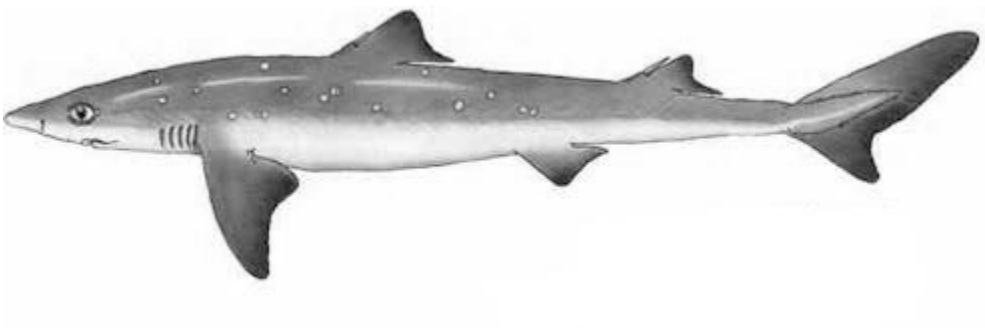
2010
Spiny Dogfish Specifications, Environmental Assessment, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis



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1.0 EXECUTIVE SUMMARY

Statutory/Regulatory Basis
Pursuant to the Magnuson Stevens Fishery Conservation and Management Act of 1976 (MSA) as amended, the Northwest Atlantic stock of spiny dogfish (*Squalus acanthias*) is jointly managed by the Mid-Atlantic (MAFMC) and New England Fishery Management Councils (NEFMC; Councils) through the Federal Spiny Dogfish Fishery Management Plan (FMP). In accordance with the FMP, this document has been prepared as part of the specification process through which the Councils recommend an annual commercial quota and other management measures for spiny dogfish (50 CFR § 648 Subpart L). Additionally, in accordance with the National Environmental Policy Act of 1969 (NEPA) and the National Oceanic and Atmospheric Administration (NOAA) Administrative Order (NAO) 216-6, the environmental impacts of the recommended management actions and the anticipated level of significance of these impacts are addressed.

Management History/Objectives
The Federal Spiny Dogfish FMP was developed in 1998 and implemented in 2000 in order to halt large scale depletion of reproductively mature female spiny dogfish and allow the stock to recover to a sustainable level. This was a necessary management response under the MSA because the biomass of mature females (i.e. spawning stock biomass, or SSB) had been driven below the threshold (100,000 mt) level (NEFSC 1997). The directed dogfish fishery of the 1990s harvested primarily the largest (80+ cm) spiny dogfish in the stock, and the species' life history is such that these fish are primarily mature females. The recovery plan intended to constrain fishing mortality (F) on mature females at a rate ($F_{rebuild} = 0.11$) that would return the stock to its nominal biomass target (200,000 mt) as quickly as possible. Because the commercial fishery concentrated on mature females, achieving $F_{rebuild}$ required the elimination of the directed fishery. Accordingly, incidental catch quotas and restrictive trip limits were put in place when the FMP was implemented. To date, management measures consistent with achieving $F_{rebuild}$ have been maintained in Federal waters since implementation of the FMP. Because SSB has increased substantially since the 2000 closure of the large scale directed fishery, an increase in Federal spiny dogfish quota from 4 M lbs (the fishing year –FY - 2008 quota) to 12 M lbs in FY2009 was possible while continuing to achieve $F_{rebuild}$. Resulting from the quota increase in FY2009, the spiny dogfish fishery is composed of a predominant bycatch fishery and a small-scale directed fishery.

In state waters, 0-3 nautical miles (nm) from shore, spiny dogfish are managed under the Atlantic States Marine Fisheries Commission (ASMFC) Interstate FMP for Spiny Dogfish. Both the state and Federal FMPs apply to a single spiny dogfish stock along the Atlantic coast of the United States (i.e., in both state and Federal waters from 0-200 nm). Importantly, although the FMPs are independent, allowing for different quotas in state or Federal jurisdictional waters, the quotas established under the FMPs in a given year are *not* additive. As such, when the quota implemented under the Interstate FMP is higher than the Federal quota, the Federal quota is generally exceeded through the landing of spiny dogfish taken from state waters. For FY 2009, state and Federal quotas were set consistently at 12 M lb. For FY2010, the ASMFC has set a 15 M lb quota in state-jurisdictional waters. Previous and future inconsistencies in the state and Federal FMPs are likely to have prolonged the timeframe for stock recovery, are confusing for fishermen, and create administrative burden.

Stock Status

In the fall of 2009, the Northeast Fisheries Science Center (NEFSC) updated the spiny dogfish stock status using a population modeling approach from the 43rd Stock Assessment Workshop (43rd SAW), 2008 catch data, and results from the 2009 trawl survey. The updated stochastic estimate of SSB for 2009 is 163,256 mt (360 M lbs), about 2.7% below SSB_{max} (167,800 mt), the recommended B_{msy} proxy. At the time of this updated assessment, the Councils decision-making process, and the National Marine Fisheries Service's (NMFS) publication of the proposed rule in the Federal Register, no official biomass target existed in the Federal FMP. The biomass target of 90% SSB_{max} that was proposed by the Councils during the FMP's development was subsequently disapproved by NMFS during review of the FMP. In comparison to the FMP's biomass threshold (1/2 SSB_{max}), used to determine if the stock is overfished, SSB_{2009} appeared to be associated with a nearly 100% probability that *the stock is not overfished*.

Several sources of removals contribute to the estimate of fishing mortality (F) for 2008. These include U.S. commercial landings (4,108 mt), Canadian commercial landings (1,572 mt), U.S. dead discards (4,934 mt), and U.S. recreational landings (214 mt). Total removals in 2008 were approximately 10,828 mt (23.871 M lbs) corresponding to an F estimate of 0.11, well below the overfishing threshold of F = 0.39 and essentially equivalent to $F_{rebuild} = 0.11$. Therefore, *overfishing was not occurring* ($F_{2008} < F_{threshold}$).

After the publication of the proposed rule for the FY2010 specifications, new peer-reviewed scientific advice became available. The Transboundary Resource Assessment Committee (TRAC) met the last week in January 2010. Although the results from this meeting proved inconclusive, a working group continued to develop the initial analyses of the biomass reference points developed at this meeting. A report and presentation of those analyses was provided to members of the TRAC on April 9, 2010, for peer-review. Consensus was reached among peer-reviewers to accept the results of the overall analyses of alternative models with respect to the updated biological references points, which indicate that the value of F_{target} should be update from 0.28 to 0.207 and $F_{threshold}$ should be updated from 0.39 to 0.325 (NEFSC 2010). In addition, the overall analyses of alternative models suggested that an appropriate measure of SSB_{max} was 30.343 kg/tow of mature female spiny dogfish, corresponding to a nominal swept area biomass estimate of 159,288 mt. As mentioned earlier, the recommended B_{msy} proxy SSB_{max} used in prior years' specifications settings was 167,800 mt. Comparisons of the newly defined biomass reference point with recent SSB estimates suggest that the SSB exceeded SSB_{max} in 2008 and 2009.

Based on this scientific advice, NMFS has declared the spiny dogfish stock as rebuilt for the purposes of U.S. management. Framework 2 to the FMP (74 FR 30012, June 29, 2009) allows for the incorporation of new, peer-reviewed stock status determination criteria through the specifications process, allowing for more timely incorporation of the best available scientific information into management of the resource, consistent with National Standards 1 and 2 of the MSA. Because new information did become available prior to final rulemaking, and pursuant to Framework 2, this specifications document has been updated since the MAFMC's original submission in order to make the following modifications to the status determination criteria, and their associated values, currently identified in the FMP:

Reference point	Basis	Estimated Value (SAW 43, 2006)	Updated Estimated Value
Biomass target	SSB_{max}	N/A [SSB_{max} = 441 million pounds (200,000 mt; (0.01 nm^2 footprint))]	350 million pounds (159,288 mt;0.012 nm^2 footprint)
Biomass threshold	½ SSB_{max}	220 million pounds (100,000 mt) female SSB	176 million pounds (79,644 mt)
Fishing mortality target during rebuilding	The fishing mortality rate that would allow stock production at 2 pups per recruit.	0.11	N/A
Fishing mortality target (for rebuilt stock)	The fishing mortality rate that would allow stock production at 1.5 pups per recruit.	0.28	0.207
Fishing mortality threshold	The fishing mortality rate that stabilizes the population (1 pup per recruit)	0.39	0.325

Both NMFS and the Councils were aware that new scientific information could become available prior to final rulemaking, and took this into consideration in recommending management measures. Nevertheless, other information needs to be considered with respect to determining the current condition of the stock. Although the 2009 updated stock assessment shows evidence of strong recruitment in 2009, low pup production from 1997 through 2003 has been implicated by survey catches of pups and is further supported by subsequent low survey catches of the size categories these age classes have grown into. As such, a decline in SSB is expected when these small 1997-2003 year-classes recruit into the SSB (approximately 2015). Another potentially important factor is that the current survival rate for pups may be less than historic levels due to reduced maternal size and a skewed male to female sex ratio. Finally, as with all fish species, environmental variables are likely to be contributing to recruitment success, but no specific factor has been identified. The important point is that a simplistic comparison of current SSB against the SSB_{max} reference point may result in overly optimistic conclusions about the condition of the stock, and as such management measures should be appropriately precautionary.

Management Measures Considered by NMFS in the Proposed Rule
(These management measures(Alternatives 1-3) were provided in the MAFMC's March 3, 2010, submission of the 2010 Spiny Dogfish Specifications, Environmental Assessment, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis)

The first three quota recommendations in this specifications package (Alternatives 1, 2, and 3) were presented for NMFS' consideration as specifications and management measures for the dogfish fishery for FY2010 by the Councils and were based upon the best stock status

information available at the time of the Councils' decision-making (i.e., the 2009 stock assessment update, lack of an official biomass target in the FMP). This information was reviewed by the MAFMC's Scientific and Statistical Committee at its October 2009 meeting and by the Councils at their November (NEFMC) and December (MAFMC) 2009 meetings. No "Preferred Alternative" was put forward in Council preparation of this document since the Mid-Atlantic and New England Council recommendations were inconsistent. Nevertheless, the FMP allows disagreement between the Councils on management measures for the upcoming fishing year and suggests that the Northeast Regional Administrator of NMFS may select any alternative that has not been rejected by both Councils.

During the Councils' decision-making process for the FY2010 specifications, the most recent stock status update suggested that SSB was 2.7% below SSBmax (the nominal proxy for Bmsy). SSB was 16% above SSBmax in the previous year's stock status update. The Science and Statistical Committee (SSC) recommended an acceptable biological catch (ABC) for FY2010 to be set at 10,064 mt (22.188 M lb), corresponding to $F_{rebuild}$ = 0.11. The MAFMC recommended a commercial quota that corresponds to $F_{rebuild}$ (0.11) due to the fact that the stock had not been declared rebuilt. Specifically, the MAFMC recommended a commercial quota of 12.0 M lbs, the level calculated to achieve $F_{rebuild}$ after other sources of fishing mortality (U.S. commercial discards, recreational landings and discards, and Canadian commercial landings) were accounted for. The NEFMC recommended a commercial quota that corresponds to an ABC based on F = 0.20. Both Councils recommended a commercial trip limit of 3,000 lbs. Although Framework Adjustment 1 established an allowance for management measures to be established in a given specification setting year for up to five subsequent years, the Councils recommend that the specifications and management measures be set for FY2010 only. This was primarily because the TRAC meeting was scheduled after the completion of the Councils' specifications process and the recognition that new information may become available for consideration in future years' specifications. In addition, Amendment 2 to the FMP, currently in development, will set annual catch limits and accountability measures that will apply to FY2011.

NMFS reviewed the SSC advice and both Councils' recommendations and concluded that the MC's recommendation would assure that the $F_{rebuild}$ (0.11) was not exceeded as required under the spiny dogfish FMP until the stock was determined to be rebuilt. As a result, NMFS published a proposed rule on April 2, 2010 (75 FR 16716) in the Federal Register, proposing a commercial spiny dogfish quota of 12.0 M lb for FY2010, the level calculated to achieve $F_{rebuild}$ after other sources of fishing mortality are accounted for. NMFS also proposed maintaining the current possession limit of 3,000 lb per trip. NMFS indicated in the proposed rule that, if the results of the TRAC assessment, including any additional analysis, provided a biomass target that indicated the stock is rebuilt, NMFS could then consider higher quota alternatives within the range previously analyzed by the Councils, and could consider setting a higher quota for FY 2010 consistent with an appropriate F value. The comment period for the proposed rule ended on May 3, 2010.

Additional Management Measure Selected by NMFS to Set the Final FY2010 Specifications
After the publication of the proposed rule, new peer-reviewed scientific advice became available following the TRAC's January 2010 assessment. Based on these updates, the Spiny Dogfish Joint Committee (Joint Committee), on behalf of both Councils, submitted a letter to NMFS during the comment period of the proposed rule requesting that NMFS implement a quota greater

than that reflected in the proposed rule but less than the maximum quota analyzed by the MAFMC (Alternative 3 – 29.5 M lb). The Joint Committee also requested NMFS set an appropriate near-term quota that would reflect a transition to a new phase of long-term stability in commercial harvest of spiny dogfish.

NMFS has declared the spiny dogfish stock rebuilt, allowing for a quota to be set for FY2010 that is not constrained by $F_{rebuild}$ (0.11). Taking into account the rebuilt status of the fishery, a goal for more consistent quota allocations and stable landings of spiny dogfish in future fishing years, along with the remaining concerns over the condition of the stock (i.e., the impacts of low pup production from 1997 – 2003 and the skewed male/female ratio), NMFS has included an additional alternative for analysis (Alternative 4; Preferred Alternative), which would set a commercial spiny dogfish quota of 15.0 M lb (F=0.167) for FY2010 and maintain the current possession limit of 3,000 lb per trip, mirroring the quota allocation and possession limit implemented by the ASMFC in state waters for the May 1 start of FY2010.

Summary of All Considered Management Measures

Alternative 1 – (No Action / MAFMC Alternative / Proposed Action stated in the Proposed Rule (75 FR 16716)) – Set quota to achieve $F_{rebuild}$ [0.11]): For FY2010, specify a commercial quota of 12.0 M lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (6.9 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (5.1 M lbs).

According to CEQ regulations, the No Action Alternative should be used for the purposes of evaluating an environmental baseline. A "true" No Action Alternative for dogfish fishery management, however, is not equivalent to status quo or baseline conditions. If the actions proposed in this document are not taken, some current management measures will remain in place (i.e. 3,000 lb trip limit), but the overall management program will not be identical to that of 2009 (i.e. there would be no specified quota for FY 2010). The "true" No Action Alternative for this fishery is infeasible and inconsistent with the FMP which requires specifications, or quotas, to be established for the fishery. Therefore, the "true" No Action Alternative is not analyzed in this document. Since management measures consistent with achieving $F_{rebuild}$ (consistent with a 12 million lb quota in 2010) have been in place since 2000, this is considered to be the baseline condition, and is referred to as Alternative 1.

Alternative 2 – (NEFMC Alternative – Set quota to achieve F = 0.20): For FY2010, specify a commercial quota of 21.6 M lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (12.5 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (9.1 M lbs).

As a result of the updated F_{target} value (0.207), the quota that results from this alternative is roughly equivalent to setting a quota to achieve the updated F_{target} (approximately 22 M lb).

Alternative 3 – (Set quota to achieve F_{target} [0.28]): For FY2010, specify a commercial quota of 29.5 M lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (17.1 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (12.4 M lbs).

This alternative was based on the F_{target} value available prior to the availability of new scientific information. As a result of the updated F_{target} value (0.207), the quota that results from this alternative exceeds F_{target}.

Alternative 4 – (Preferred Alternative, based on updated reference points - Set ASMFC FY2010 Quota): For FY2010, specify a commercial quota of 15.0 M lb with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (8.7 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (6.3 M lbs).

Impacts of the Management Actions

The 15.0 M lb quota under the Proposed Action, as revised, is consistent with the intent of the Committee's recommendation to increase the quota above a level based on $F_{rebuild}$ and promote long-term stability in commercial harvest. Compared to Alternatives 2 and 3, the Proposed Action is likely to minimize interactions with non-target species (including fish and protected resources) and habitat disturbance but is likely to minimally increase such interactions in comparison to Alternative 1. The Proposed Action is not reasonably expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat for these species. Alternative 4 will result in higher short term economic benefits than Alternative 1, but lower economic benefits compared to Alternatives 2 and 3. The Proposed Action is not associated with significant direct or indirect impacts and would have a positive cumulative effect since the net result would be to set the quota at a level that would not exceed F_{target} and allow further exploitation of the increased biomass at the same fishing effort. The cumulative impacts to non-target/bycatch species, habitat, and protected resources are all negligible since the impacts of the preferred alternative on these VECs are also negligible.

Further discussion on the impacts of the alternatives is presented in Section 7.0, and summarized in Table E-1 below. Table E-1 presents a qualitative summary of the direct and indirect impacts of the various management alternatives.

Table E-1. Qualitative summary of the expected impacts of various alternatives considered for the spiny dogfish specifications.

Proposed Federal Action		Valued Ecosystem Component (VEC)				
Spiny Dogfish Management Alternatives		**Target Species**	**Non-target/Bycatch Species**	**Habitat (including Essential Fish Habitat [EFH])**	**Protected Resources**	**Human Communities**
Alt. 1 Set quota to achieve $F_{rebuild}$ (0.11)	Quota: 12 M lbs Trip Limits: 3,000 lbs	**Positive** By definition, mortality should achieve F rebuild if the quota is landed.	**Potential Low Negative** Low level discarding will continue to occur with status quo fishing effort.	**Potential Low Negative** Low level gear impacts on habitat will continue to occur with status quo fishing effort.	**Potential Low Negative** Low level encounters will continue to occur with status quo fishing effort.	**Positive** Overall revenue levels are expected to be maintained with status quo landings
Alt. 2 Set quota to F=0.20	Quota: 21.6 M lbs Trip Limits: 3,000 lbs	**Low Positive** Fishing mortality expected to meet revised F target (0.207) if the entire quota is landed. Stock growth still expected.	**Negative** Discarding more likely to increase compared to Alt 1 (function of larger quota)	**Negative** Habitat impacts more likely to increase compared to Alt1 (function of larger quota)	**Negative** Encounters more likely to increase compared to Alt 1 (function of larger quota)	**Positive** Overall revenue increases expected
Alt. 3 Set quota to achieve previous F_{target} (0.28)	Quota: 29.5 M lbs Trip Limits: 3,000 lbs	**Low Positive** Fishing mortality expected to *exceed* revised F target if the entire quota is landed.	**Negative** Discarding more likely to increase compared to Alt 1 (function of larger quota)	**Negative** Habitat impacts more likely to increase compared to Alt 1 (function of larger quota)	**Negative** Encounters more likely to increase compared to Alt 1 (function of larger quota)	**Positive** Overall revenue increases expected
Alt. 4 Set quota to 15 M lb (F=0.167)	Quota: 15.0 M lbs Trip Limits: 3,000 lbs	**Positive** Fishing mortality expected to be below the revised Ftarget if the entire quota is landed. Stock growth still expected.	**Potential Low Negative** Low level discarding will continue and will likely increase slightly compared to Alt 1	**Potential Low Negative** Low level gear impacts on habitat will continue to occur and will likely increase slightly compared to Alt 1	**Potential Low Negative** Low level encounters will continue to occur and will likely increase slightly compared to Alt 1	**Positive** Overall revenue increases expected

2.0 LIST OF ACRONYMS

ABC	Acceptable Biological Catch
ACCSP	Atlantic Coastal Cooperative Statistics Program
ACFCMA	Atlantic Coastal Fisheries Cooperative Management Act
ASMFC	Atlantic States Marine Fisheries Commission
B	Biomass
CEQ	Council on Environmental Quality
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EO	Executive Order
ESA	Endangered Species Act of 1973
F	Fishing Mortality Rate
FR	Federal Register
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
FY	Fishing Year
HPTRP	Harbor Porpoise Take Reduction Plan
IRFA	Initial Regulatory Flexibility Analysis
M	Natural Mortality Rate
MC	Spiny Dogfish Monitoring Committee
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MRFSS	Marine Recreational Fisheries Statistical Survey
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSRA	Magnuson-Stevens Fishery Conservation and Management Reauthorization Act
MSY	Maximum Sustainable Yield
mt	metric tons
NAO	NOAA Administrative Order
NE	New England
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
nm	nautical mile
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PBR	Potential Biological Removal
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
TRAC	Transboundary Resource Assessment Committee
SARC	Stock Assessment Review Committee
SAW	Stock Assessment Workshop
SSB	Spawning Stock Biomass
SSC	Science and Statistical Committee
SFA	Sustainable Fisheries Act
VECs	Valued Ecosystem Components
VTR	Vessel Trip Report

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4.0 INTRODUCTION AND BACKGROUND OF SPECIFICATION PROCESS

4.1 Purpose and Need for the Action

The purpose of this action is to analyze Federal spiny dogfish specifications and management measures for FY 2010 (May 1, 2010 - April 30, 2011) to ensure the sustainability of the stock. As required by the FMP, this action is needed to establish a commercial fishing quota and any other management measures that will ensure that the appropriate target fishing mortality rate for spiny dogfish is not exceeded in any given year. In addition to the commercial quota, the Councils may also recommend trip limits, minimum or maximum fish sizes, seasons, mesh-size restrictions, and other gear restrictions.

Framework 2 to the FMP (74 FR 30012, June 29, 2009) allows for the incorporation of new, peer-reviewed stock status determination criteria through the specifications process, allowing for more timely incorporation of the best available scientific information into management of the resource, consistent with National Standards 1 and 2 of the MSA. As a result of this advice, this action will also make modifications to the status determination criteria, and their associated values, currently identified in the FMP. After NMFS published a proposed rule for the FY2010 specifications in the Federal Register, new peer-reviewed scientific advice became available. Both NMFS and the Councils were aware that this new information may have become available prior to final rulemaking, and took this into consideration in recommending management measures.

Basis of Specifications and Management Measures

The FMP established a procedure to develop specifications and management measures based on analyses of fishery and scientific information by the Spiny Dogfish Monitoring Committee. Furthermore, the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSRA) mandates review of management measures by the Councils' Science and Statistical Committees.

As announced in the Federal Register (74 FR 52185), the MAFMC's SSC met October 27, 2009 to determine the ABC for spiny dogfish for FY 2010. A subsequent meeting to identify the appropriate commercial quota and trip limit for 2010 was held by the MAFMC's Spiny Dogfish Monitoring Committee (MC) on October 29, 2009 (74 FR 52950) with follow up discussion on November 13, 2009 via conference call. At the SSC meeting it was determined that although SSB was estimated to be above SSBmax in the previous year's assessment update (SSB_{2008}/SSB_{max} = 1.16; NEFSC 2008), the stock had not been declared rebuilt. Additionally, in the 2009 assessment update SSB was estimated to be below SSB_{max} (SSB_{2009}/SSB_{max} = 0.973 mt; NEFSC 2009). As such, the most appropriate level of fishing mortality, and therefore, ABC for spiny dogfish would be one consistent with continuing to achieve $F_{rebuild}$ (0.11). According to model projections, the catch associated with $F_{rebuild}$ for spiny dogfish would be 10,064 mt (22.188 M lbs).

In keeping with the advice of the SSC, the spiny dogfish MC strove to identify a commercial harvest level that would constrain fishing mortality at $F_{rebuild}$ (0.11). To identify the appropriate commercial quota, the MC took into account all other sources of

fishing mortality for the spiny dogfish stock. These include U.S. commercial discards, recreational landings and discards, and Canadian commercial landings. The commercial quota that was available after accounting for these other factors is 12.251 M lbs. The MC chose to recommend a commercial quota of 12.0 M lbs in order to maintain the same quota in FY 2010 as in FY 2009. The MC felt that the slightly smaller status quo commercial quota adequately accommodated some management uncertainty for FY 2010. The MC also recommended setting trip limits at 3,000 lbs which would maintain status quo. According to the specification process laid out in the FMP, the Joint Committee typically reviews the recommendation of the Monitoring Committee, however, that Committee did not meet for Councils' specification setting in 2009.

The Councils received the recommendations of the various Committees and adopted the first three recommendations outlined in Section 5.0.

NMFS reviewed the SSC advice and both Councils' recommendations and concluded that the MC's recommendation would assure that the $F_{rebuild}$ (0.11) was not exceeded, as required under the spiny dogfish FMP until the stock was determined to be rebuilt. As a result, NMFS published a proposed rule in the Federal Register on April 2, 2010 (75 FR 16716), proposing a commercial spiny dogfish quota of 12.0 M lb for FY2010, the level calculated to achieve $F_{rebuild}$ after other sources of fishing mortality are accounted for. NMFS also proposed maintaining the current possession limit of 3,000 lb per trip. NMFS indicated in the proposed rule that, if the results of the TRAC assessment, including any additional analysis, provided a biomass target that indicated the stock is rebuilt, NMFS could then consider higher quota alternatives within the range previously analyzed by the Councils, and could consider setting a higher quota for FY 2010 consistent with an appropriate F value. The comment period for the proposed rule ended on May 3, 2010.

After the publication of the proposed rule, new peer-reviewed scientific advice became available following the TRAC's January 2010 assessment. Based on these updates, the Spiny Dogfish Joint Committee (Joint Committee), on behalf of both Councils, submitted a letter to NMFS during the comment period of the proposed rule requesting that NMFS implement a quota greater than that reflected in the proposed rule but less than the maximum quota analyzed by the MAFMC (Alternative 3 – 29.5 M lb). The Joint Committee also requested NMFS set an appropriate near-term quota that would reflect a transition to a new phase of long-term stability in commercial harvest of spiny dogfish.

NMFS has declared the spiny dogfish stock rebuilt (NEFSC 2010), allowing for a quota to be set for FY2010 that is not constrained by $F_{rebuild}$ (0.11). Taking into account the rebuilt status of the fishery, a goal for more consistent quota allocations and stable landings of spiny dogfish in future fishing years, along with the remaining concerns over the condition of the stock (i.e., the impacts of low pup production from 1997 – 2003 and the skewed male/female ratio), NMFS has included an additional alternative for analysis (Alternative 4; Preferred Alternative), which would set a commercial spiny dogfish quota of 15.0 M lb (equating to F=0.167, when discard mortality and Canadian harvest estimates are incorporated into total catch) for FY2010 and maintain the current possession limit of 3,000 lb per trip, mirroring the quota allocation and possession limit implemented by the ASMFC in state waters for the May 1 start of FY2010.

4.2 Management Objectives of the Spiny Dogfish FMP

The overall goal of the FMP is to conserve spiny dogfish in order to achieve optimum yield from the resource in the western Atlantic Ocean. The specification of an annual commercial quota and trip limits meets that overall goal by accomplishing the following objectives, which were adopted into the FMP:

1. Reduce fishing mortality to ensure that overfishing does not occur.

2. Promote compatible management regulations between state and Council jurisdictions and the US and Canada.

3. Promote uniform and effective enforcement of regulations.

4. Minimize regulations while achieving the management objectives stated above.

5. Manage the spiny dogfish fishery so as to minimize the impact of the regulations on the prosecution of other fisheries, to the extent practicable.

6. Contribute to the protection of biodiversity and ecosystem structure and function.

5.0 MANAGEMENT ALTERNATIVES

Three alternatives were presented for consideration as specifications and management measures for the dogfish fishery for FY2010 by the Councils to be considered by NMFS in the proposed rule. These alternatives were based on the Councils' recommendations and informed by the recent 2009 stock assessment update which indicated that the spiny dogfish stock is not overfished, and that overfishing is not occurring. However, the stock was not declared rebuilt due to the lack of an official biomass target. Alternative 1 represents the most conservative approach and would maintain the $F_{rebuild}$ (0.11) target. Alternative 2 is based on a higher F value (0.20) as recommended by the NEFMC. Alternative 3 reflects the previous default F target (0.28) for a rebuilt stock.

The regulations allow for the Regional Administrator to modify the Councils' recommendations using any measures not rejected by both Councils to assure that the F target will not be exceeded in any fishing year (May 1-April 30). To account for the incorporation of the updated status determination criteria and their associated values, including updated F target and SSBmax values, NMFS proposes an additional Alternative (Alternative 4) for consideration in the final rule to set the spiny dogfish specifications for the 2010 fishing year. Alternative 4 would set the quota at 15 M lb, equating to F=0.167.

A No Action Alternative is required by NEPA for comparing the impacts of actions against baseline conditions. In this case, the No Action Alternative (Alternative 1) represents the status quo baseline conditions ($F_{rebuild}$) since the FMP was initiated in 2000. No other alternatives were considered and analyzed in this EA.

5.1 Alternative 1 – (No Action / MAFMC Alternative / Proposed Action stated in the Proposed Rule (75 FR 16716)) – Set quota to achieve $F_{rebuild}$ [0.11]): For FY2010, specify a commercial quota of 12.0 M lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (6.9 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (5.1 M lbs).

According to CEQ regulations, the No Action Alternative should be used for the purposes of evaluating an environmental baseline. A "true" No Action Alternative for dogfish fishery management, however, is not equivalent to status quo or baseline conditions. If the actions proposed in this document are not taken, some current management measures will remain in place (i.e. 3,000 lb trip limit), but the overall management program will not be identical to that of 2009 (i.e. there would be no specified quota for FY 2010). The "true" No Action Alternative for this fishery is infeasible and inconsistent with the FMP which requires specifications, or quotas, to be established for the fishery. Therefore, the "true" No Action Alternative is not analyzed in this document. Since management measures consistent with achieving $F_{rebuild}$ (consistent with a 12 million lb quota in 2010) have been in place since 2000, this is considered to be the baseline condition, and is referred to as Alternative 1.

5.2 Alternative 2 – (NEFMC Alternative – Set quota to achieve F = 0.20): For FY2010, specify a commercial quota of 21.6 M lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (12.5 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (9.1 M lbs).

As a result of the updated F_{target} value (0.207), the quota that results from this alternative is roughly equivalent to setting a quota to achieve the updated F_{target} (approximately 22 M lb).

5.3 Alternative 3 – (Set quota to achieve F_{target} [0.28]): For FY2010, specify a commercial quota of 29.5 M lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (17.1 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (12.4 M lbs).

This alternative was based on the F_{target} value available prior to the availability of new scientific information. As a result of the updated F_{target} value (0.207), the quota that results from this alternative exceeds F_{target}.

5.4 Alternative 4 – (Preferred Alternative, based on updated reference points - Set ASMFC FY2010 Quota): For FY2010, specify a commercial quota of 15.0 M lb with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (8.7 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (6.3 M lbs).

6.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND FISHERIES

The Valued Ecosystem Components (VECs) affected by the alternatives include the spiny dogfish resource, non-target/bycatch species, protected resources, habitat including Essential Fish Habitat (EFH), and human communities/socio-economic environment, all of which are described below.

6.1 Spiny Dogfish Stock and Fisheries

In the sections below, the biology of the stock, history and current status of the stock, as well as U.S. and Canadian catch information is presented. Currently, there is a small directed fishery for spiny dogfish due to the FY2009 quota increase. Discards are about equal to total landings but have been declining for the last 4 years.

6.1.1 Spiny Dogfish Biology and Ecological Relationships

A complete description of spiny dogfish biology and ecological relationships is given in Section 2.1 of the FMP (MAFMC 1999). A summary is provided here.

The spiny dogfish, *Squalus acanthias*, is a small coastal shark with a circumboreal distribution (i.e., in the Northern region of the Atlantic Ocean). In addition to being the most abundant shark in the western North Atlantic, it is also one of the most highly migratory species of the Atlantic coast (Bigelow and Schroeder 1953). Rago et al. (1994) report that their general distribution in the Northwest Atlantic is between Labrador and Florida but are most abundant from Nova Scotia to Cape Hatteras, North Carolina. Seasonal inshore-offshore movements and coastal migrations are thermally induced (Bigelow and Schroeder 1953, Jensen 1965). Generally, spiny dogfish spend summers in inshore waters and overwinter in deeper offshore waters. They are usually epibenthic (living near the surface of the ocean floor), but occur throughout the water column and are found in a depth range from nearshore shallows to offshore shelf waters approaching 3,000 ft (Collette and MacPhee 2002).

Length and age at 50% maturity of spiny dogfish in the Northwest Atlantic is estimated to be 23.4 inches and 6 years for males and 30.6 inches and 12 years for females (Nammack et al. 1985). Litter size ranges from 2 to 15 pups (average of 6) with fecundity increasing with length (Soldat 1979). Nammack et al. (1985) reported maximum ages in the Northwest Atlantic for males and females to be 35 and 40 years, respectively. Maximum length is estimated to be 49 inches for females and less than 36 inches for males. The current estimate of the natural mortality rate is 0.092, which was the value assumed for spiny dogfish greater than 12 inches in the NEFSC 1994, 1998 and 2003 assessments.

Bowman et al. (1984) observed a high degree of variability in the diet of spiny dogfish across seasons, areas and years. They considered this to be a reflection of the species omnivorous nature and the high degree of temporal and spatial variability of both dogfish and their prey. Their diet appears broadly related to abundance trends in some of their major prey items (e.g., herrings, Atlantic mackerel, codfishes, hakes, and squid). Spiny dogfish are potential competitors with virtually every marine predator within the

Northwest Atlantic Ocean ecosystem. These include a wide variety of predatory fish, marine mammals, and seabirds.

6.1.2 Status of the Spiny Dogfish Stock

Historic Stock Status

At the onset of the domestic fishery in the early 1990's, population biomass for the Northwest Atlantic stock of spiny dogfish was at its highest estimated level (approx. 1.2 billion lbs). The Federal Spiny Dogfish FMP was developed in 1998 and implemented in 2000 in order to halt large scale depletion of reproductively mature female spiny dogfish and allow the stock to recover to a sustainable level. This was a necessary management response under the MSA because the biomass of mature females had been driven below the threshold (100,000 mt) level (NEFSC 1997). The directed dogfish fishery of the 1990s harvested primarily the largest spiny dogfish in the stock, and the species' life history is such that these fish are primarily mature females. Therefore, the recovery plan intended to constrain fishing mortality (F) on mature females at a rate ($F_{rebuild}$) that would return the stock to SSB_{max}, the SSC's suggested B_{msy} proxy, in five years. Because the directed commercial fishery concentrated on mature females, achieving $F_{rebuild}$ required the elimination of the large-scale directed fishery, which peaked at landings of nearly 60 M lb (27.2 mt) in 1996. Accordingly, an incidental catch quota (4.0 M lbs) and restrictive trip limits (600 lbs per trip in quota Period 1 and 300 lbs per trip in quota Period 2[1]) were put in place when the FMP was implemented.

Management measures consistent with discouraging the return of a large-scale directed spiny dogfish fishery have been maintained in Federal waters since implementation of the FMP. The commercial quota was recently increased from 4.0 M lbs in FY2008 to 12 M lbs in FY2009, however, the larger quota was consistent with maintaining $F_{rebuild}$ for the stock which had expanded to approximately B_{msy}. This recent increase in the quota has allowed for a small directed spiny dogfish fishery.

In state waters, 0-3 nautical miles (nm) from shore, spiny dogfish are managed under the ASMFC Interstate FMP for Spiny Dogfish. With the exception of 2004 and 2005, and most recently 2009, spiny dogfish management measures in state-jurisdictional waters under the Interstate FMP have differed from federally imposed measures. While the quotas have varied in the past, both the Federal and Interstate FMPs are intended to cover the entire spiny dogfish population along the Atlantic coast of the United States (i.e., in both state and Federal waters from 0-200 nm). As such, when the quota implemented under the Interstate FMP is higher than the Federal quota, the Federal quota is generally exceeded through the landing of spiny dogfish taken from state waters. For the FY2009, state and Federal quotas were set consistently at 12 M lb. For FY2010, the ASMFC has set a 15 M lb quota in state-jurisdictional waters. Previous inconsistencies in the state and Federal FMPs are likely to have prolonged the timeframe for stock recovery, are confusing for fishermen, and create administrative burden.

[1] The annual commercial quota is distributed between two periods (Period 1 is May 1 - October 31 and Period 2 is November 1 - April 30) based on the historical percentage of commercial landings for each semi-annual period during the years 1990 through 1997. Period 1 is allocated 57.9% of the annual quota and Period 2 is allocated 42.1%. This is intended to preserve the traditional distribution of landings, both geographically and seasonally.

At the time of the Councils decision-making process and NMFS publication of the proposed rule, the most recent peer-reviewed evaluation of the status of the Northwest Atlantic spiny dogfish stock was conducted at the 43rd Northeast Regional Stock Assessment Workshop (NEFSC 2006). According to that assessment the spiny dogfish stock was not overfished in 2005, and overfishing was not occurring. The estimate of reproductively mature female component of the stock (SSB) had increased from 48,000 mt (the 2004 estimate) to 106,000 mt in 2005 (Biomass threshold is 100,000 mt). Nevertheless pup production was still low. The low levels of SSB following depletion of the stock in the 1990s has resulted in sustained low recruitment from1997 through 2008. The updated assessment indicated an increase in recruitment during 2009. Fishing mortality on the female exploitable stock in 2005 was estimated to be about 0.13 ($F_{rebuild}$ was 0.11 and $F_{threshold}$ was 0.39).

Current Stock Status

In the fall of 2009, the NEFSC updated the spiny dogfish stock status using a population modeling approach from the 43rd Stock Assessment Workshop (43rd SAW), 2008 catch data, and results from the 2009 trawl survey. The updated stochastic estimate of SSB for 2009 is 163,256 mt (360 M lbs), about 2.7% below SSB_{max} (167,800 mt), the recommended B_{msy} proxy. At the time of the updated assessment, the Councils decision-making process, and NMFS publication of the proposed rule, no official biomass target existed in the Federal FMP. The biomass target of 90% SSB_{max} that was proposed by the Councils during the FMP's development was subsequently disapproved by NMFS during the review of the FMP. In comparison to the FMP's biomass threshold (1/2 SSB_{max}), used to determine if the stock is overfished, SSB_{2009} appeared to be associated with a nearly 100% probability that *the stock is not overfished*.

Several sources of removals contribute to the estimate of fishing mortality (F) for 2008. These include U.S. commercial landings (4,108 mt), Canadian commercial landings (1,572 mt), U.S. discards (4,934 mt), and U.S. recreational landings (214 mt). Total removals in 2008 were approximately 10,828 mt (23.871 M lb) corresponding to an F estimate of 0.11, well below the overfishing threshold of F = 0.39 and essentially equivalent to $F_{rebuild}$ = 0.11. Therefore, *overfishing was not occurring* ($F_{2008} < F_{threshold}$).

After the publication of the proposed rule for the FY2010 specifications, new peer-reviewed scientific advice became available. The TRAC Assessment occurred the last week in January 2010. Although the results from this meeting proved inconclusive, a working group continued to develop the initial analyses of the biomass reference points developed at this meeting. A report and presentation of those analyses was provided to members of the TRAC on April 9, 2010, for peer-review. Consensus was reached among peer-reviewers to accept the results of the overall analyses of alternative models with respect to the updated biological references points, which indicate that the value of F_{target} should be update from 0.28 to 0.207 and $F_{threshold}$ should be updated from 0.39 to 0.325 (NEFSC 2010). . In addition, the overall analyses of alternative models suggested that an appropriate measure of SSB_{max} was 30.343 kg/tow of mature female spiny dogfish, corresponding to a nominal swept area biomass estimate of 159,288 mt. Comparisons of the newly defined biomass reference point with recent SSB estimates suggest that the SSB exceeded SSB_{max} in 2008 and 2009.

Based on the scientific advice, NMFS has declared the spiny dogfish stock rebuilt for the purposes of U.S. management.

Framework 2 allows for the incorporation of new, peer-reviewed stock status determination criteria through the specifications process, allowing for more timely incorporation of the best available scientific information into management of the resource, consistent with National Standards 1 and 2 of the MSA. As a result, this action will also make the following modifications to the status determination criteria, and their associated values, currently identified in the FMP:

Reference point	Basis	Estimated Value (SAW 43, 2006)	Updated Estimated Value
Biomass target	SSB_{max}	N/A [SSB_{max} = 441 million pounds (200,000 mt; (0.01 nm^2 footprint))]	350 million pounds (159,288 mt;0.012 nm^2 footprint)
Biomass threshold	½ SSB_{max}	220 million pounds (100,000 mt) female SSB	176 million pounds (79,644 mt)
Fishing mortality target during rebuilding	The fishing mortality rate that would allow stock production at 2 pups per recruit.	0.11	N/A
Fishing mortality target (for rebuilt stock)	The fishing mortality rate that would allow stock production at 1.5 pups per recruit.	0.28	0.207
Fishing mortality threshold	The fishing mortality rate that stabilizes the population (1 pup per recruit)	0.39	0.325

Both NMFS and the Councils were aware that new scientific information could become available prior to final rulemaking, and took this into consideration in recommending management measures. Nevertheless, other information needs to be considered with respect to determining the current condition of the stock. Low pup production from 1997 through 2003 has been implicated by survey catches of pups and is further supported by subsequent low survey catches of the size categories these age classes have grown into. As such, although an increase in the population is expected over the next few years, a decline in SSB is expected when these small 1997-2003 year-classes recruit into the SSB (approximately 2015). Another potentially important factor is that the current survival rate for pups may be less than historic levels due to reduced maternal size and a skewed male to female sex ratio. Finally, as with all fish species, environmental variables are likely to be contributing to recruitment success, but no specific factor has been identified. The important point is that a simplistic comparison of current SSB against the SSB_{max} reference point may result in overly optimistic conclusions about the condition of the stock, and as such management measures should be appropriately precautionary.

6.1.3 Spiny Dogfish Catch

A variety of domestic and foreign interests have historically participated in the harvest of the Northwest Atlantic spiny dogfish stock. Calendar year harvest estimates from 1962-2008 are provided in Table 1. These include landings from U.S. commercial and recreational sectors as well as Canadian, former USSR, and "other foreign" commercial fisheries. A thorough characterization of the historic (pre-FMP) fishery for spiny dogfish is given in Section 2.3 of the FMP (MAFMC 1999). Since the Federal FMP was implemented in 2000, annual landings of spiny dogfish have declined considerably (Table 1).

Certain commercial gear types are associated with the retention of spiny dogfish in Federal waters. The catch of spiny dogfish by gear in FY2008 is given in Table 6. These data indicate that spiny dogfish landings came mostly from gill nets (68.2%), hook and line (15.2%), bottom otter trawls (4.9%), as well as unknown (7.7%) or other gear (3.9%).

6.1.3.1 Spiny Dogfish Commercial Catch

The spiny dogfish commercial catch currently comprises a combination of U.S. commercial landings and discards from state and Federal waters, as well as Canadian commercial landings (Table 1). Canadian commercial discards are not currently estimated.

6.1.3.1.1 U.S. Commercial Spiny Dogfish Landings

From FY2000-2008, landings of spiny dogfish from the EEZ have been constrained by a 4.0 million pound Federal quota. Substantial increases in SSB since 2000 allowed for an increase in the Federal quota in FY2009 to 12 M lbs while still maintaining the rebuilding period F target ($F_{rebuild} = 0.11$). Under the interstate FMP, the state water quota was set at 4.0 M lbs in FY2006, 6.0 M lbs in FY2007, 8.0 M lbs in FY2008 and finally 12.0 M lbs in FY2009.

Commercial harvest has historically been dominated by Massachusetts (Table 2). Starting in 2007, dogfish landings from Virginia were greater than or approximately equivalent to those of Massachusetts. State-by-state landings since 2007 are influenced by the regional allocation of commercial quota through the ASMFC's Interstate FMP. Currently, that FMP specifies that the annual commercial quota be allocated to two regions (north and south) and North Carolina. Specifically, 58% of the quota is allocated to the northern region (Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut), 26% to the southern region (New York, New Jersey, Delaware, Maryland, Virginia), and 16% to North Carolina.

Calendar year 2008 U.S. commercial landings were 9.057 M lbs, which is about 15.9% of the 1996 high (60.1 M lbs; Table 1). Unpublished NMFS dealer reports indicate that the total ex-vessel value of commercially landed spiny dogfish in calendar year 2008 was about $2.207 million, and in FY 2008 was about $2.157 million making the approximate price/lb of spiny dogfish $0.24 in either timeframe (Table 3).

Commercial landings in FY2008 (8.975 M lbs) represented about a 32% increase from FY2007 landings (6.795 M lbs). Spiny dogfish were landed in all months in FY2008 with peak landings occurring in September of Period 1 and November-January of Period 2 (Table 4).

6.1.3.1.2 U.S. Commercial Spiny Dogfish Discards

A method for estimating spiny dogfish discards as a function of landings from various commercial fishing sectors (catch-based method) was developed in NEFSC (2003). Following this method, dead discards are calculated as the product of total estimated discards by gear type and proportional mortality by gear type. Proportional mortalities by gear type were reviewed in NEFSC (2006) and are currently assumed to be 50% for trawls, 30% for gillnets, and 10% for hook gear. Dead discards from U.S. commercial fishing activity appear to have peaked at about 19,000 mt (41.9 M lbs) in 1991, and subsequently declined and stabilized at around 5,000 mt (11.0 M lbs) since 1997 . In 2008, dead discards from U.S. commercial fisheries were estimated to be about 4,311 mt (9.5 M lbs). Although landings of dogfish are dominated by gillnet and hook and line gear, the predominant discard gear is otter trawl. NEFSC (2009 unpubl.) includes estimates of dead discards by gear category: otter trawl - 2,802 mt (6.177 M lbs), sink gill net – 1,459 mt (3.217 M lbs), and line/scallop trawl – 49.7 mt (0.110 M lbs).

6.1.3.1.3 Canadian Commercial Spiny Dogfish Landings

Historic Canadian commercial landings have been low relative to landings from the U.S. commercial fishery (Table 1). In 2001, following the implementation of the FMP, Canadian commercial landings exceeded U.S. commercial landings for the first time. Canadian commercial landings have fluctuated since then (Table 1). In 2008, Canadian landings were about 1,572 mt (3.466 M lbs). Although U.S. Federal managers have implemented restrictions to discourage the directed harvest of spiny dogfish, Canada has maintained a directed fishery under a 2,500 mt (5.512 M lbs) quota with no trip limits. Market conditions in 2009 were unfavorable for the Canadian fishery and 2009 landings were 113.4 mt (~250,000 lbs), about 7% of 2008 landings.

6.1.3.2 U.S. Spiny Dogfish Recreational Catch

Estimates of the recreational catch (landings and discards) of spiny dogfish are generated from data obtained through the NMFS Marine Recreational Fishery Statistics Survey (MRFSS). A method for estimating spiny dogfish discards was developed in NEFSC (2003) and reviewed in NEFSC (2006). The estimated recreational discard mortality is 20% compared to the assumed discard mortality for commercially caught spiny dogfish from hook and line gear which is 10%. The higher mortality rate is based on spiny dogfish being generally caught with live bait, which can result in deep hooking, and also that dogfish are often mishandled by anglers. The 20% recreational mortality rate is in the upper range of recreational mortality rates applied by the NEFSC based on Malchoff (1995). Total recreational removals (landings + dead discards) for 2008 were estimated to be about 837 mt (1.84 M lbs) which is roughly consistent with levels reported in NEFSC (2006) since 2001. As indicated in Table 5, Massachusetts accounted for the largest share of the recreational landings (52.7%), followed by New Jersey (31.1%),

Delaware (5.5%), Maryland (3.3%), Connecticut (2.8%), New Hampshire (2.6%), and 2% from all other states.

6.2 Non-target Species

Discards associated with gear used to land spiny dogfish, reflecting both directed and non-directed trips, were tabulated from 2008 vessel trip reports and are indicated in Table 7. Spiny dogfish comprised the bulk of the discards for gill nets (90.2%) and hook and line gear (89.7%) and 25.5% for bottom otter trawls. Other species reported to be discarded included Atlantic cod in both sink gill nets (5.2%) and hook gear (1.8 %), as well as black sea bass and striped bass in hook gear (both 1.8%). All other species comprised less than 1% of discards in these two gear types. A wider variety of discarded species occurred in bottom otter trawl catches (Table 7).

6.3 Physical Environment and Essential Fish Habitat (EFH)

The affected environment for management actions proposed in this document encompasses all of the spiny dogfish EFH. Given the ubiquitous distribution of spiny dogfish (Northwest Atlantic between Labrador and Florida) this also includes EFH for most species managed by the New England and Mid-Atlantic Fishery Management Councils. A more complete description of essential fish habitat for spiny dogfish is given in Section 2.2.2 in the FMP. A summary of that description is given here.

For juvenile spiny dogfish, EFH is defined as: 1) North of Cape Hatteras, the waters of the Continental shelf from the Gulf of Maine through Cape Hatteras, North Carolina in areas that encompass the highest 90% of all ranked ten minute squares for the area where juvenile dogfish were collected in the NEFSC trawl surveys. 2) South of Cape Hatteras, the waters over the Continental Shelf from Cape Hatteras, North Carolina through Cape Canaveral, Florida, to depths of 1280 ft. 3) Inshore, the "seawater" portions of the estuaries where dogfish are common or abundant on the Atlantic coast, from Passamaquoddy Bay, Maine to Cape Cod Bay, Massachusetts. Generally, juvenile dogfish are found at depths of 33 to 1280 ft in water temperatures ranging between 37ºF and 82ºF.

For adults: 1) North of Cape Hatteras, EFH is the waters of the Continental shelf from the Gulf of Maine through Cape Hatteras, North Carolina in areas that encompass the highest 90% of all ranked ten minute squares for the area where adult dogfish were collected in the NEFSC trawl surveys. 2) South of Cape Hatteras, EFH is the waters over the Continental Shelf from Cape Hatteras, North Carolina through Cape Canaveral, Florida, to depths of 1476 ft. 3) Inshore, EFH is the "seawater" portions of the estuaries where dogfish are common or abundant on the Atlantic coast, from Passamaquoddy Bay, Maine to Cape Cod Bay, Massachusetts. Generally, adult dogfish are found at depths of 33 to 1476 ft in water temperatures ranging between 37ºF and 82ºF.

As stated in Section 6.1, there has been no large directed fishery for spiny dogfish in Federal waters since FY2000. Commercial gear types used to harvest spiny dogfish include sink gill nets, hook gear, and to a much lesser extent bottom otter trawls (Table 6). Over two-thirds of the reported landings of spiny dogfish in FY 2008 were caught in sink gill nets, 15% with hook and line, and only 5% in bottom trawls. The quantity of

dogfish caught in trawls and discarded was almost the same (500,000 lbs) as the quantity landed (Table 7). Of these three gear types, the bottom otter trawl is the only gear known to significantly affect benthic marine habitats (NRC 2002, Morgan and Chuenpagdee 2003, Stevenson et al. 2004).

Physical Environment

The Northeast U.S. Shelf Ecosystem has been described as including the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream (Figure 1). The continental slope includes the area east of the shelf, out to a depth of 2000 m. Four distinct sub-regions comprise the NOAA Fisheries Northeast Region: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope. Occasionally another sub-region, Southern New England, is described; however, we incorporated discussions of any distinctive features of this area into the sections describing Georges Bank and the Mid-Atlantic Bight.

The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of various sediment types. Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and strong currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, NC. The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise. It is fairly homogenous, with exceptions at the shelf break, some of the canyons, the Hudson Shelf Valley, and in areas of glacially rafted hard bottom.

Pertinent physical characteristics of the three sub-regions that could potentially be affected by this action are described in this section. Information included in this document was extracted from Stevenson et al. (2004).

Gulf of Maine

Although not obvious in appearance, the Gulf of Maine (GOM) is actually an enclosed coastal sea, bounded on the east by Browns Bank, on the north by the Nova Scotian (Scotian) Shelf, on the west by the New England states, and on the south by Cape Cod and Georges Bank (Figure 2). The GOM was glacially derived, and is characterized by a system of deep basins, moraines and rocky protrusions with limited access to the open ocean. This geomorphology influences complex oceanographic processes that result in a rich biological community.

The GOM is topographically unlike any other part of the continental border along the U.S. Atlantic coast. The GOM's geologic features, when coupled with the vertical variation in water properties, result in a great diversity of habitat types. It contains twenty-one distinct basins separated by ridges, banks, and swells. The three largest basins are Wilkinson, Georges, and Jordan. Depths in the basins exceed 250 meters (m), with a maximum depth of 350 m in Georges Basin, just north of Georges Bank. The Northeast Channel between Georges Bank and Browns Bank leads into Georges Basin,

and is one of the primary avenues for exchange of water between the GOM and the North Atlantic Ocean.

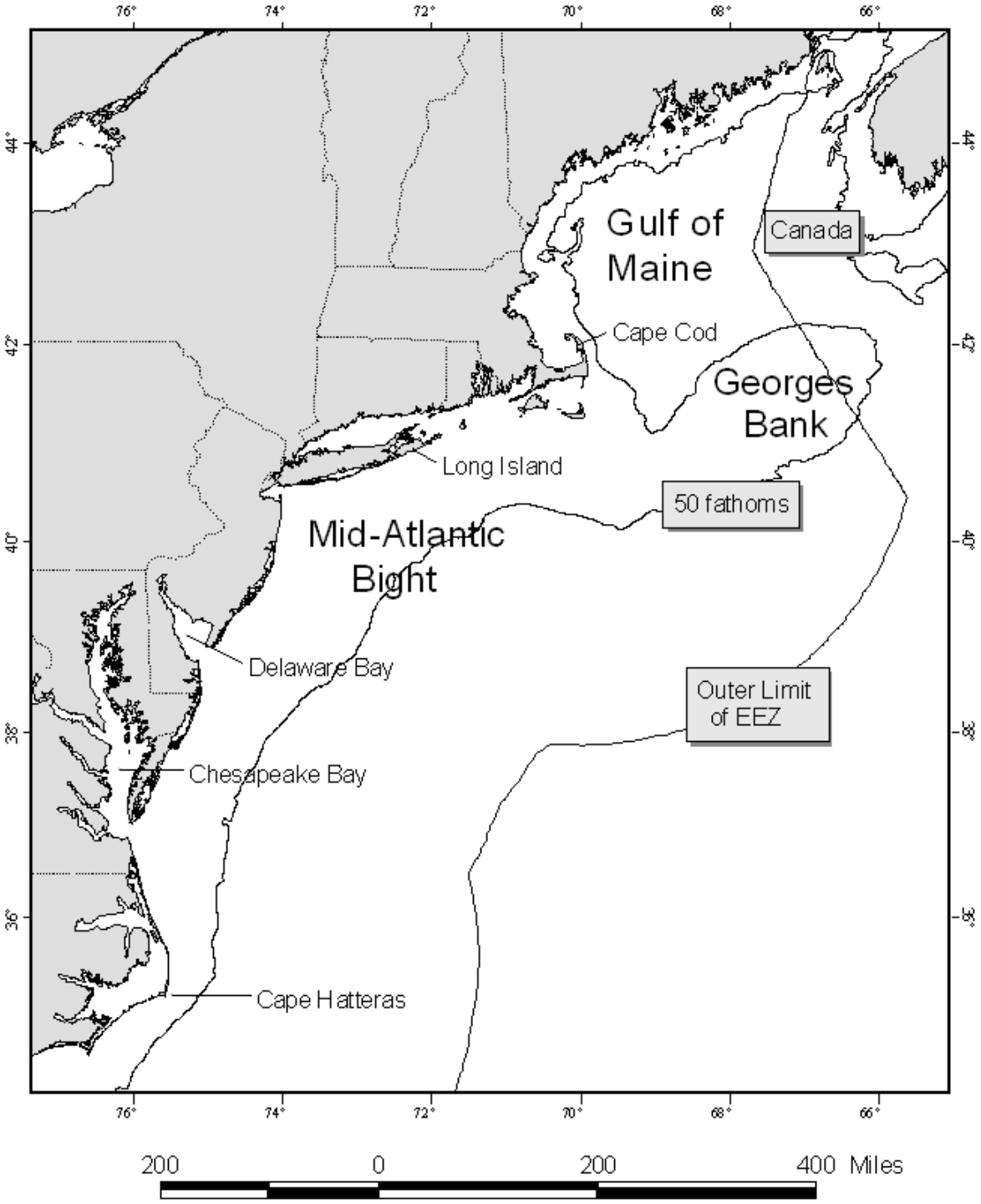

Figure 1. **Northeast U.S Shelf Ecosystem.**

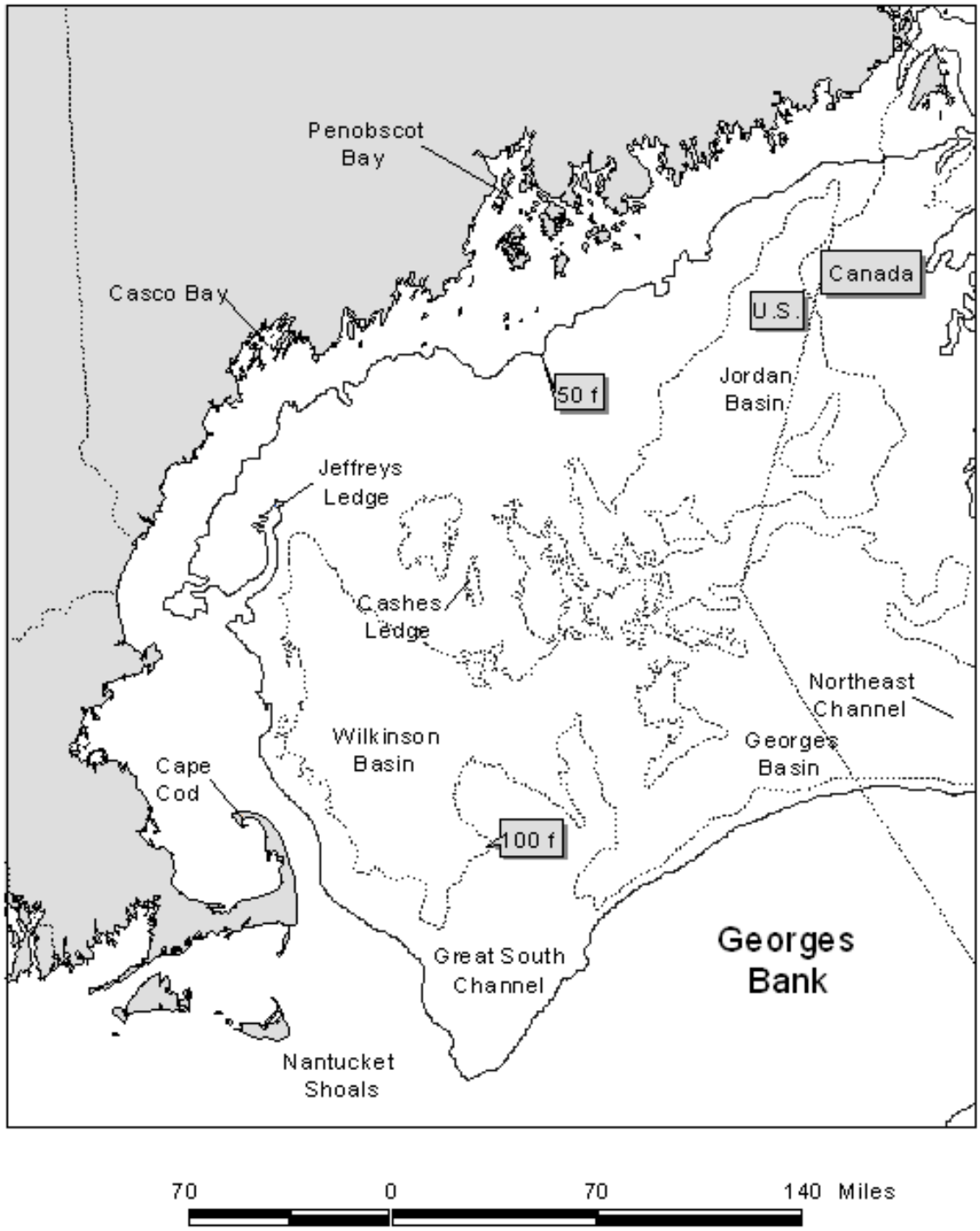

Figure 2. **Gulf of Maine.**

High points within the Gulf include irregular ridges, such as Cashes Ledge, which peaks at 9 m below the surface, as well as lower flat topped banks and gentle swells. Some of these rises are remnants of the sedimentary shelf that was left after most of it was removed by the glaciers. Others are glacial moraines and a few, like Cashes Ledge, are outcroppings of bedrock. Very fine sediment particles created and eroded by the glaciers have collected in thick deposits over much of the GOM, particularly in its deep basins (Figure 3). These mud deposits blanket and obscure the irregularities of the underlying bedrock, forming topographically smooth terrains. Some shallower basins are covered with mud as well, including some in coastal waters. In the rises between the basins, other materials are usually at the surface. Unsorted glacial till covers some morainal areas, as on Sewell Ridge to the north of Georges Basin and on Truxton Swell to the south of Jordan Basin. Sand predominates on some high areas and gravel, sometimes with boulders, predominates on others.

Coastal sediments exhibit a high degree of small-scale variability. Bedrock is the predominant substrate along the western edge of the GOM north of Cape Cod in a narrow band out to a depth of about 60 m. Rocky areas become less common with increasing depth, but some rock outcrops poke through the mud covering the deeper sea floor. Mud is the second most common substrate on the inner continental shelf. Mud predominates in coastal valleys and basins that often abruptly border rocky substrates. Many of these basins extend without interruption into deeper water. Gravel, often mixed with shell, is common adjacent to bedrock outcrops and in fractures in the rock. Large expanses of gravel are not common, but do occur near reworked glacial moraines and in areas where the seabed has been scoured by bottom currents. Gravel is most abundant at depths of 20 - 40 m, except in eastern Maine where a gravel-covered plain exists to depths of at least 100 m. Bottom currents are stronger in eastern Maine where the mean tidal range exceeds 5 m. Sandy areas are relatively rare along the inner shelf of the western GOM, but are more common south of Casco Bay, especially offshore of sandy beaches.

Georges Bank

Georges Bank is a shallow (3 - 150 m depth), elongate (161 km wide by 322 km long) extension of the continental shelf that was formed by the Wisconsinian glacial episode. It is characterized by a steep slope on its northern edge and a broad, flat, gently sloping southern flank. The Great South Channel lies to the west. Natural processes continue to erode and rework the sediments on Georges Bank. It is anticipated that erosion and reworking of sediments will reduce the amount of sand available to the sand sheets, and cause an overall coarsening of the bottom sediments (Valentine and Lough 1991).

Glacial retreat during the late Pleistocene deposited the bottom sediments currently observed on the eastern section of Georges Bank, and the sediments have been continuously reworked and redistributed by the action of rising sea level, and by tidal, storm and other currents. The strong, erosive currents affect the character of the biological community. Bottom topography on eastern Georges Bank is characterized by linear ridges in the western shoal areas; a relatively smooth, gently dipping sea floor on the deeper, easternmost part; a highly energetic peak in the north with sand ridges up to 30 m high and extensive gravel pavement; and steeper and smoother topography incised by submarine canyons on the southeastern margin.

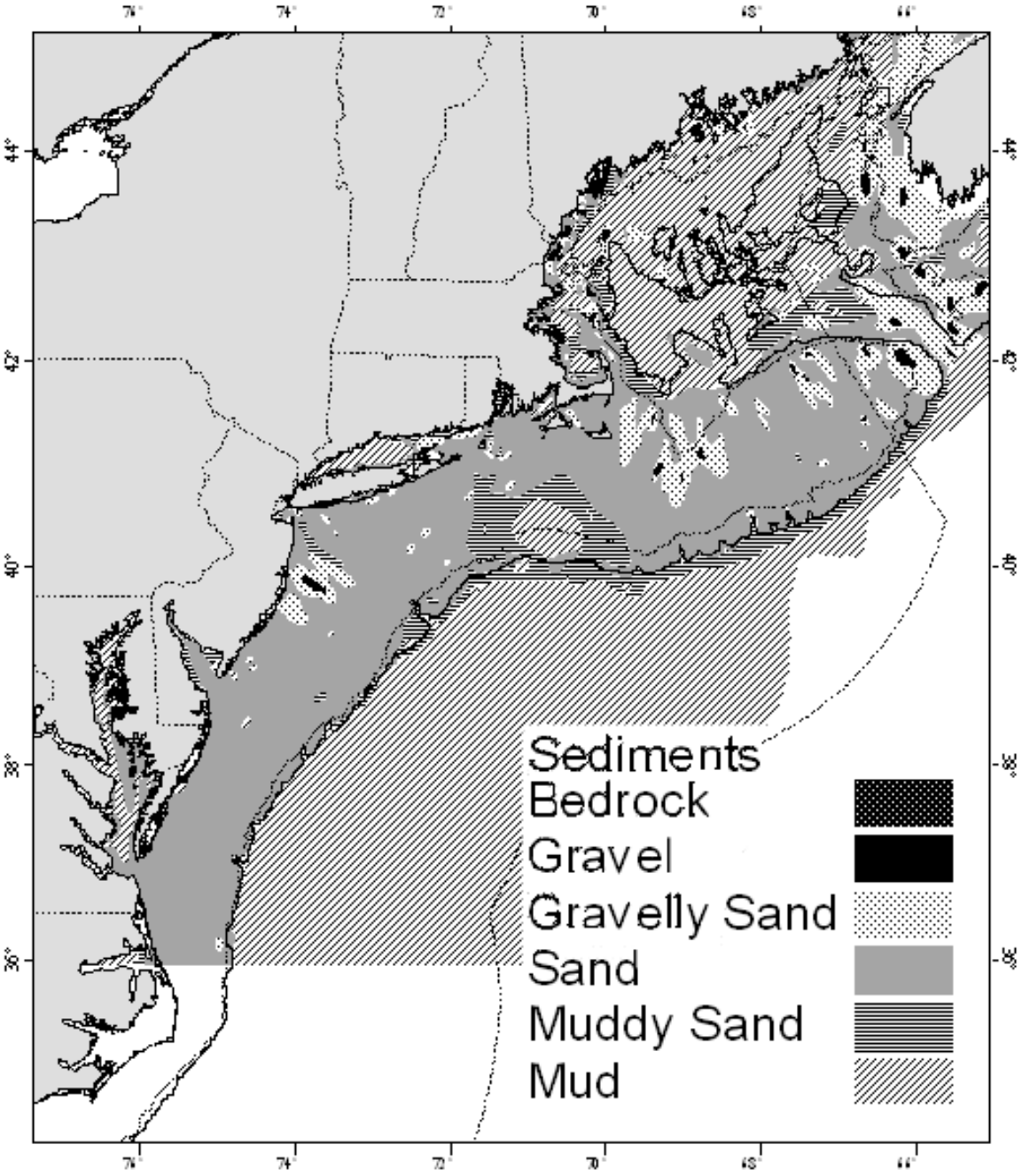

Figure 3. **Northeast region sediments, modified from Poppe et al. (1989a and b).**

The central region of the Bank is shallow, and the bottom is characterized by shoals and troughs, with sand dunes superimposed upon them. The two most prominent elevations on the ridge and trough area are Cultivator and Georges Shoals. This shoal and trough area is a region of strong currents, with average flood and ebb tidal currents greater than 4 km/h, and as high as 7 km/h. The dunes migrate at variable rates, and the ridges may also move. In an area that lies between the central part and Northeast Peak, Almeida *et al.* (2000) identified high-energy areas as between 35 - 65 m deep, where sand is transported on a daily basis by tidal currents, and a low-energy area at depths > 65 m that is affected only by storm currents.

The area west of the Great South Channel, known as Nantucket Shoals (Figure 2), is similar in nature to the central region of the Bank. Currents in these areas are strongest where water depth is shallower than 50 m. This type of traveling dune and swale morphology is also found in the Mid-Atlantic Bight, and further described in that section of the document. The Great South Channel separates the main part of Georges Bank from Nantucket Shoals. Sediments in this region include gravel pavement and mounds, some scattered boulders, sand with storm generated ripples, and scattered shell and mussel beds. Tidal and storm currents range from moderate to strong, depending upon location and storm activity (Valentine, pers. comm.).

Mid-Atlantic Bight

The Mid-Atlantic Bight includes the shelf and slope waters from Georges Bank south to Cape Hatteras, and east to the Gulf Stream (Figure 1). Like the rest of the continental shelf, the topography of the Mid-Atlantic Bight was shaped largely by sea level fluctuations caused by past ice ages. The shelf's basic morphology and sediments derive from the retreat of the last ice sheet, and the subsequent rise in sea level. Since that time, currents and waves have modified this basic structure.

Shelf and slope waters of the Mid-Atlantic Bight have a slow southwestward flow that is occasionally interrupted by warm core rings or meanders from the Gulf Stream. On average, shelf water moves parallel to bathymetry isobars at speeds of 5 - 10 cm/s at the surface and 2 cm/s or less at the bottom. Storm events can cause much more energetic variations in flow. Tidal currents on the inner shelf have a higher flow rate of 20 cm/s that increases to 100 cm/s near inlets.

The shelf slopes gently from shore out to between 100 and 200 km offshore where it transforms to the slope (100 - 200 m water depth) at the shelf break. In both the Mid-Atlantic and on Georges Bank, numerous canyons incise the slope, and some cut up onto the shelf itself. The primary morphological features of the shelf include shelf valleys and channels, shoal massifs, scarps, and sand ridges and swales. Most of these structures are relic except for some sand ridges and smaller sand-formed features. Shelf valleys and slope canyons were formed by rivers of glacier outwash that deposited sediments on the outer shelf edge as they entered the ocean. Most valleys cut about 10 m into the shelf, with the exception of the Hudson Shelf Valley that is about 35 m deep. The valleys were partially filled as the glacier melted and retreated across the shelf. The glacier also left behind a lengthy scarp near the shelf break from Chesapeake Bay north to the eastern end

of Long Island. Shoal retreat massifs were produced by extensive deposition at a cape or estuary mouth. Massifs were also formed as estuaries retreated across the shelf.

Some sand ridges are more modern in origin than the shelf's glaciated morphology. Their formation is not well understood; however, they appear to develop from the sediments that erode from the shore face. They maintain their shape, so it is assumed that they are in equilibrium with modern current and storm regimes. They are usually grouped, with heights of about 10 m, lengths of 10 - 50 km and spacing of 2 km. Ridges are usually oriented at a slight angle towards shore, running in length from northeast to southwest. The seaward face usually has the steepest slope. Sand ridges are often covered with smaller similar forms such as sand waves, megaripples, and ripples. Swales occur between sand ridges. Since ridges are higher than the adjacent swales, they are exposed to more energy from water currents, and experience more sediment mobility than swales. Ridges tend to contain less fine sand, silt and clay while relatively sheltered swales contain more of the finer particles. Swales have greater benthic macrofaunal density, species richness and biomass, due in part to the increased abundance of detrital food and the physically less rigorous conditions.

Sand waves are usually found in patches of 5 - 10 with heights of about 2 m, lengths of 50 - 100 m and 1 - 2 km between patches. Sand waves are primarily found on the inner shelf, and often observed on sides of sand ridges. They may remain intact over several seasons. Megaripples occur on sand waves or separately on the inner or central shelf. During the winter storm season, they may cover as much as 15% of the inner shelf. They tend to form in large patches and usually have lengths of 3 - 5 m with heights of 0.5 - 1 m. Megaripples tend to survive for less than a season. They can form during a storm and reshape the upper 50 - 100 cm of the sediments within a few hours. Ripples are also found everywhere on the shelf, and appear or disappear within hours or days, depending upon storms and currents. Ripples usually have lengths of about 1 - 150 cm and heights of a few centimeters.

Sediments are uniformly distributed over the shelf in this region (see Figure 3). A sheet of sand and gravel varying in thickness from 0 - 10 m covers most of the shelf. The mean bottom flow from the constant southwesterly current is not fast enough to move sand, so sediment transport must be episodic. Net sediment movement is in the same southwesterly direction as the current. The sands are mostly medium to coarse grains, with finer sand in the Hudson Shelf Valley and on the outer shelf. Mud is rare over most of the shelf, but is common in the Hudson Shelf Valley. Occasionally relic estuarine mud deposits are re-exposed in the swales between sand ridges. Fine sediment content increases rapidly at the shelf break, which is sometimes called the "mud line," and sediments are 70 - 100% fines on the slope. On the slope, silty sand, silt, and clay predominate.

The northern portion of the Mid-Atlantic Bight is sometimes referred to as southern New England. Most of this area was discussed under Georges Bank; however, one other formation of this region deserves note. The mud patch is located just southwest of Nantucket Shoals and southeast of Long Island and Rhode Island (Figure 3). Tidal currents in this area slow significantly, which allows silts and clays to settle out. The mud is mixed with sand, and is occasionally resuspended by large storms. This habitat is an anomaly of the outer continental shelf.

Artificial reefs are another significant Mid-Atlantic habitat, formed much more recently on the geologic time scale than other regional habitat types. These localized areas of hard structure have been formed by shipwrecks, lost cargoes, disposed solid materials, shoreline jetties and groins, submerged pipelines, cables, and other materials (Steimle and Zetlin 2000). While some of materials have been deposited specifically for use as fish habitat, most have an alternative primary purpose; however, they have all become an integral part of the coastal and shelf ecosystem. It is expected that the increase in these materials has had an impact on living marine resources and fisheries, but these effects are not well known. In general, reefs are important for attachment sites, shelter, and food for many species, and fish predators such as tunas may be attracted by prey aggregations, or may be behaviorally attracted to the reef structure.

6.4 Endangered and Other Protected Species

There are numerous species under NMFS' jurisdiction that inhabit the environment within the spiny dogfish management unit and are protected under the Endangered Species Act of 1973 (ESA) and/or the Marine Mammal Protection Act of 1972 (MMPA). Thirteen are classified as endangered or threatened under the ESA, while the remainder is protected by the provisions of the MMPA. The Council has determined that the following list of species protected either by the ESA and the MMPA may be found in the environment inhabited by spiny dogfish:

Cetaceans

Species	Status
Northern right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*)	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Beaked whales (*Ziphius* and *Mesoplodon* spp.)	Protected
Risso's dolphin (*Grampus griseus*)	Protected
Pilot whale (*Globicephala* spp.)	Protected
White-sided dolphin (*Lagenorhynchus acutus*)	Protected
Common dolphin (*Delphinus delphis*)	Protected
Spotted and striped dolphins (*Stenella* spp.)	Protected
Bottlenose dolphin (*Tursiops truncatus*)	Protected

Sea Turtles

Species	Status
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered
Hawksbill sea turtle (*Eretmochelys imbricata*)	Endangered
Loggerhead sea turtle (*Caretta caretta*)	Threatened

Fish

Species	Status
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Atlantic salmon (*Salmo salar*)	Endangered

Species Not Likely to be Affected
Several ESA-listed species, while their distribution overlaps to some degree with the management unit of the spiny dogfish FMP, are not likely to be affected by the fishery since the fishery does not typically operate in areas where these species occur. These species include shortnose sturgeon, the Gulf of Maine Distinct Population of Atlantic Salmon, hawksbill sea turtles, blue whales, and fin whales.

Species Likely to be Affected
It is expected that all of the remaining species identified above have the potential to be affected by the dogfish fishery. The status of the marine mammal populations listed above has been discussed in detail in the U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments. Initial assessments were presented in Blaylock et al. (1995) and are updated in Waring et al. (2009). The most recent information on the stock assessment of various marine mammals through 2009 can be found at: http://www.nmfs.noaa.gov/pr/sars/. Three other useful websites on marine mammals are: http://www.nmfs.noaa.gov/pr/recovery, http://spo.nwr.noaa.gov/mfr611/mfr611.htm, and http://www.nmfs.noaa.gov/pr/species/mammals.

Summary information for the ESA-listed species likely to be affected by the spiny dogfish fishery, along with information on their interactions and overlap with the fishery, is presented below.

Sea turtles have a seasonal distribution in Mid-Atlantic waters north of Cape Hatteras, NC. In general, turtles move up the coast from southern wintering areas south of Cape Hatteras as water temperatures warm in the spring and then reverse direction in the fall as water temperatures decline; returning to waters south of Cape Hatteras for the winter (Keinath *et al.* 1987; Shoop and Kenney 1992; Musick and Limpus 1997; Morreale and Standora 1993; Morreale and Standora 1998; Braun-McNeill and Epperly 2004; James *et al.* 2005; Morreale and Standora 2005). Recreational anglers have reported sightings of sea turtles in waters defined as inshore waters (bays, inlets, rivers, or sounds; Braun-McNeill and Epperly 2004) as far north as New York as early as March-April, but in relatively low numbers (Braun-McNeill and Epperly 2004). Greater numbers of loggerheads, Kemp's ridleys, and greens are found in Virginia's inshore, nearshore, and offshore waters from May through November and in New York's inshore, nearshore, and offshore waters from June through October (Keinath *et al.* 1987; Morreale and Standora 1993 ; Braun-McNeill and Epperly 2004). Leatherback sea turtles have a similar seasonal distribution but have a more extensive range in the Gulf of Maine compared to the hardshelled species, which appear to be temperature limited to waters only as far north as Cape Cod (Shoop and Kenney 1992).

The distribution of ESA-listed right, humpback, fin, and sei whales in New England and Mid-Atlantic waters also varies seasonally with each species following the general pattern of migration between low latitude winter calving grounds and high latitude summer foraging grounds (Perry *et al.* 1999; Kenney 2002). Nevertheless, this is an

oversimplification of cetacean movements. In the winter, only a portion of the known right whale population is seen on the calving grounds. The winter distribution of the remaining right whales remains uncertain (Waring *et al.* 2009). Results from winter surveys and passive acoustic studies suggest that animals may be dispersed in several areas including Cape Cod Bay (Brown *et al.* 2002) and offshore waters of the southeastern U.S. (Waring *et al.* 2009). During the spring and summer months, right whales use northern waters, including Gulf of Maine waters for foraging. Similarly, humpback whale sightings are most frequent in New England waters from mid-March through November between 41°N and 43°N latitude, from the Great South Channel north along the outside of Cape Cod to Stellwagen Bank and Jeffrey's Ledge (CeTAP 1982) and peak in May and August. Small numbers of individuals may be present in this area year-round, including the waters of Stellwagen Bank. Like right whales, humpback whales traverse Mid-Atlantic waters to and from the calving/mating grounds, but it may also be an important winter feeding area for juvenile humpback whales. During the 1978-1982 CeTAP surveys, fin whales accounted for 24% of all cetaceans and 46% of all large cetaceans sighted over the continental shelf between Cape Hatteras and Nova Scotia (CeTAP 1982). The single most important area for the species appeared to be from the Great South Channel, along the 50m isobaths past Cape Cod, over Stellwagen Bank, and past Cape Ann to Jeffrey's Ledge (Hain *et al.* 1992). In comparison, the sei whale is often found in the deeper waters characteristic of the continental shelf region (Hain *et al.* 1985; Waring *et al.* 2009*).* NMFS aerial surveys found substantial numbers of sei whales in this area, south of Nantucket, in the spring of 2001 (Waring *et al.* 2009). Indications are that, at least during the feeding season, a major portion of the sei whale stock is centered in northerly waters, perhaps on the Scotian shelf (Mitchell and Chapman 1977; Waring *et al.* 2009). The southern portion of the species range during spring and summer includes the northern portions of the U.S. EEZ -the Gulf of Maine and Georges Bank (Waring *et al.* 2009*).*

The North Carolina gillnet fishery for spiny dogfish has historically caught both sea turtles and Atlantic bottlenose dolphins. To date, management measures consistent with the Federal spiny dogfish rebuilding plan have eliminated widespread directed fishing for spiny dogfish, including the gillnet fishery for spiny dogfish in North Carolina. Additionally, protective measures under the Harbor Porpoise Take Reduction Plan (HPTRP) and Bottlenose Dolphin Take Reduction Plan (BDTRP) in combination with Federal spiny dogfish harvest policy have been sufficient to reduce gillnet fishery interactions with harbor porpoises and bottlenose dolphins below Potential Biological Removal (PBR) levels.

The dominant gear types associated with the retention of spiny dogfish in 2008 (sink gill nets and hook gear) are used by several fisheries identified in the List of Fisheries for 2010 (74 CFR 27739). Sink gill nets are deployed in two Category I fisheries: "Mid-Atlantic gillnet" and "Northeast sink gillnet". Hook gear that catches spiny dogfish is deployed by a Category III fishery: "Northeast/Mid-Atlantic bottom longline/hook and line". Category I fisheries are those identified in the List of Fisheries as associated with frequent incidental mortality and serious injury of marine mammals. Category III fisheries have a remote likelihood of, or no known incidental mortality and serious injury of marine mammals.

The Mid-Atlantic gillnet and Northeast sink gillnet fisheries are both included in the Atlantic Large Whale Take Reduction Plan (ALWTRP), as these gears, which are used in the spiny dogfish fishery, are known to interact with large whales. The ALWTRP contains a suite of management measures for gillnet, as well as pot/trap gear. More information on the ALWTRP can be found at http://www.nero.noaa.gov/whaletrp/.

In summary, the gears used in the spiny dogfish fishery have been known to interact with several ESA-listed and MMPA species. However, as long as the retention of spiny dogfish is generally a byproduct of the activity of other fisheries and a large directed fishery for spiny dogfish does not exist then interactions with protected species will continue to be analyzed under the management plans for those other fisheries.

6.5 Human Communities/ Socio-economic Environment

Human communities include the individuals that harvest the stock, as well as the ports and communities in which they reside, home port of the vessels, and otherwise indirectly support shore-side businesses. The following section discusses the participants involved in the spiny dogfish fishery, as well as their home ports and/or states.

6.5.1 Vessel Activity and Permit Information

According to unpublished NMFS permit file data, 3,142 vessels were issued Federal spiny dogfish permits in FY2008, while 229 of these vessels contributed to overall landings. The distribution of permitted and active vessels by home port state is given in Table 8. Most of the active vessels were from home ports in Massachusetts (51.5%), New Hampshire (13.1%), Rhode Island (11.8%), Maine (6.1%), New Jersey (5.7%), New York (4.8%), Maryland (2.2%), Virginia (1.7%), North Carolina (1.3%), and Connecticut (1.3%). All other states comprised 0.5% of the total.

NMFS permit data indicate that 288 dealers possessed Federal spiny dogfish dealer permits in FY2008 while dealer reports indicate 61 of those dealers actually bought spiny dogfish. The distribution of permitted and active dealers by state is given in Table 9. Most of the active dealers were from the states of Massachusetts (32.8%), New York (15.5%), North Carolina (15.5%), Rhode Island (13.8%), and Virginia (10.3%) with other states comprising 12.1% of the total.

Dogfish landings were reported from a total of 70 unique ports in the dealer data. Unknown ports accounted for 6.2% of the landings. Landings by port for FY2008 are given in Table 10. Gloucester, MA accounted for the largest share of total FY2008 landings (16.5%), followed by Virginia Beach / Lynnhaven, VA (13.2%), Wanchese, NC (10.3%), Chatham, MA (10.1%), Wachapreague, VA (5.6%), Seabrook, NH (5.1%), and Marshfield, MA (4.6%).

Comparing spiny dogfish revenue to total revenue by port where ex-vessel dogfish revenue was $100,000 or more, spiny dogfish landings accounted for 47.5% of total revenue ($236,284 / $497,742) in Virginia Beach/Lynnhaven, VA, 5.6% ($144,921 / $2,568,614) in Marshfield, MA, and 5.3% ($148,825 / $2,825,527) in Seabrook, NH (Table 10). This suggests that dependence on the harvest of spiny dogfish by fishing communities on the Atlantic Coast is fairly limited.

6.5.2 Port and Community Description

The Council contracted with Dr. Bonnie McCay and her associates at Rutgers University to describe the ports and communities associated with the fisheries in Mid-Atlantic (McCay et al. 1993). The Spiny Dogfish FMP contains details of McCay et al. (1993) with regard to the spiny dogfish fishery and are hereby incorporated by reference. Port descriptions taken from the NEFSC's "Community Profiles for the Northeast US Fisheries" for Gloucester, MA, Lynnhaven, VA, Wanchese, NC, and Chatham, MA, each of which accounted for more than 10% of total dogfish landings, are provided in Appendix 1. These are available on the internet at: http://www.nefsc.noaa.gov/read/socialsci/community_profiles/

7.0 ENVIRONMENTAL CONSEQUENCES – ANALYSIS OF DIRECT AND INDIRECT IMPACTS

As discussed in Section 6.0 (Description of the Affected Environment and Fisheries), the VECs include the target species (spiny dogfish), non-target and bycatch species, protected resources, and human communities. This section describes and characterizes the impacts of the alternatives on these VECs as compared to the No Action Alternative. As stated in Section 5.4, the No Action Alternative is effectively the same as Alternative 1. A “true” No Action Alternative for dogfish fishery management, however, is not equivalent to status quo or baseline conditions.

If the actions proposed in this document are not taken, some current management measures will remain in place (i.e. 3,000 lb trip limit), but the overall management program will not be identical to that of FY2009 (i.e. there would be no specified quota for FY 2010). The “true” No Action Alternative for this fishery is infeasible and inconsistent with the FMP and Magnuson-Stevens Act which require specifications, or quotas, to be established for the fishery. Therefore, the “true” No Action Alternative is not analyzed in this document. Since management measures consistent with achieving $F_{rebuild}$ (consistent with a 12 million lb quota for FY2010) have been in place since 2000, this is considered to be the baseline condition, and is referred to as Alternative 1.

7.1. Target Species (Spiny Dogfish) Impacts

The alternative management measures are described in Section 5.0 of this document. The ASMFC has already set a 15.0 million lb quota with a 3,000 lb trip limit for FY2010, and therefore, total U.S. commercial landings of spiny dogfish in state waters should be consistent as those that would be implemented in Federal waters under the revised preferred alternative (Alternative 4). A 12.0 million lb quota as under Alternative 1 is expected to achieve $F_{rebuild} = 0.11$ in FY 2010. However, updated stock status information made available in the spring of 2010 indicates that the stock is rebuilt, eliminating the need for the quota to be set at a value that will achieve $F_{rebuild}$. The revised Proposed Action (Alternative 4) represents a precautionary increase from Alternative 1 in response to stock condition (i.e., low pup recruitment between 1997-2003, skewed male/female ratio). The impacts of Alternative 4 (15.0 M lb) are expected to be similar as those associated with Alternative 1 (12.0 M lb). The 29.5 M lb quota listed under Alternative 3, based on the previous value of F_{target} (0.28), would exceed the updated

F_{target} (0.207). Stock biomass is expected to continue to grow in the near term under any alternative, however, long term biomass projections at F = 0.20 and F=0.28 show a subsequent decline near or below the "overfished" threshold in approximately ten years. Such a decline would be considered to be a negative impact to the spiny dogfish resource. None of the alternatives propose to modify the current 3,000 lb trip limit.

Although this action is only setting the specifications for FY2010, comparisons of constant catch over the long-term, rather than constant F, provide insight on the effect of stability in catch levels over time on biomass projections. Projections of constant catch strategies at 15 M lb (Alternative 4) and 21.6 M lb (FY2010 quota that results from Alternative 2 (F=0.20)) indicate that these harvest level could be held constant for 5 years, both with high probabilities that the stock would not decline to the level where it would once again be deemed overfished. However, low recruitment is expected following this five year period due to low pup production from1997-2003. In addition, setting a harvest scenario of 21.6 M lb over the next 5 years has only a 27 percent chance of maintaining the biomass above the target when the small year-classes from years of low pup production recruit into the fishery. In comparison, in setting a constant catch strategy of 15 M lb over the next 5 years, there is a 45 percent average probability of maintaining the biomass above the target over the next 5 years.

In summary, although stock size would be expected to grow the most under Alternative 1, the stock has been declared rebuilt and the quota is no longer constrained by $F_{rebuild}$. Due to low pup recruitment between 1997-2003, all long-term biomass projections for all alternatives indicate that near-term stock biomass growth is followed by a subsequent decline in approximately ten years. According to projections based on F, this decline nears the “overfished” threshold under Alternatives 2 and 3. Alternative 4 represents the measure that is likely to most positively impact the dogfish population by taking into account the fact that there are concerns regarding the condition of the stock that will likely impact the spiny dogfish biomass levels in future years.

7.2 Non-target Species Impacts

The degree to which discarding of non-target species would change under any of the alternatives is related to how fishing effort would change if a given alternative is implemented. If the quota in the EEZ are increased (as under Alternatives 2, 3, and 4), then it is likely that there will be some increase in dogfish fishing effort. If this occurs, then bycatch of non-target species would be expected to increase. In comparison to Alternative 1, it is expected that fishing effort in the EEZ is more likely to increase than decrease under Alternatives 2 through 4. An increase in effort would be minimized under Alternative 4 and would be most likely to increase under Alternative 3.

The composition of the bycatch from any directed dogfish fishing is expected to be similar to that described in Section 6.2 and Table 7. Other than spiny dogfish, which dominate the discards when dogfish are retained, codfish and other species are also discarded. For gillnets and hook gear, species other than dogfish comprise a very small proportion of discards (Table 7). For trawls, the species composition of the discards is broader, but then trawl-caught dogfish comprise a small (4.9%) proportion of total commercial dogfish landings (Table 6). The amount of bycatch associated with spiny dogfish harvest in state waters is poorly understood since non-federally permitted vessels

are not required to participate in the Federal Observer program or submit vessel trip reports. In conclusion, it is likely that discards associated with spiny dogfish harvest would minimally increase under Alternative 4 and increase to a larger extent under Alternatives 2 and 3. However, because the abundance of dogfish has increased greatly since 2000, effort is unlikely to increase significantly.

7.3 Habitat Impacts

Habitat impacts associated with the harvest of spiny dogfish would potentially increase under Alternatives 2 and 3 since they represent an 80% and 140% increase, respectively, over the 12 million lb commercial quota that was in place during FY2009. Alternative 4 represents a 20% increase from the FY2009 quota and habitat impacts associated with spiny dogfish under this alternative would likely increase slightly compared to FY2009. There are no adverse habitat impacts associated with Alternative 1 since the quota would remain the same as last year. Because no change is proposed in the trip limit (3,000 lb), that aspect of the alternatives is not related to a change in habitat impacts.

A major factor in habitat impacts is the type of fishing gear used to harvest dogfish. Commercial gear for spiny dogfish includes gill nets, hook gear and, to a much lesser degree, bottom otter trawls (Table 6). Currently, most of the reported landings of spiny dogfish are caught in sink gill nets, with only 5% from bottom trawls (Table 6). Of these three gear types, the bottom otter trawl is the only one known to significantly affect benthic marine habitats since it is a bottom-tending mobile gear, while bottom gill nets and hook gear (bottom long lines) are stationary and cause minor impacts to benthic habitats (NRC 2002, Morgan and Chuenpagdee 2003, NEFSC 2002). Benthic habitats for a number of federally-managed species in the Northeast region are moderately or highly vulnerable to adverse impacts associated with bottom otter trawls (Stevenson et al. 2004) and both regional Councils have implemented management measures in recent years to minimize these impacts, to the extent practicable, as required by the MSA.

The larger quotas associated with Alternatives 2, 3, and 4 could increase trawling activity and lead to increased adverse impacts on benthic habitats, although this impact would be minimized to the greatest extent under Alternative 4. This outcome, however, presumes there would be significant directed fishing for spiny dogfish with trawls. Bottom otter trawls were an important component of the directed fishery during the 1990s, accounting for as much as 30% of the annual landings in 1999. Since the implementation of quota management in the federal Spiny Dogfish FMP in 1998, there has been no directed trawl fishery for dogfish. Vessel trip report data for 2008 indicate that an equal quantity of dogfish caught in bottom trawls are landed as are discarded (Table 7). From a cost-benefit perspective, it is more likely that modest increases in the quota will simply result in the retention of spiny dogfish that would otherwise be discarded, without causing any increase in bottom trawling activity. However, the higher the quota, the more likely it is that a directed trawl fishery for dogfish will develop. Alternative 3, therefore, would be more likely to adversely impact benthic habitats than Alternative 2 and Alternative 4.

Evaluated in the context of an overall decline in bottom trawling activity for groundfish in the Northeast region in recent years and the fact that management measures (closed areas) are in place for minimizing the adverse habitat impacts of bottom trawling and

dredging, it is unlikely that any additional measures would be required to minimize the impacts of a directed dogfish fishery with an increased quota.

7.4 Impacts on Endangered Species and Other Protected Resources

The degree to which encounters with endangered and other protected species would change any of the alternatives is related to how fishing effort would change if a given alternative is implemented. If the quota and trip limit are increased over Alternative 1 (as under Alternatives 2, 3, and 4), then it is likely that there will be some increase in *directed* dogfish fishing in the EEZ. If this occurs, then encounters with protected resources could be attributable to activity by the dogfish fishery. The amount of directed fishing effort that may occur is not easily predicted. Additionally, because the abundance of dogfish has increased, larger catches are not necessarily associated with an increase in fishing effort. That a given trip would be made for the sole purpose of harvesting dogfish is less likely the farther from shore that trip occurs. Nevertheless, in comparison to Alternative 1, it is expected that directed dogfish fishing in the EEZ is more likely to increase than decrease under Alternatives 2, 3, and 4, and to the greatest degree under Alternative 3. An increase in directed dogfish fishing would be least likely to increase under Alternative 4.

The protected species that would be encountered from directed dogfish fishing would likely be similar to those which occurred in the historic North Carolina gill net fishery. As such, one might expect that encounters with coastal bottlenose dolphins, sea turtles, and harbor porpoises may occur (see Section 6.4). However, since the implementation of the Bottlenose Dolphin Take Reduction Plan and Harbor Porpoise Take Reduction Plan, more stringent rules are in place than existed when those previously mentioned encounters took place. Specifically, nets must be attended and no night time sets are allowed. Similarly, the Atlantic Large Whale Take Reduction Plan should reduce potential encounters with whales. Nevertheless, it is possible that protected resource encounters associated with spiny dogfish harvest may increase under Alternatives 2, 3, and 4, as compared to Alternative 1, and to the greatest degree under Alternative 3.

In comparison to Alternative 1, Alternatives 2 and 3 allow for approximately a two-fold increase in the annual quota. It is likely with this potential for increased fishing, gear interactions with protected resources would also increase, resulting in negative impacts to this VEC. There is the potential for continued low negative impacts to protected resources under Alternatives 1 and 4 as well. However, because the abundance of dogfish has increased greatly, effort is unlikely to increase significantly.

7.5 Human Community Impacts

As noted in Section 6.5, the dealer data associate a very limited number of fishing communities with a high (> 5%) proportion of spiny dogfish revenue to total commercial landings revenue. Additionally, none of the alternatives proposes to decrease revenue relative to the baseline by decreasing the quota. Alternative 1 would be expected to maintain current revenue levels and Alternatives 2, 3, and 4 would be expected to increase revenue from dogfish landings. As such, positive or null economic impacts are expected under any of the scenarios under consideration. Total spiny dogfish revenue

from the last complete fishing year (FY2008) was reported as $2.157 million. Using the average FY2008 price/lb ($0.24) landing the full FY2009 quota (and therefore also FY2010 quota under Alternative 1) corresponds to $2.880 million. Using the same approach, revenue would be expected to increase to $3.600 million under Alternative 4, $5.191 million under Alternative 2, and $7.070 million under Alternative 3. Assuming the distribution of landings by port is consistent with FY2008 (Section 6.5), the increases in dogfish revenue should benefit those ports that are more heavily dependent on dogfish revenue than other communities, assuming all other revenue sources do not change. Additionally, increases or maintaining status quo revenues would benefit fishing vessel crews. In FY2008, 30 vessels with Federal dogfish permits were reported in the dealer data to have had dogfish revenues greater than 5% of total revenue (dogfish revenue range $178 to 27,569, average = $9,214; dogfish rev / total rev range 5.1% to 100%, average = 29.8%). Among the vessels, crew size ranged from 1 to 5 (average = 2). The economic benefits would be greatest under Alternative 3 and to a lesser extent Alternatives 2 and 4, but fishermen would still benefit with the potential for maintained revenue under Alternative 1.

7.6 Cumulative Impacts

7.6.1 Introduction; Definition of Cumulative Effects

This section analyzes and discusses the significance of the cumulative impacts of the proposed alternatives. Cumulative impacts are defined under NEPA as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other action" (40 CFR § 1508.7). Consistent with NEPA, the MSA, as amended, requires that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. Additionally, the MSA promotes long-term positive impacts on the environment through guidance outlined in the National Standards. Under this regulatory regime, the cumulative impacts of past, present, and future Federal fishery management actions on the spiny dogfish stock should generally be positive. This document analyzes the significance to the human environment of impacts that may result from the alternatives. Consideration is given to the relative probability that each alternative will achieve the management objectives of the FMP through biological/ecological, socioeconomic, and legal review by experts on Council staff and NMFS. In addition, this Cumulative Impacts Assessment specifically considers the proposed management alternatives in the context of the cumulative impacts of past, present and reasonably foreseeable future fishing and non-fishing actions. The analysis is generally qualitative in nature because of the limitations of determining effects over time and over the large geographic areas under consideration.

Temporal and Geographic Scope of the Cumulative Impacts Assessment
In terms of past actions for fisheries, habitat and socioeconomic impacts, the temporal scope of this analysis is primarily focused on actions that have taken place since the early 1990s, when the directed U.S. spiny dogfish commercial fishery began its rapid expansion. For endangered and other protected species, the context is largely focused on the 1980s and 1990s, when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ. In terms of future actions, the

analysis considers the period between the effective date for these specifications (May 1, 2010) and the year by which the stock is currently expected to be fully recovered (2020) (i.e., after the period of low recruitment into the SSB, which is expected to occur in 2015).

The geographic scope of the analysis of impacts to fish species and habitat for this action is the range of the fisheries in the western Atlantic Ocean, as described in the Affected Environment and Environmental Consequences sections of the document (Sections 6.0 and 7.0). For endangered and protected species the geographic range is the total range of each species (information available online in latest stock assessments for each species). The geographic range for socioeconomic impacts is defined as those fishing communities bordering the range of the commercial spiny dogfish fishery (Sections 6.5) from the U.S.-Canada border to, and including, North Carolina.

7.6.2 Non-Fishing Activities

Cumulative impacts from non-fishing activities such as pollution, loss of coastal wetlands, marine transportation, and marine mining pose a risk to the spiny dogfish resource. These impacts are most likely to occur indirectly through habitat degradation. As indicated in the FMP, EFH for both juvenile and adult spiny dogfish is widespread, and includes generally all continental shelf waters from the Gulf of Maine to Cape Canaveral, Florida. Additionally, no habitat areas of particular concern (HAPC) have been identified to date for spiny dogfish. Nevertheless, the potential for adverse impacts to spiny dogfish and spiny dogfish EFH should coincide with wherever human induced disturbances are occurring. Activities of concern may include discharge of chemical pollutants and sewage; changes in water temperature, salinity and dissolved oxygen; an increase in suspended sediment and activities that involve dredging and the disposal of dredged material. Non-fishing activities generally tend to be concentrated in nearshore areas and only affect localized areas offshore. Wherever these activities co-occur, they can work additively or synergistically to decrease habitat quality and, as such, may indirectly constrain the sustainability of the managed resources, non-target species, and protected resources. Decreased habitat suitability could tend to reduce the tolerance of these VECs to the impacts of fishing effort. Impacts are generally negative in the immediate area of the activity. However, the overall impact to the affected species and their habitats on a population level is difficult to predict, but may be considered “low negative” or even “negligible”, since a large portion of these species have a limited or minor exposure to these local non-fishing perturbations due to the large range and various habitat regions the species occupies.

In addition to guidelines mandated by the MSA, NMFS reviews these types of effects through the review process required by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for certain activities that are regulated by Federal, state, and local authorities. Such reviews and permitting by NMFS and other agencies often reduce, mitigate or avoid anticipated adverse effects.

7.6.3 Fishing Activities: Past, Present, and Reasonably Foreseeable Future Activities

7.6.3.1 Target Species Impacts

The Federal Spiny Dogfish FMP eliminated the large-scale directed fishing for spiny dogfish in Federal waters, greatly reducing fishing mortality and halting the decline in female spawning stock biomass. Following the initiation of Federal management of spiny dogfish, increased activity by the Canadian dogfish fishery and inconsistent harvest policy in state waters constrained the Federal recovery plan from succeeding in the manner that had been originally envisioned. Recovery to 90% of SSB_{max} was expected by the 2004 fishing year, however, the 2004 update to the status of the stock indicated that biomass was about 30% of SSB_{max}. For 2009, SSB was been estimated to have increased to 163,256 mt which is about 97.3% of the rebuilding target. Recent updates to biomass reference points, made available in the spring of 2010, indicate that stock is rebuilt and SSB exceeded SSB_{max} in 2008 and 2009. However, long term projections indicate that no matter what fishing mortalities are achieved, biomass will oscillate - continuing to increase in the near term, then declining to a "low" around 2017, followed by another increase. The reason for this oscillation is a "hole" in female biomass that is the result of prolonged low pup production from 1997-2003. Nevertheless, as a result of past actions (implementation of the Federal FMP and, more recently, extension of the rebuilding plan into state waters), fishing mortality on mature female dogfish dropped from around 0.30 in 1998 to about 0.11 in 2006 - 2008, and has resulted in a rebuilt stock. Therefore, although long term stability of the stock has not been fully achieved, the additive effects of past management actions have directly benefited the spiny dogfish stock.

7.6.3.2 Non-target Species Impacts

The establishment of the Federal Spiny Dogfish FMP, which eliminated the major directed spiny dogfish fishery in Federal waters, is associated with positive impacts on non-target species. The current possession limit is 3,000 lbs per trip, and the proposed actions would maintain that trip limit. The abundance of dogfish has increased greatly and larger catches are not necessarily associated with an increase in fishing effort. There are no known plans to investigate methods to decrease spiny dogfish bycatch in other fisheries. Given that a major directed spiny dogfish fishery associated with the bycatch of non-target species is unlikely to develop in the near future, impacts on non-target species as a result of spiny dogfish harvest are not expected to be significant in future years.

7.6.3.3 Habitat Impacts

Commercial gear types historically used to harvest spiny dogfish include sink gill nets, bottom longlines, and to a much lesser extent, bottom otter trawls. Of these gear types, the bottom otter trawl is the only gear known to significantly affect benthic habitats since it is a bottom-tending mobile gear. Prior to the implementation of the Federal Spiny Dogfish FMP, bottom otter trawls were an important component of the directed fishery, for example, harvesting as much as 30% of the annual landings in 1999. In FY2008, however, bottom otter trawls contributed 4.9% of the total commercial landings (Table

6). Additional adverse habitat impacts would be expected with a roughly two-fold increase in the quota as under Alternatives 2 and 3. Additional adverse habitat impacts would not be expected if the quota was maintained under Alternative 1 and would be minimal under Alternative 4. However, because the abundance of dogfish has increased greatly, larger catches would not necessarily be associated with an equivalent increase in fishing effort. Furthermore, it is possible that a larger quota (even 29.5 M lbs) would not be enough to create a directed trawl fishery for dogfish and instead fishermen would simply retain and land a greater proportion of the catch.

7.6.3.4 Endangered and Other Protected Species Impacts

The North Carolina gillnet fishery for spiny dogfish caught both sea turtles and Atlantic bottlenose dolphins. Management measures consistent with the Federal spiny dogfish rebuilding plan, have eliminated the directed gillnet fishery for spiny dogfish in North Carolina. Additionally, protective measures under the HPTRP in combination with Federal spiny dogfish harvest policy have been sufficient to reduce the fishery interactions with harbor porpoises below PBR levels. The impacts of these past management actions can be characterized as indirect and positive in that they have reduced mortality for these species that was associated with the historic spiny dogfish fishery. The dominant gear types currently associated with the retention of spiny dogfish (sink gill nets and hook gear) are used by several fisheries identified in the List of Fisheries for 2010 (74 CFR 27739). Sink gill nets are deployed in two Category I fisheries: "Mid-Atlantic gillnet" and "Northeast sink gillnet". Widespread directed fishing for spiny dogfish has effectively been eliminated in Federal waters since FY2000. However, with the proposed increase in quota under Alternative 4, as well as Alternatives 2 and 3, it is possible that encounters with protected resources could increase from status quo (i.e., non-existent) level. But, given that the abundance of dogfish has increased greatly, larger catches are not necessarily associated with an increase in fishing effort. A major directed spiny dogfish fishery is unlikely to develop in the near future. As such, impacts on endangered and other protected species as a result of spiny dogfish harvest are not expected to be significant in future years.

7.6.3.5 Fishery and Socioeconomic Impacts

As a result of the implementation of the spiny dogfish FMP, negative effects have been incurred by the socioeconomic sector of the environment through loss of revenue to fishermen and decreased export revenue to wholesalers. These negative effects are expected to be ameliorated as a stable recovery of the spiny dogfish stock proceeds. Under the Alternatives, revenue associated with spiny dogfish harvest should remain stable (Alternative 1) or increase (Alternatives 2, 3, and 4); see Section 7.5) disregarding changes in market value. Nevertheless, a significant directed fishery is not expected to return for several more years given the protracted rebuilding period for the spiny dogfish stock and current market forces (i.e., limited processing capabilities).

7.6.4 Summary of Cumulative Effects/Conclusions

None of the alternatives under consideration are expected to have significant negative impacts on the spiny dogfish resource or the human communities involved. Maintaining the status quo quota and trip limit (Alternative 1) would continue stock rebuilding

quickest among the alternatives under consideration. The fishing mortality rates associated with Alternatives 2 , 3, and 4 are also expected to allow for stock growth, albeit at a more modest rate. However, updated biomass reference points indicate that the fishing mortality rate associated with Alternative 3 would likely slightly exceed the updated F_{target}. Additionally, there is a low likelihood that a major directed spiny dogfish fishery and corresponding low negative impact associated with increases in fishery interactions with non-target species, habitat, and protected resources would develop in Federal waters in the upcoming fishing year. Socioeconomic benefits are expected because harvest levels in FY2010 are expected to be equal to or greater than in FY2009 since no quota decreases are envisioned. In general, stock conditions have improved greatly from a cumulative effects perspective.

As discussed above, past, present, and reasonably foreseeable future fishing actions (i.e., the FMP, FW1 and other specifications) have had a positive impacts on the spiny dogfish stock, and negligible impacts on non-target/bycatch species, habitat, and protected resources. The Federal management actions have had negative impacts on the human communities, due to limited annual quota and trip limits which effectively eliminated the large scale directed fishery.

Given the importance of spiny dogfish harvest in state jurisdictional waters in recent years, the incremental impact of proposed Federal management actions must be considered in the context of anticipated state fishery activity. Except for three years (FY2004, 2005, 2009) divergent state water harvest policy has had a constraining effect on the Federal spiny dogfish stock recovery plan. For most years since 2000, the ASMFC has increased their overall quota and trip limits above Federal levels. The ASMFC implemented a 15 M lb quota at the May 1, 2010, start of the FY.

As explained in Section 7.6.2, non-fishing actions generally tend to be concentrated in nearshore areas, and include the discharge of chemical pollutants and sewage; changes in water temperature, salinity and dissolved oxygen; an increase in suspended sediment and activities that involve dredging and the disposal of dredged material. The impacts to habitat and to the dogfish stock, non-target species, and protected species from non-fishing activities are likely negative in the immediate area of the action. However, the degree of negative impact to the population as a whole is difficult to predict, but likely low negative or even negligible, since a large portion of these species populations have a limited or minor exposure to these local non-fishing perturbations due to the large range and various habitat regions the species occupies. Also adverse effects are often reduced or even avoided as required by certain conditions placed on these activities during permitting.

The cumulative effects on the VECs are, by definition, a combination of the proposed action and the other above described fishing and non-fishing actions. Past and current fishing regulatory actions have resulted in positive impacts to the dogfish stock, which is supported by the increase in biomass of the stock. The preferred alternative would have a positive cumulative effect on the spiny dogfish resource since the net result would be to increase the quota at a precautionary level that would not exceed F_{target} and allow for increased exploitation of the biomass. The cumulative impacts to non-target/bycatch species, habitat, and protected resources are all negligible since the impacts of the preferred alternative on these VECs are also negligible. Although past and current

fishery management actions have had negative social and economic impacts to dogfish fishermen and the associated businesses, the preferred alternative offers the opportunity to increase revenues and therefore would result in positive cumulative impact to these entities. As described above, none of the impacts outlined in this assessment (direct, indirect or cumulative) are considered significant.

8.0 APPLICABLE LAWS

8.1 NEPA

8.1.1 Finding of No Significant Environmental Impact (FONSI)

National Oceanic and Atmospheric Administration Administrative Order (NAO) 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) regulations at 40 C.F.R. 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

1) Can the proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?

The proposed measures are intended to prevent overfishing and assure that F_{target} is not exceeded in FY 2010. This action is not expected to jeopardize the sustainability of any target species that may be affected by the action. As discussed in Section 6.1.2, the spiny dogfish stock has rebounded and is not overfished, nor is overfishing is occurring. These proposed measures take into account updated scientific information regarding the rebuilt status of the spiny dogfish stock.

2) Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?

The proposed action is not expected to jeopardize the sustainability of any non-target species. The proposed measures are not expected to significantly alter fishing methods or activities. Because the abundance of dogfish has increased during the rebuilding program, effort is unlikely to increase with an increase quota. By maintaining the possession limits, the proposed action should not increase directed dogfish fishing in the EEZ. As such, then incidental catch of non-target species is likely not increase.

3) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?

The proposed action is not expected to cause substantial damage to the ocean, coastal habitats, and/or EFH as defined under the MSA and identified in the FMP. There has been an overall decline in bottom trawling activity for groundfish in the Northeast region in recent years and management measures (closed areas) are in place for minimizing the adverse habitat impacts of bottom trawling and dredging. The proposed action is not expected to significantly alter fishing methods or activities, fishing effort or the spatial and/or temporal distribution of current fishing effort. Therefore, although the proposed action will slightly increase the quota from status quo, it is unlikely that a significant directed dogfish fishery will result. Although habitat impacts could potentially increase, this is not expected to cause substantial damage to EFH.

4) Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety?

No changes in fishing behavior that would affect safety are anticipated. The overall effect of the proposed action would not adversely impact public health or safety.

5) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

The proposed action is not reasonably expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat for these species. While there may be some adverse impacts by increasing the commercial quota, should fishing effort increase, that impact is not expected to be significant. Because the abundance of dogfish has increased during the rebuilding program, larger catches are not necessarily associated with an increase in fishing activity. In addition, measures in place to protect endangered or threatened species, marine mammals, and critical habitat for these species would remain in place.

6) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

The proposed action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. The action is not expected to significantly alter fishing methods or activities or fishing effort or the spatial and/or temporal distribution of current fishing effort.

7) Are significant social or economic impacts interrelated with natural or physical environmental effects?

The proposed action is not expected to have a substantial impact on the natural or physical environment. The proposed action is not expected to significantly alter fishing methods or activities, fishing effort or the spatial and/or temporal distribution of current fishing effort. Therefore, there are no social or economic impacts interrelated with natural or physical environmental effects.

8) Are the effects on the quality of the human environment likely to be highly controversial?

Although the Councils' management recommendations reflect some disagreement, Federal and state managers generally acknowledge that large scale removal of mature female spiny dogfish should be curtailed. Although there is some controversy over the setting of dogfish specifications, the effects of this action is not expected to be highly controversial.

9) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?

This action addresses the commercial quota and trip limit for spiny dogfish. This fishery is not known to be prosecuted in any unique areas such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas. Therefore, the proposed action is not expected to have a substantial impact on any of these areas.

10) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

The impacts of the proposed action on the human environment are described in Section 7.0 of the EA. The proposed action addresses the commercial quota and trip limit for the spiny dogfish fishery. The proposed action is not expected to significantly alter fishing methods or activities, and is not expected to significantly increase fishing effort or the spatial and/or temporal distribution of current fishing effort. The measures contained in this action are not expected to have highly uncertain, unique, or unknown risks on the human environment.

11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

As discussed in Section 7.6, the proposed action is not expected to have cumulatively significant impacts when considered with the impacts from other fishing and non-fishing activities. The improvements in the condition of the stock are expected to generate cumulative positive impacts overall. The proposed action, together with past and future actions are not expected to result in significant cumulative impacts on the biological, physical, and human components of the environment.

12) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

The proposed action addresses the commercial quota and trip limit for the spiny dogfish fishery. This fishery is not known to be prosecuted in any areas that might affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause the loss or destruction of significant scientific, cultural or historical resources. Therefore, the proposed action is not expected to affect on any of these areas.

13) Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

The proposed action addresses the commercial quota and trip limit for the spiny dogfish fishery. There is no evidence or indication that this fishery has ever resulted in the introduction or spread of non-indigenous species. The proposed action is not expected to significantly alter fishing methods or activities, and is not expected to significantly increase fishing effort or the spatial and/or temporal distribution of current fishing effort. Therefore, it is highly unlikely that the proposed action would be expected to result in the introduction or spread of a non-indigenous species.

14) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

The proposed action addresses the commercial quota and trip limit for the spiny dogfish fishery. The proposed action is not expected to significantly alter fishing methods or activities, and is not expected to significantly increase fishing effort or the spatial and/or temporal distribution of current fishing effort. This action reflects the incorporation of new scientific information (i.e., updated reference points), in accordance with Framework 2 to the FMP. The proposed action will not result in significant effects, nor does it represent a decision in principle about a future consideration.

15) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

The proposed action addresses the commercial quota and trip limit for the spiny dogfish fishery. The proposed action is not expected to alter fishing methods or activities such that they threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment. The proposed action has been found to be consistent with other applicable laws (see Sections 9.2 - 9.10 below).

16) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

The impacts of the proposed action on the biological, physical, and human environment are described in Section 7.0. The cumulative effects of the proposed action on target and non-target species are detailed in Section 7.6. The proposed action is not expected to significantly increase fishing effort or the spatial and/or temporal distribution of current fishing effort. The improvements in the condition of the stock through implementation of quotas based on the fishing mortality target contained in the FMP are expected to generate positive impacts overall.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment, it is hereby determined that the proposed actions in this specification package will not significantly impact the quality of the human environment as described above and in the Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement for this action is not necessary.

Regional Administrator, Northeast Region, NMFS

JUNE 7, 2010
Date

8.2 EFH Assessment

Description of Action

The proposed action would implement revised specifications for spiny dogfish for the 2010 fishing year, with a commercial landings quota of 15 million pounds and a possession limit of 3,000 lbs per trip. The proposed action represents a 25% increase in the commercial quota, which was 12 million lbs in fishing year 2009. Other alternatives that were not selected by the Council would have increased the quota to a much greater extent. Quota increases are supported by a recent stock assessment that shows the spiny dogfish stock is rebuilt.

Potential Adverse Impacts of the Action on EFH

The higher commercial quota could have some adverse impacts on benthic EFH in the region, but they would be minimal and not require any mitigation. A very small percentage (<5% in 2007) of the dogfish that are landed are caught in bottom trawls; most are caught in bottom gill nets which have very low habitat impacts. Spiny dogfish are caught incidentally in the mixed species trawl fishery and discard rates are high. A directed bottom trawl fishery for spiny dogfish is not likely to develop given the proposed increase in the commercial quota. Thus, any increase in landings would be realized by simply retaining dogfish that would otherwise by discarded at sea, with no increase in bottom trawling activity. Furthermore, the trip possession limit would not change, so there would be no incentive to direct trawling effort during any particular trip toward the capture of dogfish.

Proposed Measures to Avoid, Minimize, or Mitigate Adverse Impacts of This Action

The more than minimal and not temporary adverse EFH impacts of the multispecies bottom trawl fishery in the Northeast region were minimized to the extent practicable in 2004 with the creation of seven habitat closed areas that prohibit the use of any mobile, bottom-tending gear. Since the proposed action would not have any additional adverse habitat impacts that require mitigation, the adverse impacts of the fishery would continue to be minimized once this quota increase is implemented.

Conclusions

The proposed action could adversely affect benthic EFH for some managed species in the region, but the impacts would be minimal and not require any mitigation.

8.3 Marine Mammal Protection Act

The MAFMC has reviewed the impacts of the proposed spiny dogfish specifications on marine mammals and has concluded that the proposed management actions are consistent with the provisions of the MMPA, and will not alter existing measures to protect the species likely to inhabit the spiny dogfish management unit. For further information on the potential impacts of the fishery and the proposed management action on marine mammals, see Section 7.4 of this document.

8.4 Endangered Species Act

Section 7 of the Endangered Species Act requires federal agencies conducting, authorizing, or funding activities that affect threatened or endangered species to ensure

that those effects do not jeopardize the continued existence of listed species. The MAFMC has concluded, using information available, that the proposed spiny dogfish specifications are not likely to jeopardize any ESA-listed species or alter or modify any critical habitat, based on the discussion of impacts in this document (Section 7.4).

8.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972, as amended, provides measures for ensuring stability of productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. It is recognized that responsible management of both coastal zones and fish stocks must involve mutually supportive goals. The Council has developed this specifications document and will submit it to NMFS; NMFS must determine whether this action is consistent to the maximum extent practicable with the CZM programs for each state (Maine through North Carolina).

8.6 Administrative Procedures Act

Sections 551-553 of the Federal Administrative Procedure Act establish procedural requirements applicable to informal rulemaking by federal agencies. The purpose is to ensure public access to the federal rulemaking process and to give the public notice and an opportunity to comment before the agency promulgates new regulations.

The Administrative Procedure Act requires solicitation and review of public comments on actions taken in the development of a fishery management plan and subsequent amendments and framework adjustments. Development of this specifications document provided many opportunities for public review, input, and access to the rulemaking process. This proposed specifications document was developed as a result of a multi-stage process that involved review of the source document (2010 Specifications package) by affected members of the public. The public had the opportunity to review and comment on management measures during a meeting of the Council's Scientific and Statistical Committee on October 27, 2009, a Spiny Dogfish Monitoring Committee Meeting on October 29, 2009, a NEFMC meeting held on November 18, 2009, and the MAFMC meeting held on December 8, 2009. In addition, NMFS published a proposed rule in the Federal Register on April 2, 2010, soliciting public comment on the proposed management measures. The comment period for the proposed rule ended on May 3, 2010.

8.7 Data Quality Act

Utility of Information Product

The proposed document includes: A description of the proposed specifications, description of the alternatives considered, and the reasons for selecting the proposed management measures. This action proposes commercial quotas and other management measures for spiny dogfish in FY 2010. This proposed specifications document implements the FMP's conservation and management goals consistent with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as well as all other existing applicable laws.

This proposed specifications document was developed as a result of a multi-stage process that involved review of the source document (2010 Specifications package) by affected members of the public. The public had the opportunity to review and comment on management measures during a meeting of the Council's Scientific and Statistical Committee on October 27, 2009, a Spiny Dogfish Monitoring Committee Meeting on October 29, 2009, a NEFMC meeting held on November 18, 2009, and the MAFMC meeting held on December 8, 2009.

The Federal Register notice that announces the proposed rule and the implementing regulations will be made available in printed publication and on the website for the Northeast Regional Office. The notice provides metric conversions for all measurements.

Integrity of Information Product

The information product meets the standards for integrity under the following types of documents:

Other/Discussion (e.g., Confidentiality of Statistics of the Magnuson-Stevens Fishery Conservation and Management Act; NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics; 50 CFR 229.11, Confidentiality of information collected under the Marine Mammal Protection Act.)

Objectivity of Information Product

The category of information product that applies for this product is “Natural Resource Plans.”

In preparing specifications documents, the Council must comply with the requirements of the Magnuson-Stevens Act, the National Environmental Policy Act, the Regulatory Flexibility Act, the Administrative Procedure Act, the Paperwork Reduction Act, the Coastal Zone Management Act, the Endangered Species Act, the Marine Mammal Protection Act, the Data Quality Act, and Executive Orders 12630 (Property Rights), 12866 (Regulatory Planning), 13132 (Federalism), and 13158 (Marine Protected Areas).

This specifications document has been developed to comply with all applicable National Standards, including National Standard 2. National Standard 2 states that the FMP's conservation and management measures shall be based upon the best scientific information available. Despite current data limitations, the conservation and management measures proposed to be implemented under this specifications document are based upon the best scientific information available. This information includes NMFS dealer weighout data for 2008, which was used to characterize the economic impacts of the management proposals. These data, as well as the NMFS Observer program database, were used to characterize historic landings, species co-occurrence in the spiny dogfish catch, and discarding. The specialists who worked with these data are familiar with the most recent analytical techniques and with the available data and information relevant to the spiny dogfish fishery. Marine Recreational Fisheries Statistical Survey (MRFSS) data were used to characterize the recreational fishery for this species.

The policy choices (i.e., management measures) proposed to be implemented by this specifications document are supported by the available scientific information and, in cases where information was unavailable, proxy reference points are based on observed trends in survey data. The management measures contained in the specifications document are designed to meet the conservation goals and objectives of the FMP, and prevent overfishing and rebuild overfished resources, while maintaining sustainable levels of fishing effort to ensure a minimal impact on fishing communities.

The supporting materials and analyses used to develop the measures in the proposed rule are contained in the specifications document and to some degree in previous specifications and/or FMPs as specified in this document.

The review process for this specifications package involves the Mid-Atlantic Fishery Management Council, the Northeast Fisheries Science Center, the Northeast Regional Office, and NOAA Fisheries headquarters. The Center's technical review is conducted by senior level scientists with specialties in population dynamics, stock assessment methods, demersal resources, population biology, and the social sciences. The Council review process involves public meetings at which affected stakeholders have opportunity to provide comments on the specifications document. Review by staff at the Regional Office is conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with the applicable law. Final approval of the specifications document and clearance of the rule is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

8.8 Paperwork Reduction Act

The Paperwork Reduction Act (PRA) concerns the collection of information. The intent of the PRA is to minimize the Federal paperwork burden for individuals, small businesses, state and local governments, and other persons as well as to maximize the usefulness of information collected by the Federal government. There are no changes to the existing reporting requirements previously approved under this FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the Paperwork Reduction Act.

8.9 Impacts Relative to Federalism/E.O. 13132

This specifications document does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order (EO) 13132.

8.10 Environmental Justice/Executive Order (E.O.) 12898

This EO provides that “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” EO 12898 directs each Federal agency to analyze the environmental effects, including human health, economic,

and social effects of Federal actions on minority populations, low-income populations, and Indian tribes, when such analysis is required by NEPA. Agencies are further directed to "identify potential effects and mitigation measures in consultation with affected communities, and improve the accessibility of meetings, crucial documents, and notices."

The proposed actions are not expected to affect participation in the spiny dogfish fishery. Since the proposed action represents no changes relative to the current opportunity to participate in this fishery, no negative economic or social effects are anticipated as a result (Section 7.0). Therefore, the proposed action under the preferred alternatives is not expected to cause disproportionately high and adverse human health, environmental or economic effects on minority populations, low-income populations, or Indian tribes.

8.11 Regulatory Flexibility Act/E.O. 12866

8.11.1 Regulatory Impact Review (RIR) and Initial Regulatory Flexibility Analysis (IRFA)

This section provides the analysis and conclusions to address the requirements of Executive Order 12866 and the Regulatory Flexibility Act (RFA). Since many of the requirements of these mandates duplicate those required under the MSA and NEPA, this section contains references to other sections of this document. The following sections provide the basis for concluding that the proposed action is not significant under E.O. 12866 and will not have a significant economic impact on a substantial number of small entities under the RFA.

8.11.2 Description of Management Objectives

The goals and objectives of the management plan for the spiny dogfish resource are stated in Section 1.1.3 of the Spiny Dogfish FMP. The proposed action is consistent with, and does not modify those goals and objectives.

8.11.3 Description of the Fishery

Section 2.3 of the Spiny Dogfish FMP contains a detailed description of the historic spiny dogfish fishery. Updated fishery activity is given in Section 6.5 of this document.

8.11.4 Statement of the Problem

The purpose and need for this action is identified in Section 4.1 of this document. The Spiny Dogfish FMP requires that the Councils and the Regional Administrator review the best available stock and fishery data when developing specifications for the upcoming fishing year(s).

8.11.5 Description of the Alternatives

Alternative 1 – (No Action / MAFMC Alternative / Proposed Action stated in the Proposed Rule (75 FR 16716)) – Set quota to achieve $F_{rebuild}$ [0.11]): For FY2010, specify a commercial quota of 12.0 M lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the

FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (6.9 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (5.1 M lbs).

According to CEQ regulations, the No Action Alternative should be used for the purposes of evaluating an environmental baseline. A "true" No Action Alternative for dogfish fishery management, however, is not equivalent to status quo or baseline conditions. If the actions proposed in this document are not taken, some current management measures will remain in place (i.e. 3,000 lb trip limit), but the overall management program will not be identical to that of 2009 (i.e. there would be no specified quota for FY 2010). The "true" No Action Alternative for this fishery is infeasible and inconsistent with the FMP which requires specifications, or quotas, to be established for the fishery. Therefore, the "true" No Action Alternative is not analyzed in this document. Since management measures consistent with achieving $F_{rebuild}$ (consistent with a 12 million lb quota in 2010) have been in place since 2000, this is considered to be the baseline condition, and is referred to as Alternative 1.

Alternative 2 – (NEFMC Alternative – Set quota to achieve F = 0.20): For FY2010, specify a commercial quota of 21.6 M lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (12.5 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (9.1 M lbs).

As a result of the updated F_{target} value (0.207), the quota that results from this alternative is roughly equivalent to setting a quota to achieve the updated F_{target} (approximately 22 M lb).

Alternative 3 – (Set quota to achieve F_{target} [0.28]): For FY2010, specify a commercial quota of 29.5 M lbs with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (17.1 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (12.4 M lbs).

This alternative was based on the F_{target} value available prior to the availability of new scientific information. As a result of the updated F_{target} value (0.207), the quota that results from this alternative exceeds F_{target}.

Alternative 4 – (Preferred Alternative, based on updated reference points - Set ASMFC FY2010 Quota): For FY2010, specify a commercial quota of 15.0 M lb with trip limits of 3,000 lbs (vessels are prohibited from landing more than the specified amount in one calendar day). As per the FMP, the quota would be divided with quota Period 1 (May 1 through October 31) allocated 57.9% of the quota (8.7 M lbs), and quota Period 2 (November 1 through April 30) allocated 42.1% of the quota (6.3 M lbs).

8.11.6 Economic Analysis

The economic impacts of the proposed actions are discussed in Section 7.0 of this document. None of the alternatives under consideration are expected to result in negative economic impacts. Higher quotas (Alternatives 2, 3, and 4) are expected to increase revenue from the dogfish fishery. In general, no significant economic impacts are expected because the alternatives are consistent with the goals of the FMP and are unlikely to result in significant deviation (negatively) from the status quo.

8.11.7 Determination of Significance under E.O. 12866

NMFS Guidelines provide criteria to be used to evaluate whether a proposed action is significant. A significant regulatory action means any regulatory action that is likely to result in a rule that may:

1. *Have an annual effect on the economy of $100 million or more, or adversely effect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or tribal governments or communities.*

The proposed action will not have an effect on the economy in excess of $100 million. The proposed action is not expected to have any adverse impacts on the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local or tribal governments or communities.

2. *Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency.*

The proposed action will not create a serious inconsistency with, or otherwise interfere with, an action taken or planned by another agency. No other agency has indicated that it plans an action that will affect the spiny dogfish fishery in the EEZ.

3. *Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof.*

The proposed action will not materially alter the budgetary impact of entitlements, grants, user fees or loan programs, or the rights and obligations of their participants.

4. *Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.*

The proposed action does not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866.

8.11.8 Initial Regulatory Flexibility Analysis

The following sections contain analyses of the effect of the proposed action on small entities. Under Section 603(b) of the RFA, each initial regulatory flexibility analysis is required to address:

1. Reasons why the agency is considering the action,
2. The objectives and legal basis for the proposed rule,
3. The kind and number of small entities to which the proposed rule will apply,
4. The projected reporting, record-keeping and other compliance requirements of the proposed rule, and
5. All Federal rules that may duplicate, overlap, or conflict with the proposed rule.

8.11.9 Reasons for Considering the Action

The purpose and need for this action is identified in Section 4.1 of this document. The Spiny Dogfish FMP requires that the Council and the Regional Administrator annually review the best available stock and fishery data when developing specifications for the upcoming fishing year.

8.11.10 Objectives and Legal Basis for the Action

The objective of the proposed action is to implement specifications for the spiny dogfish fishery, as required under the regulations implementing the Spiny Dogfish FMP, which are provided in 50 CFR 648, Subpart L.

8.11.11 Description and Number of Small Entities to Which the Rule Applies

All of the potentially affected businesses are considered small entities under the standards described in NOAA Fisheries guidelines because they have gross receipts that do not exceed $3.5 million annually. A discussion of vessel activity during the 2008 fishing year is given in Section 6.5.1 of this document.

8.10.12 Recordkeeping and Reporting Requirements

The proposed action does not introduce any new reporting, recordkeeping, or other compliance requirements.

8.11.13 Duplication, Overlap, or Conflict with Other Federal Rules

The proposed action does not duplicate, overlap or conflict with any other Federal rules.

8.11.14 Economic Impacts on Small Entities

Section 7.0 of this document contains the economic analysis of the alternatives that were considered during the specification process.

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TABLES

Table 1. Landings of spiny dogfish (1,000s lbs) in the Northwest Atlantic Ocean for calendar years 1962 to 2008.

Year	US Comm	US Rec	US Total	Canada	Former USSR	Other Foreign	Total (NW Atl.Stock)
1962	518	-	518	-	-	-	518
1963	1,344	-	1,344	-	-	2	1,346
1964	1,610	-	1,610	-	-	35	1,645
1965	1,076	-	1,076	20	414	22	1,532
1966	1,274	-	1,274	86	20,699	-	22,059
1967	612	-	612	-	5,370	-	5,982
1968	348	-	348	-	9,709	-	10,057
1969	250	-	250	-	19,460	800	20,510
1970	233	-	233	42	10,855	1,578	12,709
1971	162	-	162	9	23,814	1,684	25,669
1972	153	-	153	7	51,372	1,519	53,050
1973	197	-	197	44	31,347	10,084	41,672
1974	281	-	281	79	45,071	8,971	54,401
1975	324	-	324	2	49,231	423	49,980
1976	1,212	-	1,212	7	36,775	236	38,229
1977	2,053	-	2,053	2	15,304	567	17,926
1978	1,826	-	1,826	185	1,272	99	3,383
1979	10,478	-	10,478	2,934	231	181	13,824
1980	9,006	-	9,006	1,477	774	547	11,804
1981	15,135	3,291	18,426	1,243	1,138	1,010	21,817
1982	11,928	154	12,082	2,101	60	743	14,986
1983	10,795	148	10,943	-	791	231	11,965
1984	9,811	201	10,012	9	642	220	10,883
1985	8,880	196	9,076	29	1,530	701	11,336
1986	6,057	401	6,459	46	472	340	7,316
1987	5,960	675	6,634	617	256	51	7,558
1988	6,846	791	7,637	-	1,265	161	9,063
1989	9,903	922	10,825	366	373	192	11,755
1990	32,475	395	32,870	2,901	844	22	36,637
1991	29,049	289	29,338	644	481	35	30,498
1992	37,165	474	37,639	1,828	57	90	39,614
1993	45,509	265	45,774	3,111	-	60	48,944
1994	41,447	340	41,786	4,010	-	4	45,801
1995	50,068	141	50,209	2,090	-	31	52,330
1996	60,055	57	60,112	917	-	520	61,550
1997	40,460	146	40,606	983	-	472	42,061
1998	45,476	134	45,609	2,379	-	1,338	49,326
1999	32,760	119	32,880	5,439	-	1,221	39,540
2000	20,407	10	20,418	5,902	-	1,089	27,408
2001	5,056	61	5,117	8,278	-	666	14,061
2002	4,839	452	5,290	6,614	-	-	11,904
2003	2,579	87	2,667	2,800	-	-	5,467
2004	2,160	244	2,404	5,150	-	-	7,554
2005	2,535	79	2,615	4,034	-	-	6,649
2006	5,212	-	5,212	5,185	-	-	10,397
2007	7,723	185	7.908	5,132	-	-	13,040
2008	9,057	471	9,528	3,466	-	-	12,994

Source: unpublished NMFS Dealer Reports, South Atlantic General Canvass, MRFSS data, and SAW-43.

Table 2. Commercial landings (1,000s lbs) of spiny dogfish by state from calendar years 1962 through 2008.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Total
1962	48	0	0	0	6	55	4	0	38	367	0	518
1963	757	0	0	0	0	78	4	0	36	468	0	1,344
1964	225	0	0	1	10	73	1	0	27	1,273	0	1,610
1965	378	0	17	2	15	97	2	0	16	550	0	1,076
1966	572	0	0	0	11	180	3	0	15	493	0	1,274
1967	181	0	15	1	4	196	0	0	14	201	0	612
1968	0	0	1	0	50	136	7	0	16	138	0	348
1969	0	0	0	0	5	145	13	0	17	70	0	250
1970	0	0	5	1	18	119	1	0	13	74	0	233
1971	0	0	1	0	9	111	12	0	3	24	0	162
1972	0	0	2	18	0	113	0	0	5	14	0	153
1973	0	0	12	23	0	98	5	0	10	49	0	197
1974	0	0	7	5	0	176	1	1	14	76	0	281
1975	0	0	4	20	0	223	2	4	6	65	0	324
1976	944	0	7	4	2	206	4	0	7	38	0	1,212
1977	1,748	0	38	58	2	172	10	0	8	16	0	2,053
1978	1,426	70	69	6	5	194	14	1	16	24	0	1,826
1979	2,314	310	6,536	4	9	213	865	0	12	215	0	10,478
1980	1,365	15	6,161	1	0	229	580	0	11	641	3	9,006
1981	1,138	0	9,972	4	4	110	204	8	1,533	2,156	4	15,135
1982	623	0	6,361	3	3	104	5	3	1,974	2,846	6	11,928
1983	496	1	9,987	0	9	57	1	4	213	27	0	10,795
1984	1,247	0	8,164	24	5	77	9	6	259	19	0	9,811
1985	903	0	7,636	2	10	137	8	0	170	14	1	8,880
1986	770	0	4,774	5	19	295	53	0	129	12	0	6,057
1987	598	0	5,148	31	6	156	4	0	8	10	0	5,960
1988	482	1	5,828	1	94	86	10	0	24	19	302	6,846
1989	4,880	0	4,925	4	1	48	23	0	4	19	0	9,903
1990	6,366	185	17,807	1,301	24	18	4,544	0	2,182	7	41	32,475
1991	2,016	0	14,489	3,160	9	77	2,716	6	4,939	174	1,463	29,049
1992	1,719	402	18,376	2,028	22	156	2,535	0	3,063	229	8,635	37,165
1993	3,525	1,642	26,831	1,924	15	95	770	0	1,796	105	8,806	45,509
1994	1,813	2,598	23,214	530	170	237	1,130	0	1,429	447	9,878	41,447
1995	1,664	2,106	28,760	574	294	934	2,389	63	3,117	810	9,357	50,068
1996	911	1,080	26,959	1,129	706	1,328	4,635	0	7,151	2,483	13,674	60,055
1997	449	1,009	21,665	1,015	347	488	3,950	0	4,227	4,275	3,035	40,460
1998	274	1,893	24,911	1,769	267	1,457	6,305	2	2,399	3,190	3,008	45,476
1999	35	1,239	14,915	1,338	88	1,453	3,925	0	2,134	5,018	2,617	32,760
2000	8	2,335	5,762	306	30	1,906	5,222	0	450	1,545	2,845	20,407
2001	0	536	3,913	394	7	63	17	0	0	126	0	5,056
2002	1	349	3,799	438	0	50	1	0	2	196	3	4,839
2003	0	175	2,006	123	1	38	0	0	1	236	0	2,579
2004	3	0	1,208	149	50	53	7	0	6	261	423	2,160
2005	29	153	1997	147	84	48	1	0	6	63	8	2,535
2006	184	620	2797	549	81	15	0	0	21	941	4	5,212
2007	109	185	2,795	525	23	25	14	0	23	3,895	129	7,723
2008	49	1,374	3,578	237	10	22	50	0	111	3,491	134	9,057

Source: unpublished NMFS Dealer Reports, South Atlantic General Canvass data.

Table 3. Ex-vessel value and price per pound of commercially landed spiny dogfish, Maine - North Carolina combined, 1996-2008.

Calendar Year	Value ($1,000)	Price ($/lb)	Fishing Year	Value ($1,000)	Price ($/lb)
1996	10,877	0.18	1996	10,371	0.18
1997	6,781	0.15	1997	5,717	0.14
1998	7,833	0.17	1998	8,338	0.17
1999	5,400	0.16	1999	5,510	0.17
2000	4,342	0.21	2000	1,989	0.24
2001	1,137	0.22	2001	1,147	0.23
2002	989	0.20	2002	970	0.20
2003	364	0.14	2003	415	0.12
2004	311	0.14	2004	260	0.17
2005	479	0.19	2005	545	0.21
2006	1,188	0.23	2006	1,434	0.22
2007	1,508	0.20	2007	1,360	0.20
2008	2,207	0.24	2008	2,157	0.24

Source: Unpublished NMFS Dealer Weighout and South Atlantic General Canvass data.

Table 4. Spiny dogfish landings (lbs) by month in FY2008.

	Month	Landings(lbs)	Pct of Total
Period 1	May	246,814	2.7%
	Jun	763,783	8.5%
	Jul	1,010,524	11.3%
	Aug	939,705	10.5%
	Sep	2,512,131	28.0%
	Oct	987	0.0%
	Total	**5,473,944**	**61.0%**
Period 2	Nov	1,051,470	11.7%
	Dec	1,312,176	14.6%
	Jan	1,134,664	12.6%
	Feb	1,226	0.0%
	Mar	0	0.0%
	Apr	1,706	0.0%
	Total	**3,501,242**	**39.0%**
	Grand Total	**8,975,186**	**100.0%**

Source: Unpublished NMFS dealer reports

Table 5. Recreational landings (N) of spiny dogfish by state for 2008.

State	Landings (N)	Pct of Total
MASSACHUSETTS	44,979	52.7%
NEW JERSEY	26,542	31.1%
DELAWARE	4,716	5.5%
MARYLAND	2,854	3.3%
CONNECTICUT	2,385	2.8%
NEW HAMPSHIRE	2,230	2.6%
OTHER	1,720	2.0%
TOTAL	85,426	100.0%

Source: NMFS Marine Recreational Fisheries Statistical Survey

Table 6. Commercial gear types associated with spiny dogfish harvest in FY2008.

Commercial Gear Type	Landings (1,000s lbs)	Pct Total
GILL NET	6,122,027	68.2%
HOOK AND LINE	1,364,636	15.2%
UNKNOWN	693,538	7.7%
TRAWL,OTTER,BOTTOM	442,469	4.9%
OTHER	352,516	3.9%
TOTAL	8,975,186	100.0%

Source: Unpublished NMFS dealer reports

Table 7. Discards associated with the dominant gear types used to harvest spiny dogfish in FY2008 as reported in vessel trip report (VTR) data. Species comprising ~2% or more of the discards by gear are shown.

Gill Net, Sink			Hook and Line			Trawl, Otter, Bottom		
Discard Species	**Discards (lbs)**	**Pct Of Total for this Gear**	**Discard Species**	**Discards (lbs)**	**Pct Of Total for this Gear**	**Discard Species**	**Discards (lbs)**	**Pct Of Total for this Gear**
DOGFISH, SPINY	2,239,083	90.2%	DOGFISH, SPINY	111,500	89.7%	DOGFISH, SPINY	474,665	25.5%
COD, ATLANTIC	128,027	5.2%	COD, ATLANTIC	2,297	1.8%	COD, ATL	343,312	18.5%
OTHER	114,166	4.6%	SEA BASS, BLACK	2,245	1.8%	SKATE, NK	327,178	17.6%
			BASS, STRIPED	2,202	1.8%	HERRING, ATL	147,855	8.0%
			OTHER	6,043	12.2%	SCUP	124,358	6.7%
						SKATE, LITTLE	77,612	4.2%
						MACKEREL, ATL	77,356	4.2%
						FLOUNDER, YELT	71,579	3.9%
						FLOUNDER, SUM	56,834	3.1%
						OTHER	157,388	8.5%
Total	2,481,276	**100%**	**Total**	**124,287**	**100%**	**Total**	**1,858,137**	**100%**

Source: 2007 vessel trip reports

Table 8. Federally permitted dogfish vessel activity by home port state in FY2008. Active vessels are defined as vessels identified in the dealer reports as having landed spiny dogfish in FY2008.

State	Permitted Vessels	Pct of Total
MA	1,105	36.6%
NJ	444	14.7%
ME	370	12.3%
NY	286	9.5%
RI	201	6.7%
NC	162	5.4%
NH	141	4.7%
VA	120	4.0%
CT	59	2.0%
MD	45	1.5%
DE	34	1.1%
PA	27	0.9%
FL	14	0.5%
GA	6	0.2%
ALL OTHERS	9	0.2%
TOTAL	3,142	100.0%

State	Active Vessels	Pct of Total
MA	118	51.5%
NH	30	13.1%
RI	27	11.8%
ME	14	6.1%
NJ	13	5.7%
NY	11	4.8%
MD	5	2.2%
VA	4	1.7%
NC	3	1.3%
CT	3	1.3%
ALL OTHERS	< 3	0.5%
TOTAL	229	100.0%

Source: NMFS permit database, Dealer weighout data

Table 9. Federally permitted spiny dogfish dealers by state in FY2008. Active dealers are defined as dealers identified in the federal dealer reports as having bought spiny dogfish in FY2008.

State	Permitted Dealers	Pct of Total
MA	76	27.2%
NY	63	22.6%
NJ	36	12.9%
RI	26	9.3%
NC	22	7.9%
VA	21	7.5%
ME	15	5.4%
NH	6	2.2%
MD	5	1.8%
ALL OTHERS	9	3.2%
TOTAL	288	100.0%

State	Active Dealers	Pct of Total
MA	19	32.8%
NY	9	15.5%
NC	9	15.5%
RI	8	13.8%
VA	6	10.3%
ALL OTHERS	7	12.1%
TOTAL	61	100.0%

Source: NMFS permit database, Dealer weighout data

Table 10. Commercial landings (lbs) and value of spiny dogfish by port for fishing year 2008.

Port	Landings (lbs)	Pct of Total	Value ($)	Pct of Total	Total Port Value ($)	Dogfish Value / Port Value
GLOUCESTER, MASSACHUSETTS	1,479,309	16.5%	404,932	18.8%	49,794,599	0.8%
VIRGINIA BEACH/LYNNHAVEN, VIRGINIA	1,181,420	13.2%	236,284	11.0%	497,742	47.5%
WANCHESE, NORTH CAROLINA	923,989	10.3%	138,078	6.4%	15,110,190	0.9%
CHATHAM, MASSACHUSETTS	909,233	10.1%	226,859	10.5%	15,014,983	1.5%
WACHAPREAGUE, VIRGINIA	506,423	5.6%	96,710	4.5%	487,687	19.8%
SEABROOK, NEW HAMPSHIRE	459,368	5.1%	148,825	6.9%	2,825,527	5.3%
MARSHFIELD, MASSACHUSETTS	414,910	4.6%	144,921	6.7%	2,568,614	5.6%
ALL OTHERS	3,100,527	34.5%	760,653	35.3%	472,112,052	0.2%
TOTAL	**8,975,179**	**100.0%**	**2,157,262**	**100.0%**	**558,411,394**	**n/a**

Source: Unpublished NMFS dealer reports

11.0 LIST OF AGENCIES AND PERSONS CONSULTED

This document was prepared by the Mid-Atlantic Fishery Management Council in consultation with the National Marine Fisheries Service and the New England Fishery Management Council.

Members of the Spiny Dogfish Monitoring Committee include:

James Armstrong, MAFMC Staff (Monitoring Committee Chair)
Angel Bolinger, Maryland DNR
Emily Bryant, NMFS NERO
Clark Gray, North Carolina Division of Marine Fisheries
Chris Kellogg, New England Fishery Management Council
Dan McKiernan, Massachusetts Division of Marine Fisheries
Jack Musick, Virginia Institute of Marine Sciences
Paul Rago, NEFSC Population Dynamics Branch
Eric Schneider, Rhode Island Division of Fish and Wildlife
Chris Hickman, North Carolina ex-officio industry advisor
Eric Brazer, Massachusetts ex-officio industry advisor

Members of the Joint Spiny Dogfish Committee include:

Red Munden (Chair) MAFMC
Dana Rice (Vice-Chair) NEFMC
Erling Berg MAFMC
Howard King MAFMC
Jack Travelstead MAFMC
Frank Blount NEFMC
David Goethel NEFMC

In addition, the following organizations/agencies were consulted during the development of the spiny dogfish specifications, either through direct communication/correspondence and/or participation in Council public meetings:

NOAA Fisheries, National Marine Fisheries Service, Northeast Regional Office, Gloucester MA
Northeast Fisheries Science Center, Woods Hole MA
Atlantic States Marine Fisheries Commission
The Ocean Conservancy

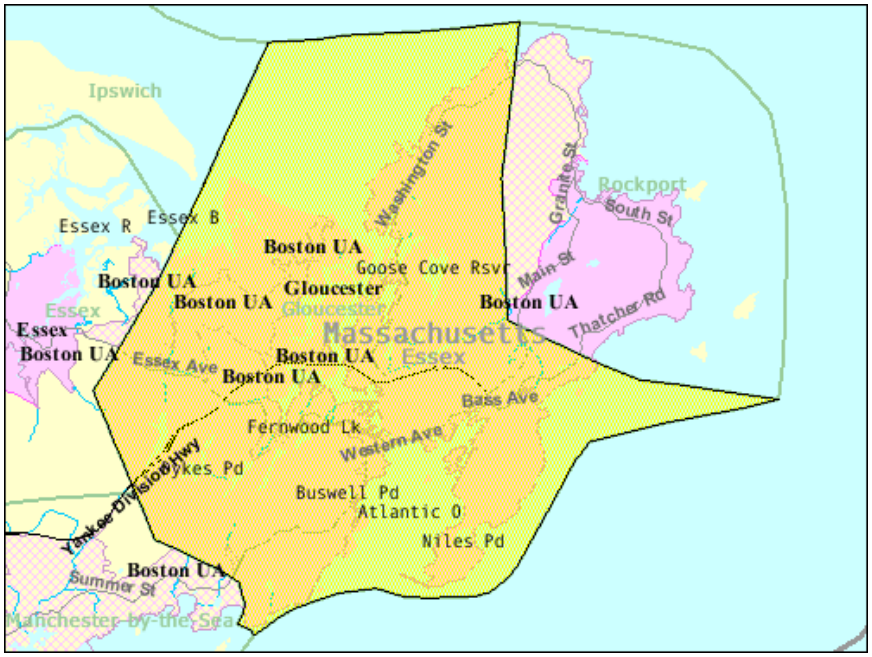
APPENDIX 1

Relevant Port and Community Descriptions

GLOUCESTER, MA[1]
Community Profile[2]

PEOPLE AND PLACES
Regional orientation

The city of Gloucester (42.62°N, 70.66°W) is located on Cape Ann, on the northern east coast of Massachusetts in Essex County. It is 30 miles northeast of Boston and 16 miles northeast of Salem. The area encompasses 41.5 square miles of territory, of which 26 square miles is land (USGS 2008).



Map 1. Location of Gloucester, MA (US Census Bureau 2000)

Historical/Background

The history of Gloucester has revolved around the fishing and seafood industries since its settlement in 1623. Part of the town's claim to fame is being the oldest functioning fishing community in the United States. It was established as an official town in 1642 and later became a city in 1873. By the mid 1800s, Gloucester was regarded by many to be the largest fishing port in the world. Unfortunately, with so many fishermen going to sea there were many deaths during the dangerous voyages. At least 70 fishermen died at sea in 1862 and the annual loss peaked at 249 in 1879. The construction of memorial statues and an annual memorial to fishermen demonstrates that the high death tolls are still in the memory of the town's residents.

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[1] These community profiles have been created to serve as port descriptions in Environmental Impact Statements (EISs) for fisheries management actions. They also provide baseline information from which to begin research for Social Impact Assessments (SIAs). Further, they provide information relevant to general community impacts for National Standard 8 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and information on minorities and low income populations for Executive Order (E.O.) 12898 on Environmental Justice.

[2] For purposes of citation please use the following template: "Community Profile of *Town, ST*. Prepared under the auspices of the National Marine Fisheries Service, Northeast Fisheries Science Center. For further information contact Lisa.L.Colburn@noaa.gov."

In 1924 a town resident developed the first frozen packaging device, which allowed Gloucester to ship its fish around the world without salt. The town is still well-known as the home of Gorton's frozen fish packaging company, the nation's largest frozen seafood company.

As in many communities, after the U.S. passed and enforced the Magnuson Act and foreign vessels were prevented from fishing within the country's EEZ (Exclusive Economic Zone), Gloucester's fishing fleet soon increased -- only to decline with the onset of major declines in fish stocks and subsequent strict catch regulations. For more detailed information regarding Gloucester's history. (Hall-Arber et al. 2001).

Demographics[3]

According to Census 2000 data (US Census Bureau 2000a), Gloucester had a total population of 30,273, up 5.4% from a reported population of 28,716 in 1990 (US Census Bureau 1990). Of this 2000 total, 47.9% were males and 52.1% were females. The median age was 40.1 years and 75.2% of the population was 21 years or older while 18.1% of the population was 62 or older.

The age structure (see Figure 1) between genders in Gloucester shows a peak between ages the ages of 40 to 49. Gloucester had a much lower percentage between the ages of 20-29. This may be an indication of out-migration after high school graduation for college or work since the fishing industry is not as strong as it was in the past.

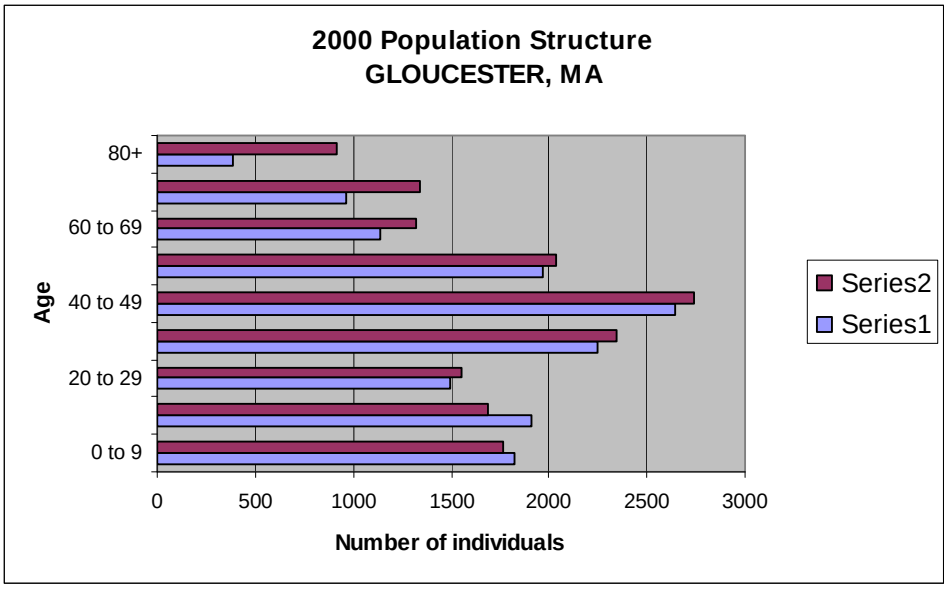

Figure 1. Gloucester's population structure by sex in 2000 (US Census Bureau 2000)

The majority of the population was white (96.9%), with 0.9% black or African American, 0.9% Asian, 0.4% Native American, and 0.1% Pacific Islander or Hawaiian (see Figure 2). Only 1.5% of the population identified themselves as Hispanic/Latino (see Figure 3). Residents linked their backgrounds to a number of different ancestries including: English (15.1%), Irish (20.1%), Italian (21.9%) and Portuguese (9.8%). With regard to region of birth, 77.4% were born in

[3] While mid-term estimates are available for some larger communities, data from the 2000 Census are the only data universally available for the communities being profiled in the Northeast. Thus for cross-comparability we have used 2000 data even though these data may have changed significantly since 2000 for at least some communities.

Massachusetts, 16.2% were born in a different state and 5.3% were born outside the U.S (including 2.6% who were not United States citizens).

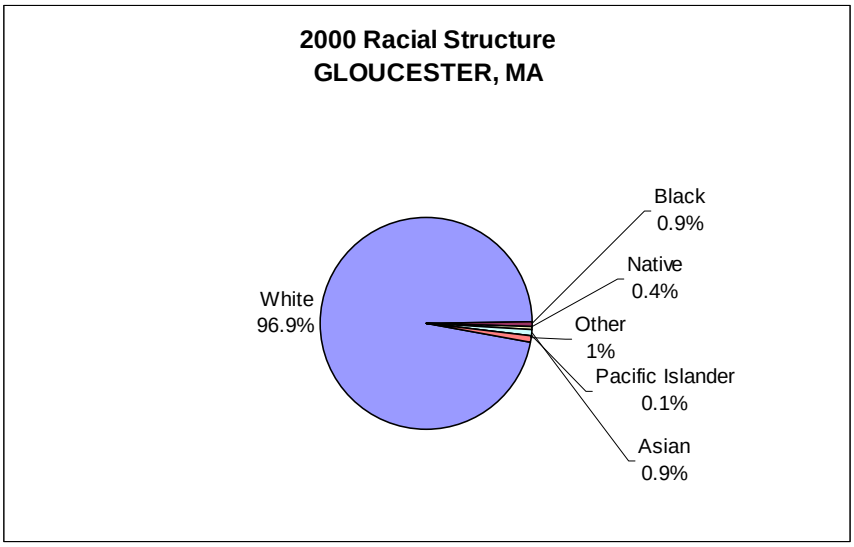

Figure 2. Racial Structure in 2000 (US Census Bureau 2000)

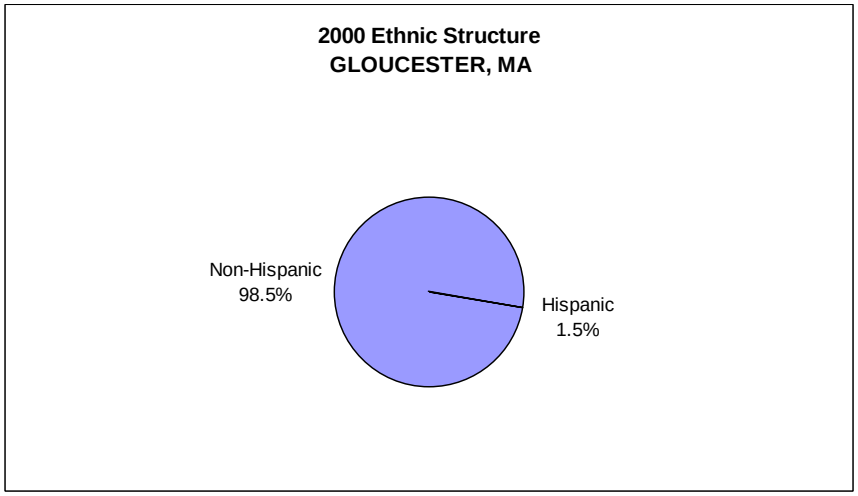

Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000)

According to Griffith and Dyer (1996), “Probably 80 percent of Gloucester's fishermen are Italian (mostly Sicilian). Although large immigration flows ended in the mid-1970s, there are at least 26 vessels (out of approximately 200) on which only Italian is spoken. Even among the fishermen who arrived at a very young age, Italian is often the first and virtually only language spoken. Some of these men depend on their wives to communicate with the English-speaking population when necessary” (Griffith and Dyer 1996).

For 89.7% of the population, only English was spoken in the home, leaving 10.3% in homes where a language other than English was spoken, including 3.6% of the population who spoke English less than “very well” according to the 2000 Census. Further, Doeringer et al. (1986) noted with regard to both Gloucester and New Bedford: "[m]any workers are geographically immobile because of close ties to community and family -- ties that are reinforced in some ports by the presence of a large number of recent immigrants, many of whom lack facility in English (Miller and van Maaned 1979; Poggie and Pollnac 1980)”

Of the population 25 years and over, 85.7% were high school graduates or higher and 27.5% had a bachelor's degree or higher. Again of the population 25 years and over, 5.2% did not reach ninth grade, 9.2% attended some high school but did not graduate, 25.9% completed high school, 31.5% had some college with no degree, 8.7% received an associate's degree, 17.2% earned a bachelor's degree, and 10.2% received either a graduate or professional degree.

Although the religion percentages are not available through U.S. Census data, according to the Association of Religion Data Archives (ARDA) in 2000, the religion with the highest number of congregations and adherents in Essex County was Catholic with 70 congregations and 362,900 adherents. Other prominent congregations in the county were United Church of Christ (49 with 15,358 adherents), United Methodist (31 with 8,713 adherents), Jewish (29 with 21,700 adherents), Episcopal (28 with 14,064 adherents) and American Baptist (24 with 5,291 adherents). The total number of adherents to any religion was up 4.1% from 1990 (ARDA 2000).

Issues/Processes

As regulations tighten, fishermen have been concerned that they will go out of business. It is interesting, however, that Gloucester has gained some business from Maine vessels which land here due to tightening restrictions at the statewide level in Maine.[4]

Fishermen and environmentalists in the Gloucester area have been heavily opposed to the development of two offshore LNG facilities near Gloucester. The facilities require fishermen to avoid a large area for security reasons, restricting some important fishing grounds and causing vessels to have to steam longer to get around the closed areas. Environmentalists have been concerned about the effect the ship traffic may have on endangered right whales inhabiting the area. In December 2006, $6.3 million was provided to the Gloucester Fishing Community Preservation Fund as part of a $12.6 million mitigation package for the LNG terminal being built off the coastline. These funds will be used to buy fishing permits from local fishermen who wish to leave the industry, and lease them to others (Moser 2007).

Cultural attributes

Gloucester demonstrates dedication to its fishing culture through numerous social events, cultural memorial structures, and organizations. St. Peter's Fiesta, celebrated since 1927, is in honor of the patron saint of fishermen. It is put on by the St. Peter's Club, an organization that facilitates social interactions for fisherman. The celebration lasts for five days at the end of June each year. Festivities for this celebration include a seine boat race and a greasy pole competition, but the parade carrying a statue of St. Peter around the town and a blessing of the Italian-American fishing fleet are the foci of the festival.

2004 marked the 20th anniversary of the Gloucester Schooner Festival, which is sponsored by Gorton's Seafood. "The Gloucester Schooner Festival celebrates the major contribution of the classic fishing schooner to the history of Gloucester. The events feature the last remaining of these great old vessels and their replicas, as they compete in the Mayor's Race for the Esperanto Cup, a trophy from the first International Fishermen's Races sailed in 1920." The Gloucester Maritime Heritage Center has held Gloucester Maritime Heritage Day annually for the last four years in conjunction with the Schooner Festival; activities commemorate the

[4] Profile review comment, Caleb Gilbert, Port Agent, NMFS, 11-15 Parker St., Gloucester, MA 01930, February 8, 2008

city's ties to the sea.[5] Another festival that celebrates the area's fishing culture is the Essex Clamfest.

Other indications of the fishing culture in Gloucester include its annual Fishermen's Memorial Service, an annual tradition to honor fishermen lost at sea. The earliest recording of this ceremony was in the mid 1800s. In the 1960s this service stopped due to the closure of Fishermen's Union Hall (the organization previously in charge of it), but in 1996 the Gloucester Mayor asked residents to revive the tradition. Now there is a committee that documents the ceremony's speeches and ceremonial walk from the American Legion Square to the Fishermen's Monument each year, so that the tradition is not lost in the future.[6]

Interesting infrastructure that demonstrates the significance of fishing history in this city include "Our Lady of Good Voyage Church" built in 1893 and the recent opening of the Gloucester Maritime Heritage Center, which provides visitors and the city residents with information of the historic and current fishing industry The statue named "The Man at the Wheel" was built in memory of the 5,300 fishermen that died at sea. In 2001 a new statue dedicated to fishermen's wives was built by The Gloucester Fishermen's Wives Association.

INFRASTRUCTURE

Current Economy

Gorton's of Gloucester employs approximately 500 people in their fish processing facility, but it is important to note that at least as of 2000, the company had been processing and packaging only imported fish since the mid 1990s. Major employers that provide over 100 jobs in Gloucester include the following businesses (number of employees listed in parentheses): Varian Semi Conductor Equipment Associates (950), Gorton's of Gloucester (500), Battenfeld Gloucester Engineering (400), Shaw's Supermarkets (350), Addison Gilbert Hospital (325), NutraMax Products (220), and Seacoast Nursing and Retirement (160). Cape Pond Ice employs up to 30 people during the busy summer season.

According to the U.S. Census 2000[7], 66.1% (24,397 individuals) of the population 16 years or older were in the labor force (see Figure 4), of which 3.2% were unemployed, 0.2% were in the Armed Forces, and 62.7% were employed.

[5] Profile review comment, Harriet Webster, Gloucester Maritime Heritage Center, 23 Harbor Loop Rd., Gloucester, MA 01930, October 19, 2007

[6] For more information call (978) 281-9740 and (978) 283-1645 to speak with either Thelma Parks or Lucia Amero, both are on Fishermen Memorial Service Committee

[7] Again, Census data from 2000 are used because they are universally available and offer cross-comparability among communities. Some statistics, particularly median home price, are likely to have changed significantly since 2000.

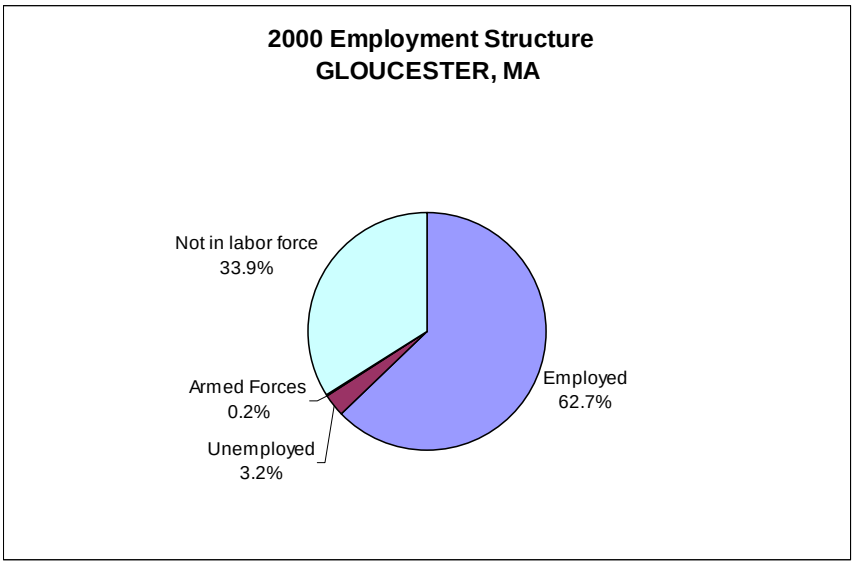

Figure 4. Employment Structure in 2000 (US Census Bureau 2000)

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 382 or 2.5% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 1,319 positions or 8.6% of jobs. Educational, health and social services (20.2%), manufacturing (16.7%), retail trade (10.8%) and arts, entertainment, recreation, accommodation and food services (9.2%) were the primary industries.

The median household income in 2000 was $47,772 (up 46.1% from $32,690 in 1990 [US Census Bureau 1990]) and median per capita income in 2000 was $25,595. For full-time year round workers, males made approximately 35.7% more per year than females.

The average family in Gloucester in 2000 consisted of 3.0 persons. With respect to poverty, 7.1% of families (up from 6.7% in 1990 [US Census Bureau 1990a]) and 8.8% of individuals were below the U.S. Census poverty threshold. This threshold is $8,794 for individuals and ranges from $11,239 through $35,060 for families, depending on number of persons (2-9) (US Census Bureau 2000a). In 2000, 26.0% of all families (of any size) earned less than $35,000 per year.

In 2000, Gloucester had a total of 13,958 housing units, of which 90.2% were occupied and 54.3% were detached one unit homes. Just over half (53.9%) of these homes were built before 1940. Mobile homes accounted for 0.1% of housing units; 88.7% of detached units had between 2 and 9 rooms. In 2000, the median cost for a home in this area was $204,600. Of vacant housing units, 70.4% were used for seasonal, recreational, or occasional use. Of occupied units, 40.3% were renter occupied.

Government

Gloucester's city government is run by an elected mayor and city council.

Fishery involvement in government

The Gloucester Fisheries Commission is the only municipal-level government sector focused on fisheries, but it is currently inactive. However, NOAA Fisheries, Fisheries Statistics Office, has two port agents based here. Port agents sample fish landings and provide a 'finger-on-the-pulse' of their respective fishing communities. The NOAA Fisheries Northeast Regional

Office is based in Gloucester; many of the employees here work closely with the city.[8] There is also a harbor master in town.

Institutional

Fishing associations

Both the Gloucester Fishermen's Association and Gloucester Lobstermen's Association are located in Gloucester (Stevenson nd). The Massachusetts Fisherman's Partnership focuses on issues for fishermen in different ports in Massachusetts. The Partnership responded to the need of health care for fishermen and their families by developing the Fishing Partnership Health Insurance Plan with federal and state aid. This plan has been in place since 1997 and reduces the amount of money that fishermen's families have to pay to be covered by health insurance (Hall-Arber et al. 2001).

Fishing assistance centers

The Gloucester Fishermen and Family Assistance Center was established in 1994. Currently it is run and funded by grants from the Department of Labor. "In an effort to help fishermen, their families, and other fishing workers to transition to new work, Massachusetts applied for and received grants from the U. S. Department of Labor to set up career centers. National Emergency Grants (NEG) fund centers in Gloucester, New Bedford and Cape Cod and the Islands to provide re-employment and re-training services to those individuals who can no longer make an income from fishing and fishing related businesses" (Commonwealth Corporation 2007).

The Gloucester Fishermen's Wives Association (GFWA) was founded in 1969 by the wives of Gloucester fishermen. In 2001 they constructed a memorial statue to the fishermen's wives of Gloucester.

The Gloucester Fishing Community Preservation Fund was established in 2007 to manage a project buying fishing permits from those who wish to get out of the industry and leasing them to others, using the funding received in a mitigation package for the development of an offshore LNG terminal in the fishing grounds (Moser 2007).

Other fishing related organizations

Northeast Seafood Coalition is a non-profit, membership organization located in Gloucester, focused on representing the interests of commercial fishermen. "The Gloucester Maritime Heritage Center is the only working historic waterfront in the Northeast that combines a historic working marine railway, where wooden vessels are hauled and repaired, with a Gulf of Maine aquarium, ongoing construction of wooden boats, and educational exhibits and programs" (GMHC 2007). They have a number of educational programs for children and teens, including field trips, boat building, internships, and after school programs (GMHC 2007).

Physical

There are several ways to access Gloucester and to travel within the city. Cape Ann Transportation Authority (CATA) is the bus system that runs from Gloucester to Rockport. State Routes 128, 127, and 133 are highway system providing access within and to the city. The neighboring town of Beverly has a small municipal airport with three asphalt runways. Amtrak and MBTA (Massachusetts Bay Transportation Authority) trains provide public transportation

[8] Profile review comment, Caleb Gilbert, Port Agent, NMFS, 11-15 Parker St., Gloucester, MA 01930, February 8, 2008

from Gloucester to the Boston area (State of Massachusetts 2007). Gloucester is approximately 35 miles from Boston and 106 miles from Portland, Maine by car (MapQuest nd).

Gloucester has been a full service port for the commercial fishing industry in the region; however, this status would be jeopardized if one or more of the facilities went out of business. Thus far it has provided all the necessary facilities for fishermen in the town, and even facilities needed for neighboring fishing communities. Offloading facilities located within the city include Capt. Vince, which deals almost exclusively in lobster, the Gloucester Seafood Display Auction, Ocean Crest, John B. Wrights, NE Marine Resources, and a few others who have been offloading fish in Gloucester for years (Robinson S 2003). There are nine lobster buyers that are either based in or come to Gloucester for purchasing.

Fishermen can purchase necessary equipment and have it repaired in town by either Gloucester Marine Railways or Rose Marine, both of which can provide haul out service for large vessels (Robinson 2003). Additionally, the Gloucester Maritime Heritage Center specializes in large wooden vessel restoration projects.[9] There are three other facilities that provide services for vessels under 40ft. Gloucester fishermen have a choice of nine gear and supply shops in town (Robinson S 2003). Harbor plans in 2006 have been formulated to maintain the necessary fishing infrastructure (Hall-Arber 2001). There are at least 11 locations that provide long-term mooring space and seven for temporary mooring space. At least four facilities provide a place for fishermen to purchase fuel (Robinson S 2003). Whole Foods runs the 17,000 sq. ft. Pigeon Cove seafood processing facility, which supplies Whole Foods markets throughout the country with seafood. Some of the fish processed here is caught in Gloucester or Rockport, but much of it is imported from elsewhere in New England or flown in from other parts of the world (Hall-Arber 2001).

Cape Pond Ice, started in 1848, is the only ice business remaining in Gloucester, and provides other ice services, such as vegetable transport and ice sculptures to offset the declining business from the fishing industry. B&N Gear is the only bottom trawl gear seller in town (Finch 2004). Gloucester Seafood Display Auction, opened in 1997 by the Cuilla family, quickly grew to become the largest open display auction of fresh seafood in North America as of 2000. This allows buyers to purchase fish directly from the boats rather than having to rely on fish brokers, as they did in the past (Dornbusch 2003).

INVOLVEMENT IN NORTHEAST FISHERIES[10]

Commercial

Although there are threats to the future of Gloucester's fishery, the fishing industry remains strong in terms of recently reported landings. Gloucester's commercial fishing industry had the 13th highest landings in pounds (78.5 million) and the nation's ninth highest landings

[9] Profile review comment, Harriet Webster, Gloucester Maritime Heritage Center, 23 Harbor Loop Rd., Gloucester, MA 01930, October 19, 2007

[10] In reviewing the commercial landings data several factors need to be kept in mind. 1) While both federal and state landings are included, some states provide more detailed data to NMFS than others. For example, shellfish may not be included or data may be reported only by county and not by port. 2) Some communities did not have individual port codes until more recently. Before individual port codes were assigned, landings from those ports were coded at the county level or as an aggregate of two geographically close small ports. Where landings were coded at the county level they cannot be sorted to individual ports for those earlier years, e.g., prior to 2000. 3) Where aggregated codes were used, those aggregate codes may still exist and be in use alongside the new individual codes. Here the landings which are still assigned to the aggregate port code cannot be sorted into the individual ports, so port level data are only those which used the individual port code. 4) Even when individual port codes exist, especially for small ports, landings may be coded at the county level. Here again it is impossible to disaggregate these to a port level, making the port level landings incomplete. 5) In all these cases, the per port data in this profile may under report the total level of landings to the port, though all landings are accounted for in the overall NMFS database.

value in 2002 ($41.2 million). In 2003 recorded state landings totaled 11.6 million pounds, with catches of lobster, cod, and haddock at 2.0 million, 4.7 million, and 2.6 million pounds landed, respectively (US Fisheries 2002). In 2002 Gloucester had the highest landings value of lobster in Massachusetts with the state-only landings worth $2 million and the combined state and federal landings recorded from federally permitted vessels was just over $10 million.

Gloucester's federally managed group with the highest landed value was largemesh groundfish with nearly $20 million in 2006 (see Table 1). Lobster landings were second in value, bringing in more than $10 million in 2006, a significant increase from the 1997-2006 average value of just over $7 million. Monkfish and herring were also valuable species; both had more valuable landings in 2006 than the ten year average values. The number of vessels home ported (federal) increased slightly from 1997 to 2006, but there was a slight reduction for the years 1998, 1999, and 2000 (Table 2).

Landings by Species

Table 1. Dollar value of Federally Managed Groups of landing in Gloucester

	Average from 1997-2006	2006 only
Largemesh Groundfish[11]	17,068,934	19,577,975
Lobster	7,036,231	10,179,221
Monkfish	3,556,840	4,343,644
Other[12]	3,246,920	1,906,551
Herring	3,127,523	5,623,383
Squid, Mackerel, Butterfish	1,065,567	3,692,506
Scallop	735,708	1,113,749
Smallmesh Groundfish[13]	732,353	254,287
Dogfish	375,972	316,913
Skate	63,488	27,334
Tilefish	52,502	245,398
Surf Clams, Ocean Quahog	29,033	77,805
Bluefish	21,672	18,116
Summer Flounder, Scup, Black Sea Bass	1,286	603

Note: Red crab are also landed, but cannot be reported due to confidentiality

[11] Largemesh groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

[12] "Other" species includes any species not accounted for in a federally managed group.

[13] Smallmesh multi-species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)

Vessels by Year[14]

Table 2. All columns represent vessel permits or landings value combined between 1997 and 2006

Year	# Vessels (home ported)	# Vessels (owner's city)	Level of fishing home port ($)	Level of fishing landed port ($)
1997	277	216	15,483,771	23,497,650
1998	250	196	18,078,326	28,394,802
1999	261	199	18,396,479	25,584,082
2000	261	202	19,680,155	41,929,807
2001	295	230	18,614,181	37,961,334
2002	319	247	21,316,029	37,795,464
2003	301	225	22,451,526	37,795,464
2004	298	227	24,531,345	42,760,975
2005	287	217	34,319,544	45,966,974
2006	284	213	34,255,146	47,377,485

(Note: # Vessels home ported = No. of permitted vessels with location as homeport
 # Vessels (owner's city) = No. of permitted vessels with location as owner residence[15]
Level of fishing home port ($) = Landed value of fisheries associated with home ported vessels
Level of fishing landed port ($) = Landed value of fisheries landed in location)

Recreational

Gloucester is home to roughly a dozen fishing charter companies and party boats fishing for bluefin tuna, sharks, striped bass, bluefish, cod, and haddock. Between 2001- 2005, there were 50 charter and party vessels making 4,537 total trips registered in logbook data by charter and party vessels in Gloucester carrying a total of 114,050 anglers (NMFS VTR data). Some of the charter and party boats may be captained by part-time fishermen that needed a new seasonal income (Cape Ann Chamber of Commerce 2007). The Yankee Fleet offers deep sea fishing on their party boats on half-day, full-day, and overnight trips and charter fishing trips Sandy B Fishing Charters takes passengers in search of cod, haddock, tuna, and striped bass. Black Pearl Charters also has offshore trips for cod and haddock, and inshore trips for bluefish and striped bass.

Subsistence

Information on subsistence fishing in Gloucester is either unavailable through secondary data collection or the practice does not exist.

FUTURE

The Massachusetts Department of Housing and Community Development recognize that the fishing industry is changing. The city must adapt to these major economic changes.

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[14] Numbers of vessels by owner's city and homeport are as reported by the permit holder on permit application forms. These may not correspond to the port where a vessel lands or even spends the majority of its time when docked.

[15] The Owner-City from the permit files is technically the address at which the owner receives mail concerning their permitted vessels, which could reflect the actual location of residence, the mailing address as distinct from residence, owner business location, or the address at which a subsidiary receives mail about the permits.

Although the city is preparing for other industries, such as tourism, they are also trying to preserve both the culture of fishing and the current infrastructure necessary to allow the fishing industry to continue functioning. The city is also currently working with the National Park Service to plan an industrial historic fishing port, which would include a working fishing fleet (State of Massachusetts 2007). This would preserve necessary infrastructure for the fishing industry and preserve the culture to further develop tourism around fishing.

According to newspaper articles (Finch 2004) and city planning documents, residents have conflicting visions for the future of Gloucester. Many argue that the fishing industry is in danger of losing its strength. For example an anthropological investigation of the fishing infrastructure in Gloucester (Robinson 2003) found that the port is in danger of losing its full-service status if some of the businesses close down. With stricter governmental regulations on catches to rebuild declining and depleted fish stocks, many residents are choosing to find other livelihood strategies, such as tourism or other businesses. In 1996, the NMFS piloted a vessel buyback program to decrease the commercial fishing pressure in the northeast. Of the 100 bids applying to be bought by the government, 65 were from Gloucester fishermen (Gorlick 2000). This could be taken as an indication that these fishermen do not see any future in fishing for themselves in the Northeast. NMFS adjusted this program to just buy back permits rather than vessels. Massachusetts had the highest sale of permits, though the number of Gloucester permits could not be obtained at this time.[16]

On the other hand, there are fishermen who claim the fishing and seafood industries will remain strong in the future, despite the pessimistic forecasts. The Gloucester Seafood Festival and Forum is one example of celebrating and promoting Gloucester seafood industry (City of Gloucester 2007).

Whole Foods/Pigeon Cove recently expanded its facility to 17,000 sq. ft., and has plans to expand further (Hall-Arber et al. 2001).

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[16] If buyback data is needed on the port level, contact Drew Kitts at NEFSC in Woods Hole, MA.

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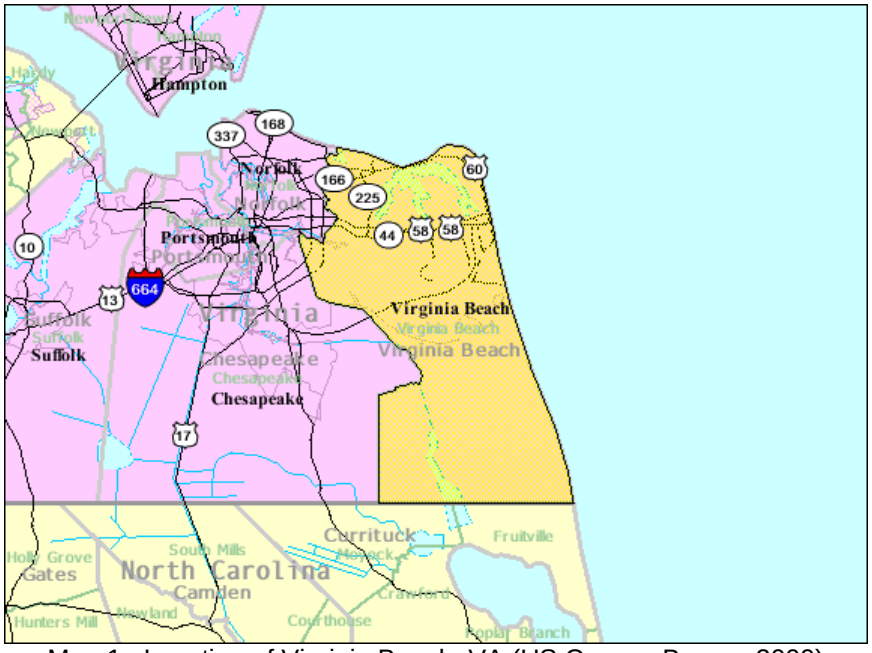
VIRGINIA BEACH, VA[1]

Community Profile[2]

PEOPLE AND PLACES

Regional orientation

Virginia Beach, Virginia (36.85°N, 75.97°W) is located in the southeast part of the state on the Atlantic coastline. The city is independent and is not part of any county. The city of Virginia Beach is nestled between North Carolina to the south, the Atlantic Ocean to its east, the Chesapeake Bay on the north, and in the southeastern region of Hampton Roads (USGS 2008).



Map 1. Location of Virginia Beach, VA (US Census Bureau 2000)

Historical/Background

The rich history of Virginia Beach dates back nearly 400 years, when English Colonists landed in Chesapeake Bay in Virginia on April 26, 1607. The colonists spent three days at the site of their first landing, erecting a cross and naming the spot Cape Henry. From Cape Henry they sailed across the bay and up the river, ultimately settling the colony of Jamestown. Later colonists settled around Cape Henry and the lands beyond. Princess Anne County was formed from the eastern section of Lower Norfolk County in 1691 and was named in honor of the youngest daughter of King James (City of Virginia Beach n.d.).

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[1] These community profiles have been created to serve as port descriptions in Environmental Impact Statements (EISs) for fisheries management actions. They also provide baseline information from which to begin research for Social Impact Assessments (SIAs). Further, they provide information relevant to general community impacts for National Standard 8 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and information on minorities and low income populations for Executive Order (E.O.) 12898 on Environmental Justice.

[2] For purposes of citation please use the following template: "Community Profile of *Town, ST*. Prepared under the auspices of the National Marine Fisheries Service, Northeast Fisheries Science Center. For further information contact Lisa.L.Colburn@noaa.gov."

Commerce grew as an industry in the 1700s. A resolution was passed to build a permanent lighthouse at Cape Henry to guide merchant ships safely to Virginia Beach shores. The Cape Henry Lighthouse was the first lighthouse to be authorized, completed and lighted by the Federal Government and now stands as a Historic Landmark (National Park Service 2001).

Demographics[3]

According to Census 2000 data, Virginia Beach had a total population of 425,257 up from the reported population of 363,069 in 1990. Of this 2000 total, 49.5% were males and 50.5% were females. The median age was 38.9 years and 72.6% of the population was 21 years or older while 20.7% was 62 years or older.

Virginia Beach's age structure (see Figure 1) shows the highest percentage of the population was between 30 and 39 years of age. This statistic suggests that professionals (post-graduates) are moving to Virginia Beach to live and work. There were also a large number of residents in all age categories through 40-49, after which the populations began to drop off, indicating that Virginia Beach was a family-oriented community.

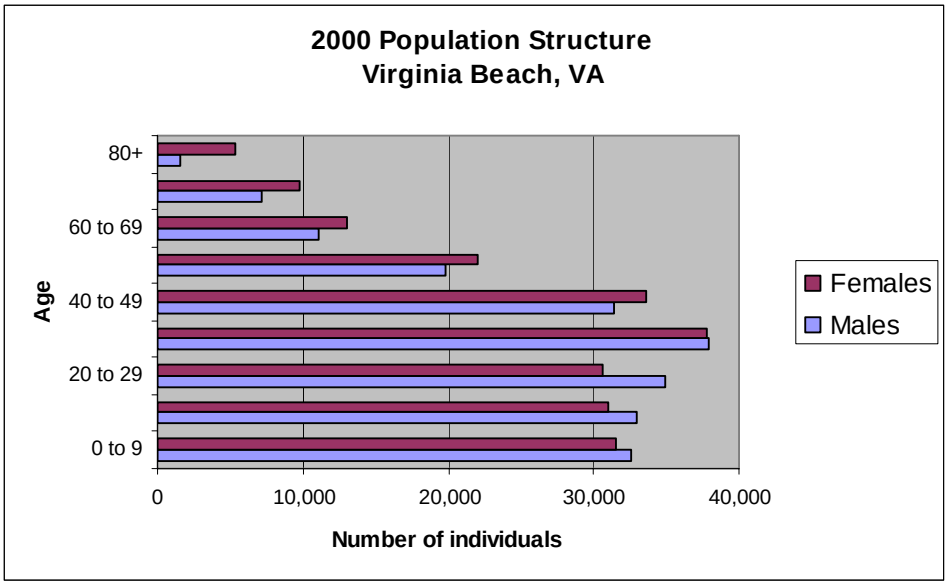

Figure 1. Virginia Beach's population structure by sex in 2000 (US Census Bureau 2000)

The majority of the population was white (70.4%) with 18.7% of residents black or African American, 4.8% Asian, 0.4% Native American, and 0.1% Pacific Islander or Hawaiian (see Figure 2). Only 4.1% of the population identified themselves as Hispanic/Latino (see Figure 3). Residents linked their backgrounds to a number of different ancestries including: German (13.7%), Irish (12.4%), and Italian (5.6%). With the regard to region of birth, 37.7% were born in Virginia, 53.0% were born in a different state and 6.6% were born outside of the U.S. (including 2.4% who were not United States citizens).

[3] While mid-term estimates are available for some larger communities, data from the 2000 Census are the only data universally available for the communities being profiled in the Northeast. Thus for cross-comparability we have used 2000 data even though these data may have changed significantly since 2000 for at least some communities.

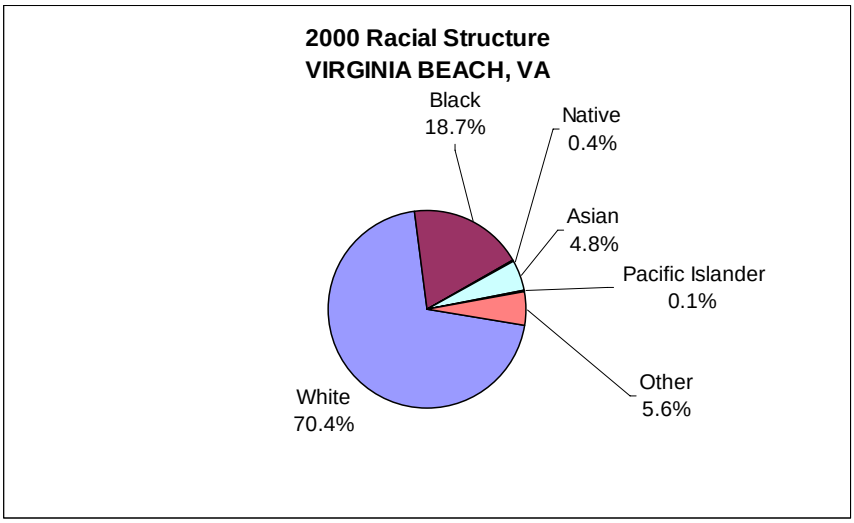

Figure 2. Racial Structure in 2000 (US Census Bureau 2000)

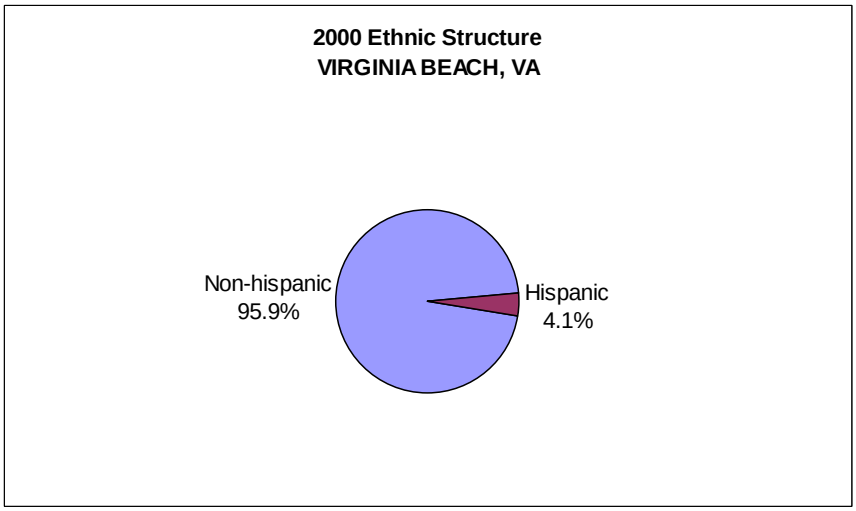

Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000)

For 89.7% of the population, only English was spoken in the home, leaving 10.3% in homes where a language other than English was spoken, including 3.3% of the population who spoke English less than 'very well' according to the 2000 Census.

Of the population 25 years and over, 90.4% were high school graduates or higher and 28.1% had a bachelor's degree or higher. Again of the population 25 years and over, 2.4% did not reach ninth grade, 7.1% attended some high school but did not graduate, 25.9% completed high school, 28.9% had some college with no degree, 7.5% received an associate's degree, 19.2% earned a bachelor's degree, and 8.9% received either a graduate or professional degree.

Although religion percentages are not available through the U.S. Census, according to the Association of Religion Data Archives in 2000, the religion with the highest number of congregations and adherents in Virginia Beach County was Catholic with 12 congregations and 40,922 adherents. Other prominent congregations in the county were Southern Baptist Convention (30 with 19,804 adherents), United Methodist (24 with 19,506 adherents), and Independent, Charismatic Churches (Evangelical Protestant) (3 with 17,525 adherents). The total number of adherents to any religion was down 8.2% from 1990 (ARDA 2000).

Issues/Processes

In August 2006, Omega Protein Corp agreed to a five year limit on its commercial catch of menhaden. The annual catch limit of 109,020 metric tons is the average annual harvest from 2001 through 2005. The decision, approved by Atlantic States Marine Fisheries Commission (ASMFC), is hailed as a "wonderful balance between conservation and commerce" by the Chesapeake Bay Foundation (Barisic 2006).

Discussion has ensued over Virginia Beach's oceanfront image, which has degraded due to inappropriate behavior and public safety threats from young delinquents. A committee consisting of business owners, residents and other community leaders has been formed to address the issues. Amongst the possible solutions discussed are to create more activities that exclude alcohol, learning more about the interests of young adults, and even hiring a consultant to develop a master plan for Virginia Beach (City of Virginia Beach nd).

The Oceana Naval Air Station, Virginia Beach's largest employer, may be closed down. City and state officials have said saving the base will protect the area's economy; however, jet noise and other hazards have made Oceana increasingly controversial with some residents (Galuszka 2001).

Beach erosion has been an issue in Virginia Beach for years. Every year between 1949 and 2001, Virginia Beach added sand to its resort strip at Sandbridge beach and underwent restoration in 2003. As much as 8 feet of Sandbridge beach a year disappears due to heavy wave energy on the shore, and replenishment takes the beach back to 200 feet. Sandbridge landowners pay extra taxes of 12 cents per $100 of assessed value for sand replenishment (Virginian Pilot 1998).

Cultural attributes

There are several cultural facilities located within the city limits of Virginia Beach. The Chesapeake Bay Center is an interactive visitor's center with a main attraction being a historical exhibition displaying scenes and artifacts of the 1607 Virginia Bay Colony settlement. The center also displays fine art and has an aquarium and environmental exhibitions which are accompanied with classroom space, a wet lab and touch tank developed by the Virginia Aquarium and Marine Science Center. Visitors to the Chesapeake Bay Center can participate in various hands-on programs such as kayaking in the Chesapeake Bay (VBCVB nd).

The Town Center project is underway downtown and includes a Westin Hotel with conference center, luxury condominiums, retail space, and parking facilities. The project will also include the eventual building of Sandler Center for the Performing Arts, a seafood restaurant, and a large commercial building.[4]

INFRASTRUCTURE

Current Economy

In the last fiscal year (June 2007), the city experienced "good, steady growth", according to the Department of Economic Development.[5]

"Four military bases in Virginia Beach have a tremendous economic impact on the region, with the Department of Defense spending $11 billion in 2002, and increasing in following years due to the War with Iraq." The bases include Oceana Naval Air Station, the

[4] Community Review comments, Mary Luskey, Research Manager, Dept. of Economic Development, 222 Central Park Ave, Suite 1000, Virginia Beach, VA 23462, October 19, 2007

[5] Community Review comments, Mary Luskey, Research Manager, Dept. of Economic Development, 222 Central Park Ave, Suite 1000, Virginia Beach, VA 23462, October 19, 2007

largest master jet base in the United States, employing 12,000; Little Creek Naval Amphibious Base, which employs 13,000; Fort Story, which conducts amphibious training operations and employs approximately 1,200 military and civilian personnel; and Dam Neck, a training base for combat direction and control systems, which employs 4,700 persons. Businesses serving soldiers, sailors, and their families employ even more area residents. Military Exchanges and PX's accounted for $123.8 million in sales in 2002.

The City of Virginia Beach has the lowest overall tax rates of any locality in the Hampton Roads on real estate, personal property, and utilities. There is also a reportedly plentiful supply of labor, with military spouses numbering over 40,000. A vast majority of these spouses work in full or part time in office and customer service positions. Other components of the work force include students (80,000) and active duty personnel (over 10,000).[6]

"In 2002 over 3 million sun-loving visitors spent more than $700 million during their stays at the resort city for accommodations, meals, entertainment, and other services, resulting in about 11,000 new service jobs." The city received $29 million in net direct revenue from tourist activity.

"About one-third of Virginia Beach's labor force is employed in retail and wholesale business. The city had more than 7,800 retail/wholesale businesses with total taxable sales of over $3.9 billion in 2002, an increase of 4.3 percent from the previous year" (City-date nd).

According to the US Census 2000[7], 72.9% (234,257 individuals) of the total population 16 years of age or over were in the labor force (see Figure 4), of which 2.6% were unemployed, 9.7% were in the Armed Forces, and 60.7% were employed.

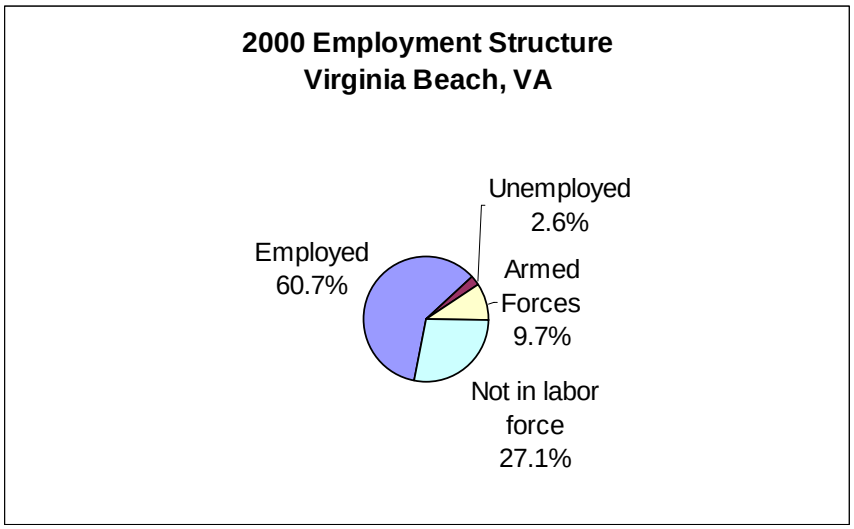

Figure 4. Employment structure in 2000 (US Census Bureau 2000)

According to the Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 421 positions or 0.2% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 8.8% of jobs. Education, health and social services (20.5%), retail trade (13.7%), professional,

[6] Community Review comments, Mary Luskey, Research Manager, Dept. of Economic Development, 222 Central Park Ave, Suite 1000, Virginia Beach, VA 23462, October 19, 2007

[7] Again, Census data from 2000 are used because they are universally available and offer cross-comparability among communities. Some statistics, particularly median home price, are likely to have changed significantly since 2000.

scientific, management, administrative, and waste management services (10.9%), and arts, entertainment, recreation, accommodation and food services (8.9%) were the primary industries.

Median household income in Virginia Beach was $48,705 (up 144.8% from $19,894 in 1990 [US Census Bureau 1990]) and median per capita income was $22,365. For full-time year round workers, males made approximately 23.0% more per year than females.

The average family in Virginia Beach consisted of 2.70 persons. With respect to poverty, 5.1% of families (less than 6.2% in 1990 [US Census Bureau 1990]) earned below the U.S. Census poverty threshold. This threshold is $8,794 for individuals and ranges from $11,239 through $35,060 for families, depending on number of persons (2-9) (US Census Bureau 2000b). In 2000, 12.1% of all families (of any size) earned less than $35,000.

In 2000, Virginia Beach had a total of 162,277 housing units of which 95.2% were occupied and 56.5% were detached one unit homes. Only 1.3% of these homes were built before 1940. Mobile homes, boats, RVs, vans, etc. accounted for 1.5% of the total housing units; 89.1% of detached units had between 2 and 9 bedrooms. In 2000, the median cost for a home in this area was $123,200. Of vacant housing units, 1.4% were used for seasonal, recreational, or occasional use. Of occupied units, 34.4% were renter occupied.

Government

The Virginia Beach government consists of a City Council, Mayor, and several Boards of Commission. The Virginia Beach City Council meets the first, second and fourth Tuesday of each month to discuss various concerns and agendas (City of Virginia Beach n.d.).

Fishery involvement in government

The Virginia Marine Resources Commission (VMRC) is a State Agency established in 1875 to preserve Virginia's marine and aquatic resources, including all tidal waters. The VMRC's Fisheries Management Division aids in the planning of state, interstate, and federal management organizations. Its Fisheries Advisory Council helps agencies create and implement management plans for both commercial and recreational fishery species. The Commission's headquarters are located in Newport News (VMRC nd).

Institutional

Fishing associations

The Virginia Beach Angler's Club offers the residents of Virginia Beach and surrounding communities a family oriented club that promotes the education and promotion of fresh and salt water fishing around the Chesapeake Bay area. The Club meets the first Thursday of each month at the Virginia Beach Fire Station to discuss local fisheries. Each month a guest speaker speaks on fishing and the variety of species found in and around the waters of Chesapeake Bay (TidalFish.com nd).

Fishing assistance centers

Information on fishing assistance centers in Virginia Beach is unavailable through secondary data collection.

Other fishing related organizations

Information on other fishing related organizations in Virginia Beach is unavailable through secondary data collection.

Physical

The city of Virginia Beach is very accessible through all types of major transportation. In fact, "distribution greatly benefits from the fact that Virginia Beach is within 750 miles of three-fourths of the country's industrial activity and two-thirds of its population. An integrated system of highway, air, rail, and sea services provides easy access to national and international markets" (City-Data.com nd). By automobile Virginia Beach can be reached by interstate 264, Route 60 and Route 149. The closest airport is the Norfolk International Airport which is 13.11 miles away and the closest train station is Dale's Train Station located just 12.5 miles away from the city's downtown area. Virginia Beach is 18 miles from Norfolk, 30 miles from Hampton, 37 miles from Newport News, and 208 miles from Washington, DC by car (MapQuest 2005).

Rudee Inlet at the south end of the Virginia Beach oceanfront opens on the Atlantic Ocean. Two major public marinas are located in Virginia Beach, Bubba's Marina and Lynnhaven Waterway Marina. These public marinas provide boat launching for a fee, and ramps open 24 hours (VaBeach.com nd). Lynnhaven Inlet is home to most of the commercial fishing fleet in Virginia Beach.

INVOLVEMENT IN NORTHEAST FISHERIES[8]

Commercial

The commercial fishing industry in Virginia has practiced aquaculture over the past ten years. Numerous products are raised in Virginia; the largest in quantity is hard clams (Kirkley et al. 2005). Sea Gate Marketing is one wholesale and processing facility listed for Virginia Beach.

Landings and vessel data provided for Virginia Beach combine data listed under Virginia Beach and Lynnhaven/Lynnhaven Inlet; all landings are listed under Virginia Beach/Lynnhaven as this is the name of the harbor within the city where landings are made. On average for 1997-2006, the most valuable landings were of "other" species, valued at over $2.5 million on average for those ten years, although worth just $555,000 in 2006. The summer flounder, scup, and black sea bass species grouping was second in averaged value at over $500,000; the value of this category was less in 2006 as well. Overall, landings in Virginia Beach increased from 1997-2000 to a high of $4.4 million in 2000, but then declined to just over $1 million by 2006. The number of vessels home ported in Virginia Beach/Lynnhaven varied from a high of 43 in 1999 down to 25 in 2006, and generally showed a declining trend. The level of home port fishing for these vessels was much lower than the level of landings overall, indicating that vessels from other ports land their catch here. The number of vessels with owners living in Virginia Beach exceeds the number of home ported vessels in all years; some vessel owners likely keep their boats in other nearby ports.

[8] In reviewing the commercial landings data several factors need to be kept in mind. 1) While both federal and state landings are included, some states provide more detailed data to NMFS than others. For example, shellfish may not be included or data may be reported only by county and not by port. 2) Some communities did not have individual port codes until more recently. Before individual port codes were assigned, landings from those ports were coded at the county level or as an aggregate of two geographically close small ports. Where landings were coded at the county level they cannot be sorted to individual ports for those earlier years, e.g., prior to 2000. 3) Where aggregated codes were used, those aggregate codes may still exist and be in use alongside the new individual codes. Here the landings which are still assigned to the aggregate port code cannot be sorted into the individual ports, so port level data are only those which used the individual port code. 4) Even when individual port codes exist, especially for small ports, landings may be coded at the county level. Here again it is impossible to disaggregate these to a port level, making the port level landings incomplete. 5) In all these cases, the per port data in this profile may under report the total level of landings to the port, though all landings are accounted for in the overall NMFS database.

Landings by Species

Table 1. Dollar value by Federally Managed Groups of Landings in Virginia Beach

	Average from 1997-2006	2006 only
Other[9]	2,668,790	555,304
Summer Flounder, Scup, Black Sea Bass	541,683	458,351
Dogfish	86,708	73,223
Scallop	33,902	0
Squid, Mackerel, Butterfish	24,930	419
Bluefish	23,904	2,134
Red Crab	15,737	0
Monkfish	2,007	43
Lobster	423	3,528
Herring	90	0
Tilefish	76	13
Skate	73	0
Smallmesh Groundfish[10]	36	38
Largemesh Groundfish[11]	19	0

Vessels by Year[12]

Table 2. All columns represent vessel permits or landings value combined between 1997-2006

Year	# Vessels (home ported)	# Vessels (owner's city)	Level of fishing home port ($)	Level of fishing landed port ($)
1997	27	39	249,822	2,703,777
1998	36	48	493,604	4,272,786
1999	43	54	693,717	4,347,932
2000	37	50	912,987	4,452,079
2001	35	52	918,173	3,990,595
2002	35	50	708,893	3,844,617
2003	33	46	564,337	3,636,945
2004	33	45	390,455	2,823,176
2005	31	44	473,379	2,818,818
2006	25	32	256,266	1,093,053

(Note: # Vessels home ported = No. of permitted vessels with location as homeport
 # Vessels (owner's city) = No. of permitted vessels with location as owner residence[13]
Level of fishing home port ($) = Landed value of fisheries associated with home ported vessels
Level of fishing landed port ($) = Landed value of fisheries landed in location)

[9] "Other" species includes any species not accounted for in a federally managed group
[10] Smallmesh multi-species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)
[11] Largemesh groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock
[12] Numbers of vessels by owner's city and homeport are as reported by the permit holder on permit application forms. These may not correspond to the port where a vessel lands or even spends the majority of its time when docked.
[13] The Owner-City from the permit files is technically the address at which the owner receives mail concerning their permitted vessels, which could reflect the actual location of residence, the mailing address as distinct from residence, owner business location, or the address at which a subsidiary receives mail about the permits.

Recreational

The city of Virginia Beach is known as the Striped Bass capital of the world. Virginia Beach has two major inlets for fishing and numerous boat ramps; Rudee Inlet found at the south end of Virginia Beach and Lynnhaven Inlet which is found on the west side of Virginia Beach, making access easy for visiting anglers towing a boat (VaBeach.com nd).

Charter fishing is also very popular in the community. The Virginia Beach Fishing Center located at the Rudee Inlet has the largest charter and party boat fleet on the Virginia coast (Virginia Tourism Corporation nd). Between 2001- 2005, there were 24 charter and party vessels making 2,364 total trips by charter and party vessels in Virginia Beach. These trips carried a total of 61,896 anglers.

Subsistence

Information on subsistence fishing in Virginia Beach is either unavailable through secondary data collection or the practice does not exist.

FUTURE

The future of Virginia Beach looks as promising as its past. However, the overall landscape of Virginia Beach is changing dramatically. The demographics of the city have changed over the years on a consistent basis to create a much more culturally diverse city. The city is also working to mature into a more diverse community. To understand and embrace this dramatic change, the City of Virginia Beach Department of Economic Development has and continues to implement strategies to create a diversified, growing, and dynamic economy through new business and the enhancement of existed businesses (City of Virginia Beach nd). The city also aims to become a year-round destination for business and pleasure. With a new Convention Center which opened in 2007, there have been 146 conventions and meetings and bookings made for future events up through the year 2012.[14]

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WANCHESE, NC[1]
Community Profile[2]

PEOPLE AND PLACES
Regional orientation

The village of Wanchese (35.8°N, 75.6°W) is located on Roanoke Island in North Carolina's Outer Banks (USGS 2008). It is 68 miles from Elizabeth City, NC and roughly 100 miles from the Norfolk/Virginia Beach/Hampton area in Virginia (MapQuest nd).

Map 1. Location of Wanchese, NC (US Census Bureau 2000)

Historical/Background

Wanchese is located on Roanoke Island, famous for its role in American History as the site of the first attempt (ultimately a failed attempt) at European settlement in the New World. The settlement of 117 men, women, and children sent here by Queen Elizabeth I and Sir Walter Raleigh in the late 1500s disappeared without a trace, and became known as the Lost Colony, a mystery which has yet to be solved. Wanchese and Manteo are named for two Native Americans who were brought back to England from a 1584 expedition to the island (ICW-NET nd). Archeological exploration of Wanchese found large piles of shells, indicating that the area's early Native American residents were harvesting oysters and other shellfish, and probably fish, from the waters around Roanoke Island long before European settlers established a tradition of

[1] These community profiles have been created to serve as port descriptions in Environmental Impact Statements (EISs) for fisheries management actions. They also provide baseline information from which to begin research for Social Impact Assessments (SIAs). Further, they provide information relevant to general community impacts for National Standard 8 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and information on minorities and low income populations for Executive Order (E.O.) 12898 on Environmental Justice.

[2] For purposes of citation please use the following template: "Community Profile of *Town, ST*. Prepared under the auspices of the National Marine Fisheries Service, Northeast Fisheries Science Center. For further information contact Lisa.L.Colburn@noaa.gov."

fishing here (Carolina Algonkian Project 2002). The English colonists who settled here were also very dependent upon harvesting marine species (Stoffle nd). Today Wanchese is advertised to tourists as a quaint fishing village where visitors can watch the fish come in to port and be shipped around the world (Outer Banks Visitors Bureau nd).

Demographics[3]

According to Census 2000 data[4], Wanchese had a total population of 1,527, up 10.6% from the reported population of 1,380 in 1990 (US Census Bureau 1990). Of this 2000 total, 50.7% were male and 49.3% were female. The median age was 37.2 years and 73.0% of the population was 21 years or older while 15.0% was 62 or older.

Wanchese's age structure (see Figure 1) shows a dip in the number of 20-29 year olds, indicating that many people may leave town for college or in search of employment around this age, characteristic of many fishing towns.

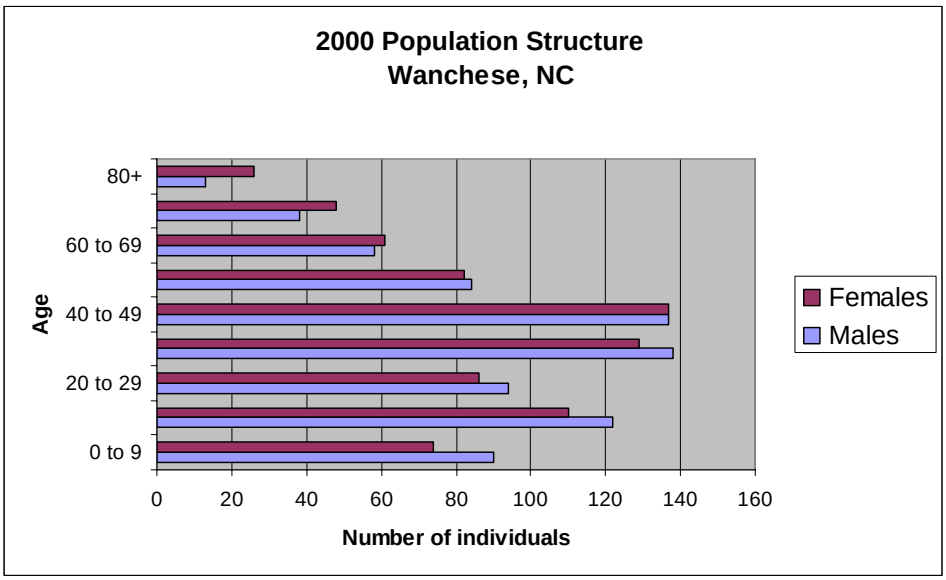

Figure 1. Wanchese's population structure by sex in 2000 (US Census Bureau 2000)

The majority of the population was white (98.5%), with 0.3% of residents black or African American, 0.1% Asian, 0.6% Native American, and none Pacific Islander or Hawaiian (see Figure 2). Only 1.8% of the population identified themselves as Hispanic/Latino (see Figure 3). Residents linked their backgrounds to a number of different ancestries including: English (23.6%), Irish (14.8%), and German (11.8%). With regard to region of birth, 55.6% were born in North Carolina, 42.6% were born in a different state and 1.2% were born outside of the U.S. (including 1.2% who were not United States citizens).

[3] While mid-term estimates are available for some larger communities, data from the 2000 Census are the only data universally available for the communities being profiled in the Northeast. Thus for cross-comparability we have used 2000 data even though these data may have changed significantly since 2000 for at least some communities.

[4] These and all census data, unless otherwise referenced, can be found at U.S. Census: American Factfinder 2000 http://factfinder.census.gov/home/saff/main.html; census data used are for Wanchese CDP (cited July 2007)

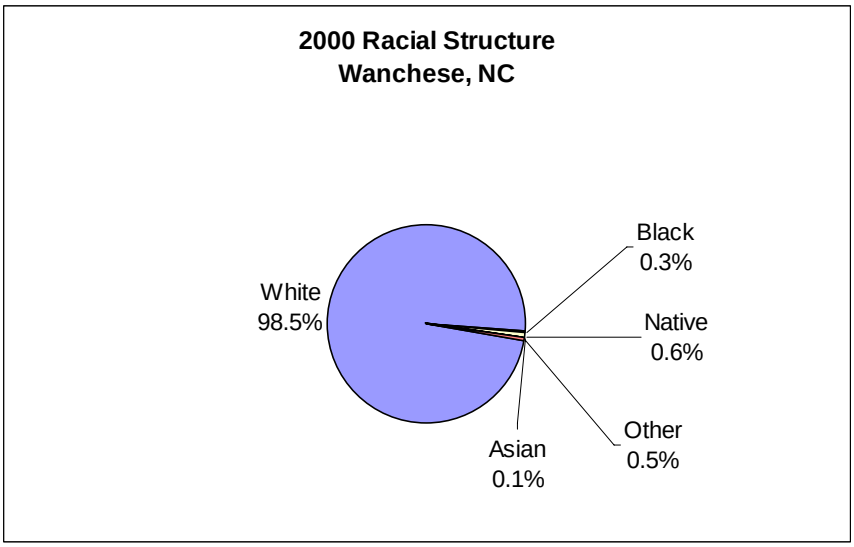

Figure 2. Racial Structure in 2000 (US Census Bureau 2000)

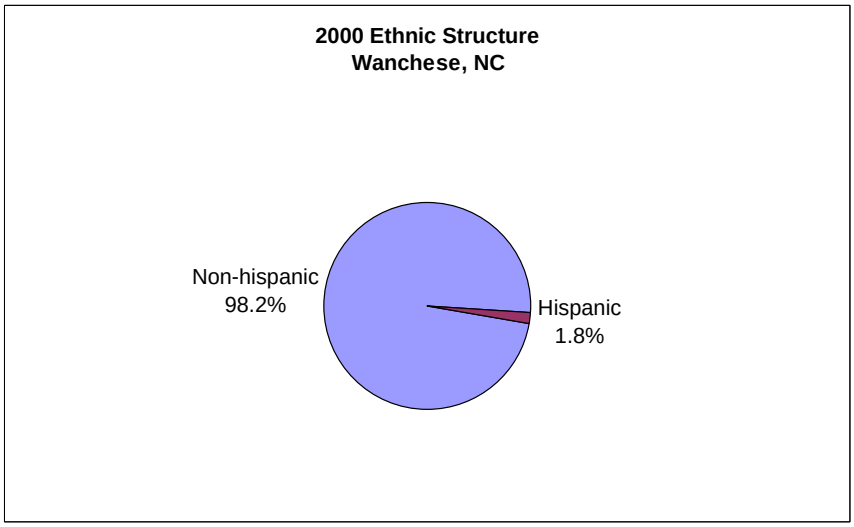

Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000)

For 98.8% of the population, only English was spoken in the home, leaving 1.2% in homes where a language other than English was spoken, and including none of the population who spoke English less than "very well" according to the 2000 Census.

Of the population 25 years and over, 76.5% were high school graduates or higher and 16.2% had a bachelor's degree or higher. Again of the population 25 years and over, 4.5% did not reach ninth grade, 19.0% attended some high school but did not graduate, 36.0% completed high school, 20.5% had some college with no degree, 3.8% received an associate's degree, 11.6% earned a bachelor's degree, and 4.5% received either a graduate or professional degree.

Although religion percentages are not available through the U.S. Census, according to the Association of Religion Data Archives in 2000, the religion with the highest number of congregations and adherents in Dare County was Methodist with 14 congregations and 4,686 adherents. Other prominent congregations were Catholic (4 with 2,097 adherents), Assembly of God (8 with 1,184 adherents), and Southern Baptist Convention (6 with 1,783 adherents). The total number of adherents to any religion was up 32.9% from 1990 (ARDA 2000).

Issues/Processes

For the last 43 years, the Army Corps of Engineers has been continuously dredging a channel at the entrance to Oregon Inlet, which connects the Roanoke Sound with the Atlantic Ocean. The Oregon Inlet receives heavy vessel traffic as it is the only navigable inlet between Cape Henry, Virginia and Hatteras Inlet, North Carolina, and it is commonly used by commercial fishing vessels from North Carolina and from other states (NCFA 2002). However, traveling the inlet can be dangerous; most vessels have to wait for high tide to pass, and a trawler was lost here in 1981. Some people argue that the Corps is fighting a losing battle against nature in dredging the Inlet. But without dredging, an important port would be lost (NCSG 2001) which could have a negative effect on many area businesses (Dare County nd). Some vessels from Wanchese now fish out of Hampton Roads, Virginia because of the danger involved with passing through the Inlet (Stoffle nd). The Corps received authorization in 1970 to construct two jetties alongside the inlet to stabilize the shifting sands and to dredge a channel through Roanoke Sound, making passage in and out of Wanchese safer for commercial fishing vessels as well as recreational boats, but as of 2002, this project had yet to be completed due to a variety of objections and proposed alternative plans (NCFA 2002). The construction of the jetties has been highly controversial, opposed by environmentalists and others who believe changing the dynamics of this poorly-understood estuary will have negative consequences (NCSG 2001). In April 2005, the Army Corps of Engineers announced it would discontinue its regular dredging of Oregon Inlet because of federal budget cuts (AP 2005).

The Wanchese Seafood Industrial Park has been controversial since it was built in 1979, and many fishermen opposed it. It was originally supposed to house a processing plant as well as a restaurant and cannery, but the facilities were never built. The park opened itself to marine related businesses, and has seen a boom in boatbuilding at the facility (NCSG 2001).

Crab fishermen along North Carolinas eastern coast have also seen an increase in competition from the global market, with an influx of imported crab meat from around the world. Many local Crab processors are unable to compete and are losing profit (NCSG 2002).

Cultural attributes

The Dare County Parks and Recreation Department runs a fishing school for children during the summer months as well as a fishing tournament for children (Dare County Parks & Recreation nd). The North Carolina Maritime Museum on Roanoke Island in neighboring Manteo is dedicated to the region's maritime history and includes exhibits on early commercial shad fishing and an old shad fishing vessel. Until recently, Wanchese held a blessing of the fleet and seafood festival (Stoffle nd), but it seems these activities no longer exist here.

INFRASTRUCTURE

Current Economy

The Wanchese Seafood Industrial Park houses a number of businesses, many of which are related to fishing or other marine industries and are family-run operations. In 2001 Davis Boatworks was the largest employer in the park, employing 180 people (NCSG 2001), but was recently bought by a larger New Jersey company and moved to New Jersey. Another boatbuilder, Scully Boatbuilders, moved into the facility previously occupied by Davis Boatworks (NCWaterways.com 2003), and the former owner of Davis Boatworks has opened a new boatbuilding. There is only one seafood dealer in the Seafood Industrial Park: O'Neals Sea

Harvest, a family-run business.[5]

There are three seafood businesses located outside the Seafood Industrial Park; Moon Tillet Fishing Company, Etheridge Seafood, and Wanchese Fish Company.[6] The Moon Tillett Fishing Company in Wanchese, which is a processing, packing, and distribution facility located on the harbor, employs over 40 people in all areas of the operation.

According to the U.S. Census 2000[7], 66.6% (799 individuals) of the total population 16 years of age and over were in the labor force (see Figure 4), of which 1.8% were unemployed, none were in the Armed Forces, and 64.8% were employed.

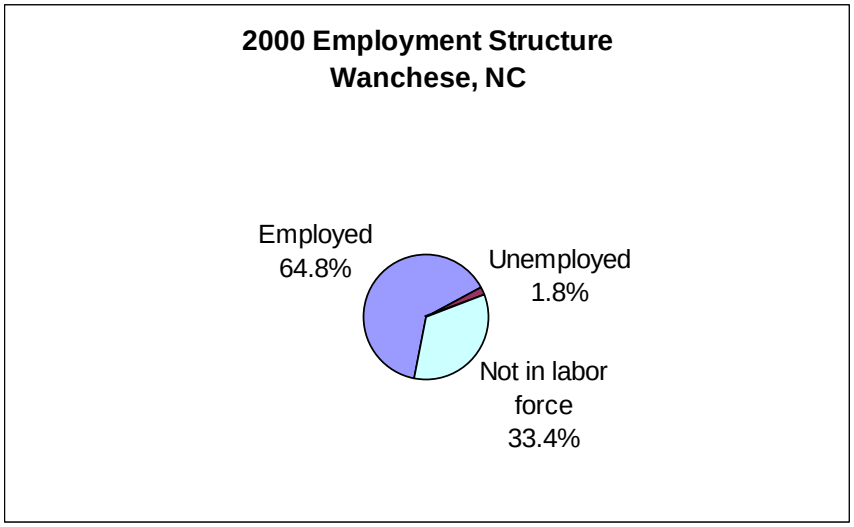

Figure 4. Employment Structure in 2000 (US Census Bureau 2000)

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 64 positions or 8.2% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 128 positions or 16.5% of jobs. Education, health, and social services (22.0%), manufacturing (13.1%) and retail trade (11.7%) were the primary industries.

Median household income in Wanchese was $39,250 (up 51.1% from $25,977 in 1990 [US Census Bureau 1990]) and per capita income was $17,492. For full-time year round workers, males made approximately 34.1% more per year than females.

The average family in Wanchese in 2000 consisted of 2.96 persons. With respect to poverty, 5.1% of families (down from 6.5% in 1990 [US Census Bureau 1990]) and 8.1% of individuals earned below the official U.S. Census poverty threshold. This threshold is $8794 for individuals and ranges from $11,239 through $35,060 for families, depending on number of persons (2-9) (US Census Bureau 2000b). In 2000, 46.5% of all families (of any size) earned less than $35,000 per year.

In 2000, Wanchese had a total of 690 housing units, of which 89.0% were occupied and 67.4% were detached one unit homes. Less than ten percent (8.0%) of these homes were built

[5] Community Review Comments, Beth Burns, Fisheries Biologist, North Carolina Division of Marine Fisheries, Wanchese Office, PO Box 539, Wanchese, NC 27981, October 3, 2007

[6] Community Review Comments, Beth Burns, Fisheries Biologist, North Carolina Division of Marine Fisheries, Wanchese Office, PO Box 539, Wanchese, NC 27981, October 3, 2007

[7] Again, Census data from 2000 are used because they are universally available and offer cross-comparability among communities. Some statistics, particularly median home price, are likely to have changed significantly since 2000.

before 1940. Mobile homes, vans, and boats accounted for 31.5% of the total housing units; 98.6% of detached units had between 2 and 9 rooms. In 2000, the median cost for a home in this area was $104,900. Of vacant housing units, 7.1% were used for seasonal, recreational, or occasional use, while of occupied units 24.3% were renter occupied.

Government

Wanchese is still an unincorporated village within Dare County (NCSG 2001). The county is governed by a seven-member board of commissioners. They are elected in county-wide elections to serve four-year staggered terms. There is also a County Manager who is the chief administrative officer for the government. The county seat is in Manteo, six miles from Wanchese, also on Roanoke Island (Dare County nd).

Fishery involvement in the government

One of the twenty one voting members of the Mid-Atlantic Fishery Management Council (MAFMC) is from Wanchese. The Council is responsible for planning and decision making to carry out provisions of the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MAFMC nd). In addition, the North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries has an active field office on Harbor Road in Wanchese, within the NC Seafood Industrial Park (NCDENR).

Institutional

Fishing associations

The North Carolina Fisheries Association has been supporting fishing families since 1952, with the goal "to celebrate and preserve commercial fishing families, heritage, and seafood" in North Carolina. This is achieved through lobbying federal, state, and local legislators and through public awareness projects. Several members of the Board of Directors are from Wanchese (NCFA nd).

Fishing assistance centers

Information on fishing assistance centers in Wanchese is unavailable through secondary data collection.

Other fishing related organizations

Information on other fishing related organizations in Wanchese is unavailable through secondary data collection.

Physical

Wanchese is located along Route 345, off Interstate Highway 64 which runs through Manteo and Rt. 345 provides the only land access to the village. Wanchese is 6 miles from the Dare County Regional Airport in Manteo, 192 miles from the Raleigh-Durham International Airport, and 100 miles from the Norfolk International Airport in Virginia (MapQuest nd).

Wanchese is home to the Wanchese Seafood Industrial Park, "the only Federal, State and County-financed project devoted entirely to the seafood processing and fishing industries" (Outer Banks Visitors Bureau nd), built to enhance fishing and marine-related industries in the area and to increase the area's economic growth (NCDoC nd). The facility houses a number of businesses involved with building, repairing, and outfitting commercial fishing and sport fishing

vessels, as well as one company that sells seafood packaging (NCDoC nd).

The Broad Creek Fishing Center, located within the NC Wanchese Seafood Industrial Park, is a full service marina for the sportfishing industry, with fishing gear and bait, and also houses a number of charter vessels. Many charter vessels are also docked at the Thicket Lump Marina, which also has a bait and tackle shop. There is one public boat ramp in Wanchese operated by Dare County (Dare County nd).

INVOLVEMENT IN NORTHEAST FISHERIES[8]

Commercial

Wanchese appears to have a diversified fishing industry, based on a large number of species landed. Fishing operations here readily switch gear to target different species depending on availability and market demand. Gear and vessel types used include longlining, scallop dredges, gillnetting, otter trawling, and crab pots (Stoffle nd). The most valuable species grouping landed in Wanchese on average from 1997-2006, with an average value of $7.7 million, is the "other" species grouping, which includes blue crab and Atlantic croaker, both important species in Wanchese. However, croaker is a federally managed obtained primarily from the ocean, where blue crabs are state managed and harvested from the interior waters of the state.[9] The value of "other" landings in 2006 far exceeded the ten-year average value at close to $10 million (see Table 1). Landings in the summer flounder, scup, and black sea bass grouping were also significant, and also exceeded the ten-year average, as did bluefish landings.

The level of landings in Wanchese increased in most years, from a low of $6 million in 1997 to a high of $15.8 million in 2004. The value of fishing for home-ported vessels increased steadily between 1997 and 2005, declining in 2006, with 2005 home port values more than four times the 1997 values. The number of vessels, while showing considerable variability, seems to have also increased, with a maximum of 54 in 2005 (see Table 2).

The Moon Tillett Fishing Company in Wanchese is one of the largest fishing and seafood trading operations in the Outer Banks. The company includes retail and wholesale sales and distribution, including importing and exporting fish, and processing both fresh and frozen seafood. O'Neal's Sea Harvest, Inc. is a wholesale and retail distributor of fresh and frozen seafood (Outer Banks Visitors Bureau nd). They specialize in crabs and make crab pots as well (NCSG 2001). Other commercial dealers include Etheridge Seafood and Wanchese Fish Company which handle large volumes of fish.[10]

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[8] In reviewing the commercial landings data several factors need to be kept in mind. 1) While both federal and state landings are included, some states provide more detailed data to NMFS than others. For example, shellfish may not be included or data may be reported only by county and not by port. 2) Some communities did not have individual port codes until more recently. Before individual port codes were assigned, landings from those ports were coded at the county level or as an aggregate of two geographically close small ports. Where landings were coded at the county level they cannot be sorted to individual ports for those earlier years, e.g., prior to 2000. 3) Where aggregated codes were used, those aggregate codes may still exist and be in use alongside the new individual codes. Here the landings which are still assigned to the aggregate port code cannot be sorted into the individual ports, so port level data are only those which used the individual port code. 4) Even when individual port codes exist, especially for small ports, landings may be coded at the county level. Here again it is impossible to disaggregate these to a port level, making the port level landings incomplete. 5) In all these cases, the per port data in this profile may under report the total level of landings to the port, though all landings are accounted for in the overall NMFS database.

[9] Community Review Comments, Beth Burns, Fisheries Biologist, North Carolina Division of Marine Fisheries, Wanchese Office, PO Box 539, Wanchese, NC 27981, October 3, 2007

[10] Community Review Comments, Beth Burns, Fisheries Biologist, North Carolina Division of Marine Fisheries, Wanchese Office, PO Box 539, Wanchese, NC 27981, October 3, 2007

Landings by Species

Table 1. Dollar value by Federally Managed Groups of landings in Wanchese

	Average from 1997-2006	2006 only
Other[11]	7,679,033	9,620,101
Summer Flounder, Scup, Black Sea Bass	1,718,482	2,846,008
Bluefish	581,481	631,231
Monkfish	349,827	155,222
Scallop	338,145	136,774
Squid, Mackerel, Butterfish	155,286	162,475
Dogfish	66,619	396
Tilefish	10,291	38
Lobster	2,090	0
Skate	1,073	74
Largemesh Groundfish[12]	883	501
Smallmesh Groundfish[13]	56	0

Note: Herring are also landed, but data cannot be reported due to confidentiality.

Vessels by Year[14]

Table 2. All columns represent vessel permits or landings value combined between 1997-2006

Year	# Vessels (home ported)	# Vessels (owner's city)	Level of fishing home port ($)	Level of fishing landed port ($)
1997	30	22	3,199,133	6,328,469
1998	29	17	3,866,523	8,906,794
1999	40	25	3,861,804	9,748,684
2000	47	32	5,316,849	13,907,486
2001	51	30	7,939,403	10,904,337
2002	46	28	7,772,627	9,307,889
2003	49	29	9,535,872	10,083,266
2004	47	31	11,950,292	15,780,765
2005	54	28	13,358,295	10,523,773
2006	52	33	11,314,873	13,552,820

(Note: # Vessels home ported = No. of permitted vessels with location as homeport
 # Vessels (owner's city) = No. of permitted vessels with location as owner residence[15]
Level of fishing home port ($) = Landed value of fisheries associated with home ported vessels
Level of fishing landed port ($) = Landed value of fisheries landed in location)

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[11] "Other" species includes any species not accounted for in a federally managed group

[12] Largemesh groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

[13] Smallmesh multi-species : red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)

[14] Numbers of vessels by owner's city and homeport are as reported by the permit holder on permit application forms. These may not correspond to the port where a vessel lands or even spends the majority of its time when docked.

[15] The Owner-City from the permit files is technically the address at which the owner receives mail concerning their permitted vessels, which could reflect the actual location of residence, the mailing address as distinct from residence, owner business location, or the address at which a subsidiary receives mail about the permits.

Recreational

The Outer Banks area is known as "the billfish capital of the world" (Outer Banks Visitors Bureau nd), and recreational fishing is a billion dollar industry in North Carolina (Stoffle nd). The neighboring town of Manteo, also on Roanoke Island, has a marina that hosts a number of billfishing and other sportfishing tournaments throughout the year (Pirate's Cove nd). There are also a number of marinas that have charter fishing vessels in Wanchese (A-Salt Weapon Charters, Broad Creek Fishing Center, Thicket Lump Marina). Some of the younger fishermen have switched from commercial fishing to charter fishing, which is a more profitable industry. Clamming used to be done commercially in the southern part of the state but is no longer done as a commercial activity. Instead it is generally done by families looking to take home clams to eat (Stoffle nd).

Subsistence

Information on subsistence fishing in Wanchese is either unavailable through secondary data collection or the practice does not exist.

FUTURE

As it becomes increasingly difficult to make a living from fishing in Wanchese, much of the village's industry has shifted to boatbuilding, which has proved to be a profitable industry for many. However, many of the seafood packing and distribution houses in Wanchese are still in operation after several decades (NCSG 2001). The boatbuilding industry rarely employs past fishermen, instead relying on carpenters from home-building trades, and Mexican workers. The seafood packaging and distribution houses also hire predominately Mexican employees.[16]

Dare County has recently worked with residents to propose a zoning plan for Wanchese, which currently lacks zoning of any kind, to protect the character of the town by designating commercial, residential, and mixed-use districts for the town, including a marine commercial district (Virginian Pilot 2005).

In 2002 Will Etheridge III, owner of Etheridge Seafood, one of the oldest businesses in Wanchese, believed the fishing industry will be put out of business by environmentalists and recreational fishermen, and because the public was not aware of the commercial fishing industry. He claimed that he would not encourage his children or grandchildren to go into the seafood business (NCSG 2001). Some commercial fishermen see the industry as inevitably declining, and see charter fishing in the recreational fishing industry as a fallback way to make a living (Stoffle nd).

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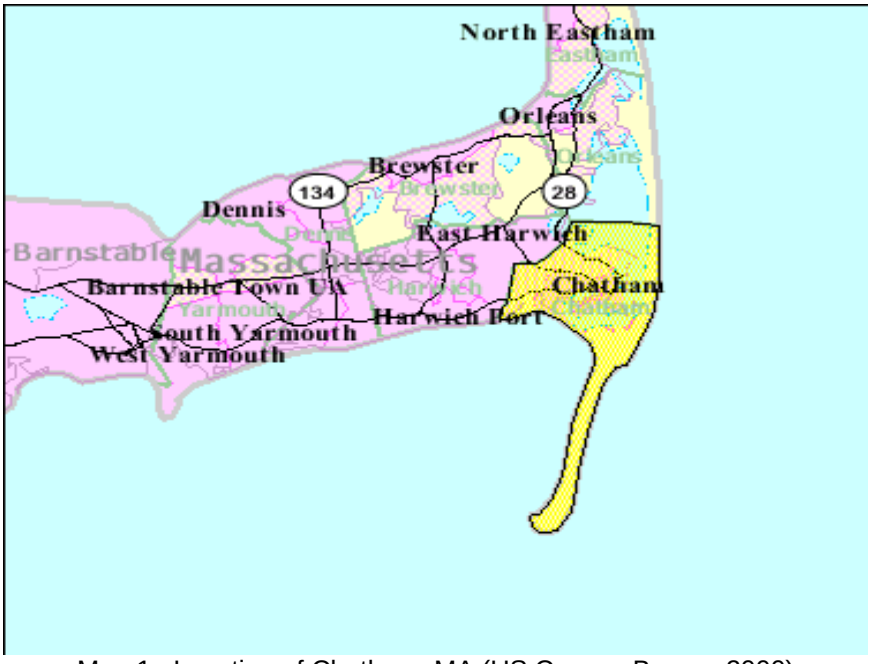
CHATHAM, MA[1]
Community Profile[2]

PEOPLE AND PLACES
Regional Orientation

Chatham, Massachusetts is located at the southeastern tip of Cape Cod in Barnstable County, approximately 89 miles from Boston. To the east is the Atlantic Ocean, to the south is Nantucket Sound, and to the north is Pleasant Bay. The only adjacent town (located at both the north and west town line boundaries) is Harwich. Major geographical features of the town are hills, wooded uplands, extensive barrier beaches and spits, harbors, numerous small estuaries, and salt and freshwater ponds (Town of Chatham nd).



Map 1. Location of Chatham, MA (US Census Bureau 2000)

Historical/Background

Chatham was an English settlement in the mid 1600s. William Nickerson, a name that is still prominent in the town today, acquired nearly the entire town's area at that time. Because of Chatham's geography and lack of developed transportation, the town's economy and living conditions were vulnerable to warships. The population began to stabilize with the fishing trade, ship building, fishing, and salt making in the mid 18th century. With the building of the railroad in 1887, Chatham quickly became a summer resort destination for wealthy people. By 1950, the

[1] These community profiles have been created to serve as port descriptions in Environmental Impact Statements (EISs) for fisheries management actions. They also provide baseline information from which to begin research for Social Impact Assessments (SIAs). Further, they provide information relevant to general community impacts for National Standard 8 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and information on minorities and low income populations for Executive Order (E.O.) 12898 on Environmental Justice.

[2] For purposes of citation please use the following template: "Community Profile of *Town, ST*. Prepared under the auspices of the National Marine Fisheries Service, Northeast Fisheries Science Center. For further information contact Lisa.L.Colburn@noaa.gov."

summer season population was more than double the year round population. According to the Town of Chatham website, Chatham now receives from 20-25,000 visitors each summer (Town of Chatham nd). Although the cost of living is increasing in Chatham from the dominant tourism industry, there is still a fishing community using a range of harvest techniques from the more traditional hook and line and weir fishing to the more modern trawling, gillnetting, scalloping, etc., as well as an important shellfishing industry. While the fishing industry exists and is determined to survive through the difficult period of stock depletion and strict fishery regulations, many changes both in and out of the town are putting pressure on the industry.

Demographics[3]

According to Census 2000 data (US Census Bureau 2000), Chatham had a total population of 1,667, down 12.9% from the reported population of 1,916 in 1990 (US Census Bureau 1990). Of this 2000 total, 52.3% were female and 47.7% were male. The median age was 53.3 years and 86.4% of the population was 18 years or older while 32.5% was 65 or older.

The population structure for Chatham (Figure 1) shows an abnormal age group distribution compared to other small fishing towns in the Northeast. There is a very small percentage of the total population between 30 and 39 years and between 0 and 9 years, but a large number of females between the ages of 40-49. Overall, there are more adults than younger age groups in Chatham and more males than females between the ages of 10-19, 30-39 and 60-69. This larger portion of males in these age groups may indicate fishermen working out of Chatham.

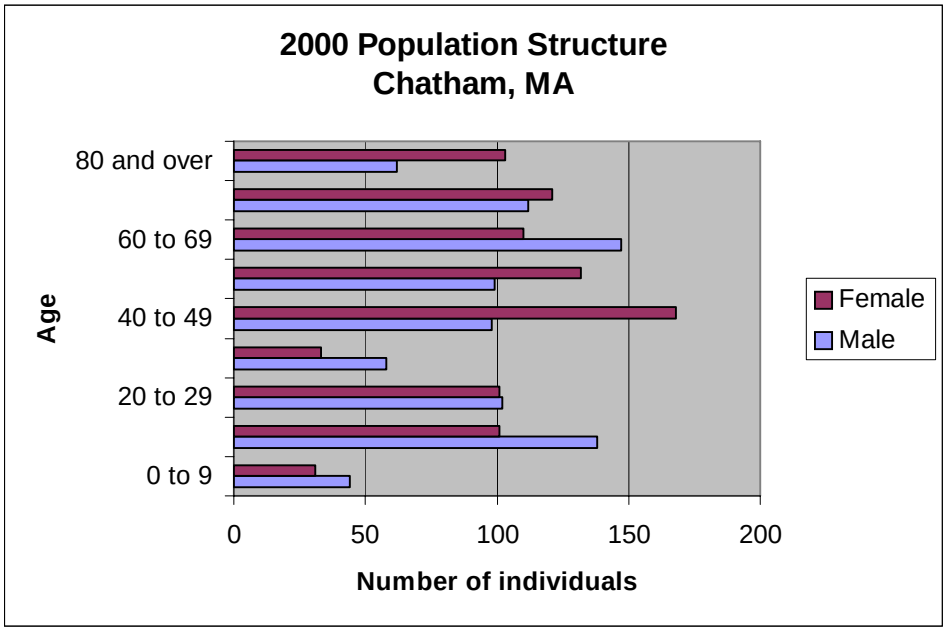


Figure 1. Chatham's Population Structure by sex in 2000 (US Census Bureau 2000)

The majority of the population was white (95.2%), with 2.2% of residents black or African American, 0.3% Asian, 0.2% Native American, and none Pacific Islander or Hawaiian

[3] While mid-term estimates are available for some larger communities, data from the 2000 Census are the only data universally available for the communities being profiled in the Northeast. Thus for cross-comparability we have used 2000 data even though these data may have changed significantly since 2000 for at least some communities.

(Figure 2). Only 1.9% of the total population identified themselves as Hispanic/Latino (Figure 3). Residents linked their backgrounds to a number of different ancestries including: Irish (27.5%), English (26%), German (6.5%), and Italian (6.8%). With regard to region of birth, 54.3% were born in Massachusetts, 36.4% were born in a different state and 8.8% were born outside of the United States (including 4.1% who were not United States citizens).

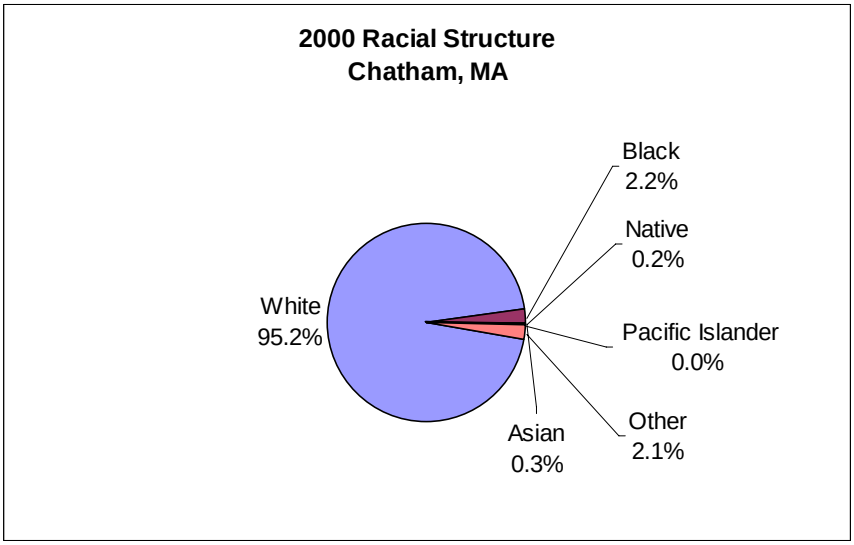


Figure 2. Chatham's Racial Structure in 2000 (US Census Bureau 2000)

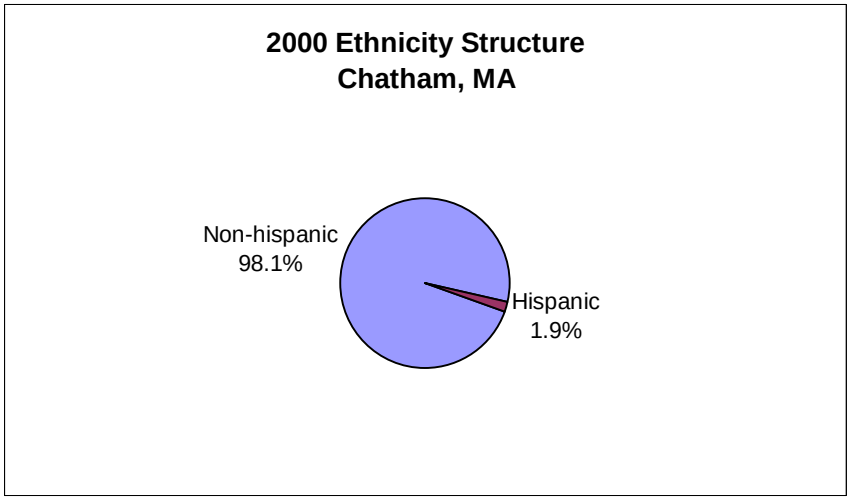


Figure 3. Chatham's Ethnic Structure in 2000 (US Census Bureau 2000)

For 95.1% of the population, only English was spoken in the home, leaving 4.9% in homes where a language other than English was spoken, including 2.9% of the population who spoke English less than 'very well' according to the 2000 Census.

Of the population 25 years and over, 89.9% were high school graduates or higher and 45.1% had a bachelor's degree or higher. Again of the population 25 years and over, 5.0% did not reach ninth grade, 5.1% attended some high school but did not graduate, 22.2% completed high school, 14.1% had some college with no degree, 8.4% received their associate's degree,

32.8% earned their bachelor's degree, and 12.3% received either their graduate or professional degree.

Although the religion percentages are not available through U.S. Census data, according to the Association of Religion Data Archives (ARDA) in 2000, the religion with the highest number of congregations in Barnstable County was Catholic with 29 congregations and 89,000 adherents. Other prominent congregations in the county were Episcopal (11 with 8,028 adherents) and Baptist (7 with 1,387 adherents). The total numbers of adherents to any religion was down 20.7% from 1990 (ARDA 2000).

Issues/Processes

Information gathered during a visit to the Cape Cod Commercial Hook Fishermen's Association (CCCHFA) in 2004 revealed that the fishing industry in Chatham faces similar challenges to other fishing port communities in the Northeast. With tourism and the increase of gentrification, the fishing industry is threatened by a lack of mooring space and the threat of land-based fishing infrastructure closing down. At the same time many believe that the history of fishing has been a large part of the allure that draws tourists to Chatham, so it could lose its cultural appeal if the fisheries really did fade away. With a group such as the CCCHFA, the fishermen appear to be fighting the challenges of stricter catch regulations and decreased catches by finding alternative ways to keep their fishing industry alive. Also refer to section "Fisheries involvement in the government" for more information on CCCHFA sector allocation.

The Cape Cod Regional Economic Development Council (CCREDC) has not recognized the importance of commercial fishing on Cape Cod, however; they rely on census data which hides fishermen's incomes in the self employment and agricultural categories. Melissa Weidman of CCCHFA estimated that there are 10,000 fishermen on Cape Cod, while the CCREDC reported only 50 fishermen. One example of an important business to fishing in Chatham is Cape Fish Supply. It is the biggest supplier for the entire Cape. People come here from Provincetown with the next biggest supplier in New Bedford.[4]

The Town of Chatham has made many significant financial investments in the commercial fishing industry. In early 2006, the taxpayers invested $1 million in the Chatham Municipal Fish Pier. The Town dredges the channel and the harbor at the fish pier twice a year due to the constant shifting shoals in the area.[5]

There is controversy over the harvesting of shellfish in the National Seashore Wilderness Sanctuary (Monomoy). Some people are trying to organize against the extraction of shellfish in this area. This is the most important shellfishery in New England. A few years ago Chatham had $4.5 million industry from shellfish, while the entire state of Maine had only $9 million. The process of turning the clam beds (a result of extraction) actually releases sulfates from the soil producing a more conducive environment for other creatures, including more shellfish.[6]

Cultural attributes

The Cape Cod Commercial Hook Fishermen's Association plays a major role in the Chatham community. Each year they host their annual Hookers Ball gala in the summer. The event's proceeds help support the work of the grassroots sustainable fishery organization. The

[4] Personal Communication, Melissa Roberts Weidman, Cape Cod Commercial Hook Fishermen's Association, 210 E. Orleans Road, North Chatham, MA 02650, August 2004

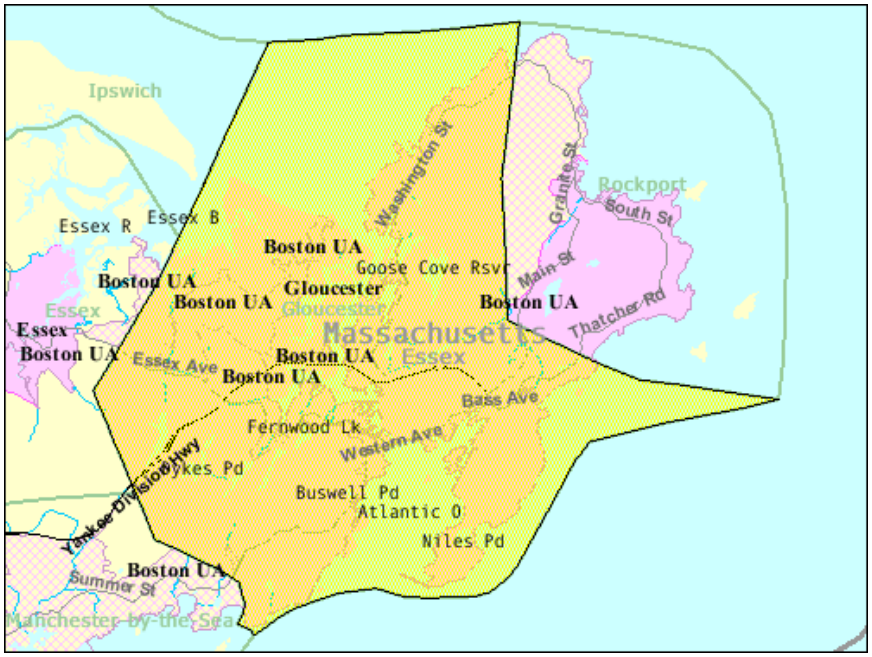
[5] Profile review comment, Susan Rocanello, Chatham Assistant Harbormaster, 594 Main St. Chatham, MA 02633, September 12, 2007

[6] Personal Communication, Personnel Manager, Chatham Bars Inn, Shore Rd., Chatham, MA 02633, August 2004

GLOUCESTER, MA[1]
Community Profile[2]

PEOPLE AND PLACES
Regional orientation

The city of Gloucester (42.62°N, 70.66°W) is located on Cape Ann, on the northern east coast of Massachusetts in Essex County. It is 30 miles northeast of Boston and 16 miles northeast of Salem. The area encompasses 41.5 square miles of territory, of which 26 square miles is land (USGS 2008).



Map 1. Location of Gloucester, MA (US Census Bureau 2000)

Historical/Background

The history of Gloucester has revolved around the fishing and seafood industries since its settlement in 1623. Part of the town's claim to fame is being the oldest functioning fishing community in the United States. It was established as an official town in 1642 and later became a city in 1873. By the mid 1800s, Gloucester was regarded by many to be the largest fishing port in the world. Unfortunately, with so many fishermen going to sea there were many deaths during the dangerous voyages. At least 70 fishermen died at sea in 1862 and the annual loss peaked at 249 in 1879. The construction of memorial statues and an annual memorial to fishermen demonstrates that the high death tolls are still in the memory of the town's residents.

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[1] These community profiles have been created to serve as port descriptions in Environmental Impact Statements (EISs) for fisheries management actions. They also provide baseline information from which to begin research for Social Impact Assessments (SIAs). Further, they provide information relevant to general community impacts for National Standard 8 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and information on minorities and low income populations for Executive Order (E.O.) 12898 on Environmental Justice.

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CCCHFA also started a Chatham Fish Pier Program, where local retired fishermen explain details about the boats as they unload their catch. Another way the community remembers its maritime history is through the Chatham Maritime Festival, which celebrates Chatham's maritime heritage with an exciting day of contests, races and a fishing parade. There are web cams (TeleCAM) for the Chatham fish pier and Stage Harbor, where visitors can go online to view boat activity and get panorama's of the harbor. The TeleCAMs are updated every half hour from sunrise to sunset.

INFRASTRUCTURE

Current Economy

The economy of Chatham drives the population fluctuation as tourists and seasonal residents come in and out for the summer. Representative of this is the fact that the two businesses in Chatham that employ the most people are summer resorts (Chatham Bars Inn and Chatham Wayside Inn). Chatham Bars Inn, established in 1914, is the largest employer in Chatham with approximately 200 year-round employees and 550-600 summer employees. The resort provides housing for some of its seasonal employees, the majority of which are from other countries or are college students.[7] Chatham is also notable in that it has "twice the Cape Cod average of self-employed persons, a higher-than-regional average number of fishermen, and more highly valued residential properties" (Town of Chatham nd).

According to the U.S. Census 2000[8], 51.6% of the total population 16 years of age and over were in the labor force (Figure 4), of which 2.0% were unemployed, 2.0% were in the Armed Forces, and 47.6% were employed.

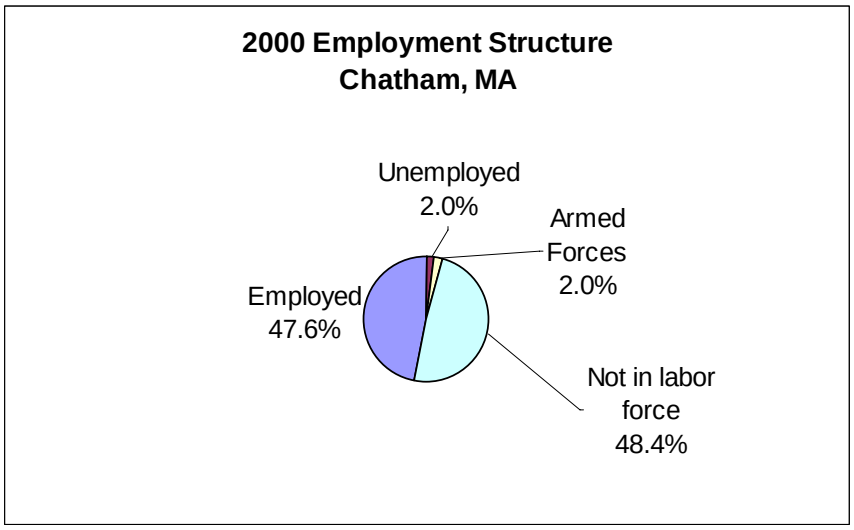

Figure 4. Employment structure in 2000 (US Census Bureau 2000)

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 26 positions or 3.6% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 122 positions or 16.8% of jobs. Educational, health and social services (19.1%), arts, entertainment, recreation,

[7] Personal Communication, Personnel Manager, Chatham Bars Inn, Shore Rd., Chatham, MA 02633, August 2004

[8] Again, Census data from 2000 are used because they are universally available and offer cross-comparability among communities. Some statistics, particularly median home price, are likely to have changed significantly since 2000.

accommodation and food services (17.9%), retail trade (17.3%), construction (10.7%), and finance, insurance, real estate, and rental and leasing (10.2%) were the primary industries.

Median household income in Chatham was $47,037 (up 76.1% from $26,716 in 1990 [US Census Bureau 1990]) and median per capita income was $28,542. For full-time year round workers, men made approximately 3.3% more per year than females.

The average family in Chatham consisted of 2.52 persons. With respect to poverty, 0.9% of families (down from 9.5% in 1990 [US Census Bureau 1990]) and 7.8% of individuals were below the official U.S. Census poverty threshold. This threshold is $8,794 for individuals and ranges from $11,239 through $35,060 for families, depending on number of persons (2-9) (US Census Bureau 2000b). In 2000, 23.9% of all families (of any size) earned less than $35,000 per year.

In 2000, Chatham had a total of 1,891 housing units of which 43.1% were occupied and 85.4% were detached one unit homes. Over one third (36%) of these homes were built before 1940. Mobile homes, boats, RVs, and vans accounted for no housing units; 98.9% of detached units had between 2 and 9 rooms. In 2000, the median cost for a home in this area was $372,900. Of vacant housing units, 89.5% were used for seasonal, recreational, or occasional use. Of occupied units 27.2% were renter occupied.

Government

The town of Chatham was incorporated as a town in 1730. The town is operated by a Town Manager, a Board of Selectmen, and an Open Town Meeting (Town of Chatham 2007).

Fishery involvement in government

The Town owns and operates a shellfish upwelling system in Stage Harbor as part of their shellfish program.[9] They also have a harbor master's office.

NOAA Fisheries, Fisheries Statistics Office, has a port agent based off Main Street in Chatham. Port agents sample fish landings and provide a 'finger-on-the-pulse' of their respective fishing communities.

Institutional

Fishing associations

The Chatham maritime community is supported by the Cape Cod Commercial Hook Fishermen's Association (CCCHFA). The association began in 1993 with a small group of commercial hook and line fishermen who got together to discuss problems in the industry. Their purpose is to address problems by building sustainable fisheries for the future, and representing the traditional fishing communities. One of the programs that the CCCHFA created is the S.S. Shanty Community Fisheries Action Center (CCCHFA 2005). They also spearheaded the creation of and received the first sector allocation for the groundfish fishery (Plante 2004). This initiative has encouraged other sectors to form in the area and region. The purpose of the Action Center is to empower fishermen, educate concerned residents, and facilitate collaboration between conservation, fishing and community organizations to generate a more active and effective marine community on Cape Cod (CCCHFA 2005).

The Massachusetts Fisherman's Partnership focuses on issues for fishermen in different ports in Massachusetts. The Partnership responded to the need of health care for fishermen and their families by developing the Fishing Partnership Health Insurance Plan with federal and state

[9] Profile review comment, Stuart Smith, Harbormaster, 594 Main St. Chatham, MA 02633, September 19, 2007

aid. This plan has been in place since 1997 and reduces the amount of money that fishermen's families have to pay to be covered by health insurance (Hall-Arber et al. 2001).

Fishing assistance centers

No fishing assistance centers that provide monetary support were identified in Chatham during this research; however, the CCCHFA could be classified as an assistance center.

Other fishing-related organizations

Hook and line fishermen of Cape Cod established the CCCHFA in 1993. This grassroots organization now has 2,500 members and several programs to support Cape Cod traditional maritime communities and increase awareness about the fishing culture in the area. Another organization that is vital to the Chatham community is the Friends of Chatham Waterways. The association has an interest in the broader municipal issues that may have an impact on Chatham's maritime heritage or upon the natural environment of the community.

Physical

Chatham is 17 miles east of Hyannis, 89 miles southeast of Boston, and 223 miles away from New York City (State of Massachusetts 2007). Chatham is supported by the State Routes 28 and 137. There is no freight rail service, but the network of intermodal facilities serving eastern Massachusetts and Rhode Island is easily accessible. Chatham is a member of the Cape Cod Regional Transit Authority (CCRTA), which operates a b-bus demand response service. The b-bus is a convenient, low-cost public transportation system, picking residents up at their homes on Cape Cod. The CCRTA provides this door-to-door, ride-by-appointment service for people of all ages for trips for any purpose, including school, work, shopping, college, doctor's appointments, visiting friends and even Boston medical trips. B-buses carry up to 19 passengers and are all lift-equipped. The Chatham Municipal Airport is a General Aviation (GA) facility located 2 miles NW of town, and scheduled airline flights are available at the Hyannis Municipal Airport in the neighboring town of Barnstable (State of Massachusetts 2007). The nearest international airports are Logan International in Boston (90 miles away) and T.F Green Airport in Warwick, RI (100 miles away) (MapQuest nd). The are three commercial piers located in Stage Harbor, all of which are privately owned.[10]

INVOLVEMENT IN NORTHEAST FISHERIES[11]

Commercial

Cod had the highest landings in pounds within state waters for 2003. Shellfishing is also very important in Chatham. Approximately 150 people depend on the shell fishing in

[10] Profile review comment, Stuart Smith, Harbormaster, 594 Main St. Chatham, MA 02633, September 19, 2007

[11] In reviewing the commercial landings data several factors need to be kept in mind. 1) While both federal and state landings are included, some states provide more detailed data to NMFS than others. For example, shellfish may not be included or data may be reported only by county and not by port. 2) Some communities did not have individual port codes until more recently. Before individual port codes were assigned, landings from those ports were coded at the county level or as an aggregate of two geographically close small ports. Where landings were coded at the county level they cannot be sorted to individual ports for those earlier years, e.g., prior to 2000. 3) Where aggregated codes were used, those aggregate codes may still exist and be in use alongside the new individual codes. Here the landings which are still assigned to the aggregate port code cannot be sorted into the individual ports, so port level data are only those which used the individual port code. 4) Even when individual port codes exist, especially for small ports, landings may be coded at the county level. Here again it is impossible to disaggregate these to a port level, making the port level landings incomplete. 5) In all these cases, the per port data in this profile may under report the total level of landings to the port, though all landings are accounted for in the overall NMFS database.

Chatham.[12] Federal landed value data reveals that largemesh groundfish were the highest value catch between the years 1997 and 2006. There are a variety of landed groups in Chatham, with largemesh groundfish, "Other", and lobster yielding the highest values (Table 1). The number of vessels whose home port was Chatham stayed relatively consistent over the 1997-2006 time period, with a small spike in 2002 and a significant decline in 2006. Likewise, the level of fishing home port value stayed consistent during the same time. The number of vessels whose owner's city was Chatham fluctuated between 61 and 94 vessels, showing the same decline in 2006. The level of fishing landed port was also stable, with a spike in 2001 (Table 2).

Landings by Species

Table 1 Rank Value of Landings for Federally Managed Groups

	Rank Value of Average Landings from 1997-2006
Largemesh Groundfish[13]	1
Other[14]	2
Lobster	3
Scallop	4
Monkfish	5
Dogfish	6
Skate	7
Squid, Mackerel, Butterfish	8
Summer Flounder, Scup, Black Sea Bass	9
Bluefish	10
Smallmesh Groundfish[15]	11
Surf Clams, Ocean Quahog	12
Tilefish	13
Herring	14

(Note: Only rank value is provided because value information is confidential in ports with fewer than three vessels or fewer than three dealers, or where one dealer predominates in a particular species and would therefore be identifiable.)

Vessels by Year[16]

Table 2. Federal Vessel Permits Between 1997-2006

Year	# Vessels (home ported)	# Vessels (owner's city)
1997	146	87
1998	131	75
1999	130	77
2000	131	79
2001	135	81
2002	162	94
2003	161	94
2004	145	82
2005	136	72
2006	117	61

(Note: # Vessels home ported = No. of permitted vessels with location as homeport,
 # Vessels (owner's city) = No. of permitted vessels with location as owner residence[17])

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[12] Personal communication, Stuart Moore, Chatham Department of Coastal Resources, 549 Main Street, Chatham, MA 02633, (508) 945-5184, August 2004

[13] Largemesh groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

[14] "Other" species includes any species not accounted for in a federally managed group

[15] Smallmesh multi-species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)

[16] Numbers of vessels by owner's city and homeport are as reported by the permit holder on permit application forms. These may not correspond to the port where a vessel lands or even spends the majority of its time when docked.

Recreational

There are at least 27 charter fishing businesses located in Chatham, five of which work from the Chatham Fish Pier.[18] Due to restricted Days at Sea regulations, especially for groundfish, and to limits on striped bass (as of August 2004), some commercial fishermen use their fishing boats as day charters. This allows fishermen to still make money at sea even when they cannot catch and sell fish commercially. Thursday through Saturday fishermen cannot sell their catches, so catch and release fishing is practiced by the few that are combination commercial/recreational charter fishermen.[19]

Subsistence

Information on subsistence fishing in Chatham is either unavailable through secondary data collection or the practice does not exist.

FUTURE

During a field visit to Chatham by the NEFSC Social Science Branch community profilers (August 2004), the CCCHFA mentioned that intense pressure exists on the coastal fishing infrastructure due to gentrification and increasing costs. In Stage Harbor, there are three commercial piers which are privately owned; two by families and the third by the Stage Harbor Yacht Club. While all are presently used for commercial off-loading, any of these piers could easily be converted to a use inconsistent with the needs of the commercial fishing industry in Chatham.[20]

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[17] The Owner-City from the permit files is technically the address at which the owner receives mail concerning their permitted vessels, which could reflect the actual location of residence, the mailing address as distinct from residence, owner business location, or the address at which a subsidiary receives mail about the permits.

[18] Profile review comment, Stuart Smith, Harbormaster, 594 Main St. Chatham, MA 02633, September 19, 2007

[19] pers. com. Captain Mike during field visit to Chatham, August 4, 2004 with JE, PS, and LS.

[20] Profile review comment, Stuart Smith, Harbormaster, 594 Main St. Chatham, MA 02633, September 19, 2007

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