years or older)	77.50%	82.60%
Employment:		
Labor force (16 years and over)	68.3%	65.7%
Unemployment Rate	4.0%	5.2%
Median Household Income	\$34,875	\$47,381
Individuals below the poverty line*	8.7%	9.2%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	2.3%	1.1%
Construction	8.0%	7.4%
Manufacturing	18.8%	13.2%
Wholesale trade	3.5%	2.6%

Delaware	1990	2000
Retail	2.1%	11.6%
Education, health & social services	23.0%	19.4%
Arts, recreation, lodging & food services	10.4%	7.7%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

Forty-two commercial tuna permit holders lived in Delaware during 2008 (Table 6.50). The two HMS dealer permits issued in Delaware during 2008 were both tuna permits (Table 6.51 and

Table 9.5). There was one shark and one swordfish permit holder in the state of Delaware during 2008 (Table 6.52 and Table 6.53).

The recreational fishery in Delaware Bay and offshore is popular because of the diversity of species and habitats available to anglers. In 2007, Delaware's recreational fisheries attracted 374,000 saltwater anglers of whom approximately 60 percent were from out-of-state. In total, the anglers made 1,545,000 fishing trips in 2007 (NMFS, 2008). In 2008, Delaware was home to 737 HMS angling permit holders (Table 6.48) with a significant concentration of anglers in Millsboro, Delaware. The retail sales generated by recreational marine anglers in Delaware were estimated to be almost \$62 million and the marine recreational fishing service sector provided 724 jobs in 2006 (Southwick Associates, 2007). One hundred and twenty one HMS charter/headboats permits were issued to Delaware addresses in 2008 (Table 6.49). Communities where 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 (NMFS, 2003). To date, no HMS community profiles have been developed for any Delaware communities due to the relatively low level of involvement with HMS fisheries.

6.5.9 Maryland

Maryland's population increased from 4.8 million people in 1990 to 5.3 million people in 2000 (Table 6.17). The percentage of individuals 25 years and older with a high school diploma and/or some graduate level degree has increased by about five percent. The percentage of employed individuals, ages 16 and older, has declined slightly, while both unemployment rate and individuals below the poverty line remain approximately the same over the past decade. As with many of the other states, employment in the farming, fishing, forestry, and mining industries has declined, whereas the education, health, and social services industries provided the greatest employment opportunities in 2000.

In Maryland, there are 46 commercial tuna permit holders (Table 6.50) in 2008. In addition, six shark permit holders and six swordfish permit holders reside in Maryland (Table 6.52 and Table 6.53). To support these HMS fisheries, there are 13 dealers permitted for tuna, sharks and swordfish (Table 6.51).

Table 6.17 Maryland Demographic Profile. Source: U.S. Census, 1990 and 2000

Maryland	1990	2000
Population:	4,781,468	5,296,486
Education:		
High school graduates (25 years or older)	78.4%	83.8%
Employment:		
Labor force (16 years and over)	70.6%	67.8%
Unemployment Rate	4.3%	4.7%
Median Household Income	\$39,386	\$52,868
Individuals below the poverty line*	8.3%	8.5%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	1.7%	0.6%
Construction	7.9%	6.9%
Wholesale trade	3.8%	2.8%
Retail	15.0%	10.5%
Manufacturing	10.3%	7.7%
Education, health & social services	25.8%	20.6%
Arts, recreation, lodging & food services	1.2%	6.8%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

In 2007, 1,456,000 anglers took a total of 4,045,000 recreational fishing trips in the marine waters off of Maryland, with approximately 36 percent of these anglers originating from out-of-state (NMFS, 2008). In 2008, Maryland was home to 1,455 HMS angling permit holders (Table 6.48) The ASA estimated that saltwater anglers generated over \$354 million in retail sales, and the marine recreational fishing industry provided 5,548 jobs in Maryland in 2006 (Southwick Associates, 2007).

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 charterboats often run 60 to 70 miles offshore to areas of deep water. In Maryland, the number of HMS charter/headboat permit holders increased from 155 in 2003 to 162 in 2008 (Table 6.49). Most of these vessels are registered in Ocean City, which is known as the “White Marlin Capital of the World”. This hotspot for recreational fishing industry is home to the Annual White Marlin Open, which brings approximately \$1 million as the top prize for the tournament. Other communities involved with the HMS charter/headboat industry 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.

6.5.9.1 Ocean City, Maryland

Ocean City is a major tourist destination and is generally considered the only substantial fishing community in Maryland. There is a large charter boat presence at a variety of marinas, while most of the commercial activity takes place in West Ocean City on the mainland (MRAG Americas, Inc., 2008). The 2000 census recorded the Ocean City population at 7,173, which was

higher than the 1990 census (Table 6.18). Known as the “white marlin capitol of the world”, Ocean City is a popular destination for recreational anglers targeting HMS. Recreational anglers also target tunas and sharks, and there are a variety of annual tournaments that target white marlin, tunas, and sharks (MRAG Americas, Inc., 2008). The Consolidated HMS FMP limited the amount of blue and white marlin that could be landed recreationally (250 combined per year), and required billfish tournament participants to use non-offset circle hooks when using natural baits or natural bait/artificial lure combinations. According to MRAG Americas, Inc. (2008), recreational angling and charter/headboat permits made up 80.7 percent and 13.3 percent, respectively, of all the HMS permits issued to Ocean City in 2006 (MRAG Americas, Inc., 2008; Table 6.62). Those 777 permits illustrate how popular HMS sportsfishing is in the Ocean City area. The bulk of commercial HMS landings in 2006 came from yellowfin tuna, swordfish, and bigeye tuna, along with sandbar and shortfin mako sharks (MRAG Americas, Inc., 2008; Table 6.54).

Table 6.18 Demographic Profile of Ocean City, Maryland

Factor	1990	2000
Total population	5,074	7,173
Gender Ratio M/F (Number)	2415 / 2659	3,680 / 3,493
Age (Percent of total population)		
Under 18 years of age		21.3
18 to 64 years of age		63.5
65 years and over		25.2
Ethnicity or Race (Percent)		
White	4852	95.3
Black or African American	143	2.5
American Indian and Alaskan Native	33	0.1
Asian	46	0.7
Native Hawaiian and other Pacific Islander		<0.1
Some other race	0	0.3
Two or more races		0.9
Hispanic or Latino (any race)		1.2
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	4.8	2.6
Percent high school graduate or higher	61	87.1
Percent with a Bachelor’s degree or higher	13.4	28
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	4.1	7
And Percent who speak English less than very well		2.9
Household income (Median \$)	33350	35,772
Poverty Status (Percent of population with income below poverty line)		8.4
Percent female headed household	3.7	6.4
Home Ownership (Percent)		
Owner occupied		67.4
Renter occupied		32.6
Value Owner-occupied Housing (Median \$)	136100	152,200
Monthly Contract Rent (Median \$)	517	640
Employment Status (Population 16 yrs and over)		

Factor	1990	2000
Percent in the labor force		60.4
Percent of civilian labor force unemployed		9.3
Occupation** (Percent in workforce)		
Management, professional, and related occupations		31.6
Service occupations	18	24.1
Sales and office occupations		29.2
Farming, fishing, and forestry occupations		0.3
Construction, extraction, and maintenance occupations		9.5
Production, transportation, and material moving occupations		5.2
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining		0.5
Manufacturing		2.4
Percent government workers		11.3

6.5.10 Virginia

Virginia's population increased from 6.2 million people in 1990 to 7.1 million people in 2000 (Table 6.19). The percentage of individuals 25 years and older with a high school diploma and/or some graduate level degree has increased by six percent. The percentage of employed individuals, ages 16 and older, has declined slightly, while both the unemployment rate and individuals below the poverty line remained approximately the same over the past decade. Employment in the farming, fishing, forestry, and mining industries has declined, whereas the education, health, and social services industries provided the greatest employment opportunities in 2000.

Virginia ranked second for the quantity of commercial fishery landings at its Reedville port and third for the value of the commercial landings in the Hampton Roads area in 2004 (NMFS, 2005a). Virginia has 85 commercial tuna permit holders (Table 6.50). The Virginia commercial HMS fisheries have 14 licensed dealers, with two or more dealers operating in Chincoteague, Hampton, Newport News, Norfolk, and Virginia Beach (Table 6.51 and Figure 9.12). Five shark and four swordfish permit holders live in the Commonwealth of Virginia (Table 6.52 and Table 6.53). The commercial landings of tuna, sharks, and swordfish are not as significant as the total commercial landings coming into the state; therefore, HMS fisheries are not significantly tied to any particular Virginia community and no HMS-specific community profiles have been developed for Virginia.

In 2007, the Virginia recreational saltwater fishery attracted 836,000 anglers, of whom approximately 36 percent were from out-of-state (NMFS, 2008). Collectively, these anglers made 3,723,000 recreational fishing trips in 2007. In 2008, Virginia was home to 1,285 HMS angling category permit holders (Table 6.48) with a large concentration of angling category permit holders living in Virginia Beach and Chesapeake (Figure 9.9) It is estimated that these saltwater anglers generated over \$304 million in retail sales in Virginia in 2006 and their activity provided 5,541 jobs in the marine recreational fishing industry (Southwick Associates, 2007). 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 148 charter/headboats in Virginia with HMS permits in 2008 (Table 6.49). The communities with the greatest number of charterboats with HMS permits were Virginia Beach, Norfolk, Chincoteague, Wachapreague, and Portsmouth. The principal shark fishing season for recreational anglers is June through October.

Table 6.19 Virginia Demographic Profile. Source: U.S. Census, 1990 and 2000

Virginia	1990	2000
Population:	6,187,358	7,078,515
Education:		
High school graduates (25 years or older)	75.2%	81.5%
Employment:		
Labor force (16 years and over)	68.9%	66.8%
Unemployment Rate	4.5%	4.2%
Median Household Income	\$33,328	\$46,677
Individuals below the poverty line*	10.2%	9.6%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	2.6%	1.3%
Construction	7.8%	7.3%
Wholesale trade	3.4%	2.7%
Retail	16.1%	11.4%
Manufacturing	15.1%	11.3%
Education, health & social services	23.2%	18.3%
Arts, recreation, lodging & food services	1.1%	7.2%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

6.5.11 North Carolina

The population in North Carolina increased by nearly 18 percent between 1990 and 2000 (Table 6.20). The percentage of individuals 25 years and older with a high school diploma and/or some graduate level degree has increased by eight percent. The percentage of employed individuals, ages 16 and older, has remained roughly the same, while the unemployment rate increased and the individuals below the poverty line declined slightly over the past decade. As with many of the other states, employment in the farming, fishing, forestry, and mining industries has declined, whereas the manufacturing industry provided the greatest employment opportunities in 2000.

North Carolina's commercial fishery has a distinctive split between the North and South with Cape Hatteras as the dividing point as a result of 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 cold Labrador Current influences the waters North of Cape Hatteras. The area off Dare and Hyde Counties, North Carolina 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 shallow Carolina Bight. Vessels operating in this area have further to travel from shore to the Gulf Stream and do not

have the same diversity and richness found in the fisheries immediately to the North of Cape Hatteras.

North Carolina has the fourth largest number of HMS angling permit holders with 2,148 permits issued to its residents (Table 6.48). In 2007, NMFS estimated that 1,908,000 anglers fished in North Carolina's marine waters making a total of 6,979,000 recreational fishing trips (NMFS, 2008). Of these fishermen, approximately 57 percent were from out-of-state and approximately 14 percent were from non-coastal counties in North Carolina (NMFS, 2008). 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 2006, ASA estimated that saltwater recreational fisheries generated almost \$559 million in retail sales and the marine recreational fishing industry provided 9,735 jobs (Southwick Associates, 2007).

Table 6.20 Demographic Profile of North Carolina. Source: U.S. Census, 1990 and 2000

North Carolina	1990	2000
Population:	6,628,637	8,049,313
Education:		
High school graduates (25 years or older)	70.0%	78.1%
Employment:		
Labor force (16 years and over)	67.6%	65.7%
Unemployment Rate	4.8%	5.3%
Median Household Income	\$26,647	\$39,184
Individuals below the poverty line*	13.0%	12.3%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	2.9%	1.6%
Construction	7.0%	8.2%
Wholesale trade	4.2%	3.4%
Retail	16.1%	11.5%
Manufacturing	26.7%	19.7%
Education, health & social services	20.3%	19.2%
Arts, recreation, lodging & food services	1.0%	6.9%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

The marine recreational fisheries in North Carolina fall into three groups by species, gear and access. 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. 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. Typically, the boats are 22 feet long or longer, have electronic navigation systems, and are powered by an inboard engine. Generally, heavy tackle is used, and fighting chairs are usually installed for the billfish and giant tuna fishing. 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 2008, North Carolina had the fourth largest fleet of charter/headboats holding HMS permits with 431 vessels (Table 6.49). A significant percentage of these boats operated from communities North of Cape Hatteras. Some of these charterboats were highly specialized, for seeking only billfish for example. 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 charterboats, 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 advertising 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/headboat 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.

North Carolina has historically been an important commercial shark fishing state with 35 to 60 percent of all South Atlantic region landings coming from North Carolina in recent years. The time/area closure implemented in January 2005, to protect essential fish habitat for sandbar and dusky sharks has forced commercial shark fishermen to seek out other fisheries or other gears to target sharks and other species. Many fishermen claim that the closure has hurt their business. After North Carolina's petition to NMFS reopen Federal waters or adjust the Mid-Atlantic shark closure was denied, the State of North Carolina decided to reopen state waters to the commercial shark fishery in 2006.

In addition to recreational and for-hire industries, North Carolina residents hold the second largest number of commercial tuna permits with 645 permitted vessels in 2008 (Table 6.50). In 2008, 30 North Carolina residents held shark permits and 16 residents held swordfish permits (Table 6.52 and Table 6.53). There are 58 dealers authorized to purchase and sell tunas, sharks, and swordfish in the area, ranking North Carolina as fourth in the number of HMS dealers behind Florida, Massachusetts, and New York (Table 6.51).

6.5.11.1 Atlantic Beach, North Carolina

Fishing effort for HMS in Atlantic Beach is primarily recreational in nature, as no commercial vessels homeport in the area (MRAG Americas, Inc., 2008). According to MRAG Americas, Inc. (2008), HMS Angling and HMS charter/headboat permits comprised approximately 84 percent of permits issued in Atlantic Beach in 2006, while commercial HMS permits only made up approximately 16 percent of that total (

Table 6.63). There are various charter boat operations that fish for HMS, which cater to seasonal tourists. They mainly target bluefin tuna from November–February, and yellowfin tuna and marlin the rest of the year (MRAG Americas, Inc., 2008). Census data for the year 2000 recorded 1,781 residents in Atlantic Beach, with an increasing trend in people aged 65 and up (Table 6.21). This increasing trend in the senior population may indicate that the area is becoming a destination for retirees with disposable incomes, which may have led to recent growth in the charter fishing sector and may bode well for the charter fishing industry in the future (MRAG Americas, Inc., 2008).

Table 6.21 Demographic Profile of Atlantic Beach, North Carolina

Factor	1990	2000
Total population	1,938	1,781
Gender Ratio M/F (Number)		941 / 840
Age (Percent of total population)		
Under 18 years of age		9.8
18 to 64 years of age		72
65 years and over	12.5	18.2
Ethnicity or Race (Percent)		
White		98
Black or African American		0.6
American Indian and Alaskan Native		0.2
Asian		0.7
Native Hawaiian and other Pacific Islander		<0.1
Some other race		<0.1
Two or more races		0.4
Hispanic or Latino (any race)		0.7
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	3	2.8
Percent high school graduate or higher	85.1	90
Percent with a Bachelor's degree or higher	24.1	30.7
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	2.6	3.9
And Percent who speak English less than very well	1	1
Household income (Median \$)		
		38,312
Poverty Status (Percent of population with income below poverty line)		
		7.3
Percent female headed household		
		5
Home Ownership (Percent)		
Owner occupied		64.7
Renter occupied		35.3
Value Owner-occupied Housing (Median \$)		
		207,800
Monthly Contract Rent (Median \$)		
		582
Employment Status (Population 16 yrs and over)		

Factor	1990	2000
Percent in the labor force	69.8	63.3
Percent of civilian labor force unemployed	2.9	3.2
Occupation** (Percent in workforce)		
Management, professional, and related occupations	27	36.6
Service occupations	11.1	8.8
Sales and office occupations	23.7	35.4
Farming, fishing, and forestry occupations	2.6	0.5
Construction, extraction, and maintenance occupations		14.8
Production, transportation, and material moving occupations		3.8
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining	2.7	0.7
Manufacturing	7.6	2.2
Percent government workers	17.6	17.6

6.5.11.2 Beaufort, North Carolina

Beaufort is located near Morehead City and Atlantic Beach on the North Carolina outer banks, and is home to both commercial and recreational HMS fishing activities. Commercial landings of HMS in 2006 primarily consisted of swordfish, yellowfin tuna, sandbar shark, and shortfin mako shark (MRAG Americas, Inc., 2008; Table 6.54). According to MRAG Americas, Inc. (2008), HMS Angling and HMS charter/headboat permits comprised approximately 84 percent of permits issued in Beaufort in 2006, while commercial HMS permits only made up approximately 16 percent of that total (Table 6.64). Commercial vessels can be found on Radio Island, which is located between Beaufort and Morehead City, along with three fish house and other commercial docking facilities in Beaufort. Charter fishing is becoming increasingly popular, as the industry is fueled by seasonal visitors and increasing numbers of retirees in the area (MRAG Americas, Inc., 2008). The area is also home to recreational fishing tournaments that target HMS. Census data for the year 2000 recorded 3,771 residents in Beaufort, a slight decrease from 1990 (Table 6.22).

Table 6.22 Demographic Profile of Beaufort, North Carolina

Factor	1990	2000
Total population	3,808	3,771
Gender Ratio M/F (Number)		1,755 / 2,016
Age (Percent of total population)		
Under 18 years of age		18.3
18 to 64 years of age		61.9
65 years and over	19.1	19.8
Ethnicity or Race (Percent)		
White		75.9
Black or African American		20
American Indian and Alaskan Native		0.1
Asian		0.4
Native Hawaiian and other Pacific Islander		0.1
Some other race		2.4
Two or more races		1.2
Hispanic or Latino (any race)		3.8

Factor	1990	2000
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	45	6.2
Percent high school graduate or higher	85.1	78.9
Percent with a Bachelor's degree or higher	24.1	21.7
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	2.6	7
And Percent who speak English less than very well	1.1	2.7
Household income (Median \$)		
	21,532	28,763
Poverty Status (Percent of population with income below poverty line)		
	17.4	16.6
Percent female headed household		
	23.8	15.3
Home Ownership (Percent)		
Owner occupied		56.1
Renter occupied		43.9
Value Owner-occupied Housing (Median \$)		
		119,200
Monthly Contract Rent (Median \$)		
	373	502
Employment Status (Population 16 yrs and over)		
Percent in the labor force	60	56.3
Percent of civilian labor force unemployed	8.1	4.7
Occupation** (Percent in workforce)		
Management, professional, and related occupations	22	26.9
Service occupations	14.1	18.6
Sales and office occupations	15.8	28.7
Farming, fishing, and forestry occupations	0.9	1.2
Construction, extraction, and maintenance occupations		14.9
Production, transportation, and material moving occupations		9.7
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining	3	2.4
Manufacturing	10.9	7.6
Percent government workers	25.3	13.5

6.5.11.3 Hatteras, North Carolina

Hatteras Township is located on the Outer Banks of North Carolina, and 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 (Wilson *et al.*, 1998).

According to the 1990 and 2000 Census data, the population decreased from 2,675 in 1990 to 2,596 in 2000 (Table 6.23). The population decline can be attributed to mortality and out-migration exceeding births and in-migration. The number of males and females were approximately equal in 1990 and 2000. The age structure of the population has changed; the population has aged markedly, with consequences for educational attainment and other demographic indicators. In 1990, 37 percent of the population was 45 years or older, while in 2000 some 57 percent of the year-round residents were aged 45 years or older. The racial

composition of the township has not changed significantly between the 1990 and 2000 censuses with the majority of the township Caucasian and European ancestry predominant. The number of households has increased from 1,078 in 1990 to 1,171 in 2000, while the average size of households has dropped from 2.46 persons to 2.20 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. The farming, fishing, forestry, and mining industries employed about 34 percent of the Hatteras population, a significant increase from 1990, and the greatest sources of employment (Table 6.23). One of the most prominent fishing organizations is the Hatteras-Ocracoke Auxiliary of the North Carolina Fishermen’s Association (Wilson *et al*, 1998).

Table 6.23 Demographic Profile of Hatteras, North Carolina Source: U.S. Census, 1990 and 2000

Demographics	1990	2000
Total Population	2,675	2,596
Sex		
Male	51.6%	49.2%
Female	48.4%	50.8%
Age		
Median Age	35.1	42.1
< 17	23.9%	20.4%
18 - 44	39.6%	33.7%
45 - 64	25.4%	39.6%
> 65	11.1%	17.2%
Race		
White	98.8%	97.1%
Black or African American	0.4%	0.0%
American Indian and Alaska Native	0.8%	0.0%
Asian and Pacific Islander	0.0%	0.0%
Other	0.0%	2.3%
Household		
Total	1,078	1,171
Family households	69.7%	78.1%
Nonfamily households	30.3%	21.4%
Average household size	2.46	2.20
Average family size	2.97	2.73
Housing Occupancy		
Total housing units	1,919	2,156
Vacant housing units	43.4%	45.7%
Housing Tenure		
Owner-occupied housing units	72.3%	79.1%
Renter-occupied housing units	27.7%	20.9%

Hatteras Township, North Carolina	1990	2000
Population:	2,675	2,596
Education:		
High school graduates (25 years or older)	74.4%	68.1%
Employment:		
Labor force (16 years and over)	67.3%	83.1%
Unemployed	2.80%	4.6%
Median Household Income	\$ 24,667	\$ 39,881
Individuals below the poverty line	6.4%	4.7%
Employment in some industry sectors:		
Managerial/professional	28.4%	23.2%
Technical, Administrative, & Sales	29.9%	23.3%
Construction, Production, Maintenance, & Transportation	16.6%	10.8%
Farming, fishing, forestry, & mining	6.7%	33.8%
Industry		
Forestry, fishing, hunting, mining, and agriculture	6.4%	10.4%
Construction	16.2%	15.5%
Manufacturing	3.4%	2.4%
Wholesale trade	2.7%	4.0%
Retail trade	26.1%	14.9%
Education, health & social services	11.3%	14.0%
Arts, recreation, lodging & food services	1.2%	13.4%

Fishing 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 redbfish.

Commercial fishing is a major occupation on Hatteras Island, where there are approximately 500 to 600 part-time and full-time commercial and charterboat fishermen (Wilson *et al.*, 1998). The 2000 Census indicates that 34 percent of the population is employed in the farming, fishing, forestry and mining industry (Table 6.23). 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 charterboat fishermen is considered to be accurate for 2003 (NMFS, 2003).

Tourism and recreational fishing are also major industries in Hatteras in terms of seasonal employment. There are three economic "seasons" in Hatteras (NMFS, 1999a). In the spring, weekend and holiday travelers cause an increase in revenue; several 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.

There are five seafood wholesalers, one retail market, and three marinas (Wilson *et al.*, 1998). 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 six charterboats 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. According to MRAG Americas, Inc. (2008), HMS charter/headboat permits issued to Hatteras vessels comprised approximately 60 percent of all HMS permits issued to the area in 2006 (Table 6.65).

The three marinas each have a charterboat fleet of independent owner/operators, and each maintains a booking and information system for its fleet. The charterboats 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, the recreational fisheries and fishing services (*e.g.*, marinas, bait and tackle shops) in Hatteras provide employment for approximately 205 persons.

The recreational rod and reel fishery for pelagic fish flourishes in Hatteras. A bluefin tuna fishery during winter months is intense but somewhat unpredictable. Early in the spring, fishermen target offshore yellowfin tuna, dolphin, and wahoo, followed by marlin and sailfish fishing in the summer. Other species caught seasonally include king mackerel and striped bass. Fly-fishing has become more popular, although it still comprises a small number of offshore trips from Hatteras. Captains say it is very hard to find a year-round mate because college students work summers only and most skilled fishermen want their own vessels (Wilson *et al.*, 1998).

About half of fishing parties are all male and the other half are families, some of which participate in other tourist activities while the others fish. "Make-up charters", where marinas organize the parties, are becoming increasingly common (Wilson *et al.*, 1998). One captain estimated that his marina did 140 make-up charters in the past year. The majority of the charter customers want to fish offshore. Customers are often willing to accept retention limits imposed by the captain, although the possibility of landing at least one fish is important to many anglers. Changes in fishing conditions including weather conditions and the availability of fish affect charter bookings almost instantly, and there is not much customer loyalty to Hatteras. Clients cancel trips when they hear a species has moved out of the area. Because Hatteras attracts top sport fishermen from around the world, the issues of minimum sizes and trophy fish take on special significance. Many fishermen are interested in setting records by catching smaller bluefin tuna on fly rods.

While some of the charterboats operating in Hatteras are local, many are from other areas. They come for the winter bluefin tuna fishery but stay year-round. Researchers report tension between the local charterboats and the transient charterboats because of increased competition for both fish and customers. There is also tension with private recreational fishermen who follow the charter/headboats to see where they fish (Wilson *et al.*, 1998).

The status of the relatively new winter bluefin tuna fishery is an important aspect of HMS fisheries in Hatteras. In their study of the 1997 bluefin tuna fishing season, Ditton *et al.* (1998) found that bluefin tuna anglers spent \$3.6 million dollars in Hatteras in two and one-half months in the 1997 winter season. They estimate that this meant a \$7.6 million impact on the output of the Hatteras area economy and support of 170 jobs. Dare County unemployment estimates indicate that the bluefin tuna fishery may have reduced unemployment by eight percent during the first quarter of 1997. Unemployment in Dare County in March 1998, a year when the bluefin tuna did not show up in numbers anywhere near the 1997 level, was 29 percent higher than in March 1997.

Respondents view and react to the winter fishery very differently, even disagreeing on the year it started. Because of the unpredictability of the appearance of bluefin tuna and the duration of their stay, there is uncertainty among local businesses about whether or not to invest resources to stay open during winter months. Those who now have winter jobs, and those who hire them, have a different perspective. Businesses are generally pleased to retain year-round employees rather than hiring and training seasonally. Finding a place to live on Hatteras Island is already difficult for low wage workers. Many people, especially fishermen, did not think the winter fishery would last (Ditton *et al.*, 1998).

Sandbar shark has dominated commercial HMS landings in Hatteras. According to MRAG Americas, Inc. (2008), sandbar shark comprised over 97 percent of HMS landings in 2006 (Table 6.54). This percentage may change in the near term due to recent regulations implemented by Amendment 2 to the HMS FMP that have significantly reduced sandbar shark harvest. Prior to Amendment 2, the Consolidated HMS FMP (2006) required vessel owners and operators of longline (bottom and pelagic) fishing vessels to attend a safe handling and release workshop and Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks (2004) required release equipment on board shark fishing vessels, as well as the use of non-stainless steel corrodible hooks. The Mid-Atlantic Closure area was established in 2005, and prohibits bottom longline shark fishing off of North Carolina annually from January through July.

6.5.11.4 Morehead City, North Carolina

Although there are commercial docks in the area, recreational fishing is more prominent in Morehead City, similar to fishing activities in neighboring Atlantic Beach and Beaufort. According to MRAG Americas, Inc. (2008), HMS angling category and HMS charter/headboat permits comprised approximately 80 percent of permits issued in Morehead City in 2006, while commercial HMS permits only made up approximately 20 percent of that total (Table 6.66). The recreational fishing industry as grown, as the town's economy has become more reliant on tourism in recent years (MRAG Americas, Inc., 2008). Charter vessels target HMS seasonally, similarly to Atlantic Beach and Beaufort, and there are also large billfish tournaments held in the area from June-August (MRAG Americas, Inc., 2008). The Consolidated HMS FMP limited the amount of blue and white marlin that could be landed recreationally (250 combined per year), and required billfish tournament participants to use non-offset circle hooks when using natural baits or natural bait/artificial lure combinations. Population in Morehead City increased 27.2 percent between 1990 and 2000, and the area's economy is becoming increasingly reliant on tourism (MRAG Americas, Inc., 2008; Table 6.24).

Table 6.24 Demographic Profile of Morehead City, North Carolina

Factor	1990	2000
Total population	6,046	7,691
Gender Ratio M/F (Number)		3,507 / 4,184
Age (Percent of total population)		
Under 18 years of age		20.2
18 to 64 years of age		59
65 years and over	16.7	20.8
Ethnicity or Race (Percent)		
White		81.7
Black or African American		14
American Indian and Alaskan Native		0.7
Asian		0.8
Native Hawaiian and other Pacific Islander		<0.1
Some other race		1.1
Two or more races		1.7
Hispanic or Latino (any race)		2.3
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	11.9	8.1
Percent high school graduate or higher	70.6	80.1
Percent with a Bachelor's degree or higher	13.2	20.8
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	3.9	4.7
And Percent who speak English less than very well	1.4	1.4
Household income (Median \$)	20,041	28,737
Poverty Status (Percent of population with income below poverty line)	19.1	14.6
Percent female headed household	25.4	13.7
Home Ownership (Percent)		
Owner occupied		55.5
Renter occupied		44.5
Value Owner-occupied Housing (Median \$)		106,400
Monthly Contract Rent (Median \$)	376	507
Employment Status (Population 16 yrs and over)		
Percent in the labor force	59.4	60.2
Percent of civilian labor force unemployed	3.6	4.6
Occupation** (Percent in workforce)		
Management, professional, and related occupations	21.3	33.1
Service occupations	17.4	19.7
Sales and office occupations	27.1	21
Farming, fishing, and forestry occupations	3.4	1.1
Construction, extraction, and maintenance occupations		14.4
Production, transportation, and material moving occupations		10.7
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining	3	1.1
Manufacturing	8.9	7.4
Percent government workers	15.7	18.1

6.5.11.5 Wanchese, North Carolina

Wanchese is located on the southern part of Roanoke Island, in the northern Outer Banks. The village continues to revolve around fishing and fish processing. The first seafood dealership in Wanchese was opened in 1936 by a family that still operates two seafood businesses in the community. 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. Although commercial fishing has historically been a major industry, there has been an increasing emphasis on recreational angling and tourism.

Between 1990 and 2000, the population increased from 1,374 to 1,527 individuals (Table 6.25). The population is roughly divided between males and females. The population of Wanchese is about 98 percent Caucasian, and mostly of European ancestry. The largest age group is the 18-44 year old individuals and continues to remain about the same over the past two decades. The most dramatic shifts in the population distribution have been the decline in the percent of individuals under 20 and increase in the 45-64 year old group. In 1990, there were 503 households in Wanchese, with an average of 2.73 persons per household. The number of households had grown to 614 in 2000, with an average of 2.49 persons per household.

Table 6.25 Demographic Profile of Wanchese, North Carolina. Source: U.S. Census 1990 & 2000

Demographics	1990	2000
Total Population	1,374	1,527
Sex		
Male	51.2%	50.7%
Female	48.8%	49.3%
Age		
Median Age	27.7	37.2
< 20	36.8%	25.9%
20 - 44	35.7%	37.9%
45 - 64	20.2%	24.1%
> 65	7.2%	12.0%
Race		
White	98.5%	98.1%
Black or African American	0.0%	30.0%
American Indian and Alaska Native	1.5%	0.6%
Asian and Pacific Islander	0.0%	0.1%
Other	0.0%	0.5%
Household		
Total	503	614
Family households	76.1%	70.5%
Nonfamily households	23.9%	29.5%
Average household size	2.73	2.49
Average family size	3.25	2.96
Housing Occupancy		
Total housing units	574	690
Vacant housing units	10.8%	11.0%
Housing Tenure		
Owner-occupied housing units	72.1%	89.0%
Renter-occupied housing units	27.9%	11.0%

Wanchese, North Carolina	1990	2000
Population:	1,374	1,527
Education:		
High school graduates (25 years or older)	67.3%	76.5%
Employment:		
Labor force (16 years and over)	70.7%	66.6%
Unemployed	7.8%	1.8%
Median Household Income	\$ 25,977	\$ 39,250
Individuals below the poverty line	9.3%	8.1%
Employment in some industry sectors:		
Managerial/professional	17.0%	24.3%
Technical, Administrative, & Sales	24.6%	21.9%
Construction, Production, Maintenance, & Transportation	18.8%	36.0%
Farming, fishing, forestry, & mining	12.6%	9.5%
Industry		
Forestry, fishing, hunting, mining, and agriculture	19.7%	8.2%
Construction	5.0%	9.9%
Manufacturing	9.5%	13.1%
Wholesale trade	6.6%	6.9%
Retail trade	19.1%	11.7%
Education, health & social services	8.5%	22.0%
Arts, recreation, lodging & food services	2.9%	7.2%

In 1990, the largest industries in Wanchese were forestry, fishing, hunting, mining, and agriculture with retail trade as a close second (Table 6.25). The 2000 Census data show a significant decline in the forestry, fishing, hunting, mining, and agriculture industry and a marked increase in the education, health and social services industries (Table 6.25). The decline in the farming, fishing, forestry, and mining industry is also noticeable in the employment estimates. Some of these declines can be attributed to difficulties in hiring and managing crew for pelagic longline vessels, especially for the larger vessels that need people to stay on for longer trips (Wilson *et al.*, 1998). 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).

Fishing related associations include the Oregon Inlet Users Association and the North Carolina Fisheries Association. The former is involved with supporting the plans for jetties at Oregon Inlet and are responsible for organizing both the Wanchese Seafood Festival and the Blessing of the Fleet. The latter is a trade organization of seafood dealers and commercial fishermen from the state; two members of the 18-member Board of Directors are from Wanchese (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).

Wanchese is not a community linked to tourism in the way that most other Outer Banks and Dare County communities are. According to MRAG Americas, Inc. (2008), HMS Angling and HMS charter/headboat permits only comprised approximately 42 percent of permits issued in Wanchese in 2006, while commercial HMS permits made up approximately 58 percent of that total (Table 6.67). Of the housing stock, only eleven percent was rental properties in 2000 (Table 6.25). The marinas and boatyards in Wanchese cater to transient boats and the charterboat 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 charterboats. 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 charterboats, 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 sudden 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). In 2006, the top three HMS species landed in Wanchese by weight were yellowfin tuna, bigeye tuna, and swordfish, respectively (MRAG Americas, Inc., 2008; Table 6.54).

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 are targeted by longline vessels (Wilson *et al.*, 1998).

Researchers found pressure on this sector of the longline fishery to be substantial (Wilson *et al.*, 1998). Regulations implemented in 2004 to reduce sea turtle bycatch and bycatch mortality, require pelagic longline fishermen to use circle hooks and have specific sea turtle handling and release equipment onboard. Other changes affecting the HMS pelagic longline fleet resulting from the Consolidated FMP in 2006 require vessel operators to attend a safe

handling and release workshop. The Mid-Atlantic Closure area was established in 2005, and prohibits bottom longline shark fishing off of North Carolina annually from January through July.

6.5.12 South Carolina

The population in South Carolina has increased by 13.1 percent between 1990 and 2000 (Table 6.26). The number of individuals with a high school diploma or greater has increased from 68.3 percent in 1990 to 76.3 percent in 2000. The unemployment rate has remained about the same and the number of individuals below the poverty line declined by just over one percent. Employment in the farming, fishing, forestry, and mining industries has declined slightly with the only significant increase in employment taking place in the arts, recreation, lodging, and food services industries, from 1.1 percent in 1990 to 8.3 percent in 2000.

Table 6.26 South Carolina Demographic Profile. Source: U.S. Census, 1990 and 2000

South Carolina	1990	2000
Population:	3,486,703	4,012,012
Education:		
High school graduates (25 years or older)	68.3%	76.3%
Employment:		
Labor force (16 years and over)	66.0%	63.4%
Unemployment Rate	5.6%	5.9%
Median Household Income	\$26,256	\$37,082
Individuals below the poverty line*	15.4%	14.1%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	2.3%	1.1%
Construction	7.9%	8.3%
Wholesale trade	3.6%	3.3%
Retail	16.6%	11.9%
Manufacturing	25.7%	19.4%
Education, health & social services	19.9%	18.6%
Arts, recreation, lodging & food services	1.1%	8.3%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

South Carolina has 89 commercial tuna permit holders, holding 1.7 percent of the total commercial tuna permits (Table 6.50). Additionally, there are 32 dealers for tunas, shark, and swordfish in the state of South Carolina. With 25 shark permits (directed and incidental), South Carolina holds the fifth greatest number of shark permits. Due to the relatively small number of HMS permit holders and landings in South Carolina, no community profiles have been developed at this time.

In 2008, South Carolina was home to 955 HMS angling category permit holders (Table 6.48). About 941,000 marine anglers fished in South Carolina's waters making 2,577,000 recreational fishing trips in 2007 (NMFS, 2008). Of these recreational fishermen, approximately 59 percent were from out-of-state and 12 percent were from non-coastal counties within South Carolina. The 2006 recreational marine fishery in South Carolina generated over \$680 million in

retail sales and created 11,896 jobs (Southwick Associates, 2007). Anecdotal information suggests that the shark fishery is incidental to other fisheries, and is primarily catch-and-release.

In 2008, South Carolina had a fleet of 159 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 (Table 6.49). 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. Sharks 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 International Game Fish Association (IGFA) world-record tiger shark was caught off Cherry Grove Beach, SC, near Myrtle Beach. Charterboat 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.

6.5.13 Georgia

The population in Georgia has increased quite a bit in the last decade, from 6.5 million people in 1990 to 8.2 million people in 2000 (Table 6.27). The labor force (ages 16 and older) and unemployment has remained the same over the past decade, but there was a slight decline in the percentage of individuals below the poverty line. Employment in the farming, fishing, forestry, and mining industries has declined slightly since 1990; there has been only a slight employment increase in the art, recreation, lodging, and food services industries, from one percent to seven percent.

Table 6.27 Georgia Demographic Profile. Source: U.S. Census, 1990 and 2000

Georgia	1990	2000
Population:	6,478,216	8,186,453
Education:		
High school graduates (25 years or older)	70.9%	78.6%
Employment:		
Labor force (16 years and over)	66.1%	66.1%
Unemployment Rate	5.5%	5.5%
Median Household Income	\$29,021	\$42,433
Individuals below the poverty line*	14.7%	13.0%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	2.7%	1.4%
Construction	6.9%	7.9%
Wholesale trade	5.1%	3.9%
Retail	16.5%	12.0%
Manufacturing	18.9%	14.8%
Education, health & social services	20.4%	17.6%
Arts, recreation, lodging & food services	1.0%	7.1%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

Commercial shark fishing in Georgia has traditionally been only a very small segment of the commercial fisheries in the state. In 2008, only three vessels that held shark permits in Georgia (Table 6.52). Both Darien and Townsend, in McIntosh County, have been involved with the commercial shark fishery. There are three dealers permitted to sell HMS such as tunas, sharks, and swordfish (Table 6.51). Nineteen vessels are permitted to participate in the commercial tuna fisheries (Table 6.50). The number of HMS charter/headboat permits operating in Georgia increased from 27 in 2003 to 35 in 2008 (Table 6.49). Some of the active charter/headboat communities are Columbus, Brunswick, Marietta, Savannah, Atlanta, Alpharetta, and St. Simons Island.

In 2008, Georgia residents held 244 HMS angling category permits (Table 6.48). In 2007, marine recreational fishing in Georgia attracted 309,000 anglers, of whom approximately 15 percent were from out-of-state and approximately 37 percent from non-coastal counties (NMFS, 2008). Collectively, these anglers made 926,000 recreational fishing trips in 2007. The 2006 recreational marine fishery in Georgia generated over \$132 million in retail sales and created 2,010 jobs (Southwick Associates, 2007). 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.

6.5.14 Florida

Florida's population increased by more than 3 million people between 1990 and 2000 (Table 6.28). The percentage of individuals 25 years and older with a high school diploma and/or a graduate level degree has increased by almost five percent in the last decade. The percentage of employed individuals has declined slightly, whereas the unemployment rate and percentage of individuals below the poverty line remained about the same through the nineties. As with many of the other states, employment in the farming, fishing, forestry, and mining industries has declined, whereas the education, health, and social services industries provided the greatest employment opportunities in 2000. Employment in the arts, recreation, lodging, and food services industries has been on the rise in the last decade.

Florida's fishing industry is one of the largest and most diverse in the region. Florida residents hold more than half of the commercial shark permits with 277 permit holders residing in the state (Table 6.52). Some of the large concentrations of permit holders are in Fort Pierce, St. Petersburg, Key West, and Panama City, Florida (Figure 9.4). Florida is also home to the greatest number of swordfish permit holders with 144 permitted vessels (Table 6.53). The large numbers of swordfish permit holders are found in Fort Pierce, Pompano Beach, St. Petersburg, and Panama City. Florida residents hold about six percent of the commercial tuna permits, and are generally spread out along the entire coast of Florida (Table 6.50 and Figure 9.7). Since the East Florida Coast pelagic longline closure was implemented in 2001, there has been a shift in commercial swordfishing effort in this area to the commercial handgear sector. In 2006, NOAA Fisheries defined and authorized buoy gear for the commercial swordfish handgear fishery. Prior to buoy gear being authorized, the swordfish handgear fishery fished free-floating handlines allowed under the NMFS definition of handline. Currently, the swordfish buoy gear fishery consists of approximately 40 vessels that generally fish one night trips out of ports ranging from Fort Pierce to the upper Florida Keys. For information on buoy gear regulations and recent catches, please see Section 0.

Florida residents also have the greatest number of HMS dealer permits with 137 dealers permitted to purchase and sell tunas, sharks, and swordfish (Table 6.51). A large number of these dealers can be found in Miami, Fort Lauderdale, Key West, and St. Petersburg.

Florida has the largest marine recreational fisheries in the United States. In 2007, approximately 7,261,000 saltwater anglers fished in the waters off Florida and made 31,568,000 fishing trips during that year (NMFS, 2008). Of these fishermen, approximately 44 percent were from out-of-state. More specifically to recreational HMS fisheries, Florida has the greatest number of HMS angling permits in the United States, with 4,276 permitted individuals in 2008 (Table 6.48). A large concentration of HMS anglers reside in Jupiter, West Palm Beach, Pompano Beach, Fort Lauderdale, and Miami, Florida (Figure 9.9). ASA estimates that the 2006 recreational marine fishery in Florida generated almost \$3 billion in retail sales and created 51,588 jobs (Southwick Associates, 2007). The recreational swordfish fishery in Florida has grown since 2003 and is discussed in greater detail in Section 4.4.2. Sharks are an incidental catch for many fishermen, but some private boat fishermen have a directed fishery for sharks, including lemon, hammerhead, blacktip and tiger sharks.

As with the recreational anglers, Florida is also the number one state for HMS charter/headboat permit holders with 699 permitted vessels (Table 6.49). Many of these charter/headboat operators are from Key West, Islamorada, Miami, and Destin, Florida (Figure 9.8). It should be noted that these 634 charterboats/headboats permit holders refer to Florida residents and do not account for the transient vessels traveling to Florida for the winter and spring fishing seasons.

Table 6.28 Florida Demographic Profile. Source: U.S. Census, 1990 and 2000

Florida	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)	60.4%	58.6%
Unemployment Rate	5.8%	5.6%
Median Household Income	\$27,483	\$38,819
Individuals below the poverty line*	12.7%	12.5%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	3.1%	1.3%
Construction	7.8%	8.0%
Wholesale trade	4.6%	3.9%
Retail	19.6%	13.5%
Manufacturing	10.5%	7.3%
Education, health & social services	21.4%	18.1%
Arts, recreation, lodging & food services	2.3%	10.5%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

6.5.14.1 Apalachicola, Florida

Low levels of HMS fishing activity take place in Apalachicola, with only three HMS commercial fishing permits, five HMS Angling fishing permits, and one HMS charter/headboat permits issued in Apalachicola in 2006 (MRAG Americas, Inc., 2008; Table 6.68). Apalachicola is located at the mouth of the Apalachicola River and East Bay in Florida, and is home to 2,334 residents according to 2000 census data (MRAG Americas, Inc., 2008), of which 25% percent were living below the poverty level (Table 6.29). The area has historically been a fishing village (currently it produces a majority of Florida’s oyster crop); however, the community is rapidly changing due to an influx of development taking place in Franklin County (MRAG Americas, Inc., 2008). This new development could lead to increased levels of tourism to the Apalachicola area, and could result in opportunities for the development of HMS charter boat operations in the future (MRAG Americas, Inc., 2008).

Table 6.29 Demographic Profile of Apalachicola, Florida

Factor	1990	2000
Total population	2,707	2,334
Gender Ratio M/F (Number)		1,107 / 1,227
Age (Percent of total population)		
Under 18 years of age		21.9
18 to 64 years of age		57.6
65 years and over	16.3	20.5
Ethnicity or Race (Percent)		
White		63.4
Black or African American		34.9
American Indian and Alaskan Native		0.2
Asian		0.4
Native Hawaiian and other Pacific Islander		<0.1
Some other race		0.5
Two or more races		0.6
Hispanic or Latino (any race)		1.7
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	21.9	9.1
Percent high school graduate or higher	52.9	69.2
Percent with a Bachelor’s degree or higher	12	15.3
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	2.3	2.6
And Percent who speak English less than very well	1.2	1
Household income (Median \$)	12,813	23,073
Poverty Status (Percent of population with income below poverty line)	34.6	25.3
Percent female headed household	23.3	15
Home Ownership (Percent)		
Owner occupied		69
Renter occupied		31
Value Owner-occupied Housing (Median \$)		83,800
Monthly Contract Rent (Median \$)	285	393
Employment Status (Population 16 yrs and over)		
Percent in the labor force	48.7	50.5

Factor	1990	2000
Percent of civilian labor force unemployed	3.8	3.6
Occupation** (Percent in workforce)		
Management, professional, and related occupations	16.8	25.4
Service occupations	21.6	27.5
Sales and office occupations	24.7	21.2
Farming, fishing, and forestry occupations	4.6	5.9
Construction, extraction, and maintenance occupations		5.6
Production, transportation, and material moving occupations		14.4
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining	5.4	4
Manufacturing	5	2.9
Percent government workers	22.5	20.3

6.5.14.2 Destin, Florida

Destin is a major tourist destination located on the Florida Panhandle in Oskaloosa County. The Destin population of 11,119 residents according to 2000 census data was approximately a 37 percent increase from the 1990 survey (Table 6.30). Touted as the self-proclaimed “billfish capital of the Gulf”, Destin is home to a variety of HMS fishing tournaments throughout the year and recreational fishing for blue and white marlin that generally occurs from August-October (MRAG Americas, Inc., 2008). The Consolidated HMS FMP limited the amount of blue and white marlin that could be landed recreationally (250 combined per year), and required billfish tournament participants to use non-offset circle hooks when using natural baits or natural bait/artificial lure combinations. According to MRAG Americas, Inc. (2008), recreational angling and charter/headboat permits made up 57.4 percent and 23.7 percent, respectively, of all the HMS permits issued to Destin in 2006 (Table 6.69). While not as prolific as sportfishing in the area, the commercial HMS fishery landed 23,634 lb in 2006, consisting mainly of sandbar shark, yellowfin tuna, and swordfish (MRAG Americas, Inc., 2008; Table 6.54).

Table 6.30 Demographic Profile of Destin, Florida

Factor	1990	2000
Total population	8,080	11,119
Gender Ratio M/F (Number)		5,610/5,509
Age (Percent of total population)		
Under 18 years of age		19.4
18 to 64 years of age		63.6
65 years and over	13.2	17
Ethnicity or Race (Percent)		
White		96.2
Black or African American		0.4
American Indian and Alaskan Native		0.4
Asian		0.1
Native Hawaiian and other Pacific Islander		0.1
Some other race		0.4
Two or more races		1.5
Hispanic or Latino (any race)		2.7

Factor	1990	2000
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	1.6	2.3
Percent high school graduate or higher	88.1	91.9
Percent with a Bachelor's degree or higher	24.9	31.4
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	4.3	6.8
And Percent who speak English less than very well	0.9	2.4
Household income (Median \$)		
	32,712	53,042
Poverty Status (Percent of population with income below poverty line)		
	7	5.5
Percent female headed household		
	10.9	8
Home Ownership (Percent)		
Owner occupied		75.3
Renter occupied		24.7
Value Owner-occupied Housing (Median \$)		
		153,800
Monthly Contract Rent (Median \$)		
	506	774
Employment Status (Population 16 yrs and over)		
Percent in the labor force	66.6	60
Percent of civilian labor force unemployed	1.8	3.8
Occupation** (Percent in workforce)		
Management, professional, and related occupations	28.6	36.3
Service occupations		14.6
Sales and office occupations	28.3	28.4
Farming, fishing, and forestry occupations	4.7	2
Construction, extraction, and maintenance occupations		10.7
Production, transportation, and material moving occupations		8.1
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining	4.3	1.2
Manufacturing	5.5	4.2
Percent government workers	11.5	9.1

6.5.14.3 Pompano Beach, Florida

Pompano Beach is a small city directly adjacent to Fort Lauderdale. The Fort 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. The Consolidated HMS FMP limited the amount of blue and white marlin that could be landed recreationally (250 combined per year), and required billfish tournament participants to use non-offset circle hooks when using natural baits or natural bait/artificial lure combinations. In contrast to many Florida communities, local people in addition to tourists support a substantial amount of the recreational fishing industry. 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 with its own small commercial longline fleet (Wilson *et al.*, 1998). As a community, Pompano Beach owes its current infrastructure and social and economic lifestyle to the arrival 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.

Between 1990 and 2000, the population increased from 72,411 to 78,191 individuals (Table 6.31). The male to female ratio in the Pompano population changed only slightly in the past decade with a slight decrease in the number of females (48:52 to 49:51). The percent of the total population by each age group remained relatively constant between 1990 and 2000. Since the 1990 Census, the ethnic and racial population of Pompano Beach has shifted to increase the number of 'other' ethnicities in the population. In 1990, the population was 70 percent Caucasian and 29 percent Black-American. Twenty percent of the population was of Hispanic ancestry. In 2000, the population consisted of 67 percent Caucasians, 25 percent Black-Americans, and eight percent of people of other ethnicities. The proportion of the population with Hispanic ancestry had dropped to ten percent.

The number of households increased from 31,891 in 1990 to 35,197 in 2000 (Table 6.31). The average household size in Pompano Beach decreased from 2.2 persons per household in 1990 to 2.1 persons per 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 (NMFS, 1999a). 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. The technical, administrative, and sales industries provide the greatest source of employment, with managerial and professional positions a close second. Employment in the farming, fishing, forestry and mining industries declined from almost 12 percent in 1990 to less than one percent in 2000.

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. In fact, Pompano Beach has the second largest concentration of HMS angling permit holders with 303 residents participating in the HMS recreational fishery (Figure 9.9). Virginia Beach has 316 permit holders. 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, which mainly targets tunas and swordfish. A large number of swordfish permit holders reside in Pompano Beach (Figure 9.1 and Figure 9.3). Effort in the swordfish pelagic longline fishery along the east coast of Florida has shifted towards buoy gear, since it became an authorized gear type for swordfish in 2006. There is also some shark fishing farther North along the coast. There are eleven HMS longline permit holders residing in Pompano Beach, Florida. The most intensive local fishing takes place December through April. The longline fleet conducts business with three Pompano Beach dealers permitted for shark and swordfish and one Dania shark and

swordfish permitted dealer. The development of the Pompano Beach area for yachting and recreational fishing has made dockage and access to the water more expensive (NMFS, 1999b).

Wilson *et al.* (1998) noted that commercial respondents reported increased difficulty in getting quality crew. The smaller vessels take two crew members plus the captain. Owner-operators often try to have at least one consistent crew member, 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 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 do exist. However, the work force is fairly well-educated, so finding employment could be competitive (Table 6.31). Commercial fishing employment alternatives for vessels and crew are minimal because of limited entry programs in other fisheries.

Table 6.31 Demographic Profile of Pompano Beach, Florida. Source: U.S. Census 1990 and 2000.

Demographics	1990	2000
Total Population	72,411	78,191
Sex		
Male	48.2%	49.3%
Female	51.8%	50.9%
Age		
Median Age	39.8	42.2
< 20	19.8%	19.7%
20 - 44	35.0%	34.5%
45 - 64	19.9%	22.5%
> 65	25.3%	23.4%
Race		
White	70.1%	67.8%
Black or African American	28.6%	25.4%
American Indian and Alaska Native	0.1%	0.2%
Asian and Pacific Islander	0.3%	0.8%
Other	0.9%	2.0%
Household		
Total	31,981	35,197
Family households	57.9%	52.4%
Nonfamily households	42.1%	47.6%
Average household size	2.26	2.13
Average family size	2.90	2.85
Housing Occupancy		
Total housing units	42,179	44,496
Vacant housing units	24.7%	20.9%

Pompano Beach, Florida	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)	52.1%	53.8%
Unemployed	3.5%	3.6%
Median Household Income	\$ 29,683	\$ 36,073
Individuals Below the Poverty Line	16.0%	17.0%
Employment in some industry sectors:		
Managerial/professional	24.8%	28.6%
Technical, Administrative, & Sales	31.8%	30.0%
Construction, Production, Maintenance, & Transportation	3.2%	11.4%
Farming, fishing, forestry, & mining	11.6%	0.5%
Industry Code Description		
Forestry, fishing, hunting, mining, and agriculture	3.1%	0.5%
Construction	10.4%	9.8%
Manufacturing	8.5%	7.1%
Wholesale trade	5.4%	4.7%
Retail trade	18.6%	13.6%
Education, health & social services	13.2%	14.9%
Arts, recreation, lodging & food services	2.3%	11.0%

6.5.14.4 Fort Pierce, Florida

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 stopover point.

Fort Pierce is a community in transition. The community grew rapidly between 1960 and 1990, from a population of 24,857 to 36,830 (Table 6.32). Between 1990 and 2000, the population grew by only two percent, increasing by about 800 people. Changing from a predominantly white community in 1950, the white portion of the population declined to less than half the total in 2000. The black or African American population made up just over 40 percent of the Fort Pierce population. No other ethnic or racial groups dominate the remaining 11 percent of the population. About 30 percent of the population is under 20 years old, whereas another 33 percent is between 20 and 44. The median age in 2000 was 35.4 years old.

Table 6.32 Demographics of Fort Pierce, Florida. Source: U.S. Census 1990 and 2000.

Demographics	1990	2000
Total Population	36,830	37,516
Sex		
Male	47.1%	49.3%
Female	52.9%	50.7%
Age		
Median Age	34.2	35.4
< 20	30.4%	30.3%
20 - 44	30.8%	32.7%
45 - 64	18.8%	19.6%
> 65	20.0%	17.5%
Race		
White	53.8%	49.5%
Black or African American	42.5%	40.9%
American Indian and Alaska Native	0.2%	0.3%
Asian and Pacific Islander	0.4%	0.9%
Other	3.1%	5.4%
Household		
Total	14,283	14,407
Family households	64.4%	61.2%
Nonfamily households	35.6%	38.8%
Average household size	2.58	2.56
Average family size	3.21	3.19
Housing Occupancy		
Total housing units	17,250	17,170
Vacant housing units	17.8%	16.6%
Housing Tenure		
Owner-occupied housing units	53.3%	53.2%
Renter-occupied housing units	46.7%	46.8%

Fort Pierce, Florida	1990	2000
Population:	36,830	37,516
Education:		
High school graduates (25 years or older)	56.9%	59.7%
Employment:		
Labor force (16 years and over)	48.2%	55.1%
Unemployed	6.8%	4.9%
Median Household Income	\$ 18,913	\$ 25,121
Individuals Below the Poverty Line	29.2%	30.9%
Employment in some industry sectors:		
Managerial/professional	16.8%	19.9%
Technical, Administrative, & Sales	28.0%	20.5%
Construction, Production, Maintenance, & Transportation	9.7%	9.0%
Farming, fishing, forestry, & mining	10.4%	31.3%
Industry		
Forestry, fishing, hunting, mining, and agriculture	9.8%	7.8%
Construction	8.2%	12.6%
Manufacturing	7.1%	8.0%
Wholesale trade	4.1%	4.8%
Retail trade	21.0%	12.5%
Education, health & social services	17.1%	16.9%
Arts, recreation, lodging & food services	1.1%	10.8%

There were 14,407 households in Fort Pierce, with an average household size of 2.56 persons, in 2000. 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 statewide average per capita income of \$21,557, and \$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 shark gillnetters. Fifteen shark and nine swordfish permit holders reside in Fort Pierce (Figure 9.4 and Figure 9.1).

The commercial fishing fleet in Fort Pierce has grown in the past decade due to lost dock space for commercial fleets in nearby ports. 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. 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. Effort in the swordfish pelagic longline fishery has shifted towards buoy gear, since it became an authorized gear type for swordfish in 2006. The shark bottom longline fishery has been impacted by a variety of regulations since 2004. Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks required release equipment on board shark fishing vessels, as well as the use of non-stainless steel corrodible hooks, and divided the fishing year into three shark seasons instead of two. The Consolidated HMS FMP required vessel owners and operators of longline (bottom and pelagic) fishing vessels to attend a safe handling and release workshop, and that second dorsal and anal fins remain attached through landing. Amendment 2 to the HMS FMP changed the commercial trip limit to 33 non-sandbar large coastal sharks, established a Shark Research Fishery, and requires that all sharks must be landed with their fins naturally attached.

6.5.14.5 Madeira Beach, Florida

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).

The Madeira Beach economy has changed with increases in the 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 in Madeira Beach increased by about six percent from 1990 to 2000 (Table 6.33). In 2000, 97 percent of the population was Caucasian. The number of people in the population claiming German ancestry rose from 11 percent in 1990 to 19.7 percent in 2000 (Table 6.33), although 92 percent of the population of Madeira Beach was born in the United States. Median age increased from 34.2 in 1990 to 47.6 in 2000. The number of households in Madeira Beach increased from 2,230 in 1990 to 2,523 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, \$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. Seventy-two percent of Madeira Beach 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 jobs in farming, fishing, forestry, and mining industries declined over the last decade from just over ten percent to less than one percent (Table 6.33). The industry itself also declined, whereas the arts, recreation, lodging and food services related industries increased from 2.5 percent to over 21 percent.

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 in Madeira Beach, such as amberjack, were considered trash 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.

Table 6.33 Demographic Profile for Madeira Beach, Florida. Source: U.S. Census 1990 and 2000.

Demographics	1990	2000
Total Population	4,225	4,500
Sex		
Male	50.9%	52.0%
Female	49.1%	48.0%
Age		
Median Age	34.2	47.6
< 20	11.2%	9.5%
20 - 44	35.3%	32.5%
45 - 64	28.0%	36.0%
> 65	25.6%	21.9%
Race		
White	99.8%	97.4%
Black or African American	0.0%	0.0%
American Indian and Alaska Native	0.0%	0.8%
Asian and Pacific Islander	0.2%	0.0%
Other	0.0%	1.8%
Household		
Total	2,230	2,523
Family households	50.5%	59.8%
Nonfamily households	49.5%	40.2%
Average household size	1.89	1.78
Average family size	2.49	2.39
Housing Occupancy		
Total housing units	3,788	3,971
Vacant housing units	41.1%	36.5%

Madiera Beach, Florida	1990	2000
Population:	4,225	4,500
Education:		
High school graduates (25 years or older)	83.8%	87.3%
Employment:		
Labor force (16 years and over)	56.9%	61.5%
Unemployed	1.6%	2.7%
Median Household Income	\$ 24,748	\$ 36,671
Individuals Below the Poverty Line	8.4%	9.8%
Employment in some industry sectors:		
Managerial/professional	35.3%	30.4%
Technical, Administrative, & Sales	31.2%	28.9%
Construction, Production, Maintenance, & Transportation	1.4%	17.8%
Farming, fishing, forestry, & mining	10.3%	0.7%
Industry		
Forestry, fishing, hunting, mining, and agriculture	1.4%	0.0%
Construction	8.8%	7.0%
Manufacturing	7.5%	11.3%
Wholesale trade	4.5%	4.1%
Retail trade	30.7%	11.4%
Education, health & social services	11.4%	7.9%
Arts, recreation, lodging & food services	2.5%	21.6%

Longline vessels began to target swordfish in the 1970s, using cloth and nylon line before monofilament longlines were commonly used. The bottom longline fishery in Maderia began after local availability of swordfish rapidly declined. This prompted a group of vessels to head

north to search for fish. While heading back they discovered a significant amount of shark, tilefish and yellowedge grouper by setting longline gear in deep water (Wilson *et al.*, 1998). Marginal swordfish vessels began to experiment with various techniques such as straight hooks, auto-baiters and circle hooks. The Madeira Beach fleet is currently 95 percent bottom longline vessels. There are three seafood dealers in this community, two of which were permitted to sell HMS species in 2005. One dealer estimated that before restrictions on shark fishing his business used to be 45 percent grouper, 45 percent shark, and ten percent swordfish and tuna; now it is 75 percent grouper, ten 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 commercially with bottom longline gear. For this reason, the majority of longline fishermen hold permits for multiple fisheries. Commercial grouper fishermen are subject to limited access, a minimum size, area restrictions, seasonal closures, and a quota, while commercial shark fishermen are subject to similar types of restrictions except for minimum sizes.

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, 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 (NMFS, 1999a).

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, 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 (Wilson *et al.*, 1998; NMFS, 1999a).

When the shark bottom longline fishery began in Florida it was easy to catch sharks, but the catch from the bottom longline fishery has become marginal due to restrictions and increased distance to the fishing grounds (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, had turned the fishery into a small vessel fishery (NMFS, 1999a). In 2008, Amendment 2 to the HMS FMP created a stricter commercial shark retention limit by replacing the 4,000 pound trip limit with a 33 large coastal shark trip limit. Amendment

2 also prohibited the harvest of sandbar shark (*Carcharhinus plumbeus*) unless fishing within the newly established Shark Research Fishery. Some fishermen keep both grouper and shark gear on board and will participate in both fisheries, sometimes on the same fishing trip.

Besides changes in harvest limits, regulations since 2004 have directly impacted the shark bottom longline fishery. Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks required release equipment on board shark fishing vessels, as well as the use of non-stainless steel corrodible hooks, and divided the fishing year into three shark seasons instead of two. The Consolidated HMS FMP required vessel owners and operators of longline (bottom and pelagic) fishing vessels to attend a safe handling and release workshop, and that second dorsal and anal fins remain attached through landing. As well as changing the shark trip limit and restricting the harvest of sandbar sharks, Amendment 2 to the HMS FMP also requires that all sharks must be landed with their fins naturally attached.

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 (NMFS, 1999a).

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 charterboat fleet and the commercial fishing fleet. In 2006, there was one HMS charter/headboat permits issued to Madeira Beach (MRAG Americas, Inc., 2008; Table 6.71). Additionally, the Madeira Beach shark tournaments, which were mostly sponsored by a vessel or engine manufacturer, are no longer held due to loss of this infrastructure. 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 (NMFS, 1999a).

6.5.14.6 Panama City, Florida

Panama City is located on the Gulf of Mexico in the Florida Panhandle. 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 (NMFS, 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. The Consolidated HMS FMP limited the amount of blue and white marlin that could be landed recreationally (250 combined per year), and required billfish tournament participants to use non-offset circle hooks when using natural baits or natural bait/artificial lure combinations. Some charterboats 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; NMFS, 1999a).

Between 1990 and 2000, Panama City experienced a modest increase in its population from 34,378 in 1990 to 36,417 in 2000 (Table 6.34). Since 1990, there has been an increase in the male population with a corresponding decrease in the female portion of the total population; males: 47 to 49 percent and females: 53 to 51 percent. The Panama City population did get older in the past decade the median age increased from 34 years old to about 37 years old. Correspondingly, the greatest portion of the population in both decades was in the 20-44 years old age bracket.

Panama City had 14,033 households in 1990, and the number of households grew to 14,819 in 2000 (Table 6.34). The average household size decreased from 2.37 persons in 1990 to 2.30 persons in 2000, indicating that there might be an increase in “empty nesters” and retiree households. The percentage of individuals below the poverty line decreased slightly over the past decade from almost twenty to seventeen percent. 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. 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. There are thirty Panama City residents with an HMS charter/headboat permit (Figure 9.8). 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).

Table 6.34 Demographic Profile for Panama City, Florida. Source: U.S. Census 1990 and 2000.

Demographics	1990	2000
Total Population	34,378	36,417
Sex		
Male	46.7%	48.6%
Female	53.3%	51.4%
Age		
Median Age	33.9	37.2
< 20	28.6%	25.6%
20 - 44	34.9%	36.8%
45 - 64	19.6%	21.7%
> 65	16.9%	16.0%
Race		
White	76.1%	73.6%
Black or African American	21.0%	21.5%
American Indian and Alaska Native	0.7%	0.6%
Asian and Pacific Islander	1.6%	1.6%
Other	0.6%	0.8%
Household		
Total	14,033	14,819
Family households	69.2%	61.0%
Nonfamily households	30.8%	39.0%
Average household size	2.37	2.30
Average family size	2.90	2.92
Housing Occupancy		
Total housing units	15,928	16,548
Vacant housing units	11.8%	10.4%
Housing Tenure		
Owner-occupied housing units	58.3%	57.8%
Renter-occupied housing units	41.7%	42.2%

Panama City Beach, Florida	1990	2000
Population:	34,378	36,417
Education:		
High school graduates (25 years or older)	70.3%	79.2%
Employment:		
Labor force (16 years and over)	54.0%	53.9%
Unemployed	4.6%	3.1%
Median Household Income	\$ 21,881	\$ 31,572
Individuals Below the Poverty Line	19.6%	17.2%
Employment in some industry sectors:		
Managerial/professional	25.9%	32.2%
Technical, Administrative, & Sales	32.2%	27.7%
Construction, Production, Maintenance, & Transportation	1.5%	19.0%
Farming, fishing, forestry, & mining	10.2%	0.4%
Industry		
Forestry, fishing, hunting, mining, and agriculture	1.6%	0.5%
Construction	7.0%	6.7%
Manufacturing	7.7%	7.0%
Wholesale Trade	3.3%	0.1%
Retail Trade	21.4%	13.8%
Education, health & social services	19.4%	22.2%
Arts, recreation, lodging & food services	1.5%	14.2%

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). In 2005, ten longline vessels held an HMS permit; 20 shark permits and 12 swordfish permits were issued to residents of Panama City.

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 ten 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. Also in 2000, the DeSoto Canyon Closed Area was established in the Gulf of Mexico, which prohibited pelagic longline fishing in these areas.

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).

6.5.14.7 Islamorada, Florida

Islamorada, located in the Florida Keys, is a popular destination for HMS recreational fishing. It is estimated that there are over 100 charter fishing vessels in the area and the self-proclaimed moniker of “sportfishing capital of the world” is in reference to the recreational fishing presence in the area. The community depends on tourism, and has approximately 45 hotels/motels and over 24 marinas to support recreational fishing activities (MRAG Americas, Inc., 2008). Islamorada hosts over 10 HMS tournaments throughout the year, running from November-February, as well as a billfish tournament in August (MRAG Americas, Inc., 2008). In 2008, regulations requiring billfish tournament participants to use non-offset circle hooks when using natural baits or natural bait/artificial lure combinations became effective. Residential population in the area has increased by almost 430 percent, from 1,293 in 1990 to 6,846 in 2000, according to census data (Table 6.35). HMS commercial efforts in the area are limited, as most operations have been pushed out of the area due to marine sanctuary restrictions (MRAG Americas, Inc., 2008).

Located in the Florida Keys, Islamorada calls itself the Sportfishing Capital of the World because of its proximity to the Florida Bay, the Everglades, bonefish flats, coral reefs and the Gulf Stream. Islamorada is famous for light tackle technique and many different rods have been developed in this community. It is now increasingly a recreational fishing community, with many charterboats that troll for yellowtail snapper, grouper, blackfin tuna, dolphin, wahoo and billfish in inshore waters. Recreational activities in the Keys consist of trophy fishing, catch-and-release, spearfishing, and fishing for food. There has been a growing interest in the guided fishing industry that promotes catch-and-release (NMFS, 1999a). According to the Florida Bureau of Vessel Titling and Registration, Monroe County has a total of 23,079 registered vessels, with 18,731 pleasure and 4,260 commercial vessels as of 1996. In 1998, there were eleven marinas in Islamorada (Wilson *et al.*, 1998).

Tournaments are an important marketing device for tourism in this town. The majority of vessels in Islamorada tournaments are Florida vessels, but there are some out-of-state participants. The Tourist Development Council of the Florida Keys has a large marketing budget and gives grants and sponsorship to tournaments. One tackle shop employed 57 people in 1998 and planned to open a fishing school next year that would employ six teachers and teach 24 people at a time for three to four days. Other water-related tourist businesses include powerboat rentals, boat tours, cruises, kayak, wave runner and sailboat rentals, snorkel and dive shops, boat dockage, lifts and repair shops, and fishing supply shops.

The largest resort in Islamorada began as a fishing marina and sportfishing is a big part of their marketing. The resort has two sets of vessels offshore and “back country,” the local term for the Florida Bay area. There are 19 “six-pack boats” which are charterboats and one

headboat. In the winter, charter/headboats target sailfish, blackfin tuna, and bonito. Recreational fishermen in this community generally feel that retention limits, minimum sizes, voluntary catch-and-release, and other management measures are effective. Florida's ban on inshore net fishing is also considered a success. Sea trout, bonefish, pompano, and Spanish mackerel are plentiful as a result of the net ban.

According to the Monroe County Cooperative Extension Service, fishing is better as a result of regulations. However, some charter/headboat captains are pessimistic about the future. They feel that the overall fishing is not good, and they have lost customers because there are not as many fish to target (Wilson *et al.*, 1998). There is a general concern in Islamorada that it would be devastating to the community if the fish stocks were depleted. There are a lot of concerns with habitat such as the loss of grass beds, destruction of mangrove shoreline, water quality, algae blooms, and coral reefs dying from ozone depletion and too much sunlight. Some people are concerned with runoff from the lower part of the peninsula including phosphates and exhaust. There is also a concern over an increasing number of fishermen in the area (Wilson *et al.*, 1998).

Islamorada has been subject to considerable expansion. In 1990, the population was 1,220 individuals and in 2000, it was 6,846-429.5 percent increase over a ten-year period (Table 6.35). The population was roughly half male and half female in both census years. The pattern of age distribution, however, changed between 1990 and 2000. The population in Islamorada is older than Fort Pierce, Pompano, and Panama City. The median age increased from just over 42 years to just over 46 years old over the past decade. The dominant age group shifted from 20-44 years old to 45-64 years old. Islamorada has a very well educated population with almost 92 percent having at least graduated high school (Table 6.35).

The labor force has declined over the past decade indicating that the population is aging (Table 6.35). While the median household income and the percentage of individuals above the poverty line increased, the employment rate also increased slightly. In both 1990 and 2000, the greatest source of employment is in the technical, administrative, and sales industry sectors. Employment in farming, fishing, forestry, and mining decreased by one half. Correspondingly, the forestry, fishing, mining, and agriculture industry decreased by one half. The largest industry in Islamorada was retail trade in 2000.

Due to limited range and safety concerns about venturing farther offshore, Islamorada has a small vessel longline fleet that fishes year-round in nearby waters. While these vessels are experiencing increased difficulty with finding crew, this is significantly less of a problem for them than for larger pelagic longline vessels. Researchers found that the commercial fishing community has an increasingly smaller niche relative to recreational fisheries. They cited limited entry in the snapper, king mackerel, and crab fisheries; a ban on net use in inshore waters in Florida; and incidental catch limits for bluefin tuna as limiting factors for the commercial fisheries. On July 1, 2001 the Tortugas Ecological Reserve was established as a no-take zone within the Florida Keys National Marine Sanctuary, and prohibits commercial fishing in this area (NOAA, 2001).

Skilled captains were seeking employment in the Bahamas, as well as the growing longline fleets in South Africa and South America, while the longline supply business has shifted its emphasis to supplying foreign fleets. In Islamorada, a growing recreational fishing industry provides alternative employment opportunities for commercial fishermen familiar with charter/headboats and as fishing guides. In fact, there is a significant concentration of charter/headboat permits issued to Islamorada residents, 27 permitted vessels in 2008 (Figure 9.8). However, the Islamorada work force is fairly well educated, so finding alternative employment could be competitive.

Table 6.35 Demographic Profile for Islamorada, Florida. Source: U.S. Census, 1990 and 2000.

Demographics	1990	2000
Total Population	1,293	6,846
Sex		
Male	54.2%	53.0%
Female	45.8%	47.0%
Age		
Median Age	42.3	46.2
< 20	13.3%	17.0%
20 - 44	40.8%	30.6%
45 - 64	26.7%	35.6%
> 65	19.2%	16.9%
Race		
White	95.3%	96.8%
Black or African American	0.9%	0.5%
American Indian and Alaska Native	0.0%	0.2%
Asian and Pacific Islander	0.0%	0.7%
Other	3.9%	0.8%
Household		
Total	672	3,174
Family households	51.6%	58.4%
Nonfamily households	48.4%	41.6%
Average household size	1.92	2.10
Average family size	2.54	2.63
Housing Occupancy		
Total housing units	966	5,461
Vacant housing units	32.4%	41.9%
Housing Tenure		
Owner-occupied housing units	65.9%	71.1%
Renter-occupied housing units	34.1%	28.9%

Islamorada, Florida	1990	2000
Population:	1,293	6,846
Education:		
High school graduates (25 years or older)	77.8%	91.7%
Employment:		
Labor force (16 years and over)	73.2%	62.9%
Unemployed	0.9%	2.3%
Median Household Income	\$ 26,266	\$ 41,522
Individuals Below the Poverty Line	9.1%	6.9%
Employment in some industry sectors:		
Managerial/professional	25.9%	28.0%
Technical, Administrative, & Sales	30.7%	30.0%
Construction, Production, Maintenance, & Transportation	7.8%	17.9%
Farming, fishing, forestry & mining	7.9%	3.9%
Industry		
Forestry, fishing, hunting, mining, and agriculture	6.8%	3.7%
Construction	3.8%	6.6%
Manufacturing	4.6%	1.9%
Wholesale trade	2.9%	1.2%
Retail trade	39.4%	20.2%
Education, health & social services	6.1%	12.7%
Arts, recreation, lodging & food services	3.2%	21.1%

6.5.14.8 Port Salerno, Florida

Port Salerno is located on the east coast of Florida, approximately 30 miles north of West Palm Beach. It is home to 10,104 residents according to 2000 census data (Table 6.36). In the past, there have been concentrations of longline vessels that targeted shark, which claimed Port Salerno as their home port, but due to gentrification and increasing fishery regulations, commercial fishing infrastructure has shrunk, and currently there is only one commercial facility remaining in the area (MRAG Americas, Inc., 2008). Effort in the swordfish pelagic longline fishery along the east coast of Florida has shifted towards buoy gear, since it became an authorized gear type for swordfish in 2006. HMS recreational tournaments are held in Port Salerno and are sponsored by a local sailfish club in nearby Stewart, FL (MRAG Americas, Inc., 2008). The Consolidated HMS FMP limited the amount of blue and white marlin that could be landed recreationally (250 combined per year), and required billfish tournament participants to

use non-offset circle hooks when using natural baits or natural bait/artificial lure combinations. According to the 2000 census there were 10,104 residents in Port Salerno, almost a 30 percent increase from 1999 (Table 6.36). Over 80 percent of the HMS permits issued to Port Salerno addresses in 2006 were commercial in nature, and only five recreational angling permits were issued to the area (Table 6.72).

Table 6.36 Demographic Profile of Port Salerno, Florida

Demographics	1990	2000
Total population	7,786	10,104
Gender Ratio M/F (Number)	3,748 / 4,038	4,928 / 5,176
Age (Percent of total population)		
Under 18 years of age	19.2	19.9
18 to 64 years of age	56.8	55.4
65 years and over	23.9	24.7
Ethnicity or Race (Percent)		
White	88.0	88.8
Black or African American	6.9	7.0
American Indian and Alaskan Native	0.2	0.1
Asian	0.4	0.7
Native Hawaiian and other Pacific Islander		0.1
Some other race	0.1	2.3
Two or more races		1.3
Hispanic or Latino (any race)	4.4	8.2
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	6.3	3.2
Percent high school graduate or higher	81.2	85.4
Percent with a Bachelor's degree or higher	17.9	21.5
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	10	9.5
And Percent who speak English less than very well	3.2	4.5
Household income (Median \$)	31,687	39,839
Poverty Status (Percent of population with income below poverty line)	6.9	9.6
Percent female headed household	7.7	9.3
Home Ownership (Number)		
Owner occupied		3262
Renter occupied		1204
Value Owner-occupied Housing (Median \$)		116,900
Monthly Contract Rent (Median \$)		559
Employment Status (Population 16 yrs and over)		
Percent in the labor force	57.1	54.3
Percent of civilian labor force unemployed	5.5	2.8
Occupation** (Percent in workforce)		
Management, professional, and related occupations	-	28.5
Service occupations	-	19.3
Sales and office occupations	-	27.6
Farming, fishing, and forestry occupations	3.6	0.8
Construction, extraction, and maintenance occupations	-	13.9
Production, transportation, and material moving occupations	-	10
Industry** (Percent in workforce)		

Demographics	1990	2000
Agriculture, forestry, fishing, hunting and mining	3.1	0.9
Manufacturing	12	8.8
Percent government workers	9.8	10.4

6.5.15 Alabama

The population in Alabama has increased by about 400,000 people between 1990 and 2000 (Table 6.37). The percentage of individuals 25 years and older with a high school diploma and/or some graduate level degree has increased by about eight percent. The percentage of employed individuals, unemployment rate, and percentage of individuals below the poverty line have declined slightly in the last decade. As with many of the other states, employment in the farming, fishing, forestry, and mining industries has declined, whereas the education, health, and social services industries provided the greatest employment opportunities in 2000. Also, the arts, recreation, lodging, and food services, and manufacturing industries have been the greatest source of employment Alabama residents over the past decade.

In 2008, Alabama residents held 20 commercial tuna permits (Table 6.50), five commercial shark permits (Table 6.52), and two swordfish permits (Table 6.53). The communities involved in the shark fishery are Andalusia, Bayou la Batre, Elba, Elberta, Gulf Shores, and Lillian. There are four licensed HMS dealers working in coastal Alabama (Table 6.51). Alabama residents hold about one percent or less of the commercial tuna, shark, and swordfish permits; therefore, no community profiles have been developed to date.

The marine recreational fishery off Alabama attracted 713,000 anglers in 2007, who accounted for 2,120,000 fishing trips (NMFS, 2008). Of these recreational fishermen, approximately 41 percent were from out-of-state and about 24 percent were from non-coastal counties within Alabama. In 2008, there were 430 Alabama residents who held an angling permit to fish recreationally for HMS (Table 6.48). A large number of these anglers are in Mobile, Alabama. In 2006, recreational marine anglers generated an estimated \$226 million in retail sales and supported 3,762 jobs (Southwick Associates, 2007). 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.

Table 6.37 Alabama Demographic Profile. Source: U.S. Census, 1990 and 2000.

Alabama	1990	2000
Population:	4,040,587	4,447,100
Education:		
High school graduates (25 years or older)	66.9%	75.3%
Employment:		
Labor force (16 years and over)	61.1%	59.7%
Unemployment Rate	6.9%	6.2%
Median Household Income	\$23,597	\$34,135
Individuals below the poverty line*	18.3%	16.1%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	3.03%	1.90%
Construction	7.1%	7.6%
Wholesale trade	4.1%	3.6%
Retail	16.2%	12.2%
Manufacturing	22.9%	18.2%
Education, health & social services	21.6%	19.3%
Arts, recreation, lodging & food services	0.9%	6.4%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

There are 66 vessels with a 2008 HMS charter/headboat permit in Alabama (Table 6.49), and many of these vessels are located in Orange Beach). Some other communities with several charter/head boat permit owners are Birmingham, Mobile, Gulf Shores and Dauphin Island. There is a small, directed shark fishery advertised by some of the charter/headboats, but most take shark incidentally to other fish species throughout the year.

6.5.15.1 Orange Beach, Alabama

Orange Beach, located along Wolf Bay in Baldwin County, is primarily a tourist beach destination, but is also home to a substantial charter fishing industry (MRAG Americas, Inc., 2008). Over 50 charter vessels are docked at ten local marinas. HMS charter fishermen primarily target blue marlin, white marlin, sailfish and yellowfin tuna, and several HMS tournaments take place in the area from March-August (MRAG Americas, Inc., 2008). The Consolidated HMS FMP limited the amount of blue and white marlin that could be landed recreationally (250 combined per year), and required billfish tournament participants to use non-offset circle hooks when using natural baits or natural bait/artificial lure combinations. HMS recreational Angling and charter/headboat permits made up approximately 96 percent of all HMS permits issued to addresses in Orange Beach in 2006 (Table 6.73). According to the 2000 census there were 3,784 residents in Port Salerno, almost a 68 percent increase from 1999 (Table 6.38).

Table 6.38 Demographic Profile of Orange Beach, Alabama

Demographics	1990	2000
Total population	2,253	3,784
Gender Ratio M/F (Number)	1,153 / 1,100	1,967 / 1,817

Demographics	1990	2000
Age (Percent of total population)		
Under 18 years of age	15	16.6
18 to 64 years of age	63.4	65.2
65 years and over	21.6	18.2
Ethnicity or Race (Number)		
White	99.2	94.8
Black or African American	0.1	0.4
American Indian and Alaskan Native	0.5	0.7
Asian	0.1	0.2
Native Hawaiian and other Pacific Islander	0.0	0.0
Some other race	0.1	2.0
Two or more races	0.0	1.9
Hispanic or Latino (any race)	0.6	2.8
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	3.1	2.1
Percent high school graduate or higher	84.3	88.4
Percent with a Bachelor's degree or higher	21.2	24.7
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	4.3	6.3
And Percent who speak English less than very well	1.1	4.3
Household income (Median \$)		
	30,445	40,542
Poverty Status (Percent of population with income below poverty line)		
	8.6	10.6
Percent female headed household		
	5.9	7.8
Home Ownership (Percent)		
Owner occupied	798	1,305
Renter occupied	228	474
Value Owner-occupied Housing (Median \$)		
	94,700	204,500
Monthly Contract Rent (Median \$)		
	374	577
Employment Status (Population 16 yrs and over)		
Percent in the labor force	56.7	62.7
Percent of civilian labor force unemployed	3.9	3.1
Occupation** (Percent in workforce)		
Management, professional, and related occupations		25.9
Service occupations		18.4
Sales and office occupations		27.6
Farming, fishing, and forestry occupations	3.7	1.2
Construction, extraction, and maintenance occupations		20.4
Production, transportation, and material moving occupations		6.5
Industry** (Percent in workforce)		
Agriculture, forestry, fishing and hunting	2.7	0.6
Manufacturing	8.6	3.8
Percent government workers	10.3	9.4

6.5.16 Mississippi

Between 1990 and 2000, Mississippi's population increased from 2.6 million people to 2.8 million people (Table 6.39). The percentage of individuals 25 years and older with a high school diploma and/or some graduate level degree has increased significantly by almost 24

percent. The percentage of employed individuals has remained the same over the past decade, while the unemployment rate declined slightly and percentage of individuals below the poverty line declined by almost five percent. As with many of the other states, employment in the farming, fishing, forestry, and mining industries has declined, whereas the education, health, and social services industries provided the greatest employment opportunities in 2000. Also, the arts, recreation, lodging, and food services industries have been growing source of employment in Mississippi over the past decade.

Fifteen Mississippi residents held a commercial tuna permit (Table 6.50), six a commercial shark permit (Table 6.52), and one a commercial swordfish permit (Table 6.53) in 2008. Communities involved in the commercial shark fishery are Moss Point, Biloxi, and Pascagoula.

Mississippi's saltwater recreational fisheries attracted approximately 285,000 anglers in 2007 (NMFS, 2008). Out-of-state and in-state anglers from non-coastal counties made up 19 and 12 percent of that total, respectively. In 2008, there were 239 Mississippi residents with an HMS angling permit (Table 6.48). The ASA estimated that marine recreational fishing in Mississippi generated over \$63 million in retail sales and 1,116 jobs in 2006 (Southwick Associates, 2007). There are 27 charter/headboats with HMS permits home-ported in Mississippi (Table 6.49). Communities involved in the charter and headboat fishery include Biloxi, 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.

Table 6.39 Mississippi Demographic Profile. Source: U.S. Census, 1990 and 2000.

Mississippi	1990	2000
Population:	2,573,216	2,844,658
Education:		
High school graduates (25 years or older)	64.3%	87.9%
Employment:		
Labor force (16 years and over)	59.7%	59.4%
Unemployment Rate	8.4%	7.4%
Median Household Income	\$20,136	\$31,330
Individuals below the poverty line*	25.2%	19.9%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	4.6%	3.4%
Construction	6.4%	7.6%
Wholesale trade	3.8%	3.4%
Retail	16.1%	11.8%
Manufacturing	23.4%	18.3%
Education, health & social services	22.5%	20.1%
Arts, recreation, lodging & food services	0.7%	8.3%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

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.

6.5.17 Louisiana

The population of Louisiana has not changed by much between the last two census, 4.2 million people in 1990 and 4.5 million people in 2000 (Table 6.40). The percentage of individuals 25 years and older with a high school diploma and/or some graduate level degree has increased by almost seven percent. The percentage of employed individuals has remained the same over the past decade, while the unemployment rate and percentage of individuals below the poverty line have declined. As with many of the other states, employment in the farming, fishing, forestry, and mining industries has declined, whereas the education, health, and social services industries provided the greatest employment opportunities in 2000. Also, the arts, recreation, lodging, and food services industries have been growing source of employment over the past decade.

Louisiana was second only to Alaska in the quantity of its commercial fisheries in the United States in 2003 and fifth in value (NMFS, 2004b). Several of Louisiana's communities were in the top ten major U.S. ports for the greatest quantity of commercial fishery landings: Empire-Venice, Intracoastal, and Cameron. Two communities were ranked in the top ten for the value of the commercial fishery landings: Empire-Venice and Dulac-Chauvin, Louisiana. 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.

Table 6.40 Louisiana Demographic Profile. Source: U.S. Census, 1990 and 2000.

Louisiana	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)	59.3%	59.4%
Unemployment Rate	9.6%	7.3%
Median Household Income	\$21,949	\$32,566
Individuals below the poverty line*	23.6%	19.6%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	5.7%	4.2%*
Construction	6.8%	7.9%
Wholesale trade	4.5%	3.5%
Retail	17.5%	11.9%
Manufacturing	12.5%	10.1%
Education, health & social services	25.3%	21.7%
Arts, recreation, lodging & food services	1.1%	9.1%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

Seventy Louisiana residents held a commercial tuna permit in 2008 (Table 6.50). Louisiana was home to the third largest number of shark permit holders in 2008 with 39 permitted vessels (Table 6.52). Sixteen of those permit holders live in New Orleans, Louisiana (Figure 9.4). The largest concentrations of shark vessels were home ported in New Orleans, Houma, Dulac, and Gretna. There are also 37 swordfish permit holders in Louisiana (Table 6.53). To support these HMS fisheries, there are 25 dealers licensed to purchase and sell tunas, sharks, and/or swordfish in Louisiana.

The recreational saltwater fisheries off Louisiana attracted 1,134,000 anglers in 2007, collectively making 4,516,000 fishing trips (NMFS, 2008). Of these anglers, 14 percent were from out-of-state, and 11 percent were from non-coastal counties within Louisiana. There were 663 HMS angling permit holders residing in Louisiana during 2008 (Table 6.48). The ASA estimated that saltwater angling in Louisiana generated over \$472 million in retail sales and supported 7,733 jobs in 2006 (Southwick Associates, 2007). 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 2008, 78 charter/headboats from Louisiana communities had HMS permits (Table 6.49). The majority of websites sampled show that sharks is a component of most trips offered by these vessels. Communities involved in the charter and head boat fishery for sharks include Venice, New Orleans, Chauvin/Dulac, Houma, Baton Rouge, Golden Meadow, Belle Chase, Metairie, Grande Isle, Cut-Off, Chalmette, Lake Charles, and Monroe.

As described in Section 6.3.2.1, the impacts from Hurricanes Katrina and Rita have been devastating to Louisiana and many Gulf Coast communities. NMFS is involved in several studies to determine the full economic and social impacts of these hurricanes.

6.5.17.1 Venice, Louisiana

Venice is another Louisiana community with historical ties to the commercial fishing industry. Venice has a strong focus on commercial fisheries, and cites the large volume of local shrimp landings and numerous residents involved in the fishing industry as evidence. Many residents fish commercially, at least on a part-time basis (Impact Assessment, 2004). In the past 20 years, however, oil and recreational fishing have become increasingly important for the economy of Venice. Wilson *et al.* (1998) note, however, few if any, Venice residents commercially harvest highly migratory species. Boothville-Venice is a “census designated place” and the Bureau of the Census statistics includes both small communities. Similarly, NMFS links Empire and Venice as a single port. Thus, both the port and community are referred to as Venice in this document.

The population of Venice has declined from 2,743 in 1990 to 2,220 in 2000 (Table 6.41). There is a slightly greater percentage of males compared to females in the population. The median age increased from about 26 to 32 between 1990 and 2000. The number of individuals under 20 declined by almost seven percent, while those 45 and older increased by almost seven percent in the last decade. Whites account for a majority of the resident population, but blacks or

African Americans accounted for about 29 percent of the total population in both 1990 and 2000. Despite apparent overall out-migration, numerous families of Vietnamese and Cambodian ancestry have moved to the area over the last decade (Impact Assessment, 2004). While many initially went into the fishing industry, more recently, there has been an apparent shift among many new arrivals toward citrus farming.

In 1990, there were 836 households with an average size of 3.23 people. The number of households decreased to 746 in 2000 and the average household size had dropped to 2.96 people. The number of people employed in farming, fishing, forestry, and mining decreased over the last decade from 16.9 percent to 11 percent. The forestry, fishing, hunting, mining, and agriculture industries continued to make up twenty-two percent area's businesses. Retail trade is the second largest industry in the area (Table 6.41).

In 1990, thirty-six percent of the population of Venice lived below the poverty level, but this figure dropped to 18 percent in 2000 (Table 6.41). In 1990, 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 (NMFS, 1999a). In 2000, 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.

Venice is located about 30 miles south of the parish seat Point B 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 (Wilson *et al.*, 1998). Fishing infrastructure in Venice is extensive. There are several seafood dealers and docks; sale and repair facilities for commercial and recreational boats, bait shops, ice houses, boat launches, and several small marinas and marine suppliers (Impact Assessment, 2004). One of the marinas, the Cypress Cove Marina and Lodge, is a large facility offering boat storage, charter services, guided waterfowl hunting with air boat transportation, hotel, restaurant, and various support services essential for recreational fishing and hunting (Impact Assessment, 2004). The majority of business is sport-recreational. 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 (Wilson *et al.*, 1998).

Marina owners suggest that commercial fishing activity has declined over the last several years, and that Venice residents seem to be more focused on recreational fishing and oil field support. A local retail seafood dealer suggests that Louisiana's unpredictable weather and foreign shrimp imports are detrimentally affecting the local commercial fleet. Other informants suggest that the commercial fishing fleet is struggling in many ways, but that the involvement of the larger community in alternative industries, such as offshore oil field support and citrus, is keeping the local economy fairly dynamic (Impact Assessment, 2004). In 2006, 17 commercial, 10 recreational, and 26 charter/headboat HMS permits were issued to addresses in Venice (Table 6.74).

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 law enforcement agents harass them, 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).

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 (NMFS, 1999a).

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 local dealers. In 1997, 60 percent of this business was tuna, 30 percent shark and ten 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.

Table 6.41 Demographic Profile of Venice, Louisiana. Source: U.S. Census, 1990 and 2000.

Demographics	1990	2000
Total Population	2,699	2,220
Sex		
Male	51.4%	51.0%
Female	48.6%	49.0%
Age		
Median Age	26.3	31.7
< 20	42.0%	35.2%
20 - 44	35.1%	35.2%
45 - 64	18.3%	22.0%
> 65	4.6%	7.6%
Race		
White	63.9%	61.9%
Black or African American	31.3%	28.7%
American Indian and Alaska Native	3.3%	3.4%
Asian and Pacific Islander	1.4%	4.0%
Other	0.0%	0.3%
Household		
Total	836	746
Family households	84.7%	78.3%
Nonfamily households	15.3%	21.7%
Average household size	3.23	2.96
Average family size	3.58	3.38
Housing Occupancy		
Total housing units	960	933
Vacant housing units	14.0%	20.0%
Housing Tenure		
Owner-occupied housing units	87.5%	87.1%
Renter-occupied housing units	12.5%	12.9%

Boothville & Venice, Louisiana	1990	2000
Population:	2,699	2,220
Education:		
High school graduates (25 years or older)	43.5%	48.4%
Employment:		
Labor force (16 years and over)	48.1%	53.0%
Unemployed	3.3%	2.0%
Median Household Income	\$ 16,250	\$ 33,813
Individuals Below the Poverty Line	36.2%	17.3%
Employment in some industry sectors:		
Managerial/professional	13.8%	18.1%
Technical, Administrative, & Sales	20.7%	19.5%
Construction, Production, Maintenance, & Transportation	12.1%	40.8%
Farming, fishing, forestry, & mining	16.9%	11.0%
Industry		
Forestry, fishing, hunting, mining, and agriculture	22.5%	22.7%
Construction	10.8%	8.1%
Manufacturing	7.1%	4.8%
Wholesale Trade	9.4%	0.0%
Retail Trade	16.0%	13.1%
Education, health & social services	5.6%	14.4%
Arts, recreation, lodging & food services	0.0%	10.4%

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, demersal fish such as drum, catfish, and sheepshead, from January through May, mullet (for the roe) from October through December (NMFS, 1999a).

The bottom longline shark fishery has been impacted by a variety of regulations since 2004. Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks required release equipment on board shark fishing vessels, as well as the use of non-stainless steel corrodible hooks, and divided the fishing year into three shark seasons instead of two. The Consolidated HMS FMP required vessel owners and operators of longline (bottom and pelagic) fishing vessels to attend a safe handling and release workshop, and that second dorsal and anal fins remain attached through landing. Amendment 2 to the HMS FMP changed the commercial trip limit to 33 non-sandbar large coastal sharks, established a Shark Research Fishery, and requires that all sharks must be landed with their fins naturally attached.

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. 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. Charterboats 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. The marina 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 charterboats. 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. This second marina employs 12 to 15 people in its newly opened hotel and another 15 to 25 in the marina. Eight charterboats operate from the marina, and there is room for ten 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 (NMFS, 1999a).

6.5.17.2 Dulac, Louisiana

Dulac is located in the center of Terrebonne Parish, about 15 miles South of Houma, Louisiana. 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 (Wilson *et al.*, 1998). With easy access to Timbalier Bay and the Gulf of Mexico via the Houma Navigational Canal, many Dulac residents are deeply involved in commercial fishing, and many recreational fishers from Houma and distant Lafayette maintain camps in this area (Impact Assessment, 2004). 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 (Wilson *et al.*, 1998). 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 was 3,273 individuals; it declined to 2,458 in 2000 (Table 6.42). Dulac reported the same number of males as females both 1990 and 2000. Individuals under 20 years old make up the greatest proportion of the population in both 1990 and 2000 with individuals between 20 and 44 comprising the second largest age group. Whites comprise the largest proportion of race-49 and 54 percent in 1990 and 2000, respectively. American Indian and Native Alaskans accounted for 48 and 39 percent of the total population in 1990 and 2000, respectively. As noted in Wilson *et al.* (1998), however, this latter category is made up mostly of the Houma Indians, which is a tribe not recognized by the U.S. government. 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.

In 1990, Dulac had 922 households with an average size of 3.55 persons per household (Table 6.42). 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 individuals 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 individuals 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. In 1990, the largest proportion of the Dulac population was employed in the technical, administrative, and sales industries. Whereas in 2000, the largest proportion of the population was employed in construction, production, maintenance, and transportation. Sixteen percent of the population was employed in the farming, fishing, forestry, and mining industries in 2000. Forestry, fishing, hunting, mining, and agriculture were the largest industries in Dulac in both 1990 and 2000.

The combination of a high concentration of minorities in the Dulac population and the high percentage of individuals living below the poverty line highlights the need to consider Executive Order 12898 or Environmental Justice. Under this Executive Order, agencies determine if there will be disproportionately high and adverse environmental effects of its

regulations on the activities of minority and low-income populations. As mentioned in Chapter 4, some of the preferred alternatives may have some negative social and/or economic impacts in general, but most of these could be mitigated and none of the preferred alternatives are likely to have disproportionate impacts on minority and low-income sectors of the Dulac population.

Table 6.42 Demographic Profile of Dulac, Louisiana. Source: U.S. Census, 1990 and 2000.

Demographics	1990	2000
Total Population	3,273	2,458
Sex		
Male	49.3%	50.0%
Female	50.7%	50.0%
Age		
Median Age	25.5	31.8
≤ 20	41.8%	35.2%
20 – 44	35.2%	32.2%
45 – 64	17.0%	22.8%
≥ 65	6.0%	9.8%
Race		
White	49.4%	54.0%
Black or African American	2.3%	2.5%
American Indian and Alaska Native	48.1%	39.4%
Asian and Pacific Islander	0.0%	0.5%
Other	0.3%	0.5%
Household		
Total Households	922	768
Family households	85.8%	79.3%
Nonfamily households	14.2%	20.7%
Average household size	3.55	3.20
Average family size	3.93	3.55
Housing Occupancy		
Total housing units	1,182	1,063
Vacant housing units	33.0%	27.8%
Housing Tenure		
Owner-occupied housing units	80.1%	79.3%
Renter-occupied housing units	19.9%	20.7%

Dulac, Louisiana	1990	2000
Population:	3,273	2,458
Education:		
High school graduates (25 years or older)	27.1%	39.1%
Employment:		
Labor force (16 years and over)	37.8%	44.9%
Unemployed	8.0%	3.0%
Median Household Income	\$ 12,653	\$ 22,900
Individuals Below the Poverty Line	49.3%	30.9%
Employment in some industry sectors:		
Managerial/professional	5.7%	12.4%
Technical, Administrative, & Sales	18.1%	17.7%
Construction, Production, Maintenance, & Transportation	17.2%	41.4%
Farming, fishing, forestry, & mining	12.3%	15.9%
Industry		
Forestry, fishing, hunting, mining, and agriculture	23.6%	25.9%
Construction	3.7%	3.1%
Manufacturing	14.0%	10.0%
Wholesale Trade	8.5%	5.7%
Retail Trade	17.7%	10.3%
Education, health & social services	9.7%	8.5%
Arts, recreation, lodging & food services	0.0%	10.7%

Pelagic longline fishermen in Dulac target yellowfin tuna all year. Dulac longline vessels do not target swordfish, 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 causing a reduction in the community's employment rate. In 2005, HMS permit data show only one dealer in Dulac with several HMS dealer permits.

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 Vietnamese-American may be impacted more intensely by changes in the regulations given the extent of their investment in this fishery (NMFS, 1999a).

Dulac was also a homeport 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 associated with small vessels (Wilson *et al.*, 1998). Typically, sharks are caught between five and 20 miles from shore. The shark bottom longline fishery has been impacted by a variety of regulations since 2004. Amendment 1 to the FMP for Atlantic Tunas, Swordfish, and Sharks required release equipment on board shark fishing vessels, as well as the use of non-stainless steel corrodible hooks, and divided the fishing year into three shark seasons instead of two. The Consolidated HMS FMP required vessel owners and operators of longline (bottom and pelagic) fishing vessels to attend a safe handling and release workshop, and that second dorsal and anal fins remain attached through landing. Amendment 2 to the HMS FMP changed the commercial trip limit to 33 non-sandbar large coastal sharks, established a Shark Research Fishery, and requires that all sharks must be landed with their fins naturally attached. 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. The local fishermen, fishing for shark in state waters, use a gillnet and fish under a special state license because longlining for sharks in state waters is banned. In 2006, approximately 98 percent of HMS permits issued to addresses in Dulac were strictly for commercial use (

Table 6.75).

6.5.17.3 Grand Isle, Louisiana

The community of Grand Isle is located in Jefferson Parish on the only inhabited barrier island in Louisiana (MRAG Americas, Inc., 2008). It was included because of its high number of recreational permits in 2006 (Table 6.76) compared to its low population (Table 6.43), although fishing effort on HMS species in this area is minimal (MRAG Americas, Inc., 2008). Only one recreational marina remained in 2006, as the effects of Hurricane Katrina wiped out several recreational marinas in the area (MRAG Americas, Inc., 2008).

Table 6.43 Demographic Profile of Grand Isle, Louisiana

Factor	1990	2000
Total population	1,455	1,541
Gender Ratio M/F (Number)	738/717	788 / 753
Age (Percent of total population)		
Under 18 years of age	28.4	23.7
18 to 64 years of age	49.4	63.1
65 years and over	7.8	13.2
Ethnicity or Race (Percent)		
White	99.5	96
Black or African American	0.1	0.2
American Indian and Alaskan Native	0.4	2.3
Asian	0.0	0.2
Native Hawaiian and other Pacific Islander	N/A	<0.1
Some other race	0.0	0.4
Two or more races	N/A	0.9
Hispanic or Latino (any race)	0.8	1.5
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	23.9	17
Percent high school graduate or higher	57	68.3
Percent with a Bachelor's degree or higher	5.6	13.3
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	28.2	18.4
And Percent who speak English less than very well	10.9	3.2
Household income (Median \$)	19,454	33,548
Poverty Status (Percent of population with income below poverty line)	25.8	13.2
Percent female headed household	9.7	8.4
Home Ownership (Percent)		
Owner occupied	74	80.1
Renter occupied	26	19.9
Value Owner-occupied Housing (Median \$)	42,100	69,500
Monthly Contract Rent (Median \$)	249	409
Employment Status (Population 16 yrs and over)		
Percent in the labor force	55.1	57.8
Percent of civilian labor force unemployed	3.9	4.7
Occupation** (Percent in workforce)		
Management, professional, and related occupations	N/A	22
Service occupations	N/A	16.9
Sales and office occupations	N/A	22.5
Farming, fishing, and forestry occupations	5.4	8.8
Construction, extraction, and maintenance occupations	N/A	13.9
Production, transportation, and material moving occupations	N/A	15.9
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining	13.9	15.3
Manufacturing	17.6	8.9
Percent government workers	13.8	14.2

6.5.18 Texas

The population of Texas has increased by nearly 4 million people over the past decade, reaching 20.1 million in 2000 (Table 6.44). The percentage of individuals 25 years and older with a high school diploma and/or a graduate level degree has increased slightly. The percentage of employed individuals, the unemployment rate, and percentage of individuals below the poverty line, have all declined over the past decade. As with many of the other states, employment in the farming, fishing, forestry, and mining industries has declined, whereas the education, health, and social services industries provided the greatest employment opportunities in 2000.

In the state of Texas during 2008, 28 residents possessed a commercial tuna permit (Table 6.50), six a commercial shark permit (Table 6.52), and four a commercial swordfish permit (Table 6.53). The commercial shark fishery generally tends to be a small portion of the commercial fisheries of Texas. There are 20 licensed HMS dealers for tuna, shark, and swordfish in Texas (Table 6.51).

In 2008, there were 724 Texas residents that held an HMS angling permit (Table 6.48). NMFS (2008) did not estimate the number of saltwater anglers or trips taken in 2007, but the ASA estimated that saltwater angling in Texas generated over \$981 million in retail sales and supported 18,542 jobs (Southwick Associates, 2007). The number of charter/headboat permit holders from Texas has increased from 129 in 2003 to 172 in 2008 (Table 6.49) with a large concentration of the 2008 permit holders in Port Aransas (Figure 9.8). Most of these take shark as an incidental catch to other near-shore and offshore fish. In addition to Port Aransas, Freeport, Galveston, Houston, Port Isabel, and Port O'Connor, as well as several other communities, are home to HMS angling permit holders.

Table 6.44 Texas Demographic Profile. Source: U.S. Census, 1990 and 2000.

Texas	1990	2000
Population:	16,986,510	20,851,820
Education:		
High school graduates (25 years or older)	72.1%	75.7%
Employment:		
Labor force (16 years and over)	66.0%	63.6%
Unemployment Rate	7.1%	6.1%
Median Household Income	\$27,016	\$39,927
Individuals below the poverty line*	18.1%	15.4%
Employment in some industry sectors:		
Farming, fishing, forestry & mining	4.9%	2.7%
Construction	6.7%	8.1%
Wholesale trade	4.9%	3.9%
Retail	17.4%	12.0%
Manufacturing	14.4%	11.8%
Education, health & social services	22.5%	19.3%
Arts, recreation, lodging & food services	1.2%	7.3%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

6.5.18.1 Freeport, Texas

Freeport, located approximately 45 miles south of Houston, TX and home to 12,708 residents according to 2000 census data (Table 6.45), has a highly diversified economy that supports both recreational and commercial HMS activities (Impact Assessment, 2005). There were 18 General category HMS commercial fishing permits, 66 HMS recreational angling fishing permits, and 48 HMS charter/headboat permits issued to addresses in Grand Isle in 2006 (Table 6.77). There is a small offshore pelagic commercial fleet in the area, and a much larger recreational charter fleet that targets tuna in the winter and billfish in the summer (MRAG Americas, Inc., 2008).

Table 6.45 Freeport, Texas Demographic Profile. Source MRAG Americas, Inc. (2008).

Factor	1990	2000
Total population	11,389	12,708
Gender Ratio M/F (Number)	5,692/5,697	6,353 / 6,355
Age (Percent of total population)		
Under 18 years of age	34.2	35.7
18 to 64 years of age	56.7	56.2
65 years and over	9.1	8.1
Ethnicity or Race (Percent)		
White	62.2	61.6
Black or African American	15.3	13.4
American Indian and Alaskan Native	0.4	0.6
Asian	0.3	0.4
Native Hawaiian and other Pacific Islander	0.0	<0.1
Some other race	21.9	20.9
Two or more races	0.0	3.2
Hispanic or Latino (any race)	38.6	52
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	21.3	22.6
Percent high school graduate or higher	58.1	55.1
Percent with a Bachelor's degree or higher	6.4	5.4
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	31.9	45.3
And Percent who speak English less than very well	13.7	23.5
Household income (Median \$)	21,483	30,245
Poverty Status (Percent of population with income below poverty line)	24.1	22.3
Percent female headed household	13.4	16.8
Home Ownership (Percent)		
Owner occupied	57	57
Renter occupied	43	43
Value Owner-occupied Housing (Median \$)	35,800	35,700
Monthly Contract Rent (Median \$)	259	439
Employment Status (Population 16 yrs and over)		
Percent in the labor force	63.6	54.3
Percent of civilian labor force unemployed	9.5	13.7

Factor	1990	2000
Occupation** (Percent in workforce)		
Management, professional, and related occupations	N/A	16.4
Service occupations	N/A	16.8
Sales and office occupations	N/A	24
Farming, fishing, and forestry occupations	2.3	0.1
Construction, extraction, and maintenance occupations	N/A	20.5
Production, transportation, and material moving occupations	N/A	22.2
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining	3.8	0.4
Manufacturing	24.9	17.7
Percent government workers	10.1	10.5

6.5.18.2 Port Aransas, Texas

Port Aransas is a small community of 3,370 residents (Table 6.46) located in Nueces County on the northern tip of Mustang Island, approximately 32 miles southwest of Corpus Christi (MRAG Americas, Inc., 2008; Impact Assessment, 2005). It is a popular destination for sport fishermen and population in the area can expand in the summer months to over 20,000 during the peak tourist season (Impact Assessment, 2005). Recreational fishermen in the area mainly target inshore species, but there are many offshore charters available that target HMS, such as tuna, shark, and billfish (MRAG Americas, Inc., 2008). White and blue marlin, tuna, sailfish and swordfish are also targeted in four tournaments during August (MRAG Americas, Inc., 2008). The Consolidated HMS FMP limited the amount of blue and white marlin that could be landed recreationally (250 combined per year), and required billfish tournament participants to use non-offset circle hooks when using natural baits or natural bait/artificial lure combinations. There were 43 HMS charter/headboat fishing permits and 93 HMS recreational angling fishing permits issued to addresses in Grand Isle in 2006 (Table 6.78). Commercial fishing efforts for HMS generally do not take place in Port Aransas.

Table 6.46 Port Aransas, Texas Demographic Profile. Source: MRAG Americas, Inc. (2008).

Factor	1990	2000
Total population	2,233	3,370
Gender Ratio M/F (Number)	1,146 / 1,087	1,753 / 1,617
Age (Percent of total population)		
Under 18 years of age	21.6	18.9
18 to 64 years of age	64.5	65.4
65 years and over	13.9	15.7
Ethnicity or Race (Percent)		
White	96.1	93.9
Black or African American	0.2	0.4
American Indian and Alaskan Native	0.4	1.2
Asian	1.3	0.9
Native Hawaiian and other Pacific Islander	N/A	<0.1
Some other race	1.9	2.2
Two or more races	N/A	1.4
Hispanic or Latino (any race)	6.2	6.1
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	3.7	2.5
Percent high school graduate or higher	81.2	87.4
Percent with a Bachelor's degree or higher	23.9	27.9
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	8.3	9
And Percent who speak English less than very well	3.1	2.2
Household income (Median \$)	23,396	39,432
Poverty Status (Percent of population with income below poverty line)	15.8	11.3
Percent female headed household	8.1	7.3
Home Ownership (Percent)		
Owner occupied	59	69.3
Renter occupied	41	30.7
Value Owner-occupied Housing (Median \$)	67,100	110,500
Monthly Contract Rent (Median \$)	317	571
Employment Status (Population 16 yrs and over)		
Percent in the labor force	65.6	61.5
Percent of civilian labor force unemployed	4.6	4.1
Occupation** (Percent in workforce)		
Management, professional, and related occupations	N/A	36.4
Service occupations	N/A	21
Sales and office occupations	N/A	20.3
Farming, fishing, and forestry occupations	6.3	2.8
Construction, extraction, and maintenance occupations	N/A	11.8
Production, transportation, and material moving occupations	N/A	7.7
Industry** (Percent in workforce)		
Agriculture, forestry, fishing, hunting and mining	7.3	3.6
Manufacturing	5	1
Percent government workers	20.6	21.4

6.5.19 Puerto Rico

The population in Puerto Rico increased by nearly 300,000 people in the last decade (Table 6.47). The percentage of individuals 25 years and older with a high school diploma and/or a graduate level degree has increased by over ten percent in the last decade. The percentage of employed individuals, unemployment rate, and percentage of individuals below the poverty line all declined through the nineties. Education, health, and social services provide the greatest sources of employment. The farming, fishing, forestry, and mining employed less than two percent of the population in 2000.

While Puerto Rico was home to 103 commercial tuna permit holders in 2008, there were no permit holders for sharks or swordfish (Table 6.50; Table 6.52, and Table 6.53). A large number of the commercial tuna permit holders are in Aguadilla and another large group is located in Rincon. There are six HMS dealer permit holders in Puerto Rico; four for tunas in Aguadilla; one for tunas in Aquada; and one for sharks and swordfish in San Juan (Table 6.51).

Table 6.47 Puerto Rico Demographic Profile. Source: U.S. Bureau of the Census, 1990 and 2000.

Puerto Rico	1990	2000
Population:	3,522,037	3,808,610
Education:		
High school graduates (25 years or older)	49.7%	60.0%
Employment:		
Labor force (16 years and over)	47.3%	40.7%
Unemployment Rate	20.4%	19.2%
Median Household Income		\$ 14,412
Individuals below the poverty line*	58.9%	48.2%
Employment in some industry sectors:		
Farming, fishing, forestry & mining		1.7%
Construction		
Wholesale trade		4.4%
Retail		11.7%
Manufacturing		13.5%
Education, health & social services		19.3%
Arts, recreation, lodging & food services		6.5%

*U.S. Census uses data from 1989 and 1999 to estimate these values.

The recreational saltwater fisheries in Puerto Rico attracted 185,000 anglers in 2007, collectively making 1,080,000 fishing trips (NMFS, 2008). Of these anglers, 16 percent of the anglers were not from Puerto Rico. In 2008, 909 HMS angling permit holders were residing in Puerto Rico (Table 6.48). The following communities have the largest concentrations of HMS anglers: San Juan, Guaynabo, Arecibo, Mayaguez, Vega Baja, Ponce, Carolina, as well as several other communities with smaller concentrations of permit holders. Twenty-two vessels from Puerto Rico held an HMS charter/headboat permit in 2008 (Table 6.49), specifically several were located in San Juan and Rincon. Due to the number of HMS permits issued to individuals located in San Juan, a community profile should be developed in the future.

Generally, the fishing industry of Puerto Rico is made up of private clubs for the upper and middle class and small, and poor artisanal fishing communities. There are approximately 2,500 licensed artisanal fishermen who are required to report their landings to the Office of Natural Resources' Fisheries Laboratory. However, interviews and informal conversation with artisanal fishermen suggest that the reported and actual landings differ widely (Wilson *et al.*, 1998). At the local level, there are artisanal fishermen's associations (villages) and recreational fishermen's membership clubs.

The fishing industry is not a prominent economic activity in Puerto Rico and variations in fishing incomes have little impact on the island's economy. Most of the recreational fishing activity centers around the capital city of San Juan. Artisanal fishing communities are found throughout the island. These communities are extremely poor and will likely be the communities most affected by changes in regulations. The extremely deep inshore waters off these areas make billfish and other highly migratory species accessible to the artisanal fishery.

6.5.19.1 Arecibo, Puerto Rico

The Arecibo population in 1990 was 93,385 people; approximately 99 percent of those people were born in Puerto Rico or in the United States (NMFS, 1999b). The majority of the population is classified as Hispanic or Latino. Naturalized citizens and non-citizens each make up less than one percent of the population of Arecibo, but their ethnicity is unknown. According to interviews with local government officials, the vast majority of immigrants in Arecibo are from the Dominican Republic; however, there is no way to confirm that information due to waves of illegal immigration. In 2000, the U.S. Census reported the Arecibo population grew by less than seven percent (101,131 people).

The number of households in Arecibo grew by almost ten thousand throughout the last decade, from 24,333 to 34,245 households. In 1990, the median household income is \$7,520. By 2000, the median household income increased by \$5,000 to \$12,520. In the early nineties, thirty-two percent of the households are receiving some kind of public assistance; the average public assistance income is \$1,939. The number of individuals below the poverty line did decrease over the past decade, from 73 percent to almost 51 percent. The unemployment rate also declined from 23 percent to eight percent in 2000. Of the population age 16 and older, 43.9 percent are in the civilian labor force in 1990, whereas this number declined to 38 percent in 2000. In 1990, the highest employing industries for men and women were manufacturing and services. In 2000, the construction, production, maintenance, and transportation industries supplied the greatest number of employment opportunities.

Recreational fishing is the predominant mode of participation in the HMS fisheries in Arecibo, Puerto Rico. Fifty-one Arecibo residents hold an HMS angling permit, but none of 28 charter/headboat permit holders in Puerto Rico are from Arecibo. Two Arecibo residents hold a commercial tuna permit. Despite the lack of commercial shark and swordfish permit holders in Puerto Rico, there is one HMS permitted dealer for sharks and swordfish in San Juan, one for tunas in Aquada, and four for tunas in Aquadilla.

The Arecibo Yacht Club is a private club created by and for the local recreational fishermen. The members of the club formed the Association of Sport Fishing of Arecibo and its facilities. Members of the Arecibo Yacht Club organize marlin and inshore fishing tournaments. According to local government officials, the municipality does not get any economic benefit from those tournaments because all the profits go directly to the Club, which is a private business. The tournament does not affect the economy of the region even indirectly by promoting related business because the participants are mainly the same local fishermen. The marlin tournament is held in May. However, according to the commodore of the club, the tournaments are not always lucrative, even for the club (Wilson *et al.*, 1998). The club has approximately 253 members, and among them, 82 are boat owners. The size of the vessels fluctuates between 18 and 50 feet. The larger boats, measuring 33 feet or more, have a crew consisting of a captain and a mate. The crew is in charge of the maintenance of the boats while in the marina and directing the fishing journeys. The facilities of the club and marina were constructed with private funds and are a very exclusive place for the middle-upper class of Arecibo. Although, the commodore reports that in the club's facilities there is an area available for the boats of the artisanal fishermen.

Among the members are part-time artisanal fishermen, but most of them are recreational fishermen. However, usually they come out on the weekends and use the money they obtain from the catch to pay for the trip expenses. The artisanal fishermen catch mostly red snapper and grouper by bottom fishing. This kind of fishing is done with a line that goes to the bottom of the sea, mostly in rocky areas. The rest of the fishermen mainly target dolphin and tuna. To catch these species, they use a hand line, or a single cord with one hook. From May through October, marlin, white needle, and blue needle are typically found seven to ten miles from the shore.

6.6 Future Assessments

In the 2008 assessment, MRAG Americas, Inc. developed a list of HMS communities using permit and census data similar to a study by Sepez *et al.* (2005). This assessment yielded 14 new community profiles, and is a method that is reproducible and can be applied in the future to identify new communities that have emerging involvement in HMS fisheries, as well as monitor changes in HMS communities that have been profiled in the past. Along with evaluating the number of HMS permits in relation to population to determine areas of concern NMFS should continue to consult with the HMS permit databases, landings information, and HMS AP members to determine the most appropriate community profiles for HMS-related fisheries.

Table 6.48 Number and Percentage of HMS Angling Permits by State and Country as of May 2008.

Angling Permits		
State	Total	Percentage
Florida	4276	15.9%
Massachusetts	3552	13.2%
New Jersey	3200	11.9%
North Carolina	2148	8.0%
New York	2025	7.5%
Pennsylvania	1510	5.6%
Maryland	1455	5.4%
Virginia	1285	4.8%
South Carolina	955	3.5%
Puerto Rico	909	3.4%
Connecticut	857	3.2%
Delaware	737	2.7%
Texas	724	2.7%
Louisiana	663	2.5%
Rhode Island	507	1.9%
Alabama	430	1.6%
New Hampshire	426	1.6%
Maine	419	1.6%
Georgia	244	0.9%
Mississippi	239	0.9%
Tennessee	44	0.2%
Virgin Islands	44	0.2%
Vermont	38	0.1%
Ohio	33	0.1%
Illinois	24	0.1%
Michigan	23	0.1%
West Virginia	16	0.1%

State	Total	Percentage
Missouri	14	0.1%
Washington DC	12	0.0%
Indiana	11	0.0%
Wisconsin	11	0.0%
Arkansas	9	0.0%
California	9	0.0%
Minnesota	9	0.0%
Oklahoma	8	0.0%
British Virgin Islands	7	0.0%
Colorado	7	0.0%
Arizona	6	0.0%
Kansas	5	0.0%
Kentucky	5	0.0%
Canada	4	0.0%
Iowa	4	0.0%
Nebraska	3	0.0%
Nevada	4	0.0%
South Dakota	4	0.0%
North Dakota	3	0.0%
New Mexico	3	0.0%
Washington	3	0.0%
Wyoming	3	0.0%
Oregon	2	0.0%
Cayman Islands	1	0.0%
Guam	1	0.0%
Hawaii	1	0.0%
Montana	1	0.0%
Total	26933	100%

Table 6.49 Number and Percentage of HMS Charter/Headboat Permits by State and Country as of May 2008.

Charter/Headboat Permits		
State	Permits	Percentage
Florida	699	16.3%
Massachusetts	649	15.1%
New Jersey	553	12.9%
North Carolina	431	10.0%
New York	369	8.6%
Texas	172	4.0%
Maryland	162	3.8%
South Carolina	159	3.7%
Virginia	148	3.4%
Rhode Island	142	3.3%
Pennsylvania	134	3.1%
Deleware	121	2.8%
Connecticut	114	2.7%
Maine	88	2.0%
Louisiana	78	1.8%
New Hampshire	67	1.6%
Alabama	66	1.5%
Georgia	35	0.8%
Mississippi	27	0.6%
Puerto Rico	22	0.5%
Virgin Islands	21	0.5%
Michigan	7	0.2%
Minnesota	6	0.1%
Tennessee	5	0.1%
Illinois	3	0.1%
Vermont	3	0.1%
Hawaii	2	0.0%
Kentucky	2	0.0%
Missouri	2	0.0%
Ohio	2	0.0%
West Virginia	2	0.0%
California	1	0.0%
Colorado	1	0.0%
Washington DC	1	0.0%
Indiana	1	0.0%
Nevada	1	0.0%
Oklahoma	1	0.0%
Total	4297	100.0%

Table 6.50 **Number and Percentage of Commercial Tuna Permits by State and Country in 2008.**

Commercial Tuna Permits		
State	Permits	Percentage
Massachusetts	1248	28.9
North Carolina	645	15.0
Maine	439	10.2
New Jersey	292	6.8
Florida	264	6.1
New York	261	6.1
New Hampshire	231	5.4
Rhode Island	183	4.2
Connecticut	140	3.2
Puerto Rico	103	2.4
Virginia	85	2.0
South Carolina	71	1.6
Louisiana	70	1.6
Pennsylvania	60	1.4
Maryland	46	1.1
Deleware	42	1.0
Texas	28	0.6
Virgin Islands	22	0.5
Alabama	20	0.5
Georgia	19	0.4
Mississippi	15	0.3
Vermont	8	0.2
West Virginia	4	0.1
Colorado	3	0.1
Missouri	2	0.0
Oklahoma	2	0.0
Alaska	1	0.0
Arkansas	1	0.0
California	1	0.0
Minnesota	1	0.0
Nevada	1	0.0
Oregon	1	0.0
Tennnesse	1	0.0
Washington	1	0.0
Total	4311	100

Table 6.51 Number and Percentage of HMS Shark, Swordfish, and Tuna Dealers by State and Country as of August 2008.

HMS Shark, Swordfish and Tuna Permits		
State	Permits	Percentage
FL	134	19.3%
MA	114	16.4%
NY	82	11.8%
NJ	75	10.8%
NC	58	8.4%
RI	47	6.8%
SC	32	4.6%
VA	27	3.9%
LA	23	3.3%
ME	19	2.7%
CA	17	2.4%

HMS Shark, Swordfish and Tuna Permits		
State	Permits	Percentage
MD	13	1.9%
TX	12	1.7%
HI	8	1.2%
PR	8	1.2%
NH	5	0.7%
AL	4	0.6%
VI	4	0.6%
CT	3	0.4%
GA	3	0.4%
DE	2	0.3%
PA	2	0.3%
WA	2	0.3%
Total	694	100.0%

Table 6.52 Number and Percentage of Directed and Incidental Shark Permit Holders by State as of February 2008.

Shark Permits		
State	# of Permits	Percentage
Florida	277	55.5%
New Jersey	54	10.8%
Louisiana	39	7.8%
North Carolina	30	6.0%
South Carolina	20	4.0%
Massachusetts	17	3.4%
New York	15	3.0%
Rhode Island	7	1.4%
Maryland	6	1.2%

State	# of Permits	Percentage
Mississippi	6	1.2%
Texas	6	1.2%
Virginia	5	1.0%
Alabama	5	1.0%
Maine	3	0.6%
Connecticut	3	0.6%
Georgia	3	0.6%
New Hampshire	2	0.4%
Delaware	1	0.2%
Total	499	100.0%

Table 6.53 **Number and Percentage of Swordfish Permit Holders by State as of February 2008.**

Swordfish Permits		
State	# of Permits	Percentage
Florida	144	42.6%
New Jersey	50	14.8%
Louisiana	37	10.9%
Massachusetts	25	7.4%
Rhode Island	18	5.3%
New York	17	5.0%
North Carolina	16	4.7%
Maryland	6	1.8%
South Carolina	6	1.8%
Virginia	4	1.2%
Texas	4	1.2%
Maine	3	0.9%
Connecticut	3	0.9%
Alabama	2	0.6%
New Hampshire	1	0.3%
Delaware	1	0.3%
Mississippi	1	0.3%
Total	338	100.0%

Table 6.54 2006 Commercial HMS landings (lb) by community according to MRAG Americas, Inc. (2008).

Community	Swordfish	Bigeye Tuna	Bluefin Tuna	Yellowfin Tuna	Albacore Tuna	Skipjack Tuna	Blue Shark	Hammerhead	Thresher	Silky	Spinner	Tiger	Sandbar	Shortfin mako
Wakefield	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
New Bedford	100,449	17,436	2,225	54,544	7,620	0	0	587	0	44	0	580	42	6,594
Gloucester	25,501	6,547	1,483	1,844	1,889	0	0	0	0	0	0	0	0	4,710
Montauk	848	1,172	0	1,526	96	0	0	0	0	0	0	0	0	157
Barneгат Light	146,859	68,297	9,640	203,427	31,666	0	0	0	0	153	0	0	166	13,660
Brielle	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cape May	28,044	11,302	1,483	116,843	6,500	0	465	587	0	0	0	773	6,644	3,454
Ocean City	47,540	25,499	3,337	100,569	4,643	17	58	0	0	3,797	0	0	21,885	14,838
Atlantic Beach	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wanchese	231,768	266,710	14,460	1,004,736	4,899	370	2,035	17,202	3,335	175	5,856	725	74,209	44,513
Hatteras Village	0	0	0	0	0	0	0	168	0	0	0	145	11,503	0
Morehead City	4,026	345	0	127	224	0	0	0	0	0	0	0	0	79
Beaufort	176,952	3,928	1,854	30,578	640	0	0	2,517	0	502	48	0	8,139	4,161
Islamorada	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Port Salerno	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Madeira Beach	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Apalachicola	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Destin	2,755	551	0	4,132	0	0	0	1,762	0	0	1,104	1,208	12,043	79
Orange Beach	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dulac	274,010	45,416	23,359	1,090,811	7,204	470	116	0	0	0	0	0	0	1,021
Venice	2,543	689	0	58,930	0	0	0	0	0	0	0	0	0	236
Grand Isle	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Port Aransas	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Freeport	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 6.55 HMS Permits for Gloucester, Massachusetts, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	145	3.3%
Shark Directed	2	0.9%
Shark Incidental	2	0.7%
Swordfish Directed	3	1.6%
Swordfish Incidental	2	0.7%
HMS General	145	3.2%
HMS Charter/Headboat	32	0.8%
HMS Longline	4	1.7%
Tuna Dealer	12	2.9%

Table 6.56 HMS Permits for New Bedford, Massachusetts, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	36	0.8%
Shark Directed	0	-
Shark Incidental	3	1.0%
Swordfish Directed	3	1.6%
Swordfish Incidental	3	1.0%
HMS General	36	0.8%
HMS Charter/Headboat	1	0.02%
HMS Longline	3	1.3%
Tuna Dealer	18	4.4%

Table 6.57 HMS Permits for Wakefield, Rhode Island, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	44	0.2%
Shark Directed	0	-
Shark Incidental	0	-
Swordfish Directed	0	-
Swordfish Incidental	0	-
HMS General	15	0.3%
HMS Charter/Headboat	14	0.3%
HMS Longline	0	-
Tuna Dealer	9	2.2%

Table 6.58 HMS Permits for Montauk, New York, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	187	0.7%
Shark Directed	0	-
Shark Incidental	5	1.7%
Swordfish Directed	3	1.6%
Swordfish Incidental	5	1.7%
HMS General	65	1.5%
HMS Charter/Headboat	78	1.8%
HMS Longline	3	1.3%
Tuna Dealer	5	1.2%

Table 6.59 HMS Permits for Barnegat Light, New Jersey, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	11	0.2%
Shark Directed	17	7.4%
Shark Incidental	5	1.7%
Swordfish Directed	14	7.7%
Swordfish Incidental	5	1.7%
HMS General	11	0.2%
HMS Charter/Headboat	9	0.2%
HMS Longline	15	6.3%
Tuna Dealer	4	0.9%

Table 6.60 HMS Permits for Brielle, New Jersey, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	11	0.2%
Shark Directed	0	-
Shark Incidental	1	0.3%
Swordfish Directed	0	-
Swordfish Incidental	1	0.3%
HMS General	11	0.2%
HMS Charter/Headboat	37	0.8%
HMS Longline	0	-
Tuna Dealer	1	0.1%

Table 6.61 HMS Permits for Cape May, New Jersey, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	538	2.1%
Shark Directed	2	0.9%
Shark Incidental	8	2.7%
Swordfish Directed	2	1.1%
Swordfish Incidental	8	2.7%
HMS General	30	0.7%
HMS Charter/Headboat	88	2.1%
HMS Longline	4	1.7%
Tuna Dealer	4	0.9%

Table 6.62 HMS Permits for Ocean City, Maryland, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	667	2.5%
Shark Directed	4	1.7%
Shark Incidental	2	0.7%
Swordfish Directed	6	3.5%
Swordfish Incidental	2	0.7%
HMS General	31	0.7%
HMS Charter/Headboat	110	2.6%
HMS Longline	4	1.7%
Tuna Dealer	2	0.4%

Table 6.63 HMS Permits for Atlantic Beach, North Carolina, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	145	0.5%
Shark Directed	0	-
Shark Incidental	0	-
Swordfish Directed	0	-
Swordfish Incidental	0	-
HMS General	48	1.1%
HMS Charter/Headboat	37	0.8%
HMS Longline	0	-
Tuna Dealer	1	0.2%

Table 6.64 HMS Permits for Beaufort, North Carolina, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	154	0.6%
Shark Directed	0	1.5%
Shark Incidental	3	-
Swordfish Directed	0	-
Swordfish Incidental	0	-
HMS General	31	0.7%
HMS Charter/Headboat	22	0.5%
HMS Longline	0	-
Tuna Dealer	6	1.5%

Table 6.65 HMS Permits for Hatteras Village, North Carolina, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	16	0.3%
Shark Directed	3	1.3%
Shark Incidental	2	0.7%
Swordfish Directed	0	-
Swordfish Incidental	2	0.7%
HMS General	16	0.4%
HMS Charter/Headboat	57	1.3%
HMS Longline	1	0.4%
Tuna Dealer	1	0.2%

Table 6.66 HMS Permits for Morehead City, North Carolina, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	294	1.1%
Shark Directed	0	-
Shark Incidental	1	0.3%
Swordfish Directed	0	-
Swordfish Incidental	1	0.3%
HMS General	83	1.8%
HMS Charter/Headboat	49	1.1%
HMS Longline	0	-
Tuna Dealer	3	0.7%

Table 6.67 HMS Permits for Wanchese, North Carolina, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	32	0.7%
Shark Directed	12	5.2%
Shark Incidental	2	0.7%
Swordfish Directed	8	4.4%
Swordfish Incidental	2	0.7%
HMS General	32	0.7%
HMS Charter/Headboat	17	0.4%
HMS Longline	11	4.7%
Tuna Dealer	5	1.2%

Table 6.68 HMS Permits for Apalachicola, FL, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	5	0.02%
Shark Directed	0	-
Shark Incidental	1	0.3%
Swordfish Directed	0	-
Swordfish Incidental	1	0.3%
HMS General	1	-
HMS Charter/Headboat	1	0.02%
HMS Longline	0	-
Tuna Dealer	1	0.2%

Table 6.69 HMS Permits for Destin, Florida, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	116	0.4%
Shark Directed	7	3.0%
Shark Incidental	6	2.0%
Swordfish Directed	5	2.7%
Swordfish Incidental	6	2.0%
HMS General	7	0.2%
HMS Charter/Headboat	48	1.1%
HMS Longline	7	3.0%
Tuna Dealer	1	0.2%

Table 6.70 HMS Permits for Islamorada, Florida, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	3	0.06%
Shark Directed	1	0.4%
Shark Incidental	0	-
Swordfish Directed	0	-
Swordfish Incidental	1	0.3%
HMS General	3	0.1%
HMS Charter/Headboat	45	1.0%
HMS Longline	0	-
Tuna Dealer	0	-

Table 6.71 HMS Permits for Madeira Beach, Florida, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	0	-
Shark Directed	17	7.0%
Shark Incidental	4	1.3%
Swordfish Directed	5	2.7%
Swordfish Incidental	4	1.3%
HMS General	0	-
HMS Charter/Headboat	1	0.02%
HMS Longline	8	3.4%
Tuna Dealer	0	-

Table 6.72 HMS Permits for Port Salerno, Florida, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	5	.02%
Shark Directed	13	5.6%
Shark Incidental	4	1.3%
Swordfish Directed	0	-
Swordfish Incidental	4	1.3%
HMS General	3	0.1%
HMS Charter/Headboat	0	-
HMS Longline	0	-
Tuna Dealer	0	-

Table 6.73 HMS Permits for Orange Beach, Alabama, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	205	0.8%
Shark Directed	0	-
Shark Incidental	1	0.3%
Swordfish Directed	0	-
Swordfish Incidental	1	0.3%
HMS General	8	0.2%
HMS Charter/Headboat	49	1.2%
HMS Longline	1	0.4%
Tuna Dealer	0	-

Table 6.74 HMS Permits for Venice, Louisiana, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	10	0.2%
Shark Directed	0	-
Shark Incidental	2	0.7%
Swordfish Directed	1	0.5%
Swordfish Incidental	2	0.7%
HMS General	10	0.2%
HMS Charter/Headboat	26	0.6%
HMS Longline	3	1.3%
Tuna Dealer	1	0.2%

Table 6.75 HMS Permits for Dulac, Louisiana, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	0	-
Shark Directed	1	0.4%
Shark Incidental	10	3.4%
Swordfish Directed	10	5.5%
Swordfish Incidental	10	3.4%
HMS General	0	-
HMS Charter/Headboat	1	0.02%
HMS Longline	22	9.3
Tuna Dealer	2	0.5%

Table 6.76 HMS Permits for Grand Isle, Louisiana, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	55	0.2%
Shark Directed	0	-
Shark Incidental	0	-
Swordfish Directed	0	-
Swordfish Incidental	0	-
HMS General	4	0.1%
HMS Charter/Headboat	6	0.1%
HMS Longline	0	-
Tuna Dealer	0	-

Table 6.77 HMS Permits for Freeport, Texas, 2006 (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	66	1.5%
Shark Directed	0	-
Shark Incidental	0	-
Swordfish Directed	0	-
Swordfish Incidental	0	-
HMS General	18	0.4%
HMS Charter/Headboat	48	1.1%
HMS Longline	0	-
Tuna Dealer	5	1.2%

Table 6.78 **HMS Permits for Port Aransas, Texas, 2006** (MRAG Americas, Inc., 2008)

Type of Permit	Frequency	Percent of total
HMS Angling	93	0.3%
Shark Directed	0	-
Shark Incidental	0	-
Swordfish Directed	0	-
Swordfish Incidental	0	-
HMS General	3	0.1%
HMS Charter/Headboat	43	1.0%
HMS Longline	0	-
Tuna Dealer	0	-

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