



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

April 28, 2011

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act, an environmental review has been performed on the following action.

TITLE: Amendment 5 to the Monkfish Fishery Management Plan, RIN 0648-AX70

LOCATION: Exclusive Economic Zone off the East Coast of the United States

SUMMARY: Amendment 5 will implement annual catch limits and accountability measures for the monkfish fishery to bring the FMP into compliance with the 2007 reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act, with the intent of preventing overfishing from occurring. This action also implements updated biological and management reference points for the monkfish fishery to be consistent with National Standard 1 guidelines and the most recent scientific advice on the fishery. Finally, this action implements three management measures to promote efficiency and reduce waste in the fishery. In nearly all cases, this action is expected to have a neutral or positive impact on the human environment. The only exceptions are some potentially negative impacts on non-target species, protected species, and habitat resulting from the increased days-at-sea allocations and trip limits resulting from the increased catch targets. These adverse impacts, however, are not likely to be substantial. Thus, there are no significant social or economic impacts, nor are there any significant natural or physical environmental effects expected to result from this action.

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The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact (FONSI), including the environmental assessment, is enclosed for your information.

Although NOAA is not soliciting comments on this completed EA/FONSI, we will consider any comments submitted that would assist us in preparing future NEPA documents. Please submit any written comments to the Responsible Official named above.

Sincerely,

Paul N. Doremus
NEPA Coordinator

Enclosure



Monkfish Fishery Management Plan
Amendment 5

Incorporating
Stock Assessment and Fishery Evaluation (SAFE) Reports
for the 2007 & 2008 Fishing Years
and the
Environmental Assessment

Prepared by
New England Fishery Management Council
and Mid-Atlantic Fishery Management Council

in consultation with
NOAA National Marine Fisheries Service

Final submission: September 20, 2010
Updated: March 31, 2011

Acronyms and Abbreviations

ABC	Acceptable Biological Catch
ACL	Annual Catch Limit
ALWTRP	Atlantic Large Whale Take Reduction Plan
AM	Accountability Measure
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission
CPUE	catch per unit of effort
DAM	Dynamic Area Management
DAS	days-at-sea
DPWG	Data Poor Working Group
DSEIS	Draft Supplemental Environmental Impact Statement
EA	Environmental Assessment
EEZ	exclusive economic zone
EFH	essential fish habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
F	Fishing mortality rate
FEIS	Final Environmental Impact Statement
FMP	fishery management plan
FW	framework
FY	fishing year
GB	Georges Bank
GOM	Gulf of Maine
HAPC	habitat area of particular concern
HPTRP	Harbor Porpoise Take Reduction Plan
IFQ	individual fishing quota
ITQ	individual transferable quota
IVR	interactive voice response reporting system
LOA	letter of authorization
MA	Mid-Atlantic
MAFAC	Marine Fisheries Advisory Committee
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MPA	marine protected area
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSRA	Magnuson-Stevens Reauthorization Act of 2007
MSY	maximum sustainable yield
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center

NEPA	National Environmental Policy Act
NERO	Northeast Regional Office
NMA	Northern Management Area (Monkfish)
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OLE	Office for Law Enforcement (NMFS)
OY	optimum yield
PBR	Potential Biological Removal
PDT	Plan Development Team
PRA	Paperwork Reduction Act
PREE	Preliminary Regulatory Economic Evaluation
RFA	Regulatory Flexibility Act
RMA	Regulated Mesh Area
RPA	Reasonable and Prudent Alternatives
SA	Statistical Area
SAFE	Stock Assessment and Fishery Evaluation
SARC	Stock Assessment Review Committee
SAW	Stock Assessment Workshop
SBNMS	Stellwagen Bank National Marine Sanctuary
SEIS	Supplemental Environmental Impact Statement
SFA	Sustainable Fisheries Act
SIA	Social Impact Assessment
SMA	Southern Management Area (monkfish)
SNE	southern New England
SSB	spawning stock biomass
SSC	Social Science Committee
TAC	total allowable catch
TED	turtle excluder device
TTAC	Target Total Allowable Catch
TTAL	Target Total Allowable Landings
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
VEC	Valued Ecosystem Component
VMS	vessel monitoring system
VPA	virtual population analysis
VTR	vessel trip report
WGOM	Western Gulf of Maine
WO	weighout
YPR	yield per recruit

1.0 Executive Summary

The monkfish fishery is jointly managed by the New England Fishery Management Council (NEFMC) and the Mid-Atlantic Fishery Management Council (MAFMC), with the NEFMC having the administrative lead. The fishery extends from Maine to North Carolina out to the continental margin. The Councils manage the fishery as two stocks, with the Northern Fishery Management Area (NMA) covering the Gulf of Maine and northern part of Georges Bank, and the Southern Fishery Management Area (SMA) extending from the southern flank of Georges Bank through the Mid-Atlantic Bight to North Carolina (see Figure 1).

The Councils adopted the Monkfish Fishery Management Plan (FMP) in 1999. For the first eight years under the FMP, the fishery was in a rebuilding plan since the stocks were considered overfished (below the biomass target). In 2007, the Northeast Data Poor Stocks Working Group (DPWG) completed a monkfish stock assessment and recommended revisions to the biomass reference points. The Councils adopted the new reference points in December 2007, which resulted in the revisions to the stock status in both areas. Based on the new assessment and reference points, overfishing was not occurring and the stocks were rebuilt (above the biomass target) in both areas. The assessment report, however, contained several cautionary statements, due to the fact that this was the first use of a new assessment model, and to uncertainty in the input data and overall knowledge of monkfish life history and population dynamics.

In 2007, the Councils proposed in Framework 4 to set catch targets (TTACs) at 5,000 mt and 5,100 mt for the NMA and SMA, respectively. The Councils requested the DPWG to evaluate the impact of applying those TTACs for the 2007-2009 fishing years. The DPWG concluded that under those catch targets, fishing mortality rates would remain below the threshold, and biomass would remain in an upward trend above the biomass target. Upon receiving the DPWG report, NMFS approved Framework 4 which included an automatic extension of the TTACs beyond FY2009 if the Councils did not adopt new targets.

Also in 2007, the Magnuson-Stevens Fishery Conservation and Management Act was reauthorized (MSRA), and revised to include, among other things, the requirement that all FMPs establish Annual Catch Limits (ACLs) and measures to ensure accountability (AMs). For stocks not subject to overfishing, such as monkfish, the Act set a deadline of 2011 for the implementation of ACLs and AMs. In 2009, NMFS published revised National Standard 1 Guidelines which the Councils have used to develop ACLs and AMs for all FMPs.

The Councils are addressing two primary purposes with this amendment: To implement the MSRA mandated ACLs and AMs, and to set the specifications of DAS, trip limits and other management measures to replace those adopted in Framework 4. The Councils are also proposing to make modifications to the FMP to improve the Research Set Aside (RSA) Program, to minimize bycatch resulting from trip limit overages, and to allow the landing of monkfish heads.

The following table summarizes the measures comprising the **proposed action**:

Biological and Management Reference Points Control Rules	MSY	MSY = $F_{\text{threshold}} \times B_{\text{target}}$ N: 17,053 mt S: 25,487 mt		
	OFL	OFL = $F_{\text{threshold}} \times B_{\text{current}}$ N: 22,729 mt S: 28,263 mt		
	ABC	ABC (interim) = Current (2006) biomass x average exploitation rate during recent increases in biomass ((North) 1999-2006 and (South) 2000-2006). N: 17,485 mt S:13,326 mt		
	OY	OY=ACT		
ACLs and AMs	ACL	ACL=ABC		
	Reactive AMs	Deduct ACL overage weight from ACT; adjust mgmt. measures in 2 nd year after overage year; if Councils do not take appropriate action, RA will use formulaic approach to adjust DAS and trip limits and implement by notice action.		
	Proactive AM (ACT) North	10,750 mt		
	Proactive AM (ACT) South	11,513 mt		
Specification of DAS and Trip Limits		DAS	Trip limit (tail wt. lbs./DAS)	
			Permit A & C	Permit B,D, &H
	NMA	40	1,250	800
	SMA	28	550	450
Automatic DAS Adjustment for Trip Limit Overage	24 hours and one minute deducted from a vessel's DAS account for a trip limit overage of not more than one day's limit			
Changes to the Research Set-Aside (RSA) Program	The Councils may make changes to the RSA program through the framework adjustment process			
Landing of Monkfish Heads	Vessels could land unattached monkfish heads provided the total weight of the heads does not exceed 2.32 times the weight of tails on board			

The following table summarizes the **No Action Alternatives** to the proposed action:

Biological and Management Reference Points Control Rules	MSY	The current plan does not specify these reference points, and is, therefore, not compliant with the MSRA		
	OFL			
	ABC			
	OY	OY= Annual target total allowable landings (TTAL), does not include discards		
ACLs and AMs	ACL	The current plan does not specify ACLs and AMs and is, therefore, not compliant with the MSRA		
	Reactive AMs			
	Proactive AM (ACT)	The current plan sets TTALs as the basis for specifying management measures, but this target does not include discards, and is not intended to prevent exceeding the ACL. Current TTALs are 5,000 mt (North) and 5,100 mt (South)		
Specification of DAS and Trip Limits		DAS	Trip limit (tail wt. lbs./DAS)	
			Permit A & C	Permit B,D, &H
	NMA	31	1,250	470
	SMA	23	550	450
Automatic DAS Adjustment for Trip Limit Overage	Vessels catching an overage of the daily trip limit must either discard the overage or remain at sea until sufficient time has elapsed to account for the fish on board			
Changes to the Research Set-Aside (RSA) Program	Changes to the RSA program must be done through a plan amendment, rather than the framework adjustment process			
Landing of Monkfish Heads	Vessels are prohibited from landing detached monkfish heads due to the lack of an established head-to-tail ratio in the regulations			

Updated Stock Status

A stock assessment was completed in July 2010 (SARC 50, see Appendix 7), after the Councils had made their final decisions on the measures to be submitted in Amendment 5. The stock status, relative to current biological reference points, remained unchanged from the prior assessment, that is, that both northern and southern stock components are not overfished, and overfishing is not occurring. SARC 50 also recommended new biomass reference points, and recalculated the fishing mortality rate corresponding to the overfishing threshold, F_{max} , and concluded that the stock status would not change, even under the new reference points.

Summary of Environmental Consequences of the Proposed Action

As detailed in Section 5.0, Environmental Consequences, the impact of the proposed action is, in nearly all cases, expected to have a neutral or positive impact on the human environment. The only exceptions are those potentially negative impacts on non-target species, protected species and habitat resulting from the increased DAS and trip limits resulting from the increased catch targets. These adverse impacts, however, are not likely to be substantial.

The adoption of ACLs and AMs will contribute to ensuring the overfishing of monkfish does not occur, and if it does, future overfishing will be prevented. These controls will not only have a positive effect on the monkfish resource, but may also have a long-term positive effect on non-target species, protected species, habitat and communities as a result of the improved controls on fishing effort and the resulting long-term sustainability of the fishery. Similarly, the specification of DAS and trip limits at an increased level, but one that is expected to prevent catches from exceeding the ACL, will have a positive effect on the monkfish resource and dependent communities. As noted above, this increase is either neutral or potentially negative for non-target species, protected species and habitat as a consequence of the increase in fishing effort. This effect is potentially mitigated if the increased opportunity to target monkfish will reduce the time that vessels engage in other fisheries, if those other fisheries have a greater interaction with protected species or a greater impact to habitat.

The other proposed measures in Amendment 5 will either be neutral or positive in terms of their environmental impact. The provision to allow vessels to land an overage of the trip limit will reduce monkfish discards and improve catch accounting. The resulting increased efficiency will reduce the time that gear is in the water, with resulting reductions in the potential for interactions with protected species and impacts on habitat. The impact on non-target species is mixed, depending on whether vessels who use their DAS at a faster rate (by landing overages) then re-direct their effort on other species. The other two proposed measures, allowing changes to the RSA program through a framework adjustment and allowing the landing of monkfish heads, are administrative changes with no environmental impact, except, the positive impact that the latter will have on communities resulting from increased vessel revenues.

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2.0 Background, Purpose and Need

2.1 Background

2.1.1 History of the Fishery Management Plan

The initial Monkfish FMP was implemented in 1999, and has been amended several times, most recently in 2007 (Frameworks 4 and 5) and 2008 (Framework 6). A summary of previous management actions is contained in the Background sections of those earlier documents, available on the NEFMC website, www.nefmc.org. A synoptic discussion, focusing on the science and management aspects of the FMP up to Framework 4 is contained in an article attached as Appendix I, (Haring and Maguire, 2008). The three most recent management actions, Frameworks 4, 5 and 6 are summarized below.

For management purposes, the monkfish fishery is divided into two areas, the Northern and Southern Management Areas (NMA and SMA, respectively), Figure 1. While scientific evidence for two biological stocks is uncertain, and additional research, including archival tagging, is ongoing, fisheries in the two areas are clearly distinct. Stock assessments are done on the two areas separately to be able to support the management plan. The NMA monkfish fishery is closely integrated with the multispecies fishery, and is primarily a trawl fishery, while the SMA fishery is primarily a gillnet fishery targeting monkfish almost exclusively. These differences have resulted in some differences in management measures, such as trip limits and DAS allocations, between the two areas.

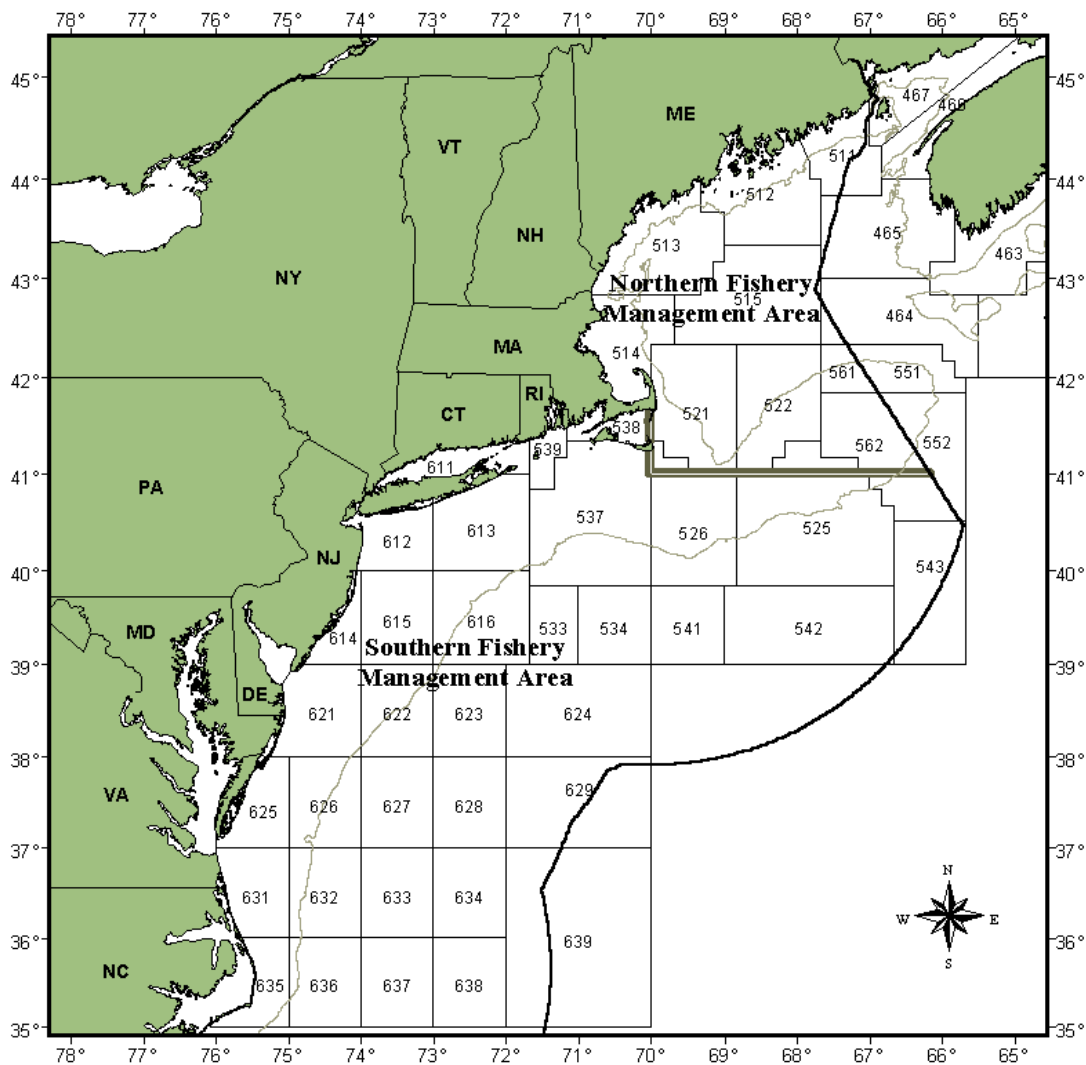


Figure 1 Monkfish fishery management areas and statistical areas.

2.1.1.1 Monkfish Framework 4

The fishing year 2006 was Year 7 of the 10-year rebuilding plan implemented under the original FMP in 1999. The goal of the rebuilding plan was to achieve the biomass target reference points in 2009, as measured by the NEFSC autumn trawl survey three-year average biomass indices. Following several years of increases in the biomass indices for both stocks, the indices lagged behind the rebuilding schedule, and in 2006 were both below the minimum biomass threshold and approximately 50% below their biomass index targets. As a result, the Councils revised the management program so that the goals of the 10-year rebuilding program can be met in 2009 with Framework 4, which they submitted to NMFS in February 2007.

In Framework 4, TTACs were set at 5,000 mt and 5,100 mt for the NMA and SMA, respectively. These TTACs are the basis for calculating the monkfish trip limits and days-at-sea (DAS) allocations for vessels targeting monkfish. Framework 4 also established the requirement for vessels fishing in the NMA on a multispecies DAS, and exceeding the monkfish incidental catch limit, to call in a monkfish DAS, which could be done by Vessel Monitoring Systems (VMS) any time prior to returning to port. Vessels in the SMA were

already required to call in a monkfish DAS when exceeding the incidental limit. Framework 4 also reduced the monkfish incidental limit in the NMA from 400 lbs. per DAS (tail wt.) or 50% of the weight of fish on board, whichever is less, to 300 lbs. per DAS or 25% of the total weight of fish on board, whichever is less. The Councils had increased the incidental limit under Framework 2, when the northern stock appeared to be nearly rebuilt, but restored the original incidental limit because the stock status had returned to being overfished in 2006.

Framework 4 retained the 550 lbs. and 450 lbs. SMA monkfish trip limit (tail wt. per DAS) for permit categories ACG and BDH, respectively. Vessels were allocated 31 monkfish DAS, but vessels were limited to an allowance of 23 DAS in the SMA out of the total allocation. In the NMA, trip limits were set at 1,250 lbs. and 470 lbs. (tail wt. per DAS) for permit category AC and BD, respectively. Framework 4 established that the DAS allocations will remain in effect through 2009 unless the TTAC is exceeded in an area during the 2007 fishing year. In that case, the proposed TTAC overage backstop provision would take effect and could result in a recalculation of the DAS allocations that are expected to keep landings below the TTAC based on catch and effort data from the 2007 fishing year. The backstop provision would make no adjustment if the TTAC overage was 10% or less, and would close the directed fishery in a management area if the overage exceeded 30%, resulting in zero DAS and the application of monkfish incidental limits to all vessels.

Other measures adopted under Framework 4 include a change in the northern boundary of the Category H fishery from 38°20'N Lat to 38°40'N Lat, and a change to the monkfish incidental limit on limited access scallop vessels fishing in the closed area access programs.

On April 27, 2007, NMFS published a temporary rule implementing interim measures, while deferring a decision on Framework 4 pending the results of a stock assessment scheduled for July (72 *Federal Register* 20952, April 27, 2007). The interim rule implemented the TTACs and most measures proposed in Framework 4, except the 23 DAS allowance for SMA vessels (retaining the 12 DAS from the prior year), and prohibited the use of carryover DAS. The DPWG completed an assessment of monkfish which included estimates of absolute biomass and recommended revisions to existing biomass reference points from a survey index basis to an absolute biomass basis. Based on that assessment, both stocks are above the recommended biomass targets, and are, therefore, "rebuilt". The assessment report also emphasized the uncertainty in the model and results, and contained a number cautionary statements.

As a result of the assessment, NMFS approved Framework 4 and published an interim final rule with an effectiveness date of October 22 (72 *Federal Register* 53942, September 21, 2007).

2.1.1.2 Monkfish Framework 5

As a result of the aforementioned DPWG assessment in 2007, the Councils initiated Framework 5 primarily to adopt the recommended biomass reference points, as well as to address the concerns of the Regional Administrator about the effect of carryover DAS on

the management program's ability to constrain landings to the TTAC. In addition, the Councils used the opportunity of this adjustment to implement revisions to some other measures to ensure that the management program succeeds in keeping landings within the TTAC levels. Framework 5, which was implemented prior to the start of the 2008 fishing year (73 *Federal Register* 22831, April 28, 2008), reduced the number of unused DAS that could be carried over to the next fishing year from 10 to 4; revised the DAS accounting method for gillnet vessels such that all trips less than 15 hours would be counted as 15 hours, eliminating the provision that trips less than 3 hours would be counted as time used; and, revised the monkfish incidental catch allowance applicable to vessels in the Southern New England Regulated Mesh Area (SNE RMA) fishing with large mesh but not on a monkfish, scallop or multispecies DAS, from 5% of the total weight of fish on board (with no landings cap) to 5% of total weight of fish on board not to exceed 50 lbs. per day, up to 150 lbs. maximum, and also applied this revision to all vessels fishing under a Skate Bait Letter of Authorization (LOA) east of 74°00'W. In addition, Framework 5 modified the Monkfish LOA requirement for vessels fishing under the less restrictive measures for the NMA such that vessels using a VMS would no longer be required to obtain the LOA, but could make the declaration via the VMS.

2.1.1.3 Monkfish Framework 6

One of the elements of the FMP adopted in Framework 4 was a backstop provision that would have adjusted, and possibly closed the directed monkfish fishery in a management area if the landings in FY2009 exceeded the TTAC by more than 30 percent. With the adoption of new biological reference points and revised stock status as a result of the DPWG assessment, as well as the measures adopted in Framework 5 designed to reduce the likelihood of TTAC overages, the Councils concluded that the backstop provision was no longer necessary. They submitted the regulatory change in Framework 6 in April 2008, and the final rule became effective on October 10, 2008, approximately seven months before the start of FY2009 (73 *Federal Register* 52635, September 10, 2008). This was the only action taken in Framework 6.

2.1.1.4 Summary of FY2000-2010 TACs, DAS and trip limits

Since the implementation of the FMP, the applicable trip limits and allocated DAS have been adjusted several times. The target TAC and the method for calculating it have also undergone several changes. The target TACs, allocated DAS and applicable trip limits since adoption of the FMP are summarized in

Figure 2, which also shows landings and landings as a percentage of the TAC. Several factors have contributed to the overage/underage of landings, including availability of monkfish, restrictions or lack thereof on vessels, validity of the target TAC methodology, and "loopholes" in the regulations that enabled vessels to exceed the intended level of effort while operating within the rules applicable at the time. Since the FMP was implemented, the Councils have addressed many of those factors through various amendments and framework adjustments, and they will continue to make improvements as issues are identified and new information becomes available.

Target TACs, trip limits, DAS restrictions, and landings (FY 2000 - FY 2010) for NMA							
			Trip Limits*	Trip Limits*			
Fishing Year	Target TAC (lbs)	Target TAC (mt)	Cat. A & C	Cat. B & D	DAS Restrictions**	Landings (lbs)	Percent of TAC
2000	12,507,000	5,673	n/a	n/a	40	26,145,000	209%
2001	12,507,000	5,673	n/a	n/a	40	32,745,000	262%
2002	25,737,000	11,674	n/a	n/a	40	31,947,000	124%
2003	39,039,000	17,708	n/a	n/a	40	31,207,000	80%
2004	37,408,000	16,968	n/a	n/a	40	25,905,000	69%
2005	29,012,839	13,160	n/a	n/a	39.3	21,016,671	72%
2006	17,057,168	7,737	n/a	n/a	39.3	14,720,268	86%
2007	11,023,100	5,000	1,250	470	30.3	11,133,346	101%
2008	11,023,100	5,000	1,250	470	30.3	7,777,910	71%
2009	11,023,100	5,000	1,250	470	30.3		
2010	11,023,100	5,000	1,250	470	30.3		
* Trip limits in pounds tail weight per DAS							
** Excluding up to 10 DAS carryover, became 4 DAS carryover in FY2007							
Target TACs, trip limits, DAS restrictions, and landings (FY 2000 - FY 2010) for SMA							
			Trip Limits*	Trip Limits*			
Fishing Year	Target TAC (lbs)	Target TAC (mt)	Cat. A & C	Cat. B, D, & H	DAS Restrictions**	Landings (lbs)	Percent of TAC
2000	13,281,000	6,024	1,500	1,000	40	17,549,000	132%
2001	13,281,000	6,024	1,500	1,000	40	24,404,000	184%
2002	17,463,000	7,921	550	450	40	16,487,000	94%
2003	22,511,000	10,211	1,250	1,000	40	26,891,000	119%
2004	14,929,707	6,772	550	450	28	13,719,000	92%
2005	21,325,318	9,673	700	600	39.3	21,287,811	100%
2006	8,084,353	3,667	550	450	12	13,027,100	161%
2007	11,243,562	5,100	550	450	23	15,829,172	141%
2008	11,243,562	5,100	550	450	23	14,883,410	132%
2009	11,243,562	5,100	550	450	23		
2010	11,243,562	5,100	550	450	23		
* Trip limits in pounds tail weight per DAS							
** Excluding up to 10 DAS carryover, became 4 DAS carryover in FY2007							

Figure 2 Target TACs, trip limits, DAS restrictions, and landings (FY 2000 - FY 2010)

2.1.2 Standardized Bycatch Reporting Methodology (SBRM) Omnibus Amendment (Amendment 3)

In 2005, the Councils initiated a joint omnibus amendment to all their FMPs to address the requirements of the Magnuson-Stevens Act to include, in all FMPs, a standardized bycatch reporting methodology (SBRM). SBRM is the combination of sampling design, data collection procedures, and analyses used to estimate bycatch and to determine the most appropriate allocation of observers across the relevant fishery modes. The measures include: bycatch reporting and monitoring mechanisms; analytical techniques and allocation of at-sea fisheries observers; and SBRM performance standard; a review and reporting process; framework adjustment and annual specifications provisions; a prioritization process; and provisions for industry-funded observers and observer set-aside programs. The SBRM amendment is Amendment 3 to the Monkfish FMP, and became effective on February 27, 2008 (73 *Federal Register* 4736, January 28, 2008).

2.1.3 Essential Fish Habitat Omnibus Amendment (Amendment 4)

The Council initiated Phase 1 of the Essential Fish Habitat Omnibus Amendment in 2004, which is Amendment 4 to the Monkfish FMP. The primary purpose of Phase 1 was to review EFH designations, consider HAPC alternatives, describe prey species, and evaluate non-fishing impacts. This action is an amendment to all FMPs in this region. The Council approved the DSEIS for Phase 1 at the February 2007 Council meeting, which then was submitted to NMFS in March 2007. The Council made final decisions on Phase 1 topics at their June 2007 meeting. Phase 2 of the EFH Amendment began in September 2007 to consider the effects of fishing gear on EFH and move to minimize, mitigate or avoid those impacts that are more than minimal and temporary in nature. Phase 2 will also reconsider measures in place to protect EFH in the Northeast region. The entire Amendment (Phase 1 and Phase 2) is expected to be submitted in 2011. On October 5, 2009, NMFS published a Notice of Intent to prepare an EIS (74 *Federal Register* 51126) covering both phases of the EFH Omnibus Amendment.

2.1.4 Other Fishery Management Plans Affecting the Monkfish Fishery

Approximately 97% of the monkfish limited access vessels also hold limited access permits in either the Northeast Multispecies or Atlantic Sea Scallop fisheries. Both of those fisheries have undergone, and continue to undergo changes in the management programs which have direct and indirect effects on the monkfish fishery. In large part due to the success of the scallop FMP and the profitability of the fishery, scallop vessels that also have monkfish limited access permits elect to use their allocated effort to target scallops rather than monkfish, since they would be required to use a scallop DAS to target monkfish, and be prohibited from using a dredge on those trips. As a result, a substantial portion of the allocated monkfish effort (DAS) is not used. In contrast, while some multispecies stocks have responded positively to management (e.g., haddock and redfish) others remain overfished and in need of rebuilding. Consequently, the Multispecies FMP continues to constrain fishing effort and is undergoing some major changes, most notably the adoption of catch shares through the allocation of quota to sectors.

2.1.4.1 Multispecies FMP

Groundfish stocks have been managed under the Magnuson-Stevens Act (MSA) beginning with the adoption of a groundfish plan for cod, haddock, and yellowtail flounder in 1977. This plan relied on hard quotas (total allowable catches, or TACs), and proved unworkable. The quota system was rejected in 1982 with the adoption of the Interim Groundfish Plan, which relied on minimum fish sizes and codend mesh regulations for the Gulf of Maine and Georges Bank to control fishing mortality. The interim plan was replaced by the Northeast Multispecies FMP in 1986, which established biological targets in terms of maximum spawning potential and continued to rely on gear restrictions and minimum mesh size to control fishing mortality. A more detailed discussion of the history of the management plan up to 1994 can be found in Amendment 5 (NEFMC 1994).

Amendment 5 was a major revision to the FMP. Adopted in 1994, it implemented a moratorium on new permits (limited access), reductions in time fished (days-at-sea, or DAS) for some fleet sectors and adopted year-round closures to control mortality. Amendment 5 also increased the minimum mesh size, set limits on vessel upgrading, and implemented a mandatory landings reporting requirement. Amendment 7 (NEFMC 1996), adopted in 1996, expanded the DAS program and accelerated the reduction in DAS first adopted in Amendment 5. Since the implementation of Amendment 7, there were a series of amendments and smaller changes (framework adjustments) that are detailed in Amendment 13 (NEFMC 2003).

Amendment 13 was developed over a four-year period to meet the MSA requirement to adopt rebuilding programs for stocks that are overfished and to end overfishing. Amendment 13 also brought the FMP into compliance with other provisions of the MSA. Subsequent to the implementation of Amendment 13, FW 40A provided opportunities to target healthy stocks, FW 40B improved the effectiveness of the effort control program, and FW 41 expanded the vessels eligible to participate in a Special Access Program (SAP) that targets GB haddock. FW 42 included measures to implement the biennial adjustment to the FMP as well as a Georges Bank yellowtail rebuilding strategy, several changes to the Category B (regular) DAS Program and two Special Access Programs, an extension of the DAS leasing program, and introduced the differential DAS system. FW 43 adopted haddock catch caps for the herring fishery and was implemented August 15, 2006.

Amendment 16 implemented major changes to the groundfish management plan. Notably, it greatly expanded the sector program and implemented Annual Catch Limits in compliance with 2006 revisions to the MSA. The amendment also included a host of mortality reduction measures for “common pool” (i.e. non-sector) vessels and the recreational component of the fishery. Amendment 16 became effective for the current fishing year that started May 1, 2010.

2.1.4.2 Atlantic Sea Scallops

The Council established the Scallop FMP in 1982. A number of Amendments and Framework Adjustments have been implemented since that time to adjust the original plan. Amendment 4 was implemented in 1994 and introduced major changes in scallop management, including a limited access program, a DAS reduction plan to reduce mortality and prevent recruitment overfishing, new gear regulations to improve size

selection and reduce bycatch, and a vessel monitoring system to track a vessel's fishing effort. Amendment 4 also created the general category scallop permit for vessels that did not qualify for a limited access permit. Although originally created for an incidental catch of scallops in other fisheries, and for small-scale directed fisheries, the general category fishery and fleet has evolved since its creation in 1994'

In 1998, the Council developed Amendment 7 to the Scallop FMP which established two new scallop closed areas (Hudson Canyon and VA/NC Areas) in the Mid-Atlantic to protect concentrations of small scallops until they reached a larger size and reduced the DAS allocations. In 1999, Framework Adjustment 11 allowed the first scallop fishing within portions of the Georges Bank groundfish closed areas since 1994. Scallop resource surveys and experimental fishing activities had identified areas where scallop biomass was very high due to no fishing in the intervening years. These surveys and experimental fisheries provided more precise estimates of total biomass as well as the distribution and amount of finfish bycatch and allowed the Council to open the southern part of Closed Area II. In 2000, Framework Adjustment 13 expanded the closed area access program.

In 2004, Amendment 10 introduced rotation area management and changed the way that the FMP allocates fishing effort for limited access scallop vessels. Instead of allocating an annual pool of DAS for limited vessels to fish in any area, vessels had to use a portion of their total DAS allocation in the controlled access areas defined by the plan, or exchange them with another vessel to fish in a different controlled access area. Vessels could fish their open area DAS in any area that was not designated a controlled access area. Subsequent actions have focused on controlling fishing mortality, and have made annual adjustments to the rotational area management program and DAS allocations, as well as other provisions, such as bycatch reduction measures, improved catch monitoring and habitat protections. Notably, Amendment 11, which became effective on June 1, 2008 was designed to control capacity and mortality in the general category scallop fishery. Since 1999, there has been considerable growth in fishing effort and landings by vessels with general category permits, primarily as a result of resource recovery and higher scallop prices. Among other provisions, Amendment 11 implemented a limited entry program for the previously open-access general category fishery. Vessels that qualified are under an ITQ program that has been allocated 5% of the total projected scallop catch.

The most recent scallop actions which may impact interaction with the monkfish fishery are Amendment 15, which will be in place for the 2011 fishing year and Framework 21, which became effective on June 28, 2010. There are three goals of Amendment 15: 1) bring the Scallop FMP in compliance with new requirements of the MSRA (such as ACLs and AMs); 2) address excess capacity in the limited access scallop fishery through potential permit stacking and leasing alternatives; and 3) consider measures to adjust several aspects of the overall program to make the scallop management plan more effective. Potentially, if scallop catch exceeds the ACL, then scallop DAS in open areas would be reduced in the subsequent year. Framework 21 sets specifications and area access programs for FY 2010.

2.1.4.3 Skate FMP Amendment 3

The final rule for Amendment 3 to the Northeast Skate Complex FMP was published on June 16, 2010. This amendment establishes annual catch limits, accountability measures, bait fishery quotas, and skate wing, bait, and incidental skate possession limits to address the following issues:

- Overfished status of thorny skates
- Overfishing of thorny skate
- Implementation of annual catch limits (ACLs) and accountability measures (AMs), a new mandate of the reauthorized Magnuson-Stevens Act, and
- A baseline review process that has become obsolete and less meaningful.

The final action established an incidental skate possession limit of 500 lbs. of wings (1135 lbs. whole), established a 20,000 lbs. whole weight possession limit for vessels with a Skate Bait Letter of Authorization, reduced the skate wing possession limit to 5,000 lbs. (11,350 lbs. whole), and adopted a three-season annual quota system for the skate bait fishery. In-season AMs will reduce allowable skate trip landings to the incidental limit (500 lbs. of skate wings, 1135 lbs. whole) when landings approach (80-90%) allowable levels.

An annual monitoring report and a bi-annual specification process replaced the obsolete baseline review procedures and will describe the expected impacts of recent regulations and pending management alternatives in other fisheries that impact the skate resource. The first annual monitoring report was published in June 2010 and is available at http://www.nefmc.org/skates/annual_reviews/2010%20Annual%20Monitoring%20Report%20Final.pdf.

2.1.5 Actions to Minimize Interactions with Protected Species

Many of the factors that serve to mitigate the impacts of the monkfish fishery on protected species are currently being implemented in the Northeast Region under either the Atlantic Large Whale Take Reduction Plan (ALWTRP) or the Harbor Porpoise Take Reduction Plan (HPTRP). In addition, the Monkfish FMP has undergone repeated consultations pursuant to Section 7 of the Endangered Species Act (ESA), with the most recent Biological Opinion dated April 14, 2003. The conclusion in that Opinion states that the monkfish fishery is not likely to jeopardize the continued existence of North Atlantic right whales, provided that the fishery is complying with the ALWTRP.

A previous Biological Opinion for the Monkfish FMP, dated June 14, 2001, concluded that continued authorization of the fishery was likely to jeopardize the continued existence of ESA-listed right whales as a result of entanglement in gillnet gear used in the fishery. A Reasonable and Prudent Alternative (RPA) was provided to remove the likelihood of jeopardy. The RPA included, in part, implementation of a Seasonal Area Management (SAM) program and a Dynamic Area Management (DAM) program to reduce the likelihood of right whale interactions with gillnet gear used in the monkfish fishery. The RPA measures were implemented as part of the Atlantic Large Whale Take Reduction Plan (ALWTRP). On October 5, 2007, NMFS published a final rule in the *Federal Register* (72 FR 57104) that made many changes to the ALWTRP affecting the use of fixed gillnet gear

in the monkfish fishery, amongst others. These changes included elimination of the DAM program as of April 7, 2008, and elimination of the SAM program as of October 6, 2008. The changes to the ALWTRP, therefore, modified the monkfish fishery in a manner that causes an effect to listed species not considered in the June 14, 2001 Opinion for the fishery. NMFS reinitiated formal consultation on the monkfish fishery on April 2, 2008, in accordance with the regulations at 50 CFR 402.16 to reconsider the effects of the continued authorization of the monkfish fishery on ESA-listed cetaceans and sea turtles. A Biological Opinion was issued for the monkfish fishery on October 29, 2010. After reviewing the current status of right, humpback, fin, and sei whales as well as loggerhead, leatherback, Kemp's ridley, and green sea turtles, the environmental baseline and cumulative effects in the action area, the effects of the continued operation of the Monkfish FMP, in compliance with the requirements of the ALWTRP, this Opinion concludes that the proposed activity is likely to adversely affect, but not jeopardize the continued existence of these species. As a result, an incidental state statement was prepared for the monkfish fishery. The incidental take statement anticipates for loggerhead sea turtles (a) the annual take of up to 171 individuals over a 5-year average in gillnet gear, of which up to 69 per year may be lethal and (b) the annual take of up to two (2) individual over a 5-year average in trawl gear, of which up to one (1) per year may be lethal; for leatherback sea turtles, the annual lethal or non-lethal take of up to four (4) individuals in trawl gear and gillnet gear combined; for Kemp's ridley sea turtles, the annual lethal or non-lethal take of up to four (4) individual in trawl gear and gillnet gear combined; and for green sea turtles, the annual lethal or non-lethal take of up to five (5) individuals in trawl gear gillnet gear combined. Furthermore, reasonable and prudent measures (RPMs) were established as a means of minimizing sea turtle interactions with the monkfish fishery now and to generate the information necessary in the future to continue to minimize incidental takes. These RPMs are non-discretionary and must be implemented by NMFS, and are as follows:

1. NMFS must seek to ensure that any sea turtles incidentally taken in monkfish fishing gear are handled in such a way as to minimize stress to the animal and increase its survival rate.
2. NMFS must seek to ensure that monitoring and reporting of any sea turtles encountered in monkfish fishing gear: (1) detects any adverse effects such as injury or mortality; (2) assesses the realized level of incidental take in comparison with the anticipated incidental take documented in this Opinion; (3) detects whether the anticipated level of take has occurred or been exceeded; and (4) collects data from individual encounters.
3. NMFS must continue to investigate and implement, within a reasonable time frame following sound research, gear modifications for gear used in the monkfish fishery to reduce incidental takes of sea turtles and/or the severity of the interactions that occur.

Additionally, NMFS must comply with the terms and conditions specified in the Opinion, which are established to implement the above RPMs.

As described below, the regulatory measures of the ALWTRP and the HPTRP must be adhered to by any vessel fishing for monkfish with gillnet gear.

2.1.5.1 Harbor Porpoise Take Reduction Plan

NMFS published the rule implementing the Harbor Porpoise Take Reduction Plan on December 1, 1998. The HPTRP includes measures for gear modifications and area closures, based on area, time of year, and gillnet mesh size. In general, the Gulf of Maine component of the HPTRP includes time and area closures, some of which are complete closures; others are closures to gillnet fishing unless pingers (acoustic deterrent devices) are used in the prescribed manner. The Mid-Atlantic component includes time and area closures in which gillnet fishing is prohibited regardless of the gear specifications. Based on an increase in harbor porpoise takes in the overall sink gillnet fishery in recent years, the Harbor Porpoise Take Reduction Team has developed options to reduce takes, and NMFS published a proposed rule on July 21, 2009 (74 *Federal Register* 36058) with four alternatives, including no action. The comment period ended on August 20, 2009.

NMFS published the final rule for the HPTRT on February 19, 2010 (75 *Federal Register* 7383). The changes contained in the new rule address the two primary causes of a recent increase harbor porpoise bycatch in gillnets: increased bycatch in places where measures to prevent it are not currently required, and gaps in compliance with current management measures, such as improper use of pingers. To address these problems, the measures expand when and where “pingers” are required on gillnets off New England, add new seasonal management measures off New Jersey, and define areas off New England that will close to gillnetters (“consequence closures”) if harbor porpoise bycatch exceeds the target rate for each area for two consecutive seasons. In the Mid-Atlantic, a new management area is being created off the coast of New Jersey, encompassing waters where high bycatch has been observed recently. The area will be closed to gillnetting from February 1 to March 15, and gear modified to reduce the risk of bycatch will be required to fish there between January 1 and April 30 every year when gillnet fishing is allowed.

2.1.5.2 Atlantic Large Whale Take Reduction Plan

The ALWTRP contains a series of regulatory measures designed to reduce the likelihood of fishing gear entanglements of right, humpback, and fin whales, and acknowledges benefits to minke whales in the North Atlantic. The main tools of the plan include a combination of broad gear modifications and time/area closures (which are being supplemented by progressive gear research), expanded disentanglement efforts, extensive outreach efforts in key areas, and an expanded right whale surveillance program to supplement the Mandatory Ship Reporting System.

Key regulatory changes implemented in 2002 included: 1) new gear modifications; 2) implementation of a Dynamic Area Management system (DAM) of short-term closures to protect unexpected concentrations of right whales in the Gulf of Maine; and 3) establishment of a Seasonal Area Management system (SAM) of additional gear modifications to protect known seasonal concentrations of right whales in the southern Gulf of Maine and Georges Bank.

On June 21, 2005, NMFS published a proposed rule (70 *Federal Register* 35894) for changes to the ALWTRP, and published a final rule on October 5, 2007 (72 *Federal Register* 57104). The new ALWTRP measures expand the gear mitigation measures by: (a) including additional trap/pot and net fisheries (*i.e.*, gillnet, driftnet) to those already

regulated by the ALWTRP, (b) redefining the areas and seasons within which the measures would apply, (c) changing the buoy line requirements, (d) expanding and modifying the weak link requirements for trap/pot and net gear, and (e) requiring (within a specified timeframe) the use of sinking and/or neutrally buoyant groundline in place of floating line for all fisheries regulated by the ALWTRP on a year-round or seasonal basis.

2.1.5.3 Atlantic Trawl Gear Take Reduction Strategy (ATGTRS)

In September 2006, the NMFS convened the Atlantic Trawl Gear Take Reduction Team (ATGTRT) under the Marine Mammal Protection Act (MMPA). The ATGTRT was convened to address incidental mortality and serious injury of long-finned pilot whales (*Globicephala melas*), short-finned pilot whales (*Globicephala macrorhynchus*), common dolphins (*Delphinus delphis*), and Atlantic white-sided dolphins (*Lagenorhynchus acutus*) in several trawl gear fisheries operating in the Atlantic Ocean. These marine mammal species are known to interact with the Mid-Atlantic Mid-Water Trawl, the Mid-Atlantic Bottom Trawl, Northeast Mid-Water Trawl and the Northeast Bottom Trawl fisheries.

Because none of the marine mammal stocks of concern to the ATGTRT are classified as a “strategic stock” nor do they currently interact with a Category I fishery it was determined that development of a take reduction plan (TRP) was currently not necessary.

In lieu of a TRP, the ATGTRT agreed to develop an Atlantic Trawl Gear Take Reduction Strategy (ATGTRS). The ATGTRS identifies informational and research tasks as well as education and outreach needs the ATGTRT believes are necessary to provide the basis for achieving the ultimate MMPA goal of achieving zero mortality rate goal (ZMRG). The ATGTRS also identifies several potential voluntary measures that can be adopted by certain trawl fishing sectors to potentially reduce the incidental capture of marine mammals. These voluntary measures are as follows:

- reducing the numbers of turns made by the fishing vessel and tow times while fishing at night; and
- increasing radio communications between vessels about the presence and/or incidental capture of a marine mammal to alert other fishermen of the potential for additional interactions in the area.

2.1.5.4 Final Rule to minimize monkfish gillnet interaction with sea turtles

On December 3, 2002, the agency published a final rule (67 *Federal Register* 71895) establishing seasonally adjusted gear restrictions by closing portions of the mid-Atlantic EEZ waters to fishing with large-mesh (>8”) to protect migrating sea turtles, following an interim final rule published March 21 that year. The basis of this rule was that sea turtles migrate northward as water temperatures warmed. At the time the interim and final rules were published, there was no evidence that the primary fishery involved – monkfish – was being prosecuted in state waters. In 2002, when most monkfish fishermen were not permitted under the FMP to fish in the EEZ and the rest were faced with the sea turtle closures, the proportion of North Carolina monkfish landings from state waters increased five-fold to 92%, posing an unforeseen risk to migrating sea turtles since they were not protected in state waters. In response, NMFS published a final rule on April 26, 2006 (71 *Federal Register* 24776) that included modifications to the large-mesh gillnet restrictions. Specifically, the new final rule revises the gillnet restrictions to apply to gillnets having 7-

inch stretched mesh or greater, versus the 8-inch stretched mesh defined in the 2002 final rule, but did not apply this new rule in state waters as considered in the proposed rule. State waters, and Federal waters north of Chincoteague, VA remain unaffected by the large-mesh gillnet restrictions.

2.1.6 Magnuson-Stevens Reauthorization Act and National Standard 1 Guidelines

The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSRA) amended the Magnuson-Stevens Act to include new requirements for annual catch limits (ACLs) and accountability measures (AMs) and other provisions regarding preventing and ending overfishing and rebuilding fisheries. The MSRA also established requirements for Councils that adopt Limited Access Privilege Programs (LAPPS), which include individual fishery quotas.

This section describes the legal and regulatory authority and requirements for the Council with respect to managing fisheries, with a focus on the requirement to stop or prevent overfishing and to maintain stocks at sustainable levels while achieving optimum yield for the benefit of the nation. This section also includes the reference points and definitions of relevant terms as provided in the MSRA and NMFS' National Standard 1 Guidelines (NS1 Guidelines, 50 CFR 600, published in 74 *Federal Register* 3178, January 16, 2009).

2.1.6.1 MSRA

2.1.6.1.1 Scientific and Statistical Committee (SSC) responsibilities

MSRA Sec 302 (g)(1)(b): Each scientific and statistical committee shall provide its Council ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch, preventing overfishing, maximum sustainable yield, and achieving rebuilding targets, and reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures, and sustainability of fishing practices.

2.1.6.1.2 Limits on Council action

MSRA Sec 302 (h)(6): (Each Council shall) develop annual catch limits for each of its managed fisheries that may not exceed the fishing level recommendations of its scientific and statistical committee or the peer review process established under subsection (g).

2.1.6.1.3 Fishery management plan requirements

MSRA Sec 303 (a)(15): (Any FMP shall) establish a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability.

2.1.6.2 Overfishing

MSRA Sec 3(34): The terms “overfishing” and “overfished” mean a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis.

2.1.6.3 Optimum yield

MSRA Sec 3(33): The term “optimum”, with respect to the yield from a fishery, means the amount of fish which—

- (A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems;
- (B) is prescribed as such on the basis of maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor; and
- (C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery.

MSRA Sec 301(a)(1): Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

2.1.6.4 National Standard 1 Guidelines

The MSRA requires the Secretary of Commerce to establish advisory guidelines (which shall not have the force and effect of law), based on the national standards, to assist in the development of FMPs. On January 16, 2009, NMFS published the Final Rule amending the National Standard 1 (NS1) Guidelines (74 *Federal Register* 3178).

2.1.6.4.1 Acronyms:

ABC – Acceptable Biological Catch
ACL - Annual Catch Limit
AM – Accountability Measure
ACT – Annual Catch Target
MFMT – Maximum Fishing Mortality Threshold
MSST – Minimum Stock Size Threshold
MSY – Maximum Sustainable Yield
OFL – Overfishing Limit
OY – Optimum Yield
SDC – Status Determination Criteria

2.1.6.4.2 Summary of items to include in FMPs related to NS1

The Councils must evaluate and describe the following items in their FMPs and amend the FMPs, if necessary, to align their management objectives to end or prevent overfishing (references are to paragraphs in 50 CFR 600.310, NS1 Guidelines):

- (1) **MSY** and **SDC** (see paragraphs (e)(1) and (2) of this section).
- (2) **OY** at the stock, stock complex, or fishery level and provide the **OY specification analysis** (see paragraph (e)(3) of this section).
- (3) **ABC** control rule (see paragraph (f)(4) of this section).
- (4) Mechanisms for specifying **ACLs** and possible sector-specific ACLs in relationship to the ABC (see paragraphs (f)(5) and (h) of this section).
- (5) **AMs** (see paragraphs (g) and (h)(1) of this section).

(6) Stocks and stock complexes that have statutory exceptions from ACLs... (Note: monkfish does not have a statutory exception, so this part is not apply)

2.1.6.4.3 Maximum Sustainable Yield (MSY)

MSY is the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technological characteristics (e.g. gear selectivity), and the distribution of catch among fleets. **Fmsy** is the fishing mortality rate that, if applied over the long term would result in MSY. **Bmsy** means the long-term average size of the stock or stock complex that would be achieved by fishing at Fmsy. Because MSY is a long-term average, it need not be estimated annually, but it must be based on the best scientific information available. When data are insufficient to estimate MSY directly, Councils should adopt other measures of reproductive potential that can serve as reasonable proxies for MSY, Fmsy and Bmsy, to the extent possible.

2.1.6.4.4 Status Determination Criteria (SDC)

SDC mean the quantifiable factors, MFMT, OFL, and MSST, or their proxies that are used to determine if overfishing has occurred, or if the stock or stock complex is overfished. “Overfished” relates to biomass, while “overfishing” pertains to a rate or level of removal of fish from a stock. SDC must be expressed in a way that enables the Council to monitor each stock, and determine annually, if possible, whether overfishing is occurring and whether the stock is overfished. In specifying SDC, a Council must provide an analysis of how the SDC were chosen and how they relate to reproductive potential. Each FMP must specify, to the extent possible, objective and measurable SDC.

2.1.6.4.5 Maximum Fishing Mortality Threshold (MFMT)

MFMT means the level of fishing mortality (F), on an annual basis, above which overfishing is occurring.

2.1.6.4.6 Overfishing Limit (OFL)

OFL means the annual amount of catch that corresponds to the estimate of MFMT applied to a stock’s abundance and is expressed in terms of numbers or weight of fish. OFL is an estimate of the catch level above which overfishing is occurring, corresponds to the level that jeopardizes the capacity of a stock to produce MSY on a continuing basis.

2.1.6.4.7 Minimum Stock Size Threshold (MSST)

MSST means the level of biomass below which the stock is considered to be overfished, and corresponds to the level that jeopardizes the capacity of the stock to produce MSY on a continuing basis.

If the fishing mortality rate exceeds the MFMT, or the catch exceeds the OFL for one year or more, overfishing is occurring, and if the estimated stock size in a given year falls below the MSST, the stock is considered overfished.

2.1.6.4.8 Optimum Yield (OY)

OY is a long-term average amount of desired yield from a stock, stock complex or fishery. An FMP must contain conservation and management measures, including ACLs and AMs, to achieve OY on a continuing basis, and provisions for information collection that are designed to determine the degree to which OY is achieved. Exceeding OY does not necessarily constitute overfishing. However, even if no overfishing resulted from exceeding OY, continual harvest at a level above OY would violate NS1, because OY was not achieved on a continuing basis.

OY cannot exceed MSY in any circumstance, and must take into account the need to prevent overfishing and rebuild overfished stocks. If the estimates of MFMT and current biomass are known with a high level of certainty and management controls can accurately limit catch, then OY could be set very close to MSY, assuming no other reductions are necessary for social, economic or ecological factors. The amount of fish that constitutes OY should be expressed in terms of numbers or weight of fish, and may be either a range or single value. All catch, including that resulting from bycatch, scientific research and all fishing activities, must be counted against OY. There should be a mechanism in the FMP for periodic assessment of the OY specification, so that it is responsive to changing circumstances in the fishery.

2.1.6.4.9 Acceptable Biological Catch (ABC), Annual Catch Limits (ACLs), and Annual Catch Targets (ACTs)

ABC is a level of a stock's annual catch that accounts for scientific uncertainty in the estimate of OFL and any other scientific uncertainty. ABC should be expressed in terms of catch, but may be expressed in terms of landings as long as estimates of bycatch and any other fishing mortality not accounted for in the landings are incorporated into the determination of ABC. ABC may equal, but may not exceed OFL.

The ABC control rule means a specified approach to setting the ABC. Control rules are policies for setting limit or target fishing levels, and are established by fishery managers in consultation with fisheries scientists, particularly the SSC. The determination of ABC should be based, when possible, on a probability of 50 percent or less that a catch equal to ABC would result in overfishing. The ABC control rule must articulate how ABC will be set compared to the OFL based on the scientific knowledge about the stock, the scientific uncertainty in the estimate of OFL, and any other scientific uncertainty. An SSC may recommend an ABC that differs from the result of the ABC control rule calculation, based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors, but must explain why.

ACL may equal but cannot exceed the ABC, and may be set annually or on a multiyear basis. ACL is the level of annual catch of a stock that serves as the basis for invoking AMs. ACL may be subdivided into sector ACLs, which may be necessary if the management measures for different sectors differ in the degree of management uncertainty so that appropriate AMs can be developed for each sector. In this usage, "sector" means a distinct user group to which separate management strategies and separate catch quotas apply, such as the commercial sector, recreational sector, or various user groups within a fishery.

ACT is an amount of catch of a stock that is the management target of the fishery, and accounts for management uncertainty in controlling catch at or below the ACL. The ACT control rule means a specified approach to setting the ACT for a stock such that the risk of exceeding the ACL due to management uncertainty is at an acceptably low level, and should articulate how management uncertainty is accounted for in setting ACT. Two sources of management uncertainty that should be accounted for are: uncertainty in the ability of managers to constrain catch so the ACL is not exceeded; and, uncertainty in quantifying the true catch amounts (i.e., estimation errors).

2.1.6.4.10 Accountability Measures (AMs)

AMs are management controls to prevent ACLs, including sector ACLs, from being exceeded, and to correct or mitigate overages of the ACL, if they occur. NMFS identifies two categories of AMs, in-season AMS and AMs for when the ACL is exceeded. **[Note: for purposes of this amendment, the two categories are referred to as “proactive” and “reactive” AMs].**

2.1.6.4.10.1 In-season AMs

Whenever possible, FMPs should include in-season monitoring and management measures to prevent catch from exceeding ACLs. In-season AMs could include, but are not limited to: ACT; closure of a fishery; closure of specific areas; changes in gear; changes in trip size or bag limits; reductions in effort; or other appropriate management controls. FMPs should contain in-season closure authority, giving NMFS the ability to close fisheries if it determines, based on data that it deems sufficiently reliable, that an ACL has been exceeded or is projected to be reached, and that closure of the fishery is necessary to prevent overfishing.

2.1.6.4.10.2 AMs for when the ACL is exceeded

On an annual basis, the Council must determine as soon as possible after the fishing year if an ACL was exceeded. If an ACL was exceeded, AMs must be triggered and implemented as soon as possible to correct the operational issue that caused the overage, as well as any biological consequences to the stock resulting from the overage when it is known. These AMs could include, among other things, modifications of in-season AMs or overage adjustments. If catch exceeds the ACL for a given stock more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary to improve its performance and effectiveness.

2.2 Purpose and Need

The primary need for this action is to bring the Monkfish FMP into compliance with the 2007 re-authorization of the Magnuson-Stevens Fishery Conservation and Management Act (MSRA). The MSRA included several new requirements, foremost of which is that each fishery adopt annual catch limits (ACLs) to prevent overfishing, including measures to ensure accountability. Since the monkfish stocks are not subject to overfishing, the MSRA requires that the Monkfish FMP achieve compliance by 2011. Therefore, the primary purpose of this amendment is to consider measures that will implement annual catch limits and accountability measures (AMs) to prevent overfishing.

This action is also needed to fully comply with the revised NS1 Guidelines pertaining to the specification of reference point control rules and status determination criteria. On January 16, 2009, NMFS published amended guidelines for National Standard 1 (NS1) of the MSRA (74 *Federal Register* 3178) for setting ACLs and other management reference points, and clarifying the relationship among those reference points. Specifically, these reference points include the Overfishing Limit (OFL), Maximum Sustainable Yield (MSY), Optimum Yield (OY), and Allowable Biological Catch (ABC). In addition, the guidelines provide a framework for various AMs, including in-season AMs, AMs for when the ACL is exceeded, AMs based on multi-year average data, and AMs for State-Federal fisheries. These reference points and AMs are discussed in more detail in Section 2.1.6 above. The purpose is, therefore, to define and adopt management reference points in accordance with the revised Guidelines.

This action is needed because current specifications of target total allowable catch (TTAC), and associated management measures, such as days-at-sea (DAS) and trip limits adopted in Framework 4 for the 2007-2009 fishing years will expire on April 30, 2010. Framework 4 included a provision to continue these specifications in FY2010 and beyond if the Councils do not adopt new specifications prior to that time. However, the Councils' intent was that the extension only be a contingency provision in the event unforeseen circumstances prevented setting specifications at the end of the three-year period. The Councils began working on Amendment 5 in January 2009. Given the rebuilt status of the resource, it was unreasonable to simultaneously develop specifications separately for FY2010. As a result, the TTACs and associated management measures in place or FY2009 will remain in effect for one additional year until the Councils can complete Amendment 5. Since the Councils are proposing to use an Annual Catch Target (ACT) as an in-season, proactive AM, the ACT will serve the same function as the TTAC as being the basis for specifying management measures, after accounting for discards. The third purpose of this amendment, therefore, is to adopt specifications for FY2011-2013 and beyond, if necessary. Revised specifications will include trip limits and DAS for the directed fishery, adjustments to the Research Set Aside (RSA) program, or other administrative or operational revisions to the existing management program.

Table 1 is a summary of the needs for, and purposes of this action.

Need	Purpose	Section
MSRA Compliance	Implement ACLs and AMs to prevent overfishing	3.2
NS1 Guidelines Compliance	Adopt biological and management reference points and control rules consistent with updated NS1 Guidelines	3.1
Expiration of Specifications adopted in Framework 4	1 – Adopt updated catch targets on which to base management measures	3.2.2.3
	2 – Adopt appropriate DAS and trip limits for directed fishery, incidental monkfish	3.3 - 3.6

	catch limits, administrative measures adjustment, other management measures in the current program.	

Table 1 Summary of purposes and needs identified for Amendment 5

2.3 Notice of Intent and Scoping Process

The Councils began development of Amendment 5 in late 2008. The Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) was published February 20, 2009 (74 *Federal Register* 7880) and scoping hearings were held as shown below:

Date	Location
Monday, February 23, 2009	Gloucester, MA
Tuesday, February 24, 2009	Warwick, RI
Tuesday, March 3, 2009	Manahawkin, NJ
Friday, March 6, 2009	Rockport, ME

The scoping comment period ended on March 31, 2009.

In the initial stages of Amendment 5, the Councils proposed including alternatives that would have potentially significantly changed the management program through the adoption of a catch share system (e.g., Individually Transferrable Quotas or Sectors). At its September, 2009 meeting, however, the NEFMC considered the time constraints associated with implementing ACLs and AMs for 2011 and voted to narrow the scope of issues to be addressed in Amendment 5, and to defer development of catch shares to the next amendment. The separation of these actions will enable the Councils and NMFS to review and approve ACLs and AMs within the statutory 2011 timeline while giving proper consideration under NEPA to catch shares. After the Councils decided to delay consideration of catch shares to a future amendment, the staff proceeded with development of an EA instead of an EIS because it believed that the other actions under consideration would not likely have a significant impact on the human environment, which has been verified in the analyses contained within this EA, and the finding of no significant impact. On September 20, 2010 NMFS published a NOI to prepare an EA, and retraction of the NOI for the EIS for Amendment 5 (75 *Federal Register* 57262)

2.4 Goals and Objectives

The original FMP specified the following management objectives:

1. To end and prevent overfishing; rebuilding and maintaining a healthy spawning stock;
2. To optimize yield and maximize economic benefits to the various fishing sectors;
3. To prevent increased fishing on immature fish;
4. To allow the traditional incidental catch of monkfish to occur.

The goals and objectives for this amendment supplement the basic FMP objectives. As discussed in the Purpose and Need Section above, this amendment is primarily intended to bring the FMP into compliance with the new MSRA mandates, and to specify management measures consistent with the FMP goals, including updated specification of catch targets and associated management measures.

3.0 Alternatives under Consideration

The following section describes the alternatives under consideration for Amendment 5, including those that were considered but rejected. During the development of Amendment 5, based on scoping comments and other considerations, the Councils also considered including several alternatives for adjusting some of the applicable incidental catch limits and for adopting catch-share management programs, either ITQs or sectors. In consideration of the MSRA-mandated deadline to implement ACLs and AMs by 2011, and the expiration of current specifications of DAS and trip limits, as well as the time required to fully develop and analyze those other alternatives, the Councils have deferred action on them to a future amendment. Thus, the Councils have not rejected the alternatives, but are deferring further development of them so they can complete the required provisions in a timely manner.

3.1 Biological and Management Reference Points

3.1.1 Alternative 1 – No Action

Current biological and management reference points are used to determine stock status with respect to being rebuilt (biomass targets, B_{target}), being in an overfished condition (biomass thresholds, $B_{\text{threshold}}$), and when overfishing is occurring (fishing mortality thresholds, $F_{\text{threshold}}$). Framework 5 adopted revised biomass reference points on the recommendation of the Data Poor Stocks Working Group (DPWG, 2007) as shown in Table 2. In 2003, Framework 2 adopted revised $F_{\text{threshold}}$ reference points on the recommendation of SAW/SARC 34, and set them equal to F_{max} . Framework 2 also stated that if a future assessment re-estimated the value associated with F_{max} , then the corresponding value of the $F_{\text{threshold}}$ reference point would change automatically. The values associated with F_{max} at that time were $F=0.2$, and those were revised in 2007 by the DPWG to the values shown in Table 2. The DPWG concluded that F_{max} is a proxy for F_{MSY} , and the average observed biomass (B_{target}) is a proxy for B_{MSY} , but a MSY proxy was not determined. These reference points, while they may be the basis for calculating the proposed reference points described in the following sections, do not, in and of themselves, adequately meet the requirements of the MSRA and the NS1 Guidelines.

	B_{target} (mt)	$B_{\text{threshold}}$ (mt)	$F_{\text{threshold}}$
NMA	92,200	65,200	0.31
SMA	122,500	96,400	0.40

B_{target} = average of total biomass 1980 - 2006

$B_{\text{threshold}}$ = lowest value of total biomass 1980 - 2006

$F_{\text{threshold}} = F_{\text{max}}$

Table 2 Biological reference points for northern (NMA) and southern (SMA) monkfish management areas.

With respect to OY, the FMP currently sets OY at the catch associated with the target total allowable landings (TTAL). While this approach may be consistent with the MSRA and NS1 Guidelines, the proposed action no longer uses the TTAL as a basis for specifying management measures. Rather, under the proposed action, the ACT will be used for setting

management measures, after accounting for discards, and the specification of OY needs to be revised to reflect that change.

3.1.2 Alternative 2 – Preferred Alternative - reference points and control rules

3.1.2.1 MSY control rule and specification

MSY is the long-term equilibrium catch produced by fishing at the rate calculated to achieve MSY (F_{msy}) on a stock that is at the biomass level that can produce MSY (B_{msy}) over the long term. F_{msy} or its proxy is the maximum fishing mortality threshold (MFMT, $F_{threshold}$), above which overfishing is deemed to be occurring. B_{msy} or its proxy is the target biomass reference point (B_{target}). MSY is the product of these two reference points, and the control rule is expressed as:

$$MSY = F_{threshold} \times B_{target}$$

MSY values are currently calculated to be 17,053 mt and 25,487 mt for Northern and Southern management areas, respectively. The input variables and calculation are shown in Table 3 and are discussed below.

	$F_{threshold}$	M	exploitable B_{2006} (mt)	exploitable B_{target} (mt)*	$U = F/Z \cdot (1 - e^{-Z})$	MSY proxy = $F/Z \cdot (1 - e^{-Z}) \cdot B$	OFL
North	0.31	0.30	97,940	73,484	0.2321	17,053	22,729
South	0.40	0.30	98,250	88,598	0.2877	25,487	28,263

* calculated as average of exploitable biomass (1980-2006) from SCALE using selectivity curve for 2004-2006 for entire time series

B target was defined by DPWG as average of total biomass (1980-2006)

Table 3 PDT calculations of MSY and OFL based on exploitable biomass targets.

Discussion

The PDT calculated MSY using the most recent estimate of $F_{threshold}$ and B_{target} from the DPWG assessment for 2006. These are proxy reference points for F_{msy} and B_{msy} . The DPWG calculated B_{target} as the average of *total* biomass 1980-2006, but for the purpose of determining MSY, *exploitable* biomass needs to be used. For the NMA, the assessment model (Statistical Catch At Length, SCALE) input maintained a consistent selectivity pattern throughout the time series, but for the SMA, three different selectivity patterns were applied to reflect changes in predominant gears during the period. As a result, the PDT recalculated B_{target} as *exploitable* biomass by applying the selectivity pattern during the most recent period to the entire time series (Table 4 and Figure 3).

The SSC stated the following in its March 30 Report to the Council:

The 2007 Data Poor Stocks Workshop advanced the monkfish stock assessment as a basis for fishery management by developing an analytical model (Statistical Catch At Length, SCALE) that synthesizes all recent information available on the fishery and the resource (catch data, survey data, size distributions and life history). However, substantial sources of uncertainty remain in the SCALE analysis. Although the DPSW accepted the model to estimate stock size and fishing mortality, it was not a reliable basis to determine conventional MSY reference points. Yield-per-recruit was used to derive F_{max} as a proxy for F_{MSY} , and the average estimated biomass during the assessment time series was used as a data-poor proxy for B_{MSY} . The SSC recognizes the uncertainties described in the DPSW report (natural mortality rate, growth rate, magnitude of discards, uncertain survey indices, under-reported historical catch, and a short assessment series). The SCALE model was also not considered to be a suitable basis for projection by the DPSW; as stated in the 2007 assessment summary, “Further work is necessary to develop a complete forecasting approach.” These uncertainties influence both components of OFL: the F_{MSY} proxy and stock biomass projections. Therefore, the SSC concludes that the information currently available for monkfish does not support a conventional approach to determining OFL and ABC as provided in National Standard 1 guidelines.

The SSC noted the following in its June 23 Report to the Council:

The 2007 Data Poor Stocks Workshop (NEFSC 2007) concluded that F_{max} is a proxy for F_{MSY} , and the average observed biomass is a proxy for B_{MSY} , but a MSY proxy was not determined. An approximation of MSY was calculated by the PDT as the catch associated with F_{max} and the average observed biomass (17,000 mt for the north and 25,000 mt for the south). However, the F_{MSY} and B_{MSY} proxies were chosen independently and are not consistent (i.e., fishing at F_{max} is not expected to maintain the mean of observed biomass), and MSY should ideally be derived as the long-term yield expected by fishing at F_{MSY} . Given the data-poor status of monkfish, the PDT’s calculation of MSY should be used as a proxy until more consistent reference points can be derived.

Exploitable Biomass (mt)			
	PDT 2009	DPWG 2007	
1980	74,524	86,815	
1981	82,285	95,232	
1982	92,009	105,523	
1983	101,971	115,814	
1984	110,891	124,734	
1985	118,625	132,016	
1986	122,689	134,990	
1987	124,376	135,605	
1988	122,651	133,229	
1989	117,442	127,900	
1990	104,752	115,536	
1991	96,516	108,043	
1992	87,770	98,674	
1993	77,186	88,038	
1994	68,357	80,425	
1995	66,027	79,525	
1996	64,206	67,979	
1997	63,417	67,391	
1998	63,164	67,261	
1999	62,768	66,611	
2000	65,756	69,215	
2001	71,213	74,597	
2002	74,072	77,922	
2003	80,661	85,268	
2004	86,742	86,742	
2005	93,818	93,818	
2006	98,250	98,250	
			difference
average	88,598	96,932	8,334
=Btarget proxy			

Table 4 Comparison of SMA exploitable biomass estimates from final SCALE runs from DPWG 2007 (3 selectivity blocks) to exploitable biomass derived by applying the most recent selectivity block (2004-2006) to numbers at length output from DPWG 2007 final SCALE run and converting to weight at length.

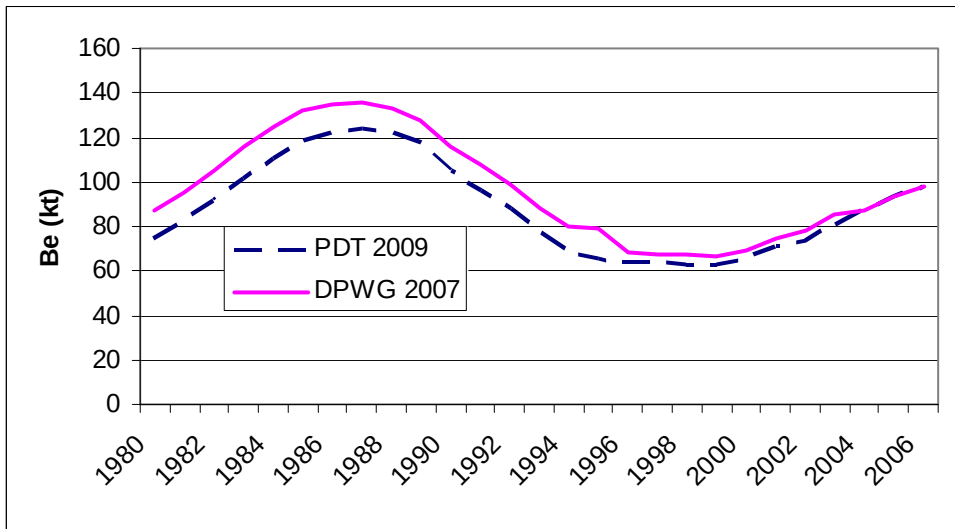


Figure 3 Comparison of SMA exploitable biomass estimates from final SCALE runs from DPWG 2007 (3 selectivity blocks) to exploitable biomass derived by applying the most recent selectivity block (2004-2006) to numbers at length output from DPWG 2007 final SCALE run and converting to weight at length (PDT 2009).

3.1.2.2 OFL control rule and specification

OFL is the amount of catch above which overfishing is deemed to be occurring, that is, it is a status determination criterion for overfishing. It is an annual limit derived as the product of current exploitable biomass and $F_{\text{threshold}}$. The OFL control rule is expressed as:

$$\text{OFL} = F_{\text{threshold}} \times B_{\text{current}}$$

OFL values are currently calculated to be 22,729 mt and 28,263 mt, North and South, respectively. The input variables and calculation are shown in Table 3 and are discussed below.

Discussion

The values associated with B_{current} are from the DPWG for 2006. When a new assessment is completed, (scheduled for 2010), new estimates of current biomass will result in different values for OFL based on the proposed control rule. It should be noted that the current values for OFL are higher than those associated with MSY since the estimate of current biomass is above the biomass associated with producing MSY. This is consistent with the NS1 Guidelines. However, the OFL estimates resulting from the proposed method are very high in comparison to historic landings, reflecting the uncertainty surrounding the estimate of current biomass from the 2006 assessment.

3.1.2.3 ABC control rule and specification

ABC is the level of catch that accounts for scientific uncertainty in the estimate of OFL and any other scientific uncertainty. NS1 Guidelines state that the Council must establish an ABC control rule based on scientific advice from its SSC. Further, the guidelines prescribe that “the determination of ABC should be based, when possible, on the probability that an actual catch equal to the stock’s ABC would result in overfishing.

The SSC observed in its June 23 report to the Council that “considerable uncertainties in the assessment model preclude its use to determine probability of exceeding the projected Overfishing Level of catch.” Therefore, the SSC recommended the method of determining ABC should be considered an interim proxy until Overfishing Level of catch and its uncertainty can be projected.

The SSC recommended that the interim ABC should be derived (ABC control rule) as:
the product of the average exploitation rate during the recent period of stable or increasing trend in biomass for each management unit and the most recent estimate of exploitable biomass.

The PDT reviewed the SCALE model results from the 2007 assessment and determined that the period 1999-2006 and 2000-2006 be used for the NMA and SMA, respectively. The starting years are those where the recent increase was first observed (see Table 5). The calculations produced values for **ABC of 17,485 mt (North) and 13,326 mt (South)**. These resulted in buffers between OFL and ABC of 5,234 mt (North) and

14,930 mt (South), or 23% and 53% of the respective OFL values (Table 6).

Discussion

In its March 30 Report, the SSC commented that “the data-poor default method for determining an interim ABC produces catch advice that is substantially less than the nominal OFL, but is not directly associated with overfishing (i.e., it is not directly based on OFL and its uncertainty).” The SSC stated that it will re-consider ABC recommendations for the 2014 fishing year, based on updated information (a stock assessment is scheduled for 2010). The SSC recognizes that the interim ABC for the NMA is slightly greater than the MSY proxy. As described above, the MSY proxy is simply the combination of F_{MSY} and B_{MSY} proxies that were independently derived, and should not be considered a constraint on ABC. National Standard Guidelines provide that the catch associated with overfishing (OFL) will fluctuate above and below MSY, and at high stock sizes ABC may exceed MSY. The most recent estimate of exploitable biomass of monkfish in the north is 33% greater than the B_{MSY} proxy, justifying an interim ABC that is slightly greater than the MSY proxy.

North					South				
Year	Age-1 Recruitment	Exploitable Biomass (kt)	Total Biomass (kt)	F	Year	Age-1 Recruitment	Exploitable Biomass (kt)	Total Biomass (kt)	F
1980	20.50	110.83	127.27	0.05	1980	31.05	86.81	107.91	0.09
1981	14.77	107.23	123.28	0.05	1981	29.96	95.23	116.80	0.06
1982	15.30	104.22	119.68	0.05	1982	24.51	105.52	127.14	0.05
1983	14.84	101.03	115.55	0.05	1983	22.13	115.81	136.88	0.05
1984	13.53	98.12	111.38	0.06	1984	21.65	124.73	144.67	0.04
1985	10.42	94.16	106.18	0.08	1985	20.58	132.02	150.44	0.05
1986	15.11	88.66	99.93	0.07	1986	23.80	134.99	152.10	0.04
1987	14.15	83.50	94.26	0.09	1987	36.12	135.61	152.67	0.04
1988	17.42	76.51	87.14	0.11	1988	14.49	133.23	150.35	0.05
1989	23.66	68.89	80.34	0.15	1989	25.93	127.90	145.58	0.12
1990	27.30	60.25	73.29	0.17	1990	34.10	115.54	133.81	0.10
1991	21.38	53.53	68.36	0.18	1991	39.77	108.04	127.04	0.13
1992	23.33	49.53	66.24	0.22	1992	32.57	98.67	118.80	0.20
1993	36.49	49.15	67.62	0.34	1993	43.95	88.04	110.42	0.26
1994	33.13	46.75	66.12	0.34	1994	35.49	80.43	104.39	0.23
1995	15.48	46.35	66.26	0.41	1995	29.88	79.52	104.05	0.28
1996	20.10	44.93	65.23	0.43	1996	23.35	67.98	101.55	0.35
1997	34.47	45.51	65.33	0.32	1997	24.53	67.39	100.18	0.37
1998	40.99	49.87	69.09	0.20	1998	43.85	67.26	98.37	0.36
1999	52.82	56.78	78.25	0.20	1999	39.26	66.61	96.42	0.29
2000	52.57	61.83	88.35	0.22	2000	34.85	69.21	99.76	0.19
2001	32.21	66.90	97.95	0.30	2001	16.56	74.60	107.38	0.23
2002	26.24	70.35	103.03	0.30	2002	33.33	77.92	112.56	0.19
2003	26.10	77.35	108.33	0.32	2003	50.37	85.27	120.07	0.20
2004	27.85	83.57	110.08	0.23	2004	25.71	86.74	124.26	0.15
2005	22.79	90.33	112.87	0.16	2005	17.44	93.82	129.99	0.15
2006	27.05	97.94	118.70	0.09	2006	30.60	98.25	135.45	0.12
2007	20.50	109.52	129.62	0.06	2007	31.05	104.87	142.74	0.07
2008	20.50	119.88	139.31	0.06	2008	31.05	116.07	151.76	0.07
2009	20.50	125.40	144.02	0.05	2009	31.05	125.14	158.82	0.06

Table 5 DPWG 2007 Estimates of Age-1 recruitment, Exploitable and Total Biomass and Fishing mortality rate from the SCALE model final run, including projections for 2007-2009.

	Start Year	F _{abc}	U _{abc}	Exp. B ₂₀₀₆ (kmt)	ABC (mt)	OFL-ABC (mt)	Buffer (OFL-ABC)/OFL
NORTH	1999	0.23	0.18	97.94	17,485	5,234	23%
SOUTH	2000	0.17	0.14	98.25	13,326	14,937	53%

Table 6 PDT Calculation of ABC and the buffers between ABC and OFL

3.1.2.4 OY

The MSRA defines “optimum” with respect to yield from a fishery as the “amount of fish which (A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems; (B) is prescribed as such on the basis of maximum sustainable yield from the fishery as reduced by any relevant economic, social and ecological factors; and (C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing maximum sustainable yield.” The NS1 Guidelines state that OY must take into account the need to prevent overfishing and rebuild overfished stocks. Setting OY equal to the ACT, as proposed, represents the maximum yield from the fishery while preventing overfishing, after taking into account scientific uncertainty in the overfishing limit in setting ABC, and management uncertainty in setting measures that will not exceed the ABC. Generally, the greatest benefit to the nation, including social and economic considerations, implies maximizing yield from the fishery while not overfishing, and, therefore, the use of the ACT as a numerical value associated with OY would be appropriate.

OY=ACT

3.2 ACL and AMs

Section 303(a)(15), of the MSRA requires Councils to “establish a mechanism for specifying annual catch limits (ACLs) in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability (AMs)”. NS1 Guidelines state that ACLs cannot exceed the ABC and, in coordination with AMs must prevent overfishing. Since the purpose of ABC is to account for the scientific uncertainty in the estimate of OFL, the ACL may equal ABC, provided the AMs are sufficient to prevent exceeding the ACL, or account for any overage of ACL so that overfishing does not occur.

3.2.1 Alternative 1 – No Action

The current FMP does not specify an ACL, nor does it have measures that have been identified as those intended to ensure accountability. Rather, the FMP has specified a target total allowable catch level (TTAC) to set management measures at a level that will prevent overfishing and achieve optimum yield. In actuality, the TTAC is a target total allowable landings level, since the current FMP does not account for discards in setting the target. Discards are considered in the stock assessments, however, and in the analyses that determine whether overfishing is occurring. The no action alternative, therefore, with respect to ACLs and AMs, would be to continue the current approach of setting target total allowable landings at a level that is expected to prevent overfishing. This approach does not comply with the MSRA and NS1 Guidelines.

3.2.2 Alternative 2 – Preferred Alternative - ACLs and AMs

3.2.2.1 ACLs

Since the Councils propose using annual catch targets (ACTs) as proactive AMs, see subsections below, that are set sufficiently below the ACL to account for uncertainty in the ability of the management measures to control catch (“management uncertainty”), as well as reactive AMs, they have determined that there is no technical basis for setting the ACL below the ABC. Therefore, the Councils propose that:

$$\text{ACL}=\text{ABC}$$

Discussion

In its March 30 Report, the SSC observed the following:

The ... proposal to define the annual catch limit (ACL) as equal to the ABC is consistent with the final guidelines to implementing National Standard 1. The buffer between ACL and ACT should account for management uncertainty, avoid exceeding the ACL and avoid reactive accountability measures. The magnitude of recent catch has low risk of exceeding the OFL or the proposed interim ABC. In 2006, total catch was 7,187mt in the north (32% of OFL) and 9,561mt in the south (34% of OFL). According to the PDT’s estimate of 2007 landings and status quo discard rates, total catch in 2007 was approximately 5,400mt in the north (24% of OFL) and 8,800mt in the south (31% of OFL). Any reduction in the magnitude or rate of discards would reduce both scientific and management uncertainty.

3.2.2.2 Reactive AM

NS1 Guidelines describe AMs as management controls designed to prevent ACLs from being exceeded, and to correct or mitigate overages of the ACL if they occur. The latter form of AMs are reactive in that they take effect in the event of an overage. The guidelines say further that “on an annual basis, the Council must determine as soon as possible after the fishing year if an ACL was exceeded. If an ACL was exceeded, AMs must be triggered and implemented as soon as possible to correct the operational issues that caused the ACL overage...”. The Councils propose the following reactive AM:

If the ACL in a management area is exceeded in a given year, the overage would be deducted on a pound-for-pound basis from the ACT, and adjustments made to management measures would be developed during the year immediately following the year in which the overage occurred, for implementation in the next fishing year. Thus, if the ACL is exceeded, the ACT is to be reduced in the second fishing year following the year in which the overage occurred. In the event the Councils do not take appropriate action, the Regional Administrator will use a formulaic approach that will be developed by the PDT, similar to that used in Framework 2, to adjust DAS and trip limits, and will implement those adjustments by Notice Action published in the *Federal Register* no later than January 1 for subsequent fishing year starting May 1.

Discussion

The monkfish FMP provides for incidental catch in other fisheries by assigning various incidental landing limits appropriate to the affected fisheries to minimize bycatch. When developing monkfish management measures for the directed fisheries in the north and south, the FMP first deducts the most recent estimate of incidental landings (not total catch) from the landings target (TAC) to determine the amount of fish available to the directed fishery. In other words, the FMP controls directed effort, which is based on the TAC residual after incidental catch, but it does not directly control the incidental catch in fisheries managed by other FMPs. The incidental catch takes precedence due to the fact that monkfish is caught to some degree in almost every fishery, and to attempt to control that catch (other than to allow limited landings) would require the FMP to impose management restrictions on fisheries managed under other FMPs.

Extending this management philosophy to the ACL and reactive accountability measures would mean that the ACL would be apportioned, but not allocated based on observed catch distribution (landings plus discards) by various fisheries (e.g., directed, by gear, and indirect by gear or fishery). When catch exceeds the ACL, the first step in adopting accountability measures would be to determine the source of the overage. If the overage is due to overages by the directed fishery component, then proportional adjustments would be made to the ACT, and associated management measures, for the subsequent year. If the overage is due to catch by incidental fisheries exceeding the expected level, then the amount of the overage would be added to the incidental catch portion of the ACT, with a subsequent recalculation of the directed fishery portion, and associated management measures. This approach would likely apply whether the fishery remained under the current management system, or moved toward a catch-share approach.

The proposed reactive AM requires the Councils to take action as soon as possible after the end of the fishing year, but also provides a backstop authority to the NMFS Regional Administrator to take action if the Councils fail to act in a timely way. This two-tiered approach provides the Councils an opportunity to consider alternative approaches to making the necessary adjustments, but establishes a firm, formulaic approach that ensures accountability whether or not the Councils take action.

3.2.2.3 Proactive AMs (ACT)

A proactive AM would be an ACT that is set sufficiently below the ACL such that the measures that are based on the ACT prevent the ACL from being exceeded, in consideration of all sources of management uncertainty. Proactive AMs, as described below, would set catch targets based on the expectation that, in spite of uncertainty in the effectiveness of management measures, those measures would ensure that the ACL is not exceeded. The ACT which would be the basis for setting management measures (DAS/trip limits), after accounting for incidental catch in non-directed fisheries, and includes discards in all fisheries.

The Councils proposed two options for ACTs for each area. The ACTs can be subdivided into two parts, landings and discards. Discards have been estimated from data compiled for the DPWG assessment, and are based on a three year average for the most recent

years in the assessment (2004-2006). The discard rates are 7.5% for the NMA and 29% for the SMA which are applied to the total allowable landings to derive the ACTs.

3.2.2.3.1 NMA ACT Options

	TAL Increase	TAL (mt)	Discards (mt)	NMA ACT (mt)
ACT Option 1	50 %	7,500	563	8,063
<u>ACT Option 2</u>	<u>100 %</u>	<u>10,000</u>	<u>750</u>	<u>10,750</u>
ACL	17,480 mt			

Discard rate for NMA= 7.5%

The Councils' preferred alternative is ACT Option 2 for the NMA.

3.2.2.3.2 SMA ACT Options

	TAL Increase	TAL (mt)	Discards (mt)	SMA ACT (mt)
ACT Option 1	40 %	7,140	2,071	9,211
<u>ACT Option 2</u>	<u>75 %</u>	<u>8,925</u>	<u>2,588</u>	<u>11,513</u>
ACL	13,326 mt			

Discard rate for SMA= 29%

The Councils' preferred alternative is ACT Option 2 for the SMA.

Discussion

In using a proactive AM, the Councils recognized that there is uncertainty in the effectiveness of management measures, as well as uncertainty in the timely monitoring of catch, including discards. By using an ACT to set management measures, the Councils are placing a buffer between the catch target used to set management measures and the catch limit which defines overfishing, after accounting for scientific uncertainty in the OFL. A higher ACT increases the risk that catch will exceed the ACL, and that overfishing will occur. Catch will exceed the ACT if any of the assumptions in the analytical model used to calculate the specification of management measures (DAS and trip limits) are violated. Such violation could occur for a variety of reasons including, but not limited to: that the incidental catch of monkfish in other fisheries is greater in the future than in the baseline year of the model (FY2008); that monkfish catch rates on directed trips is greater than in the baseline year; that DAS utilization rates (DAS used compared to DAS allocated) increase. Furthermore, if a future stock assessment results in a recalculation, and reduction, of the OFL and ABC, under the control rules proposed in this amendment, then there is a greater risk that the ACT will be unacceptably close to, or even exceed the ACL. On the other hand, a higher ACT allows for greater yield from the fishery, providing economic opportunity for fishing businesses and greater availability to the consumer.

3.3 Specification of DAS and Trip Limits Alternatives

This section describes the alternatives under consideration for modifications to measures applicable to vessels fishing in the directed monkfish fishery, that is, while on a monkfish

DAS, as well as the options under consideration for adjustments to DAS and trip limit allocations to achieve the ACT options for each management area.

3.3.1 DAS and Trip Limit Options

3.3.1.1 Alternative 1 (no action)

If the Councils do not adjust the DAS and trip limits, current effort levels would remain in effect under the terms of specifications adopted in Framework 4. These are:

	DAS	Trip limit (tail wt. lbs./DAS)	
		Permit A & C	Permit B,D, &H
NMA	31	1,250	470
SMA	23	550	450

These specifications would not be consistent with the ACT options being proposed since they are based on the TTAC of 5,000 mt and 5,100 mt, NMA and SMA, respectively. Since the proposed ACTs are higher than the TTACs, these specifications would not result in the fishery achieving OY. The exception to this conclusion is with respect to SMA ACT Option 1, due to the TTAC overage in previous fishing years. SMA ACT Option 1 is based on the catch that resulted in FY2008 from these specifications. Therefore, two of the SMA specifications options discussed below retain the current trip limit and DAS allocations to achieve the higher ACT.

3.3.1.2 Alternative 2 – Preferred Alternative - NMA and SMA DAS and trip limit options

The Councils considered a range of DAS and trip limit options under each ACT option presented above. The range of options comprises three approaches: maintain current DAS allocations, and adjust the trip limit; maintain the current trip limit and adjust the DAS allocations; and, adjust both DAS and trip limits. A detailed discussion of the methodology and results is provided in Appendix 2, Monkfish Northern and Southern Fishery Management Area Daily Landings and Days-at-Sea limit Allocations for FY2011-FY2013 (Specifications Report).

In addition, in response to a request by the Monkfish Oversight Committee, PDT developed an option for the NMA that would set the trip limits for all limited access permit categories at the same level with a DAS allocation of 40. The report discusses this analysis and notes that the results are limited by the overall allocation of total allowable landings (TAL) to the BD permit category group. In this circumstance, the AC permit category trip limits are lower than they would be under the standard options. To allow for a higher BD trip limit would require reallocation of permit category AC group TAL allocation to the BD group, which is not a measure that the Councils have agreed to consider, and which would be counter to the basis on which the initial permit qualifications were based. This option was hence not forwarded by the Committee to the Council, and, therefore, is not presented below under alternatives under consideration.

The Specifications Report also contains the results of an analysis requested by the Monkfish Oversight Committee which assumes that monkfish incidental catch in the

NMA would be 50% of recent historical levels as a result of restrictions proposed in Amendment 16 to the Multispecies FMP. Under that scenario, the allocation of TAL to the directed fishery (DAS and trip limits) would increase. The Committee did not specify that this scenario be included as an alternative for consideration in this amendment, and so those options are not included in those described below. Whether or not a 50% reduction in incidental landings would occur is highly uncertain, and, therefore, to include that scenario as alternatives to be considered would be inappropriate. Furthermore, the distribution of landings per DAS and DAS usage rates in FY2008 indicates that even if the allocations were to be increased, very few vessels would avail themselves of that increased opportunity, since the overwhelming majority of vessels did not use their allocated monkfish DAS (median of 6 DAS out of 35 allocated, including carryovers), and landed well below the allowable limit on those monkfish DAS.

3.3.1.2.1 NMA DAS and trip limit options

The two ACT options for the NMA are based on a 50% and 100% increase in the target TAL, or 8,063 mt and 10,750 mt, respectively. The three options for DAS and trip limit allocations are shown in Table 7. It should be noted that the trip limits for the AC permit group is 1,250 lbs. tail wt. per DAS for all options because that is the highest daily average landings prior to the implementation of trip limits in FY2007. **The Councils' preferred NMA alternative is Option 2c, with 40 DAS, and daily tail weight trip limits of 1,250 lbs. (Categories A & C) and 800 lbs. (Categories B & D).**

3.3.1.2.2 SMA DAS and trip limit options

The two ACT options for the SMA are based on a 40% and 75% increase in the target TAL, or 9,211 mt and 11,513 mt, respectively. The three options for DAS and trip limit allocations are shown in Table 8. **The Councils' preferred SMA alternative is Option 2b, with 28 DAS, and daily tail weight trip limits of 550 lbs. (Categories A & C) and 450 lbs. (Categories B, D & H).**

TAC Increase (percent)	NMA TAC (mt)	Discards (mt)	TAL (mt)	NMA OPTION	AC trip limit (tail wt. per DAS)	BD trip limit (tail wt. per DAS)	DAS
50% (ACT Option 1)	8,063	563	7,500	1A	1250	700	31
				1B	1250	470	45
				1C	1250	600	40
100% (ACT Option 2)	10,750	750	10,000	2A	1250	950	31
				2B	1250	470	51
				2C	1250	800	40

Table 7 Specification Options (DAS and trip limits) for the NMA under two ACT options

TAC Increase (percent)	SMA TAC (mt)	Discards (mt)	TAL (mt)	SMA OPTION	AC trip limit (tail wt. per DAS)	BD trip limit (tail wt. per DAS)	DAS
40% (ACT Option 1)	9,211	2,071	7,140	1A	550	450	23
				1B	550	450	23
				1C	700	600	15
75% (ACT Option 2)	11,513	2,588	8,925	2A	700	600	23
				2B	550	450	28
				2C	700	600	23

Table 8 Specification Options (DAS and trip limits) for the SMA under two ACT options

3.3.2 Other adjustments to the DAS and trip limit management program

3.3.2.1 Automatic DAS Adjustment for Trip Limit Overage

The Councils considered a modification to the DAS and trip limits management program that would allow vessels to exceed the daily trip limit by one day's amount, and to have the vessel's DAS accounting balance to be charged accordingly.

3.3.2.1.1 Alternative 1 - No Action

Currently, vessels that exceed the trip limit applicable to the amount of time away from port may not return to port until sufficient time has elapsed or discard the overage. Gillnet vessels that have not hauled through all of their gear also have the choice of leaving fish in their nets and returning on another trip to complete the hauls, which often results in product degradation and discards.

3.3.2.1.2 Alternative 2 – Preferred Alternative - Automatic DAS Adjustment for Trip Limit Overage

Under this alternative, a vessel may exceed the applicable trip limit in the amount equivalent to one day's trip limit, provided the vessel reports that it has an overage via VMS or cell phone prior to crossing the VMS demarcation line. For the terminal DAS, the vessel's DAS account balance would be automatically charged according to one of the following three options:

Option 1: 30 hours would be deducted from a vessel's DAS account (based on the current rule that gillnet vessels are charged a minimum of 15 hours for a trip, times two)

Option 2: 48 hours would be deducted from a vessel's DAS account (based on 2 x 24 hours)

Option 3: 24 hours and one minute would be deducted from a vessel's DAS account (based on the current rule that applies the trip limit to a day or any partial day, including one minute)

The Councils' preferred alternative is Option 3, deduct 24 hours and one minute for a one-day overage of the trip limit.

Discussion: This alternative would enable vessels fishing under the trip limits while on a monkfish DAS to land up to one additional day's limit, and be charged time against their DAS account balance according to one of the three options. For example, under Option 1 if the trip limit applicable to a vessel (based on permit category and area) is 550 lbs. tail wt. per DAS, or part of a DAS, a vessel could land 1100 lbs. tail wt. on a trip lasting less than 24 hours and be charged 30 hours. Under Option 2, the vessel would be charged 48 hours, and under Option 3, 24 hours and one minute. Currently, in order to land 1100 lbs. tail wt., the vessel would have to remain at sea for a minimum of 24 hours and one minute, or discard any amount over 550 lbs. if the trip is less than 24 hours.

3.3.2.2 Category C and D permit GF DAS Usage

3.3.2.2.1 Alternative 1 - No Action - Preferred Alternative -

Vessels holding a monkfish Category C or D permit and a multispecies permit are charged a multispecies Category A DAS for every monkfish DAS used. If the vessel's allocation of multispecies Category A DAS is fewer than the monkfish DAS allocation, the vessel may fish the difference as a monkfish-only DAS but only after all multispecies Category A DAS have been used. This provision is based on the allocation of multispecies Category A DAS, not simply the remaining balance. Therefore, if a vessel begins the fishing year with a multispecies Category A DAS allocation that is greater than its monkfish DAS allocation, then fishes only multispecies DAS to the point where its multispecies Category A DAS balance is less than its monkfish DAS balance, the vessel may only use the number of monkfish DAS that corresponds to the number of remaining multispecies Category A DAS.

3.3.2.2.2 Alternative 2 – Category C and D permit GF DAS Usage

Under this alternative, **vessels holding a limited access monkfish Category C or D permit and a limited access multispecies permit that have a higher monkfish DAS allocation than multispecies Category A DAS allocation could elect when to declare a combination multispecies/monkfish DAS. However, when the balance of monkfish DAS remaining equals the vessel's allocation of multispecies Category A DAS, the vessel will be automatically charged a multispecies Category A DAS for every monkfish DAS used.**

3.3.2.3 Monkfish Vessels in GF Sectors - GF DAS usage requirement

This section describes the alternative being considered for addressing the interaction between the Multispecies FMP and the Monkfish FMP, and, specifically, the rules applicable to vessels fishing in groundfish sectors who are not required to fish on a groundfish DAS.

3.3.2.3.1 Alternative 1 – Preferred Alternative - No Action

Vessels holding a monkfish Category C or D permit and a multispecies permit are charged a multispecies Category A DAS for every monkfish DAS used. A vessel enrolled in a multispecies (groundfish) sector is still allocated multispecies Category A DAS, but may not be required to use those days when fishing for groundfish under the rules of the individual sectors. Thus, when a vessel enrolled in a groundfish sector exceeds the applicable incidental limit for monkfish, it must declare a monkfish DAS, and will be charged a multispecies Category A DAS for every monkfish DAS used.

If the vessel's allocation of multispecies Category A DAS is fewer than the monkfish DAS allocation, the vessel may fish the difference as a monkfish-only DAS, but only after all multispecies Category A DAS are used up. When fishing on a monkfish-only DAS, a vessel is required to fish in one of the monkfish exempted fisheries established under the Multispecies FMP, but is not required to have Annual Catch Entitlement (ACE) for groundfish species in that area. [Note: the Multispecies FMP has established times and areas where vessels not fishing on a multispecies DAS may fish with specified gear, based on minimal incidental catch of multispecies, and those vessels are exempt from the multispecies DAS requirement.] When fishing on a combined monkfish/groundfish DAS, the sector member vessel is not required to fish in one of the monkfish exempted fisheries but is restricted to fishing only in areas where the sector has Annual Catch Entitlement (ACE) remaining, and any catch of multispecies would be charged against that ACE. If the sector has insufficient ACE remaining, or if the sector is closed

because it has caught its ACE, then vessels would be able to use any available monkfish-only DAS in an exempted.

3.3.2.3.2 Alternative 2 – Eliminate GF DAS usage requirement

Under this alternative, **a vessel enrolled in a groundfish sector that also has a monkfish Category C or D permit would not be required to use a multispecies Category A (groundfish) DAS in conjunction with its monkfish DAS.** As with the no action alternative, when fishing on a monkfish-only DAS, the vessel is not required to fish in one of the monkfish exempted fisheries established under the Multispecies FMP, but is restricted to fishing only in areas where the sector has ACE remaining, and any catch of multispecies would be charged against that ACE. If the sector has insufficient ACE remaining, or if the sector is closed because it has caught its ACE, then vessels would not be able to use their monkfish only DAS in an exempted fishery due to the potential for incidental catch of multispecies.

The Councils considered two area options for this alternative:

Option 1: this alternative would apply to vessels fishing only in the NMA

Option 2: this alternative would apply to vessels fishing in either the NMA or SMA.

3.4 Changes to the Monkfish Research Set-Aside (RSA) Program

3.4.1 Carryover RSA DAS – No Action Required

See Section 3.7.2, Alternatives Considered but Rejected.

3.4.2 Allow Changes to RSA Program by Framework Adjustment

3.4.2.1 Alternative 1 – No Action

Currently any changes to the Monkfish Cooperative Research Set Aside Program must be done through a plan amendment.

3.4.2.2 Alternative 2 – Preferred Alternative - Allow Changes to RSA Program by Framework Adjustment

Under this alternative, **the Councils could consider and adopt changes to the RSA Program (i.e., increase or decrease RSA set-aside amount) through a framework adjustment to the FMP.**

3.5 Mandatory VMS

3.5.1 Alternative 1 – Preferred Alternative - No Action

The Monkfish FMP does not currently require limited access vessels to use a VMS. Permit Category C and D vessels are already required to use VMS by either the Scallop or Multispecies regulations, since, by definition, C and D permits are those limited access monkfish permits that also hold a limited access permit in either the Scallop or Multispecies fisheries.

3.5.2 Alternative 2 – Mandatory VMS

The Councils considered three options, based on area, for requiring all limited access monkfish vessels to use a VMS unless exempted under the power-down provisions described in Table 9. If

a vessel is already required to use a VMS under the regulations of other FMPs, then those regulations, including the applicable power-down provisions, supersede this requirement.

Option 1: All monkfish limited access vessels fishing in the SMA will be required to have an operational VMS when on a monkfish DAS.

Option 2: All monkfish limited access vessels fishing in the NMA will be required to have an operational VMS when on a monkfish DAS.

Option 3: All monkfish limited access vessels will be required to have an operational VMS when on a monkfish DAS.

(2) *Power down exemption.*

(i) Any vessel required to transmit the vessel's location at all times, as required in paragraph (c)(1) of this section, is exempt from this requirement if it meets one or more of the following conditions and requirements:

(A) The vessel will be continuously out of the water for more than 72 consecutive hours, the vessel signs out of the VMS program by obtaining a valid letter of exemption pursuant to paragraph (c)(2)(ii) of this section, and the vessel complies with all conditions and requirements of said letter;

(B) For vessels fishing with a valid NE multispecies limited access permit, or a valid surfclam and ocean quahog permit specified at §648.4(a)(4), the vessel owner signs out of the VMS program for a minimum period of 30 consecutive days by obtaining a valid letter of exemption pursuant to paragraph (c)(2)(ii) of this section, the vessel does not engage in any fisheries until the VMS unit is turned back on, and the vessel complies with all conditions and requirements of said letter; or

(C) The vessel has been issued a limited access herring permit, and is in port, unless required by other permit requirements for other fisheries to transmit the vessel's location at all times. Such vessels must activate the VMS unit and enter the appropriate activity code prior to leaving port.

(D) The vessel has been issued a general scallop permit or a monkfish limited access permit and is required to operate VMS as specified in §648.10(b)(1)(iv), is not in possession of any scallops or monkfish onboard the vessel, is tied to a permanent dock or mooring, and the vessel operator has notified NMFS through VMS by transmitting the appropriate VMS power down code, that the VMS will be powered down, unless required by other permit requirements for other fisheries to transmit the vessel's location at all times. Such a vessel must repower the VMS prior to moving from the fixed dock or mooring. VMS codes and instructions are available from the Regional Administrator upon request;

(E) For vessels fishing with a valid monkfish limited access permit, the vessel owner signs out of the VMS program for a minimum period of 30 consecutive days by obtaining a valid letter of exemption pursuant to paragraph (c)(2)(ii) of this section, the vessel does not engage in any fisheries where a VMS is required until the VMS unit is turned back on, and the vessel complies with all conditions and requirements of said letter.

(ii) *Letter of exemption.*

(A) *Application.* A vessel owner may apply for a letter of exemption from the VMS transmitting requirements specified in paragraph (c)(1) of this section for his/her vessel by sending a written request to the Regional Administrator and providing the following: The location of the vessel during the time an exemption is sought; and the exact time period for which an exemption is needed (i.e., the time the VMS signal will be turned off and turned on again); and, in the case of a vessel meeting the conditions of paragraph (c)(2)(i)(A) of this section, sufficient information to determine that the vessel will be out of the water for more than 72 continuous hours. The letter of exemption must be on board the vessel at all times, and the vessel may not turn off the VMS signal until the letter of exemption has been received.

(B) *Issuance.* Upon receipt of an application, the Regional Administrator may issue a letter of exemption to the vessel if it is determined that the vessel owner provided sufficient information as required under paragraph (c)(2) of this section, and that the issuance of the letter of exemption will not jeopardize accurate monitoring of the vessel's DAS. Upon written request, the Regional Administrator may change the time period for which the exemption is granted.

Table 9 VMS power down exemptions under the proposed mandatory VMS alternative. Text is current regulatory language (CFR 648.9), modified as shown by shading.

3.6 Allow landing of Monkfish Heads

3.6.1 Alternative 1 -1 No Action

Vessels are prohibited from landing monkfish heads unattached. Currently, vessels may only land whole fish or tails, as there is a tails-to-whole conversion factor in the FMP and implementing regulations.

3.6.2 Alternative 2 – Preferred Alternative - Allow landing of Monkfish Heads

Under this proposal, vessels could land unattached monkfish heads provided the total weight of the heads does not exceed 2.32 times the total weight of tails on board.

3.7 Alternatives Considered but Rejected

3.7.1 ACT Options

During the development of Amendment 5, the Councils considered using the current target TAC plus estimated discards as the basis for one of the ACT options. Under that option the ACTs would be 5,375 mt (NMA) and 6,579 mt (SMA). On the recommendation of the Monkfish Committee and Advisory Panel, the Councils rejected that option. In making the recommendation, the Committee noted that such a low catch target option is unnecessary considering the status of the stocks (rebuilt and overfishing not occurring). Furthermore, in the SMA, that ACT option would have resulted in reduced DAS allocations since there was an overage of the target TAC in 2007 and 2008. The Committee also heard comment that if there is no basis for retaining those options, they should be removed because they will distract the public from commenting on the more realistic options, and will cause unnecessary distress in the public hearing process.

When the NEFMC was deciding on final measures from the range of alternatives presented in the EA, it conditionally identified NMA ACT Option 2 as its preferred alternative but tasked the PDT with analyzing a third option prior to voting to submit the amendment. The third option was not included in the draft EA and public hearing process. It would have set the NMA ACT at 13,988 mt, or 80% of the ACL. Upon review of the Option 3 analysis, at the June 2010 meeting, the Council took no action, and, therefore, Option 2 remained as the preferred alternative.

3.7.2 Carryover RSA DAS

At the time that the Councils developed the draft of this amendment document, vessels that received RSA DAS for research and/or compensation, from projects awarded RSA grants, were required to fish those DAS before the end of the fishing year. Unused RSA DAS could not be carried forward to the following fishing year. In March, 2010, NMFS published a final rule implementing a technical amendment (75 *Federal Register* 12141, March 15, 2010) that adopted one of the Councils' options, allowing a project that has been awarded RSA DAS but has not used up those DAS before the end of the fishing year to carryover the unused portion of the DAS to the following year. Carryover RSA DAS may not be accumulated for future years. Following this action, the Councils no longer needed to consider any changes to the RSA Program with respect to allowing carryover DAS.

4.0 Affected Environment (SAFE Report for 2007 and 2008)

4.1 Biological Environment and Stock Status

4.1.1 Monkfish Life History

The most recent published summary of monkfish life history and population dynamics is contained in an article by Richards, *et al.*, 2008 and included here as Appendix 3. The paper uses data from resource surveys spanning the period 1948-2007. The authors noted that “monkfish

exhibited seasonal onshore-offshore shifts in distribution, migrated out of the southern Mid-Atlantic Bight (MAB) in mid-spring, and re-appeared there in autumn”. This observation is reflected in the seasonal pattern of fishery activity, particularly in the SMA. The authors also observed that “sex ratios at length for fish 40-65 cm long were skewed toward males in the southern MAB, but approximated unity elsewhere, suggesting that a portion of the population resides outside sampled areas. Growth was linear at 9.9 cm per year, and did not differ by region or sex. Maximum observed size was 138 cm for females and 85 cm for males. Length at 50% maturity for males was 35.6 cm (4.1 yrs. old) in the north and 37.9 cm (4.3 yrs. old) in the south; for females, 38.8 cm (4.6 yrs. old) in the north and 43.8 cm (4.9 yrs. old) in the south. Ripe females were found in shallow (<50 m.) and deep (>200 m) water in the south, and in shallow (<50 m) in the north.”

4.1.2 Stock Status

Monkfish were assessed within the Data Poor Stocks Working Group (DPWG) in 2007, with the terminal year of the assessment being 2006. The DPWG Report is summarized in Table 10. The DPWG concluded that both northern and southern management components are not overfished and overfishing is not occurring. The DPWG Report also stressed that these conclusions be considered in the context of the high degree of uncertainty due to, among other things, input data quality, assumptions (such as natural mortality rates), the newness of the assessment model, and the lack of complete understanding about basic biological parameters, such as growth and reproduction rates. The full assessment report is available online at <http://www.nefsc.noaa.gov/nefsc/publications/crd/crd0713/>.

	North	South	Comment
F_{threshold} (MFMT)	0.31	0.40	F_{MSY} proxy based on F_{max}
F_{current} (2006)	0.09	0.12	Not updated for 2007, 2008
B_{target}	92,200 mt	122,500 mt	B_{MSY} proxy
B_{current} (2006)	118,700 mt	135,500 mt	Not updated for 2007, 2008
B_{threshold} (MSST)	65,200 mt	96,400 mt	

Table 10 Monkfish reference points and status (2006) based on DPWG 2007 assessment

More recently, the 50th Stock Assessment Review Committee (SARC 50) completed another assessment, and the report was issued in July, 2010. While the information in this assessment was not considered by the Councils in evaluating the alternatives and selecting preferred alternatives, the results of the assessment have been incorporated into this EA, particularly with respect to stock status and projections of the impacts of the preferred alternatives. The Summary Report of SARC 50 is contained in Appendix VII. SARC 50 concluded that both stock components are above their respective biomass thresholds, including the newly recommended biomass thresholds that have not yet been adopted into the FMP, indicating they are not overfished. Additionally, SARC 50 determined that fishing mortality is below F_{threshold}, indicating that overfishing is not occurring.

4.1.3 Bycatch of non-target species in the fishery

Information about the absolute level of bycatch species in the directed monkfish fishery is not available, according to the EIS for Amendment 2. Nevertheless, Amendment 2 stated that winter skates and dogfish are the predominant species discarded in the NMA monkfish fisheries, while winter and thorny skates, as well as dogfish are discarded in the SMA. While there is no new information about changes in the types of bycatch, the status of these three species has changed, and the updated information is summarized below:

- **Winter skate** – not overfished, overfishing is not occurring
- **Thorny skate** – overfished, overfishing is not occurring,
- **Spiny dogfish** – no biomass target adopted in the FMP, but there is an approved minimum biomass threshold under which the stock would be considered not overfished, and overfishing is not occurring.

4.1.4 Marine Mammals and Protected Species

There are numerous protected species that inhabit the environment within the Monkfish FMP management unit. These species are afforded protection under the Endangered Species Act of 1973 (ESA; i.e., for those designated as threatened or endangered) and/or the Marine Mammal Protection Act of 1972 (MMPA), and are under NMFS' jurisdiction. Thirteen of these species are classified as endangered or threatened under the ESA, while the remainder are protected by the provisions of the MMPA. Actions taken to minimize the interaction of the fishery with protected species are described in Section 2.1.5 of this document.

4.1.4.1 Species Present in the Area

The following species that may occur in the operations area of the monkfish fishery (Gulf of Maine to Cape Hatteras) are protected under the Endangered Species Act and/or Marine Mammal Protection Act.

Cetaceans

<u>Species</u>	<u>Status</u>
North Atlantic right whale (<i>Eubalaena glacialis</i>)	Endangered
Humpback whale (<i>Megaptera novaeangliae</i>)	Endangered
Fin whale (<i>Balaenoptera physalus</i>)	Endangered
Sei whale (<i>Balaenoptera borealis</i>)	Endangered
Blue whale (<i>Balaenoptera musculus</i>)	Endangered
Sperm whale (<i>Physeter macrocephalus</i>)	Endangered
Minke whale (<i>Balaenoptera acutorostrata</i>)	Protected
Risso's dolphin (<i>Grampus griseus</i>)	Protected
Pilot whale (<i>Globicephala spp.</i>)	Protected
Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>)	Protected
Common dolphin (<i>Delphinus delphis</i>)	Protected
Bottlenose dolphin (<i>Tursiops truncatus</i>) ^a	Protected
Harbor porpoise (<i>Phocoena phocoena</i>)	Protected
Spotted dolphin (<i>Stenella frontalis</i>)	Protected
Striped dolphin (<i>Stenella coeruleoalba</i>)*	Protected
Northern bottlenose whale (<i>Hyperoodon ampullatus</i>)*	Protected
Beaked whale (<i>Ziphius and Mesoplodon spp.</i>)*	Protected
Pygmy or dwarf sperm whale (<i>Kogia spp.</i>)*	Protected

False killer whale (<i>Pseudorca crassidens</i>)*	Protected
Melonheaded whale (<i>Peponocephala electra</i>)*	Protected
Rough-toothed dolphin (<i>Steno bredanensis</i>)*	Protected
White-beaked dolphin (<i>Lagenorhynchus albirostris</i>)*	Protected

Pinnipeds

<u>Species</u>	<u>Status</u>
Harbor seal (<i>Phoca vitulina</i>)	Protected
Gray seal (<i>Halichoerus grypus</i>)	Protected
Hooded seal (<i>Cystophora cristata</i>)	Protected
Harp seal (<i>Phoca groenlandicus</i>)	Protected
Ringed seal (<i>Phoca hispida</i>)*	Protected
Bearded seal (<i>Erignathus barbatus</i>)*	Protected

Sea Turtles

<u>Species</u>	<u>Status</u>
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	Endangered
Kemp's ridley sea turtle (<i>Lepidochelys kempii</i>)	Endangered
Green sea turtle (<i>Chelonia mydas</i>) ^b	Endangered
Hawksbill sea turtle (<i>Eretmochelys imbricata</i>)	Endangered
Loggerhead sea turtle (<i>Caretta caretta</i>)	Threatened

Fish

<u>Species</u>	<u>Status</u>
Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Endangered
Atlantic salmon (<i>Salmo salar</i>) ^c	Endangered

Note:

- a Bottlenose dolphin (*Tursiops truncatus*), Western North Atlantic coastal stock is listed as depleted.
- b Green turtles in U.S. waters are listed as threatened except for the Florida breeding population which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green turtles are considered endangered wherever they occur in U.S. waters.
- c Gulf of Maine distinct population segment (DPS)
- * Non ESA-listed species protected by the MMPA that utilize this environment and have no documented interaction with the type of gear used by the monkfish fishery.

4.1.4.2 Species Not Likely to be Affected

Interactions between gear and a given species occur when fishing gear overlaps both spatially and trophically with the species' niche. Spatial interactions are more "passive" and involve unintentional interactions with fishing gear. Trophic interactions are more "active" and occur when protected species attempt to consume prey caught in fishing gear and become entangled in the process. Spatial and trophic interactions can occur with various types of fishing gear used by the monkfish fishery through the year. Large and small cetaceans and sea turtles are more prevalent within the operations area during the spring and summer, relatively abundant during the fall, and some are still present in winter. The potential for entanglements to occur is assumed to be higher in areas where more gear is set and in areas with higher concentrations of protected species.

NMFS has determined that the action being considered in this EA (i.e., approval of the Amendment 5) is not likely to adversely affect shortnose sturgeon, the Gulf of Maine distinct population segment (DPS) of Atlantic salmon, hawksbill sea turtles, blue whales, or sperm whales, all of which are listed as endangered species under the ESA. NOAA Fisheries has also determined that the action being considered is not expected to adversely affect critical habitat that has been designated for North Atlantic right whales and the Gulf of Maine DPS of Atlantic salmon, which occur within the action area. Shortnose sturgeon and salmon belonging to the Gulf of Maine DPS of Atlantic salmon occur within the general geographical areas fished by the monkfish fishery, but they are unlikely to occur in the area where the fishery would operate given their numbers and distribution. Therefore, none of these species are likely to be affected by the monkfish fishery. The following discussion provides the rationale for these determinations. Additional non-ESA listed species that may occur in the operations area that are not known to interact with the specific gear types that would be used by the monkfish fishery will not be discussed in this assessment.

North Atlantic right whales Critical Habitat

Critical habitat for right whales has been designated for Cape Cod Bay, Great South Channel, and coastal Florida and Georgia (outside of the action area for this Opinion). Cape Cod Bay and Great South Channel were designated critical habitat for right whales due to their importance as spring/summer foraging grounds for this species. Although the physical and biological processes shaping acceptable right whale habitat are poorly understood, there is no evidence to suggest that operation of the monkfish fishery adversely affects the value of critical habitat designated for the right whale. Right whale critical habitat will, therefore, not be considered further in this Opinion.

Atlantic Salmon Critical Habitat

Coincident with the June 19, 2009 endangered listing, NMFS designated critical habitat for the GOM DPS of Atlantic salmon (74 FR 29300; June 19, 2009). Designation of critical habitat is focused on the known primary constituent elements (PCEs) within the occupied areas of a listed species that are deemed essential to the conservation of the species. Within the GOM DPS, the PCEs for Atlantic salmon are 1) sites for spawning and rearing and 2) sites for migration (excluding marine migration; although successful marine migration is essential to Atlantic salmon, NMFS was not able to identify the essential features of marine migration and feeding habitat or their specific locations at the time critical habitat was designated. Because there is no history or likelihood of future monkfish fishing activity to occur within estuaries corresponding to the GOM DPS of Atlantic Salmon, the associated fishing activities are not expected to alter attributes of Atlantic salmon critical habitat.

Shortnose sturgeon are benthic fish that mainly occupy the deep channel sections of large rivers. They can be found in rivers along the western Atlantic coast from St. Johns River, Florida (although the species is possibly extirpated from this system), to the Saint John River in New Brunswick, Canada. The species is anadromous in the southern portion of its range (i.e., south of Chesapeake Bay), while some northern populations are amphidromous (NMFS 1998). Since the monkfish fishery would not operate in or near the rivers where concentrations of shortnose

sturgeon are most likely found, it is highly unlikely that the monkfish fishery would affect shortnose sturgeon.

The wild populations of Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River are listed as endangered under the ESA. Juvenile salmon in New England rivers typically migrate to sea in May after a two to three year period of development in freshwater streams, and remain at sea for two winters before returning to their U.S. natal rivers to spawn (Reddin 2006). Results from a 2001-2003 post-smolt trawl survey in the nearshore waters of the Gulf of Maine indicate that Atlantic salmon post-smolts are prevalent in the upper water column throughout this area in mid to late May (Lacroix and Knox 2005). Therefore, commercial fisheries deploying small mesh active gear (pelagic trawls and purse seines within 10-m of the surface) in nearshore waters of the Gulf of Maine may have the potential to incidentally take smolts. However, it is highly unlikely that the action being considered in this assessment will affect the Gulf of Maine DPS of Atlantic salmon given that operation of the monkfish fishery does not occur in or near the rivers where concentrations of Atlantic salmon are likely to be found and monkfish gear operates in the ocean at or near the bottom rather than near the surface. Thus, this species will not be considered further in this EA.

The hawksbill turtle is uncommon in the waters of the continental U.S. Hawksbills prefer coral reefs, such as those found in the Caribbean and Central America. Hawksbills feed primarily on a wide variety of sponges, but also consume bryozoans, coelenterates, and mollusks. The Culebra Archipelago of Puerto Rico contains especially important foraging habitat for hawksbills. Nesting areas in the western North Atlantic include Puerto Rico and the Virgin Islands. There are accounts of hawksbills in south Florida and individuals have been sighted along the east coast as far north as Massachusetts; however, east coast sightings north of Florida are rare (NMFS 2009a). Since operation of the monkfish fishery does not occur in waters that are typically used by hawksbill sea turtles, it is highly unlikely that its operations would affect this turtle species.

Blue whales do not regularly occur in waters of the U.S. EEZ (Waring *et al.* 2002). In the North Atlantic, blue whales are most frequently sighted in the St. Lawrence from April to January (Sears 2002). No blue whales were observed during the Cetacean and Turtle Assessment Program (CeTAP) surveys of the mid- and north Atlantic areas of the outer continental shelf (CeTAP 1982). Calving for the species occurs in low latitude waters outside of the area where the monkfish fishery operates. Blue whales feed on euphausiids (krill) that are too small to be captured in fishing gear. There have been no observed fishery-related mortalities or serious injuries to blue whales during 1996-2000 (Waring *et al.*, 2002). Given that the species is unlikely to occur in areas where the monkfish fishery operates, and the operation of the fishery does not affect the availability of blue whale prey or areas where calving and nursing of young occur, the proposed action would not be likely to adversely affect blue whales.

Unlike blue whales, sperm whales do regularly occur in waters of the EEZ. However, the distribution of the sperm whales in the EEZ occurs on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring *et al.* 2007). Typically, sperm whale distribution is concentrated east-northeast of Cape Hatteras in winter and shifts northward in the

spring when whales are found throughout the Mid-Atlantic Bight (Waring *et al.* 2007). In summer, distribution extends further northward to areas east and north of Georges Bank and the Northeast Channel region, as well as the continental shelf south of New England. Distribution moves south of New England in fall, back to the Mid-Atlantic Bight (Waring *et al.* 2007). In contrast, the monkfish fishery operates in continental shelf waters. The average depth over which sperm whale sightings occurred during the CeTAP surveys was 1,792 m (CeTAP 1982). Female sperm whales and young males almost always inhabit open ocean, deep water habitat with bottom depths greater than 1,000 m and at latitudes less than 40° N (Whitehead 2002). Sperm whales feed on large squid and fish that inhabit the deeper ocean regions (Perrin *et al.* 2002). There has been no observed fishery-related mortalities or serious injuries to sperm whales during 2001-2005 (Waring *et al.*, 2007). Given that sperm whales are unlikely to occur in areas (based on water depth) where the monkfish fishery operates, and the operation of the fishery does not affect the availability of sperm whale prey or areas where calving and nursing of young occur, the proposed action would not be likely to adversely affect sperm whales.

Although large whales and marine turtles may be potentially affected through interactions with fishing gear, NMFS has determined that the continued authorization of the monkfish fishery would not have any adverse effects on the availability of prey for these species. Right whales and sei whales feed on copepods (Horwood 2002, Kenney 2002). The monkfish fishery will not affect the availability of copepods for foraging right and sei whales because copepods are very small organisms that will pass through monkfish fishing gear rather than being captured in it. Humpback whales and fin whales also feed on krill as well as small schooling fish (e.g., sand lance, herring, mackerel) (Aguilar 2002, Clapham 2002). Monkfish fishing gear operates on or very near the bottom. Fish species caught in monkfish gear are species that live in benthic habitat (on or very near the bottom) such as flounders and other groundfish species versus schooling fish such as herring and mackerel that occur within the water column. Therefore, the continued authorization of the monkfish fishery will not affect the availability of prey for foraging humpback or fin whales. Moreover, none of the turtle species known to occur in the area in which the monkfish fishery operates are known to feed upon groundfish species.

4.1.4.3 Species Potentially Affected

It is expected that the sea turtle, cetacean, and pinniped species discussed below have the potential to be affected by the operation of the monkfish fishery. Background information on the range-wide status of sea turtle and marine mammal species that occur in the area and are known or suspected of interacting with fishing gear (demersal gear including trawls, gillnets, and longline types) can be found in a number of published documents. These include sea turtle status reviews and biological reports (NMFS and USFWS 1995; Marine Turtle Expert Working Group (TEWG) 1998, 2000; NMFS and USFWS 2007a, 2007b; Leatherback TEWG 2007), recovery plans for ESA-listed cetaceans and sea turtles (NMFS 1991, 2005; NMFS and USFWS 1991a, 1991b; NMFS and USFWS 1992), the marine mammal stock assessment reports (e.g., Waring *et al.* 2006; 2007), and other publications (e.g., Clapham *et al.* 1999, Perry *et al.* 1999, Best *et al.* 2001, Perrin *et al.* 2002).

4.1.4.3.1 Sea Turtles

Loggerhead, leatherback, Kemp's ridley, and green sea turtles occur seasonally in southern New England and Mid-Atlantic continental shelf waters north of Cape Hatteras, North Carolina. In general, turtles move up the coast from southern wintering areas as water temperatures warm in the spring (James *et al.* 2005, Morreale and Standora 2005, Braun-McNeill and Epperly 2004, Morreale and Standora 1998, Musick and Limpus 1997, Shoop and Kenney 1992, Keinath *et al.* 1987). The trend is reversed in the fall as water temperatures cool. By December, turtles have passed Cape Hatteras, returning to more southern waters for the winter (James *et al.* 2005, Morreale and Standora 2005, Braun-McNeill and Epperly 2004, Morreale and Standora 1998, Musick and Limpus 1997, Shoop and Kenney 1992, Keinath *et al.* 1987). Hard-shelled species are typically observed as far north as Cape Cod whereas the more cold-tolerant leatherbacks are observed in more northern Gulf of Maine waters in the summer and fall (Shoop and Kenney 1992, Sea Turtle Stranding and Salvage Network (STSSN) database <http://www.sefsc.noaa.gov/seaturtleSTSSN.jsp>).

In general, sea turtles are a long-lived species and reach sexual maturity relatively late (NMFS SEFSC 2001; NMFS and USFWS 2007a, 2007b, 2007c, 2007d). Sea turtles are injured and killed by numerous human activities (NRC 1990; NMFS and USFWS 2007a, 2007b, 2007c, 2007d). Nest count data are a valuable source of information for each turtle species since the number of nests laid reflects the reproductive output of the nesting group each year. A decline in the annual nest counts has been measured or suggested for four of five western Atlantic loggerhead nesting groups through 2004 (NMFS and USFWS 2007a); however, data collected since 2004 suggests nest counts have stabilized or increased (TEWG 2009). Nest counts for Kemp's ridley sea turtles as well as leatherback and green sea turtles in the Atlantic demonstrate increased nesting by these species (NMFS and USFWS 2007b, 2007c, 2007d).

Sea turtles are known to be captured in gillnet and trawl gear; gear types that are used in the monkfish fishery. The following table, Table 11, provides recent information on observed turtle interactions with the monkfish fishery for the period 2003 – Dec. 2008. The data have not been analyzed with respect to trends or impact of effort controls and/or sea turtle closures relative to monkfish fishery. Gillnet gear is the most prevalent gear used in the SMA monkfish fishery.

Year	Month	Species	Statistical Area	Gear Type
2003	August	Unknown	537	Sink gillnet
2003	August	Unknown	537	Sink gillnet
2003	August	Unknown	537	Sink gillnet
2004	May	Loggerhead	621	Sink gillnet
2004	June	Loggerhead	612	Sink gillnet
2004	October	Leatherback	615	Sink gillnet
2004	November	Leatherback	613	Sink gillnet
2006	December	Leatherback	537	Sink gillnet

Table 11 Turtle Interactions in Gillnet Gear Targeting Monkfish, 2003-Dec. 2008.

Source: NEFSC Observer Data

On November 16, 2007, NMFS and the US Fish and Wildlife Service (USFWS) received a petition from the Center for Biological Diversity and Oceana requesting that loggerhead turtles in the Northwest Atlantic Ocean be reclassified as a DPS with endangered status and that critical habitat be designated. NMFS and the USFWS found that both petitions presented substantial information that the petitioned actions may be warranted. As a result of these petitions, NMFS

and USFWS convened a biological review team (BRT) in February 2008 to review the best available scientific information, determine whether DPSs exist, and assess the extinction risk for each potential DPS. The BRT organized their evaluation by ocean basin: Pacific Ocean, Atlantic Ocean (including the Mediterranean Sea), and Indian Ocean. This status review was completed in August 2009. Overall, the BRT concluded that the Northeast Atlantic and Mediterranean DPSs are at immediate risk of extinction; the North Pacific, South Pacific, North Indian, Southeast Indo-Pacific, Northwest Atlantic DPSs are currently at risk of extinction; and the Southwest Indian and South Atlantic DPSs are likely not currently at immediate risk of extinction (NMFS and USFWS 2009).

It should be noted that the status review document prepared by the BRT is not a listing decision. NMFS and the USFWS must next evaluate the report and determine what, if any, action is appropriate under the ESA. Possible decisions by the agencies include: No change in listing status; a change in listing status for the species as currently defined (single species range wide); identification of DPS; and proposing to list some or all of them as either threatened or endangered. The agencies will prepare proposed determinations and publish those in the *Federal Register* and solicit public comment. The agencies will then review the comments and prepare a final determination. Typically a listing action becomes effective 30 days after publication of the final rule in the *Federal Register*. Only after that final listing decision is announced in the *Federal Register* would DPSs be applied, if deemed necessary and warranted, and a new listing be in effect.

4.1.4.3.2 Large Cetaceans

The most recent Marine Mammal Stock Assessment Report (SAR) (Waring *et al.* 2009) reviewed the current population trend for each of these large cetacean species within U.S. EEZ waters, as well as providing information on the estimated annual human-caused mortality and serious injury, and a description of the commercial fisheries that interact with each stock in the U.S. Atlantic. Information from the SAR is summarized below.

The western North Atlantic baleen whale species (North Atlantic right, humpback, fin, sei, and minke) follow a general annual pattern of migration from high latitude summer foraging grounds, including the Gulf and Maine and Georges Bank, and low latitude winter calving grounds (Perry *et al.* 1999, Kenney 2002). However, this is an oversimplification of species movements, and the complete winter distribution of most species is unclear (Perry *et al.* 1999, Waring *et al.* 2009). Studies of some of the large baleen whales (right, humpback, and fin) have demonstrated the presence of each species in higher latitude waters even in the winter (Swingle *et al.* 1993, Wiley *et al.* 1995, Perry *et al.* 1999, Brown *et al.* 2002).

For North Atlantic right whales, the available information suggests that the population is increasing at a rate of 1.8 percent per year between 1990 and 2003, and the total number of North Atlantic right whales was estimated to be at least 323 animals in 2003 (Waring *et al.* 2009). The minimum rate of annual human-caused mortality and serious injury to right whales averaged 3.8 per year during 2002 to 2006 (Waring *et al.* 2009). Of these, an average of 1.4 per year resulted from fishery interactions. Recent mortalities included six female right whales, including three that were pregnant at the time of death (Waring *et al.* 2009).

The North Atlantic population of humpback whales is estimated to be 11,570, although the estimate is considered to be low (Waring *et al.* 2009). The best estimate for the Gulf of Maine stock of humpback whales is 847 whales (Waring *et al.* 2009). The population trend was considered positive for the Gulf of Maine population, but there are insufficient data to estimate the trend for the larger North Atlantic population. Based on data available for selected areas and time periods, the minimum population estimates for other western north Atlantic whale stocks are 2,269 fin whales, 207 sei whales, 4,804 sperm whales, and 3,312 minke whales (Waring *et al.* 2009). No recent estimates are available for blue whale abundance. Insufficient data exist to determine trends for any other large whale species.

Gillnet gear is known to pose a risk of entanglement causing injury and death to large cetaceans. Right whale, humpback whale, and minke whale entanglements in gillnet gear have been documented (Johnson *et al.* 2005; Waring *et al.* 2009). However, it is often not possible to attribute the gear to a specific fishery.

The ALWTRP was recently revised with publication of a new final rule (72 FR 57104, October 5, 2007) that is intended to continue to address entanglement risk of large whales (right, humpback, fin, and and acknowledges benefits to minke whales) in commercial fishing gear and to reduce the risk of death and serious injury from entanglements that do occur.

4.1.4.3.3 Small Cetaceans

Numerous small cetacean species (dolphins; pilot whales; and harbor porpoise) that occur within the area are known to interact with monkfish fishing gear. Seasonal abundance and distribution of each species in Mid-Atlantic, Georges Bank, and/or Gulf of Maine, Georges Bank, and southern New England/Mid-Atlantic waters varies with respect to life history characteristics. Some species primarily occupy continental shelf waters (e.g., white sided dolphins, harbor porpoise), while others are found primarily in continental shelf edge and slope waters (e.g., Risso's dolphin), and still others occupy all three habitats (e.g., common dolphin, spotted dolphin). Information on the western North Atlantic stocks of each species is summarized in Waring *et al.* (2009). Small cetaceans are known to interact with gillnet and trawl gear (Waring *et al.* 2009).

With respect to harbor porpoise specifically, the most recent Stock Assessment Reports show that the number of harbor porpoise takes is increasing, moving closer to the Potential Biological Removal level calculated for this species (610 animals/year from 2001-2005) rather than declining toward the long-term Zero Mortality Rate Goal (ZMRG), which is 10 percent of PBR (approximately 75 animals). Observer information collected from January 2005 to June 2006 has indicated an increase in porpoise bycatch throughout the geographic area covered by the Harbor Porpoise Take Reduction Plan (HPTRP) in both the Gulf of Maine and Mid-Atlantic regions and in monkfish gear specifically (NMFS, Discussion Paper on Planned Amendments to the Harbor Porpoise TRP 2007). The Harbor Porpoise Take Reduction Team developed options to reduce takes, and NMFS published a proposed rule on July 21, 2009 (74 *Federal Register* 36058) with four alternatives including no action. The comment period on this rule ended on August 20, 2009 and the final rule was published on February 19, 2010 (75 *Federal Register* 7383).

The following changes were implemented in the 2010 amendments to the HPTRP:

New England

- Expand the size of the Massachusetts Bay Management Area, as well as pinger use to include November;
- Establish the Stellwagen Bank Management Area and require pingers from November 1 through May 31;
- Establish the Southern New England Management Area where pingers are required from December 1 through May 31; and
- Establish the Cape Cod South Expansion Consequence Closure Area and Coastal Gulf of Maine Consequence Closure Area. These areas would be closed to gillnetting for two to three months if harbor porpoise bycatch levels are too high.

Mid-Atlantic

- Establish the Mudhole South Management Area, with a seasonal closure and gear modifications for large and small mesh gear;
- Modify the northern boundary of the waters off New Jersey Management Area to intersect with the southern shoreline of Long Island, NY at 72° 30' W longitude; and
- Modify tie-down spacing requirement for large mesh gillnets in all Mid-Atlantic management areas (waters off New Jersey, Mudhole North and South, and Southern Mid-Atlantic Management Areas).

The Atlantic Trawl Gear Take Reduction Team (ATGTRT) was organized in 2006 to implement a plan to address the incidental mortality and serious injury of long-finned pilot whales, short-finned pilot whales, common dolphins, and Atlantic white-sided dolphins in several trawl gear fisheries. In lieu of a TRP, the ATGTRT agreed to develop an Atlantic Trawl Gear Take Reduction Strategy (ATGTRS). The ATGTRS identifies informational and research tasks as well as education and outreach needs the ATGTRT believes are necessary to provide the basis for achieving the ultimate MMPA goal of achieving ZMRG. The ATGTRS also identifies several potential voluntary measures that can be adopted by certain trawl fishing sectors to potentially reduce the incidental capture of marine mammals. These voluntary measures are as follows:

- Reducing the numbers of turns made by the fishing vessel and tow times while fishing at night; and
- Increasing radio communications between vessels about the presence and/or incidental capture of a marine mammal to alert other fishermen of the potential for additional interactions in the area.

4.1.4.3.4 Pinnipeds

Of the four species of seals expected to occur in the area, harbor seals have the most extensive distribution with sightings occurring as far south as 30° N latitude (Katona *et al.* 1993, Waring *et al.* 2009). Gray seals are the second most common seal species in U.S. EEZ waters, occurring primarily off New England (Katona *et al.* 1993; Waring *et al.* 2009). Pupping for both species occurs in both U.S. and Canadian waters of the western north Atlantic with the majority of harbor seal pupping likely occurring in U.S. waters and the majority of gray seal pupping in Canadian waters, although there are at least three gray seal pupping colonies in U.S. waters as well. Harp and hooded seals are less commonly observed in U.S. EEZ waters. Both species

form aggregations for pupping and breeding off eastern Canada in the late winter/early spring, and then travel to more northern latitudes for molting and summer feeding (Waring *et al.* 2009). Both species have a seasonal presence in U.S. waters from Maine to New Jersey, based on sightings, stranding, and fishery bycatch (Waring *et al.* 2009). All four species of seals are known to interact with gillnet and/or trawl gear (Waring *et al.* 2009).

Although harbor seals may be more likely to occur in the operations area between fall and spring, harbor and gray seals are year-round residents; therefore, interactions could occur year-round. The uncommon occurrences of hooded and harp seals in the operations area are more likely to occur during the winter and spring, allowing for an increased potential for interactions during the winter.

4.2 Physical and Biological Environment

The Northeast U.S. Shelf Ecosystem (Figure 4) 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 (Sherman *et al.* 1996). 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 and biological characteristics of each of these sub-regions are described in this section, along with a short description of the physical features of coastal environments. Monkfish habitats are described in Section 4.4.1. Information on the affected physical and biological environments included in this amendment was extracted from Stevenson *et al.* (2004). The primary source references used by Stevenson *et al.* are not cited in the text. They are: Backus 1987; Schmitz *et al.* 1987; Tucholke 1987; Wiebe *et al.* 1987; Cook 1988; Reid and Steimle 1988; Stumpf and Biggs 1988; Abernathy 1989; Townsend 1992; Mountain 1994; Beardsley *et al.* 1996; Brooks 1996; Sherman *et al.* 1996; Dorsey 1998; Kelley 1998; NEFMC 1998; Steimle *et al.* 1999. References used to describe the biological features of the affected environment and to describe monkfish habitats are cited in the text.

4.2.1 Gulf of Maine

Physical Environment

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 5). 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.

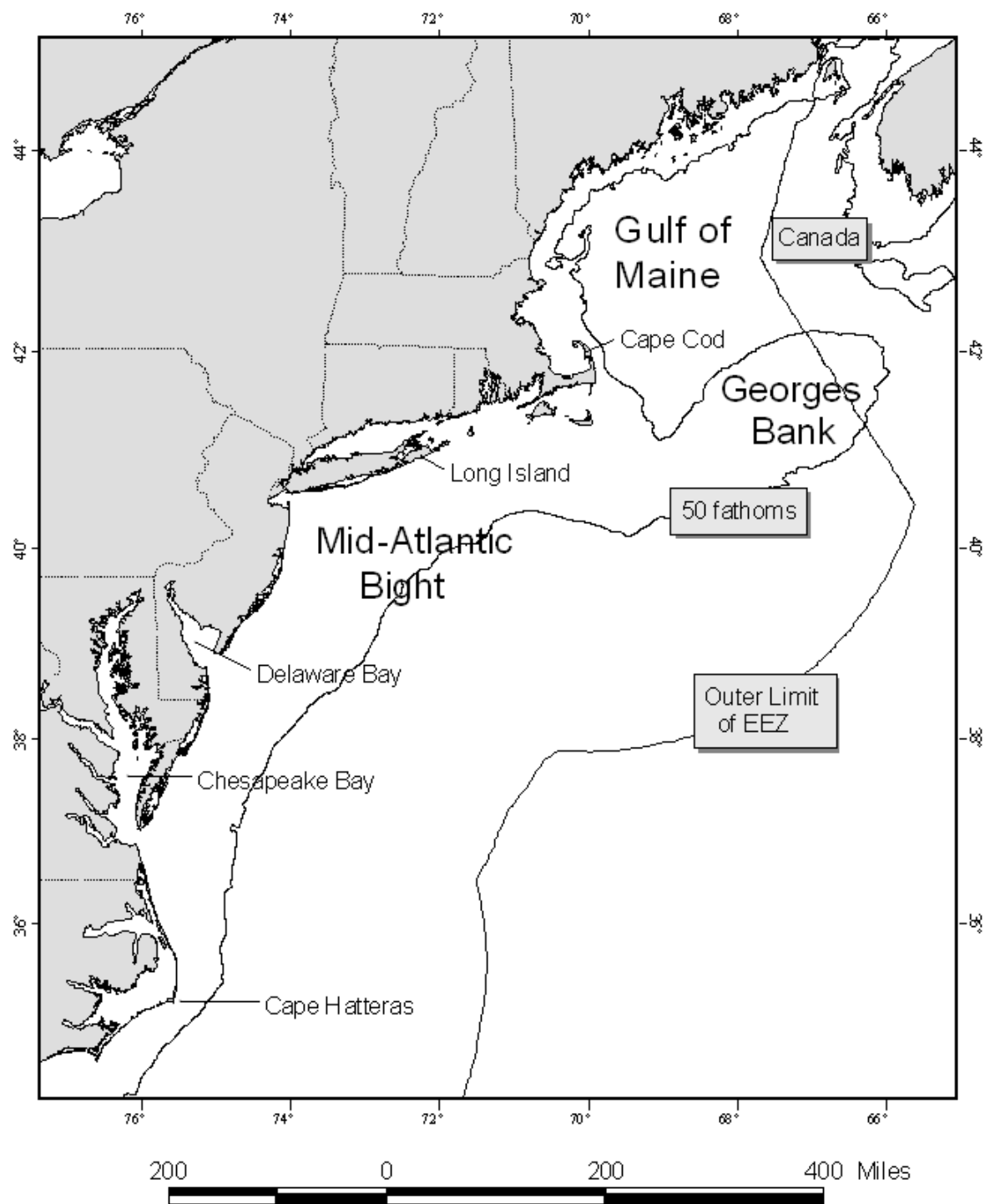


Figure 4 Northeast U.S Shelf Ecosystem.

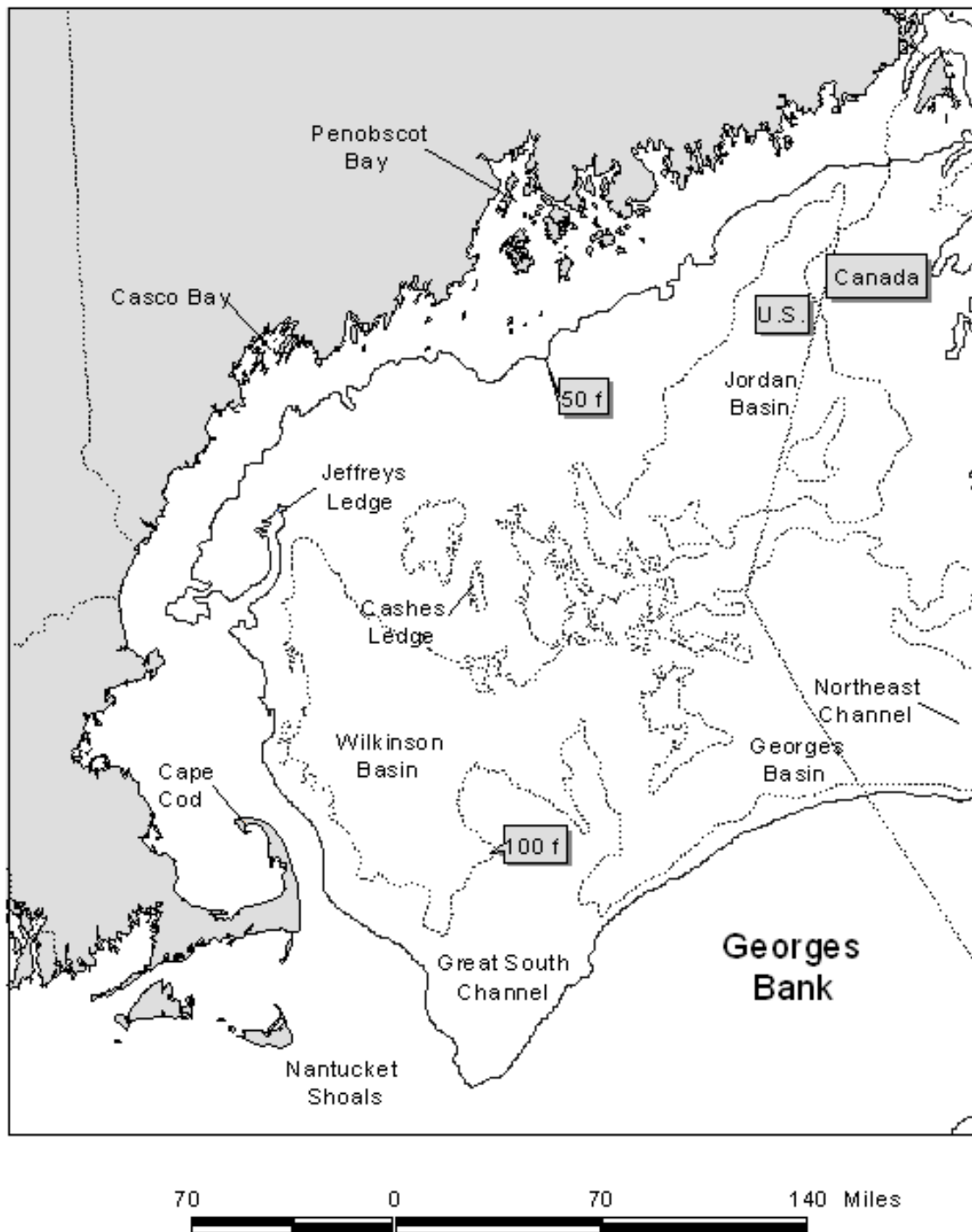


Figure 5 Gulf of Maine.

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 (Figure 5). Depths in the basins exceed 250 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.

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 6). 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.

An intense seasonal cycle of winter cooling and turnover, springtime freshwater runoff, and summer warming influences oceanographic and biologic processes in the GOM. The Gulf has a general counterclockwise nontidal surface current that flows around its coastal margin (Figure 7). It is primarily driven by fresh, cold Scotian Shelf water that enters over the Scotian Shelf and through the Northeast Channel, and freshwater river runoff, which is particularly important in the spring. Dense relatively warm and saline slope water entering through the bottom of the Northeast Channel from the continental slope also influences gyre formation.

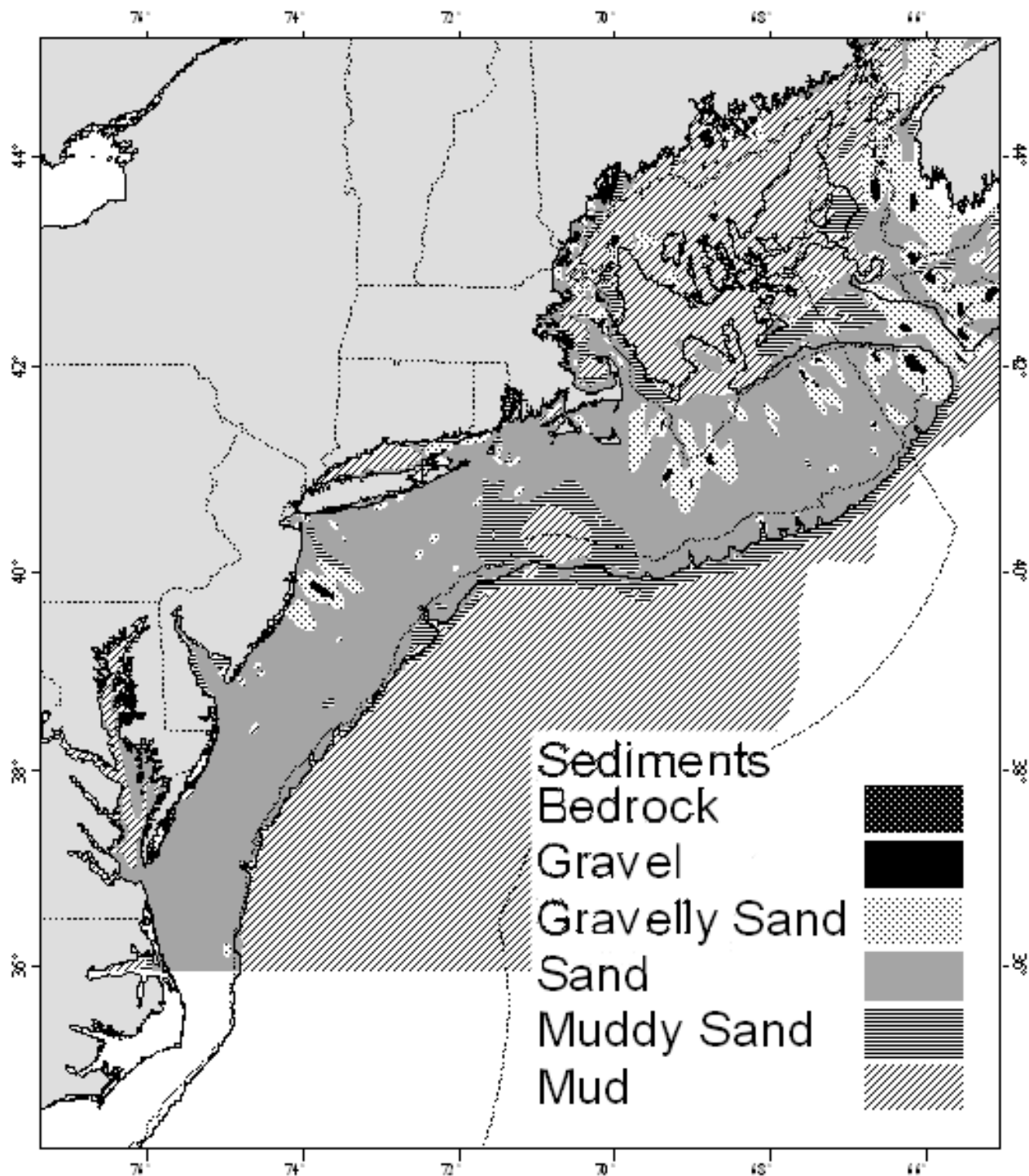


Figure 6 Northeast region sediments, modified from Poppe *et al.* (1989a and b).

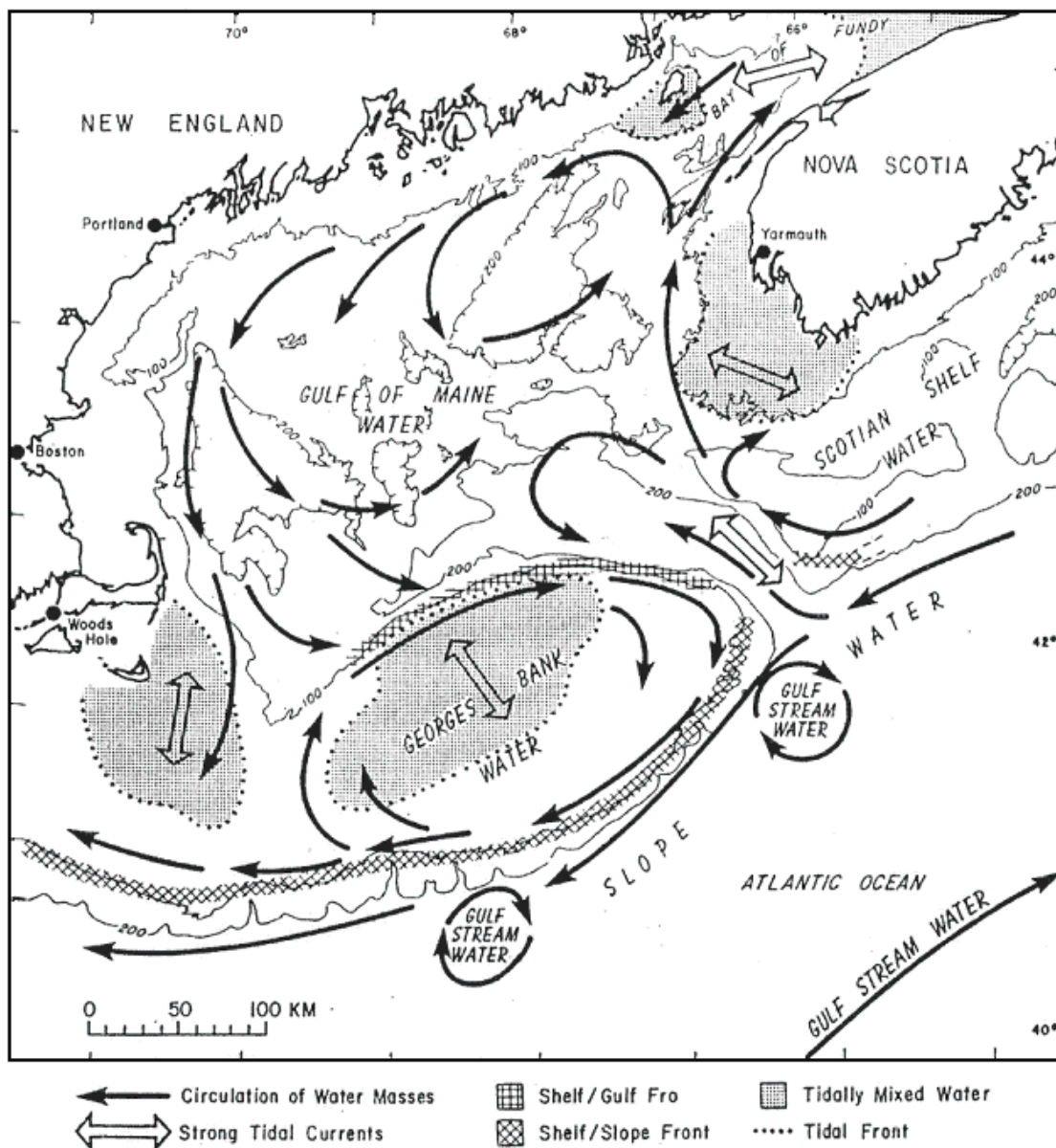


Figure 7 Water mass circulation patterns in the Georges Bank - Gulf of Maine region.

Counterclockwise gyres generally form in Jordan, Wilkinson, and Georges Basins and the Northeast Channel as well. These surface gyres are more pronounced in spring and summer; with winter, they weaken and become more influenced by the wind.

Stratification of surface waters during spring and summer seals off a mid-depth layer of water that preserves winter salinity and temperatures. This cold layer of water is called “Maine intermediate water” (MIW) and is located between more saline Maine bottom water and the warmer, stratified Maine surface water. The stratified surface layer is most pronounced in the deep portions of the western GOM. Tidal mixing of shallow areas prevents thermal stratification and results in thermal fronts between the stratified areas and cooler mixed areas. Typically, mixed areas include Georges Bank, the southwest Scotian Shelf, eastern Maine coastal waters, and the narrow coastal band surrounding the remainder of the Gulf.

The Northeast Channel provides an exit for cold MIW and outgoing surface water while it allows warmer more saline slope water to move in along the bottom and spill into the deeper basins. The influx of water occurs in pulses, and appears to be seasonal, with lower flow in late winter and a maximum in early summer.

GOM circulation and water properties can vary significantly from year to year. Notable episodic events include shelf-slope interactions such as the entrainment of shelf water by Gulf Stream rings (see the “Gulf Stream and Associated Features” section, below), and strong winds that can create currents as high as 1.1 m/s over Georges Bank. Warm core Gulf Stream rings can also influence upwelling and nutrient exchange on the Scotian shelf, and affect the water masses entering the GOM. Annual and seasonal inflow variations also affect water circulation.

Internal waves are episodic and can greatly affect the biological properties of certain habitats. Internal waves can shift water layers vertically, so that habitats normally surrounded by cold MIW are temporarily bathed in warm, organic rich surface water. On Cashes Ledge, it is thought that deeper nutrient rich water is driven into the photic zone, providing for increased productivity. Localized areas of upwelling interaction occur in numerous places throughout the Gulf.

Benthic Invertebrates

Based on 303 benthic grab samples collected in the GOM during 1956-1965, Theroux and Wigley (1998) reported that, in terms of numbers, the most common groups of benthic invertebrates in the GOM were annelid worms (35%), bivalve mollusks (33%), and amphipod crustaceans (14%). Biomass was dominated by bivalves (24%), sea cucumbers (22%), sand dollars (18%), annelids (12%), and sea anemones (9%). Watling (1998) used numerical classification techniques to separate benthic invertebrate samples into seven bottom assemblages. These assemblages are identified in Table 12 and their distribution is indicated in Figure 8. This classification system considers predominant taxa, substrate types, and seawater properties.

Demersal Fish

Demersal fish assemblages for the GOM and Georges Bank were part of broad scale geographic investigations conducted by Gabriel (1992) and Mahon *et al.* (1998). Both these studies and a more limited study by Overholtz and Tyler (1985) found assemblages that were consistent over space and time in this region. In her analysis, Gabriel (1992) found that the most persistent feature over time in assemblage structure from Nova Scotia to Cape Hatteras was the boundary separating assemblages between the GOM and Georges Bank, which occurred at approximately the 100 m isobath on northern Georges Bank. Overholtz and Tyler (1985) identified five assemblages for this region. The Gulf of Maine-deep assemblage included a number of species found in other assemblages, with the exception of American plaice and witch flounder, which was unique to this assemblage. Gabriel's approach did not allow species to co-occur in assemblages, and classified these two species as unique to the deepwater Gulf of Maine-Georges Bank assemblage. Results of these two studies are compared in Table 13.

Benthic Assemblage	Benthic Community Description
1	Comprises all sandy offshore banks, most prominently Jeffreys Ledge, Fippennies Ledge, and Platts Bank; depth on top of banks about 70 m; substrate usually coarse sand with some gravel; fauna characteristically sand dwellers with an abundant interstitial component.
2	Comprises the rocky offshore ledges, such as Cashes Ledge, Sigsbee Ridge and Three Dory Ridge; substrate either rock ridge outcrop or very large boulders, often with a covering of very fine sediment; fauna predominantly sponges, tunicates, bryozoans, hydroids, and other hard bottom dwellers; overlying water usually cold Gulf of Maine Intermediate Water.
3	Probably extends all along the coast of the Gulf of Maine in water depths less than 60 m; bottom waters warm in summer and cold in winter; fauna rich and diverse, primarily polychaetes and crustaceans, probably consists of several (sub-) assemblages due to heterogeneity of substrate and water conditions near shore and at mouths of bays.
4	Extends over the soft bottom at depths of 60 - 140 m, well within the cold Gulf of Maine Intermediate Water; bottom sediments primarily fine muds; fauna dominated by polychaetes, shrimp, and cerianthid anemones.
5	A mixed assemblage comprising elements from the cold water fauna as well as a few deeper water species with broader temperature tolerances; overlying water often a mixture of Intermediate Water and Bottom Water, but generally colder than 7°C most of the year; fauna sparse, diversity low, dominated by a few polychaetes, with brittle stars, sea pens, shrimp, and cerianthids also present.
6	Comprises the fauna of the deep basins; bottom sediments generally very fine muds, but may have a gravel component in the offshore morainal regions; overlying water usually 7 - 8°C, with little variation; fauna shows some bathyal affinities but densities are not high, dominated by brittle stars and sea pens, and sporadically by a tube-making amphipod.
7	The true upper slope fauna that extends into the Northeast Channel; water temperatures are always above 8°C and salinities are at least 35 ppt; sediments may be either fine muds or a mixture of mud and gravel.

Geographical distribution of assemblages is shown in Figure 5.

Table 12 Gulf of Maine benthic assemblages as identified by Watling (1998).

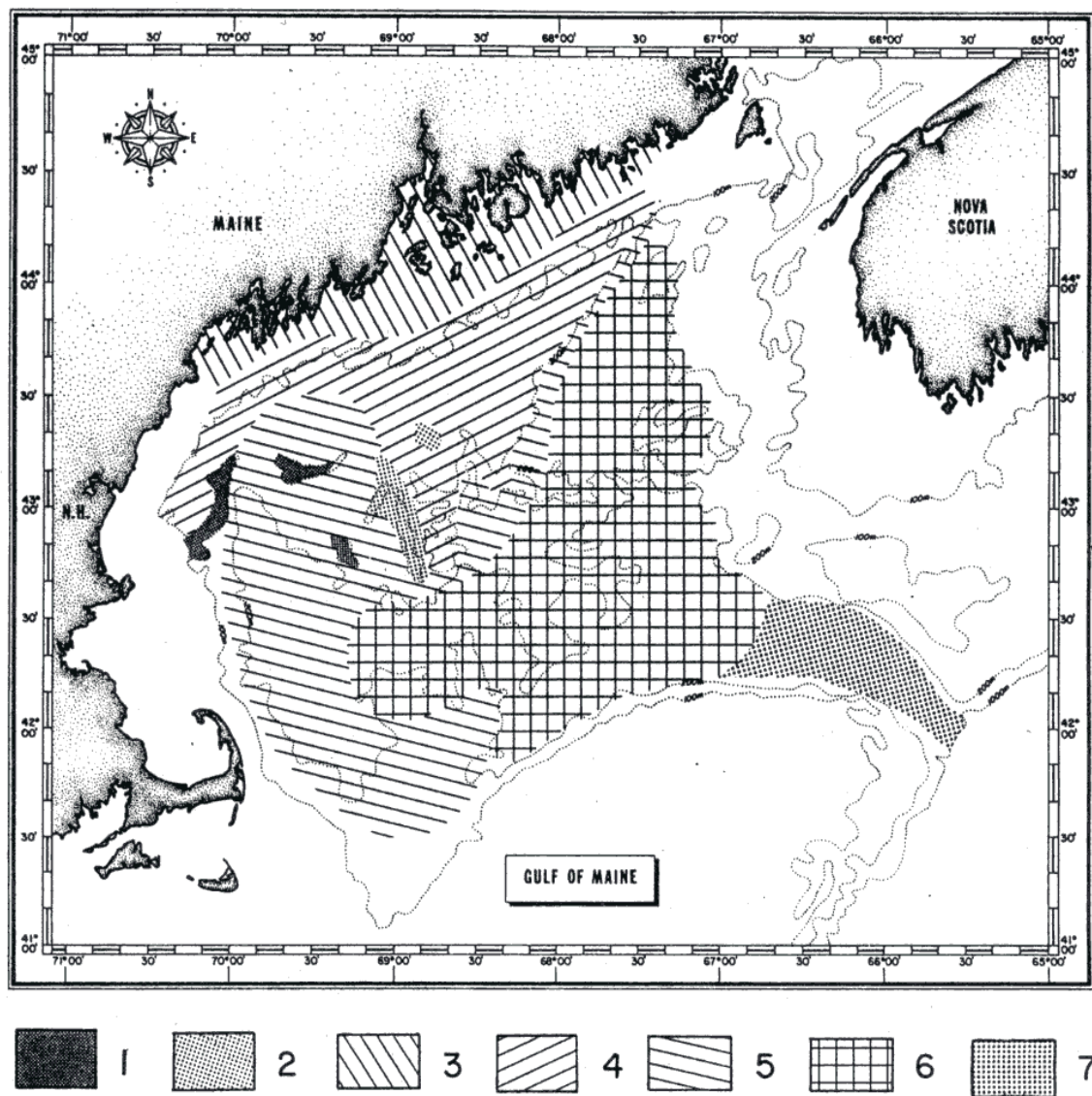


Figure 8 Distribution of the seven major benthic assemblages in the Gulf of Maine.

Distribution determined from both soft bottom quantitative sampling and qualitative hard bottom sampling. The assemblages are characterized as follows: 1. Sandy offshore banks; 2. Rocky offshore ledges; 3. Shallow (< 50 m) temperate bottoms with mixed substrate; 4. Boreal muddy bottom, overlain by Maine Intermediate Water, 50 - 160 m (approximate); 5. Cold deep water, species with broad tolerances, muddy bottom; 6. Deep basin warm water, muddy bottom; 7. Upper slope water, mixed sediment. Source: Watling (1998).

Overholtz and Tyler (1985)		Gabriel (1992)	
Assemblage	Species	Species	Assemblage
Slope and Canyon	offshore hake blackbelly rosefish Gulf stream flounder, fourspot flounder, goosefish, silver hake, white hake, red hake	offshore hake blackbelly rosefish Gulf stream flounder, fawn cusk-eel, longfin hake, armored sea robin	Deepwater
Intermediate	silver hake red hake goosefish, Atlantic cod, haddock, ocean pout, yellowtail flounder, winter skate, little skate, sea raven, longhorn sculpin	silver hake red hake goosefish, northern shortfin squid, spiny dogfish, cusk	Combination of Deepwater Gulf of Maine/Georges Bank and Gulf of Maine-Georges Bank Transition
Shallow	Atlantic cod haddock pollock silver hake white hake red hake goosefish ocean pout yellowtail flounder windowpane winter flounder winter skate little skate longhorn sculpin summer flounder sea raven, sand lance	Atlantic cod haddock pollock yellowtail flounder windowpane winter flounder winter skate little skate longhorn sculpin	Gulf of Maine-Georges Bank Transition Zone (see below also) Shallow Water Georges Bank-Southern New England
Gulf of Maine-Deep	white hake American plaice witch flounder thorny skate silver hake, Atlantic cod, haddock, cusk, Atlantic wolffish	white hake American plaice witch flounder thorny skate redfish	Deepwater Gulf of Maine-Georges Bank
Northeast Peak	Atlantic cod haddock pollock ocean pout, winter flounder, white hake, thorny skate, longhorn sculpin	Atlantic cod haddock pollock	Gulf of Maine-Georges Bank Transition Zone (see above also)

Table 13 Comparison of demersal fish assemblages of Georges Bank and the Gulf of Maine.

4.2.2 Georges Bank

Physical Environment

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 *et al.* 1993).

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 (see the “Continental Slope” section, below, for more on canyons). The interaction of several environmental factors, including availability and type of sediment, current speed and direction, and bottom topography, has formed seven sedimentary provinces on eastern Georges Bank (Valentine and Lough 1991), which are described in Table 14 and depicted in Figure 9. The gravel-sand mixture is usually a transition zone between coarse gravel and finer sediments.

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 5), 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 travelling 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.).

Sedimentary Province	Depth (m)	Description	Benthic Assemblage
Northern Edge / Northeast Peak (1)	40 - 200	Dominated by gravel with portions of sand, common boulder areas, and tightly packed pebbles. Representative epifauna (bryozoa, hydrozoa, anemones, and calcareous worm tubes) are abundant in areas of boulders. Strong tidal and storm currents.	Northeast Peak
Northern Slope and Northeast Channel (2)	200 - 240	Variable sediment type (gravel, gravel-sand, and sand) scattered bedforms. This is a transition zone between the northern edge and southern slope. Strong tidal and storm currents.	Northeast Peak
North /Central Shelf (3)	60 - 120	Highly variable sediment type (ranging from gravel to sand) with rippled sand, large bedforms, and patchy gravel lag deposits. Minimal epifauna on gravel due to sand movement. Representative epifauna in sand areas includes amphipods, sand dollars, and burrowing anemones.	Central Georges
Central and Southwestern Shelf - shoal ridges (4)	10 - 80	Dominated by sand (fine and medium grain) with large sand ridges, dunes, waves, and ripples. Small bedforms in southern part. Minimal epifauna on gravel due to sand movement. Representative epifauna in sand areas includes amphipods, sand dollars, and burrowing anemones.	Central Georges
Central and Southwestern Shelf - shoal troughs (5)	40 - 60	Gravel (including gravel lag) and gravel-sand between large sand ridges. Patchy large bedforms. Strong currents. (Few samples – submersible observation noted presence of gravel lag, rippled gravel-sand, and large bedforms.) Minimal epifauna on gravel due to sand movement. Representative epifauna in sand areas includes amphipods, sand dollars, and burrowing anemones.	Central Georges
Southeastern Shelf (6)	80 - 200	Rippled gravel-sand (medium and fine grained sand) with patchy large bedforms and gravel lag. Weaker currents; ripples are formed by intermittent storm currents. Representative epifauna includes sponges attached to shell fragments and amphipods.	Southern Georges
Southeastern Slope (7)	400 - 2000	Dominated by silt and clay with portions of sand (medium and fine) with rippled sand on shallow slope and smooth silt-sand deeper.	none

Sediment provinces as defined by Valentine *et al.* (1993) and Valentine and Lough (1991), with additional comments by Valentine (pers. comm.) and benthic assemblages assigned by Theroux and Grosslein (1987). See text for further discussion on benthic assemblages.

Table 14. Sedimentary provinces and associated benthic landscapes of Georges Bank.

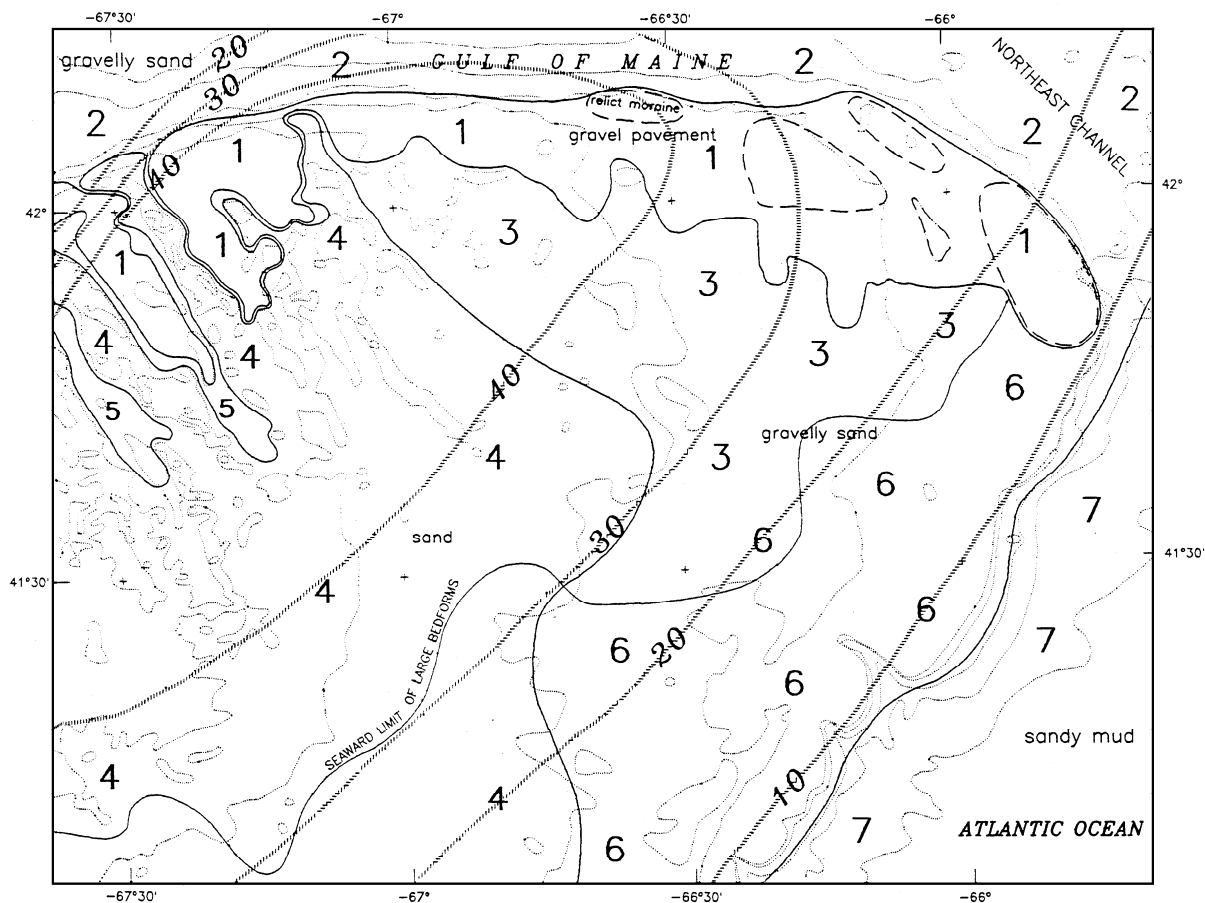


Figure 9 Sedimentary provinces of eastern Georges Bank.

Based on criteria of sea floor morphology, texture, sediment movement and bedforms, and mean tidal bottom current speed (cm/s). Relict moraines (bouldery seafloor) are enclosed by dashed lines. See Table 14 for descriptions of provinces. Source: Valentine and Lough (1991).

Oceanographic frontal systems separate water masses of the GOM and Georges Bank from oceanic waters south of the Bank. These water masses differ in temperature, salinity, nutrient concentration, and planktonic communities, which influence productivity and may influence fish abundance and distribution. Currents on Georges Bank include a weak, persistent clockwise gyre around the Bank, a strong semidiurnal tidal flow predominantly northwest and southeast, and very strong, intermittent storm induced currents, which all can occur simultaneously (Figure 7). Tidal currents over the shallow top of Georges Bank can be very strong, and keep the waters over the Bank well mixed vertically. This results in a tidal front that separates the cool waters of the well mixed shallows of the central Bank from the warmer, seasonally stratified shelf waters on the seaward and shoreward sides of the Bank. The clockwise gyre is instrumental in distribution of plankton, including fish eggs and larvae.

Invertebrates

Amphipod crustaceans (49%) and annelid worms (28%) numerically dominated the contents of 211 samples collected on Georges Bank during 1956-1965 (Theroux and Wigley 1998). Biomass was dominated by sand dollars (50%) and bivalves (33%). Theroux and Grosslein (1987) utilized the same database to identify four macrobenthic invertebrate assemblages. They noted that the boundaries between assemblages were not well defined because there is considerable intergrading between adjacent assemblages. Their assemblages are associated with those identified by Valentine and Lough (1991) in Table 14.

The Western Basin assemblage is found in the upper Great South Channel region at the northwestern corner of the Bank, in comparatively deepwater (150 - 200 m) with relatively slow currents and fine bottom sediments of silt, clay and muddy sand. Fauna are comprised mainly of small burrowing detritivores and deposit feeders, and carnivorous scavengers. Valentine and Lough (1991) did not identify a comparable assemblage; however, this assemblage is geographically located adjacent to Assemblage 5 as described by Watling (1998) (Table 12, Figure 8).

The Northeast Peak assemblage is found along the Northern Edge and Northeast Peak, which varies in depth and current strength and includes coarse sediments, consisting mainly of gravel and coarse sand with interspersed boulders, cobbles, and pebbles. Fauna tend to be sessile (coelenterates, brachiopods, barnacles, and tubiferous annelids) or free-living (brittle stars, crustaceans, and polychaetes), with a characteristic absence of burrowing forms.

The Central Georges Bank assemblage occupies the greatest area, including the central and northern portions of the Bank in depths less than 100 m. Medium grained shifting sands predominate this dynamic area of strong currents. Organisms tend to be small to moderately large with burrowing or motile habits.

The Southern Georges Bank assemblage is found on the southern and southwestern flanks at depths from 80 - 200 m, where fine grained sands and moderate currents predominate. Many southern species exist here at the northern limits of their range.

Demersal Fish

Along with high levels of primary productivity, Georges Bank has been historically characterized by high levels of fish production. Several studies have attempted to identify demersal fish assemblages over large spatial scales. Overholtz and Tyler (1985) found five depth related groundfish assemblages for Georges Bank and the GOM that were persistent temporally and spatially. Depth and salinity were identified as major physical influences explaining assemblage structure. Gabriel (1992) identified six assemblages, which are compared with the results of Overholtz and Tyler (1985) in Table 12. Mahon *et al.* (1998) found similar results.

4.2.3 Mid-Atlantic Bight

Physical Environment

The Mid-Atlantic Bight includes the shelf and slope waters from Georges Bank south to Cape Hatteras, and east to the Gulf Stream (Figure 4). 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.

Slope water tends to be warmer than shelf water because of its proximity to the Gulf Stream, and tends to be more saline. The abrupt gradient where these two water masses meet is called the shelf-slope front. This front is usually located at the edge of the shelf and touches bottom at about 75 - 100 m depth of water, and then slopes up to the east toward the surface. It reaches surface waters approximately 25 - 55 km further offshore. The position of the front is highly variable, and can be influenced by many physical factors. Vertical structure of temperature and salinity within the front can develop complex patterns because of the interleaving of shelf and slope waters; *e.g.*, cold shelf waters can protrude offshore, or warmer slope water can intrude up onto the shelf.

The seasonal effects of warming and cooling increase in shallower, nearshore waters. Stratification of the water column occurs over the shelf and the top layer of slope water during the spring-summer and is usually established by early June. Fall mixing results in homogenous shelf and upper slope waters by October in most years. A permanent thermocline exists in slope waters from 200 - 600 m deep. Temperatures decrease at the rate of about 0.02°C per meter and remain relatively constant except for occasional incursions of Gulf stream eddies or meanders.

Below 600 m, temperature declines, and usually averages about 2.2°C at 4000 m. A warm, mixed layer approximately 40 m thick resides above the permanent thermocline.

The “cold pool” is an annual phenomenon particularly important to the Mid-Atlantic Bight. It stretches from the Gulf of Maine along the outer edge of Georges Bank and then southwest to Cape Hatteras. It becomes identifiable with the onset of thermal stratification in the spring and lasts into early fall until normal seasonal mixing occurs. It usually exists along the bottom between the 40 and 100 m isobaths and extends up into the water column for about 35 m, to the bottom of the seasonal thermocline. The cold pool usually represents about 30% of the volume of shelf water. Minimum temperatures for the cold pool occur in early spring and summer, and range from 1.1 - 4.7°C.

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 (see the “Continental Slope” section, below). The primary morphological features of the shelf include shelf valleys and channels, shoal massifs, scarps, and sand ridges and swales (Figure 10 and Figure 11).

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 (Figure 10 and Figure 11). Shoal retreat massifs were produced by extensive deposition at a cape or estuary mouth. Massifs were also formed as estuaries retreated across the shelf.

The sediment type covering most of the shelf in the Mid-Atlantic Bight is sand, with some relatively small, localized areas of sand-shell and sand-gravel. On the slope, silty sand, silt, and clay predominate.

Some sand ridges (Figure 10) 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.

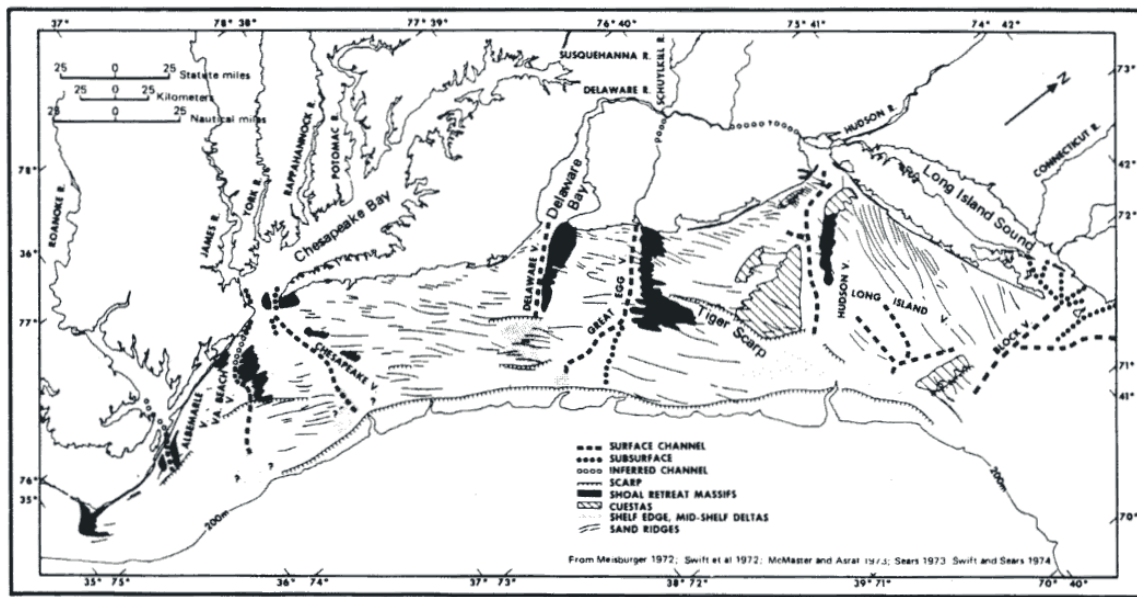


Figure 10 Mid-Atlantic Bight submarine morphology.
Source: Stumpf and Biggs (1988).

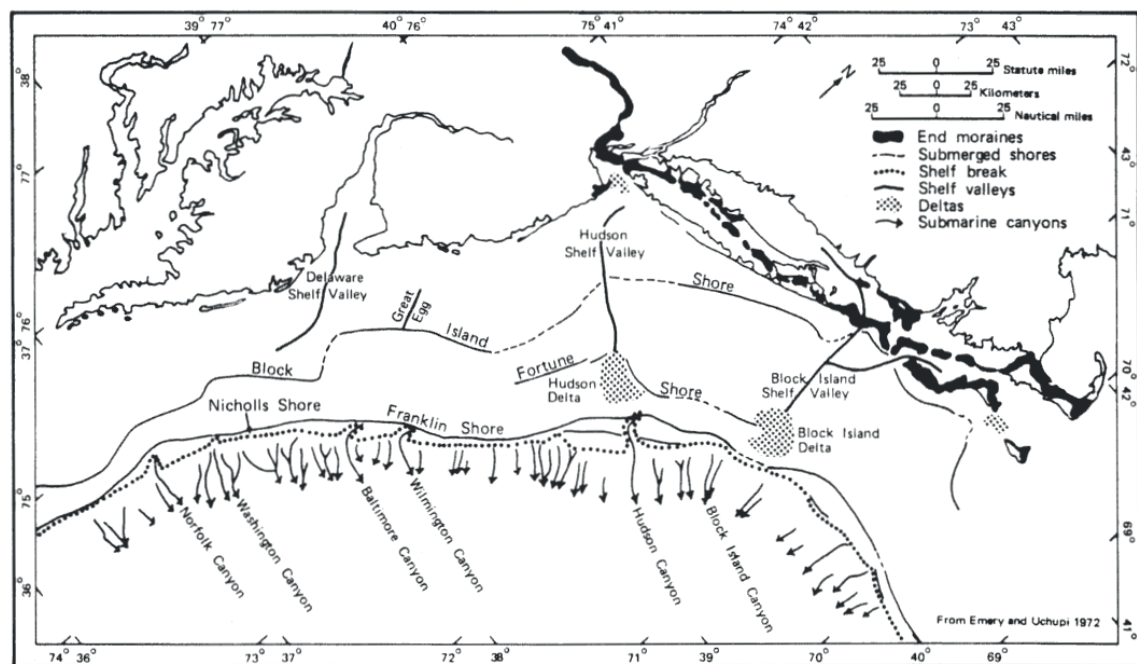


Figure 11 Major features of the mid-Atlantic and southern New England continental shelf.
Source: Stumpf and Biggs (1988).

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 (Figure 6). 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.

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 6). 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. The overview by Steimle and Zetlin (2000) used NOAA hydrographic surveys to plot rocks, wrecks, obstructions, and artificial reefs, which together were considered a fairly complete list of nonbiogenic reef habitat in the Mid-Atlantic estuarine and coastal areas (Figure 12).

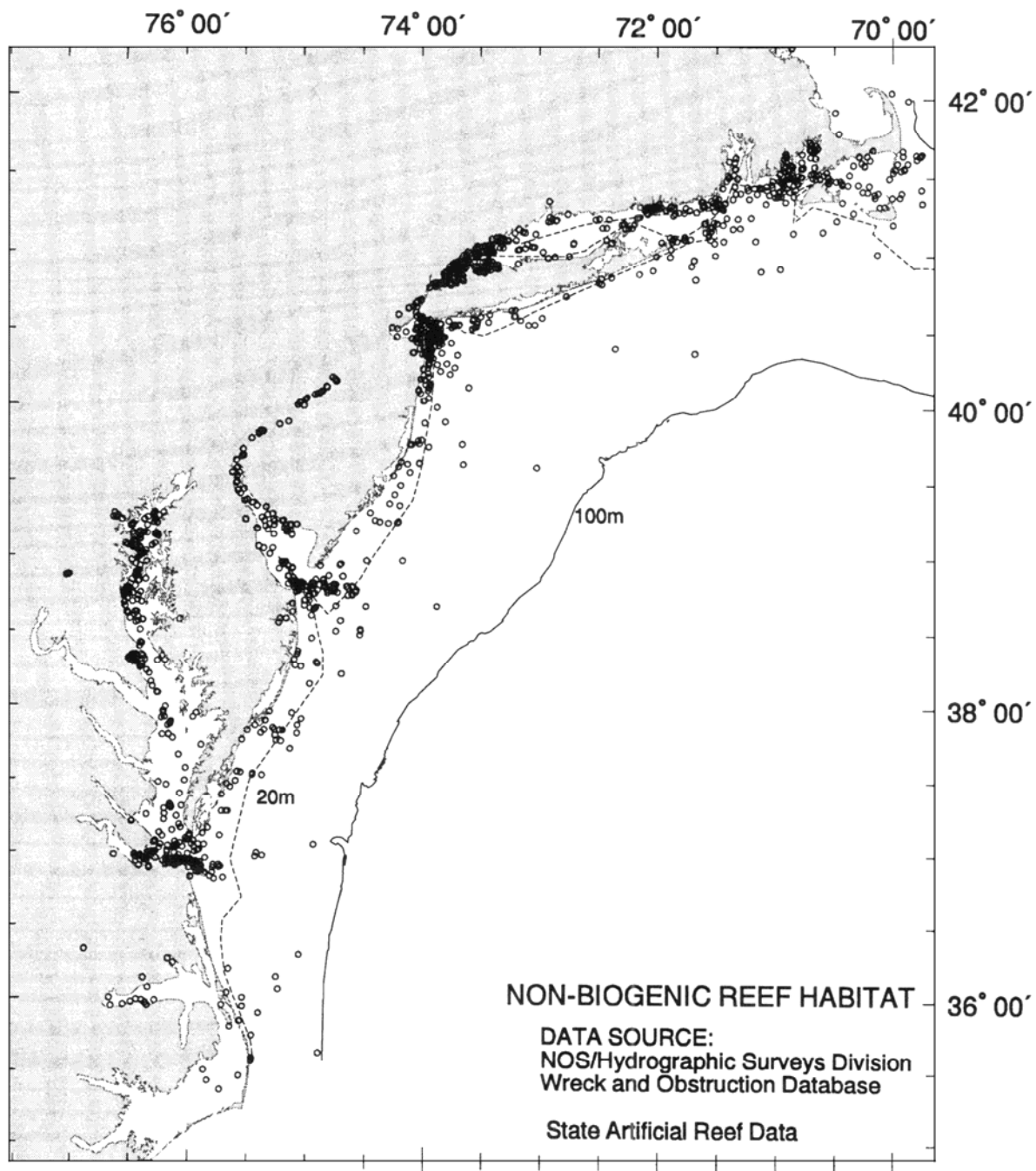


Figure 12 Summary of all reef habitats (except biogenic, such as mussel or oyster beds) in the Mid-Atlantic Bight.

Source: Steimle and Zetlin (2000).

Invertebrates

Wigley and Theroux (1981) reported on the faunal composition of 563 bottom grab samples collected in the Mid-Atlantic Bight during 1956-1965. Amphipod crustaceans and bivalve mollusks accounted for most of the individuals (41% and 22%, respectively), whereas mollusks dominated the biomass (70%). Three broad faunal zones related to water depth and sediment type were identified by Pratt (1973). The “sand fauna” zone was defined for sandy sediments (1% or less silt) that are at least occasionally disturbed by waves, from shore out to 50 m (Figure 10). The “silty sand fauna” zone occurred immediately offshore from the sand fauna zone, in stable sands containing a small amount of silt and organic material. Silts and clays become predominant at the shelf break and line the Hudson Shelf Valley, and support the “silt-clay fauna.”

Building on Pratt’s work, the Mid-Atlantic shelf was further divided by Boesch (1979) into seven bathymetric/morphologic subdivisions based on faunal assemblages (Table 15). Sediments in the region studied (Hudson Shelf Valley south to Chesapeake Bay) were dominated by sand with little finer materials. Ridges and swales are important morphological features in this area. Sediments are coarser on the ridges, and the swales have greater benthic macrofaunal density, species richness, and biomass. Faunal species composition differed between these features, and Boesch (1979) incorporated this variation in his subdivisions. Much overlap of species distributions was found between depth zones, so the faunal assemblages represented more of a continuum than distinct zones.

Demersal Fish

Demersal fish assemblages were described at a broad geographic scale for the continental shelf and slope from Cape Chidley, Labrador to Cape Hatteras, North Carolina (Mahon *et al.* 1998) and from Nova Scotia to Cape Hatteras (Gabriel 1992). Factors influencing species distribution included latitude and depth. Results of these studies were similar to an earlier study confined to the Mid-Atlantic Bight continental shelf (Colvocoresses and Musick 1984). In this study, there were clear variations in species abundances, yet they demonstrated consistent patterns of community composition and distribution among demersal fishes of the Mid-Atlantic shelf. This is especially true for five strongly recurring species associations that varied slightly by season (Table 15). The boundaries between fish assemblages generally followed isotherms and isobaths. The assemblages were largely similar between the spring and fall collections, with the most notable change being a northward and shoreward shift in the temperate group in the spring.

Steimle and Zetlin (2000) described representative epibenthic/epibiotic, motile epibenthic, and fish species associated with sparsely scattered reef habitats that consist mainly of manmade structures (Table 17).

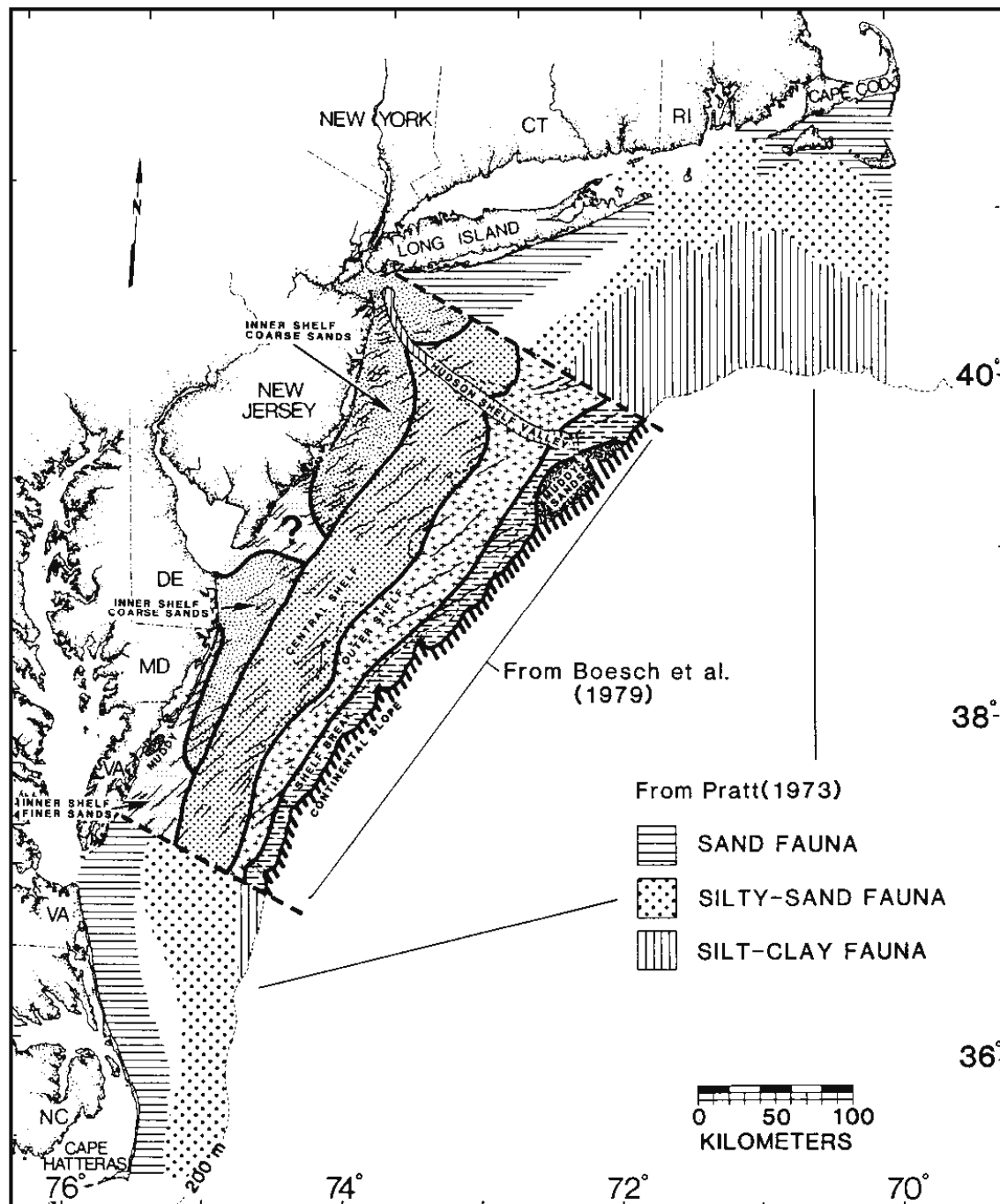


Figure 13 Schematic representation of major macrofaunal zones on the mid-Atlantic shelf. Approximate location of ridge fields indicated. Source: Reid and Steimle (1988).

Habitat Type [after Boesch (1979)]	Description		
	Depth (m)	Characterization [Pratt (1973) faunal zone]	Characteristic Benthic Macrofauna
Inner shelf	0 - 30	characterized by coarse sands with finer sands off MD and VA (sand zone)	Polychaetes: <i>Polygordius</i> , <i>Goniadella</i> , <i>Spiophanes</i>
Central shelf	30 - 50	(sand zone)	Polychaetes: <i>Spiophanes</i> , <i>Goniadella</i> Amphipod: <i>Pseudunciola</i>
Central and inner shelf swales	0 - 50	occurs in swales between sand ridges (sand zone)	Polychaetes: <i>Spiophanes</i> , <i>Lumbrineris</i> , <i>Polygordius</i>
Outer shelf	50 - 100	(silty sand zone)	Amphipods: <i>Ampelisca vadorum</i> , <i>Erichthonius</i> Polychaetes: <i>Spiophanes</i>
Outer shelf swales	50 - 100	occurs in swales between sand ridges (silty sand zone)	Amphipods: <i>Ampelisca agassizi</i> , <i>Unciola</i> , <i>Erichthonius</i>
Shelf break	100 - 200	(silt-clay zone)	not given
Continental slope	> 200	(none)	not given

As described by Pratt (1973) and Boesch (1979) with characteristic macrofauna as identified in Boesch (1979).

Table 15 Mid-Atlantic habitat types.

Season	Species Assemblage				
	Boreal	Warm temperate	Inner shelf	Outer shelf	Slope
Spring	Atlantic cod little skate sea raven goosefish winter flounder longhorn sculpin ocean pout silver hake red hake white hake spiny dogfish	black sea bass summer flounder butterfish scup spotted hake northern searobin	windowpane	fourspot flounder	shortnose greeneye offshore hake blackbelly rosefish white hake
Fall	white hake silver hake red hake goosefish longhorn sculpin winter flounder yellowtail flounder witch flounder little skate spiny dogfish	black sea bass summer flounder butterfish scup spotted hake northern searobin smooth dogfish	windowpane	fourspot flounder fawn cusk eel gulf stream flounder	shortnose greeneye offshore hake blackbelly rosefish white hake witch flounder

As determined by Colvocoresses and Musick (1984).

Table 16 Major recurrent demersal finfish assemblages of the Mid-Atlantic Bight during spring and fall.

Location (Type)	Representative Flora and Fauna		
	Epibenthic/Epibiotic	Motile Epibenthic Invertebrates	Fish
Estuarine (oyster reefs, blue mussel beds, other hard surfaces, semi-hard clay and <i>Spartina</i> peat reefs)	Oyster, barnacles, ribbed mussel, blue mussel, algae, sponges, tube worms, anemones, hydroids, bryozoans, slipper shell, jingle shell, northern stone coral, sea whips, tunicates, caprellid amphipods, wood borers	Xanthid crabs, blue crab, rock crabs, spider crab, juvenile American lobsters, sea stars	Gobies, spot, striped bass, black sea bass, white perch, toadfish, scup, drum, croaker, spot, sheepshead porgy, pinfish, juvenile and adult tautog, pinfish, northern puffer, cunner, sculpins, juvenile and adult Atlantic cod, rock gunnel, conger eel, American eel, red hake, ocean pout, white hake, juvenile pollock
Coastal (exposed rock/soft marl, harder rock, wrecks and artificial reefs, kelp, other materials)	Boring mollusks (piddocks), red algae, sponges, anemones, hydroids, northern stone coral, soft coral, sea whips, barnacles, blue mussel, horse mussel, bryozoans, skeleton and tubiculous amphipods, polychaetes, jingle shell, sea stars	American lobster, Jonah crab, rock crabs, spider crab, sea stars, urchins, squid egg clusters	Black sea bass, pinfish, scup, cunner, red hake, gray triggerfish, black grouper, smooth dogfish, summer flounder, scad, bluefish, amberjack, Atlantic cod, tautog, ocean pout, conger eel, sea raven, rock gunnel, radiated shanny
Shelf (rocks and boulders, wrecks and artificial reefs, other solid substrates)	Boring mollusks (piddocks) red algae, sponges, anemones, hydroids, stone coral, soft coral, sea whips, barnacles, blue mussels, horse mussels, bryozoans, amphipods, polychaetes	American lobster, Jonah crabs, rock crabs, spider crabs, sea stars, urchins, squid egg clusters (with addition of some deepwater taxa at shelf edge)	Black sea bass, scup, tautog, cunner, gag, sheepshead, porgy, round herring, sardines, amberjack, spadefish, gray triggerfish, mackerels, small tunas, spottail pinfish, tautog, Atlantic cod, ocean pout, red hake, conger eel, cunner, sea raven, rock gunnel, pollock, white hake
Outer shelf (reefs and clay burrows including "pueblo village community")			Tilefish, white hake, conger eel

As described in Steimle and Zetlin (2000).

Table 17 Mid-Atlantic reef types, location, and representative flora and fauna.

4.2.4 Continental Slope

Physical Environment

The continental slope extends from the continental shelf break, at depths between 60 - 200 m, eastward to a depth of 2000 m. The width of the slope varies from 10 - 50 km, with an average gradient of 3 - 6°; however, local gradients can be nearly vertical. The base of the slope is defined by a marked decrease in seafloor gradient where the continental rise begins.

The morphology of the present continental slope appears largely to be a result of sedimentary processes that occurred during the Pleistocene, including, 1) slope upbuilding and progradation by deltaic sedimentation principally during sea-level low stands; 2) canyon cutting by sediment mass movements during and following sea-level low stands; and 3) sediment slumping.

The slope is cut by at least 70 large canyons between Georges Bank and Cape Hatteras (Figure 14 and Figure 15) and numerous smaller canyons and gullies, many of which may feed into the larger canyon systems. The New England Seamount Chain including Bear, Mytilus, and Balanus Seamounts occurs on the slope southwest of Georges Bank. A smaller chain (Caryn, Knauss, etc.) occurs in the vicinity in deeper water.

A “mud line” occurs on the slope at a depth of 250 - 300 m, below which fine silt and clay-size particles predominate (Figure 6). Localized coarse sediments and rock outcrops are found in and near canyon walls, and occasional boulders occur on the slope because of glacial rafting. Sand pockets may also be formed because of downslope movements.

Gravity induced downslope movement is the dominant sedimentary process on the slope, and includes slumps, slides, debris flows, and turbidity currents, in order from thick cohesive movement to relatively nonviscous flow. Slumps may involve localized, short, down-slope movements by blocks of sediment. However, turbidity currents can transport sediments thousands of kilometers.

Submarine canyons are not spaced evenly along the slope, but tend to decrease in areas of increasing slope gradient. Canyons are typically “v” shaped in cross section and often have steep walls and outcroppings of bedrock and clay. The canyons are continuous from the canyon heads to the base of the continental slope. Some canyons end at the base of the slope, but others continue as channels onto the continental rise. Larger and more deeply incised canyons are generally significantly older than smaller ones, and there is evidence that some older canyons have experienced several episodes of filling and re-excavation. Many, if not all, submarine canyons may first form by mass-wasting processes on the continental slope, although there is evidence that some canyons were formed because of fluvial drainage (*e.g.*, Hudson Canyon).

Canyons can alter the physical processes in the surrounding slope waters. Fluctuations in the velocities of the surface and internal tides can be large near the heads of the canyons, leading to enhanced mixing and sediment transport in the area. Shepard *et al.* (1979) concluded that the strong turbidity currents initiated in study canyons were responsible for enough sediment erosion

and transport to maintain and modify those canyons. Since surface and internal tides are ubiquitous over the continental shelf and slope, it can be anticipated that these fluctuations are important for sedimentation processes in other canyons as well. In Lydonia Canyon, Butman *et al.* (1982) found that the dominant source of low frequency current variability was related to passage of warm core Gulf Stream rings rather than the atmospheric events that predominate on the shelf.

The water masses of the Atlantic continental slope and rise are essentially the same as those of the North American Basin [defined in Wright and Worthington (1970)]. Worthington (1976) divided the water column of the slope into three vertical layers: deepwater (colder than 4°C), the thermocline (4 - 17°C), and surface water (warmer than 17°C). In the North American Basin, deepwater accounts for two-thirds of all the water, the thermocline for about one-quarter, and surface water the remainder. In the slope water north of Cape Hatteras, the only warm water occurs in the Gulf Stream and in seasonally influenced summer waters.

The principal cold water mass in the region is the North Atlantic Deep Water. North Atlantic Deep Water is comprised of a mixture of five sources: Antarctic Bottom Water, Labrador Sea Water, Mediterranean Water, Denmark Strait Overflow Water, and Iceland-Scotland Overflow Water. The thermocline represents a straightforward water mass compared with either the deepwater or the surface water. Nearly 90% of all thermocline water comes from the water mass called the Western North Atlantic Water. This water mass is slightly less saline northeast of Cape Hatteras due to the influx of southward flowing Labrador Coastal Water. Seasonal variability in slope waters penetrates only the upper 200 m of the water column.

In the winter months, cold temperatures and storm activity create a well mixed layer down to about 100 - 150 m, but summer warming creates a seasonal thermocline overlain by a surface layer of low density water. The seasonal thermocline, in combination with reduced storm activity in the summer, inhibits vertical mixing and reduces the upward transfer of nutrients into the photic zone.

Two currents found on the slope, the Gulf Stream and Western Boundary Undercurrent, together represent one of the strongest low frequency horizontal flow systems in the world. Both currents have an important influence on slope waters. Warm and cold core rings that spin off the Gulf Stream are a persistent and ubiquitous feature of the northwest Atlantic Ocean (see the "Gulf Stream" section). The Western Boundary Undercurrent flows to the southwest along the lower slope and continental rise in a stream about 50 km wide. The boundary current is associated with the spread of North Atlantic Deep Water, and it forms part of the generally westward flow found in slope water. North of Cape Hatteras it crosses under the Gulf Stream in a manner not yet completely understood.

Shelf and slope waters of the northeast region are intermittently affected by the Gulf Stream. The Gulf Stream begins in the Gulf of Mexico and flows northeastward at an approximate rate of 1 m/s (2 knots), transporting warm waters north along the eastern coast of the United States, and then east towards the British Isles. Conditions and flow of the Gulf Stream are highly variable on time scales ranging from days to seasons. Intrusions from the Gulf Stream constitute the principal source of variability in slope waters off the northeastern shelf.

The location of the Gulf Stream's shoreward, western boundary is variable because of meanders and eddies. Gulf Stream eddies are formed when extended meanders enclose a parcel of seawater and pinch off. These eddies can be cyclonic, meaning they rotate counterclockwise and have a cold core formed by enclosed slope water (cold core ring), or anticyclonic, meaning they rotate clockwise and have a warm core of Sargasso Sea water (warm core ring). The rings are shaped like a funnel, wider at the top and narrower at the bottom, and can have depths of over 2000 m. They range in size from approximately 150 - 230 km in diameter. There are 35% more rings and meanders near Georges Bank than in the Mid-Atlantic region. A net transfer of water on and off the shelf may result from the interaction of rings and shelf waters. These warm or cold core rings maintain their identity for several months until they are reabsorbed by the Gulf Stream. The rings and the Gulf Stream itself have a great influence over oceanographic conditions all along the continental shelf.

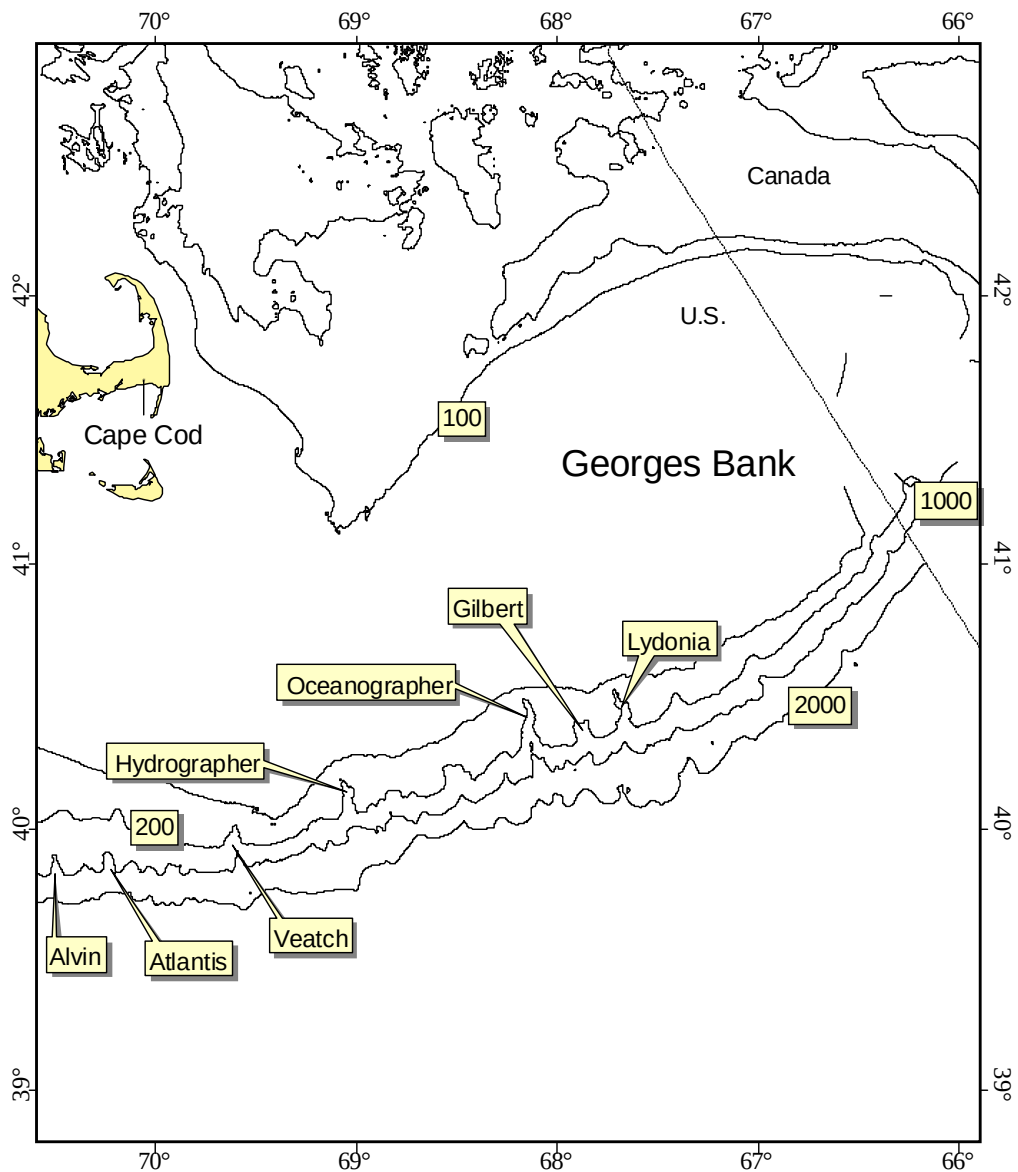


Figure 14 Principal submarine canyons on southern flank of Georges Bank. Depths in meters.

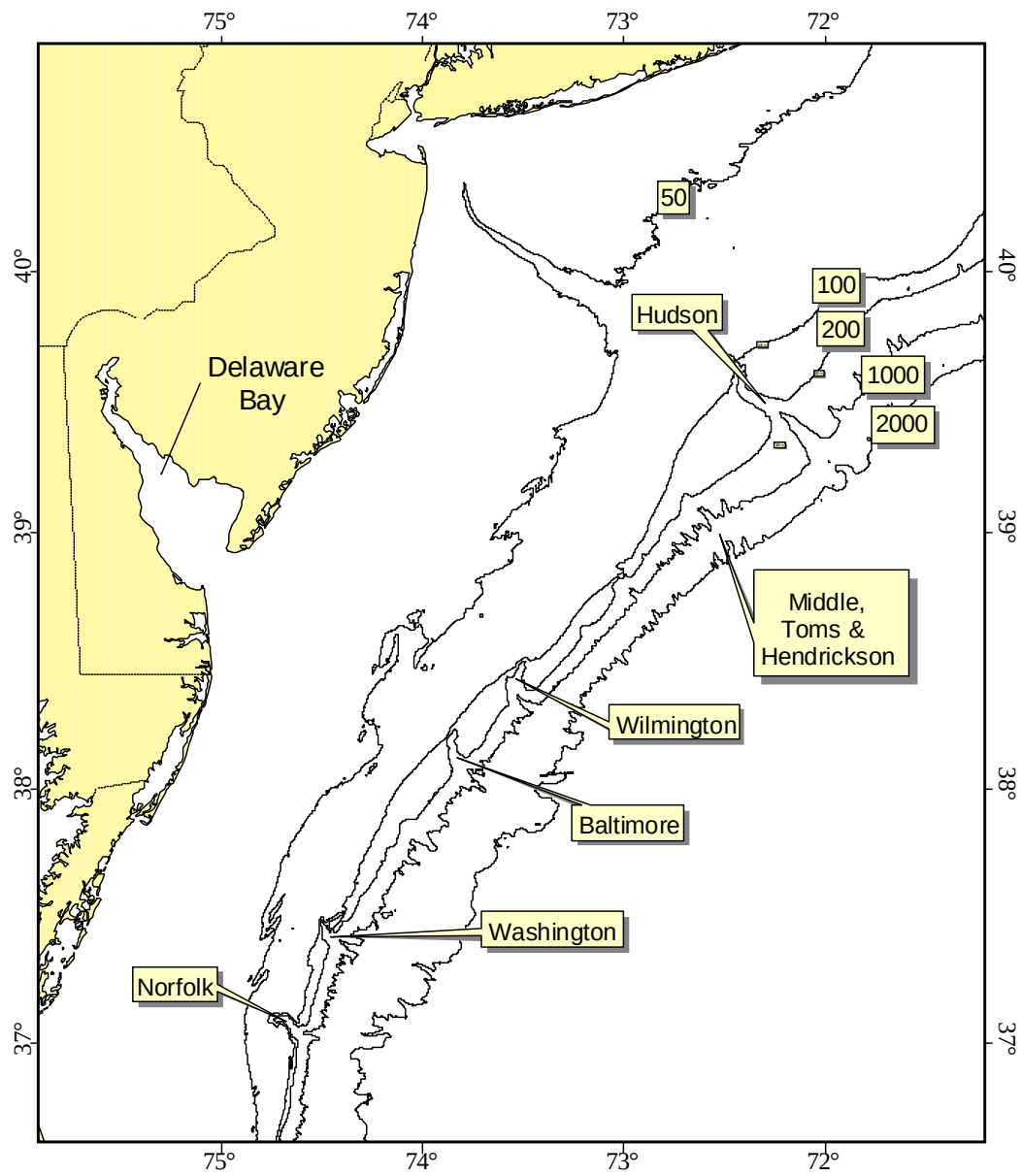


Figure 15 Principal submarine canyons in Mid-Atlantic Bight. Depths in meters.

Invertebrates

Polychaete annelids represent the most important slope faunal group in terms of numbers of individuals and species (Wiebe *et al.* 1987). Ophiuroids (brittle stars) are considered to be among the most abundant slope organisms, but this group is comprised of relatively few species. The taxonomic group with the highest species diversity is the peracarid crustaceans (which includes amphipods, cumaceans, and isopods). Some species of the slope are widely distributed, while others appear to be restricted to particular ocean basins. The ophiuroids and bivalves appear to have the broadest distributions, while the peracarid crustaceans appear to be highly restricted because they brood their young, and lack a planktonic stage of development. In general, gastropods do not appear to be very abundant; however, past studies are inconclusive since they have not collected enough individuals for large-scale community and population studies.

In general, slope inhabiting benthic organisms are strongly zoned by depth and/or water temperature, although these patterns are modified by the presence of topography, including canyons, channels, and current zonations (Hecker 1990). Moreover, at depths of less than 800 m, the fauna is extremely variable and the relationships between faunal distribution and substrate, depth, and geography are less obvious (Wiebe *et al.* 1987). Fauna occupying hard surface sediments are not as dense as in comparable shallow water habitats (Wiebe *et al.* 1987), but there is an increase in species diversity from the shelf to the intermediate depths of the slope. Diversity then declines again in the deeper waters of the continental rise and plain. Hecker (1990) identified four megafaunal zones on the slope of Georges Bank and southern New England (Table 18).

One group of organisms of interest because of the additional structure they can provide for habitat and their potential long life span are the Alcyonarian soft corals. Soft corals can be bush or treelike in shape; species found in this form attach to hard substrates such as rock outcrops or gravel. These species can range in size from a few millimeters to several meters, and the trunk diameter of large specimens can exceed 10 cm. Other Alcyonarians found in this region include sea pens and sea pansies (Order Pennatulacea), which are found in a wider range of substrate types.

As opposed to most slope environments, canyons may develop a lush epifauna. Hecker *et al.* (1983) found faunal differences between the canyons and slope environments. Hecker and Blechschmidt (1979) suggested that faunal differences were due at least in part to increased environmental heterogeneity in the canyons, including greater substrate variability and nutrient enrichment. Hecker *et al.* (1983) found highly patchy faunal assemblages in the canyons, and also found additional faunal groups located in the canyons, particularly on hard substrates, that do not appear to occur in other slope environments. Canyons are also thought to serve as nursery areas for a number of species (Cooper *et al.* 1987; Hecker 2001). The canyon habitats in Table 19 were classified by Cooper *et al.* (1987).

Demersal Fish

Most finfish identified as slope inhabitants on a broad spatial scale (Colvocoresses and Musick 1984; Overholtz and Tyler 1985; Gabriel 1992) (Table 13) are associated with canyon features as well (Cooper *et al.* 1987) (Table 19). Finfish identified by broad studies that were not included in Cooper *et al.* (1987) include offshore hake, fawn cusk-eel, longfin hake, witch flounder, and armored searobin. Canyon species (Cooper *et al.* 1987) that were not discussed in the broad scale studies include squirrel hake, conger eel, and tilefish. Cusk and ocean pout were identified by Cooper *et al.* (1987) as canyon species, but classified in other habitats by the broad scale studies.

Zone	Approximate Depth (m)	Gradient	Current	Fauna
Upper Slope	300 - 700	Low	Strong	Dense filter feeders; Scleratinians (<i>Dasmomilia lymani</i> , <i>Flabellum alabastrum</i>), quill worm (<i>Hyalinoecia</i>)
Upper Middle Slope	500 - 1300	High	Moderate	Sparse scavengers; red crab (<i>Geryon quinqueidens</i>), long-nosed eel (<i>Synaphobranchus</i>), common grenadier (<i>Nezumia</i>). Alcyonarians (<i>Acanella arbuscula</i> , <i>Eunephthya florida</i>) in areas of hard substrate
Lower Middle Slope/Transition	1200 - 1700	High	Moderate	Sparse suspension feeders; cerianthids, sea pens (<i>Distichoptilum gracile</i>)
Lower Slope	> 1600	Low	Strong	Dense suspension and deposit feeders; ophiurid (<i>Ophiomusium lymani</i>), cerianthids, sea pens

From Hecker (1990)

Table 18 Faunal zones of the continental slope of Georges Bank and Southern New England.

Habitat Type	Geologic Description	Canyon Locations	Most Commonly Observed Fauna
I	Sand or semiconsolidated silt substrate (claylike consistency) with less than 5% overlay of gravel. Relatively featureless except for conical sediment mounds.	Walls and axis	Cerianthid, pandalid shrimp, white colonial anemone, Jonah crab, starfishes, portunid crab, greeneye, brittle stars, mosaic worm, red hake, fourspot flounder, shellless hermit crab, silver hake, gulf stream flounder
II	Sand or semiconsolidated silt substrate (claylike consistency) with more than 5% overlay of gravel. Relatively featureless.	Walls	Cerianthids, galatheid crab, squirrel hake, white colonial anemone, Jonah crab, silver hake, sea stars, ocean pout, brittle stars, shellless hermit crab, greeneye
III	Sand or semiconsolidated silt (claylike consistency) overlain by siltstone outcrops and talus up to boulder size. Featured bottom with erosion by animals and scouring.	Walls	White colonial anemone, pandalid shrimp, cleaner shrimp, rock anemone, white hake, sea stars, ocean pout, conger eel, brittle stars, Jonah crab, lobster, blackbelly rosefish, galatheid crab, mosaic worm, tilefish
IV	Consolidated silt substrate, heavily burrowed/excavated. Slope generally more than 5° and less than 50°. Termed "pueblo village" habitat.	Walls	Sea stars, blackbelly rosefish, Jonah crab, lobster, white hake, cusk, ocean pout, cleaner shrimp, conger eel, tilefish, galatheid crab, shellless hermit crab
V	Sand dune substrate.	Axis	Sea stars, white hake, Jonah crab, goosefish

From Cooper *et al.* (1987). Faunal characterization is for depths < 230 m only.

Table 19 Habitat types for the canyons of Georges Bank, including characteristic fauna.

4.3 Fishing Effects on EFH

This section provides a general discussion of the effects of fishing on EFH. Section 5.4 of the FSEIS to Amendment 2 evaluated the potential adverse effects of gears used in the directed monkfish fishery on EFH for monkfish and other federally-managed species and the effects of fishing activities regulated under other Federal FMPs on monkfish EFH. The evaluation considered the effects of each activity on each type of habitat found within EFH. Since monkfish EFH has been determined to not be vulnerable to any fishing gear (Stevenson, *et al.* 2004, NEFMC 2004), the discussion focuses on gears used in the directed monkfish fishery (trawls and gillnets) that potentially could impact EFH on other fisheries.

The two gears used in the directed monkfish fishery are bottom trawls and bottom gill nets which are described in detail in Section 1.2.1 of Appendix 2 to Amendment 2 to the Monkfish FMP. Since dredges are prohibited in the directed monkfish fishery, they do not need to be evaluated in the gear-specific discussion below, but they are noted in the general discussion of fishing effects on EFH.

Generally, otter trawls are towed at speeds of 2-3 knots over the bottom and the trawl doors and footrope contact the benthic environment. Conversely, while sink gill nets are deployed on the ocean bottom, they are stationary or static, anchored at each end and left in place for varying periods of time. Gillnets have been determined to not have an adverse effect on EFH (NEFMC 2004) and are, therefore, omitted from further discussion in this section.

Appendix 2 of Amendment 2 to the Monkfish FMP (NEFMC 2004) describes the general effects of bottom trawls on benthic marine habitats. The primary source document used for this analysis was an advisory report prepared for the International Council for the Exploration of the Seas (ICES 2000) that identified a number of possible effects of beam trawls and bottom otter trawls on benthic habitats. This report is based on scientific findings summarized in Lindeboom and de Groot (1998), which were peer-reviewed by an ICES working group. The focus of the report is the Irish Sea and North Sea, but it also includes assessments of effects in other areas. Two general conclusions were: 1) low-energy environments are more affected by bottom trawling; and 2) bottom trawling can affect the potential for habitat recovery (*i.e.*, after trawling ceases, benthic communities and habitats may not always return to their original pre-impacted state). Regarding direct habitat effects, the report also concluded that:

- Loss or dispersal of physical features such as peat banks or boulder reefs (changes are always permanent and lead to an overall change in habitat diversity, which can in turn lead to the local loss of species and species assemblages dependant on such features);
- Loss of structure-forming organisms such as bryozoans, tube-dwelling polychaetes, hydroids, seapens, sponges, mussel beds, and oyster beds (changes may be permanent and can lead to an overall change in habitat diversity which can in turn lead to the local loss of species and species assemblages dependant on such biogenic features);

- Reduction in complexity caused by redistributing and mixing of surface sediments and the degradation of habitat and biogenic features, leading to a decrease in the physical patchiness of the sea floor (changes are not likely to be permanent);
- Alteration of the detailed physical features of the sea floor by reshaping seabed features such as sand ripples and damaging burrows and associated structures which provide important habitats for smaller animals and can be used by fish to reduce their energy requirements (changes are not likely to be permanent).

A more recent evaluation of the habitat effects of trawling (and dredging) was prepared by the Committee on Ecosystem Effects of Fishing for the National Research Council's Ocean Studies Board (NRC 2002). Trawl gear evaluated by the Committee included bottom otter trawls and beam trawls. Dredge gear included hydraulic clam dredges, non-hydraulic oyster, conch, and crab dredges, and scallop dredges with and without teeth. This report identified four general conclusions regarding the types of habitat modifications caused by trawls and dredges.

- Trawling and dredging reduce habitat complexity
- Repeated trawling and dredging result in discernable changes in benthic communities
- Bottom trawling reduces the productivity of benthic habitats
- Fauna that live in low natural disturbance regimes are generally more vulnerable to fishing gear disturbance

An additional source of information that relates specifically to the Northeast region is the report of a "Workshop on the Effects of Fishing Gear on Marine Habitats off the Northeastern U.S." sponsored by the New England and Mid-Atlantic Fishery Management Councils in October 2001 (NEFSC 2002). A panel of invited fishing industry members and experts in the fields of benthic ecology, fishery ecology, geology, and fishing gear technology was convened for the purpose of assisting the New England Fishery Management Council (NEFMC), the Mid-Atlantic Fishery Management Council (MAFMC) and NMFS with: 1) evaluating the existing scientific research on the effects of fishing gear on benthic habitats; 2) determining the degree of impact from various gear types on benthic habitats in the Northeast; 3) specifying the type of evidence that is available to support the conclusions made about the degree of impact.; 4) ranking the relative importance of gear impacts on various habitat types; and 5) providing recommendations on measures to minimize those adverse impacts. The panel was provided with a summary of available research studies that summarized information relating to the effects of bottom otter trawls, New Bedford style scallop dredges, and hydraulic clam dredges. Relying on this information plus professional judgment, the panel identified the effects, and the degree of impact, of these three gears plus bottom gillnets, pots, and longlines on mud, sand, and gravel/rock bottom habitats.

Additional information is provided in this report on the recovery times for each type of impact for all three gears in mud, sand, and gravel habitats ("gravel" includes other hard-bottom habitats). This information made it possible to rank these three substrates in terms of their vulnerability to the effects of bottom trawling and dredging, although other factors such as frequency of disturbance from fishing and from natural events are also important. In general, impacts were determined to be greater in gravel/rock habitats with attached epifauna. Impacts on

biological structure were ranked higher than impacts on physical structure and otter trawls and scallop dredges were ranked much higher than hydraulic dredges or stationary gears. Effects of trawls on major physical features in mud (deep-water clay-bottom habitats) and gravel bottom were described as permanent, and impacts to biological and physical structure were given recovery times of months to years in mud and gravel. Impacts of trawling on physical structure in sand were of shorter duration (days to months) given the exposure of most continental shelf sand habitats to strong bottom currents and/or frequent storms. For scallop dredges in gravel, recovery from impacts to biological structure was estimated to take several years and, for impacts to physical structure, months to years. In sand, biological structure was estimated to recover within months to years and physical structure within days to months.

The contents of a second expert panel report, produced by the Pew Charitable Trusts and entitled “Shifting Gears: Addressing the Collateral Impacts of Fishing Methods in U.S. Waters” (Morgan and Chuenpagdee 2003), was also summarized in Amendment 13 to the Multispecies FMP. This group evaluated the habitat effects of ten different commercial fishing gears used in U.S. waters. The report concluded that bottom trawls and dredges have very high habitat impacts, bottom gillnets and pots and traps have low to medium impacts, and bottom longlines have low impacts. As in the ICES and NRC reports, individual types of trawls and dredges were not evaluated. The impacts of bottom gill nets, traps, and longlines were limited to warm or shallow-water environments with rooted aquatic vegetation or “live bottom” environments (*e.g.*, coral reefs).

Results of a review of 44 gear effect studies published through the summer of 2002 that were relevant (same gears and habitats) to the NE region of the U.S. (see Stevenson *et al.* 2004) are also summarized in Amendment 2. Based on these studies, positive and negative effects of bottom otter trawls, New Bedford-style scallop dredges, and hydraulic clam dredges are summarized by substrate type in Amendment 13, along with recovery times (when known). Whenever possible, only statistically significant results were reported. In general, these studies confirm the previous determinations of potential adverse impacts of trawls and dredges found in the ICES (2000), NRC (2002), NEFSC (2002), and Morgan and Chuenpagdee (2003) reports. The results of these 44 studies are summarized below for each gear/habitat type combination. Studies of the effects of multiple gear types are not included. Physical and biological effects for each gear-substrate category are summarized in separate paragraphs. When necessary, biological effects are summarized separately for single disturbance and repeated disturbance experimental studies, and for non-experimental studies. For more detailed information, including the identification of each study, see Stevenson *et al.* (2004). An updated summary of gear effects research studies that are relevant to the NE region will be included in the revised gear effects section of the NEFMC Omnibus EFH Amendment 2 (Phase 2), which is currently being developed.

Otter Trawls – Mud

Results of 11 studies are summarized, five done in North America, four in Europe, and one in Australia. One was performed in an inter-tidal habitat, one in very deep water (250 m), and the rest in a depth range of 14-90 meters. Seven of them were experimental studies, three were observational, and one was both. Two examined physical effects, six of them assessed biological effects, and three studies examined physical and biological effects. One study evaluated

geochemical sediment effects. In this habitat type, biological evaluations focused on infauna: all nine biological assessments examined infaunal organisms and four of them also included epifauna. Habitat recovery was monitored on five occasions. Two studies evaluated the long-term effects of commercial trawling, one by comparing benthic samples from a fishing ground with samples collected near a shipwreck, while another evaluated changes in macrofaunal abundance during periods of low, moderate, and high fishing effort during a 27-year time period. Four of the experimental studies were done in closed or previously un-trawled areas and three in commercially fished areas. One study examined the effects of a single tow and six involved multiple tows, five restricted trawling to a single event (*e.g.*, one day) and two examined the cumulative effects of continuous disturbance.

Physical Effects

Trawl doors produce furrows up to 10 cm deep and berms 10-20 cm high on mud bottom. Evidence from four studies indicates that there is a large variation in the duration of these features (2-18 months). There is also evidence that repeated tows increase bottom roughness, fine surface sediments are re-suspended and dispersed, and rollers compress sediment. A single pass of a trawl did not cause sediments to be turned over, but single and multiple tows smoothed surface features.

Biological Effects

Single disturbance experimental studies

Two single-event studies were conducted in commercially trawled areas. Experimental trawling in intertidal mud habitat in the Bay of Fundy (Canada) disrupted diatom mats and reduced the abundance of nematodes in trawl door furrows, but recovery was complete after 1-3 months. There were no effects on infaunal polychaetes. In a sub-tidal mud habitat (30-40 m deep), benthic infauna were not affected. In two assessments performed in areas that had not been affected by mobile bottom gear for many years, effects were more severe. In both cases, total infaunal abundance and the abundance of individual polychaete and bivalve species declined immediately after trawling. In one of these studies, there were also immediate and significant reductions in the number of species and species diversity. Positive effects included reduced porosity, increased food value, and increased chlorophyll production in surface sediments. Most of these effects lasted less than 3.5 months. In the other, two tows removed 28% of the epifauna on mud and sand substrate and epifauna in all trawled quadrats showed signs of damage. These results were not reported separately for mud bottom.

Repeated disturbance experimental studies

Two studies of the effects of repeated trawling were conducted in areas that had been closed to fishing for six years and >25 years. In one, multiple tows were made weekly for a year and, in the other, monthly for 16 months. In one case, 61% of the benthic species sampled tended to be negatively affected, but significant reductions were only noted for brittlestars. In the other, repeated trawling had no significant effect on the numbers of infaunal individuals or biomass. In this study, the number of infaunal species increased by the end of the disturbance period. Some species (*e.g.*, polychaetes) increased in abundance, while others (*e.g.*, bivalves) decreased.

Community structure was altered after five months of trawling and did not fully recover until 18 months after trawling ended.

Observational studies

An analysis of benthic sample data collected from a fishing ground over a 27-year period of high, medium, and low levels of fishing effort showed an increased abundance of organisms belonging to taxa that were expected to increase at higher disturbance levels, whereas those that were expected to decrease did not change in abundance. Results of another study indicated that a trawling ground had fewer benthic organisms and fewer species than an un-exploited site near a shipwreck. Trawling in deep water apparently dislodged infaunal polychaetes, causing them to be suspended in near-bottom water.

Otter Trawls – Sand

Results of 14 studies are summarized. Six studies were conducted in North America (three in a single long-term experiment on the Grand Banks), four in Australia, and four in Europe. Ten are experimental studies. Eight of them were done in depths less than 60 m, one at 80 m, and four in depths greater than 100 m. Three studies examined the physical effects of trawling, ten were limited to biological effects, and one examined both. Five of the biological studies were restricted to epifauna, one only examined infauna, and five included epifauna and infauna. The only experiment that was designed to monitor recovery was the one on the Grand Banks, although surveys conducted in Australia documented changes in the abundance of benthic organisms five years after closed areas were established. Two studies compared benthic communities in trawled areas of sandy substrate with undisturbed areas near a shipwreck. Six studies were performed in commercially exploited areas, five in closed areas, two compared closed and open areas, and one was done in a test tank. All the experimental studies examined the effects of multiple tows (up to 6 per unit area of bottom) and observational studies in Australia assessed the effects of 1-4 tows on emergent epifauna. Trawling in four studies was limited to a single event (1 day to 1 week), whereas the Grand Banks experiment was designed to evaluate the immediate and cumulative effects of annual 5-day trawling events in a closed area over a three-year period.

Physical effects

A test tank experiment showed that trawl doors produce furrows in sandy bottom that are 2 cm deep, with a berm 5.5 cm high. In sandy substrate, trawls smoothed seafloor topographic features, re-suspended and dispersed finer surface sediment, but had no lasting effects on sediment composition. Trawl door tracks lasted up to one year in deep water, but only for a few days in shallow water. Seafloor topography recovered within a year.

Biological effects

Single disturbance experimental studies

Two single-event studies were conducted in commercially trawled areas. In one of these studies, otter trawling caused high mortalities of large sedentary and/or immobile epifaunal species. In the other, there were no effects on benthic community diversity. Neither of these studies

investigated effects on total abundance or biomass. Two studies were performed in un-exploited areas. One study documented effects on attached epifauna. In one, single tows reduced the density of attached macrobenthos (>20 cm) by 15% and four tows by 50%. In the other, two tows removed 28% of the epifauna on mud and sand substrate, and epifauna in all trawled quadrats showed signs of damage. These results were not reported separately for sand bottom. Total infaunal abundance was not affected, but the abundance of one family of polychaetes was reduced.

Repeated disturbance experimental studies

Intensive experimental trawling on the Grand Banks reduced the total abundance and biomass of epibenthic organisms and the biomass and average size of a number of epibenthic species. Significant reductions in total infaunal abundance and the abundance of 15 taxa (mostly polychaetes) were detected during only one of three years, and there were no effects on biomass or taxonomic diversity.

Observational studies

Changes in macrofaunal abundance in a lightly trawled location in the North Sea were not correlated with historical changes in fishing effort, but there were fewer benthic organisms and species in a trawling ground in the Irish Sea than in an un-exploited site near a shipwreck. In the other “shipwreck study,” however, changes in infaunal community structure at increasing distances from the wreck were related to changes in sediment grain size and organic carbon content. The Alaska study showed that epifauna attached to sand were less abundant inside a closed area, significantly so for sponges and anemones. A single tow in a closed area in Australia removed 89% of the large sponges in the trawl path.

Otter Trawls – Gravel/Rocky Substrate

Three studies of otter trawl effects were conducted on gravel and rocky substrates. All three were conducted in North America. Two were done in glacially-affected areas in depths of about 100 to 300 meters using submersibles and the third was done in a shallow coastal area in the southeast U.S. One involved observations made in a gravel/boulder habitat in two different years before and after trawling affected the bottom. The other two were experimental studies of the effects of single trawl tows. One of these was done in a relatively un-exploited gravel habitat and the other on a smooth rock substrate in an area not affected by trawling. Two studies examined effects to the seafloor and on attached epifauna and one only examined effects on epifauna. There were no assessments of effects on infauna. Recovery was evaluated in one case for a year.

Physical effects

Trawling displaced boulders and removed mud covering boulders and rocks and rubber tire ground gear left furrows 1-8 cm deep in less compact gravel sediment.

Biological effects

Trawling in gravel and rocky substrate reduced the abundance of attached benthic organisms (e.g., sponges, anemones, and soft corals) and their associated epifauna and damaged sponges,

soft corals, and brittle stars. Sponges were more severely damaged by a single pass of a trawl than soft corals, but 12 months after trawling all affected species – including one species of stony coral – had fully recovered to their original abundance and there were no signs of damage.

Otter Trawls – Mixed Substrates

Three studies of the effects of otter trawls on mixed substrates are summarized. All three were conducted in North America and relied on sonar and observations made by divers or from a submersible. One of them combined submersible observations and benthic sampling to compare the physical and biological effects of trawling in a lightly fished and heavily fished location in California with the same depth and variety of sediment types. One was a survey of seafloor features produced by trawls in a variety of bottom types and the other primarily examined the physical effects of single trawl tows on sand and mud bottom.

Physical effects

Trawl doors left tracks in sediments that ranged from less than 5 cm deep in sand to 15 cm deep in mud. In mud, fainter marks were also made between the door tracks, presumably by the footgear. A heavily trawled area had fewer rocks, shell fragments, and biogenic mounds than a lightly trawled area.

Biological effects

The heavily trawled area in California had lower densities of large epifaunal species (*e.g.*, sea slugs, sea pens, starfish, and anemones) and higher densities of brittle stars and infaunal nematodes, oligochaetes, and one species of polychaete. There were no differences in the abundance of mollusks, crustaceans, or nemertean between the two areas. However, since this was not a controlled experiment, these differences could not be attributed to trawling. Single trawl tows in Long Island Sound attracted predators and suspended epibenthic organisms into the water column.

4.4 Essential Fish Habitat

4.4.1 Monkfish Essential Fish Habitat

Section 5.1 of the FSEIS to Amendment 2 described benthic habitats that exist within the range of the monkfish fishery biological characteristics of regional systems, and assemblages of fish and benthic organisms. It also included a description of canyon habitats on the edge of the continental shelf. The EFH text descriptions and map designations for the various life stages of monkfish were defined in the Habitat Omnibus Amendment (1998). The following paragraphs and maps, excerpted from the Habitat Omnibus Amendment, describe the environmental needs and natural distribution of Monkfish. For more information on Monkfish EFH refer the Habitat Omnibus Amendment (1998). Note that figures 4.1 and 4.2 (EFH for eggs and larvae) referenced in the following excerpt are not shown, and an additional figure is added, showing combined adult and juvenile monkfish EFH designations. Figure 16 shows the areas designated as EFH for juvenile monkfish (corresponding to Figure 4.3 in the excerpt), Figure 17 shows EFH designated for adult monkfish (Figure 4.4 in the excerpt), and Figure 18 shows the combined areas designated as monkfish EFH.

Essential Fish Habitat Description *Monkfish (Lophius americanus)*

In its Report to Congress: Status of the Fisheries of the United States (September 1997), NMFS determined monkfish is currently overfished. This determination is based on an assessment of stock size. Essential Fish Habitat for monkfish is described as those areas of the coastal and offshore waters (out to the offshore U.S. boundary of the exclusive economic zone) that are designated on Figures 4.1 - 4.4 and meet the following conditions:

Eggs: *Surface waters of the Gulf of Maine, Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras, North Carolina as depicted in Figure 4.1. Generally, the following conditions exist where monkfish egg veils are found: sea surface temperatures below 18° C and water depths from 15 - 1000 meters. Monkfish egg veils are most often observed during the months from March to September.*

Larvae: *Pelagic waters of the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Cape Hatteras, North Carolina as depicted in Figure 4.2. Generally, the following conditions exist where monkfish larvae are found: water temperatures 15° C and water depths from 25 - 1000 meters. Monkfish larvae are most often observed during the months from March to September.*

Juveniles: *Bottom habitats with substrates of a sand-shell mix, algae covered rocks, hard sand, pebbly gravel, or mud along the outer continental shelf in the middle Atlantic, the mid-shelf off southern New England, and all areas of the Gulf of Maine as depicted in Figure 4.3. Generally, the following conditions exist where monkfish juveniles are found: water temperatures below 13° C, depths from 25 - 200 meters, and a salinity range from 29.9 - 36.7‰.*

Adults: *Bottom habitats with substrates of a sand-shell mix, algae covered rocks, hard sand, pebbly gravel, or mud along the outer continental shelf in the middle Atlantic, the mid-shelf off southern New England, along the outer perimeter of Georges Bank and all areas of the Gulf of Maine as depicted in Figure 4.4. Generally, the following conditions exist where monkfish adults are found: water temperatures below 15° C, depths from 25 - 200 meters, and a salinity range from 29.9 - 36.7‰.*

Spawning Adults: *Bottom habitats with substrates of a sand-shell mix, algae covered rocks, hard sand, pebbly gravel, or mud along the outer continental shelf in the middle Atlantic, the mid-shelf off southern New England, along the outer perimeter of Georges Bank and all areas of the Gulf of Maine as depicted in Figure 4.4. Generally, the following conditions exist where spawning monkfish adults are found: water temperatures below 13° C, depths from 25 - 200 meters, and a salinity range from 29.9 - 36.7‰. Monkfish are observed spawning most often during the months from February to August.*

The Council acknowledges potential seasonal and spatial variability of the conditions generally associated with this species.

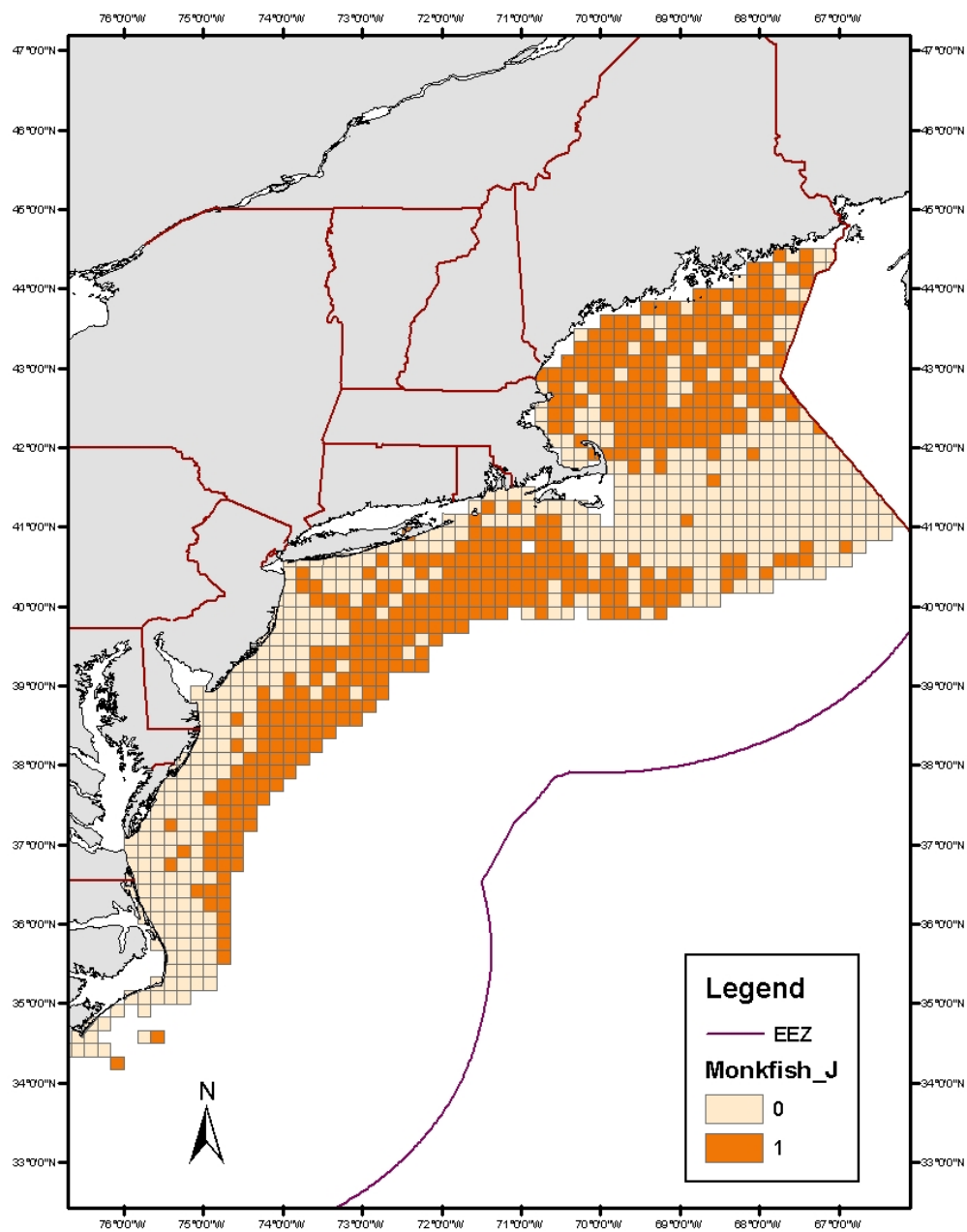


Figure 16 EFH Designation for Juvenile Monkfish is highlighted in the shaded ten-minute squares

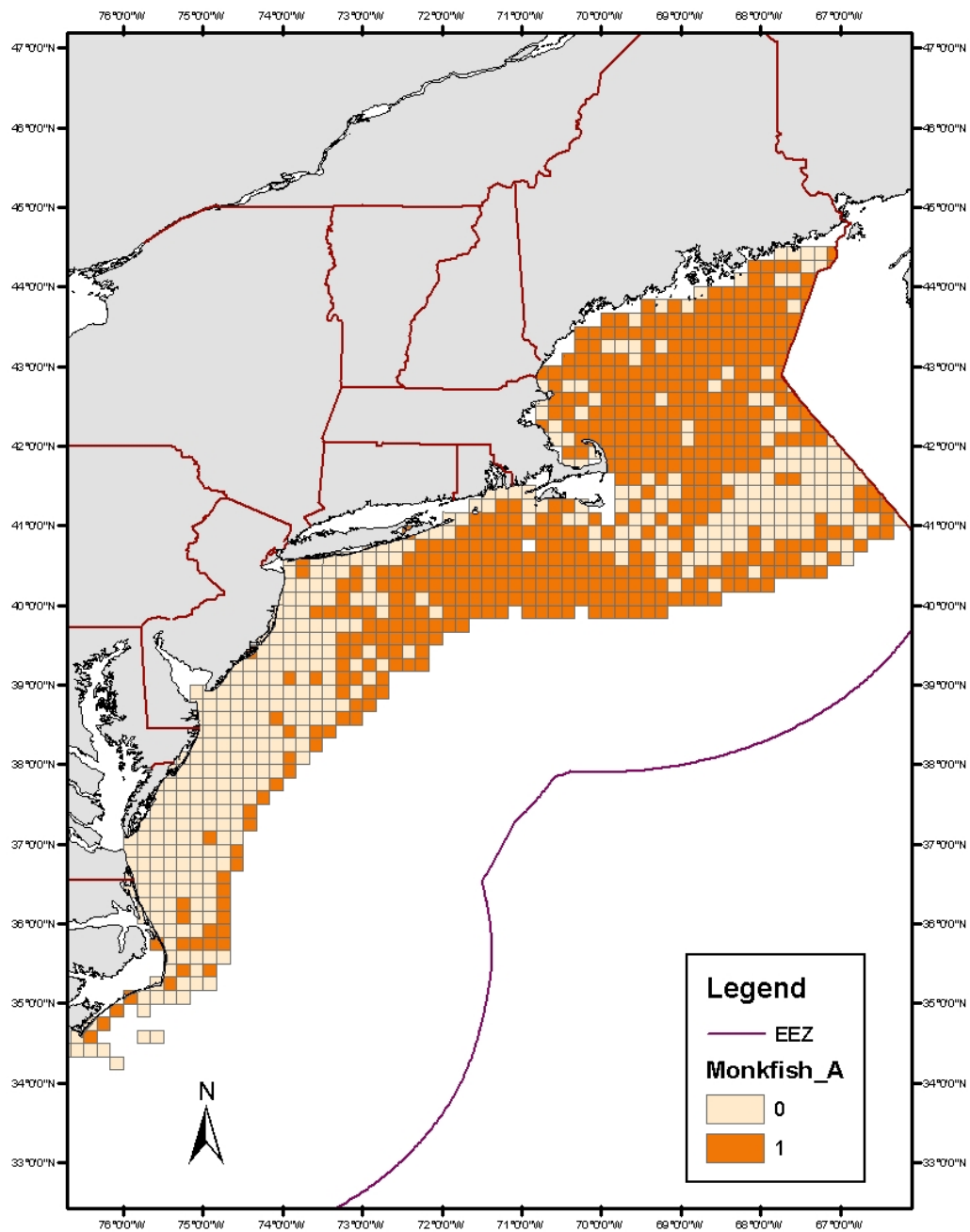


Figure 17 EFH Designations for Adult Monkfish is highlighted in the shaded ten-minute squares

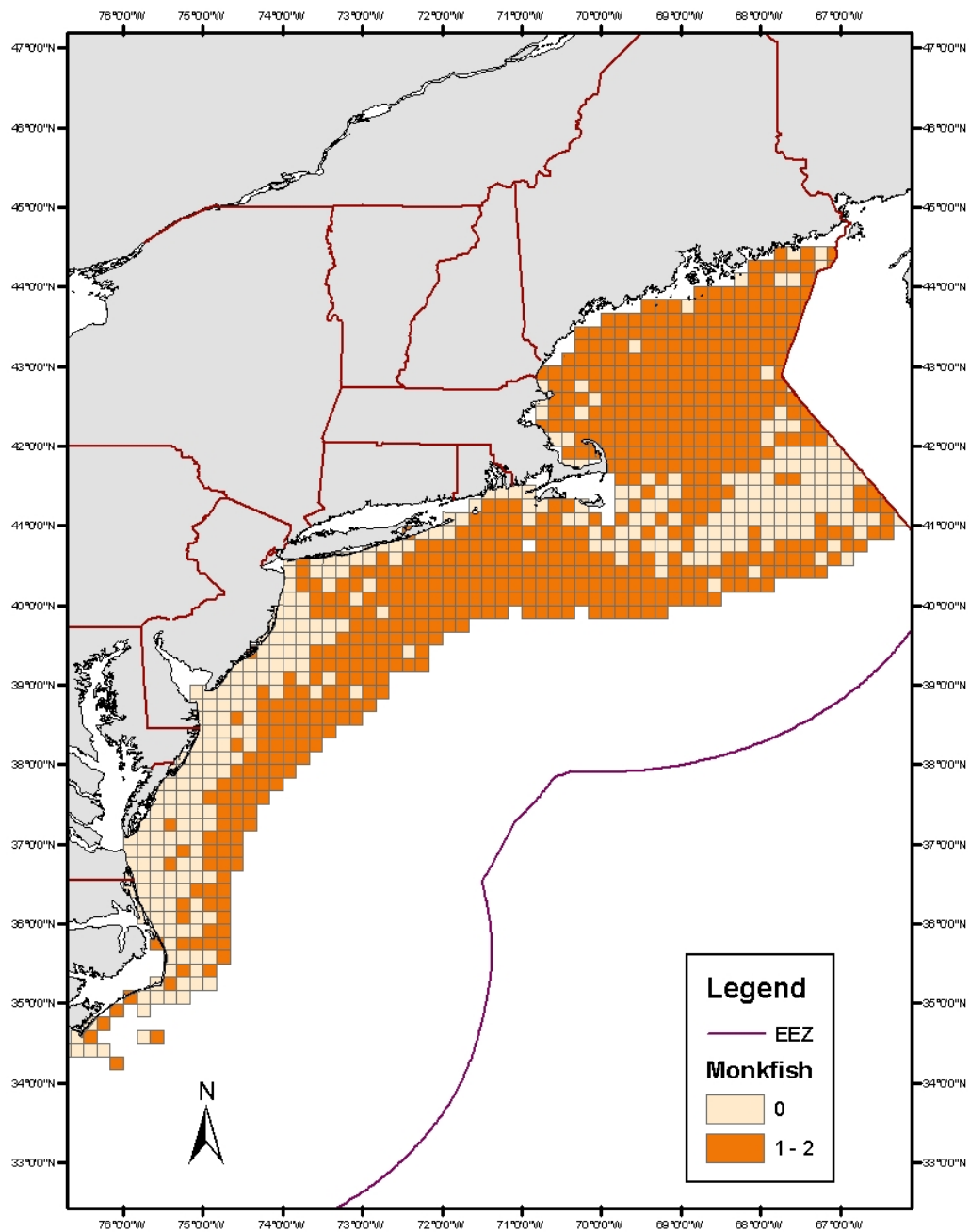


Figure 18 EFH Designation for both Juvenile and Adult Monkfish combined is highlighted in the shaded ten-minute squares

4.4.2 Essential Fish Habitat of Other Species vulnerable to Bottom Trawl Gear

The environment that could potentially be affected by the proposed action has been identified as EFH for benthic life stages of species that are managed under the NE Multispecies; Atlantic Sea Scallop; Monkfish; Deep-Sea Red Crab; Northeast Skate Complex; Atlantic Herring; Summer Flounder, Scup, and Black Sea Bass; Tilefish; Squid, Atlantic Mackerel, and Butterfish; Atlantic Surfclam and Ocean Quahog Fishery Management Plans. EFH for the species managed under these FMPs includes a wide variety of benthic habitats in state and Federal waters throughout the Northeast U.S. Shelf Ecosystem. EFH descriptions of the geographic range, depth, and bottom types for all the benthic life stages of the species managed under these FMPs are summarized in the following table (Table 20).

Species	Life Stage	Geographic Area of EFH	Depth (meters)	EFH Description
American plaice	juvenile	GOME and estuaries from Passamaquoddy Bay to Saco Bay, ME and from Mass. Bay to Cape Cod Bay, MA	45 - 150	Bottom habitats with fine grained sediments or a substrate of sand or gravel
American plaice	adult	GOME and estuaries from Passamaquoddy Bay to Saco Bay, ME and from Mass. Bay to Cape Cod Bay, MA	45 - 175	Bottom habitats with fine grained sediments or a substrate of sand or gravel
Atlantic cod	juvenile	GOME, GB, eastern portion of continental shelf off southern NE and following estuaries: Passamaquoddy Bay to Saco Bay; Mass. Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	25 - 75	Bottom habitats with a substrate of cobble or gravel
Atlantic cod	adult	GOME, GB, eastern portion of continental shelf off southern NE and following estuaries: Passamaquoddy Bay to Saco Bay; Mass. Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	10 - 150	Bottom habitats with a substrate of rocks, pebbles, or gravel
Atlantic halibut	juvenile	GOME, GB	20 - 60	Bottom habitats with a substrate of sand, gravel, or clay
Atlantic halibut	adult	GOME, GB	100 - 700	Bottom habitats with a substrate of sand, gravel, or clay
Atlantic herring	eggs	GOME, GB and following estuaries: Englishman/Machias Bay, Casco Bay, and Cape Cod Bay	20 - 80	Bottom habitats attached to gravel, sand, cobble or shell fragments, also on macrophytes
Atlantic sea scallop	juvenile	GOME, GB, southern NE and middle Atlantic south to Virginia-North Carolina border and following estuaries: Passamaquoddy Bay to Sheepscot R.; Casco Bay, Great Bay, Mass Bay, and Cape Cod Bay	18 - 110	Bottom habitats with a substrate of cobble, shells, and silt
Atlantic sea scallop	adult	GOME, GB, southern NE and middle Atlantic south to Virginia-North Carolina border and following estuaries: Passamaquoddy Bay to Sheepscot R.; Casco Bay, Great Bay, Mass Bay, and Cape Cod Bay	18 - 110	Bottom habitats with a substrate of cobble, shells, coarse/gravelly sand, and sand
Haddock	juvenile	GB, GOME, middle Atlantic south to Delaware Bay	35 - 100	Bottom habitats with a substrate of pebble and gravel
Haddock	adult	GB and eastern side of Nantucket Shoals, throughout GOME, *additional area of Nantucket Shoals, and Great South Channel	40 - 150	Bottom habitats with a substrate of broken ground, pebbles, smooth hard sand, and smooth areas between rocky patches

Species	Life Stage	Geographic Area of EFH	Depth (meters)	EFH Description
Monkfish	juvenile	Outer continental shelf in the middle Atlantic, mid-shelf off southern NE, all areas of GOME	25 - 200	Bottom habitats with substrates of a sandshell mix, algae covered rocks, hard sand, pebbly gravel, or mud
Monkfish	adult	Outer continental shelf in the middle Atlantic, mid-shelf off southern NE, outer perimeter of GB, all areas of GOME	25 - 200	Bottom habitats with substrates of a sandshell mix, algae covered rocks, hard sand, pebbly gravel, or mud
Ocean pout	eggs	GOME, GB, southern NE, and middle Atlantic south to Delaware Bay, and the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts and Cape Cod Bay	<50	Bottom habitats, generally in hard bottom sheltered nests, holes, or crevices
Ocean pout	juvenile	GOME, GB, southern NE, middle Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay; Mass. Bay, and Cape Cod Bay	< 50	Bottom habitats in close proximity to hard bottom nesting areas
Ocean pout	adult	GOME, GB, southern NE, middle Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay; Mass. Bay, Boston Harbor, and Cape Cod Bay	< 80	Bottom habitats, often smooth bottom near rocks or algae
Offshore hake	juvenile	Outer continental shelf of GB and southern NE south to Cape Hatteras, NC	170 - 350	Bottom habitats
Offshore hake	adult	Outer continental shelf of GB and southern NE south to Cape Hatteras, NC	150 - 380	Bottom habitats
Pollock	juvenile	GOME, GB, and the following estuaries: Passamaquoddy Bay to Saco Bay; Great Bay to Waquoit Bay; Long Island Sound, Great South Bay	0 – 250	Bottom habitats with aquatic vegetation or a substrate of sand, mud, or rocks
Pollock	adult	GOME, GB, southern NE, and middle Atlantic south to New Jersey and the following estuaries: Passamaquoddy Bay, Damariscotta R., Mass Bay, Cape Cod Bay, Long Island Sound	15 – 365	Hard bottom habitats including artificial reefs
Red hake	juvenile	GOME, GB, continental shelf off southern NE, and middle Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Saco Bay; Great Bay, Mass. Bay to Cape Cod Bay; Buzzards Bay to Conn. R.; Hudson R./ Raritan Bay, and Chesapeake Bay	< 100	Bottom habitats with substrate of shell fragments, including areas with an abundance of live scallops

Species	Life Stage	Geographic Area of EFH	Depth (meters)	EFH Description
Red hake	adult	GOME, GB, continental shelf off southern NE, and middle Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Saco Bay; Great Bay, Mass. Bay to Cape Cod Bay; Buzzards Bay to Conn. R.; Hudson R./ Raritan Bay, Delaware Bay, and Chesapeake Bay	10 - 130	Bottom habitats in depressions with a substrate of sand and mud
Redfish	juvenile	GOME, southern edge of GB	25 - 400	Bottom habitats with a substrate of silt, mud, or hard bottom
Redfish	adult	GOME, southern edge of GB	50 - 350	Bottom habitats with a substrate of silt, mud, or hard bottom
White hake	adult	GOME, southern edge of GB, southern NE to middle Atlantic and the following estuaries: Passamaquoddy Bay to Great Bay; Mass. Bay to Cape Cod Bay	5 - 325	Bottom habitats with substrate of mud or fine grained sand
Silver hake	juvenile	GOME, GB, continental shelf off southern NE, middle Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Casco Bay, Mass. Bay to Cape Cod Bay	20 – 270	Bottom habitats of all substrate types
Silver hake	adult	GOME, GB, continental shelf off southern NE, middle Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Casco Bay, Mass. Bay to Cape Cod Bay	30 – 325	Bottom habitats of all substrate types
Windowpane flounder	juvenile	GOME, GB, southern NE, middle Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Great Bay; Mass. Bay to Chesapeake Bay	1 - 100	Bottom habitats with substrate of mud or fine grained sand
Windowpane flounder	adult	GOME, GB, southern NE, middle Atlantic south to Virginia - NC border and the following estuaries: Passamaquoddy Bay to Great Bay; Mass. Bay to Chesapeake Bay	1 - 75	Bottom habitats with substrate of mud or fine grained sand
Winter flounder	eggs	GB, inshore areas of GOME, southern NE, and middle Atlantic south to Delaware Bay	<5	Bottom habitats with a substrate of sand, muddy sand, mud, and gravel
Winter flounder	juvenile	GB, inshore areas of GOME, southern NE, middle Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Chincoteague Bay	0.1 – 10 (1 - 50, age 1+)	Bottom habitats with a substrate of mud or fine grained sand
Winter flounder	adult	GB, inshore areas of GOME, southern NE, middle Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Chincoteague Bay	1 - 100	Bottom habitats including estuaries with substrates of mud, sand, grave

Species	Life Stage	Geographic Area of EFH	Depth (meters)	EFH Description
Witch flounder	juvenile	GOME, outer continental shelf from GB south to Cape Hatteras	50 - 450 to 1500	Bottom habitats with fine grained substrate
Witch flounder	adult	GOME, outer continental shelf from GB south to Chesapeake Bay	25 - 300	Bottom habitats with fine grained substrate
Yellowtail flounder	juvenile	GB, GOME, southern NE continental shelf south to Delaware Bay and the following estuaries: Sheepscot R., Casco Bay, Mass. Bay to Cape Cod Bay	20 - 50	Bottom habitats with substrate of sand or sand and mud
Yellowtail flounder	adult	GB, GOME, southern NE continental shelf south to Delaware Bay and the following estuaries: Sheepscot R., Casco Bay, Mass. Bay to Cape Cod Bay	20 - 50	Bottom habitats with substrate of sand or sand and mud
Red crab	juvenile	Southern flank of GB and south the Cape Hatteras, NC	700 - 1800	Bottom habitats of continental slope with a substrate of silts, clays, and all silt-clay-sand composites
Red crab	adult	Southern flank of GB and south the Cape Hatteras, NC	200 - 1300	Bottom habitats of continental slope with a substrate of silts, clays, and all silt-clay-sand composites
Black sea bass	juvenile	Demersal waters over continental shelf from GOME to Cape Hatteras, NC, also includes estuaries from Buzzards Bay to Long Island Sound; Gardiners Bay, Barnegat Bay to Chesapeake Bay; Tangier/ Pocomoke Sound, and James River	1 - 38	Rough bottom, shellfish and eelgrass beds, manmade structures in sandy-shelly areas, offshore clam beds, and shell patches may be used during wintering
Black sea bass	adult	Demersal waters over continental shelf from GOME to Cape Hatteras, NC, also includes estuaries: Buzzards Bay, Narragansett Bay, Gardiners Bay, Great South Bay, Barnegat Bay to Chesapeake Bay; Tangier/ Pocomoke Sound, and James River	20 - 50	Structured habitats (natural and manmade), sand and shell substrates preferred
Ocean quahog	juvenile	Eastern edge of GB and GOME throughout the Atlantic EEZ	8 - 245	Throughout substrate to a depth of 3 ft within Federal waters, occurs progressively further offshore between Cape Cod and Cape Hatteras
Ocean quahog	adult	Eastern edge of GB and GOME throughout the Atlantic EEZ	8 - 245	Throughout substrate to a depth of 3 ft within Federal waters, occurs progressively further offshore between Cape Cod and Cape Hatteras

Species	Life Stage	Geographic Area of EFH	Depth (meters)	EFH Description
Atlantic surfclam	juvenile	Eastern edge of GB and the GOME throughout Atlantic EEZ	0 - 60, low density beyond 38	Throughout substrate to a depth of 3 ft within Federal waters, burrow in medium to coarse sand and gravel substrates, also found in silty to fine sand, but not in mud
Atlantic surfclam	adult	Eastern edge of GB and the GOME throughout Atlantic EEZ	0 - 60, low density beyond 38	Throughout substrate to a depth of 3 ft within Federal waters
Scup	juvenile	Continental shelf from GOME to Cape Hatteras, NC includes the following estuaries: Mass. Bay, Cape Cod Bay to Long Island Sound; Gardiners Bay to Delaware Inland Bays; and Chesapeake Bay	(0 - 38)	Demersal waters north of Cape Hatteras and inshore on various sands, mud, mussel, and eelgrass bed type substrates
Scup	adult	Continental shelf from GOME to Cape Hatteras, NC includes the following estuaries: Cape Cod Bay to Long Island Sound; Gardiners Bay to Hudson R./ Raritan Bay; Delaware Bay and Inland Bays; and Chesapeake Bay	(2 -185)	Demersal waters north of Cape Hatteras and inshore estuaries (various substrate types)
Summer flounder	juvenile	Over continental shelf from GOME to Cape Hatteras, NC; south of Cape Hatteras to Florida; also includes estuaries from Waquoit Bay to James R.; Albemarle Sound to Indian R.	0.5 – 5 in estuary	Demersal waters, on muddy substrate but prefer mostly sand; found in the lower estuaries in flats, channels, salt marsh creeks, and eelgrass beds
Summer flounder	adult	Over continental shelf from GOME to Cape Hatteras, NC; south of Cape Hatteras to Florida; also includes estuaries from Buzzards Bay, Narragansett Bay, Conn. R. to James R.; Albemarle Sound to Broad R.; St. Johns R., and Indian R.	0 - 25	Demersal waters and estuaries
Tilefish	juvenile	US/Canadian boundary to VA/NC boundary (shelf break, submarine canyon walls, and flanks: GB to Cape Hatteras)	76 - 365	Rough bottom, small burrows, and sheltered areas; substrate rocky, stiff clay, human debris
Tilefish	adult	US/Canadian boundary to VA/NC boundary (shelf break, submarine canyon walls, and flanks: GB to Cape Hatteras)	76 - 365	Rough bottom, small burrows, and sheltered areas; substrate rocky, stiff clay, human debris
Longfin squid	eggs	GB, southern NE and middle Atlantic to mouth of Chesapeake Bay	<50	Egg masses attached to rocks, boulders and vegetation on sand or mud bottom

Species	Life Stage	Geographic Area of EFH	Depth (meters)	EFH Description
Golden crab	juvenile	Chesapeake Bay to the south through the Florida Straight (and into the Gulf of Mexico)	290 - 570	Continental slope in flat areas of foraminifera ooze, on distinct mounds of dead coral, ripple habitat, dunes, black pebble habitat, low outcrop, and soft bioturbated habitat
Golden crab	adult	Chesapeake Bay to the south through the Florida Straight (and into the Gulf of Mexico)	290 - 570	Continental slope in flat areas of foraminifera ooze, on distinct mounds of dead coral, ripple habitat, dunes, black pebble habitat, low outcrop, and soft bioturbated habitat
Barndoor skate	juvenile	Eastern GOME, GB, Southern NE, Mid-Atlantic Bight to Hudson Canyon	10 - 750, mostly < 150	Bottom habitats with mud, gravel, and sand substrates
Barndoor skate	adult	Eastern GOME, GB, Southern NE, Mid-Atlantic Bight to Hudson Canyon	10 - 750, mostly < 150	Bottom habitats with mud, gravel, and sand substrates
Clearence skate	juvenile	GOME, along shelf to Cape Hatteras, NC; includes the estuaries from Hudson River/Raritan Bay south to the Chesapeake Bay mainstem	0 – 500, mostly < 111	Bottom habitats with substrate of soft bottom along continental shelf and rocky or gravelly bottom
Clearence skate	adult	GOME, along shelf to Cape Hatteras, NC; includes the estuaries from Hudson River/Raritan Bay south to the Chesapeake Bay mainstem	0 – 500, mostly < 111	Bottom habitats with substrate of soft bottom along continental shelf and rocky or gravelly bottom
Little skate	juvenile	GB through Mid-Atlantic Bight to Cape Hatteras, NC; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem	0 - 137, mostly 73 - 91	Bottom habitats with sandy or gravelly substrate or mud
Little skate	adult	GB through Mid-Atlantic Bight to Cape Hatteras, NC; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem	0 - 137, mostly 73 - 91	Bottom habitats with sandy or gravelly substrate or mud
Rosette skate	juvenile	Nantucket shoals and southern edge of GB to Cape Hatteras, NC	33 - 530, mostly 74 - 274	Bottom habitats with soft substrate, including sand/mud bottoms, mud with echinoid and ophiuroid fragments, and shell and pteropod ooze
Rosette skate	adult	Nantucket shoals and southern edge of GB to Cape Hatteras, NC	33 - 530, mostly 74 - 274	Bottom habitats with soft substrate, including sand/mud bottoms, mud with echinoid and ophiuroid fragments, and shell and pteropod ooze

Species	Life Stage	Geographic Area of EFH	Depth (meters)	EFH Description
Smooth skate	juvenile	Offshore banks of GOME	31 – 874, mostly 110 - 457	Bottom habitats with a substrate of soft mud (silt and clay), sand, broken shells, gravel and pebbles
Smooth skate	adult	Offshore banks of GOME	31 – 874, mostly 110 - 457	Bottom habitats with a substrate of soft mud (silt and clay), sand, broken shells, gravel and pebbles
Thorny skate	juvenile	GOME and GB	18 - 2000, mostly 111 - 366	Bottom habitats with a substrate of sand, gravel, broken shell, pebbles, and soft mud
Thorny skate	adult	GOME and GB	18 - 2000, mostly 111 - 366	Bottom habitats with a substrate of sand, gravel, broken shell, pebbles, and soft mud
Winter skate	juvenile	Cape Cod Bay, GB, southern NE shelf through Mid-Atlantic Bight to North Carolina; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem	0 - 371, mostly < 111	Bottom habitats with substrate of sand and gravel or mud
Winter skate	adult	Cape Cod Bay, GB southern NE shelf through Mid-Atlantic Bight to North Carolina; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem	0 - 371, mostly < 111	Bottom habitats with substrate of sand and gravel or mud
White hake	juvenile	GOME, southern edge of GB, southern NE to middle Atlantic and the following estuaries: Passamaquoddy Bay to Great Bay; Mass. Bay to Cape Cod Bay	5 - 225	Pelagic stage - pelagic waters; demersal stage - bottom habitat with seagrass beds or substrate of mud or fine grained sand

Table 20 EFH descriptions for all benthic life stages of federally-managed species in the U.S. Northeast Shelf Ecosystem. Species with EFH vulnerable to bottom tending gear are shaded (see Stevenson *et al.* 2004).

4.4.3 Effect of the Monkfish fishery on Essential Fish Habitat

Section 5.4 of the FSEIS to Amendment 2 evaluated the potential adverse effects of gears used in the directed monkfish fishery on EFH for monkfish and other federally-managed species and the effects of fishing activities regulated under other Federal FMPs on monkfish EFH. The evaluation considered the effects of each activity on each type of habitat found within EFH. The two gears used in the directed monkfish fishery are bottom trawls and bottom gill nets which are described in detail in Section 1.2.1 of Appendix 2 to Amendment 2 to the Monkfish FMP. Generally, otter trawls are towed at speeds of 2-3 knots over the bottom and the trawl doors and footrope contact the benthic environment. Conversely, while sink gill nets are deployed on the ocean bottom, they are stationary or static, anchored at each end and left in place for varying periods of time.

Monkfish EFH has been determined to only be minimally vulnerable to bottom-tending mobile gear (bottom trawls and dredges) and bottom gillnets (see Appendix 2 of Amendment 2 FSEIS). Therefore, the effects of the monkfish fishery and other fisheries on monkfish EFH do not require any management action. However, the monkfish trawl fishery does have more than a minimal and temporary impact on EFH for a number of other demersal species in the region. Adverse impacts that were more than minimal and not temporary in nature were identified for the following species and life stages, based on an evaluation of species life history and habitat requirements and the spatial distributions and impacts of bottom otter trawls in the region (Stevenson *et al.*, 2004):

Species and life stages with EFH more than minimally vulnerable to otter trawl gear (42):

American plaice (Juvenile (J), Adult (A)), Atlantic cod (J, A), Atlantic halibut (J, A), haddock (J, A), pollock (A), ocean pout (E, J, A), red hake (J, A), redfish (J, A), white hake (J), silver hake (J), winter flounder (A), witch flounder (J, A), yellowtail flounder (J, A), black sea bass (J, A), scup (J), tilefish (J, A), barndoor skate (J, A), clearnose skate (J, A), little skate (J, A), rosette skate (J, A), smooth skate (J, A), thorny skate (J, A), and winter skate (J, A).

There are no species or life stages for which EFH is more than minimally vulnerable to bottom gill nets (Stevenson *et al.*, 2004).

4.4.4 Measures to Minimize Adverse Impacts of the Monkfish Fishery on EFH

In Amendment 13 to the Multispecies FMP and Amendment 10 to the Scallop FMP, the NEFMC implemented a range of measures to minimize the impacts of bottom trawling in the Gulf of Maine, George's Bank and Southern New England. In addition to the significant reductions in DAS and some gear modifications, in Amendment 13 the Council closed 2,811 square nautical miles to bottom-tending mobile fishing gear (known as Habitat Closed Areas). Because the monkfish fishery overlaps significantly with the groundfish fishery in the NMA and the habitat closed areas extend into the SMA, measures to protect habitat in Amendment 10 and Amendment 13 assist in minimizing the effect of fishing on EFH in the monkfish fishery.

The alternatives implemented in Amendment 2 focus on those areas (offshore/shelf slope/canyons) and gears modifications (trawl mesh) where the monkfish fishery operations do not overlap (spatially or gear use) with the groundfish or scallop fishery. The Councils closed Oceanographer and Lydonia Canyons deeper than 200 meters, a total closure of 116 square nautical miles, to vessels on a monkfish DAS to minimize the impacts of the directed monkfish fishery on deepwater canyon, hard bottom communities. These two canyon areas are outside the range of the multispecies and scallop fisheries, but could be areas in which, or adjacent to where deep-water monkfish fisheries occur.

4.5 Human Environment, Vessels, Ports and Communities

This section updates information provided in the annual SAFE Report for the Monkfish FMP, adding data for the 2007 and 2008 fishing years.

4.5.1 Vessels and Fishery Sectors

The following sections show the distribution of effort and landings by permit category, area and gear type.

4.5.1.1 Permits

In 2008, there were 758 monkfish limited access permits, of which 341 were Category C permits holding limited access permits in either a Multispecies (60%) or Scallop (48%) fisheries, and 351 were Category D permits, primarily (99%) holding limited access Multispecies permits (Table 21). Overall, 73% of monkfish limited access permit holders also hold multispecies limited access permits. Vessels in all monkfish permit categories also hold limited access permits in a number of New England and Mid-Atlantic fisheries. Since Amendment 2, there are an additional seven Category H limited access permits issued for vessels fishing off the North Carolina/Virginia coast.

MONKFISH PERMIT CATEGORY	NUMBER OF MONKFISH PERMITS	NUMBER OF MONKFISH VESSELS ALSO ISSUED A LIMITED ACCESS PERMIT FOR:									
		BLACK SEA BASS	SUMMER FLOUNDER	LOBSTER	MULTI-SPECIES	OCEAN QUAHOG	RED CRAB	SCALLOP	SCUP	SQUID/ MACKEREL/ BUTTERFISH	TILEFISH
A	18	10	5	10	1	0	0	0	8	1	1
B	41	21	5	19	3	0	0	0	12	0	3
C	341	127	256	285	205	0	0	163	141	112	1
D	351	123	207	319	346	0	0	18	154	104	5
H	7	2	0	0	0	0	0	0	0	0	0
TOTAL	758	283	473	633	555	0	0	181	315	217	10

MONKFISH PERMIT CATEGORY	NUMBER OF MONKFISH PERMITS	PERCENT OF MONKFISH VESSELS ALSO ISSUED A LIMITED ACCESS PERMIT FOR:									
		BLACK SEA BASS	SUMMER FLOUNDER	LOBSTER	MULTI-SPECIES	OCEAN QUAHOG	RED CRAB	SCALLOP	SCUP	SQUID/ MACKEREL/ BUTTERFISH	TILEFISH
A	18	56%	28%	56%	0%	0%	0%	0%	44%	6%	6%
B	41	51%	12%	46%	7%	0%	0%	0%	29%	0%	7%
C	341	37%	75%	84%	60%	0%	0%	48%	41%	33%	0%
D	351	35%	59%	91%	99%	0%	0%	5%	44%	30%	1%
H	7	29%	0%	0%	0%	0%	0%	0%	0%	0%	0%
TOTAL	758	37%	62%	84%	73%	0%	0%	24%	42%	29%	1%

Table 21 Number and Percent of monkfish limited access vessels also issued a limited access permit in other fisheries in 2008, by permit category

The FMP also provides an open-access permit (Category E) for vessels that did not qualify for a limited access permit so those vessels can land monkfish caught incidentally in other fisheries. Table 22 shows that the number of category E permits increased rapidly during the first few years of the FMP, but has declined steadily since 2005, from 2,379 permits to 2,136 permits in 2008.

Fishing Year	Number of permits
1999	1466
2000	1882
2001	1991
2002	2142
2003	2120
2004	2256
2005	2379
2006	2310
2007	2265
2008	2163
TOTAL	4042

Table 22 Monkfish open-access (Category E) permits issued each year since implementation of the FMP in 1999.

The “total” is the number of unique Category E permits issued since inception of the plan.

4.5.1.2 Landings and Revenues

Table 23 shows monthly landings for FY2007 (a) and FY2008 (b) by area and gear, as well as total monthly landings since FY2002. Table 24 shows annual landings by management area and gear for FY1999-FY2008. Landings in both areas combined have declined each year since FY2005, and are approximately 40% of what they were at the peak in FY2003, and were at the lowest level since the inception of the FMP in 1999 (Figure 19). Monkfish landings increased between FY2002 and FY2003, principally due to the increase trip limits in the SMA but declined in FY2004 as trip limits and DAS allocations were reduced in that area. In FY2005 total landings increased by 1,272 mt, or about 7% due to an increase in SMA landings as a result of increased trip limits and DAS allocations, and in spite of a decline of 20% in NMA landings from the previous year. NMA landings have declined each year since FY2001, although trip limits were only established in FY2007, and in FY2008 were about 24% of what they were at the peak.

Table 25 shows monthly landings by gear from the dealer reports for FY2007 and FY 2008, both as reported (landed weight) and converted to live weight. The lower landed weights reflect the fact that monkfish are landed as tails only, and as whole fish. The lower ratio of landed weight to live weight for otter trawls (0.38), compared to gillnets (0.74), is the result of a greater proportion of tails being landed by otter trawls, while gillnet vessels land mostly whole fish. Readers should note that Table 25 includes all landings in the dealer database, while other tables reporting landed weights are filtered by permit category, and, therefore, may not include some dealer landings for which there is no permit number associated.

Figure 20 shows the long-term trend in landings (live weight equivalent) and revenues based on a calendar year. While landings have declined over 60% since the peak in 1997, nominal revenues have only declined by 22% since that time. Table 26, which is based on fishing year and landed weights, not calendar year and live weights as in Figure 20, shows a similar trend in revenues, but a long-term trend of higher nominal prices as reflected in the revenue per landed wt. trend.

Figure 21 illustrates the seasonal pattern of monkfish landings in FY2006, and the distinct difference between NMA and SMA fisheries, not only in terms of seasonality, but also in terms

of the predominant gear. In the NMA, trawl gear is the primary gear landing monkfish, and gillnet gear landings are a small proportion during the winter months. In the SMA, on the other hand, gillnet gear accounts for the majority of monkfish landings, with a peak in the late spring/early summer months when fish are migrating from deeper water, and showing less of a winter effect. Figure 22 shows the annual distribution of landings by gear for each area since FY1999. While the NMA pattern is fairly consistent over that period in terms of the proportion landed by gear type, the proportion of landings accounted for by trawl vessels has declined in the SMA, although it nearly doubled in FY2005 from the previous year.

(A) FY 2007

		MAY - 2007	JUN - 2007	JUL - 2007	AUG - 2007	SEP - 2007	OCT - 2007	NOV - 2007	DEC - 2007	JAN - 2008	FEB - 2008	MAR - 2008	APR - 2008	MAY 07- APR 08		2007*		2006*		Fishing Year* Landings
		Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Percent of Area	May07-Apr08 as a % of Target TAC	Target TAC	May06-Apr07 as a % of Target TAC	Target TAC	
NORTHERN		231	404	522	471	460	504	338	387	446	474	419	393	5,050	41%	101%	5,000	86%	7,737	
	OTTER TRAWL	217	263	239	227	247	365	233	288	432	473	413	387	3,786	31%	76%		62%		
	GILLNET	12	140	264	186	166	97	79	94	13	1	6	6	1,065	9%	21%		22%		
	HOOK	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	0%		0%		
	OTHER GEARS	1	1	18	58	46	42	25	5	1	1	0	0	199	2%	4%		2%		
SOUTHERN		1,183	802	396	306	235	430	825	926	642	423	317	697	7,180	59%	141%	5,100	161%	3,667	
	OTTER TRAWL	133	111	123	133	99	144	82	84	94	175	143	134	1,454	12%	29%		47%		
	GILLNET	908	577	195	63	16	138	599	734	481	170	127	507	4,514	37%	89%		92%		
	HOOK	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	0%		0%		
	OTHER GEARS	142	115	77	109	120	149	144	107	67	78	47	57	1,212	10%	24%		22%		
ALL AREAS		1,413	1,206	917	776	695	934	1,163	1,314	1,088	897	737	1,090	12,230	100%					
	OTTER TRAWL	350	374	363	360	346	509	315	373	526	648	556	521	5,240	43%					
	GILLNET	920	716	460	249	182	234	678	829	494	171	133	513	5,579	46%					
	HOOK	0	0	0	0	0	0	0	0	0	0	0	0	0	0%					
	OTHER GEARS	143	116	95	168	167	191	169	112	68	78	48	57	1,411	12%					
LANDINGS - ALL AREAS																				
	Fishing Year 2007	1,413	1,206	917	776	695	934	1,163	1,314	1,088	897	737	1,090	12,230						
	Fishing Year 2006	1,314	1,490	1,181	909	880	1,104	1,140	1,130	967	671	951	848	12,586						
	Fishing Year 2005	2,040	3,040	1,862	1,487	1,343	1,100	1,616	1,413	1,523	1,143	1,309	1,313	19,189						
	Fishing Year 2004	1,806	1,979	1,581	1,380	1,304	1,243	1,803	1,681	1,264	1,173	1,235	1,478	17,927						
	Fishing Year 2003	2,681	3,199	1,913	1,746	1,420	2,253	2,823	1,907	1,976	2,386	2,172	1,797	26,273						
	Fishing Year 2002	1,574	2,093	1,489	1,382	1,524	1,643	1,937	2,203	2,015	1,762	2,631	1,553	21,807						

(B) FY2008

		MAY - 2008	JUN - 2008	JUL - 2008	AUG - 2008	SEP - 2008	OCT - 2008	NOV - 2008	DEC - 2008	JAN - 2009	FEB - 2009	MAR - 2009	APR - 2009	MAY 08 - APR 09		2008*		2007*		Fishing Year* Landings
		Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Metric Tons	Percent of Area	May08-Apr09 as a % of Target TAC	Target TAC	May07-Apr08 as a % of Target TAC	Target TAC	
NORTHERN		170	237	295	266	268	294	249	284	505	378	393	187	3,528	34%	71%	5,000	101%	5,000	
	OTTER TRAWL	158	145	141	127	169	230	163	221	489	376	392	186	2,798	27%	56%		76%		
	GILLNET	10	87	150	135	95	61	85	62	16	1	1	1	702	7%	14%		21%		
	HOOK	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	0%		0%		
	OTHER GEARS	3	6	4	5	4	3	1	1	0	2	0	0	28	0%	1%		4%		
SOUTHERN		1,470	1,121	379	270	271	371	559	528	579	324	241	637	6,751	66%	132%	5,100	141%	5,100	
	OTTER TRAWL	103	105	65	136	142	152	89	140	83	144	70	182	1,410	14%	28%		29%		
	GILLNET	1,264	815	204	39	19	142	442	350	464	154	138	397	4,428	43%	87%		89%		
	HOOK	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	0%		0%		
	OTHER GEARS	103	202	110	96	110	77	27	39	32	26	33	58	912	9%	18%		24%		
ALL AREAS		1,641	1,359	674	537	539	665	808	812	1,084	703	634	824	10,279	100%					
	OTTER TRAWL	261	250	206	262	312	382	253	361	572	520	462	368	4,208	41%					
	GILLNET	1,274	901	354	173	114	203	527	411	480	155	139	398	5,130	50%					
	HOOK	0	0	0	0	0	0	0	0	0	0	0	0	0	0%					
	OTHER GEARS	106	208	114	101	114	79	28	40	32	28	33	58	941	9%					
LANDINGS - ALL AREAS																				
	Fishing Year 2008	1,641	1,359	674	537	539	665	808	812	1,084	703	634	824	10,279						
	Fishing Year 2007	1,413	1,206	917	776	695	934	1,163	1,314	1,088	897	737	1,090	12,230						
	Fishing Year 2006	1,314	1,490	1,181	909	880	1,104	1,140	1,130	967	671	951	848	12,586						
	Fishing Year 2005	2,040	3,040	1,862	1,487	1,343	1,100	1,616	1,413	1,523	1,143	1,309	1,313	19,189						
	Fishing Year 2004	1,806	1,979	1,581	1,380	1,304	1,243	1,803	1,681	1,264	1,173	1,235	1,478	17,927						
	Fishing Year 2003	2,681	3,199	1,913	1,746	1,420	2,253	2,823	1,907	1,976	2,386	2,172	1,797	26,273						
	Fishing Year 2002	1,574	2,093	1,489	1,382	1,524	1,643	1,937	2,203	2,015	1,762	2,631	1,553	21,807						

1. The three digit statistical areas defined below are for statistical and management purposes and may not be consistent with stock area delineation used for biological assessment (see the attached statistical chart).

Monkfish Stock Areas: Northern: 464-465, 467, 511-515, 521-522, 561-562
Southern: 525-526, 533-534, 537-539, 541-543, 611-639

2. Landings in live weight.

3. Gear data are based on vessel trip reports.

* Fishing Year is May 1 through April 30.

Table 23 Monkfish landings by area, gear and month for FY2006 (converted to live weight).

Monkfish FMP

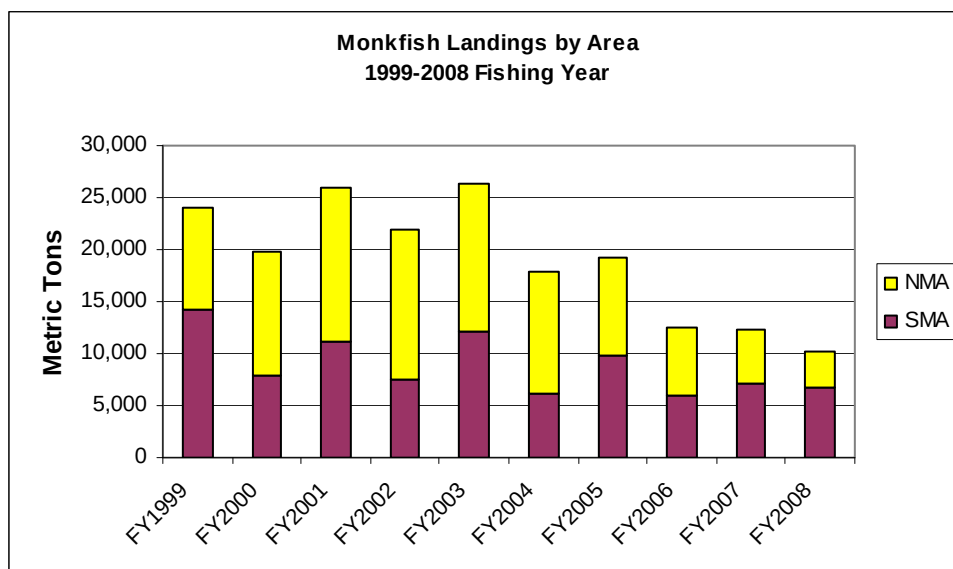


Figure 19 Monkfish landings by management area, FY1999 – 2008

Metric tons	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008
NORTHERN	9,720	11,859	14,853	14,491	14,221	11,704	9,325	6677	5,050	3,528
OTTER TRAWL	7,568	8,608	11,132	11,247	10,982	8,319	6,897	4808	3,786	2,798
GILLNET	1,651	2,947	3,416	3,152	3,024	3,336	2,361	1738	1,065	702
HOOK	0	0	1	0	0	2	3	2	0	0
OTHER GEARS	501	304	303	92	214	47	64	130	199	28
	0	0	0	0	0	0				
SOUTHERN	14,311	7,960	11,069	7,478	12,052	6,223	9,897	5909	7,180	6,751
OTTER TRAWL	5,382	3,359	2,628	1,114	1,619	1,482	2,886	1734	1,454	1,410
GILLNET	6,953	3,155	6,799	5,359	9,196	3,963	6,022	3365	4,514	4,428
HOOK	1	1	0	1	0	2	0	0	0	0
OTHER GEARS	1,975	1,445	1,643	1,005	1,236	776	989	810	1,212	912
	0	0	0	0	0	0				
ALL AREAS	24,031	19,819	25,922	21,969	26,272	17,927	19,222	12586	12,230	10,279
OTTER TRAWL	12,950	11,967	13,760	12,361	12,601	9,801	9,783	6542	5,240	4,208
GILLNET	8,604	6,102	10,214	8,510	12,220	7,299	8,384	5103	5,579	5,130
HOOK	1	2	1	1	1	4	3	2	0	0
OTHER GEARS	2,475	1,749	1,946	1,097	1,451	823	1,052	940	1,411	941

Table 24 Monkfish landings by management area and gear, FY1999 – 2008

(A)**LIVE WEIGHT for FY 2007**

Month	Otter Trawl	Scallop Dredge	Gillnet	Hook	Unspecified	Total Pounds
May	585,153	90,403	1,789,680	53,747	513,210	3,032,193
June	783,858	94,093	1,278,009	31,591	428,744	2,616,295
July	799,289	89,615	756,959	8,213	401,258	2,055,334
August	689,527	175,923	409,618	3,289	442,271	1,720,628
September	627,915	228,099	289,556	4,989	378,034	1,528,593
October	805,459	236,315	503,039	6,280	500,993	2,052,086
November	608,452	169,248	1,337,411	8,582	459,322	2,583,015
December	717,049	70,204	1,685,194	19,713	385,585	2,877,745
January	994,409	69,006	1,006,958	24,795	292,105	2,387,273
February	1,201,653	90,469	327,630	4,110	347,604	1,971,466
March	1,082,821	30,287	291,139	2,568	198,160	1,604,975
April	1,024,934	45,659	989,518	550	287,479	2,348,140
TOTAL	9,920,519	1,389,321	10,664,711	168,427	4,634,765	26,777,743

Source: NMFS Statistics Office, dealer weighout database

* May include data from CT vessels without a 2006 Monkfish permit

LANDED WEIGHT for FY 2007

Month	Otter Trawl	Scallop Dredge	Gillnet	Hook	Unspecified	Total Pounds
May	215,783	27,263	1,456,463	39,120	206,079	1,944,708
June	269,745	28,760	979,141	29,377	192,747	1,499,770
July	262,191	27,147	533,190	6,567	187,803	1,016,898
August	226,658	54,263	255,909	1,475	159,361	697,666
September	213,696	68,730	177,060	3,349	142,867	605,702
October	283,182	75,119	374,302	3,153	190,934	926,690
November	211,548	59,702	1,130,055	7,099	209,117	1,617,521
December	252,486	25,143	1,428,922	19,539	160,365	1,886,455
January	346,486	22,009	886,300	24,325	117,110	1,396,230
February	419,831	28,826	271,988	3,335	116,926	840,906
March	379,497	10,432	216,441	823	69,958	677,151
April	347,781	15,074	800,657	228	133,748	1,297,488
TOTAL	3,428,884	442,468	8,510,428	138,390	1,887,015	14,407,185

(B)**LIVE WEIGHT for FY 2008**

Month	Otter Trawl	Scallop Dredge	Gillnet	Hook	Unspecified	Total Pounds
May	467,066	67,823	2,292,856	14,263	501,662	3,343,670
June	559,059	100,310	1,511,422	8,712	571,319	2,750,822
July	408,334	66,369	635,406	8,099	308,438	1,426,646
August	491,305	85,611	295,165	9,523	296,200	1,177,804
September	569,270	115,997	193,442	6,881	303,522	1,189,112
October	755,844	95,893	370,994	7,523	237,486	1,467,740
November	539,950	31,893	935,111	24,237	201,788	1,732,979
December	763,489	36,909	742,877	19,560	191,225	1,754,060
January	1,179,163	18,814	1,013,318	12,408	156,435	2,380,138
February	1,046,807	23,147	320,241	20,312	137,030	1,547,537
March	1,003,188	29,378	212,830	5,239	126,671	1,377,306
April	839,197	24,246	693,936	16,857	156,804	1,731,040
TOTAL	8,622,672	696,390	9,217,598	153,614	3,188,580	21,878,854

Source: NMFS Statistics Office, dealer weighout database

* May include data from CT vessels without a 2006 Monkfish permit

LANDED WEIGHT for FY 2008

Month	Otter Trawl	Scallop Dredge	Gillnet	Hook	Unspecified	Total Pounds
May	157,870	21,638	1,833,500	9,090	229,763	2,251,861
June	189,975	30,984	1,138,124	2,774	218,030	1,579,887
July	138,836	21,060	404,087	3,509	116,759	684,251
August	158,924	29,027	169,230	4,817	94,401	456,399
September	185,934	39,263	100,486	2,752	93,410	421,845
October	266,100	33,164	292,890	4,680	91,279	688,113
November	195,284	12,070	742,642	21,978	104,634	1,076,608
December	276,424	13,524	559,465	15,358	82,726	947,497
January	417,142	7,185	912,976	11,334	65,369	1,414,006
February	335,700	9,879	302,758	21,022	56,612	725,971
March	327,308	9,419	182,535	3,648	47,330	570,240
April	274,163	9,711	589,680	14,660	66,080	954,294
TOTAL	2,923,660	236,924	7,228,373	115,622	1,266,393	11,770,972

Table 25 FY2007 (A) and FY2008 (B) monkfish landings from dealer reports, showing live weight (top) and landed weights (bottom).

Note: does not include landings in the dealer database for which there is no permit number associated, while other tables reporting landed weights are not filtered by permit category, and, therefore, include all dealer landings

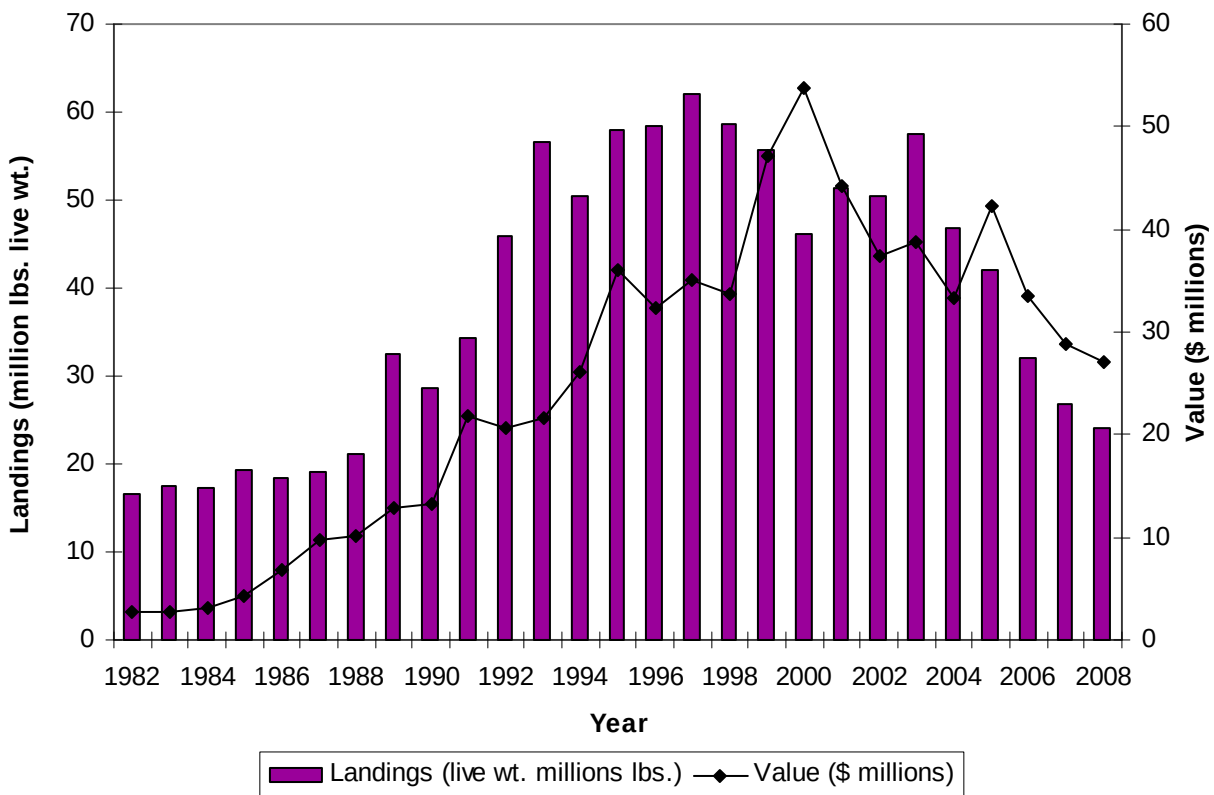


Figure 20 Calendar year monkfish landings and revenues, 1982-2008.

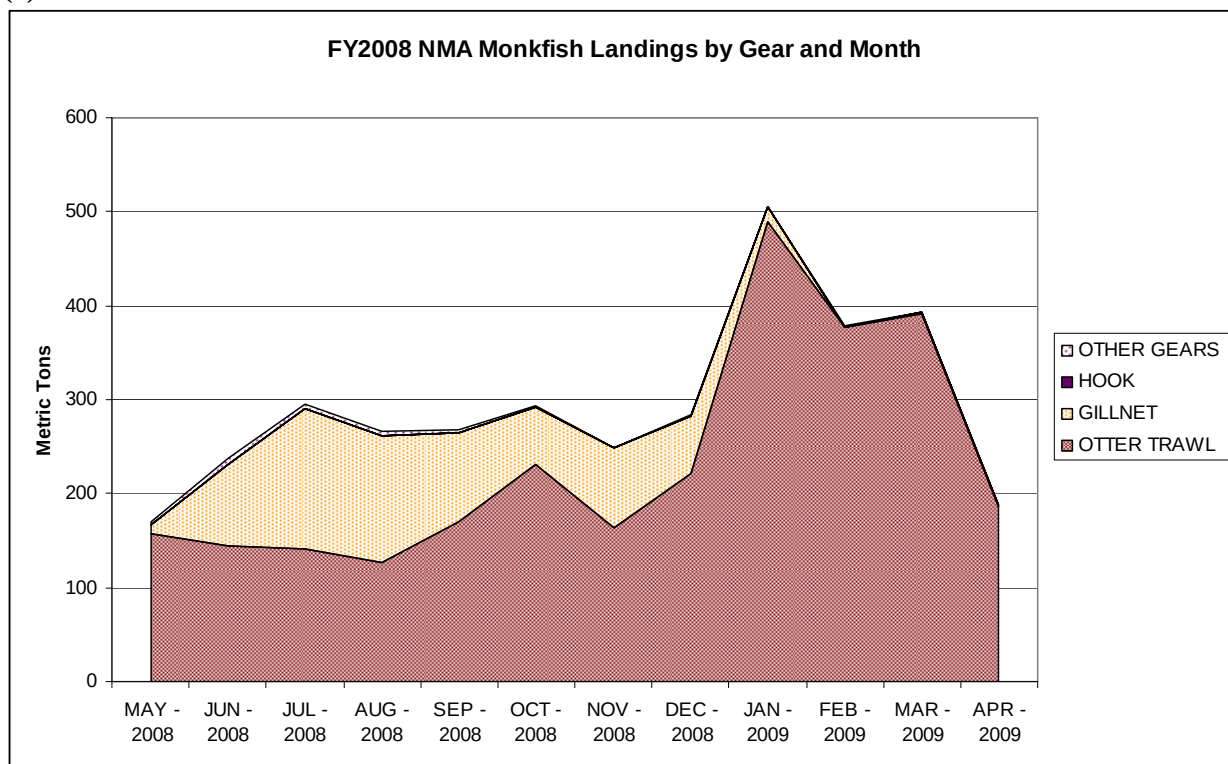
Fishing Year (May 1 - April 30)	Landings* (1,000 lbs. landed wt.)	Revenues* (\$1,000)	Revenue (\$) per landed wt. (lb)
1995	18,415.6	\$24,758.8	1.3
1996	20,732.6	\$26,188.5	1.3
1997	21,774.3	\$30,127.0	1.4
1998	24,156.0	\$34,682.0	1.4
1999	26,077.2	\$48,713.7	1.9
2000	23,422.8	\$46,122.9	2.0
2001	30,519.6	\$42,353.5	1.4
2002	25,312.0	\$35,256.4	1.4
2003	29,341.7	\$37,504.3	1.3
2004	17,843.1	\$30,142.3	1.7
2005	22,242.9	\$41,688.6	1.9
2006	14,299.2	\$27,790.3	1.9
2007	13,832.1	\$28,530.9	2.1
2008	11,498.1	\$22,854.7	2.0

* May include data from CT vessels without a 2001-2006 Monkfish permit

1995-2001 data based on vessels that were issued a monkfish permit during the 2001 fishing year. 2002-2008 fishing year data are based on vessels issued a monkfish permit during the 2002-2008 fishing years, respectively.

Table 26 Fishing year landings (in landed weights) and revenues, and revenue per landed wt., 1995 – 2008

(a)



(b)

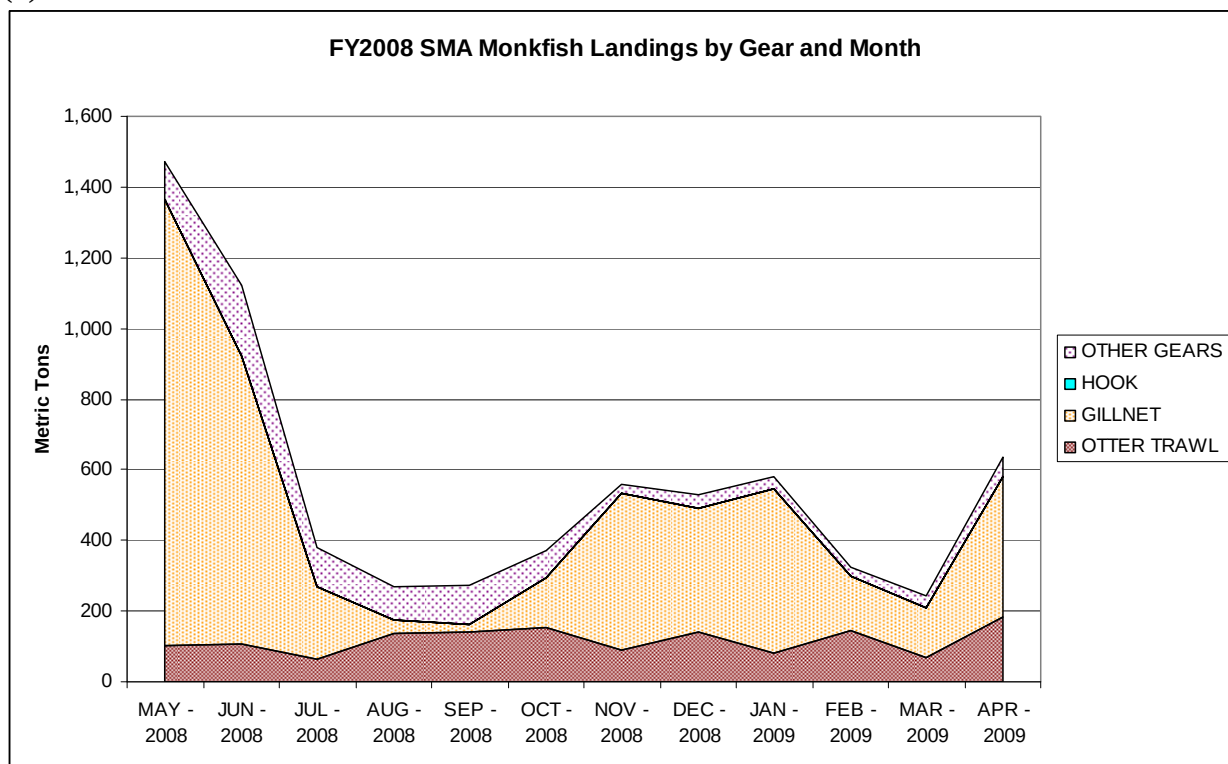
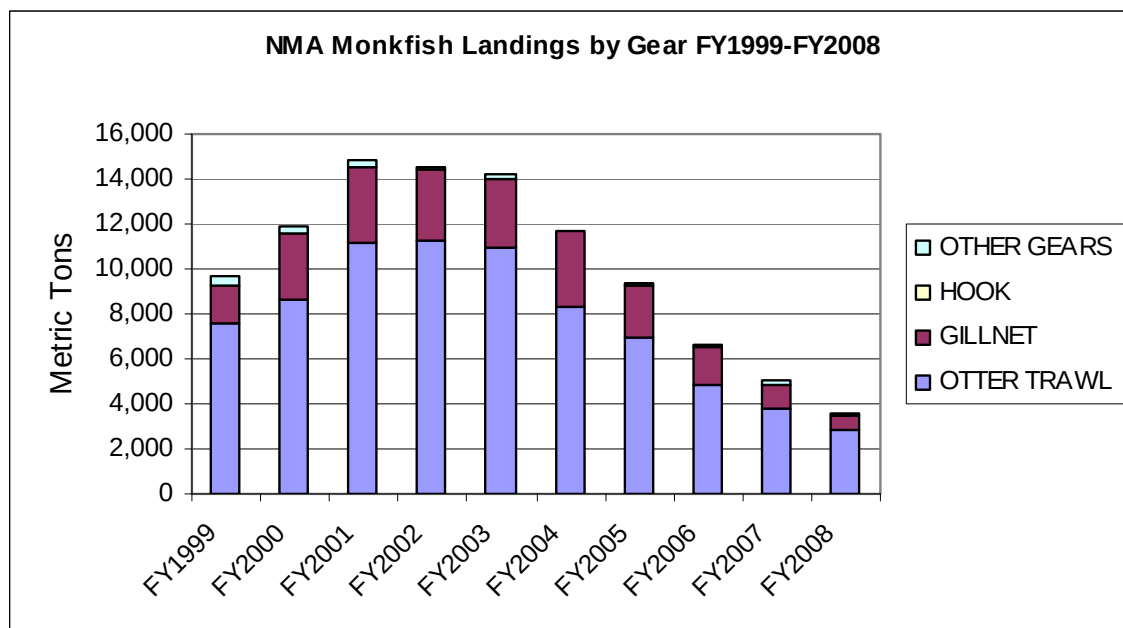


Figure 21 FY2008 NMA (a) and SMA (b) monkfish landings by gear and month

(a)



(b)

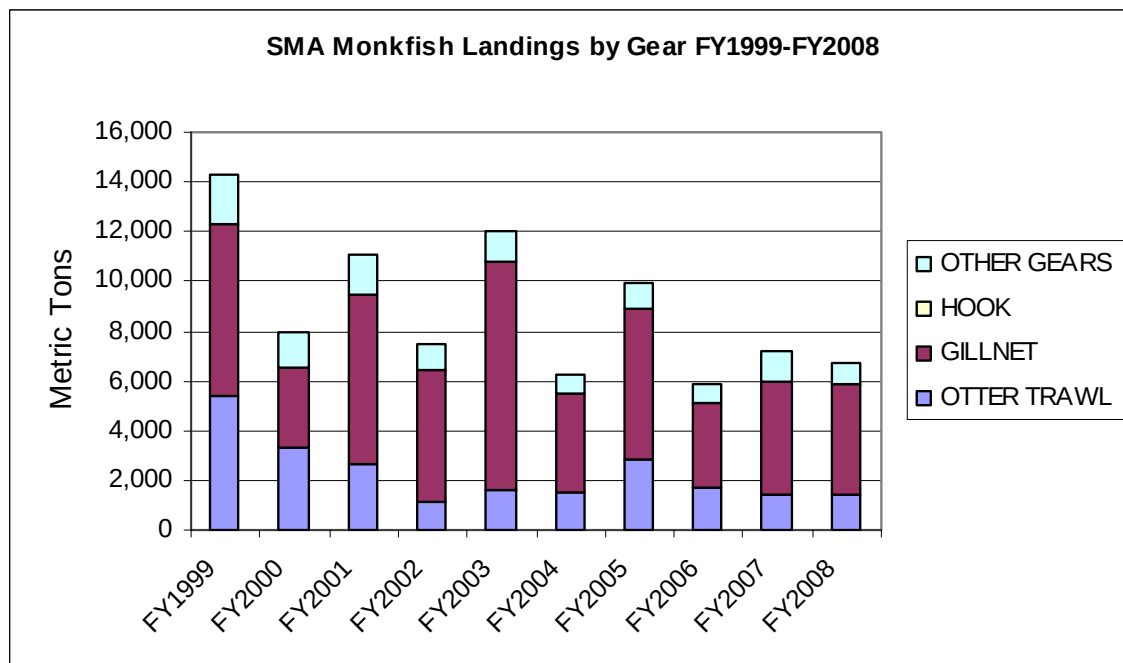


Figure 22 NMA (a) and SMA (b) monkfish landings by gear, FY1999 – 2008

While Massachusetts continues to account for the greatest proportion of all monkfish landings, all states have seen a decline in monkfish landings (Table 27). The state with the largest decline has been Maine, which used to be among the top two or three, and was in 2008 7th out of 10, leading only Maryland, North Carolina, and New Hampshire. New Hampshire has also shown a marked decline after rising in importance through the early years of the FMP. Landings in Maine and New Hampshire are entirely from the northern stock component, and the recent decline in those states' landings is reflective of the overall decline in landings from the northern stock component.

Table 28 and Table 29, below, show monkfish landings and revenues as a percentage of total landings and revenues by permit categories for FY1995 – 2008. For years prior to 2001, data is based on vessels that held a monkfish permit in 2001. For later years, the data is based on vessels that held a permit in those years. Data for Connecticut is shown separately because there may have been landings by vessels that did not have a Federal permit in 2001 – 2004 due to the way that state's landings are reported to NMFS.

Category A and B vessels continue to show a proportionally higher dependence on monkfish than Category C and D vessels, which also hold limited access permits in either scallops or multispecies. Category C vessels, of which 48% also hold scallop limited access permits have seen their dependence on monkfish revenues decline steadily as revenues from scallops have increased, and in FY2008 obtained only 3.7% of their total revenues from monkfish compared to approximately 13% prior to the implementation of the FMP and the rebound in the scallop resource.

When viewed by vessel length category (Table 30 and Table 31), a decreased reliance on monkfish is evident for all size classes since peaking in 1999-2000, especially in most recent years.

When viewed in aggregate, vessels that hold a monkfish permit are not significantly reliant on monkfish, as monkfish has accounted for less than 10% of total revenues during FY1995-2003, Table 32 and Table 33, and approximately 4% in FY2006-2008. While prior to FY2004 the proportion of monkfish remained relatively constant (4-5% of landings, 7-11% of revenues), it has declined in recent years. The proportion of most other species remained relatively constant, although the proportion of scallop landings and revenues has increased substantially, reflecting improvements in the scallop fishery in recent years.

STATE	Thousands of Pounds of Monkfish													
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
CT*	1,029	733	592	574	557	603	787	455	585	373	420	294	315	301
MA	10,023	8,955	9,893	11,353	11,167	10,643	12,298	10,684	12,059	8,346	10,794	7,141	5,973	4,754
MD	178	524	382	322	341	107	158	38	119	48	140	106	158	132
ME	1,815	1,932	2,102	1,986	3,193	3,993	5,012	4,971	3,716	2,902	2,091	977	525	290
NC	0	431	445	395	432	166	167	112	187	48	10	2	1	0
NH	329	401	523	452	801	1,477	1,928	1,233	909	1,087	790	397	199	149
NJ	1,414	2,321	2,680	3,903	4,371	2,825	5,261	3,886	5,349	2,195	3,245	2,521	3,021	2,661
NY	248	513	654	775	573	435	707	694	1,044	538	1,065	575	1,008	823
RI	2,829	4,080	3,732	3,597	3,969	2,720	3,519	2,808	4,617	1,928	2,901	1,824	2,073	1,864
VA	550	841	773	799	671	455	683	431	758	379	786	462	558	524
TOTAL	18,416	20,733	21,774	24,156	26,077	23,423	30,520	25,312	29,342	17,843	22,243	14,299	13,832	11,498

Source: NMFS Statistics Office, dealer weighout database & permit database

* May include data from CT vessels without a 2001-2006 Monkfish permit

1995-2001 data based on vessels that were issued a monkfish permit during the 2001 fishing year. 2002-2008 fishing year data are based on vessels issued a monkfish permit during the 2002-2008 fishing years, respectively.

Table 27 Monkfish landings by state (landed weight), FY1995-2008

Monkfish Permit Category	1,000 pounds, landed weight												FY 2007	FY 2008
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006		
A	453	817	563	1,093	1,277	845	1,152	1,072	1,375	727	1,117	596	932	992
% of Total A Landings	49.1%	54.1%	13.4%	10.0%	20.5%	6.5%	6.8%	4.6%	4.9%	14.1%	14.3%	9.2%	8.2%	8.6%
B	322	583	479	992	1,474	1,050	2,084	1,594	1,932	916	1,839	1,171	1,617	1,549
% of Total B Landings	14.0%	18.2%	23.4%	24.1%	36.9%	30.2%	46.4%	40.1%	48.9%	28.9%	42.7%	37.3%	44.6%	47.6%
C	11,504	12,322	12,364	12,144	11,876	10,583	12,708	10,359	11,021	6,700	8,486	5,445	4,798	3,702
% of Total C Landings	10.4%	9.3%	7.5%	8.2%	8.5%	6.9%	6.4%	7.9%	8.5%	5.3%	8.4%	6.1%	5.2%	3.8%
D	4,094	5,020	6,139	7,509	8,982	8,905	11,974	10,388	12,941	8,021	9,060	5,685	5,165	4,422
% of Total D Landings	4.6%	5.3%	5.8%	6.7%	11.1%	9.7%	11.7%	9.9%	12.9%	8.0%	10.7%	8.3%	7.2%	5.9%
H											207	197	183	204
% of Total H Landings											29.5%	28.1%	32.3%	32.5%
E (Open Access)	1,014	1,257	1,637	1,845	1,911	1,459	1,816	1,452	1,489	1,106	1,114	912	875	569
% of Total E Landings	0.5%	0.6%	0.5%	0.6%	0.8%	0.6%	0.7%	0.6%	0.4%	0.3%	0.3%	0.3%	0.3%	0.2%
CT	1,029	733	592	574	557	580	787	448	583	373	420	294	263	61
% of Total CT Landings	5.7%	4.0%	3.3%	3.5%	2.9%	3.3%	4.5%	2.9%	3.8%	2.4%	3.2%	2.8%	3.1%	2.3%
TOTAL MONK LANDED	18,416	20,733	21,774	24,156	26,077	23,423	30,520	25,312	29,342	17,843	22,243	14,299	13,832	11,498

Source: NMFS Statistics Office, dealer weighout database

* May include data from CT vessels without a 2001-2006 Monkfish permit

1995-2001 data based on vessels that were issued a monkfish permit during the 2001 fishing year. 2002-2008 fishing year data are based on vessels issued a monkfish permit during the 2002-2008 fishing years, respectively.

Table 28 Monkfish landings as a percent of total landings by permit category, 1995-2008.

Monkfish Permit Category	\$1,000, nominal (not discounted)												FY 2007	FY 2008
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006		
A	\$582	\$849	\$663	\$1,262	\$2,011	\$1,428	\$1,615	\$1,439	\$1,432	\$900	\$1,819	\$953	\$1,296	\$1,405
% of Total A Revenues	36.9%	41.4%	35.7%	51.2%	63.5%	46.6%	50.6%	42.5%	35.8%	38.2%	47.9%	29.8%	35.4%	33.2%
B	\$391	\$583	\$552	\$1,183	\$2,528	\$1,699	\$2,828	\$2,099	\$1,998	\$1,094	\$2,861	\$1,722	\$2,261	\$2,075
% of Total B Revenues	24.6%	33.5%	38.7%	49.6%	62.2%	48.1%	60.3%	53.3%	54.2%	31.4%	50.6%	41.5%	46.1%	51.6%
C	\$16,014	\$16,423	\$18,091	\$18,501	\$23,250	\$22,380	\$17,503	\$14,713	\$15,582	\$12,742	\$16,799	\$11,541	\$11,987	\$8,745
% of Total C Revenues	13.0%	12.0%	13.3%	14.0%	13.5%	11.5%	9.2%	7.4%	7.1%	5.0%	6.0%	4.6%	4.7%	3.7%
D	\$4,736	\$5,649	\$7,514	\$10,076	\$16,043	\$16,620	\$16,836	\$14,434	\$15,721	\$13,016	\$16,995	\$10,985	\$10,082	\$8,705
% of Total D Revenues	8.2%	9.3%	11.2%	14.9%	20.4%	19.9%	20.2%	17.3%	18.4%	14.4%	17.4%	12.3%	11.7%	9.9%
H											\$302	\$291	\$217	\$224
% of Total H Revenues											40.6%	49.9%	49.0%	49.3%
E (Open Access)	\$1,263	\$1,452	\$2,270	\$2,642	\$3,471	\$2,848	\$2,504	\$1,970	\$2,000	\$1,842	\$2,315	\$1,966	\$2,262	\$1,540
% of Total E Revenues	1.1%	1.2%	1.7%	2.1%	2.4%	1.9%	1.6%	1.2%	1.0%	0.7%	0.7%	0.7%	0.7%	0.5%
CT	\$1,772	\$1,233	\$1,036	\$1,018	\$1,410	\$1,148	\$1,067	\$603	\$772	\$548	\$597	\$333	\$426	\$163
% of Total CT Revenues	4.1%	2.5%	3.1%	3.0%	3.6%	3.8%	3.5%	2.2%	2.5%	1.7%	1.6%	0.9%	1.1%	4.0%
TOTAL MONK REVENUE	\$24,759	\$26,188	\$30,127	\$34,682	\$48,714	\$46,123	\$42,354	\$35,256	\$37,504	\$30,142	\$41,689	\$27,790	\$28,531	\$22,856

Source: NMFS Statistics Office, dealer weighout database

* May include data from CT vessels without a 2001-2006 Monkfish permit

1995-2001 data based on vessels that were issued a monkfish permit during the 2001 fishing year. 2002-2008 fishing year data are based on vessels issued a monkfish permit during the 2002-2008 fishing years, respectively.

Table 29 Monkfish revenues as a percent of total revenues by permit category, 1995-2008.

Vessel Length Category	1,000 pounds, landed weight													
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
0-29 Feet	70	61	21	20	50	62	73	54	55	42	26	1	1	4
% of Total 0-29 Landings	11.7%	10.5%	3.1%	2.5%	6.9%	7.1%	6.8%	6.5%	8.5%	4.9%	2.0%	0.1%	0.3%	1.0%
30-49 Feet	5,303	6,317	6,415	8,458	10,537	9,291	13,067	11,384	14,782	8,987	11,345	7,146	7,958	6,942
% of Total 30-49 Landings	8.7%	10.3%	10.7%	13.3%	18.5%	17.0%	24.0%	23.7%	28.3%	17.9%	22.9%	14.8%	15.2%	12.3%
50-69 Feet	2,675	3,771	3,398	4,057	4,550	4,983	7,056	5,919	6,364	3,249	4,073	2,240	2,063	1,685
% of Total 50-69 Landings	3.5%	4.7%	3.2%	4.7%	5.5%	5.9%	8.7%	7.6%	8.4%	4.6%	6.7%	3.9%	3.6%	2.8%
70-89 Feet	7,228	8,208	9,629	9,217	8,904	7,469	8,250	6,846	6,754	4,582	5,780	4,214	3,051	2,438
% of Total 70-89 Landings	4.0%	4.4%	3.6%	3.8%	4.0%	3.4%	3.5%	3.1%	2.9%	1.9%	3.0%	2.4%	1.7%	1.4%
90+ Feet	2,109	1,643	1,718	1,830	1,480	1,038	1,285	661	805	610	600	405	496	368
% of Total 90+ Landings	2.1%	1.3%	1.2%	1.1%	1.2%	0.7%	0.6%	0.4%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%
CT	1,029	733	592	574	557	580	787	448	583	373	420	294	263	61
% of Total CT Landings	5.7%	4.0%	3.3%	3.5%	2.9%	3.3%	4.5%	2.9%	3.8%	2.4%	3.2%	2.8%	3.1%	2.3%
TOTAL MONK LANDED	18,416	20,733	21,774	24,156	26,077	23,423	30,520	25,312	29,342	17,843	22,243	14,299	13,832	11,498

Source: NMFS Statistics Office, dealer weighout database

* CT data may include landings from vessels without a 2001-2008 Monkfish permit

1995-2001 data based on vessels that were issued a monkfish permit during the 2001 fishing year. 2002-2008 fishing year data are based on vessels issued a monkfish permit during the 2002-2008 fishing years, respectively.

Table 30 Monkfish landings as a percent of total landings by vessel length category, 1995 - 2008

Vessel Length Category	\$1,000, nominal (not discounted)													
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
0-29 Feet	\$72	\$60	\$34	\$25	\$99	\$98	\$98	\$66	\$61	\$57	\$42	\$2	\$3	\$11
% of Total 0-29 Revenues	8.3%	8.3%	3.3%	2.4%	8.9%	9.4%	8.4%	6.3%	6.4%	5.3%	3.2%	0.1%	0.2%	1.1%
30-49 Feet	\$5,657	\$6,474	\$7,049	\$9,933	\$16,887	\$16,199	\$18,410	\$15,353	\$15,822	\$11,744	\$18,739	\$11,414	\$11,902	\$10,640
% of Total 30-49 Revenues	13.1%	15.1%	15.4%	20.2%	29.3%	29.3%	31.0%	27.9%	28.1%	20.4%	20.9%	14.0%	14.1%	12.1%
50-69 Feet	\$3,524	\$4,530	\$4,488	\$5,718	\$8,669	\$9,963	\$9,931	\$8,460	\$8,583	\$6,307	\$8,285	\$5,086	\$5,377	\$3,994
% of Total 50-69 Revenues	7.2%	8.4%	7.7%	10.3%	13.0%	13.6%	13.5%	11.3%	11.0%	7.5%	8.2%	5.5%	5.9%	4.4%
70-89 Feet	\$10,548	\$11,509	\$14,712	\$14,957	\$18,420	\$16,034	\$11,161	\$9,894	\$11,040	\$10,142	\$12,783	\$9,926	\$9,323	\$7,021
% of Total 70-89 Revenues	7.1%	7.2%	8.6%	8.8%	8.7%	6.8%	4.8%	4.0%	3.9%	2.9%	3.3%	2.7%	2.5%	2.1%
90+ Feet	\$3,186	\$2,383	\$2,808	\$3,031	\$3,228	\$2,682	\$1,687	\$880	\$1,227	\$1,344	\$1,243	\$1,028	\$1,501	\$1,025
% of Total 90+ Revenues	5.6%	3.8%	4.7%	5.4%	4.9%	3.8%	2.3%	1.2%	1.4%	1.2%	1.0%	1.0%	1.4%	0.9%
CT	\$1,772	\$1,233	\$1,036	\$1,018	\$1,410	\$1,148	\$1,067	\$603	\$772	\$548	\$597	\$333	\$426	\$163
% of Total CT Revenues	4.1%	2.5%	3.1%	3.0%	3.6%	3.8%	3.5%	2.2%	2.5%	1.7%	1.6%	0.9%	1.1%	4.0%
TOTAL MONK REVENUE	\$24,759	\$26,188	\$30,127	\$34,682	\$48,714	\$46,123	\$42,354	\$35,256	\$37,504	\$30,142	\$41,689	\$27,790	\$28,531	\$22,855

Source: NMFS Statistics Office, dealer weighout database

* CT data may include landings from vessels without a 2001-2008 Monkfish permit

1995-2001 data based on vessels that were issued a monkfish permit during the 2001 fishing year. 2002-2008 fishing year data are based on vessels issued a monkfish permit during the 2002-2008 fishing years, respectively.

Table 31 Monkfish revenues as a percent of total revenues by vessel length category, 1995 – 2008

Species Category	1,000 pounds, landed weight													
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Dogfish	33,914	32,392	23,902	34,127	22,942	6,742	4,129	3,632	2,285	1,577	2,203	4,346	2,888	4,016
Dogfish % of Total Landings	7.8%	6.8%	4.0%	5.9%	4.6%	1.3%	0.7%	0.7%	0.4%	0.3%	0.4%	0.9%	0.6%	0.8%
Fluke	7,829	7,941	7,732	9,396	9,478	8,670	11,375	12,092	13,992	16,000	10,218	9,919	5,246	5,349
Fluke % of Total Landings	1.8%	1.7%	1.3%	1.6%	1.9%	1.7%	1.9%	2.3%	2.2%	2.6%	1.7%	2.0%	1.0%	1.0%
Monkfish	18,416	20,733	21,774	24,156	26,077	23,423	30,520	25,312	29,342	17,843	22,243	14,370	13,832	11,498
Monkfish % of Total Landings	4.2%	4.3%	3.7%	4.2%	5.2%	4.5%	5.0%	4.8%	4.6%	2.9%	3.8%	2.9%	2.7%	2.2%
Multispecies	47,365	53,830	62,951	67,977	68,654	88,081	102,517	83,362	81,268	75,713	63,124	48,026	58,864	65,403
Multispecies % of Total Landings	10.8%	11.3%	10.6%	11.7%	13.6%	16.8%	17.0%	16.0%	12.6%	12.4%	10.7%	9.7%	11.7%	12.2%
Scallops	14,535	15,852	11,834	12,565	23,332	35,380	47,297	50,541	58,583	60,688	53,108	59,065	58,688	51,258
Scallops % of Total Landings	3.3%	3.3%	2.0%	2.2%	4.6%	6.8%	7.8%	9.7%	9.1%	9.9%	9.0%	11.9%	11.6%	9.6%
Skates	9,134	17,503	16,740	18,756	18,061	17,643	17,987	16,849	20,890	15,163	15,378	15,977	20,946	19,954
Skates % of Total Landings	2.1%	3.7%	2.8%	3.2%	3.6%	3.4%	3.0%	3.2%	3.2%	2.5%	2.6%	3.2%	4.2%	3.7%
Other	306,209	329,535	448,958	412,327	334,735	343,322	390,973	330,310	436,943	424,469	421,911	343,949	343,499	377,035
Other % of Total Landings	70.0%	69.0%	75.6%	71.2%	66.5%	65.6%	64.6%	63.3%	67.9%	69.4%	71.7%	69.4%	68.2%	70.5%
TOTAL LBS. LANDED	437,402	477,786	593,890	579,303	503,280	523,261	604,797	522,098	643,303	611,452	588,184	495,652	503,963	534,514

Source: NMFS Statistics Office, dealer weighout database

* CT data may include landings from vessels without a 2001-2008 Monkfish permit

1995-2001 data based on vessels that were issued a monkfish permit during the 2001 fishing year. 2002-2008 fishing year data are based on vessels issued a monkfish permit during the 2002-2008 fishing years, respectively.

Table 32 FY1995-2008 Landings of monkfish and other species as a percent of total landings, on vessels with a monkfish permit in 2001 – 2008.

Species Category	\$1,000, nominal (not discounted)													
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Dogfish	\$6,610	\$6,003	\$3,555	\$5,876	\$4,072	\$1,798	\$1,110	\$870	\$537	\$444	\$565	\$1,121	\$682	\$1,225
Dogfish % of Total Revenues	1.9%	1.6%	1.0%	1.6%	0.9%	0.4%	0.2%	0.2%	0.1%	0.1%	0.1%	0.2%	0.1%	0.2%
Fluke	\$13,961	\$13,243	\$14,061	\$14,418	\$16,148	\$13,663	\$14,303	\$16,649	\$20,898	\$23,387	\$18,658	\$20,822	\$13,316	\$11,577
Fluke % of Total Revenues	4.1%	3.6%	3.8%	3.9%	3.7%	2.9%	3.1%	3.5%	3.9%	3.7%	2.5%	3.1%	1.9%	1.8%
Monkfish	\$24,759	\$26,188	\$30,127	\$34,682	\$48,714	\$46,123	\$42,354	\$35,256	\$37,504	\$30,142	\$41,689	\$27,442	\$28,531	\$22,855
Monkfish % of Total Revenues	7.3%	7.1%	8.2%	9.5%	11.0%	9.9%	9.0%	7.3%	6.9%	4.7%	5.6%	4.1%	4.1%	3.6%
Multispecies	\$57,323	\$60,825	\$71,309	\$82,758	\$83,994	\$93,590	\$102,072	\$98,877	\$88,851	\$79,971	\$81,588	\$73,506	\$81,222	\$80,878
Multispecies % of Total Revenues	16.8%	16.5%	19.3%	22.6%	19.0%	20.0%	21.8%	20.5%	16.4%	12.6%	11.0%	10.9%	11.6%	12.9%
Scallops	\$75,624	\$92,763	\$76,005	\$72,999	\$122,812	\$169,407	\$171,466	\$201,193	\$244,876	\$335,213	\$414,629	\$373,586	\$387,355	\$349,164
Scallops % of Total Revenues	22.2%	25.2%	20.6%	19.9%	27.8%	36.3%	36.6%	41.8%	45.1%	52.7%	56.1%	55.6%	55.5%	55.7%
Skates	\$2,708	\$5,440	\$3,071	\$3,471	\$3,234	\$3,598	\$3,105	\$3,489	\$4,518	\$3,241	\$4,313	\$5,414	\$6,475	\$5,380
Skates % of Total Revenues	0.8%	1.5%	0.8%	0.9%	0.7%	0.8%	0.7%	0.7%	0.8%	0.5%	0.6%	0.8%	0.9%	0.9%
Other	\$159,711	\$163,907	\$171,432	\$152,363	\$162,812	\$138,606	\$133,675	\$125,062	\$145,211	\$163,784	\$177,253	\$170,210	\$180,063	\$155,783
Other % of Total Revenues	46.9%	44.5%	46.4%	41.6%	36.9%	29.7%	28.6%	26.0%	26.8%	25.7%	24.0%	25.3%	25.8%	24.9%
TOTAL REVENUE	\$340,696	\$368,369	\$369,559	\$366,568	\$441,785	\$466,785	\$468,085	\$481,396	\$542,395	\$636,182	\$738,695	\$672,101	\$697,643	\$626,861

Source: NMFS Statistics Office, dealer weighout database

* CT data may include landings from vessels without a 2001-2008 Monkfish permit

1995-2001 data based on vessels that were issued a monkfish permit during the 2001 fishing year. 2002-2008 fishing year data are based on vessels issued a monkfish permit during the 2002-2008 fishing years, respectively.

Table 33 FY1995-2008 Revenues of monkfish and other species as a percent of total landings, on vessels with a monkfish permit in 2001-2008.

4.5.1.3 Days-at-sea (DAS)

Starting in Year 2 of the FMP (May, 2000 –April, 2001) limited access monkfish vessels (Categories A, B, C, and D) were allocated 40 monkfish DAS. By definition, Category A and B vessels do not qualify for limited access multispecies or scallop permits, and Category C and D vessels must use either a multispecies or scallop DAS while on a monkfish DAS. Beginning in FY2005 seven vessels qualified for a permit Category H fishery under the provisions adopted in Amendment 2, for vessels fishing exclusively in the southernmost area of the fishery.

In the NMA, until this year under Framework 4 which took effect in FY2007, vessels were not required to use a monkfish DAS, as there was no monkfish trip limit when a limited access vessel is on a multispecies DAS. Therefore, DAS usage was been well below the total DAS allocated, and primarily reflected monkfish fishing activity in the SMA. Starting in FY2007, vessels in both areas were required to use a monkfish DAS when exceeding the applicable incidental limit. The effect of this requirement shows the total DAS used increased from FY2006. DAS used by permit category since the inception of the plan is shown in Figure 23.

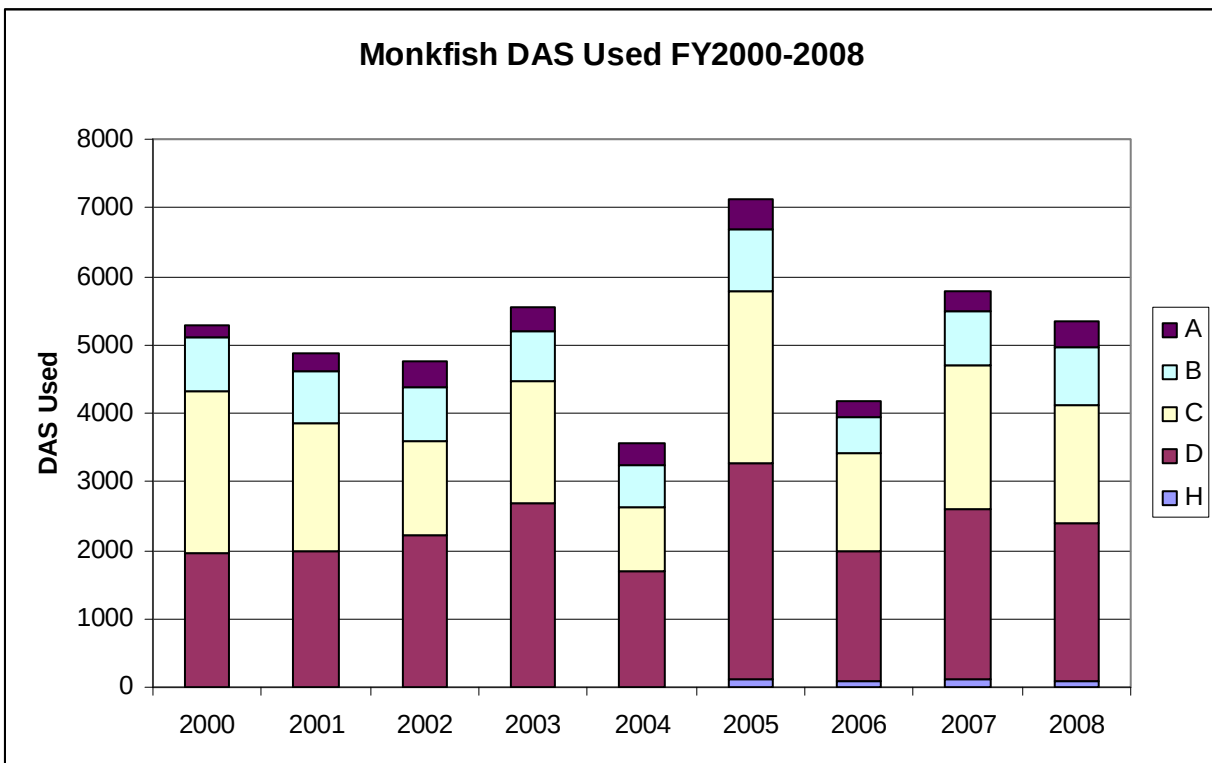


Figure 23 DAS used by permit category, FY2000 – 2008.

As shown in Table 34, only about one-third of the limited access vessels used at least one monkfish DAS in FY2007 and FY2008, and the total DAS used was only about one-quarter of the total allocated. This represents a substantial amount of latent effort in the fishery, however, even among active vessels (those that used at least one monkfish DAS), not all allocated DAS

are used. Only about 64% of allocated DAS were used by active vessels. Part of this latent effort can be explained by the fact that nearly one-half of the permit category C vessels, 153 vessels, are limited access scallop vessels who choose not to use a scallop DAS to target monkfish under the monkfish DAS usage requirements because of the greater profitability of using scallop DAS to target scallops (Table 35).

A second part of the unused DAS, even among active vessels, appears to result of the low monkfish DAS usage rate by vessels fishing in the NMA. For active vessels, that is, those that used at least one DAS, in FY2008, the usage rate is distinctly different between the two management areas. Of the 125 active vessels in the NMA most were not constrained by the allocation of 31 DAS, plus 4 DAS carryover, and the median number of DAS used in the NMA was 6 DAS (Figure 24). In contrast, among the 214 active vessels in the SMA the median number of DAS used was 22 of their 27 available DAS, (23 plus 4 carryover) (Figure 25). All vessels in the SMA had 4 carryover DAS, regardless of DAS usage in the prior year, since their full allocation was 31 DAS, with a restriction that only 23 could be used in the SMA.

FY2007 (May 2007 - April 2008)

Permit Category	All Vessels				Active Vessels*			
	Total Number of Permits	DAS Allocated	DAS Used	% Used	Number of Active Vessels	DAS Allocated	DAS Used	% Used
A	15	455	284	62%	12	364	284	78%
B	41	1,242	771	62%	30	909	771	85%
C	339	10,272	2,125	21%	102	3,091	2,125	69%
D	366	11,090	2,485	22%	137	4,151	2,485	60%
H	7	212	103	49%	6	182	103	57%
TOTAL	768	23,270	5,768	25%	287	8,696	5,768	66%

Source: NMFS Days-at-Sea (DAS) database.

* Active = vessels that used at least 1 Monk Fish DAS

FY2008 (May 2008 - April 2009)

Permit Category	All Vessels				Active Vessels*			
	Total Number of Permits	DAS Allocated	DAS Used	% Used	Number of Active Vessels	DAS Allocated	DAS Used	% Used
A	18	545	378	69%	15	455	378	83%
B	41	1,242	859	69%	36	1,091	859	79%
C	341	10,332	1,703	16%	94	2,848	1,703	60%
D	351	10,635	2,298	22%	124	3,757	2,298	61%
H	7	212	102	48%	7	212	102	48%
TOTAL	758	22,966	5,340	23%	276	8,363	5,340	64%

Source: NMFS Allocation Management System (AMS) database.

* Active = vessels that used at least 1 Monk Fish DAS

Table 34 Monkfish DAS usage, FY2007 & FY 2008

FY2007

Permit Category	Area	Number of Active Vessels	Monkfish	Monkfish/ Multispecies	Monkfish/ Scallop	DAS Used	Average DAS Usage
A	NMA	7	55	0	0	55	7.9
B	NMA	14	39	0	0	39	2.8
C	NMA	52	0	981	0	981	18.9
D	NMA	78	0	744	0	744	9.5
Total		151	94	1,725	0	1,819	12.0
A	SMA	12	230	0	0	230	19.2
B	SMA	30	732	0	0	732	24.4
C	SMA	65	0	1,143	0	1,143	17.6
D	SMA	95	0	1,741	0	1,741	18.3
H	SMA	6	0	103	0	103	17.2
Total		208	962	2,987	0	3,949	19.0

Source: NMFS Days-at-Sea (DAS) database.

* Active = vessels that used at least 1 Monk Fish DAS

FY2008

Permit Category	Area	Number of Active Vessels	Monkfish	Monkfish/ Multispecies	Monkfish/ Scallop	DAS Used	Average DAS Usage
A	NMA	6	15	0	0	15	2.5
B	NMA	18	32	0	0	32	1.8
C	NMA	47	0	741	0	741	15.8
D	NMA	53	0	520	0	520	9.8
Total		124	47	1,261	0	1,308	10.5
A	SMA	15	363	0	0	363	24.2
B	SMA	36	827	0	0	827	23.0
C	SMA	60	0	961	0	961	16.0
D	SMA	95	0	1,778	0	1,778	18.7
H	SMA	7	0	102	0	102	14.6
Total		213	1,190	2,841	0	4,031	18.9

Source: NMFS Days-at-Sea (DAS) database.

* Active = vessels that used at least 1 Monk Fish DAS

Table 35 Monkfish-only, Monkfish/Multispecies and Monkfish/Scallop DAS Usage by active vessels by area, FY2007 and FY2008.

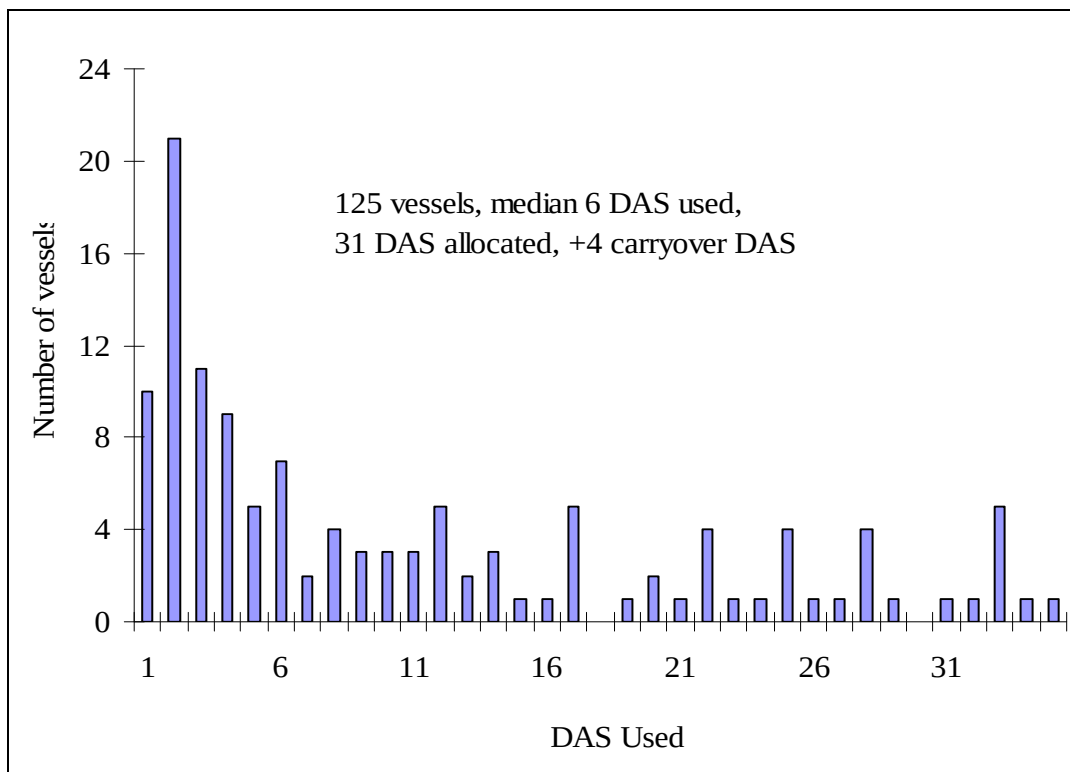


Figure 24 2008 NMA monkfish DAS usage frequency distribution.

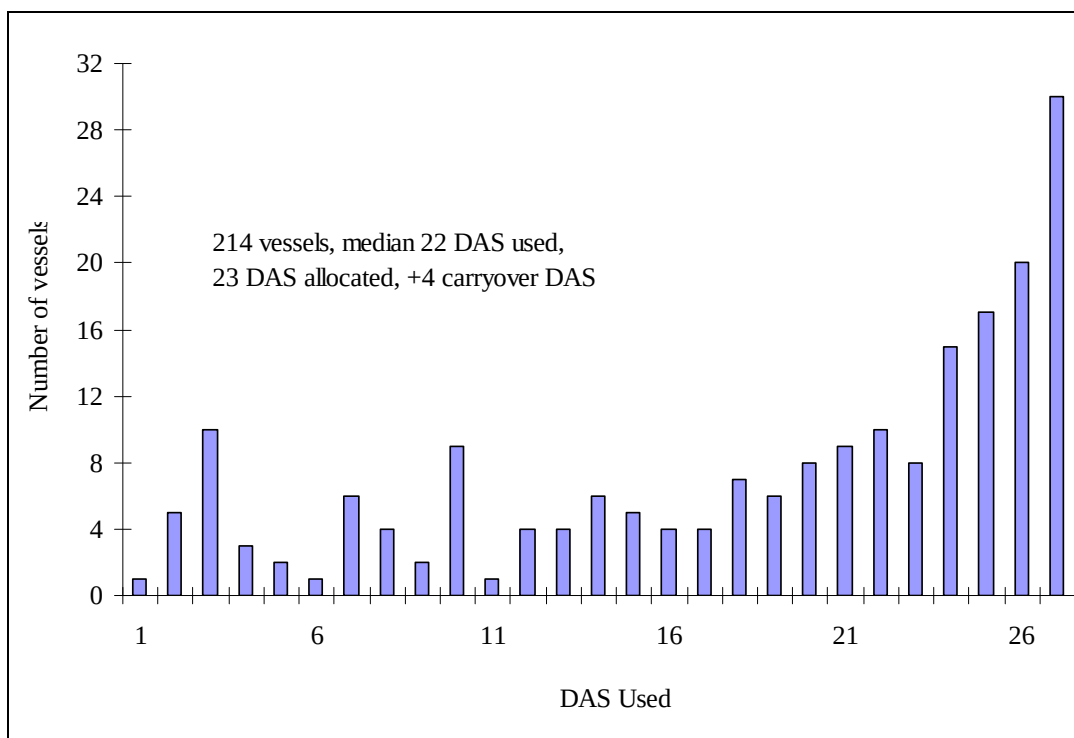


Figure 25 2008 SMA monkfish DAS usage frequency distribution.

4.5.2 Ports and communities

This section updates information contained in the FSEIS for Amendment 2, as well as in the SAFE Report for the 2006 fishing year prepared in conjunction with Framework 5. The Monkfish FMP references Amendments 5 and 7 to the Northeast Multispecies FMP and Amendment 4 to the Sea Scallop FMP for social and cultural information about monkfish ports, including port profiles. Because of the nature of the monkfish fishery, there is significant overlap between the vessels and communities involved with the monkfish fishery and those involved with the multispecies (groundfish) and scallop fisheries. Many of the same boats that target monkfish or catch them incidentally also target groundfish or scallops. Only about six percent of the limited access monkfish permit holders do not also hold limited access permits in either the multispecies or scallop fisheries.

For the purposes of this SAFE Report, “primary monkfish ports” are defined as those averaging more than \$1,000,000 in monkfish revenues from 1994-1997 (based on the dealer weighout data presented in Table 45 of the Monkfish FMP). “Secondary monkfish ports” are defined as those averaging more than \$50,000 in monkfish revenues from 1994-1997 (based on the dealer weighout data presented in the Monkfish FMP).

Primary monkfish ports include:

- Portland, ME
- Boston, MA
- Gloucester, MA
- New Bedford, MA
- Long Beach/Barnegat Light, NJ, and
- Point Judith, RI.

Secondary monkfish ports include:

- Rockland, ME
- Port Clyde, ME
- South Bristol, ME
- Ocean City, MD
- Chatham, MA
- Provincetown, MA
- Scituate, MA
- Plymouth, MA
- Westport, MA
- Portsmouth, NH
- Point Pleasant, NJ
- Cape May, NJ
- Greenport, NY
- Montauk, NY
- Hampton Bay, NY
- Newport, RI

- Hampton, VA, and
- Newport News, VA.

Table 36 shows the distribution of monkfish permit holders by homeport and monkfish permit category for the six primary, 18 secondary, and “other” monkfish ports for FY2000 - 2008. Table 37 shows monkfish landings for five of the six major ports (as reported by NMFS in their regular “Northeast Preliminary Fisheries Statistics” Report, not including Long Beach/Barnegat Light, NJ) and states, broken down by management area from which landings were reported, as well as by gear type. Virtually all of the monkfish landed in Portland, Gloucester and Boston come from the NMA, while the proportion of NMA landings in New Bedford has declined from about 50% in previous years to 38% in 2007 and 29% in 2008. Nearly all of Pt. Judith’s landings are from the SMA. Portland and Boston’s landings are almost entirely from otter trawls, while otter trawls make up about 62% of New Bedford landings. Gloucester and Pt. Judith landings are evenly split between trawls and gillnets. New Hampshire, New York and New Jersey landings are predominately (>75%) caught by gillnet gear. This is similar to the distribution by gear for each port in previous fishing years, as reported in earlier SAFE reports, except that in FY2003 New Bedford monkfish landings by scallop dredge (included in “other gear” in the table) were 18% of the port’s monkfish landings, while in FY2004 those declined to 12% and in FY2005 to 9%, before returning to 2003 levels in FY2006 and increasing to 29% in 2007. The proportion of landings by dredges in New Bedford declined slightly in 2008 to 22%.

Port landings and revenue data based on May-April fishing year is presented in Table 38 and Table 39, for primary and secondary ports (as identified in the original FMP), respectively, for FY1995-FY2008. Data is based on the vessel’s homeport and, for FY2008, on the vessel’s principal port of landing as indicated on the permit application. Vessels homeported in New Bedford recorded the highest monkfish landings and revenues from 1995-1999, although their share has declined in recent years. In FY2007 and FY2008, the port of Long Beach/Barnegat Light, NJ, emerged as the homeport with the highest landings. Portland, which averaged nearly 1.8 million pounds from 1995-2003 has declined steadily, and in 2008 landed only 0.25 million pounds.

There has been an overall decline in landings and revenues from the peak during the FY1999-FY2001 period that is reflected in the port data. In nearly all cases, the revenues from monkfish as a percentage of total revenues by port also declined, the exceptions being Chatham, MA and Hampton Bays, NY (Table 40). While some of these effects could be due to increases in revenues from other fisheries (such as scallops in New Bedford), in most cases it can be attributable to declines in monkfish landings.

HOMEPORT	FY 2000 by Category						FY 2001 by Category						FY 2002 by Category						FY 2003 by Category						FY 2004 by Category						
	A	B	C	D	E	TOTAL	A	B	C	D	E	TOTAL	A	B	C	D	E	TOTAL	A	B	C	D	E	TOTAL	A	B	C	D	E	TOTAL	
PRIMARY PORTS	4	16	196	153	351	720	4	16	200	161	366	747	4	17	194	158	403	776	5	17	203	160	396	781	4	15	206	161	398	784	
Portland	ME	X	X	11	16	18	46	X	X	11	10	21	43	X	X	10	14	20	45	X	X	12	17	27	57	X	X	15	19	24	58
Boston	MA	X	X	46	47	137	233	X	X	42	49	128	222	X	X	43	43	126	215	X	X	39	40	116	198	X	X	39	29	100	169
Gloucester	MA	X	X	18	34	104	156	X	X	19	35	110	164	X	X	18	33	138	189	X	X	20	34	129	183	X	X	21	38	133	192
New Bedford	MA	X	X	93	30	41	165	X	X	100	34	53	187	X	X	94	35	68	197	X	X	102	33	68	203	X	X	102	44	77	223
Barnegate Light	NJ	X	13	9	12	17	52	X	13	10	17	19	61	X	14	11	17	15	59	X	14	10	20	19	65	X	15	11	17	23	68
Point Judith	RI	X	X	19	14	34	68	X	X	18	16	35	70	X	X	18	16	36	71	X	X	20	16	37	75	X	X	18	14	41	74
SECONDARY PORTS	X	6	56	73	335	470	3	8	57	73	362	503	3	8	59	74	388	532	5	10	61	77	396	549	4	11	64	82	451	612	
Rockland	ME	X	X	X	X	5	7	X	X	X	X	8	10	X	X	X	X	4	5	X	X	X	X	3	4	X	X	X	X	6	7
Port Clyde	ME	X	X	3	3	6	12	X	X	5	3	5	13	X	X	5	3	5	13	X	X	5	4	5	14	X	X	5	5	5	15
South Bristol	ME	X	X	X	3	6	11	X	X	X	3	5	10	X	X	X	3	4	9	X	X	X	4	3	9	X	X	X	5	6	13
Ocean City	MD	X	X	X	X	13	13	X	X	X	X	14	14	X	X	X	X	14	14	X	X	X	X	16	16	X	X	X	X	18	18
Chatham	MA	X	X	X	11	47	58	X	X	X	12	46	58	X	X	X	12	69	81	X	X	X	14	71	85	X	X	X	15	64	79
Provincetown	MA	X	X	X	5	11	16	X	X	X	6	12	18	X	X	X	5	13	18	X	X	X	3	14	17	X	X	X	3	20	23
Scituate	MA	X	X	3	7	27	37	X	X	X	7	26	34	X	X	X	7	30	38	X	X	X	6	31	38	X	X	X	7	32	39
Plymouth	MA	X	X	X	X	13	15	X	X	X	X	17	21	X	X	X	X	18	22	X	X	X	3	17	23	X	X	X	3	24	31
Westport	MA	X	X	X	6	14	21	X	X	X	6	18	25	X	X	X	5	18	24	X	X	X	5	19	25	X	X	X	4	19	23
Portsmouth	NH	X	X	4	14	17	35	X	X	3	12	19	34	X	X	3	10	23	36	X	X	3	10	19	32	X	X	3	12	32	47
Point Pleasant	NJ	X	3	X	3	27	35	X	4	X	X	30	39	X	3	X	5	32	42	X	4	X	4	33	44	X	4	X	4	37	47
Cape May	NJ	X	X	19	5	49	73	X	X	16	6	55	79	X	X	18	5	59	84	X	X	20	6	66	94	X	X	23	6	75	106
Greenport	NY	X	X	X	X	4	6	X	X	X	X	5	6	X	X	X	X	6	7	X	X	X	X	7	8	X	X	X	X	7	8
Montauk	NY	X	X	4	5	68	77	X	X	4	6	71	81	X	X	4	7	65	77	X	X	4	8	65	79	X	3	5	8	74	90
Hampton Bay	NY	X	X	X	X	5	8	X	X	X	X	4	7	X	X	X	X	5	8	X	X	X	X	7	9	X	X	X	X	6	7
Newport	RI	X	X	X	5	13	20	X	X	4	5	16	26	X	X	5	7	12	25	X	X	7	8	8	24	X	X	7	8	13	29
Hampton	VA	X	X	4	X	3	7	X	X	4	X	4	8	X	X	5	X	3	8	X	X	3	X	3	7	X	X	4	X	X	7
Newport News	VA	X	X	9	3	7	19	X	X	11	X	7	20	X	X	11	X	8	21	X	X	11	X	9	21	X	X	11	X	11	23
OTHER PORTS	8	10	89	122	1,177	1,406	9	15	78	103	1,253	1,458	8	15	75	103	1,346	1,547	6	13	76	104	1,317	1,516	5	15	73	112	1,392	1,597	
TOTAL	12	32	341	348	1,863	2,596	16	39	335	337	1,981	2,708	15	40	328	335	2,137	2,855	16	40	340	341	2,109	2,846	13	41	343	355	2,241	2,993	

HOMEPORT	FY 2005 by Category							FY 2006 by Category							FY 2007 by Category							FY 2008 by Category								
	A	B	C	D	E	H	TOTAL	A	B	C	D	E	H	TOTAL	A	B	C	D	E	H	TOTAL	A	B	C	D	E	H	TOTAL		
PRIMARY PORTS	5	16	202	164	404	X	791	7	16	207	173	381	X	784	6	17	215	180	397	X	815	7	16	224	169	389	X	805		
Portland	ME	X	X	12	20	23	X	55	X	X	12	22	22	X	56	X	X	12	24	23	X	59	X	X	12	22	21	X	55	
Boston	MA	X	X	36	29	81	X	147	X	X	32	29	65	X	127	X	X	32	26	61	X	119	X	X	34	23	55	X	112	
Gloucester	MA	X	X	22	42	128	X	192	X	X	23	41	128	X	192	X	X	26	49	144	X	219	X	X	32	44	150	X	226	
New Bedford	MA	X	X	102	43	101	X	248	X	X	110	46	90	X	249	X	X	114	47	87	X	249	X	X	116	49	88	X	255	
Barnegate Light	NJ	X	15	12	14	28	X	71	3	15	11	17	27	X	73	3	17	11	15	27	X	73	3	16	12	13	23	X	67	
Point Judith	RI	X	X	18	16	43	X	78	X	X	19	18	49	X	87	X	X	20	19	55	X	96	X	X	18	18	52	X	90	
SECONDARY PORTS	X	14	66	81	484	X	647	X	10	61	76	514	X	663	X	13	58	85	503	X	662	3	10	56	82	478	X	631		
Rockland	ME	X	X	X	X	5	X	6	X	X	X	X	6	X	7	X	X	X	X	3	X	4	X	X	X	X	3	X	4	
Port Clyde	ME	X	X	6	4	4	X	14	X	X	4	4	3	X	11	X	X	X	3	X	8	X	X	X	X	3	3	X	8	
South Bristol	ME	X	X	X	5	5	X	12	X	X	X	6	5	X	13	X	X	X	5	6	X	13	X	X	X	5	5	X	12	
Ocean City	MD	X	X	X	X	19	X	19	X	X	X	X	26	X	26	X	X	X	X	25	X	25	X	X	X	X	21	X	21	
Chatham	MA	X	X	X	15	60	X	77	X	X	X	15	58	X	73	X	X	X	18	56	X	74	X	X	X	19	58	X	77	
Provincetown	MA	X	X	X	3	16	X	19	X	X	X	3	11	X	14	X	X	X	4	8	X	12	X	X	X	X	10	X	12	
Scituate	MA	X	X	X	8	28	X	36	X	X	X	5	25	X	31	X	X	X	8	22	X	31	X	X	X	7	27	X	36	
Plymouth	MA	X	X	3	X	21	X	28	X	X	X	X	19	X	23	X	X	X	18	X	22	X	X	X	X	X	16	X	18	
Westport	MA	X	X	X	X	18	X	20	X	X	X	X	17	X	19	X	X	X	X	16	X	18	X	X	X	X	13	X	15	
Portsmouth	NH	X	X	3	12	31	X	46	X	X	X	9	38	X	49	X	X	X	11	37	X	50	X	X	X	8	22	X	32	
Point Pleasant	NJ	X	4	X	5	48	X	58	X	X	X	6	49	X	58	X	3	X	4	50	X	58	X	X	X	6	52	X	63	
Cape May	NJ	X	X	26	7	105	X	139	X	X	25	7	123	X	156	X	X	27	10	130	X	168	X	X	24	10	123	X	158	
Greenport	NY	X	X	X	X	7	X	8	X	X	X	X	6	X	7	X	X	X	X	6	X	7	X	X	X	X	6	X	7	
Montauk	NY	X	4	5	8	73	X	90	X	4	7	8	77	X	96	X	5	6	8	78	X	98	X	5	6	9	80	X	101	
Hampton Bay	NY	X	X	X	X	9	X	10	X	X	X	X	12	X	15	X	X	X	9	X	12	X	X	X	X	8	X	10	X	
Newport	RI	X	X	7	8	16	X	32	X	X	7	7	15	X	31	X	X	6	7	13	X	29	X	X	6	7	11	X	27	
Hampton	VA	X	X	X	X	4	X	6	X	X	X	X	10	X	12	X	X	X	8	X	9	X	X	X	X	6	X	7	X	
Newport News	VA	X	X	11	X	15	X	27	X	X	8	X	14	X	22	X	X	8	X	15	X	24	X	X	X	8	X	14	X	23
OTHER PORTS	7	12	78	103	1,481	6	1,687	6	13	80	108	1,403	7	1,618	7	11	66	101	1,353	7	1,545	8	15	61	100	1,289	7	1,480		
TOTAL	14	42	346	348	2,369	6	3,125	14	39	348	357	2,298	7	3,065	15	41	339	366	2,253	7	3,022	18	41	341	351	2,156	7	2,916		

Source: NMFS Statistics Office, permit databases

Table 36 Monkfish permits by port, FY2000 – 2008.

Ports where there are fewer than three permits are marked “x” for confidentiality reasons.

PORT/ STATE	MAY 07 -APR 08	STOCK AREAS				GEAR TYPES							
		NORTHERN		SOUTHERN		OTTER TRAWL		GILLNET		HOOK		OTHER GEARS	
		Metric Tons	Percent	Metric Tons	Percent	Metric Tons	Percent	Metric Tons	Percent	Metric Tons	Percent	Metric Tons	Percent
Portland, ME	705	698	99%	7	1%	658	93%	47	7%	0	0%	0	0%
Gloucester, MA	1,711	1,676	98%	35	2%	1,206	70%	505	30%	0	0%	0	0%
Boston, MA	849	838	99%	11	1%	849	100%	0	0%	0	0%	0	0%
New Bedford, MA	3,195	1,200	38%	1,995	62%	1,522	48%	758	24%	0	0%	915	29%
Point Judith, RI	957	36	4%	921	96%	540	56%	402	42%	0	0%	15	2%
MAINE	759	752	99%	7	1%	695	92%	63	8%	0	0%	0	0%
NEW HAMPSHIRE	137	136	99%	1	1%	13	9%	125	91%	0	0%	0	0%
MASSACHUSETTS	6,475	4,091	63%	2,384	37%	3,643	56%	1,906	29%	0	0%	925	14%
RHODE ISLAND	1,545	62	4%	1,483	96%	623	40%	843	55%	0	0%	79	5%
CONNECTICUT	123	0	0%	123	100%	22	18%	59	48%	0	0%	42	34%
NEW YORK	773	3	0%	770	100%	103	13%	659	85%	0	0%	11	1%
NEW JERSEY	1,929	6	0%	1,923	100%	99	5%	1,576	82%	0	0%	254	13%
OTHER NORTHEAST	488	0	0%	488	100%	41	8%	348	71%	0	0%	99	20%
TOTAL	12,230	5,050	41%	7,180	59%	5,240	43%	5,579	46%	0	0%	1,411	12%

PORT/ STATE	MAY 08-APR 09	STOCK AREAS				GEAR TYPES							
		NORTHERN		SOUTHERN		OTTER TRAWL		GILLNET		HOOK		OTHER GEARS	
		Metric Tons	Percent	Metric Tons	Percent	Metric Tons	Percent	Metric Tons	Percent	Metric Tons	Percent	Metric Tons	Percent
Portland, ME	402	401	100%	2	0%	353	88%	50	12%	0	0%	0	0%
Gloucester, MA	1,318	1,289	98%	29	2%	943	72%	375	28%	0	0%	0	0%
Boston, MA	737	697	94%	41	6%	737	100%	0	0%	0	0%	0	0%
New Bedford, MA	2,608	759	29%	1,849	71%	1,290	49%	740	28%	0	0%	577	22%
Point Judith, RI	927	39	4%	888	96%	507	55%	386	42%	0	0%	33	4%
MAINE	423	421	100%	2	0%	368	87%	56	13%	0	0%	0	0%
NEW HAMPSHIRE	98	97	100%	0	0%	12	13%	85	87%	0	0%	0	0%
MASSACHUSETTS	5,231	2,961	57%	2,270	43%	3,013	58%	1,637	31%	0	0%	581	11%
RHODE ISLAND	1,382	42	3%	1,340	97%	525	38%	767	55%	0	0%	91	7%
CONNECTICUT	167	0	0%	167	100%	45	27%	76	46%	0	0%	46	27%
NEW YORK	842	6	1%	836	99%	102	12%	732	87%	0	0%	8	1%
NEW JERSEY	1,690	1	0%	1,690	100%	113	7%	1,419	84%	0	0%	159	9%
OTHER NORTHEAST	446	0	0%	446	100%	30	7%	359	80%	0	0%	57	13%
TOTAL	10,279	3,528	34%	6,751	66%	4,208	41%	5,130	50%	0	0%	941	9%

1. The three digit statistical areas defined below are for statistical and management purposes and may not be consistent with stock area delineation used for biological assessment (see the attached statistical chart).

Monkfish stock areas: Northern: 464-465, 467, 511-515, 521-522, 561-562
Southern: 525-526, 533-534, 537-539, 541-543, 611-639

2. Landings in live weight.

3. Gear data are based on vessel trip reports.

Table 37 Preliminary FY2007 & 2008 monkfish landings by primary port (excluding Long Beach/Barnegat Light, NJ) and State, by gear.

HOME PORT		MONKFISH LANDINGS AND REVENUES														Principal Port
		FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2008
Portland, ME	1,000 Lbs.	1,446.2	1,604.8	1,691.7	1,472.8	2,542.9	2,995.8	1,487.6	1,498.2	1,436.1	990.0	895.8	587.7	441.9	247.2	500.4
	\$1,000	\$2,257.6	\$2,393.9	\$2,707.1	\$2,640.2	\$5,472.7	\$6,707.8	\$2,004.9	\$2,289.6	\$2,667.0	\$2,471.3	\$2,088.9	\$1,692.8	\$1,476.7	\$735.1	\$1,506.7
Boston, MA	1,000 Lbs.	822.8	674.0	917.6	781.9	1,267.6	960.9	4,964.1	4,777.8	4,291.2	2,829.7	3,405.7	2,478.8	1,492.1	1,242.8	545.9
	\$1,000	\$1,082.5	\$936.3	\$1,300.3	\$1,104.1	\$2,240.1	\$2,027.5	\$6,737.6	\$6,629.9	\$5,947.0	\$5,165.8	\$6,202.5	\$4,724.3	\$3,769.6	\$3,020.3	\$1,521.2
Gloucester, MA	1,000 Lbs.	1,675.6	1,154.1	844.3	941.6	1,700.9	2,364.8	2,090.8	2,055.4	1,961.8	1,353.3	1,771.0	980.5	668.8	800.2	1,029.1
	\$1,000	\$1,620.8	\$1,097.7	\$1,037.9	\$1,382.6	\$3,060.7	\$4,441.5	\$3,053.4	\$2,923.5	\$2,604.0	\$2,702.3	\$3,504.5	\$2,083.0	\$1,595.5	\$1,667.5	\$2,266.6
New Bedford, MA	1,000 Lbs.	5,983.8	5,789.6	7,345.5	8,537.1	7,026.5	5,515.4	3,452.8	2,319.5	2,584.6	2,003.6	2,343.2	1,569.3	1,681.5	1,364.8	1,523.4
	\$1,000	\$8,980.7	\$8,260.4	\$11,686.0	\$13,926.2	\$14,442.8	\$11,783.9	\$4,697.9	\$3,278.4	\$3,918.8	\$4,191.3	\$5,514.6	\$3,984.9	\$4,567.7	\$3,709.9	\$4,047.1
Long Beach/Barneget Light, NJ	1,000 Lbs.	846.4	1,382.2	729.0	1,702.9	2,568.7	1,801.5	3,582.0	2,435.4	3,625.5	1,418.0	2,013.4	1,607.1	1,895.7	1,640.0	1,612.7
	\$1,000	\$1,210.6	\$1,531.5	\$977.7	\$2,099.9	\$4,430.7	\$3,049.4	\$4,807.6	\$3,227.3	\$3,870.5	\$1,797.6	\$3,261.3	\$2,366.1	\$2,861.0	\$2,527.7	\$2,478.5
Point Judith, RI	1,000 Lbs.	1,194.2	2,444.6	2,125.9	1,485.1	1,708.7	1,635.0	643.4	511.9	954.3	422.3	837.6	400.1	647.4	513.0	974.5
	\$1,000	\$1,645.1	\$3,366.8	\$3,248.1	\$2,175.5	\$3,275.3	\$3,423.8	\$1,008.6	\$779.4	\$1,381.3	\$672.8	\$1,825.1	\$1,032.2	\$1,764.6	\$1,328.7	\$2,047.8

Source: NMFS Statistics Office, dealer weighout & permits databases

Pounds are in landed weight

1995-2001 data based on vessels that were issued a monkfish permit during the 2001 fishing year. 2002-2008 fishing year data are based on vessels issued a monkfish permit during the 2002-2008 fishing years, respectively.

Table 38 Monkfish landings and revenues for monkfish primary ports, by homeport in FY1995 – 2008, and principal port, FY2008.

HOME PORT		MONKFISH LANDINGS AND REVENUES														Principal Port
		FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2008
Rockland, ME	1,000 Lbs.	47.7	42.5	37.1	56.3	53.9	74.0	8.3	3.8	3.1	7.3	0.9	0.0	0.0	0.0	1.5
	\$1,000	\$61.2	\$55.3	\$54.3	\$90.0	\$113.2	\$184.5	\$15.5	\$5.5	\$5.4	\$14.3	\$2.4	\$0.0	\$0.0	\$0.0	\$4.4
Port Clyde, ME	1,000 Lbs.	119.2	120.0	183.0	210.4	294.3	325.1	543.5	471.9	386.6	293.8	203.5	90.2	58.6	43.6	51.6
	\$1,000	\$148.5	\$152.7	\$260.9	\$328.4	\$581.8	\$749.5	\$748.4	\$676.8	\$679.8	\$645.7	\$505.2	\$242.0	\$187.6	\$398.0	\$421.6
South Bristol, ME	1,000 Lbs.	126.4	109.5	89.9	93.3	106.6	219.2	278.7	238.3	233.6	235.6	191.5	77.8	132.3	103.3	103.3
	\$1,000	\$162.9	\$145.1	\$131.2	\$146.5	\$217.4	\$494.5	\$410.1	\$342.7	\$431.7	\$539.2	\$470.6	\$223.7	\$448.6	\$313.5	\$313.5
Ocean City, MD	1,000 Lbs.	178.5	520.8	348.5	282.0	314.1	106.7	3.1	2.6	2.4	3.3	4.0	4.2	2.2	1.5	3.7
	\$1,000	\$241.0	\$450.5	\$310.3	\$254.1	\$347.4	\$154.4	\$4.6	\$4.2	\$3.9	\$5.5	\$7.9	\$9.2	\$5.1	\$3.3	\$8.4
Chatham, MA	1,000 Lbs.	126.3	97.5	117.2	231.6	212.7	475.3	613.4	944.1	1,317.9	649.7	1,194.5	830.8	645.0	511.6	517.1
	\$1,000	\$110.9	\$936.3	\$126.9	\$237.2	\$327.1	\$771.5	\$829.9	\$1,229.6	\$1,364.5	\$750.1	\$1,905.7	\$1,265.7	\$958.7	\$780.1	\$796.2
Provincetown, MA	1,000 Lbs.	83.3	38.8	24.4	85.6	79.9	35.1	25.9	19.8	38.0	39.2	21.1	11.3	5.9	2.6	3.2
	\$1,000	\$108.0	\$51.8	\$36.7	\$141.5	\$136.4	\$76.8	\$37.7	\$26.4	\$75.2	\$84.0	\$57.2	\$30.5	\$18.4	\$8.3	\$10.2
Scituate, MA	1,000 Lbs.	58.9	45.3	43.2	330.0	331.0	434.4	100.0	206.8	202.9	117.6	173.0	171.7	181.9	159.8	69.2
	\$1,000	\$67.9	\$53.0	\$50.3	\$391.6	\$561.5	\$745.7	\$147.7	\$266.4	\$216.1	\$186.3	\$324.0	\$258.9	\$346.0	\$319.5	\$228.4
Plymouth, MA	1,000 Lbs.	53.5	33.0	27.6	42.3	13.9	276.5	585.5	613.1	717.2	306.1	168.4	85.7	41.4	22.3	22.3
	\$1,000	\$61.6	\$37.6	\$25.5	\$55.8	\$24.3	\$508.0	\$826.2	\$795.9	\$704.8	\$403.5	\$308.1	\$146.8	\$144.2	\$35.6	\$35.6
Westport, MA	1,000 Lbs.	809.6	856.9	461.4	539.0	451.9	307.4	685.7	549.5	830.6	246.4	164.3	61.2	83.4	48.3	107.1
	\$1,000	\$764.5	\$768.5	\$387.6	\$543.3	\$691.2	\$568.3	\$1,022.6	\$739.3	\$799.1	\$248.5	\$272.4	\$83.0	\$112.2	\$60.2	\$127.6
Portsmouth, NH	1,000 Lbs.	370.7	387.9	519.9	474.7	845.3	1,253.7	1,098.7	671.8	562.9	439.4	434.0	143.1	91.0	74.4	244.6
	\$1,000	\$447.5	\$443.0	\$636.9	\$532.5	\$1,319.5	\$2,122.7	\$1,578.8	\$967.0	\$641.6	\$612.1	\$751.8	\$219.1	\$152.0	\$110.6	\$388.0
Point Pleasant, NJ	1,000 Lbs.	84.3	517.7	1,091.5	1,578.5	1,286.0	772.5	337.9	128.3	401.2	312.1	190.8	146.6	212.2	271.1	181.5
	\$1,000	\$111.4	\$565.8	\$1,096.5	\$1,884.9	\$2,320.0	\$1,208.2	\$441.5	\$164.4	\$395.6	\$401.9	\$302.5	\$251.5	\$369.3	\$432.9	\$317.4
Cape May, NJ	1,000 Lbs.	273.0	312.6	465.0	316.3	124.3	117.5	187.5	117.9	162.1	87.5	117.7	143.2	180.3	116.7	121.8
	\$1,000	\$370.1	\$389.2	\$571.7	\$398.2	\$255.7	\$266.2	\$248.2	\$134.7	\$206.3	\$131.6	\$217.6	\$279.2	\$448.9	\$260.3	\$267.1
Greenport, NY	1,000 Lbs.	26.1	48.9	62.9	41.9	12.1	3.6	6.9	19.8	7.8	13.6	22.1	12.2	6.1	9.0	9.0
	\$1,000	\$35.1	\$72.0	\$86.2	\$62.2	\$20.0	\$8.7	\$10.7	\$32.6	\$14.5	\$36.6	\$61.8	\$35.0	\$20.6	\$27.3	\$27.3
Montauk, NY	1,000 Lbs.	46.9	53.0	92.2	157.4	79.7	47.2	146.7	238.4	569.5	239.2	382.1	275.8	572.6	504.3	549.9
	\$1,000	\$62.3	\$74.2	\$135.9	\$246.9	\$170.1	\$122.2	\$237.5	\$358.4	\$691.9	\$370.4	\$630.4	\$470.1	\$881.2	\$674.8	\$725.7
Hampton Bays, NY	1,000 Lbs.	87.0	318.9	309.5	454.3	415.7	316.6	93.2	138.8	128.9	8.2	47.0	12.0	53.6	57.7	57.7
	\$1,000	\$120.5	\$516.1	\$589.6	\$733.0	\$661.6	\$562.6	\$134.4	\$191.2	\$134.8	\$11.8	\$72.1	\$28.5	\$85.0	\$169.7	\$169.7
Newport, RI	1,000 Lbs.	312.0	406.9	436.3	406.8	581.5	360.9	614.2	671.1	1,234.6	594.5	864.8	445.5	484.7	445.6	414.5
	\$1,000	\$388.0	\$505.4	\$558.1	\$584.3	\$1,229.4	\$808.1	\$848.2	\$917.9	\$1,507.4	\$817.8	\$1,565.9	\$834.9	\$858.1	\$685.7	\$642.0
Hampton, VA	1,000 Lbs.	256.2	336.0	113.4	134.9	42.2	35.8	20.7	3.6	4.7	7.4	12.1	7.6	11.3	6.7	11.8
	\$1,000	\$326.5	\$350.5	\$129.3	\$178.5	\$79.1	\$76.1	\$23.8	\$3.6	\$6.3	\$11.6	\$20.1	\$13.9	\$23.4	\$13.9	\$26.6
Newport News, VA	1,000 Lbs.	184.3	253.9	373.0	275.2	95.9	90.0	39.6	43.8	37.3	30.4	34.3	39.5	34.3	17.7	26.3
	\$1,000	\$221.1	\$285.0	\$454.0	\$333.1	\$140.4	\$106.5	\$42.9	\$50.9	\$43.3	\$41.4	\$52.9	\$75.3	\$76.6	\$40.9	\$63.2

Source: NMFS Statistics Office, dealer weighout database & permit database

Pounds are in landed weight

1995-2001 data based on vessels that were issued a monkfish permit during the 2001 fishing year. 2002-2008 fishing year data are based on vessels issued a monkfish permit during the 2002-2008 fishing years, respectively.

HOME PORT		MONKFISH LANDINGS AND REVENUES														Principal Port
		FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2008
All Other Ports	1,000 Lbs.							8699.4	6182.4	7063.9	4830.2	6373.5	3935.5	4207.7	3293.8	2816.2
	\$1,000							\$12,153	\$8,618	\$8,421	\$7,299	\$11,129	\$6,846	\$7,360	\$5,531	\$4,414
Summary of "Primary", "Secondary" and "Other" Ports								30,310	24,864	28,758	17,478	21,866	14,117	13,832	11,498	11,498
								\$42,072	\$34,654	\$36,732	\$29,612	\$41,054	\$27,196	\$28,531	\$22,855	\$22,855

Table 39 Monkfish landings and revenues for monkfish secondary and other ports, by homeport in FY1995 – 2008, and principal port, FY2008.

HOME PORT		Number of Vessels	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008
1	Westport, MA	16	56.9%	69.0%	42.5%	40.8%	49.6%	51.2%	62.9%	37.4%	47.3%	28.9%	30.7%	8.9%	8.6%	7.9%
2	Port Clyde, ME	19	10.6%	7.7%	13.7%	19.2%	37.6%	44.6%	36.5%	32.7%	36.1%	35.4%	13.4%	3.8%	7.4%	6.4%
3	Plymouth, MA	15	6.0%	4.2%	6.3%	7.9%	7.5%	38.5%	29.8%	28.6%	4.6%	22.8%	6.8%	13.6%	4.9%	5.3%
4	South Bristol, ME	6	7.1%	7.6%	7.5%	13.5%	22.6%	42.5%	32.4%	27.7%	35.6%	34.1%	35.9%	0.9%	0.0%	0.0%
5	Portsmouth, NH	30	11.8%	12.5%	19.8%	19.4%	38.4%	39.9%	49.8%	37.8%	31.3%	28.4%	29.9%	15.1%	8.7%	8.1%
6	Scituate, MA	35	5.9%	3.5%	3.2%	20.2%	30.5%	40.5%	34.5%	17.5%	30.7%	13.7%	9.7%	6.5%	7.2%	8.7%
7	Boston, MA	41	13.1%	10.8%	14.0%	13.5%	27.4%	30.8%	20.6%	23.6%	23.3%	27.8%	30.2%	24.1%	18.6%	17.3%
8	Portland, ME	87	12.5%	13.0%	13.9%	14.4%	23.5%	26.2%	22.2%	27.6%	26.3%	27.4%	22.8%	19.2%	14.0%	13.9%
9	Rockland, ME	4	17.6%	22.4%	4.1%	9.0%	12.3%	14.3%	9.5%	2.8%	4.2%	0.3%	0.0%	0.0%	0.0%	0.0%
10	Long Beach/Barnegat Light, NJ	78	17.7%	21.6%	14.8%	28.6%	39.1%	22.3%	34.2%	24.0%	25.1%	8.5%	12.3%	11.2%	12.8%	13.0%
11	Gloucester, MA	217	10.2%	6.9%	5.2%	5.8%	13.2%	18.0%	15.8%	15.1%	12.9%	14.2%	13.1%	11.0%	10.2%	9.6%
12	Point Judith, RI	154	6.6%	12.7%	9.1%	8.5%	10.6%	13.3%	11.2%	8.0%	8.5%	4.2%	7.7%	5.3%	8.6%	8.7%
13	Newport, RI	68	6.2%	9.5%	10.1%	10.7%	23.6%	11.4%	13.3%	12.1%	18.0%	7.8%	6.4%	3.4%	6.5%	5.8%
14	Chatham, MA	100	2.8%	22.4%	2.6%	4.9%	5.7%	11.2%	9.3%	19.9%	18.1%	10.8%	20.9%	14.8%	11.5%	10.7%
15	Point Pleasant, NJ	134	2.0%	7.1%	10.6%	19.0%	19.1%	9.0%	13.8%	8.0%	7.1%	3.7%	4.1%	3.4%	3.3%	4.4%
16	New Bedford, MA	475	13.4%	9.4%	14.0%	15.8%	11.5%	8.1%	5.9%	4.1%	4.5%	3.5%	3.9%	2.6%	2.8%	2.4%
17	Hampton Bays, NY	61	2.5%	9.5%	8.1%	10.0%	10.1%	7.9%	9.7%	7.0%	6.4%	3.4%	11.7%	8.0%	12.3%	12.6%
18	Ocean City, MD	77	7.3%	15.0%	12.3%	11.7%	15.3%	4.3%	4.8%	0.8%	2.2%	1.4%	2.2%	1.5%	1.9%	1.6%
19	Provincetown, MA	28	9.0%	4.9%	2.5%	8.1%	6.7%	4.3%	0.9%	2.2%	4.3%	4.9%	3.2%	2.4%	2.1%	1.7%
20	Montauk, NY	118	0.9%	1.4%	1.8%	3.3%	2.1%	1.6%	2.3%	3.4%	6.2%	3.4%	4.8%	3.0%	5.8%	5.5%
21	Cape May, NJ	249	1.5%	1.8%	2.4%	1.9%	1.4%	1.2%	0.7%	0.5%	0.6%	0.3%	0.9%	0.8%	0.7%	0.4%
22	Greenport, NY	5	1.7%	2.6%	2.9%	2.0%	1.3%	1.0%	1.1%	0.6%	0.2%	0.1%	0.5%	0.5%	1.4%	0.5%
23	Hampton, VA	52	4.0%	5.1%	2.7%	2.9%	1.2%	0.8%	0.6%	0.2%	0.2%	0.3%	0.5%	0.3%	0.6%	0.5%
24	Newport News, VA	75	1.8%	2.2%	3.9%	2.8%	0.9%	0.5%	0.2%	0.2%	0.2%	0.1%	0.1%	0.2%	0.2%	0.2%

Source: NMFS Statistics Office, dealer weighout database & permit database

1995-2001 data based on vessels that were issued a monkfish permit during the 2001 fishing year. 2002-2008 fishing year data are based on vessels issued a monkfish permit during the 2002-2008 fishing years, respectively.

Table 40 Monkfish Revenues, FY1995-2008, as a Percentage of Total Revenues by Port

4.5.2.1 Vessels by Principal Port and Owner's Residence

When applying for a permit the vessel owner must identify a "Principal Port" for the vessel, theoretically the port where their vessel lands most often. Further, the vessel owner must report his or her address. Table 1 shows the number of permits where a vessel listed a specific combination of principal port and owner's address on any Federal monkfish permit. Where there is a significant direct match between vessel owner address and vessel principal port both positive and negative social impacts will be greater.

There are 26 towns with 20 or more permits in one or both of these categories (principal port or home address) (see Table 41). Of these, only 9 (shaded) have 50 or more permits. These are, in descending order of number of permits, New Bedford (276 & 195) and Gloucester (253 & 180), MA; Cape May, NJ (167 & 75); Montauk, NY (117 & 78); Point Judith, RI (108 & 0); Chatham, MA (90 & 26); Barnegat Light/Long Beach, NJ (72 & 32); Portland, ME (72 & 26); and Point Pleasant/Point Pleasant Beach, NJ (50 & 12).

Only four ports (in **bold**) have at least a 65% match between principal port and owner's residence: New Bedford, Gloucester, and Scituate, MA; and Montauk, NY.

ST	City	Principal Port	Owner's Residence	% vessels listing same port as principal port and as residence
MA	NEW BEDFORD	276	195	71%
MA	GLOUCESTER	253	180	71%
NJ	CAPE MAY	167	75	45%
NY	MONTAUK	117	78	67%
RI	POINT JUDITH	108		0%
MA	CHATHAM	90	26	29%
NJ	BARNEGAT LIGHT	72	32	44%
ME	PORTLAND	72	26	36%
NJ	POINT PLEASANT	50	12	24%
MA	BOSTON	43	2	5%
MA	SCITUATE	40	27	68%
MD	OCEAN CITY	40	4	10%
NH	PORTSMOUTH	39	10	26%
VA	NEWPORT NEWS	38	18	47%
NC	WANCHESE	31	14	45%
NY	SHINNECOCK	31		0%
RI	NEWPORT	28	12	43%
NJ	BELFORD	28	9	32%
NH	RYE	25	12	48%
MA	NEWBURYPORT	24	12	50%
MA	FAIRHAVEN	23	13	57%
MA	PLYMOUTH	23	12	52%
NJ	ATLANTIC CITY	23	1	4%
MA	GREEN HARBOR	22	2	9%
NH	SEABROOK	21	13	62%
VA	HAMPTON	20	10	50%

Table 41 Ports with 20 or more Northeast Monkfish Permits as Principal Port or Owner's Residence for 2008

4.5.2.2 Commercial Ports of Landing

There are a total of 92 individual ports where monkfish was landed in 2008. They include ports from all states in the Northeast plus North Carolina (see Table 42).

State	County	Port
CT	HARTFORD	WINDSOR LOCKS
CT	MIDDLESEX	PORTLAND
CT	NEW HAVEN	EAST HAVEN
CT	NEW LONDON	EAST LYME
CT	NEW LONDON	NEW LONDON
CT	NEW LONDON	OLD LYME
CT	NEW LONDON	STONINGTON
CT	NEW LONDON	WATERFORD
DE	SUSSEX	INDIAN RIVER
MA	BARNSTABLE	BARNSTABLE
MA	BARNSTABLE	BASS RIVER
MA	BARNSTABLE	CHATHAM
MA	BARNSTABLE	FALMOUTH
MA	BARNSTABLE	HARWICHPORT
MA	BARNSTABLE	PROVINCETOWN
MA	BARNSTABLE	SANDWICH
MA	BARNSTABLE	WELLFLEET
MA	BARNSTABLE	WOODS HOLE
MA	BRISTOL	FAIRHAVEN
MA	BRISTOL	FALL RIVER
MA	BRISTOL	NEW BEDFORD
MA	BRISTOL	WESTPORT
MA	DUKES	CHILMARK
MA	ESSEX	GLOUCESTER
MA	ESSEX	MARBLEHEAD
MA	ESSEX	NEWBURYPORT
MA	ESSEX	ROCKPORT
MA	ESSEX	SWAMPSCOTT
MA	MIDDLESEX	CAMBRIDGE
MA	NANTUCKET	NANTUCKET
MA	PLYMOUTH	MARSHFIELD
MA	PLYMOUTH	PLYMOUTH
MA	PLYMOUTH	SCITUATE
MA	SUFFOLK	BOSTON
MD	WORCESTER	OCEAN CITY
ME	CUMBERLAND	HARPSWELL CENTER
ME	CUMBERLAND	PORTLAND
ME	HANCOCK	BASS HARBOR
ME	HANCOCK	SOUTHWEST HARBOR
ME	KNOX	PORT CLYDE
ME	SAGadahoc	PHIPPSBURG
ME	YORK	CAMP ELLIS
ME	YORK	YORK
ME	YORK	YORK HARBOR
NC	CARTERET	BEAUFORT
NC	DARE	HATTERAS
NC	DARE	WANCHESE

NC	HYDE	ENGELHARD
NC	PAMLICO	LOWLAND
NC	PAMLICO	ORIENTAL
NH	ROCKINGHAM	GREENLAND
NH	ROCKINGHAM	HAMPTON
NH	ROCKINGHAM	PORTSMOUTH
NH	ROCKINGHAM	RYE
NH	ROCKINGHAM	SEABROOK
NH	STRAFFORD	DOVER
NJ	ATLANTIC	ATLANTIC CITY
NJ	CAPE MAY	AVALON
NJ	CAPE MAY	CAPE MAY
NJ	CAPE MAY	OCEAN CITY
NJ	CAPE MAY	SEA ISLE CITY
NJ	CAPE MAY	WILDWOOD
NJ	MONMOUTH	BELFORD
NJ	OCEAN	BARNEGAT
NJ	OCEAN	BARNEGAT LIGHT/LONG BEACH
NJ	OCEAN	POINT PLEASANT
NJ	OCEAN	WARETOWN
NY	NASSAU	FREEPORT
NY	NASSAU	POINT LOOKOUT
NY	NEW YORK	NEW YORK CITY
NY	SUFFOLK	AMAGANSETT
NY	SUFFOLK	CENTER MORICHES
NY	SUFFOLK	EAST HAMPTON
NY	SUFFOLK	GREENPORT
NY	SUFFOLK	HAMPTON BAYS/SHINNECOCK
NY	SUFFOLK	ISLIP
NY	SUFFOLK	MONTAUK
NY	SUFFOLK	MORICHES
NY	SUFFOLK	RIVERHEAD
NY	SUFFOLK	SOUTHOLD
RI	NEWPORT	LITTLE COMPTON
RI	NEWPORT	NEWPORT
RI	NEWPORT	TIVERTON
RI	WASHINGTON	NEW SHOREHAM
RI	WASHINGTON	NORTH KINGSTOWN
RI	WASHINGTON	POINT JUDITH
VA	ACCOMACK	CHINCOTEAGUE
VA	ACCOMACK	GREENBACKVILLE
VA	ACCOMACK	WACHAPREAGUE
VA	CITY OF HAMPTON	HAMPTON
VA	CITY OF NEWPORT NEWS	NEWPORT NEWS
VA	YORK	SEAFORD

Table 42 All Ports Landing Monkfish in 2008

There are several ways to present landings data to show different kinds of importance of monkfish to communities. Two tables below illustrate importance due to total levels of

revenue and landings versus importance due to percent of monkfish revenue and landings relative to all commercial revenue and landings by port. In 2008 there were 32 ports with at least \$50,000 or 50,000 lbs of monkfish (see Table 43). But only 11 (**shaded**) had at least \$500,000 or 500,000 lbs: New Bedford, Gloucester, Boston and Chatham, MA; Barnegat Light/Long Beach and Point Pleasant/Point Pleasant Beach, NJ; Point Judith and Little Compton, RI; Portland, ME; and Montauk and Hampton Bays/Shinnecock, NY.

Only 6 (in **bold**) had at least \$1M or 1Mlbs: New Bedford, Gloucester and Boston, MA; Barnegat Light/Long Beach, NJ and Portland, ME.

ST	County	Port	Monk Value	Monk Lbs	Monk Vessels Landed
MA	BRISTOL	NEW BEDFORD	\$5,824,673	2,603,715	312
MA	ESSEX	GLOUCESTER	\$3,284,774	1,168,124	154
		BARNEGAT			
NJ	OCEAN	LIGHT/LONG BEACH	\$2,656,969	1,737,896	65
RI	WASHINGTON	POINT JUDITH	\$2,073,340	1,041,087	95
MA	SUFFOLK	BOSTON	\$1,630,877	557,991	29
ME	CUMBERLAND	PORTLAND	\$1,144,016	277,628	74
MA	BARNSTABLE	CHATHAM	\$945,515	620,362	38
NY	SUFFOLK	MONTAUK	\$721,697	505,286	51
		POINT PLEASANT/POINT PLEASANT BEACH			
NJ	OCEAN	HAMPTON	\$717,633	503,513	79
NY	SUFFOLK	BAYS/SHINNECOCK	\$769,716	312,085	57
RI	NEWPORT	LITTLE COMPTON	\$560,902	443,655	23
VA	ACCOMACK	CHINCOTEAGUE	\$487,195	417,365	38
RI	NEWPORT	NEWPORT	\$305,335	204,221	25
MA	PLYMOUTH	SCITUATE	\$263,690	81,879	22
NJ	CAPE MAY	CAPE MAY	\$228,491	118,162	124
NJ	OCEAN	WARETOWN	\$211,793	150,330	4
CT	NEW LONDON	STONINGTON	\$191,801	61,479	26
MA	BRISTOL	WESTPORT	\$180,197	138,245	7
NH	ROCKINGHAM	PORTSMOUTH	\$161,162	101,369	15
NJ	MONMOUTH	BELFORD	\$150,484	111,067	22
MD	WORCESTER	OCEAN CITY	\$143,065	131,990	26
CT	NEW LONDON	NEW LONDON	\$96,038	60,640	9
NY	SUFFOLK	ISLIP	\$86,306	61,737	5
NH	ROCKINGHAM	RYE	\$64,957	30,522	19
RI	NEWPORT	TIVERTON	\$62,052	49,412	6
	NEWPORT				
VA	NEWS	NEWPORT NEWS	\$55,389	26,152	38
VA	YORK	SEAFORD	\$54,086	26,341	13

* Additional ports with over \$50,000 or 50,000 lbs but which cannot be listed in the table for reasons of confidentiality are: Waterford, CT. New Shoreham, RI; Riverhead, NY; Wanchese, NC; and Greenbackville, VA.

Table 43 Monkfish Ports with \$50,000 in revenue or 50,000 lbs in landings in 2008

In terms of value dependence, a different picture emerges (see Table 44). Some of the ports with the highest levels of monkfish landings value also have very high levels landings of other species. Thus they are only minimally dependent on monkfish in percentage terms. New Bedford, MA is an example. It is only dependent on monkfish at a 2% level. And some ports will appear with high levels of percent dependence, even though they land much less monkfish, or sometimes little fish at all. Islip, NY and Tiverton, RI stand out here. In fact, of the 8 ports with at least 10% dependence (**shaded**) only 4 (in **bold**) landed at least \$500,000 or 500,000 lbs of monkfish in 2008.

ST	County	Port	% value monkfish/All species	% lbs monkfish/All species
NJ	OCEAN	WARETOWN	47%	2%
RI	NEWPORT	LITTLE COMPTON	15%	22%
NY	SUFFOLK	ISLIP	13%	20%
VA	ACCOMACK	CHINCOTEAGUE	13%	26%
		HAMPTON		
NY	SUFFOLK	BAYS/SHINNECOCK	12%	2%
MA	SUFFOLK	BOSTON	11%	9.2%
RI	NEWPORT	TIVERTON	11%	1%
		BARNEGAT		
NJ	OCEAN	LIGHT/LONG BEACH	10%	9.7%
MA	PLYMOUTH	SCITUATE	6.9	4.2
MA	ESSEX	GLOUCESTER	6.5	1.1
MA	BARNSTABLE	CHATHAM	6.3	6.5
RI	WASHINGTON	POINT JUDITH	5.8	2.9
ME	CUMBERLAND	PORTLAND	5.3	0.9
RI	NEWPORT	NEWPORT	5	2.6
NJ	MONMOUTH	BELFORD	4.8	3.5
NY	SUFFOLK	MONTAUK	4.6	4.8
NJ	OCEAN	POINT PLEASANT	3.7	2.8
NH	ROCKINGHAM	PORTSMOUTH	3.3	5.4
CT	NEW LONDON	STONINGTON	2.8	3
MA	BRISTOL	NEW BEDFORD	2.5	1.9
CT	NEW LONDON	NEW LONDON	2.4	3.9
NH	ROCKINGHAM	RYE	2.1	1.5
NY	NASSAU	FREEPORT	2.1	1.3
NH	ROCKINGHAM	SEABROOK	1.6	0.6
MD	WORCESTER	OCEAN CITY	1.3	1.6
NJ	CAPE MAY	AVALON	1.2	2.6

* Additional ports with at least 10% dependence by value or pounds but which cannot be listed in the table for reasons of confidentiality are: Waterford, CT. New Shoreham, RI; Riverhead, NY; and Greenbackville, VA.

Table 44 Monkfish Percent Value and Pounds Dependence in 2008

4.5.2.3 The Importance of Counties

There are potential aggregate effects to a county when multiple small ports, which individually do not rise to the top of dependence lists, together constitute a potential source of high impact to a general area (see Table 45). Examples of this are Suffolk County, NY with 11 ports and nearly \$2 million in revenue and Barnstable County, MA

with 10 ports (including Chatham and Provincetown) and nearly \$1 million in revenue. Barnstable County also has a processor (Table 46) and multiple dealers (Table 47). Suffolk County ports (e.g., Montauk and Hampton Bays/Shinnecock) have a large number of monkfish dealers. Bristol County, MA (which includes New Bedford) has only 4 monkfish ports, but a total value of \$6 million, as well as multiple processors (Table 46) and dealers (Table 47).

ST	County	M value	M lbs	No. Ports	M val/ tot val	m lbs/ tot lbs
MA	BRISTOL	\$6,040,374	2,755,370	4	2%	2%
NJ	OCEAN	\$3,626,907	2,422,607	5	8%	9%
MA	ESSEX	\$3,294,714	1,171,450	5	6%	1%
RI	WASHINGTON	\$2,261,089	1,195,136	3	4%	2%
NY	SUFFOLK	\$1,825,715	1,035,640	11	7%	6%
ME	CUMBERLAND	\$1,144,058	277,642	2	5%	1%
RI	NEWPORT	\$1,034,165	731,760	4	9%	6%
MA	BARNSTABLE	\$959,914	625,176	10	3%	4%
VA	ACCOMACK	\$546,811	458,443	3	12%	9%
CT	NEW LONDON	\$395,487	204,418	5	3%	5%
MA	PLYMOUTH	\$346,297	107,687	4	3%	3%
NJ	CAPE MAY	\$280,587	136,131	6	0%	0%
NH	ROCKINGHAM	\$277,763	148,950	6	2%	2%
NY	NASSAU	\$40,407	15,203	2	1%	1%
NJ	ATLANTIC	\$10,823	4,951	2	0%	0%
ME	YORK	\$1,587	445	3	0%	0%

* Other counties landing monkfish that could not be reported in the table for confidentiality reasons are: Hartford, New Haven and Middlesex, CT; Sussex, DE; Dukes, Middlesex and Nantucket, MA; Hancock and Sagadahoc, ME; Carteret, Dare, Hyde and Pamlico, NC; Strafford, NH; New York, NY; Bristol, RI and Northampton, VA.

+ Also removed are counties with only one monkfish port, as these data would not differ from port level data.

Table 45 County Level Involvement in Monkfish Fishery^{*,+}

4.5.2.4 Monkfish Processors

Processor data are available only by county, due to confidentiality. Table 46 shows that monkfish processors are most concentrated in Massachusetts, especially in Bristol County. However, they are scattered up and down the coast from Maine through South Carolina. Also, three processors are located in California, but are likely not processing the same species of monkfish managed under this FMP. As such, these processors are less important with respect to the impacts associated with this action.

ST	County	No. Processors
CA	LOS ANGELES	2
	SAN LUIS OBISPO	1
ME	CUMBERLAND	1
MA	BARNSTABLE	1
	BRISTOL	7
	ESSEX	2
	SUFFOLK	3
NH	ROCKINGHAM	1
NY	KINGS	1
RI	WASHINGTON	2
SC	CHARLESTON	1

*Data for 2008 not yet available.

Table 46 2007 Data from the NMFS Processed Product Survey*.

4.5.2.5 Monkfish Dealers

There were 160 monkfish dealers in 2008. The majority (68%) depended on monkfish for only 0-5% of the ex-vessel value of all species they bought, 79% depending on monkfish for 0-10%, and 90% of dealers depending on monkfish for 0-20% of ex-vessel value.

The absolute amount of this percentage varied widely, however, with the largest group of dealers (32%) reporting depending on monkfish for \$1,000,000 to \$5,000,000 of the ex-vessel value they buy, 13% reporting \$500,000 to \$1,000,000 for monkfish, and another 13% reporting \$10,000 to \$50,000.

Eight ports had 10 or more dealers (Table 47, shaded) and an additional fourteen had at least 5 dealers. Below is a state by state discussion for individual ports with 5 or more dealers. Here the total number of dealers may exceed 160, as some dealers buy in multiple ports. Any port with 10 or more dealers automatically meets vulnerability criteria. But a port which already has met one of the previous criteria gets a point for having as few as 5 dealers (**bold**).

ST	Port	No. Dealers
MA	New Bedford	27
NY	Montauk	19
RI	Point Judith	19
NJ	Point Pleasant	17
NY	Hampton Bays/Shinnecock	15
NJ	Cape May	13
MA	Gloucester	12
NH	Portsmouth	12
NJ	Barnegat Light/Long Beach	9
MA	Chatham	8
MA	Westport	7
MD	Ocean City	7
NC	Wanchese	6
NY	Point Lookout	6
CT	New London	5
CT	Stonington	5
MA	Provincetown	5
MA	Scituate	5
ME	Portland	5
RI	Little Compton	5
VA	Chincoteague	5
VA	Newport News	5

Table 47 All Ports with 5 or more monkfish dealers in 2008

CT has 15 monkfish dealers, with 5 each in New London and Stonington. Of the 15, 60% depend on monkfish for 0-5% of the ex-vessel value they buy, though 27% depend on monkfish for \$1,000,000 to \$5,000,000.

MA has 101 monkfish dealers, concentrated in New Bedford (27), Gloucester (12), Chatham (8), Westport (7), Provincetown and Scituate (5 each). Of the 101, 65% depend on monkfish for only 0-5% of ex-vessel value, and 71% depend on monkfish for only 0-15%. Of the 101 dealers however, 21% depend on monkfish for \$1,000,000 to \$5,000,000.

MD has 7 monkfish dealers, all in Ocean City. The vast majority depend on monkfish for only 0-5% of their business, but about half depend on it for \$500,000 to \$5,000,000.

ME has 14 monkfish dealers. Only Portland has at least 5. Of the 14, 36% depend on monkfish for 0-5% of the ex-vessel value they buy, and 76% for only 0-15%. For 31% absolute dependencies ranges from \$50,000 to \$500,000.

NC has 18 dealers, with 6 located in Wanchese – the only community with at least 5 dealers. None of the 15 depends on monkfish for more than 5% of the ex-vessel value it buys, though 11% depend on it for \$1,000,000-\$5,000,000.

NH has 20 monkfish dealers, with the only port having more than 5 being Portsmouth (12). Of the 20, 75% depend on monkfish for only 0-5% of ex-vessel value, though 30% depend on it for \$500,000 to \$5,000,000.

NJ has 62 monkfish dealers, concentrated in Point Pleasant (17), Cape May (13), and Barnegat Light/Long Beach (9). Eighty percent of dealers in NJ depend on monkfish for only 0-10% of their business. But 12% depend on monkfish for \$1,000,000 to \$5,000,000.

NY has 64 monkfish dealers, concentrated in Montauk (19), Hampton Bays/Shinnecock (15), and Point Lookout (6). Looking at Long Island as a whole, it should be noted that Freeport and Greenport also have 4 dealers each, making the region more vulnerable. Of the 64, 68% depend on monkfish for only 0-5% of ex-vessel value, and 79% for only 0-15%. Six percent however depend on it for \$1,000,000 to \$5,000,000.

RI has 38 monkfish dealers, concentrated in Point Judith (19), followed by Little Compton (5). There are also 3 each in North Kingstown, Tiverton and Newport; this proximity increases the general vulnerability of most of RI. Of the 38, 43% depend on monkfish for only 0-5% of ex-vessel value, and 63% depend on it for only 0-15%. But 5% depend on monkfish for \$1,000,000 to 45,000,000.

VA has 17 monkfish dealers, with Newport News and Chincoteague having 5 each. Of the 17, 75% depend on monkfish for only 0-5% of ex-vessel value, though 27% depend on it for \$5,000,000 to \$10,000,000.

4.5.2.6 Census Data for Top Monkfish Ports

Ports meeting the fisheries vulnerability criteria are New Bedford, Gloucester, Boston and Chatham, MA; Barnegat Light/Long Beach, Point Pleasant/Point Pleasant Beach and Cape May, NJ; Point Judith, Little Compton and Tiverton, RI; Portland, ME; Montauk, Hampton Bays/Shinnecock, Waretown and Islip, NY; Chincoteague, VA and Portsmouth, NH.

Levels of occupations in fishing farming and forestry vary widely, as do levels of families in poverty and of education (Table 48). Communities with higher dependence on fishing, higher poverty and lower educational level are generally more at risk, though these factors must also be considered in relation to relative dependence specifically on monkfish.

These and other census data can be found in the port profiles in Appendix 5, where these data are placed in the context of individual port communities (also available at http://www.nefsc.noaa.gov/read/socialsci/community_profiles/). (Islip, NY, however, does not have a profile. Communities were chosen for the Northeast Region profiling effort based on 7 different criteria related to all fishing, and Islip did not meet any of the criteria.) Below they are listed in descending percentage of occupations in farming, fishing and forestry relative to all occupations. It should be kept in mind, however, that fishermen may be undercounted due to being listed as self-employed. The top three communities for percent occupations in farming, fishing and forestry are Long Beach/Barnegat Light, NJ; Chincoteague, VA and Montauk, NY. Communities with 10% or more families in poverty are New Bedford and Boston, MA with Chincoteague, VA close behind at 9.7%.

The communities with the lowest total population (4,000 or fewer residents) are Chatham, MA; Waretown, NY; Little Compton and Point Judith/Narragansett, RI and Montauk, NY. The three communities with the lowest percentage of persons age 25 or over who have graduated at least high school (80% or under) are New Bedford, MA; Chincoteague, VA; and Boston, MA. The communities with the highest unemployment levels (5 % or more) are Montauk, NY and New Bedford, MA, followed closely by Boston, MA with 4.6%. Lower educational levels mean more difficulty in finding new jobs, as do high unemployment levels. Smaller communities have less alternative employment available.

Of the top three ports by revenues and pounds landed (New Bedford, Gloucester and Barnegat Light/Long Beach), Barnegat Light/Long Beach has the highest level of occupational dependence, while New Bedford has the highest poverty level and lowest level of education.

Ports with high median age (50 or over) may indicate an older fishing population (though this is the median for the whole town and not just the fishermen so may simply mean a large number of retirees). Older fishermen are less likely to be able to easily change fisheries or employment. Barnegat light/Long Beach, NJ and Chatham, MA are the only ports where this is so.

Port Community	Median cost of a home	Occupations in farming, fishing and forestry*	Median household income	Families in poverty	Total pop.	Median Age	Pop. (25 or over) High School Graduate or Higher	% Pop. Over 16 In Labor Force and Unemployed
LONG BEACH/ BARNEGAT LIGHT	\$334,400/ \$299,400	None*/ 6.50%	\$48,697/ \$52,361	3.8%/ 2.60%	3,329/ 764	57.3/ 54.9	92.0%/ 92.10%	2.3%/ 1.20%
CHINCOTEAGUE	\$105,600	6.50%	\$28,514	9.70%	4,317	46.1	71.40%	4.10%
MONTAUK	\$290,400	6.10%	\$42,329	8.30%	3,851	39.3	84.00%	7.70%
CHATHAM	\$372,900	3.60%	\$47,037	0.90%	1,667	53.3	89.90%	2.00%
POINT PLEASANT/ POINT PLEASANT BEACH	\$160,100/ \$223,600	0.3%/ 2.60%	\$55,987/ \$51,105	2.00%/ 5.00%	19,366/ 5,112	39.4/ 42.6	88.50%/ 87.10%	2.50%/ 3.10%
LITTLE COMPTON	\$228,200	2.10%	\$55,368	3.70%	3,593	43.5	91.00%	2.00%
GLOUCESTER	\$204,600	2.00%	\$47,722	7.10%	30,273	40.2	85.70%	3.20%
HAMPTON BAYS/ SHINNECOCK [#]	\$178,000	1.70%	\$50,161	6.70%	12,236	38.8	86.60%	3.40%
POINT JUDITH/ NARRAGANSETT [#]	\$195,500	1.60%	\$39,918	8.80%	3,671	44.5	87.50%	2.20%
NEW BEDFORD	\$113,500	1.00%	\$27,569	17.30%	93,768	35.9	57.60%	5.00%
SCITUATE	\$276,000	0.90%	\$70,868	1.40%	17,863	40.7	95.80%	1.60%
TIVERTON	\$144,400	0.60%	\$49,977	2.90%	15,260	40.8	79.50%	3.40%
PORTSMOUTH	\$168,600	0.40%	\$45,195	6.40%	20,784	38.5	91.40%	2.00%
CAPE MAY	\$212,900	0.40%	\$33,462	7.70%	4,668	47.4	87.60%	3.80%
PORTLAND	\$121,200	0.40%	\$48,763	9.20%	64,257	35.7	88.30%	3.30%
ISLIP	\$169,700	0.20%	\$65,359	4.40%	322,612	35	83.00%	2.50%
BOSTON	\$190,600	0.10%	\$39,629	15.30%	589,141	31.1	78.90%	4.60%
WARETOWN	\$109,400	0.00%	\$44,410	1.70%	1,582	40.1	84.80%	0.60%

* The census is known to undercount those employed in fishing. Further, fishing data are unavailable as a unique category due to confidentiality issues. Finally, those who fish out of this community may not live there.

⁺ These communities have two sets of census data, though socially and in terms of fishing they are best treated as a single community. For example, in some cases fish are landed in one area but fishermen live in the other, or sometimes one houses the majority of the recreational fishing and the other the majority of commercial fishing.

[#] These communities include a port of landing for which no census data are available plus census data for the smallest census unit which encompasses the port.

Table 48 Selected Census Variables for Profiled Communities

4.5.2.7 Combined Factors For Vulnerability

Some towns show up in multiple indices of vulnerability, others in only two. Communities with multiple elements of vulnerability are generally more at risk for potential negative impacts. Those with fewer are generally likely to have more neutral or positive outcomes. However, some factors have a stronger impact than others. One very strong impact factor may equal several smaller impacts. Nonetheless, by simple count, the ports in Table 49 are listed with most vulnerable ports at the top.

When considering geographic closeness Washington County, RI has 2 ports with vulnerabilities of 5 or higher. Barnstable County and Bristol County, MA, and Suffolk County, NY have multiple small monkfish ports that do not meet the vulnerability criteria. However, when considered at the county level the cumulative affect may put these ports at greater risk. Risks to individuals and families include job loss, family disruption and damage to long-standing social networks. On the industry side, there is the threat to fishermen, dealers and especially processors of losing workforce locally and market share abroad that may be difficult to regain at a later point in time, as other providers establish new relationships with buyers.

Communities with more than 5 vulnerability factors are New Bedford, MA (9), Long Beach/Barnegat Light, NJ (8), Montauk, NY (8), Chatham, MA (7), Boston, MA (7), Point Judith/Narragansett, RI (6) and Gloucester, MA (5).

ST	Port	Factors
MA	New Bedford	9
NJ	Long Beach/ Barnegat Light	8
NY	Montauk	8
MA	Chatham	7
MA	Boston	7
RI	Point Judith/Narragansett	6
MA	Gloucester	6
VA	Chincoteague	5
RI	Little Compton	5
NJ	Point Pleasant/ Point Pleasant Beach	4
ME	Portland	4
NY	Hampton Bays/Shinnecock	3
RI	Tiverton	2
NH	Portsmouth	2
NJ	Cape May	2
NY	Islip	2
NJ	Waretown	2
MA	Scituate	2

Table 49 Number of Combined Vulnerability Factors per Town Among Port Communities

4.5.2.8 Monkfish Management Areas

The Northern Fishery Management Area (NMA) covers the Gulf of Maine and the northern part of Georges Bank; the Southern Fishery Management Area (SMA) extends from the southern flank of Georges Bank through the Mid-Atlantic Bight to North Carolina.

Ports with the largest percentage of vessels fishing in both areas include New Bedford, Boston and Chatham, MA and Stonington, CT (Table 50).

ST	PORT	Monk value	vessels landing monk	% vessels fishing in both monk areas
MA	NEW BEDFORD	\$5,388,828	291	83
MA	BOSTON	\$1,630,877	29	76
MA	CHATHAM	\$943,051	33	73
CT	STONINGTON	\$191,638	25	72

Table 50 Ports Where Most Vessels Fished in Both FMAs in 2008

Ports with the largest percentage of vessels fishing only in the SMA include Point Lookout and Hampton Bays/Shinnecock, NY Belford/Middletown and Barnegat Light/Long Beach, NJ; Ocean City, MD; Little Compton, RI; and Hampton, Newport News, Chincoteague and Seaford, VA (Table 51).

ST	PORT	Monk value	vessels landing monk	% vessels fishing only in SMA
NY	POINT LOOKOUT	\$18,084	10	100
NJ	BELFORD	\$150,484	22	95
NJ	BARNEGAT LIGHT/LONG BEACH	\$2,656,017	63	84
MD	OCEAN CITY	\$142,982	24	79
RI	LITTLE COMPTON	\$493,290	18	78
NY	HAMPTON BAYS/SHINNECOCK	382643	48	77
VA	HAMPTON	\$37,898	27	74
VA	NEWPORT NEWS	\$51,277	35	69
VA	CHINCOTEAGUE	\$486,644	34	68
VA	SEAFORD	\$49,107	11	64

Table 51 Ports Where Most Vessels Fished in the SMA in 2008

Table 52 shows ports with the largest percentage of vessels who fish only in the NMA: Port Clyde and Portland, ME; Provincetown, Scituate and Gloucester, MA and Seabrook and Rye, NH.

ST	PORT	Monk value	vessels landing monk	% vessels fishing only in NMA
ME	PORT CLYDE	\$36,544	21	81
MA	PROVINCETOWN	\$8,220	10	80
MA	SCITUATE	\$229,971	18	78
NH	SEABROOK	\$45,124	26	77
NH	RYE	\$64,885	17	76
ME	PORTLAND	\$1,132,564	70	67
MA	GLOUCESTER	\$3,035,899	143	63

Table 52 Ports where most vessels fished in the NMA in 2008

Table 53 shows differences in area usage across permit categories. Greater than 80% of vessels with a permit category A, B, or H fished solely in the SMA. Between 50% and 80% of vessels with permit category C or D fished in both FMAs. Only 20% to 25% of vessels with either category D or H fished only in the NMA.

Permit Category	% vessels fishing in NMA only	% vessels fishing in SMA Only	% vessels fishing in both FMAs
A	0%	87%	13%
B	0%	89%	11%
C	6%	22%	72%
D	23%	23%	54%
E	21%	53%	27%
H	0%	100%	0%

*Calculated from data in the Economic Impacts section.

Table 53 Differences in fishery management area usage by Permit Category*

4.5.2.9 Monkfish Vessel Involvement in other Fisheries

Involvement in other fisheries can be measured either in terms of permits held or of fish caught. Given that limited access permits provide special privileges and usually indicate a larger dependence on the fishery, the permits discussion will focus on monkfish limited access permitted vessels only, and other limited access permits held by these vessels. For landings and revenue all vessels landing monkfish are included, because here the involvement is actual rather than potential.

In 2008 there were 758 vessels with a limited access Monkfish permit (Table 54). Of these, most held permits in a variety of other Northeast fisheries. This is a common pattern for all Northeast vessels, which tend to acquire and retain limited access permits even in fisheries in which they are not active in order to maintain as many options as possible. Fifty percent or more of vessels with a Monkfish limited access permit also held limited access permits for: lobster (68%), multispecies (73%), or summer flounder (62%). Other limited access permits held were for scup (42%), black sea bass (37%), squid/mackerel/butterfish (29%), or scallops (24%).

No. MF Permits	Lobster	Multi- species	Summer Flounder	Scup	Black Sea Bass	Squid/ Mackerel/ Butterfish	Scallop	Tilefish	Ocean Quahog	Red Crab
758	633	555	473	315	283	217	181	10	0	0
	84%	73%	62%	42%	37%	29%	24%	1%	0%	0%

Table 54 Number and Percent of Most Common Limited Access Permits Held by Limited Access Monkfish Permit Holders

There was also a pattern by type of limited access permits (see Section 4.5.1.1). Vessels with monkfish C or D permits were significantly more likely to hold another limited access permits than were those with monkfish A or B permits. (C and D permitted vessels also have a differential pattern of DAS usage (Table 55). (For more detail see Section 4.5.1.3)

Permit Category	Number of Active Vessels	DAS Allocated	Percent of allocated DAS that were Used
A	15	455	83%
B	36	1,091	79%
C	94	2,848	60%
D	124	3,757	61%
H	7	212	48%
TOTAL	276	8,363	64%

Table 55 DAS Allocation and Usage across Monkfish Permit Categories in 2008

When considering actual landings and revenue by all vessels landing monkfish (see Table 32 and Table 33), the most important species by revenue was scallops which are mostly caught by dredge. Next most common is a combined category of OTHER which includes a wide variety of species, including summer flounder, black sea bass, scup and squid/mackerel/butterfish. The third most common is multispecies, mostly caught by dragger and gillnet. The fourth most common is monkfish. This happens because these data are from ALL vessels that land any monkfish, not just monkfish limited access permit holders. There were 2,156 open access monkfish permit holders in 2008, although only 504 of these vessels landed some monkfish. There is a significant interrelationship between the monkfish, scallop and multispecies fisheries as shown in Section 4.5.1, and as such, regulatory changes in one FMP frequently affect the others.

5.0 Environmental Consequences of the Alternatives

5.1 Biological Impacts of Alternatives on Monkfish, Non-target Species and Protected Species

The following section describes the biological impact of alternatives under consideration for Amendment 5.

5.1.1 Impact of Biological and Management Reference Points

Biological and management reference points and associated control rules are the foundation of the management plan, but do not, in and of themselves have an impact on biological resources since they are administrative in nature. MSY, OFL, ABC and OY are goals, or reference points indirectly used as the basis for setting catch limits and targets, but do not directly affect fishing effort patterns in the way that DAS allocations, trip limits, gear restrictions and other management measures do. For this reason, both the no action alternative (which is not compliant with the MSRA and NS1 Guidelines) and the proposed reference points and control rules are neutral with respect to direct biological

impacts on target, non-target and protected species. Indirectly, however, these reference points may impact those species in a positive way through improved management of the fishery at sustainable levels.

5.1.2 Impact of ACL and AMs

The ACLs are reference points that, in conjunction with the AMs, do have an impact on management measures. Exceeding the ACLs will trigger an automatic, reactive accountability measure. In that sense, ACLs could have a biological impact.

5.1.2.1 Alternative 1 – No Action

Under the no action alternative, there are no ACLs or accountability measures. This alternative would be out of compliance with the MSRA and NS1 Guidelines. Under the no action alternative, current target TACs, and the associated DAS and trip limits, would remain in effect. Since current target TACs are lower than ACTs proposed as proactive AMs, the no action alternative might be viewed as relatively more conservative than the ACT alternatives under consideration, at least for the target species. This perspective may not be entirely accurate, however, since there are no automatic adjustments or other accountability measures if the target TAC is exceeded. Thus, the current target TACs may have no positive biological impacts on monkfish, especially since the target TACs were exceeded in the SMA years in a row under existing measures.

Furthermore, since monkfish is above the biomass target, restricting effort unnecessarily may have indirect negative impacts on other fisheries as a result of effort shifting out of the monkfish fishery when DAS allocations are exhausted. If the effort shifts into other fisheries that have a greater interaction with protected species that is not fully mitigated by measures within those fisheries or by plans implemented under the ESA or MMPA, then there is a potential negative, but indirect, impact on protected resources under the no action alternative, if such circumstances exist currently or arise in the future.

5.1.2.2 Alternative 2 – Preferred Alternative - ACLs and AMs

5.1.2.2.1 ACLs

Being a reference point, not an actual management measure, the ACLs, *per se*, would not have a biological impact. Given that the proposed ACLs are set to prevent overfishing with consideration given to the scientific uncertainty in the estimate of the OFL and other scientific uncertainty, the ACLs would have a positive biological impact on monkfish, especially when viewed in the context of the AMs, which are management measures affecting fishing effort that are designed to prevent or react to exceeding the ACL. The impact of the ACL on non-target species and protected species is likely to be neutral or positive since it will provide a stricter control, in combination with the associated AMs, on monkfish fishing effort than the current system.

5.1.2.2.2 Reactive AM

The Councils propose that if the ACL in a management area is exceeded in a given year, the overage would be deducted on a pound-for-pound basis from the ACT, and adjustments to management measures would be developed either by the Councils or, if

the Councils do not take appropriate action, by the NMFS Regional Administrator. These adjustments would be to either DAS allocations or trip limits based on the reduced ACT. Since the reactive AM is designed to respond to exceeding the ACL, if invoked, it will have a positive biological impact on monkfish in that it will prevent catches from exceeding the OFL in the future, if it results in permanent modifications to DAS and trip limits, or other modifications to management measures to avoid exceeding the ACL. The existence of such controls on monkfish fishing effort will likely be neutral or positive for non-target species and protected species.

5.1.2.2.3 Proactive AMs (ACT)

The ACT alternatives under consideration are the basis for setting trip limits and DAS allocations for the directed fishery, after accounting for discards and incidental monkfish catch. The Councils' intent is to provide a buffer so that the ACL is not exceeded due to management uncertainty. Management uncertainty results from a number of factors, principally that the assumptions on which the DAS and trip limit model are based would be violated in the future. These assumptions include, but are not limited to, that the incidental catch of monkfish by either limited access vessels not on a monkfish DAS or Category E vessels, state-only permitted vessels and unknown category vessels will be the same in FY2011-FY2013 as they were in FY2008 and FY 2007. The model also assumes that directed fishing effort patterns (on which the analysis is based) will be the same in the upcoming specifications period as they were in the most recent year.

5.1.2.2.3.1 NMA ACT Options

The Councils formally considered two ACT options for the NMA in the draft EA and public hearing process. The Councils identified Option 2 as the preferred alternative:

	TAL Increase	TAL (mt)	Discards (mt)	NMA ACT (mt)	Buffer ACL-ACT (mt)
ACT Option 1	50 %	7,500	563	8,063	9,980
ACT Option 2	100 %	10,000	750	10,750	6,730
ACL	17,480 mt				

Option 1 provides a greater buffer between the ACT and ACL than Option 2. From a biological perspective, the lower the ACT, the more conservative or precautionary the management program would be for the target species, and the lower the risk would be that the ACL is exceeded. If the ACL is exceeded, the likelihood will be greater that overfishing may be occurring, depending on the degree of scientific uncertainty in the estimate of OFL. Option 1 and Option 2 are 35% and 47% of the point estimate of OFL, respectively. Since monkfish biomass is above the biomass target and fishing mortality is estimated to be substantially below the fishing mortality threshold, a greater degree of precaution may not be necessary, although these conclusions are based on a very uncertain assessment.

During the development of this amendment, the PDT conducted projections of the impact of catch at the two ACT options using the SCALE model that was used in the 2007 DPWG assessment. These results should be viewed with caution for several reasons. The model was first applied to monkfish in 2007 and was considered highly uncertain for reasons ranging from the relatively untested status of the model to the poor quality of some of the input data for monkfish. In addition, the model package was not configured to provide stochastic projections. The ‘projections’ shown here use the parameters estimated by the model in 2007 (from data through 2006) and assume a constant (average) recruitment for 2007-2013. The only updated data in the input set are the landings. Thus the model is not tuned to any conditions except landings since 2006.

The above caveats notwithstanding, the results shown in Figure 26 and Figure 27, for NMA Options 1 and 2, respectively, show rising fishing mortality rates and declining biomass under both options, with those changes being more pronounced under the higher Option 2. In both cases, however, biomass is projected to remain above the B_{target} of 92,200 mt, and the fishing mortality rate to be below $F_{\text{threshold}}$ of $F=0.31$.

Following the completion of a stock assessment in 2010, the PDT updated the projections of biomass growth and fishing mortality under the preferred ACT options. The PDT analysis uses a revised model (AGEPRO) and updated data (SCALE model) for the

starting conditions, with landings and survey data through calendar year 2009. Since Amendment 5 will not take effect until 2011, the PDT assumed fishing mortality for 2010 to be equal to 2009, noting that the monkfish management measures have not changed.

As shown in Table 56 there is a zero probability that a catch of 10,750 mt will result in the biomass declining below the updated (2010) minimum biomass threshold, nor that overfishing will occur. The trend in biomass relative to the original (2007) and updated (2010) biomass reference points are shown in Figure 28 and Figure 29, respectively. Figure 30 shows the projected fishing mortality rate under the preferred alternative relative to the updated estimate of $F_{threshold}$.

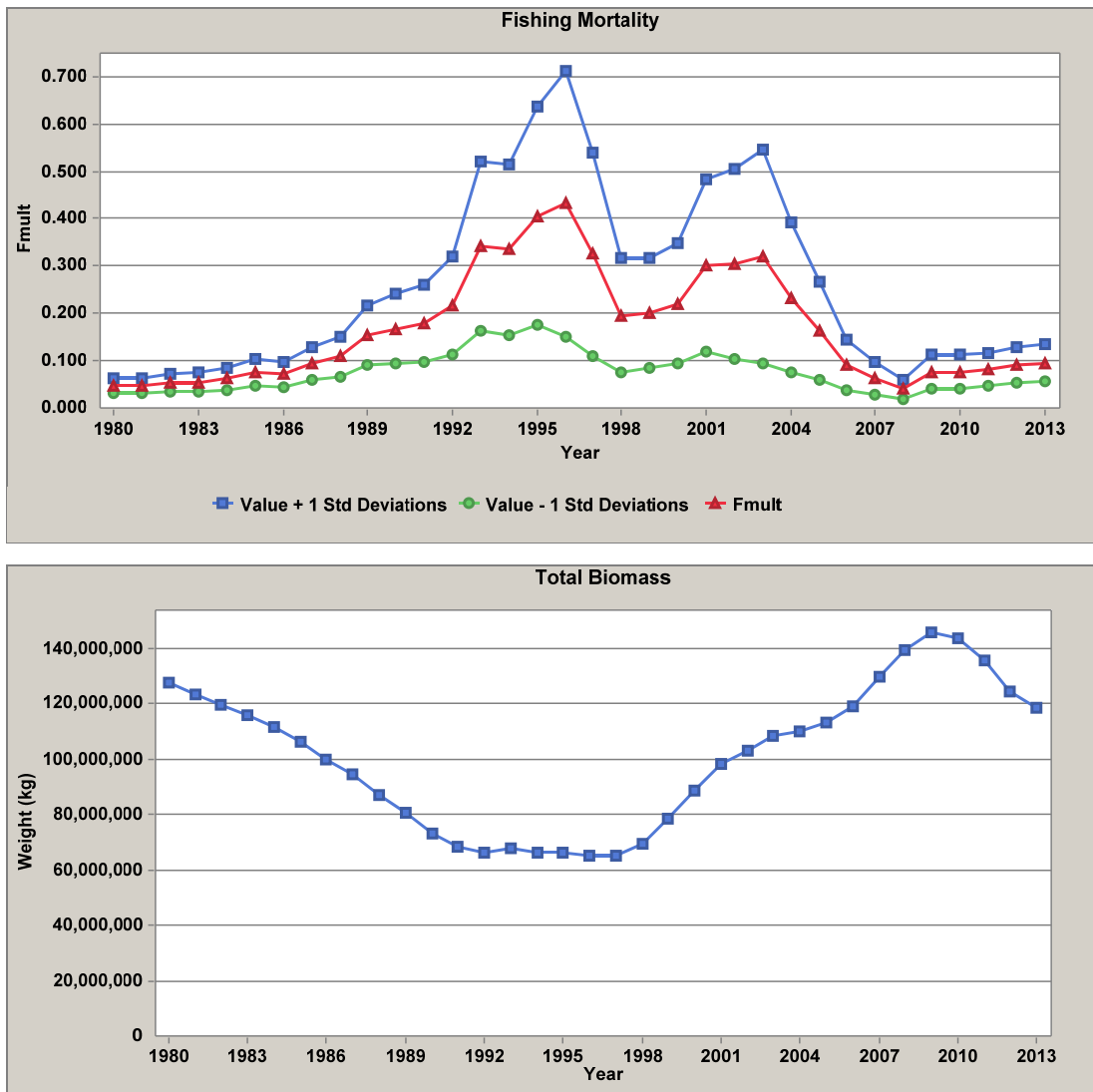


Figure 26 2007 SCALE model projection of NMA ACT Option 1, 8,063 mt, impact on fishing mortality rate and biomass through FY2013.

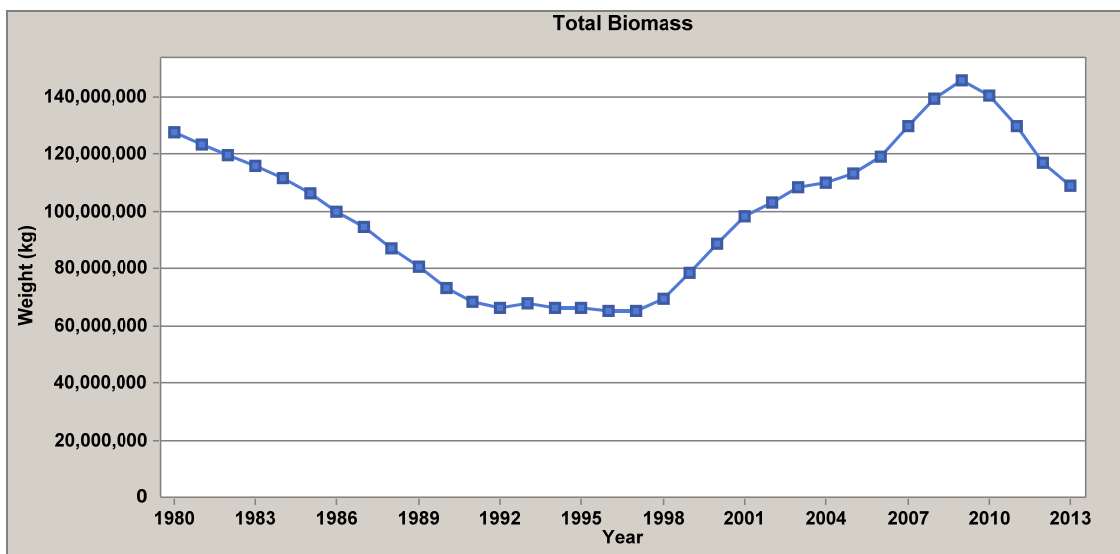
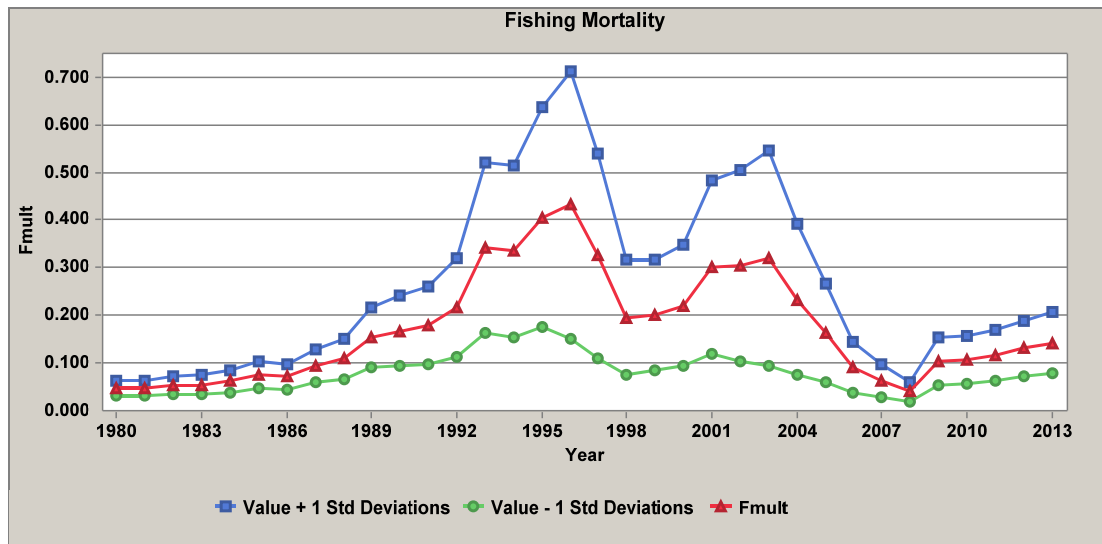


Figure 27 2007 SCALE model projection of NMA ACT Option 2, 10,750 mt, impact on fishing mortality rate and biomass through FY2013.

ACT Option 2

Year	F	Total Catch	Total Biomass	P < Bloss2006	P < Bloss2009	P > Fmax
2010	0.10	4,447	74,102	5%	0%	0%
2011	0.22	10,750	81,907	0%	0%	0%
2012	0.22	10,750	81,204	1%	0%	0%
2013	0.22	10,750	80,225	2%	0%	0%
2014	0.23	10,750	78,944	4%	0%	0%
2015	0.24	10,750	77,548	8%	0%	0%
2016	0.24	10,750	76,383	14%	0%	0%

Table 56 Updated Projection of NMA ACT Option 2, the preferred alternative, showing the probability of exceeding Fthreshold or biomass declining below Bthreshold, using both original 2006 values and updated 2009 Bloss values.

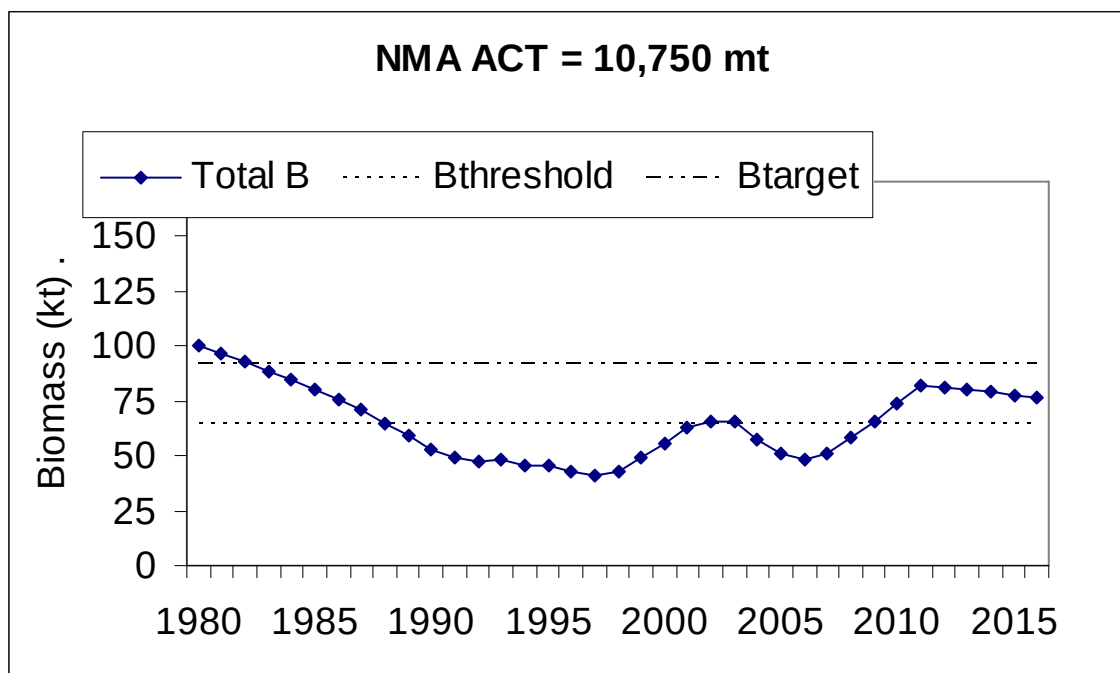


Figure 28 Updated Projection of NMA ACT Option 2, the preferred alternative, showing the trend in biomass through 2016, and 2007 biomass reference point values.

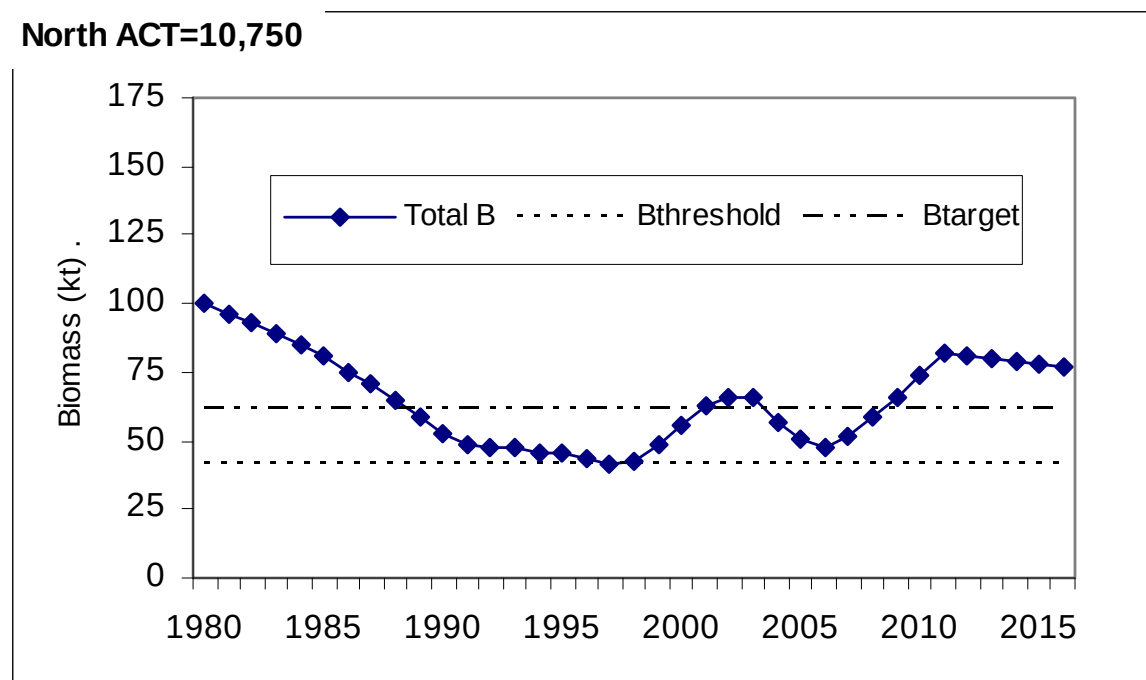


Figure 29 Updated Projection of NMA ACT Option 2, the preferred alternative, showing the trend in biomass through 2016, and biomass reference point values updated through 2009.

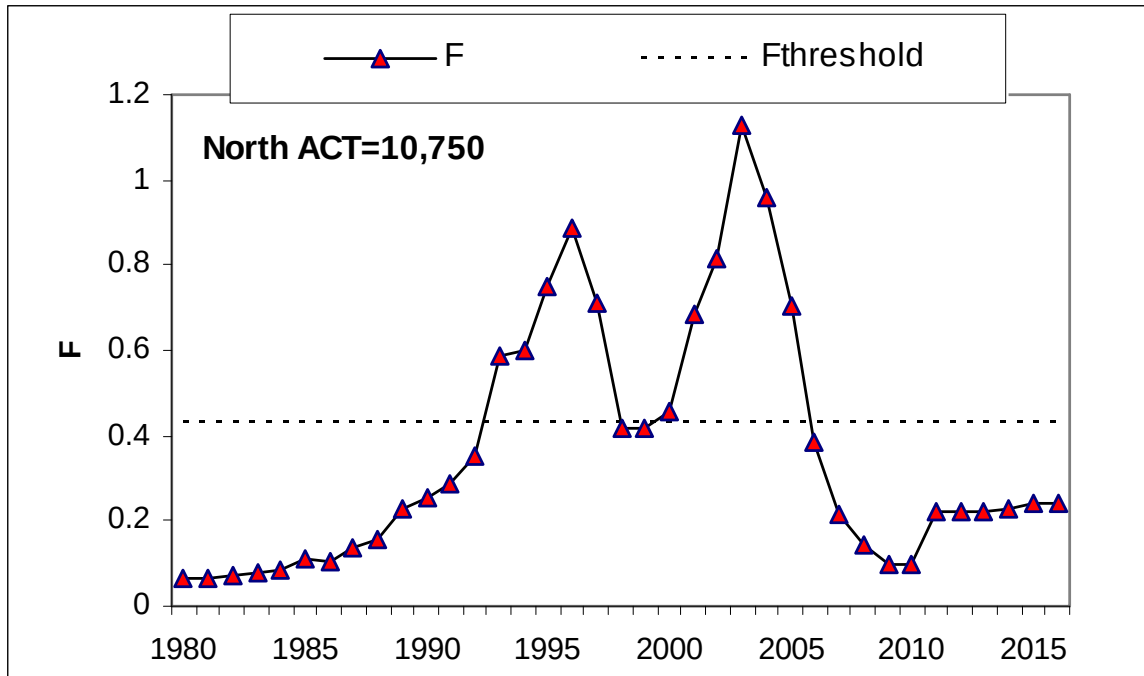


Figure 30 Updated projection of fishing mortality rates under NMA ACT Option 2, the preferred alternative, and the updated estimate of Fthreshold.

In terms of non-target species, a lower ACT would likely result in more effort shifting out of the monkfish fishery, with associated negative effects on other species, depending on the management measures in place to protect those species from overfishing, and the relative catch rates compared to the incidental catch of those non-target species in the monkfish fishery. In the NMA, the distinction between directed monkfish fishing with incidental catch of groundfish species such as grey sole, and directed groundfish fishing with incidental catch of monkfish is only made by the declaration of a monkfish DAS. In general, however, those two fisheries are otherwise indistinguishable, and a lower monkfish ACT may not materially impact groundfish fisheries through effort displacement.

Similarly, depending on the measures adopted in those other fisheries for minimizing protected species interactions and the gear types used in those fisheries, such effort shifts could result in either positive or negative protected species impacts. In the NMA, since the directed monkfish fishery is predominantly a trawl fishery, with relatively fewer protected species interactions, the higher ACT option could have a modestly positive effect on protected species if it results in an effort shift away from gillnet fisheries. If under the lower ACT option, effort shifts to other fisheries with higher rates of interactions such as the gillnet fishery, then this alternative could result in a negative, but indirect, impact to protected species.

5.1.2.2.3.2 SMA ACT Options

The Councils considered two ACT options for the SMA as shown below; Option 2 is the preferred alternative:

	TAL Increase	TAL (mt)	Discards (mt)	SMA ACT (mt)	Buffer ACL-ACT (mt)
ACT Option 1	40 %	7,140	2,071	9,211	3,346
ACT Option 2	75 %	8,925	2,588	11,513	1,857
ACL	13,326 mt				

As with the NMA ACT options, Option 1 provides a greater buffer between the ACT and ACL than Option 2. From a biological perspective, the lower the ACT, the more conservative or precautionary the management program would be for the target species, and the lower the risk would be that the ACL is exceeded. If the ACL is exceeded, the likelihood will be greater that overfishing may be occurring, depending on the degree of scientific uncertainty in the estimate of OFL. SMA Option 2 provides a very small buffer (219 mt, or 1.6% of the ACL) that increases the chances that the ACL would be exceeded, and, consequently, that overfishing could occur, even though the ACL is set well below the point estimate of OFL (53% of OFL). Option 1 and Option 2 are 32% and 46% of the point estimate of OFL, respectively, which is similar to the proportions in the NMA options.

During the development of this amendment, the PDT conducted projections of the impact of catch at the two ACT options using the SCALE model that was used in the 2007 DPWG assessment. These results should be viewed with caution for several reasons. The model was first applied to monkfish in 2007 and was considered highly uncertain for reasons ranging from the relatively untested status of the model to the poor quality of some of the input data for monkfish. In addition, the model package was not configured to provide stochastic projections. The ‘projections’ shown here use the parameters estimated by the model in 2007 (from data through 2006) and assume a constant (average) recruitment for 2007-2013. The only updated data in the input set are the landings. Thus the model is not tuned to any conditions except landings since 2006.

The above caveats notwithstanding, the results shown in Figure 31 and Figure 32, for SMA Options 1 and 2, respectively, show fishing mortality rates essentially flat under Option 1 and rising moderately under Option 2. Under both options, biomass declines slightly for the first two years, and then increases slightly in the third year. In both cases, however, biomass is projected to remain above the B_{target} of 122,500 mt, and the fishing mortality rate to be below $F_{\text{threshold}}$ of $F=0.40$.

Following the completion of a stock assessment in 2010, the PDT updated the projections of biomass growth and fishing mortality under the preferred ACT options. The PDT analysis uses a revised model (AGEPRO) and updated data (SCALE model) for the starting conditions, with landings and survey data through calendar year 2009. Since

Amendment 5 will not take effect until 2011, the PDT assumed fishing mortality for 2010 to be equal to 2009, noting that the monkfish management measures have not changed.

As shown in Table 57 there is a slight (11 %) probability that a catch of 11,513 mt will result in the biomass declining below the updated (2010) minimum biomass threshold. Additionally, there is zero probability that overfishing will occur. The trend in biomass relative to the original (2007) and updated (2010) biomass reference points are shown in Figure 33 and Figure 34, respectively. Figure 35 shows the projected fishing mortality rate under the preferred alternative relative to the updated estimate of $F_{threshold}$.

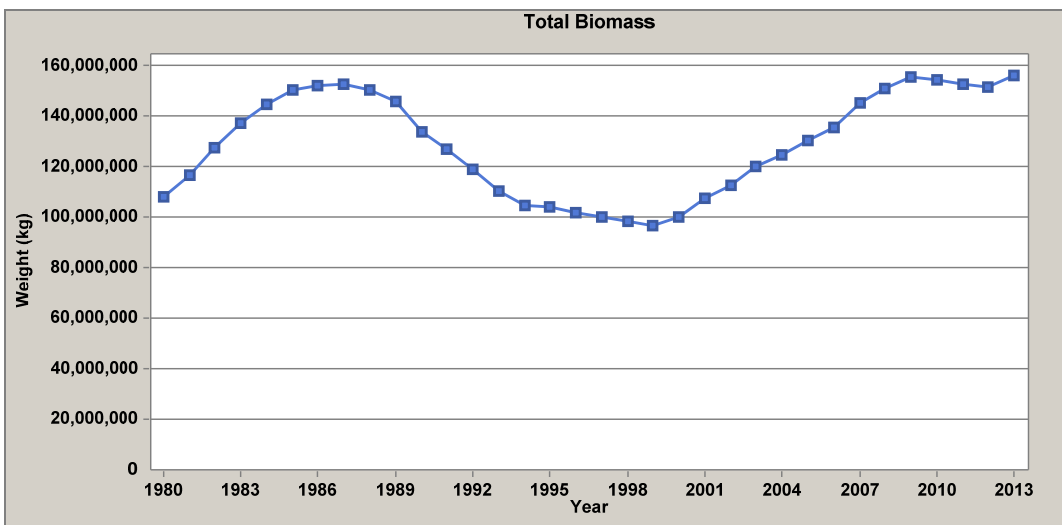
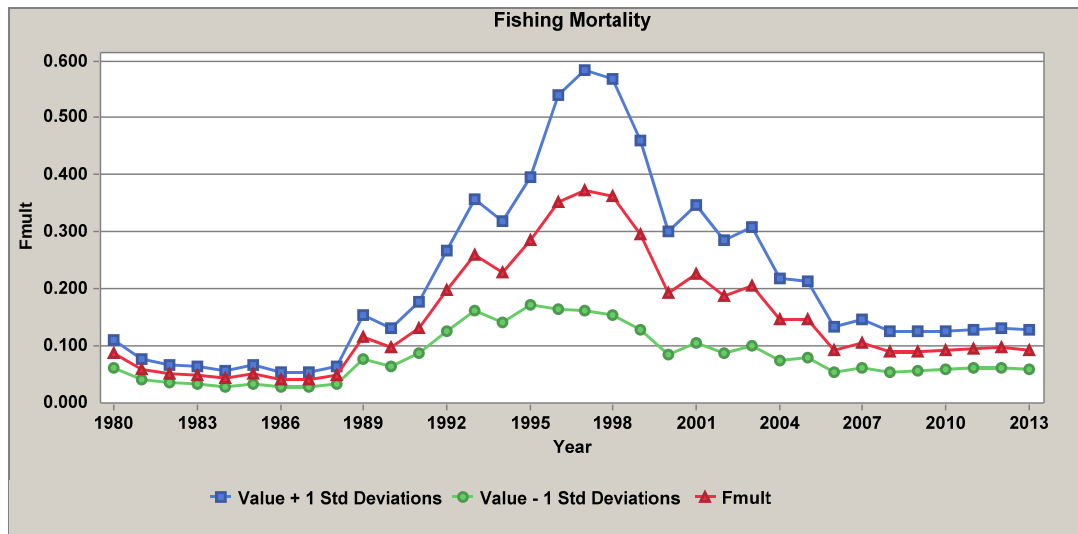


Figure 31 2007 SCALE model projection of SMA ACT Option 1, 9,211 mt, impact on fishing mortality rate and biomass through FY2013.

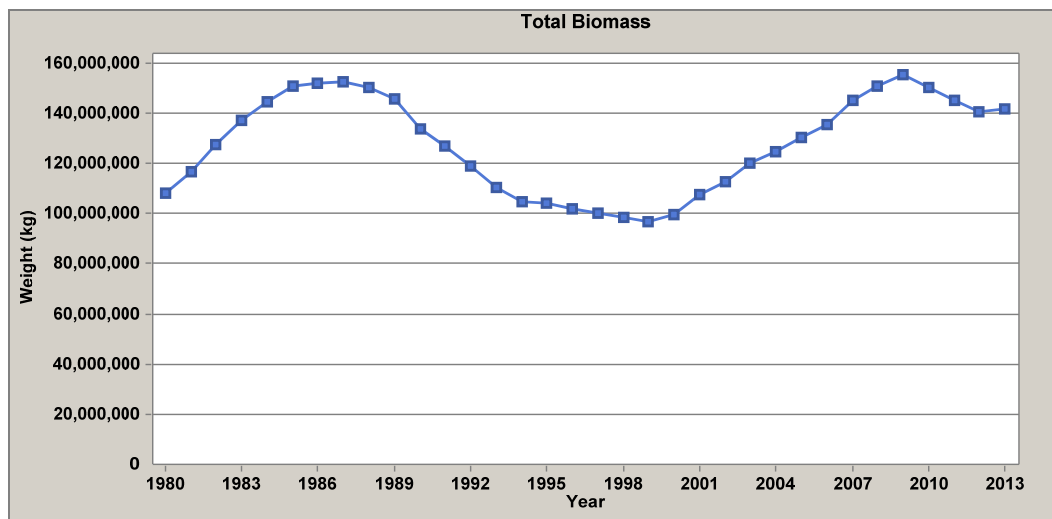
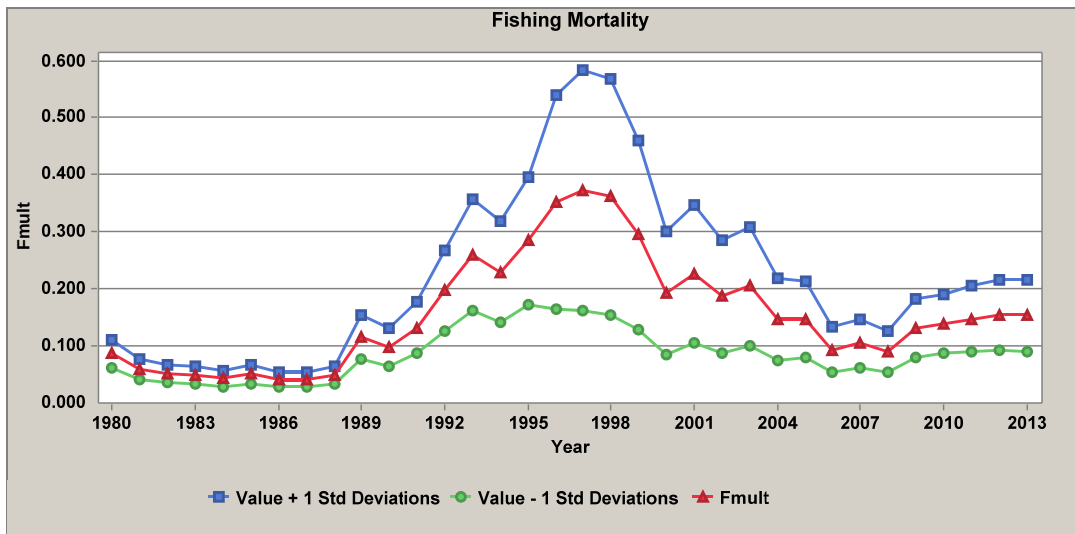


Figure 32 2007 SCALE model projection of SMA ACT Option 2, 11,513 mt, impact on fishing mortality rate and biomass through FY2013.

ACT						
Year	F	Total Catch	Total Biomass	P < Bloss2006	P < Bloss2009	P > Fmax
2010	0.07	6,235	131,344	0%	0%	0%
2011	0.13	11,513	132,243	0%	0%	0%
2012	0.14	11,513	126,295	0%	0%	0%
2013	0.15	11,513	121,055	1%	1%	0%
2014	0.16	11,513	116,674	2%	4%	0%
2015	0.17	11,513	113,979	5%	8%	0%
2016	0.17	11,513	113,777	7%	11%	0%

Table 57 Updated Projection of SMA ACT Option 2, the preferred alternative, showing the probability of exceeding Fthreshold or biomass declining below Bthreshold, using both original 2006 values and updated 2009 Bloss values.

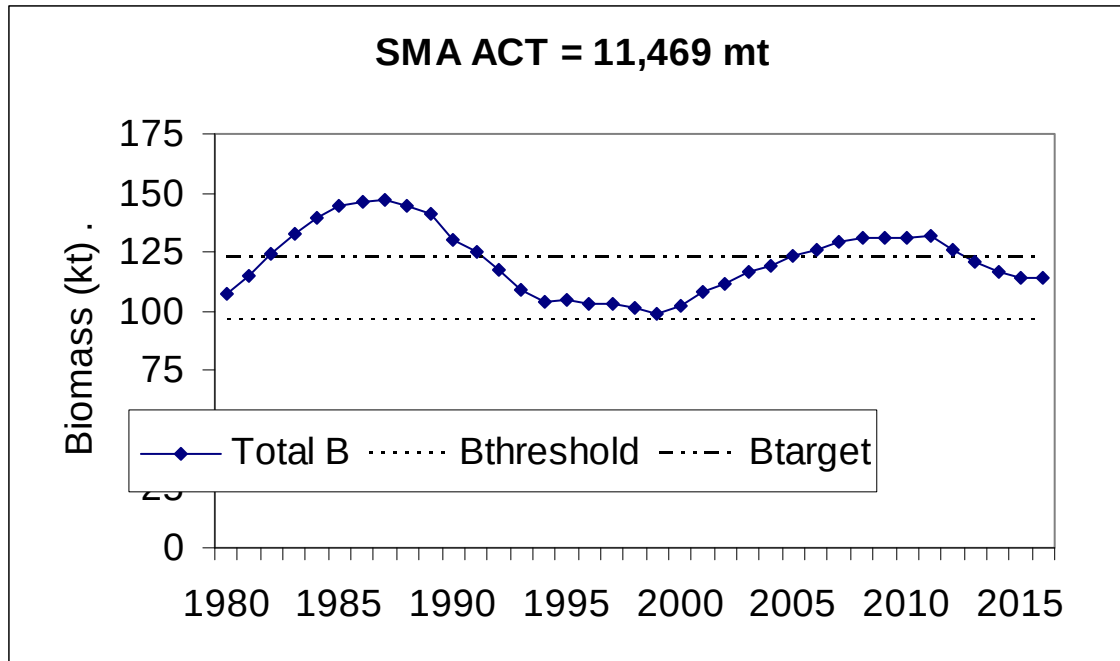


Figure 33 Updated Projection of SMA ACT Option 2, the preferred alternative, showing the trend in biomass through 2016, and 2007 biomass reference point values.

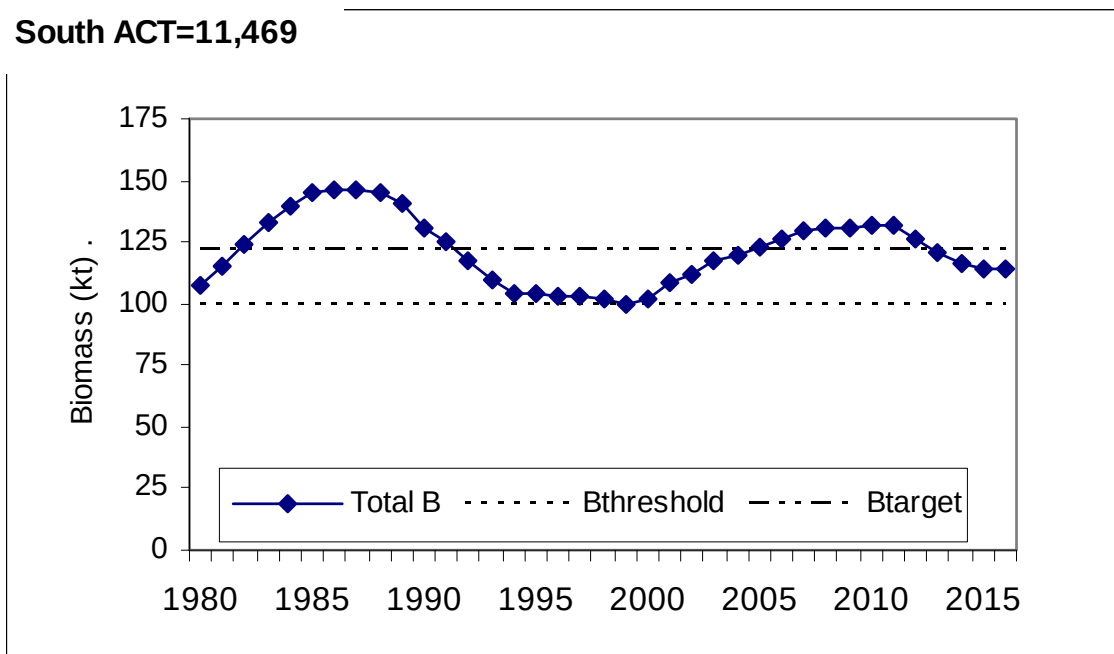


Figure 34 Updated Projection of SMA ACT Option 2, the preferred alternative, showing the trend in biomass through 2016, and biomass reference point values updated through 2009.

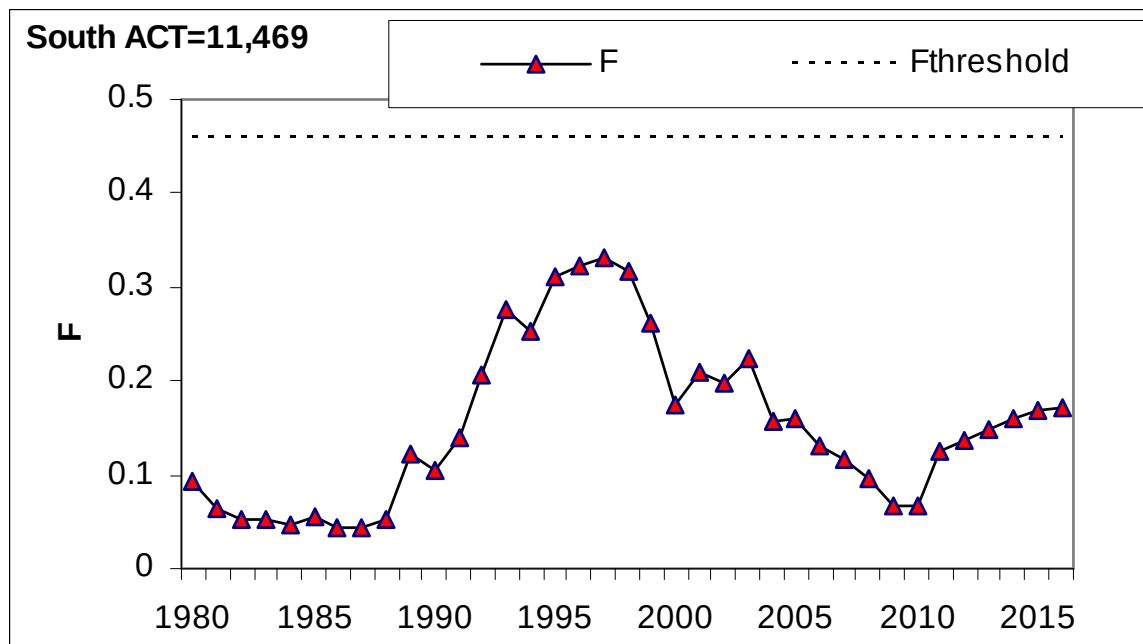


Figure 35 Updated projection of fishing mortality rates under SMA ACT Option 2, the preferred alternative, and the updated estimate of Fthreshold.

In terms of non-target species, the big difference between NMA and SMA fisheries is that in the SMA, the relationship between groundfish and monkfish fisheries is much less integrated. The directed monkfish fishery in the SMA has very little interaction with groundfish species, and it is clearly a directed fishery with incidental catch comprising mostly skates and dogfish. Therefore, a higher ACT option (and associated management measures) could likely result in increased incidental catch of those species, but, on the other hand, a lower ACT would likely result in vessels shifting effort into directed fisheries on those or other regional fisheries. Whether that effort shift has a net negative or positive effect depends on the species targeted and the management measures in place to prevent overfishing of those species in their respective FMPs. It should be noted that by 2012 all fisheries will be managed with ACLs to prevent overfishing and AMs, so the overall biological impact of effort shifts will be mitigated by those controls.

In terms of protected species, the same considerations exist as described in the impact discussion for the NMA ACT options. Given the higher ACT (Option 2) and increases in associated management measures, there is a good likelihood that gillnet effort could increase slightly having a moderately negative impact on protected species. Furthermore, the higher the ACT, the less effort will likely be displaced into other fisheries. Depending on the relative interaction of gear with protected species in those fisheries, compared to that in the directed monkfish fishery in the SMA, the impact on protected species could be negative or positive. Actions being proposed or taken to protect sea turtles, harbor porpoise and large whales will mitigate much of the impact of the fisheries (both the directed monkfish fishery and other fisheries in the region) on protected species.

5.1.3 Impact of DAS and Trip Limits Alternatives

5.1.3.1 NMA DAS and trip limit options

The Councils considered three DAS/trip limit options for each of the two NMA ACT options discussed above. The basis for these options is to maintain current DAS allocations (i.e., no action on DAS), and adjust the trip limit (to account for the increase TAL), maintain current trip limits (i.e., no action on trip limits) and increase DAS, or a combination. The DAS allocations range from 31 to 45 under ACT Option 1, and 31 to 51 under ACT Option 2. Trip limits for permit categories A&C are 1,250 lbs., tail wt. per DAS for all options (same as no action), since that is the highest observed average daily landings during the base year, and appears from the data to not constrain catches. Trip limits for permit categories B&D range from 470 lbs. tail wt. per DAS (same as no action), to 700 lbs., tail wt. per DAS, under ACT Option 1, and 470 lbs., tail wt. per DAS to 950 lbs., tail wt. per DAS under ACT Option 2. For the NMA, there are no options proposed that would result in the same trip limit/DAS combination currently in effect. The preferred NMA option is option 2c, with 40 DAS and trip limits of 1,250 lbs, and 800 lbs. (Categories AC and BD, respectively)

Since all of these options are designed to achieve the respective ACT option, they are probably equivalent with respect to impacts on monkfish, and are consistent with the preventing overfishing, as determined by the ACL. In some cases a higher trip limit may reduce discards, although this potential is somewhat mitigated by the proposal (see below) to allow vessels to land an overage of one-day's limit and have the DAS account adjusted accordingly. Based on landings data for 2007 and 2008, however, even the lowest trip limits do not appear to be constraining on monkfish trips.

In terms of impacts on non-target species, the options to retain the existing 31 DAS allocation will likely have no effect. Those options that increase the DAS allocation imply a proportionally greater amount of bycatch resulting from the increased fishing effort, particularly of skates and dogfish, possibly resulting in negative biological impacts to these species. The magnitude of these potential impacts is uncertain but could be substantial given the 64 % increase in DAS under Option 2B. Under the MSRA mandate, for ACLs and AMs, both skates and dogfish catch will be monitored and accounted for under the provisions of their respective FMPs. Additionally, more opportunity to direct effort on monkfish reduces the incentive to fish in other fisheries (such as summer flounder, sea scallop, etc.), resulting in a potential positive biological impact to those fisheries.

Similarly, there are no anticipated impacts to protected species resulting from maintaining the existing DAS allocation under Options 1A and 2A. However, increases in fishing effort resulting from a higher DAS allocation under Options 1B, 1C, 2B, and 2C could have a negative impact on protected species as a result of increased potential for interactions, depending on the time of year and areas in which these additional DAS are utilized.

5.1.3.2 SMA DAS and trip limit options

As with the NMA options discussed above, the Councils are considering three DAS/trip limit options for each of the two SMA ACT options. The basis for these options is to

maintain current DAS allocations (i.e., no action on DAS), and adjust the trip limit (to account for the increase TAL), maintain current trip limits (i.e., no action on trip limits) and increase DAS, or a combination. Current, no action, DAS are 23 in the SMA. The DAS allocation options range from 15 to 23 under ACT Option 1, and 23 to 28 under ACT Option 2. Trip limits for permit categories A&C are either 550 (i.e., no action) or 700 lbs. tail wt. per DAS under both ACT Options. Trip limits for permit categories B&D are either 450 (i.e., no action) or 600 lbs. tail wt. per DAS under both ACT Options. The preferred alternative is Option 2B, with no change to trip limits but an increase in DAS from 23 to 28.

Since all of these options are designed to achieve the respective ACT option, they are probably equivalent with respect to impacts on monkfish, and are consistent with the preventing overfishing, as determined by the ACL. In some cases a higher trip limit may reduce discards, although this potential is somewhat mitigated by the proposal (see below) to allow vessels to land an overage of one-day's limit and have the DAS account adjusted accordingly. Based on landings data for 2007 and 2008, however, even the lowest trip limits do not appear to be constraining on monkfish trips.

In terms of impacts on non-target species, those options with less DAS imply that the potential for interaction with other species will be lower; more DAS implies a greater amount of bycatch, particularly of skates and dogfish. Thus, this action may have a slightly positive or negative impact on non-target species depending on the option chosen. The options that do not change the DAS allocation are expected to have no effect compared to the no action alternative. However, more opportunity to direct effort on monkfish reduces the incentive to fish in other fisheries. Given that all managed fisheries will be governed by ACLs and AMs in the near future, such effort shifts are not likely to have a substantial biological impact on those other fisheries.

Similarly, if fewer monkfish DAS allocations results in effort shifting to other fisheries that have known interactions with protected species, the potential exists for a negative indirect impact of those options on protected species, to the extent protected species interactions are not fully mitigated by measures within those fisheries or by plans implemented under the ESA or MMPA, if such circumstances exist currently or arise in the future. Additionally, the SMA options that maintain the existing DAS allocation of 23 DAS (Options 1A, 1B, 2A and 2C) will likely be neutral with respect to impacts on protected species compared to the no action alternative, whereas the option to reduce the DAS allocation to 15 DAS (Option 1C), may have a slightly positive effect. Conversely, the option that increases the SMA DAS allocation to 28 DAS (Option 2B) could have a negative impact on protected species, depending on the time of year and areas in which these additional DAS are utilized.

5.1.4 Impact of other adjustments to the DAS and trip limit management program

5.1.4.1 Automatic DAS Adjustment for Trip Limit Overage

5.1.4.1.1 Alternative 1 - No Action

Under this alternative, vessels that exceed the trip limit applicable to the amount of time away from port may not return to port until sufficient time has elapsed or discard the overage. In the case of vessels fishing with gillnets, when a vessel reaches its trip limit, before hauling through all its gear, it may leave the remaining nets in the water without clearing them, resulting in product quality declines and subsequent discards. Not only does this circumstance cause unnecessary discards, but it also results in vessels fishing for a longer time over the course of the year to use up their DAS allocations. Besides the monkfish discards that occur, there is increased opportunity for incidental catch of other species, such as skates, dogfish, and, in the NMA in particular, some groundfish species. For vessels that use gillnets, the longer the gear is in the water, the greater the chance is that there will be protected species interactions, depending on the location and time of year. Overall, the magnitude of those impacts (monkfish discards, incidental catch and protected species interactions) depends on the frequency of overages, and how much more effort results from not “charging” vessels’ DAS accounts for those overages. Based on landings data for 2007 and 2008, this problem occurs mostly in the SMA, where vessels are landing the trip limits, or very close, on most trips.

5.1.4.1.2 Alternative 2 – Preferred Alternative - Automatic DAS Adjustment for Trip Limit Overage

Under this proposal, a vessel may exceed the applicable trip limit in the amount equivalent to one day’s trip limit. The vessel’s DAS account balance would be adjusted accordingly under one of three options: charging either 30 hours (Option 1), 24 hours (Option 2, the preferred option), or one minute (Option 3) to the last day or partial day (counting the partial day as a full day) of the trip. All three options would have a positive effect on the target species compared to taking no action by reducing regulatory discards and better matching effort counted to actual catch (rather than landings). In other words, these options reduce monkfish effort by reducing allocated effort in the amount corresponding to the monkfish caught rather than monkfish landed (to the extent the trip limit causes the discards, rather than other factors such as small size or product quality). Option 2 is the most conservative and Option 3 is the least conservative with Option 1 in the middle.

In terms of non-target species and protected species, the net result depends on several factors. If the resulting monkfish effort “reduction” causes vessels to expand their efforts in other fisheries where the interaction with protected species is greater, then these options could have an indirect, but negative effect. On the other hand, if the interaction with protected species in those other fisheries is less than that in the directed monkfish fishery, the impact of these options would be positive. If those other directed fisheries target species that are already incidentally caught in the directed monkfish fishery, then there could be a net increase in catch of those species. Whether or not that impact will be negative depends on the status of those species and the management measures in place to control fishing effort, as well as the relative size of the directed catch compared to what would be caught incidentally in the monkfish fishery. To the extent that this proposal will reduce the amount of time that gear is in the water (since it will accelerate the rate at which DAS are used), it will likely have a moderately positive impact on protected species.

5.1.4.2 Category C and D permit GF DAS Usage

5.1.4.2.1 Alternative 1 – Preferred Alternative - No Action

Currently, monkfish Category C and D vessels with a multispecies permit are required to use a multispecies Category A (groundfish) DAS in conjunction with a monkfish DAS until all of the vessel's multispecies DAS allocation are used up, at which point the vessel can fish on a monkfish-only DAS. The original intent of this requirement was to restrict the ability of vessels to increase overall effort by fishing monkfish DAS separately from groundfish DAS while still having an incidental or component catch of groundfish. This no-action alternative does not change the amount of monkfish effort or groundfish effort allocated to each vessel, but it might indirectly reduce the amount of effort targeting monkfish since vessels fishing on a monkfish-only DAS in the NMA are required to fish in a groundfish exempted fishery. There is only one seasonal exempted monkfish fishery in the NMA, and it only applies to gillnets. Therefore, trawl vessels (which are the predominant gear in the NMA monkfish fishery) with fewer groundfish DAS than monkfish DAS would not be able to use their full allocation of monkfish DAS in the NMA. The full effect of this depends on whether the Councils adopt the proposal described below to eliminate the groundfish DAS usage requirement for vessels in groundfish sectors. If that proposal is adopted, then the impact (the indirect reduction on monkfish effort) would only apply to Category C and D vessels fishing in the common pool under the Multispecies FMP.

To the extent that groundfish species are not available to vessels at the time they begin to target monkfish, requiring the vessel to utilize a groundfish DAS in order to be able to fish for monkfish, under the no action alternative could be viewed as indirectly positive for groundfish species, since allocated groundfish DAS would be used up without being used to target groundfish. This impact on non-target species would be greater in the SMA, where the directed groundfish fishery is primarily a winter fishery, taking place after most vessels have utilized their groundfish DAS while fishing for monkfish during the spring and early summer. This indirect approach, however, is not the appropriate way to control groundfish effort. Furthermore, vessels could delay fishing on a monkfish DAS until groundfish are available, which would negate the effort reduction described above.

The impact of the no action alternative on protected species, and the proposed action are equivalent (neutral) since there is no overall change in the amount of monkfish or groundfish effort allocated.

5.1.4.2.2 Alternative 2 – Category C and D permit Groundfish DAS Usage

This alternative would allow vessels to choose when they declare a monkfish-only DAS or a combined monkfish/groundfish DAS. Since vessels are required to use the same mesh size (10-inch mesh or larger) whether they are under a monkfish-only DAS or a combined monkfish/groundfish DAS, this action would not likely change protected species impacts. Similarly, this action would not result in a change in overall allocated monkfish effort, so the alternative is neutral with respect to impacts of the fishery on target species and protected species. In terms of non-target species, if vessels are able to increase their catch of groundfish because they can elect to use their combined DAS

when groundfish species are more available to them, rather than simply burn the DAS without being able to catch groundfish, then this alternative could be considered to have an indirect negative impact on groundfish species. This possible effect is somewhat mitigated, however, by the establishment of ACLs and AMs, as well as increased monitoring in the groundfish fishery. The real impact, however, depends on whether the multispecies FMP appropriately allocates DAS to the level that the groundfish fishery can sustain. If the allocations are appropriate, then the impact of enabling vessels to use those DAS to target groundfish would be neutral.

5.1.4.3 Monkfish Vessels in Groundfish Sectors - GF DAS usage requirement

5.1.4.3.1 Alternative 1 – Preferred Alternative - No Action

With no change to the current rules, monkfish category C and D vessels that enroll in groundfish sectors would be required to use a groundfish DAS when fishing on a monkfish DAS, even though the sector rules do not require member vessels to use groundfish DAS. If the sector operations plans do not require vessels to use groundfish DAS, then the requirement to use a groundfish DAS on a monkfish DAS is merely an administrative requirement under the Monkfish FMP, with no impact on fishing effort, and, thus, no impacts on target species, non-target species or protected species.

5.1.4.3.2 Alternative 2 – Eliminate Groundfish DAS usage requirement

Alternative 2 proposes to eliminate the groundfish DAS usage requirement for Category C and D vessels enrolled in a groundfish sector. As discussed under the no action alternative, when groundfish vessels are no longer required to use groundfish DAS, this change becomes a purely administrative one that will not have any effect on either groundfish effort or monkfish effort. Therefore, this alternative is neutral with respect to impacts on target species, non-target species and protected species.

5.1.5 Changes to the RSA Program

5.1.5.1 Carryover RSA DAS

When the Councils initiated this amendment, vessels were prohibited from carrying over allocated, but unused RSA DAS. On March 13, 2010, NMFS published a final rule for a technical amendment to the FMP that allowed vessels to carryover unused RSA DAS to the subsequent year, so the Councils terminated further consideration of this provision.

5.1.5.2 Allow Changes to RSA Program by Framework Adjustment

5.1.5.2.1 Alternative 1 – No Action

Currently changes to the RSA program must be done through a plan amendment. This is an administrative provision with no biological impact.

5.1.5.2.2 Alternative 2 – Preferred Alternative - Allow Changes to RSA Program by Framework Adjustment

The Councils propose allowing changes to the RSA program be done by framework adjustment. Whether such changes are done through a plan amendment (under no action)

or through a framework adjustment, the impact of those changes would need to be analyzed and discussed in the accompanying environmental documents. Since this is purely an administrative change, it is neutral with respect to impacts on target species, non-target species and protected species.

5.1.6 Mandatory VMS

5.1.6.1 Alternative 1 – Preferred Alternative - No Action

Currently, monkfish limited access vessels are not required by the FMP to have a VMS. All category C and D vessels, in fact, are required to have a VMS under the terms of either the Northeast Multispecies FMP or Atlantic Sea Scallop FMP. There are approximately 65 vessels in categories A, C and H, out of a total of 758 limited access permits. VMS requirements are for administrative and enforcement purposes and, as such, do not have any direct biological impact on target species, non-target species or protected species.

5.1.6.2 Alternative 2 – Mandatory VMS

The Councils considered requiring all monkfish limited access vessels to have an operational VMS while on a monkfish DAS. As noted above in the discussion of the no-action alternative, this is an administrative change with no direct biological impact. To the extent VMS improves enforcement or precision in estimates of the distribution of effort, there could be a moderately positive indirect impact on monkfish, non-target species, or protected species compared to taking no action.

5.1.7 Allow landing of Monkfish Heads

5.1.7.1 Alternative 1 -1 No Action

Current regulations allow monkfish to be landed whole or as tails, with a provision for allowing and counting landings of monkfish livers. Conversion factors are used to scale up these product forms to live weight equivalents in the landings database. In recent years a market has developed for monkfish heads, but there is no provision for considering the landing of detached monkfish heads in the landings database. Vessels that want to land monkfish heads must leave them attached to the body. If a vessel lands monkfish as tails only, it must discard the heads. Since the fish are already dead and accounted for when the tails are retained, whether or not the head is landed, the impact on monkfish, non-target species, and protected species of the no-action alternative is neutral.

5.1.7.2 Alternative 2 – Preferred Alternative - Allow landing of Monkfish Heads

The Councils propose allowing vessels to land unattached monkfish heads provided the total weight of the heads does not exceed 2.32 times the total weight of tails on board. Since the proposal limits the amount of detached heads that can be landed to that which would correspond to the amount of tails that are already going to be landed, there is no new opportunity for vessels to increase fishing effort under this alternative. Those heads would otherwise simply be discarded. As a result, there is no direct impact to monkfish, non-target species, or protected species associated with this alternative.

5.2 Habitat Impacts

The overall effect of the fishery on EFH was analyzed and mitigated for in Amendment 2, and in Multispecies Amendment 13. Bottom trawling for monkfish was determined to adversely affect EFH for other demersal species managed by the NEFMC and MAFMC, but not monkfish EFH. The fishery must continue to respect the 2,811 square nautical miles of habitat closed areas established by the Multispecies Amendment 13 as well as the Oceanographer and Lydonia Canyon closures adopted in Monkfish Amendment 2. Monkfish fishing effort will continue to occur in areas that are already open to bottom tending mobile gears or by gears that have been determined to not adversely impact EFH in a manner that is more than minimal and less than temporary in nature.

Most of the alternatives under consideration in this action will not directly increase monkfish effort in either management area, since they are administrative in nature, or otherwise do not affect the magnitude or distribution of fishing effort. Specifically, the alternatives under consideration that are not likely to affect monkfish fishing effort and commensurate impacts of the fishery on EFH include:

- statement or establishment of the biological and management reference points under the MSRA mandate;
- establishment of ACLs and accountability measures;
- the automatic DAS adjustment for trip limit overages (may actually result in a reduction in effort for a given level of catch by reducing bycatch);
- allowing C and D permit category vessels with multispecies permits to choose when to use their groundfish DAS in conjunction with their monkfish DAS;
- groundfish DAS usage requirement for vessels in groundfish sectors;
- allowing for RSA DAS carryover;
- allowing for adjustments to the RSA program through a framework action;
- mandatory VMS;
- and, allowing vessels to land monkfish heads.

While the establishment of ACLs and AMs is an administrative action with no direct effect on fishing effort compared to taking no action, the specification of DAS and trip limits associated with the proactive AM ACT options will change the magnitude and, perhaps, distribution of effort spatially and temporally compared to current effort levels, or those discussed and analyzed in previous specification actions. The discussion of habitat impacts below examines changes in effort relative to the historical effort allocation of 40 DAS that was analyzed in the EIS's of the original FMP and Amendment 2. Changes that have occurred in annual DAS allocations have fluctuated from year-to-year below that allocation (e.g., 12, 23, & 31 DAS), but not above. Current DAS allocations are 31 (NMA) and 23 (SMA), but these levels could be adjusted under the no action alternative, depending on stock status and TAC overages. Therefore, in this discussion the 40 DAS allocation is being used as a proxy for the no action specifications alternative in the following discussion, since that is the maximum value analyzed in the DEIS for the FMP.

This amendment considers two ACT options for each area, and within each ACT option, there are three options with different combinations of DAS and trip limits. These combinations are based on maintaining current (FY2007-2010) DAS allocations, and adjusting the trip limits, maintaining the current trip limits and adjusting the DAS allocations, or adjusting both. Of all of these twelve options under consideration for the specification of DAS and trip limits only two could possibly result in an increase compared to the historical allocation of 40 DAS that was implemented in Amendment 2, and that is being used as a proxy for the no action alternative. Both of those are in the NMA: Option 1B would allocate 45 DAS, and Option 2B would allocate 51 DAS. In the SMA, only Option 2B would increase DAS over that which was allocated during the past three years, to 28 DAS from 23, but would still be below the 40 DAS allocation. The options and qualitative habitat impact of all the options are shown in Table 58 (NMA) and Table 59 (SMA). The preferred alternatives are Option 2C (NMA) and Option 2B (SMA).

Vessels in the NMA are primarily groundfish vessels who would be either common pool or sector members, based on the measures proposed in Amendment 16 to the Multispecies FMP, currently under review. Common pool vessels' DAS will be severely curtailed by both a 50% reduction in allocated DAS and the 24-hour clock (where each part of a DAS would be counted as a full DAS against the allocation). Since there are no trawl exempted fisheries in the NMA, the constraining factor on monkfish effort will be the reduced groundfish DAS allocations, as those vessels will not likely be able to use all of their monkfish DAS.

The analysis of effort impacts of sector vessels is more complicated, and, depends on whether the alternative proposed in this amendment to remove the groundfish DAS requirement (when on a monkfish DAS) is adopted. The Councils are not taking action on this proposal, and, therefore, those vessels would most likely still be constrained for the foreseeable future by the reduced allocation of certain groundfish species that are caught coincidentally with monkfish, such as grey sole, since a vessel will need sector ACE to fish in an area when on a monkfish/groundfish DAS. The constraint imposed by reduced groundfish quota or DAS allocations will limit all sector vessels' ability to utilize their entire monkfish DAS allocations. As discussed in Section 4.5.1.3 vessels in the NMA are currently not using their entire monkfish DAS allocation or landing the full amount of the trip limit, suggesting that any increase in the DAS allocation or trip limits would not likely cause an increase in directed monkfish fishing effort.

In summary, for the reasons stated above, the actions proposed in this amendment would not have an adverse impact on EFH for any federally managed species in the region. Because the EFH Final Rule (50 CFR 600.920 (e)(1-5)) states that "federal agencies are not required to provide NMFS with assessments regarding actions that they have determined would not adversely affect EFH", no EFH Assessment is provided for this action.

TAC Increase (percent)	NMA TAC (mt)	NMA OPTION	AC trip limit (tail wt. per DAS)	BD trip limit (tail wt. per DAS)	DAS	Potential habitat impact compared to 40 DAS
50% (ACT Option 1)	8,063	1A	1250	700	31	Positive
		1B	1250	470	45	Negative
		1C	1250	600	40	Neutral
100% (ACT Option 2)	10,750	2A	1250	950	31	Positive
		2B	1250	470	51	Negative
		2C	1250	800	40	Neutral

Table 58 Specification Options (DAS and trip limits) for the NMA under two ACT options and relative habitat impacts

TAC Increase (percent)	SMA TAC (mt)	SMA OPTION	AC trip limit (tail wt. per DAS)	BD trip limit (tail wt. per DAS)	DAS	Potential habitat impact compared to 40 DAS
40% (ACT Option 1)	9,211	1A	550	450	23	Positive
		1B	550	450	23	Positive
		1C	700	600	15	Positive
75% (ACT Option 2)	11,513	2A	700	600	23	Positive
		2B	550	450	28	Positive
		2C	700	600	23	Positive

Table 59 Specification Options (DAS and trip limits) for the SMA under two ACT options and relative habitat impacts. The preferred options are 2C (NMA) and 2B (SMA).

5.3.Economic Impacts

The proposed management changes consist of a variety of measures that would impact vessels participating in monkfish fishery. The measures under consideration include creation of new biological reference points and control rules, setting ACL equal to ABC, using ACT as proactive and reactive AMs, allowing automatic DAS adjustment for trip limit overage, changing the requirements for groundfish DAS usage by limited access monkfish Category C or D permit holders, eliminating groundfish DAS usage for limited access monkfish Category C or D permit holders who are also enrolled in a ground fish sector, allowing changes to the RSA program through framework adjustment, a requirement for mandatory use of VMS, and allow landing of monkfish heads.

As of September, 2009 there are approximately 758 limited access monkfish permit holders and approximately 2,156 vessels holding an open access category E permit. Based on activity report of the fishing year 2008, 573 limited access permit holders participated in the monkfish fishery. Of these, 73 fished for monkfish only in the NMA, 167 fished only in the SMA and 333 vessels fished in both areas. At the same time, 504 incidental permit holders reported landing monkfish. Of these, 104 fished only in the NMA, 266 fished only in the SMA and 134 fished both in NMA and SMA. Table 60 shows the number of active monkfish vessels fishing in each area by permit category.

The proposed measures under Amendment 5 would affect at least 573 limited access vessels that fished for monkfish in NMA and/or SMA. The following section provides a discussion of the impacts for each measure. Where possible a quantitative assessment of the impacts is provided. If a quantitative assessment is not possible, an attempt is made to identify the types and number of vessels that may be reasonably expected to be affected.

Permit Category	Only NMA Trips	Only SMA Trips	NMA and SMA Trips
A	0	13	2
B	0	33	4
C	17	59	198
D	56	55	129
E	104	266	134
H	0	7	0

Table 60 Number of active monkfish vessels fishing by permit category and fishing area

5.3.1. Biological and Management Reference Points

The creation of a new set of biological and management reference points will not, of itself, have an immediate economic impact. Alternative 1 (no action), which would not create the new reference points, would not result in additional economic impacts beyond those identified in earlier actions. Alternative 2, the preferred alternative, which creates a series of reference points that should allow for better monitoring and management of the

fishery, implicitly includes the potential for additional national benefits in the future from a sustainable, well managed fishery.

5.3.2. ACL and AMs

The purpose of the annual catch limits (ACLs) and accountability measures (AMs) is to prevent overfishing from occurring within the fishery. Alternative 1 (no action) would not create ACLs or AMs and thus would not comply with the MSRA. There is likely no direct economic impact of taking no action, but establishing these provisions to comply with the MSRA will help prevent overfishing from occurring in the future. Thus, the no action alternative could have a negative economic impact if it were to impact the long-term sustainability of the monkfish fishery. Alternative 2 consists of a series of actions which are discussed below.

5.3.2.1.ACLs

By setting the ACLs for the northern and southern management areas (NMA and SMA) equal to the acceptable biological catch (ABC) level, rather than below the ABC, additional economic opportunity for the fishery may exist in the future. The actual limit to fishing is determined by the annual catch target (ACT, discussed below), which is set relative to the ACL and takes into account management uncertainty. Assuming that the fishery remains sustainable, if management uncertainty can be reduced, maintaining the proposed ACL would allow for a higher ACT in the future. Similarly, if scientific uncertainty is reduced, this could lead to a higher ACL, and higher ACTs as a result. A higher ACT would result in greater revenue opportunities for fishing vessels.

5.3.2.2.Reactive AM

The proposal calls for a reduction in the annual catch target (ACT) for a management area in the second year following the year that catch exceeds the annual catch limit (ACL) in that management area. How Councils reduce the ACT is not prescribed, other than the reduction in the ACT would equal the overage in ACL on a pound-for-pound basis. Should the Councils not act, NMFS would reduce the ACT using reductions in DAS and trip limits.

Harvesting additional monkfish in excess of ACL would result in immediate short-term revenue increases for those fishing vessels that harvested more than they would have if the ACL had not been exceeded. With a positive interest rate, this gain would only be lost partly with a reduction in harvest and revenues two years later. If the reduction imposed affected all vessels equally then the negative impact will be less severe on those vessels that gained from the overage previously. Also, it is possible that by exceeding the ACL longer term impacts on the stock could lead to further future economic losses due to changes in the stock size.

5.3.2.3.Proactive AMs (ACT)

The purpose for setting the annual catch target (ACT) below the annual catch limit (ACL) is to account for uncertainty in the ability of management measures to limit catch to the prescribed level. The intention behind providing a buffer between the ACL and ACT is to prevent overfishing from occurring in the event the measures to limit catch are not

fully successful. The ACT includes landings and discards of monkfish from all fisheries, including the directed monkfish fishery and fisheries where monkfish landed incidentally (e.g. scallops, multispecies, etc). Actions that reduce discards or reduce the uncertainty of the effectiveness of management actions would allow the ACT to be closer to the ACL.

In this action the ACT would be set relative to total allowable landings (TAL) prescribed in Framework Adjustment 4 (FW4) for monkfish. The TAL includes only landings, and thus the ACT had to be adjusted to account for discards. The TALs under FW4 were 5,000 metric tons for the NMA and 5,100 mt for the SMA. The Councils considered two alternatives for the ACT for each management area; all four include an increase over the FW4 TALs. The ACTs alternatives for the NMA are 46% and 62% of the ACL (=ABC= 17,485 mt), respectively (Section 3.2.2.3.1). In the SMA, the ACTs alternatives are 69% and 86% of the ACL (=ABC= 13,326 mt) (Section 3.2.2.3.2). The preferred alternatives would set the ACTs at the higher of the options for each area.

From an economic perspective, assuming that prices do not decrease due to higher landings, a higher ACT would result in higher monkfish revenues and thus additional benefits to vessels and the nation. However, this is only the case if the higher allocation is actually landed, as opposed to discarded or left uncaught. In the NMA historical landings have exceeded the level associated with both ACT options; however, in FY2008 landings were only 71% of the allocation suggesting a higher ACT may not result in higher monkfish revenues. Changes in the management of other fisheries, in particular the Multispecies FMP, could change this scenario.

In the SMA the ACT Option 1 corresponds to the level of landings in FY2007 when landings exceeded the TAL by 41%. In FY2008, monkfish landings exceeded the TAL by 32%. This suggests that additional benefits from monkfish revenues are already being realized in the SMA and thus option 1 would not yield additional benefits beyond those already realized. ACT Option 2, the preferred alternative, would result in allowed landings above current landings and thus should result in additional monkfish revenues for vessels and ports.

Quantification of the economic impacts of the proposed ACTs requires specification of the management actions used to achieve the proposed levels. The impact of alternative DAS and trip limit levels are discussed below.

5.3.3. Specification of DAS and Trip Limits Alternatives

5.3.3.1.DAS and Trip Limit Options

The trip limit and DAS alternatives would impact vessels fishing for monkfish in either area, to the extent that it impacts their normal fishing activity. As in previous annual adjustments, estimation of relative economic impacts was accomplished through the use of a trip limit model to estimate average changes in per-trip vessel returns net of operating costs and crew payments, as well as changes in monkfish revenue. The analysis uses data from observed trips to simulate outcomes under alternative trip limits and DAS allocations. The trip data is compiled from FY 2008 vessel trip reports and dealer weigh-

out slips, with the former providing catch and location data and the latter providing average monthly prices, which are used to calculate revenue estimates.

The trip limit model was previously used to analyze changes in trip limits and DAS allocations while moving from higher to lower limits. The effect was evaluated based on a comparison of the expected return for alternative trip-taking strategies. A vessel may abandon a trip if the trip limit causes earnings to fall below zero, they may continue to fish while discarding any monkfish above the trip limit, or they may fish up to the trip limit and then return to port. Assuming that a trip is taken, vessels may choose to continue fishing while discarding monkfish over the trip limit so long as the revenue earned from other species offsets the costs of fishing. Trips where other species make up a relatively small portion of the trip revenue may lead to trips being discontinued when the trip limit is reached, since the cost of continued fishing would exceed the additional revenue.

Previous monkfish frameworks and amendments proposed to reduce the trip limits or kept them the same; therefore, the trip model could have been used to analyze the economic effects of the proposed changes. However, this amendment proposes to increase the trip limits and DAS allocations, making a straight forward application of the trip limit model challenging. An increase in DAS allocation allows a vessel to take additional trips beyond the ones it has taken under the previous DAS allocation, and an increase in trip limit would allow a vessel to retain more of their catch and reduce discards on a trip. The trip limit model has been modified to accommodate these possible additional revenue opportunities.

Under this modified trip limit model, first, each trip was evaluated as in the existing model but incorporating the possibility of higher retention under higher limit. Secondly, it is assumed that a vessel may take additional trips if DAS allocations are increased provided the vessel is in a directed fishery and it has used 75% or more of its DAS allocation. Further, it is assumed that the additional trips will be very similar to the trips the vessel has taken in the past. Accordingly, depending on the percentage of days absent and additional DAS allocation, a certain number of trips are chosen randomly from a vessel's past trips to augment the set of trips the vessels have taken previously.

For the purpose of this analysis, it is assumed that if vessels took trips in both the NMA and SMA, these vessels are indifferent between taking a trip in either area. Rather they will choose to take the trip that maximizes net trip revenue. To model this assumption, all trips taken by limited access monkfish permit holders landing monkfish in at least one trip were ordered by descending revenue for each vessel. Each trip is then analyzed as follows. A trip is unchanged if the total monkfish landed is less than the incidental trip limit or the relevant monkfish management area DAS limit and the trip limit.

If the DAS limit has been reached, then the monkfish catch is reduced to the relevant proposed incidental catch limit and the appropriate strategy for the vessel (i.e., ending the trip or continuing to fish while discarding any additional monkfish catch) is determined along with the return (in terms of revenue) from the strategy. If the DAS limit has not

been reached and the monkfish catch is greater than the incidental limit and the current relevant trip limit, then the monkfish catch is reduced to the relevant trip limit and the vessel's revenue maximizing strategy and resulting return is determined. To take account of the increase in DAS allocation, vessels that might take additional trips are identified, and their trip sets are augmented by the following criteria: first, the number of additional trips the vessel might take is calculated based on the percentage of days absent given their previous level of DAS allocation and the proposed DAS allocation. Secondly, the number of trips determined in the first step is randomly selected from their full set of trips.

The relative change in net return to the vessel was estimated by calculating the average per-trip returns to the vessel owner using both the existing trip limits and the proposed FY2011 trip limits. These returns take into account operating costs, which were estimated using trip cost data collected on observer logs in FY 2008. Trips landing monkfish during FY 2008 in the NMA and SMA were identified, and the total trip cost was estimated as using a regression of the logarithm of trip cost against the logarithms of days absent, the number of crew, and a dummy variable indicating if the vessel gear type is gillnet. The parameters from this regression were then used to construct estimates of trip cost and cost per day absent for all trips landing monkfish during FY 2008. Returns to the vessel were calculated using a standard 60/40 lay system where 40 percent of the gross revenue goes to the vessel and 60 percent is shared among the crew, who pay for the operating expenses for the trip. Therefore, the net to the crew is the difference between the 60 percent share and the operating costs.

Since a necessary assumption of the trip limit model is that fishing location decisions are unchanged under new rules, an analysis of the impacts of the proposed measures is conducted separately for vessels fishing only in the NMA, vessels fishing only in the SMA, and vessels fishing in both areas. In reality, this is a simplification and a limitation of the model, since vessels could change their fishing location in order to mitigate some of the negative impacts or to access additional benefits from regulations. It should also be noted that the results are presented as the single year relative change from the FY 2008 baseline to each of the alternative combinations. In the absence of an ACL overage, the selected alternatives would remain in place until the end of the specifications period (FY2011-2013). Thus, there will be a cumulative effect of the measures over the entire three year period. However, the impacts may be mitigated by a possible fall in the monkfish prices due to the overall increase in monkfish landings. Due to the nature of the monkfish market, at this time, no model exists that can predict monkfish prices with a sufficient degree of accuracy to predict price changes due to changes in landings. In addition to these limitations, the modifications made to take account of the increase in DAS/trip limit are a simplified solution. With time and more supporting data, it is possible to identify more sophisticated methods that can predict vessel's behavior under DAS/trip limit increase more accurately.

5.3.3.1.1. Vessels only Fishing in NMA

The results from the trip limit model for NMA are presented in Table 61. The proposed options will lead to an increase in per trip average vessel return, crew payment and total monkfish revenue. All options provide an increase in the trip limit for at least one trip type, or an increase in DAS, or both. The model predicts that under the proposed regulations per trip average vessel return will increase from 0.2% to 2.2% whereas average crew payment will increase from 0.5% to 1.8% depending on different DAS allocations and trip limit alternatives. The increase in total monkfish revenue ranges from 0.8% to 24.5% under the proposed options. The results also show that the impacts from raising DAS allocation are higher than from increasing the trip limits. Accordingly, the largest impacts are seen when trip limits are same but DAS allocation is increased to 51. It should be noted that all of the NMA DAS and trip limit options represent an increase in DAS or trip limits, or both, in comparison to the DAS and trip limits currently in effect. Thus, none of these options are representative of taking no action with respect to DAS and trip limits.

Incidental Limit	TAC (mt) ACT Option	NMA Option	AC limit	BD limit	DAS	Change in Average Vessel Return	Change in Average crew Payment	Change in Monkfish Revenue
300	8,603 Option 1	1A	1250	700	31	0.2%	0.5%	0.8%
		1B	1250	470	45	1.7%	1.6%	16.1%
		1C	1250	600	40	0.5%	0.5%	10.0%
	10,750 Option 2	2A	1250	950	31	0.5%	1.2%	1.7%
		2B	1250	470	51	2.2%	1.8%	24.5%
		2C	1250	800	40	0.8%	1.2%	11.0%

Table 61 Changes from the no action alternative to proposed alternatives – Vessels only fishing in NMA. The preferred alternative row is in bold.

5.3.3.1.2. Vessels only Fishing in SMA

The trip limit model for the SMA indicates mixed impacts on average vessel return, average crew payment and monkfish revenue (Table 62). In the SMA, two out of six proposed options (1A and 1B) would not have changed the current trip limit/DAS allocations, and there would not have been any impact on average vessel return, crew payment and monkfish revenue. Option 2A, 2B and 2C would have resulted in increase in either trip limits or DAS, while option 1C would have increased trip limits but decreased the DAS allocation. As in the NMA, we see that changes in DAS allocations would have higher impacts than changes in trip limits only. Higher trip limits for all permit categories would have positive impact, but when the higher trip limit was combined with a lower DAS allocation, the overall impact would have been negative. Note, that an increase in DAS with same trip limits would have lead to a decrease in average vessel return but an increase in average crew payment and monkfish revenue. This is because, as explained in section 5.3.3.1, in our modified trip-limit model the impact of increased DAS allocation is captured by augmenting the trip set of a vessel with dummy trips

created by randomly selecting trips from its existing trips. This process leads to higher total vessel return but may lead to lower average vessel return because the proportional increase in the number of trips may outweigh the proportional increase in revenue.

Incidental Limit	TAC (mt) ACT Option	SMA Option	ACG limit	BDH limit	DAS	Change in Average Vessel Return	Change in Average Crew Payment	Change in Monkfish Revenue
50	9,211 option 1	1A	550	450	23	-	-	-
		1B	550	450	23	-	-	-
		1C	700	600	15	-1.0%	-1.4%	-20.0%
	11,513 option 2	2A	700	600	23	0.5%	0.7%	7.9%
		2B	550	450	28	-0.0%	0.7%	32.0%
		2C	700	600	23	0.5%	0.7%	7.9%

Table 62 Change from no action alternative to proposed alternatives – Vessels Fishing in SMA only. The preferred alternative row is in bold.

5.3.3.1.3. Vessels Fishing in Both NMA and SMA

Vessels fishing in both NMA and SMA will be simultaneously affected by DAS/trip limit alternatives chosen for NMA and SMA. While these vessels have a demonstrated capability to shift between areas and may be more likely to change fishing locations than vessels that have historically fished solely in one area, the trip model does not incorporate this possibility. Rather, it is assumed that vessels continue fishing in the same locations they did previously and results are calculated for each possible combinations of NMA and SMA alternatives.

There are no single DAS/trip alternative combinations for SMA and NMA which lead to a best outcome in terms of impact on average vessel return, average crew payment and total monkfish revenue. As can be seen in Table 63, the largest increase on monkfish revenue is realized under the alternative with the NMA levels of a 300 pound incidental limit, 1250 pound trip limit for A and C vessels, 470 pound trip limit for B and D vessels, and 51 DAS in the NMA, in combination with the SMA levels of a 50 pound incidental limit, 550 pound trip limit for A, C, and G vessels, 450 pound trip limit for B, D and H vessels, and 28 DAS in the SMA. This is consistent with the observation that an increase in DAS has a more favorable outcome on revenue than an increase in the trip limit.

NMA Alternatives				SMA Alternatives				Change in Vessel Return	Change in Crew payment	Change in Monkfish Revenue
Incidental limit	AC limit	BD limit	DAS	Incidental limit	ACG limit	BDH limit	DAS			
300	1250	470	31	50	550	450	23	-	-	-
					700	600	15	-0.4%	-0.7%	-6.1%
					700	600	23	0.2%	0.4%	2.7%
	550	450	28		-1.3%	-0.8%	7.0%			
	1250	700	31		550	450	23	0.0%	0.1%	0.3%
					700	600	15	-0.4%	-0.6%	-5.7%
					700	600	23	0.2%	0.4%	3.0%
	550	450	28		-1.2%	-0.7%	7.3%			
	1250	470	45		550	450	23	-0.6%	-0.5%	13.2%
					700	600	15	-0.7%	-1.4%	5.8%
					700	600	23	-0.4%	-0.1%	16.1%
	550	450	28		-1.1%	-0.7%	22.9%			
	1250	600	40		550	450	23	-0.2%	-0.3%	8.1%
					700	600	15	-0.5%	-1.1%	1.3%
					700	600	23	0.0%	0.1%	10.9%
	550	450	28		-1.4%	-1.4%	17.4%			
	1250	950	31		550	450	23	0.1%	0.2%	0.7%
					700	600	15	-0.3%	-0.5%	-5.2%
					700	600	23	0.2%	0.5%	3.4%
	550	450	28		-1.2%	-0.7%	7.7%			
	1250	470	51		550	450	23	-0.4%	-1.0%	19.5%
					700	600	15	-0.9%	-1.9%	10.7%
					700	600	23	-0.2%	-0.7%	22.4%
	550	450	28		-1.0%	-0.9%	30.0%			
	1250	800	40		550	450	23	-0.1%	-0.2%	8.6%
					700	600	15	-0.5%	-1.0%	1.8%
					700	600	23	0.0%	0.2%	11.4%
	550	450	28		-1.3%	-1.3%	17.9%			

Table 63 Change from the no action alternative to proposed alternatives – Vessels Fishing in NMA and SMA. The preferred alternative row is in bold.

5.3.3.2. Other Adjustments to the DAS and Trip Limit Management Program

5.3.3.2.1. Automatic DAS Adjustment for Trip Limit Overage

The Councils proposed a modification to the DAS and trip limits management program that would allow vessels to exceed the daily trip limit by one day's amount, and to have the vessel's DAS accounting balance to be charged accordingly. Alternative 1 is the no action alternative. Alternative 2 has 3 options for additional DAS charges for over the trip limit trips, deducting 30 hours, 48 hours, or 24 hours and one minute (**preferred alternative**), respectively, for a trip with a one-day overage.

From the economic perspective any action that allows a vessel to retain more catch without either staying out at sea or returning to sea results in an increase in revenues without an increase in costs; thus, vessel profits are higher. For vessels that are constrained by their DAS allocation, the option with the smallest DAS charge (Option 3) provides the greatest benefits to vessel in comparison to taking no action as it allows the vessel to use fewer DAS to land a given amount of monkfish. However, this same option makes predictions under models of trip limits and DAS allocation more uncertain as a vessel would now be able to land a daily limit with only a 1 minute charge. Options 1 and 2 would be less problematic from a management perspective, while option 1 would result in greater vessel revenues per DAS than option 2 since it results in vessels using their monkfish DAS at a slower rate.

5.3.3.2.2. Category C and D Permit GF DAS Usage

Under this proposal, which was not adopted by the Councils, vessels that have a monkfish DAS allocation greater than their multispecies DAS allocation would have been allowed to choose when to fish their allocated monkfish only or combined monkfish/multispecies DAS until their monkfish DAS balance was equal to their multispecies DAS allocation.

Based on FY2008, there were 551 vessels which held a monkfish C or D permit as well as limited access multispecies permit. Of these 551 vessels, 98 had no multispecies DAS left after accounting for leasing and sanction options. Of the remaining vessels, only 162 vessels had monkfish DAS allocations greater than multispecies DAS allocations, and may have been impacted by the proposed regulations. The flexibility in choice of when to use a combined monkfish-multispecies DAS or a monkfish-only DAS would have allowed the vessels to plan their fishing pattern more efficiently which may have lead to higher profits in comparison to the no action alternative.

5.3.3.2.3. Monkfish Vessels in GF Sectors - GF DAS Usage Requirement

Under this proposal, which was not adopted by the Councils, monkfish DAS would no longer be linked to multispecies DAS for vessels that are participating in a groundfish sector. Had this been adopted, sector vessels fishing on a monkfish-only DAS would be required to fish in an exempted fishery, but would not be required to have sector ACE for that area. Option 1 limits this to vessels fishing only in the NMA, while option 2 includes vessels fishing in either area.

Any action that allows a vessel greater flexibility in choosing its fishing patterns allows the opportunity for greater economic efficiency. This has the potential to increase the utilization of monkfish DAS by vessels that are part of a groundfish sector as trips would no longer be constrained by multispecies trip limits, multispecies DAS or sector ACE. Since there is no trawl exempted fishery in the NMA, and only a limited gillnet exempted fishery, most of the monkfish directed effort could have shifted to the SMA since most of that area is part of an exempted fishery. Such an effort shift could potentially have a negative effect on vessels fishing in the SMA due to the increase risk that catch limits would be exceeded and the reactive AMs being proposed in this amendment invoked in future years.

5.3.4. Changes to the RSA Program

5.3.4.1. Carryover RSA DAS

When the Councils initiated this amendment, vessels were prohibited from carrying over allocated, but unused RSA DAS. On March 13, 2010, NMFS published a final rule for a technical amendment to the FMP that allowed vessels to carryover unused RSA DAS to the subsequent year, so the Councils terminated further consideration of this provision.

5.3.4.2. Allow Changes to RSA Program by Framework Adjustment

Overall, is an administrative change affecting only the procedures that may be used by the Councils to implement changes to the Monkfish RSA Program. As such, there are no costs to regulated entities associated with this provision. However, this action would provide increased flexibility, in comparison to taking no action, to the Council in terms of modifying the RSA program to address needs and issues as they arise. This has the potential to increase the utilization of the program by researchers and industry members.

5.3.5. Mandatory VMS

Under this proposal, which was not adopted by the Councils, limited access monkfish vessels would be required to have an operational VMS. As noted in Section 3.5, the Council considered 3 options for this proposed requirement: SMA only, NMA only, and both areas.

The majority of active limited access monkfish vessels that have used some of their DAS allocation have used VMS either in the monkfish fishery, or in some other fishery (Table 64). This data is based on the DAS Allocation Management System (AMS) database. Trip activity codes used to determine fishing location and trip source was used to determine if VMS or IVR was used. All trips for a limited access monkfish vessel, no matter the fishery, were used to determine if the vessel ever used VMS. As shown below, for vessels that fished only in the NMA, 100% of the vessels used VMS over the past two fishing years in some fishery. For these vessels all three options would have no impact from installation costs, although there may be additional use costs in comparison to taking no action. For vessels that fish only in the SMA, the majority have used VMS for some fishery although over 20% of the vessels would be need to install a VMS system

should VMS become mandatory in the SMA resulting in increased costs in comparison to taking no action, either as a result of Option 1 or Option 3.

There are currently three vendors of VMS hardware and services. Installed costs range from \$1,750 to \$4,200. Monthly costs are based on usage rates, including messaging and position tracking, and are approximately \$40 - \$100+, depending on vendor and usage rates. With the power down provision proposed in this alternative, monthly charges would only be incurred when the units are operational.

As the number of active vessels fishing in both management areas has declined, so has percent of vessels without VMS. Approximately 40% of these vessels would need to install a VMS under all three options. This requirement will impose additional cost on the vessels without a VMS installed in comparison to taking no action.

Area		FY2007		FY2008	
		#	%	#	%
NMA					
	VMS	79	100%	63	100%
	No VMS	0	0%	0	0%
SMA					
	VMS	112	81%	115	77%
	No VMS	26	19%	35	23%
Both					
	VMS	41	55%	37	60%
	No VMS	34	45%	25	40%
Total					
	VMS	232	79%	215	78%
	No VMS	60	21%	60	22%

Table 64 VMS use by fishing year and area fished of the limited access monkfish vessels that used VMS in any DAS fishery they participated in

5.3.6. Allow Landing of Monkfish Heads

This action would allow the fishermen to land unattached monkfish heads up to 2.32 times the weight of tails on board. In comparison to taking no action, this would allow the conversion of a “waste” which was previously discarded to be converted to product that could either generate revenues or be used by the fisherman to offset costs from purchasing bait. Both are an economic benefit to the fisherman and allows for better use of the fishery resource.

5.3 Social Impacts Assessment (SIA)

5.3.1 Defining What Constitutes a Community

First, the context and requirements for what constitutes a community will be discussed. By National Standard 8 requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), a “fishing community” must be a geographic entity. In general, any geographic unit that the U.S. Census recognizes as a “place” is used. This includes cities, towns, and some townships, boroughs or other small administrative entities. However, it must be smaller than a county. Incorporated towns and other administrative units are automatically “places.” The Census Bureau has also surveyed some unincorporated towns and made them “Census Designated Places” or CDPs. However, there are still unincorporated towns that are not census places. For these, there are no available census data. Unless it appears as important in terms of landings or residence of permit holders, such an entity will be aggregated into the next smallest available census place. In this document the port/town is the most basic unit of analysis. Because in some cases there is a port which serves as the base for fishing activity but most fishermen do not reside directly in that port town, both owner’s home address and principal port for a vessel are discussed. Other sections of the MSA require analyses that need not be place-based. Because of this, some discussions will be about vessels by gear groups or usage of DAS allocations or about other groups such as processors or dealers.

5.3.2 Organization of the SIA

The discussion below focuses on social and cultural impacts of the FMP on communities and individuals. Because economic impacts also have social and cultural ramification, they are also included, though in a different form than seen in the economic impact section of the document. The SIA discusses some general features of importance within and across communities, which create different contexts for the various proposed conservation measures. Then, the discussion is divided into sections on each of the proposed conservation measures. It is important to remember that while some measures may have a short-term negative impact on some communities, this should be viewed in light of the potential long term benefits to all communities of a recovered monkfish fishery.

Additional relevant background data are provided in the SAFE Report section (Section 4.5, Affected Human Environment) of this document.

5.3.3 Summary of Factors Important to Assessing Vulnerability:

- Having 50 or more monkfish permits listing that place as homeport or owner’s residence in 2008
- Having at least 65% match of principal port to owner’s residence on 2008 monkfish permits
- Having landed at least 500,000 lbs of monkfish in 2008
- Having landed at least \$500,000 worth of monkfish in 2008

- Having monkfish account for at least 10% of overall pounds landed in the port
- Having monkfish account for at least 10% of overall value landed in the port
- Having 5 or more monkfish dealers buying in that community if it qualifies by any of the above, or 10 or more otherwise
- Presence of a monkfish processor in the county gives a point to any community already listed for any of the above
- levels of key demographic variables from the 2000 US Census for the port communities which meet any of the above fisheries-related factors
 - Communities with highest percentage of occupations (6% or more) in the category of “fishing, farming and forestry”
 - Communities with the highest percentage (10% or more) of families in poverty
 - Communities with the lowest population levels (4,000 or below)
 - Median age of residents is 50 or over
 - Communities with the lowest percentage (80% or under) of persons age 25 or over who have graduated at least high school
 - Communities with highest percentage (5% or more) of the population 16 or over that is in the labor force but unemployed
 - Having the highest level of occupational dependence, the highest poverty level or lowest level of education among top three ports by landings and/or value

5.3.4 Social Impacts of Alternatives under Consideration

5.3.4.1 MSY control rule and specification

This alternative would establish the following proxy MSY control rule: $MSY = B_{\text{target}} (\text{exploitable}) \times F_{\text{threshold}}$. It should be noted that for the purpose of calculating MSY, exploitable biomass needs to be used. The establishment of an MSY control rule does not have any direct impact on the establishment of ACLs or AMs, the impacts of which are discussed below. Thus, the establishment of an MSY control rule does not have any direct impact on vessels, ports, and communities in comparison to no action.

5.3.4.2 OFL control rule and specification

The change resulting from this proposal is that it establishes a catch associated with the overfishing reference point ($F_{\text{threshold}}$) as applied to current estimates of exploitable biomass. Establishing a specific catch associated with overfishing will allow for real time determination of whether or not overfishing is occurring, rather than postponing such a determination until a stock assessment under no action alternative. This alternative would establish an OFL that is equivalent to $F_{\text{threshold}}$ multiplied by the most recent exploitable biomass estimate (B_{current}). Since the current biomass estimates for both FMAs are above MSY, the resulting OFL is above MSY. Thus, this OFL control rule enables vessels to take advantage of the additional biomass, in terms of landings, at times when current biomass is above MSY, providing additional benefits in comparison to taking no action.

5.3.4.3 ABC control rule

Since the most recent estimate of exploitable biomass of monkfish in the NMA is 33% greater than the B_{MSY} proxy, a slightly larger ABC is allowed for, providing greater flexibility for those in the northern area than they had previously, since it would lead to a higher ACL, which, in turn, reduces the likelihood of reactive AMs being invoked. Ports where at least 50% of vessels fished ONLY in the NMA are (in order of greater to lesser dependence) Port Clyde, ME; Provincetown, MA; Scituate, MA; Seabrook, NH; Rye, NH; Portland, ME and Gloucester, MA (Table 50). Ports with the largest percentage of vessels fishing in both areas include: New Bedford, Boston and Chatham, MA and Stonington, CT (Table 52). Vessels from these communities could benefit from the larger ABC in the NMA.

There are also differences in fishery management area fished by permit category (Table 53). No category fishes predominantly in the NMA, though about a quarter of D and E vessels fish primarily in the NMA, and category C and D permitted vessels are most likely to fish in both fishery management areas. This means that C, D, and E vessels have a greater likelihood of benefiting from the larger NMA ABC than do other vessel categories.

5.3.4.4 OY

This proposal would set OY for this fishery at the ACT, which is equivalent to the maximum yield from the fishery after taking into account scientific uncertainty in the overfishing limit in setting ABC, and management uncertainty in setting measures that will not exceed the ABC. In comparison to taking no action, this measure is not expected to have any significant direct impact on fishermen except in so far as $OY=ACT$ and the setting of ACT is of importance to fishermen. Both options for setting the ACT include an increase in the TAL in both the NMA and SMA and are, therefore, likely to have positive benefits, with Option 2 involving the largest increase in TAL, and, therefore, the greater benefit.

5.3.4.5 ACLs

This measure to define ACLs is required by changes in the most recent authorization of the MSA. By making the ACL equal to the ABC no immediate impact should be expected in comparison to taking no action. However, the intent of establishing ACLs in the monkfish fishery is to prevent overfishing from occurring in the future. Thus, the no action alternative could have a negative social impact if it were to impact the long-term sustainability of the monkfish fishery.

5.3.4.6 Reactive Accountability Measures (AMs)

The MSRA requires AMs to account for any catch that exceeds the ACL. The proposed action establishes a procedure for accounting for any overages on a pound-for-pound basis. By implementing the corrective reduction in the 2nd year following the overage, fishermen are given time to plan ahead for the needed adjustment. Any reductions to DAS and trip limits resulting from such an overage are likely to be negative over the short-term, but result in long-term benefits by preventing overfishing from occurring in comparison to taking no action. The impacts of any reduction in DAS and trip limits resulting from an overage in the ACL would be analyzed at the time of the adjustment.

Similar to the establishment of ACLs, there is no direct social impact associated with not establishing reactive AMs (i.e., taking no action). However, by not taking action, there would be no mechanism in place to prevent overfishing from occurring, which could lead to future negative social impacts if the lack of such a mechanism leads to overfishing.

5.3.4.7 Proactive AMs (ACT)

The NS1 Guidelines provide for the use of ACTs as proactive AMs, to prevent catch from exceeding the ACL in consideration of management uncertainty. Two options are under consideration for each area. Both options include an increase in the TAL in both areas and are, therefore, likely to have positive social benefits, with Option 2 involving the largest increase, and, consequently, the greatest benefits in comparison to taking no action.

There is no direct social impact associated with not establishing ACTs for the monkfish fishery (i.e., taking no action). However, establishing ACTs helps prevent overfishing from occurring by creating a buffer between what is expected to be caught, and the upper limit of what should be caught to account for management uncertainty. Thus, taking no action could result in future negative social impacts if the lack of ACTs leads to overfishing occurring.

5.3.4.8 DAS and Trip Limit Options

The economic analysis (based on 2008 trips) looks at changes in trip limits and DAS allocations for alternative trip-taking strategies (e.g., the choice of when to end a trip). This assumes that each vessel continues to fish in the same area it did in 2008, even though vessels may change their behavior. Those fishing only in the NMA have "an increase in per trip average vessel return and crew payment and total monkfish revenue", according to the economic analysis.

Those vessels fishing only in the SMA have mixed impacts. Higher trip limits generally have positive impacts by reducing discards and allowing for greater revenue per trip. Fishermen have commented, however, that if the trip limit is too high, prices paid decline when more fish is landed at one time, and revenues can actually decline. When combined with lower DAS allocations the overall effect of higher trip limits is likely to be negative.

Vessels that fish in both areas have variable impacts according to the economic analysis (Table 46). If they fish in exactly the same location they fished in 2008, the largest increase (24.5%) on monkfish revenue is realized under the non-preferred NMA option 2B with a 1250 pound trip limit for A and C vessels, 470 pound trip limit for B and D vessels, and 51 DAS in the NMA (i.e., status quo trip limits but increased DAS). The preferred option 2C would still result in an 11% increase in vessel revenues, with an increase to 40 DAS and an increase in the B and D vessels' trip limit from 470 lbs. to 800 lbs., while there would be no change for A and C vessels' trip limit in comparison to the status quo.

In the SMA (Table 47), the preferred option 2B would result in the greatest relative increase (32%) in monkfish revenues under the 550 pound trip limit for A and C, vessels and 450 pound trip limit for B, D and H vessels, and 28 DAS in the SMA (i.e., status quo trip limits but increased DAS). The economic analysis does not account for the possibility that these vessels may change the pattern of their areas fished. However, this should be considered for individuals who usually fish both areas.

When looking at the fishing patterns of individual ports a great deal of variation is seen. Although the geographic location of the port to the fishery management area can influence the area fished, additional factors are also involved. Ports where at least 50% of vessels fished ONLY in the NMA are (in descending order of dependence) Port Clyde, ME; Provincetown, MA; Scituate, MA; Seabrook, NH; Rye, NH; Portland, ME and Gloucester, MA. Gloucester had by far the largest number of total vessels, of which 63% fished in the NMA only. Other ports had 75-80% of vessels fishing in the NMA but only 10-26 vessels total. The remaining vessels in these ports all fished in both areas. As all vessels fish in either exclusively in the NMA or in both fishery management areas, these ports are most likely to experience positive impacts from increases in the trip limits and DAS allocations.

Ports where 50% or more of vessels fished ONLY in the SMA are listed in descending order of dependence: Point Lookout, NY; Belford, NJ; Barnegat Light/Long Beach, NJ; Ocean City, MD, Little Compton, RI, Hampton Bays/Shinnecock, NY; Newport News, VA; Chincoteague, VA; Seaford, VA; Point Pleasant/Point Pleasant Beach, NJ; Montauk, NY and Newport, VA. In Point Lookout, Belford and Barnegat Light/Long Beach 84-100% of vessels fish in the SMA, while in Point Pleasant/Point Pleasant Beach, Montauk and Newport only 50-55% do so. The remaining vessels in these ports all fished in both areas. Therefore, all of these ports are likely to see positive impacts, if DAS are increased. Because of the heavy reliance on the SMA for Point Lookout, Belford and Barnegat Light/Long Beach, vessels from these ports will most likely be affected positively, if DAS are increased.

Ports where at least 50% of vessels fished in BOTH areas are listed in descending order of dependence: New Bedford, Boston and Chatham, MA; Stonington, CT; Portsmouth, NH, Cape May, NJ and Point Judith and Newport, RI. In Cape May, Point Judith, Newport and Portsmouth only 50-57% of vessels fished in both areas, with the rest in Portsmouth fishing in the NMA. The remaining vessels in the other three ports fished in the SMA. In New Bedford, Boston, Chatham, and Stonington 72-83% fished in both areas. The remaining vessels in New Bedford and Stonington all or mostly fished in the SMA, while the remaining vessels in Boston and Chatham fished in the NMA. Impacts vary based on whether the TAL option increases the trip limit and/or DAS and on the time spent in each area (see **Table 63** in the Economic Impacts Section). However, generally speaking, increases in DAS have more positive benefits than increases in the trip limit.

An additional factor to consider is that there are also differences in area fished by permit category, with Category A and B permitted vessels most likely to fish in the SMA and

Category C and D permitted vessels most likely to fish in both areas. No vessels fish predominantly in the NMA, though about a quarter of Category D and E vessels fished there in 2008. Category C and D vessels fishing in the NMA would likely realize the greatest benefits under all 6 options, with some options potentially resulting in more positive effects than others. Conversely, all limited access monkfish vessels fishing in the southern area, (Categories A, B, C, D, G and H) would be positively affected by the proposed action, or negatively affected by option 1C under this alternative.

5.3.4.9 Automatic DAS Adjustment for Trip Limit Overage

This alternative would allow vessels to exceed the daily trip limit by one day's amount, and to have the vessel's DAS accounting balance to be charged accordingly. The action (Alternative 2) includes 3 options for additional DAS charges for over the trip limit trips. Option 1 would deduct 30 hours; Option 2 would deduct 48 hours; and Option 3, the preferred alternative, would deduct 24 hours and one minute. This measure would create greater flexibility and efficiency, and, potentially higher profits compared to the no action alternative. Therefore, it is likely to be beneficial overall. Option 3 would likely provide the most flexibility since vessels would utilize their DAS at the lower rate. In addition, this action would have the greatest impact on vessels that use most or all of their monkfish DAS on an annual basis. However, it should be noted that current fishing patterns would determine which of the 3 alternatives would be best for individual vessels.

5.3.4.10 Category C and D permit GF DAS Usage

Currently, vessels holding a Category C or D permit and a Multispecies permit are charged a multispecies Category A DAS for every monkfish DAS used. If the vessel's allocation of multispecies Category A DAS is fewer than the monkfish DAS allocation, the vessel may fish the difference as a monkfish-only DAS but only after all multispecies Category A DAS have been used.

Under the non-preferred Alternative 2, vessels holding a limited access monkfish Category C or D permit and a limited access multispecies permit that have a higher monkfish DAS allocation than multispecies Category A DAS allocation could elect when to declare a combination multispecies/monkfish DAS. However, when the balance of monkfish DAS remaining equals the vessel's allocation of multispecies Category A DAS, the vessel will be automatically charged a multispecies Category A DAS for every monkfish DAS used.

While Alternative 2 would allow greater flexibility for vessels holding both a limited access monkfish Category C or D permit and a multispecies permit compared to no action, as they could elect when to declare a combination multispecies/monkfish DAS, the Councils did not adopt this proposal out of concern that overall fishing effort would increase on both monkfish and groundfish. In 2008 there were 551 vessels which held monkfish C or D permit as well as a limited access multispecies permit. Out of these 551 vessels, 98 had no multispecies DAS left after accounting for leasing and sanction options. Out of the remaining vessels (551-98), there were only 162 vessels with a monkfish DAS allocation greater than its multispecies DAS allocation (Table 65). The three ports with where the majority of these 162 vessels are located are Gloucester, MA

(29); New Bedford, MA (26); and Portland, ME (15). Ports with 10% or more of these vessels are: Portland, ME (20%); Boston (19%) and Gloucester (11%), MA.

STATE	PRINCIPAL PORT	GREATER MF DAS THAN GF DAS	STATE TOTAL
CT	State total	3	3
FL	State total	1	1
MA	BOSTON	8	76
	CHATHAM	6	
	GLOUCESTER	29	
	NEW BEDFORD	26	
	SCITUATE	3	
	All Other	4	
ME	FREEPORT	2	28
	HARPSWELL	2	
	PORTLAND	15	
	All Other	9	
NC	State total	3	3
NH	EXETER	2	4
	All Other	2	
NJ	BARNEGAT LIGHT/LONG BEACH	6	14
	POINT PLEASANT/POINT PLEASANT BEACH	5	
	All Other	3	
NY	HAMPTON BAYS/SHINNECOCK	4	15
	MONTAUK	8	
	POINT LOOKOUT	2	
	All Other	1	
RI	LITTLE COMPTON	2	16
	NEWPORT	4	
	POINT JUDITH	9	
	All Other	1	
VA	State total	2	2
		162	162

Table 65 Vessels by Port with MF DAS greater than GF DAS

5.3.4.11 Monkfish Vessels in GF Sectors - GF DAS usage requirement

The Councils considered, but did not adopt the proposal to eliminate the requirement for Category C and D vessels with multispecies permits who are also in a groundfish sector, to use a groundfish DAS when on a monkfish DAS. While this measure would have allowed greater flexibility, it also would very likely have resulted in a substantial shift in monkfish fishing effort to the SMA, where vessels could fish on a monkfish-only DAS in an exempted fishery, regardless of whether those vessels had any sector ACE for that area.

5.3.4.12 Allow Carryover of RSA DAS

When the Councils initiated this amendment, vessels were prohibited from carrying over allocated, but unused RSA DAS. On March 13, 2010, NMFS published a final rule for a technical amendment to the FMP that allowed vessels to carryover unused RSA DAS to the subsequent year, so the Councils terminated further consideration of this provision.

5.3.4.13 Allow Changes to RSA Program by Framework Adjustment

The proposed action would allow for modifications to the monkfish RSA Program to be made through a framework adjustment. The proposed action could provide greater flexibility for vessels involved in the Monkfish RSA Program since there is less time involved with making changes through a framework adjustment than through a plan amendment. However, the specific impacts of the proposed changes to the RSA program would be analyzed in the framework adjustment document implementing those changes.

5.3.4.14 Mandatory VMS

The Councils considered but are not proposing to require monkfish limited access vessels to use a VMS. Most Category C and D vessels are already required to have a VMS due to participation in either the multispecies or scallop fisheries, with the exception being those multispecies vessels that have no Category A DAS allocated to them. Therefore, this action would only have impacted Category A and B vessels, as well as those Category C and D vessels that have no allocation of multispecies Category A DAS.

In comparison to no action (the preferred alternative), requiring VMS would impose a cost on vessels, both for purchase and operation. There are currently three vendors of VMS hardware and services. Installed costs range from \$1,750 to \$4,200. Monthly costs are based on usage rates, including messaging and position tracking, and are approximately \$40 - \$100+, depending on vendor and usage rates. With the power down provision proposed in this alternative, monthly charges would only be incurred when the units are operational, thus, the power-down provision would lower the operational cost relative to other fisheries where the power-down provisions are more restrictive. On the other hand, there are some positive social impacts since VMS can serve as a safety/rescue device, and VMS can “level the playing field” among fishermen since it makes it more difficult to engage in some illicit behavior. Furthermore, more precise spatial information with regard to catch and effort may have some positive effects on reducing uncertainty, both scientific and management.

5.3.4.15 Allow landing of Monkfish Heads

This alternative would allow for monkfish heads to be landed separately from the whole monkfish, providing an appropriate conversion factor to assist with enforcement. As a result, this alternative would provide more flexibility and create additional opportunities for revenue in comparison to no action; thus, it is expected to be beneficial.

5.4 Cumulative Effects Analysis

5.4.1 Introduction

A cumulative effects assessment (CEA) is a required part of an EIS or EA according to the Council on Environmental Quality (CEQ) (40 CFR part 1508.7) and NOAA's agency policy and procedures for NEPA, found in NOAA Administrative Order 216-6. The purpose of the CEA is to integrate into the impact analyses, the combined effects of many actions over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective but rather, the intent is to focus on those effects that are truly meaningful. This section serves to examine the potential direct and indirect effects of the alternatives in Amendment 5 together with past, present, and reasonably foreseeable future actions that affect the monkfish environment. It should also be noted that the predictions of potential synergistic effects from multiple actions, past, present and/or future will generally be qualitative in nature.

Valued Ecosystem Components (VEC)

As noted in section 4.0 (Description of the Affected Environment), the VECs that exist within the monkfish fishery are identified, and the basis for their selection is established. Those VECs were identified as follows:

1. Monkfish stocks (target and non-target);
2. Non-monkfish species (incidental catch and bycatch);
3. Endangered and other protected species;
4. Habitat, including non-fishing effects; and
5. Human Communities (includes economic and social effects on the fishery and fishing communities).

Temporal Scope of the VECs

While the effects of historical fisheries are considered, the temporal scope of past and present actions for monkfish stocks, non-monkfish species, habitat and the human environment is primarily focused on actions that have taken place since implementation of the initial Monkfish FMP in 1999. An assessment using this timeframe demonstrates the changes to resources and the human environment that have resulted through management under the Council process. 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, and encompasses the pre-FMP as well as post-FMP circumstances. In terms of future actions, this analysis examines the three-year specifications period following implementation of this amendment (May 1, 2011). This date was chosen because the Councils will re-examine the FMP and its impacts during the next specifications-setting process.

Geographic Scope of the VECs

The geographic scope of the analysis of impacts to monkfish stocks, non-monkfish species and habitat for this action is the total range of these VECs in the Western Atlantic

Ocean, as described in the Affected Environment section of the document. However, the analyses of impacts presented in this amendment focuses primarily on actions related to the harvest of the managed resources. The result is a more limited geographic area used to define the core geographic scope within which the majority of harvest effort for the managed resources occurs. For endangered and protected species, the geographic range is the total range of each species (section 4.1.4).

Because the potential exists for far-reaching sociological or economic impacts on U.S. citizens who may not be directly involved in fishing for the managed resources, the overall geographic scope for human communities is defined as all U.S. human communities. Limitations on the availability of information needed to measure sociological and economic impacts at such a broad level necessitate the delineation of core boundaries for the human communities. Therefore, the geographic range for the human environment is defined as those primary and secondary ports bordering the range of the monkfish fishery from the U.S.-Canada border to, and including, North Carolina.

Analysis of Total Cumulative Effects

A cumulative effects assessment ideally makes effect determinations based on the culmination of the following: (1) impacts from past, present and reasonably foreseeable future actions; PLUS (2) the baseline condition for resources and human communities (note – the baseline condition consists of the present condition of the VECs plus the combined effects of past, present and reasonably foreseeable future actions); PLUS (3) impacts from the Proposed Action and alternatives.

A description of past, present and reasonably foreseeable future actions is presented immediately below in Table 66 and more thoroughly in Appendix VI. The baseline conditions of the resources and human community are subsequently summarized although it is important to note that beyond the stocks managed under this FMP and protected species, quantitative metrics for the baseline conditions are not available. Finally, a brief summary of the impacts from the alternatives contained in this amendment is included. The culmination of all these factors is considered when making the cumulative effects assessment.

5.4.2 Past, Present and Reasonably Foreseeable Future Actions

Table 66 summarizes the combined effects of other past, present and reasonably foreseeable future actions that affect the VECs, i.e., actions other than those alternatives under development in this document (a summary of the primary past, present and reasonably foreseeable future actions effecting this amendment can be found in Appendix VI).

Note that most of the actions effecting this amendment and considered in Table 66 come from fishery-related activities (e.g., Federal fishery management actions). As expected, these activities have fairly straightforward effects on environmental conditions, and were, are, or will be taken, in large part, to improve those conditions. The reason for this is the statutory basis for Federal fisheries management - the re-authorized Magnuson-Stevens

Act. That legislation was enacted to promote long-term positive impacts on the environment in the context of fisheries activities. More specifically, the act stipulates that management comply with a set of National Standards that collectively serve to optimize the conditions of the human environment. Under this regulatory regime, the cumulative impacts of past, present, and future Federal fishery management actions on the VECs should be expected to result in positive long-term outcomes. Nevertheless, these actions are often associated with offsetting impacts. For example, constraining fishing effort frequently results in negative short-term socio-economic impacts for fishery participants. However, these impacts are usually necessary to bring about long-term sustainability of a given resource and as such, should, in the long-term, promote positive effects on human communities, especially those that are economically dependent upon the managed resource.

Non-fishing activities were also considered when determining the combined effects from past, present and reasonably foreseeable future actions. Activities that have meaningful effects on the VECs include the introduction of chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment. These activities pose a risk to all of the identified VECs in the long term. Human induced non-fishing activities that affect the VECs under consideration in this document are those that tend to be concentrated in near shore areas. Examples of these activities include, but are not limited to agriculture, port maintenance, beach nourishment, coastal development, marine transportation, marine mining, dredging and the disposal of dredged material. Wherever these activities co-occur, they are likely to 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 would tend to reduce the tolerance of these VECs to the impacts of fishing effort. Mitigation of this outcome through regulations that would reduce fishing effort could then positively impact human communities.

VEC	Past Actions	Present Actions	Reasonably Foreseeable Future Actions	Combined Effects of Past, Present, Future Actions
Monkfish Stocks	Positive Combined effects of past actions have controlled effort, rebuilt stocks and improved habitat protection	Positive Current regulations continue to manage for sustainable stocks	Positive Future actions are anticipated to continue rebuilding and strive to maintain sustainable stocks	Positive Stocks are being managed to achieve optimum yield and prevent overfishing
Non-monkfish Species	Positive Combined effects of past actions have decreased effort and bycatch and improved habitat protection	Positive Current regulations continue to manage for sustainable stocks, thus controlling effort on direct and discard/bycatch species	Positive Future actions are anticipated to continue control effort and minimize bycatch	Positive Continued management of directed stocks will also control incidental catch/bycatch
Endangered and Other Protected Species	Positive Combined effects of past fishery actions have reduced effort and thus interactions with protected resources	Mixed Current regulations continue to control effort, but may result in some increases, thus increasing opportunities for interactions	Mixed Future regulations will likely control effort and thus protected species interactions, but may result in some effort increase, possibly increasing interactions	Positive Continued effort controls along with protected species regulations will likely help stabilize or reduce protected species interactions
Habitat	Mixed Combined effects of effort reductions, closed areas, and better control of non-fishing activities have been positive but some fishing activities and non-fishing activities continue to reduce habitat quality	Mixed Effort reductions and better control of non-fishing activities have been positive but fishing activities and non-fishing activities continue to reduce habitat quality	Mixed Future regulations will likely control effort and thus habitat impacts but may allow some effort increase along with additional non-fishing activities	Mixed Continued fisheries management will likely control effort and thus fishery related habitat impacts but fishery and non-fishery related activities will continue to reduce habitat quality
Human Communities	Positive Fishery management has resulted in rebuilt stocks and controlled, sustainable fishery which supports profitable industries and communities	Positive Fishery resources continue to support communities at a sustainable level	Mixed Continued management at sustainable levels will provide a stable, profitable fishery, benefitting affected communities; changes to the management program may result in redistribution of the benefits among communities	Positive Sustainable fisheries should support viable communities and economies

Impact Definitions:

-Monkfish Stocks, Non-monkfish species, Endangered and Other Protected Species: positive=actions that increase stock size and negative=actions that decrease stock size

-Habitat: positive=actions that improve or reduce disturbance of habitat and negative=actions that degrade or increase disturbance of habitat

-Human Communities: positive=actions that increase revenue and well being of fishermen and/or associated businesses

negative=actions that decrease revenue and well being of fishermen and/or associated businesses

Table 66 Summary effects of past, present and reasonably foreseeable future actions on the VECs identified for Amendment 5.

5.4.3 Baseline Conditions for Resources and Human Communities

For the purposes of a cumulative effects assessment, the baseline conditions for resources and human communities is considered the present condition of the VECs plus the combined effects of the past, present, and reasonably foreseeable future actions. The following table (Table 67) summarizes the added effects of the condition of the VECs and the sum effect of the past, present and reasonably foreseeable future actions (from Table 66 above). The resulting CEA baseline for each VEC is exhibited in the last column (shaded). In general, straight-forward quantitative metrics of the baseline conditions are only available for the managed resources, non-target species, and protected resources. The conditions of the habitat and human communities VECs are complex and varied. As such, the reader should refer to the characterizations given in Sections 4.4 and 4.5, respectively. As mentioned above, this cumulative effects baseline is then used to assess cumulative effects of the proposed management actions below in Table 67.

Impact Definitions for Table 67 below:

Monkfish Stocks, Non-monkfish species, Endangered and Other Protected Species	Positive = actions that maintain or increase stock size
	Negative = actions that decrease stock size
Habitat	Positive = actions that improve or reduce disturbance of habitat
	Negative = actions that degrade or increase disturbance of habitat
Human Communities	Positive = actions that maintain or increase revenue and well being of fishermen and/or associated businesses
	Negative = actions that decrease revenue and well being of fishermen and/or associated businesses
All VECs	Mixed=both positive and negative

VEC		Status/Trends	Combined Effects of Past, Present Reasonably Foreseeable Future Actions (Table 66)	Combined CEA Baseline Conditions
Monkfish Stocks	NMA	Not overfished (rebuilt) and overfishing is not occurring.	Positive – Stocks have achieved rebuilt status and are being managed at sustainable levels.	Negative – Short term overharvesting in the past contributed to several stocks being overfished or overfishing occurring. Positive – Long term regulatory actions taken over time have ended overfishing and rebuilt stocks.
	SMA	Not overfished (rebuilt) and overfishing is not occurring.		
Non-monkfish Species	Groundfish stocks	4 stocks are not overfished and overfishing is not occurring; 11 stocks are overfished and overfishing is occurring; 5 stocks are either overfished, overfishing is occurring, or status unknown	Positive – Continued management of directed stocks will also control incidental catch/bycatch.	Positive – Effort reductions in the monkfish fishery have likely reduced impacts on non-target species.
	Dogfish	Not overfished and overfishing is not occurring.		
	Skates	Winter, thorny and smooth skates are overfished and thorny is also subject to overfishing. Barndoor skate is not overfished and is rebuilding toward biomass target. Little skate is not overfished, although it is close to the overfished biomass threshold. Clearnose and rosette skates are not overfished and overfishing is not occurring.		
Habitat		Fishing impacts are complex and variable and typically neutral or adverse; Non-fishing activities had historically negative but site-specific effects on habitat quality.	Mixed – Future regulations will likely control effort and thus habitat impacts but as stocks maintain rebuilt status, effort reductions are unlikely.	Mixed - Reduced habitat disturbance by fishing gear but impacts from non-fishing actions, such as global warming, could increase and have a negative impact.
Protected Resources	Sea Turtles	Leatherback, Kemp’s ridley and green sea turtles are classified as endangered under the ESA and loggerhead sea turtles are classified as threatened.	Positive – reduced gear encounters through management actions to control effort taken under the FMP, as well as those under the ESA and MMPA have had a positive impact	Positive - Reduced gear encounters through management actions to control effort taken under the FMP, as well as those the ESA and MMPA.
	Large Cetaceans	Of the baleen whales (right, humpback, fin, blue, sei and minke whales) and sperm whales, all are protected under the MMPA and with the exception of minke whales, all are listed as endangered under the ESA.		
	Small Cetaceans	Pilot whales, dolphins and harbor porpoise are all protected under the MMPA. The most recent stock assessment for harbor porpoise shows that takes are increasing and above PBR.		
	Pinnipeds	All pinnepeds are protected under the MMPA.		
Human Communities		Complex and variable (see Section 5.6). Generally monkfish landings and revenues have decreased since implementation of the FMP in 1999, but from unsustainably high levels.	Positive – Management at long-term sustainable levels should support viable communities and economies	Positive - Management at long-term sustainable levels should support viable communities and economies.

Table 67 Cumulative effects assessment baseline conditions of the VECs

5.4.4 Summary Effects of Amendment 5 Actions

The alternatives contained in Amendment 5 can be divided into three broad categories. First, this action adopts management reference points in compliance with the MSRA and National Standard 1 Guidelines that are designed to prevent overfishing and achieve long-term sustainability in the fishery. Second, Amendment 5 adopts specifications (catch targets and associated DAS and trip limits) for the fishery for FY 2011 - FY 2013. Third, the action adopts additional management measures to improve the overall functioning of the management program, including minimizing bycatch.

The MSRA requirement to adopt ACLs and AMS is expected to provide the foundation for long-term sustainability and, more specifically, the prevention of overfishing. Since these requirements are applied to all FMPs, they should have an overall positive cumulative effect on target and non-target species and communities, and have mixed effects on protected species and habitat. In the case of monkfish, since overfishing is not occurring, and the fishery is rebuilt and managed at sustainable levels, effort reductions are not warranted, which means that the long-term impact of the fishery on protected species and habitat will not change under the FMP as it comes into compliance with the MSRA, except for changes that occur as a result of measures taken under the ESA and MMPA.

The adoption of fishery specifications for FY 2011 – FY 2013 will provide for ongoing achievement of optimum yield, prevention of overfishing and stability in the fishery. The specification of ACT to include monkfish discards will further enhance the FMP's ability to prevent overfishing, since all catch will be accounted for. Since the ACTs and associated management measures represent an increase from current levels, there may be some direct negative impact on non-target species that are caught while vessels target monkfish, such as skates and dogfish, but some indirect positive effect, as vessels shift effort away from other fisheries to take advantage of the increased opportunities in the monkfish fishery. The same type of impact may occur with regards to protected species, depending on the relative effect of the monkfish fishery compared to the interactions in other fisheries. The cumulative habitat effects are mixed, since the effect of increased fishing effort may have adverse effects on habitat, which is offset by the fact that effort under the FMP is being controlled and vessels must continue to respect the habitat closed areas established in Multispecies Amendment 13, and the offshore canyon closures established in Monkfish Amendment 2. The effect on communities is likely to be positive in both the short and long term as a result of the increased opportunity to target monkfish at sustainable levels, and the relative stability of a 3-year specification program.

The third broad category of measures includes three modifications to the management plan: Allowing vessels to land a one-day overage of the trip limit and have the appropriate time deducted from their DAS allocation; allowing vessels to land monkfish heads; and, allow the Councils to make changes to the cooperative RSA program through a framework adjustment. The latter measure is purely administrative and has no effect on any of the VECs. The other two measures are neutral or slightly positive with respect to

monkfish stocks and non-target species, because they simply allow vessels to land, rather than discard fish or fish parts that have already been caught. To the extent this means that vessels will use their DAS allocations at a slightly higher rate may have positive effects, not only on target and non-target species, but habitat and protected species as well. These two changes will also have a positive effect on communities through minimizing bycatch, promoting efficiency and reducing costs.

5.4.5 Cumulative Effects Summary

The regulatory atmosphere within which Federal fishery management operates requires that management actions be taken in a manner that will optimize the conditions of resources, habitat, and human communities. Consistent with NEPA, the MSRA requires that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. Given this regulatory environment, and because fishery management actions must strive to create and maintain sustainable resources, impacts on all VECs (except short-term impacts to human communities) from past, present and reasonably foreseeable future actions, when combined with baseline conditions, have generally been positive, and are expected to continue in that manner for the foreseeable future. This is not to say that some aspects of the various VECs are not experiencing negative impacts, but rather that when taken as a whole and compared to the level of unsustainable effort that existed prior to and just after the fishery came under management control, the overall long-term trend is positive.

Table 68 below is provided as a summary of likely cumulative effects found in the various groups of management alternatives contained in Amendment 5. Impacts are listed as no impact/neutral, positive, negative, or mixed. Impacts listed as no impact/neutral include those alternatives that have no impact or have a neutral impact (neither positive nor negative). Impacts listed as mixed contain both positive and negative impacts. The resultant cumulative effect is the CEA baseline that, as described above in Table 67, represents the sum of the past, present, and reasonably foreseeable future (identified hereafter as "other") actions and conditions of each VEC. When an alternative has a positive effect on a VEC, for example, reduced fishing mortality on a managed species, it has a positive cumulative effect on the stock size of the species when combined with the "other" actions that were also designed to increase stock size. In contrast, when an alternative has a negative effect on a VEC, such as increased mortality, the cumulative effect on the VEC would be negative and tend to reduce the positive effects of the "other" actions. The resultant positive and negative cumulative effects are described below for each VEC and are exhibited in Table 68.

Managed Resources

Past actions implemented under the Monkfish FMP have served to rebuild the fishery and neither the stocks in the northern or southern fishery management areas are overfished, nor is overfishing occurring. This management trend should continue through adoption of the proposed biological and management reference points which will be neutral or positive for monkfish stocks since, while not directly affecting fishing effort, provide the basis for monitoring stock status and achieving optimum yield from the fishery while

preventing overfishing. ACLs and AMs, as well as the specification of associated DAS and trip limits will have a positive effect because they will prevent overfishing while achieving optimum yield. Allowing vessels to land a trip limit overage and have the time deducted from their DAS allocation will minimize bycatch of monkfish and improve catch accounting. These proposed actions, along with protections afforded through other management plans, such as Amendment 16 to the NE Multispecies FMP and Atlantic Sea Scallop FMP actions, as well as actions under development to protect habitat and EFH via the Omnibus Habitat FMP should afford sustainable management of the monkfish fishery. The proposal to allow changes to the RSA program through a framework adjustment is administrative and, therefore, neutral for monkfish. Allowing vessels to land monkfish heads is also neutral because it does not alter fishing effort.

Non-Target Species

Effort control measures implemented under the Monkfish FMP over the past decade have reduced overall fishing effort with its associated incidental catch of non-target species, particularly skates and dogfish. This trend is likely to continue under the proposed action, notwithstanding the year-over-year increase in allocated effort proposed in this amendment, as discussed here. Proposed biological and management reference points will not have an effect on non-target species because they do not directly affect fishing effort, while ACLs and AMs may have an indirect positive effect since they provide the basis for controlling fishing effort. The proposed specification of DAS and trip limits may have both positive and negative effect. While the increased opportunity to target monkfish through an increased DAS allocation will allow for effort to shift from other fisheries, there may be increased incidental catch of some species, particularly skates and dogfish. The impact of the automatic adjustment to DAS for trip limit overages is mixed for converse reasons: Increased efficiency reduces the time that gear needs to be in the water, reducing the chance of incidental catch, while increases in the rate at which DAS allocations are used up may cause vessels to shift to other fisheries, increasing effort in those fisheries. Both changes to the RSA program and allowing the landing of monkfish heads are neutral with respect to their effect on non-target species. Under the MSRA, all FMPs must adopt ACLs and AMs to end/prevent overfishing, which, in concert with the actions proposed in this amendment, will likely have a positive cumulative effect on non-target species.

Protected Resources

As with target and non-target species, past effort controls and other actions developed under the Monkfish FMP have reduced the potential for interaction with protected species. However, despite these measures, bycatch of harbor porpoise has been increasing in recent years (Waring *et al.*, 2009). As a result, the cumulative impact of the proposed action on protected species is expected to be mixed. Proposed biological and management reference points will not have an effect on protected species because they do not directly affect fishing effort, while ACLs and AMs may have an indirect positive effect since they provide the basis for controlling fishing effort. The overall impact of the proposed specification of DAS and trip limits may be neutral or negative with respect to

protected species interactions depending on the time and area where the increased effort allocation is applied. If, for example, vessels utilize their increased allocation during the winter months when bycatch of sea turtles is minimal, then the increased allocation will not have an impact on these species. However, it could have negative impact on Harbor porpoise and White-sided and common dolphins since bycatch mortality of these species is highest during the winter months (see Orphanides 2009, 2010; Rossman 2010). The automatic adjustment to DAS for trip limit overages may have positive effect on protected species since increased efficiency reduces the time that gear needs to be in the water and reduces the chance of interaction. The impacts of both changes to the RSA program and allowing the landing of monkfish heads are neutral with respect to their effect on protected species.

Habitat, Including EFH

Past actions taken under the Monkfish FMP, particularly the controls on fishing effort and the closure of three offshore canyon areas in Amendment 2, have had a positive effect on protecting habitat, including EFH. The adoption of biological and management reference points will have no impact on habitat because they do not directly affect fishing effort, while ACLs and AMs may have an indirect positive effect since they provide the basis for controlling fishing effort. The impact of the proposed specification of DAS and trip limits may be neutral or negative with respect to habitat depending on the time and area where the increased effort allocation is applied. A negative effect might occur if, for example, vessels expand the area where they fish as a result of the increased DAS allocation. The automatic adjustment to DAS for trip limit overages may have a positive effect on habitat since increased efficiency reduces the time that gear needs to be in the water and in contact with the bottom. The impacts of the proposals to allow changes to the RSA program through a framework adjustment, and allowing vessels to land monkfish heads are both neutral because they do not alter fishing effort. These proposed actions, along with protections afforded through other management plans, such as Amendment 16 to the NE Multispecies FMP and Atlantic Sea Scallop FMP actions, as well as actions under development designed specifically to protect habitat and EFH via the Omnibus Habitat FMP should afford ongoing minimization, to the extent practicable, of adverse impacts of the fishery on habitat.

As discussed in Section 5.4.2, the impact of non-fishing activities on EFH tend to be concentrated in near shore areas. A list of such activities and their impact on VECs is provided in Appendix 6, in the last sections of the table. Such activities may work additively to decrease habitat quality and, as such the sustainability of managed resources, non-target species, and protected resources, but their location at only the edges of the managed fishing activity will likely diminish their cumulative effect on the VECs, including EFH.

Human Communities

The rebuilding of the monkfish resource over the past decade, along with the stability afforded by the multi-year specifications-setting process have had an overall positive

effect on the affected human communities. This trend is likely to continue under the proposed action, which allows for increased fishing opportunities, as well as bycatch reduction and other efficiencies. All of the proposed measures are expected to have a positive impact on communities. The reference points, ACLs and AMs will control fishing effort at a level that achieves optimum yield while preventing overfishing. The increase specification of DAS represents increased economic opportunity. The automatic adjustment to DAS for trip limit overages increases efficiency, reduces costs and minimizes bycatch, all of which have positive effects on communities. The proposal to allow changes to the RSA program through a framework adjustment is positive because it allows the management system to be more responsive to changing needs as they arise with respect to the RSA program. And, allowing vessels to land monkfish heads will enable vessels to increase revenues without increasing fishing effort. The cumulative effect of the ongoing management of the monkfish fishery at sustainable levels, as well as actions taken under other FMPs as they meet MSRA mandates, will likely be positive over the long term.

Management Measure	VECs				
	Managed Resources	Non-target Species	Protected Resources	Habitat Including EFH	Human Communities
Biological and Management Reference Points Control Rules	Neutral or Positive – objective and measurable reference points, while not directly affecting fishing effort, provide the basis for monitoring stock status and achieving optimum yield while preventing overfishing	No Impact/ Neutral – reference points have no direct effect on catch of non-target species	No Impact/ Neutral – reference points have no direct effect on interaction with protected species	No Impact/ Neutral – reference points have no direct effect on fishing effort or habitat	Neutral or Positive – objective and measurable reference points, while not directly affecting fishing effort, provide the basis for monitoring stock status and achieving optimum yield while preventing overfishing
ACLs and AMs	Positive – the basis for setting specifications to prevent overfishing and achieve optimum yield	Neutral or Positive – management based on ACLs and AMs will control fishing effort	Neutral or Positive – management based on ACLs and AMs will control fishing effort	Neutral or Positive – management based on ACLs and AMs will control fishing effort	Neutral or Positive – management based on ACLs and AMs will control fishing effort
Specification of DAS and Trip Limits	Positive – Effort controls to prevent overfishing and achieve optimum yield	Mixed – Increased opportunity to target monkfish shifts effort from other fisheries but may increase incidental catch in the directed fishery	Neutral or negative – Increased effort allocations may result in greater interaction with PS, depending on where and when such effort is applied	Neutral or negative – Increased effort allocations may result in greater habitat impact, depending on where and when such effort is applied	Positive – Effort controls to prevent overfishing and achieve optimum yield; increased allocation improves fishery economy
Automatic DAS Adjustment for Trip Limit Overage	Positive – Minimizes bycatch and improves catch accounting	Mixed – Increased efficiency reduces incidental catch of non-target species but may result in effort shifting to other fisheries as DAS allocations are exhausted more quickly	Positive – May reduce time that gear is in the water	Positive – May reduce time that gear is in the water and in contact with the bottom	Positive – Minimizes bycatch and improves catch accounting; reduces cost and improves efficiency
Changes to the Research Set-Aside (RSA) Program	Neutral – Administrative measure with no effort impact	Neutral – Administrative measure with no effort impact	Neutral – Administrative measure with no effort impact	Neutral – Administrative measure with no effort impact	Positive – May result in more efficient adjustment process if changes to RSA are needed
Landing of Monkfish Heads	Neutral – Does not change fishing effort	Neutral – Does not change fishing effort	Neutral – Does not change fishing effort	Neutral – Does not change fishing effort	Positive – Allows for increased revenue with no increase in fishing effort

Table 68 Summary of Cumulative Effects of proposed action

6.0 Consistency with Applicable Laws

6.1 Magnuson-Stevens Act (MSA)

6.1.1 National Standards

Section 301 of the Magnuson-Stevens Act requires that FMPs contain conservation and management measures that are consistent with the ten National Standards (NS). The following section summarizes, in the context of the National Standards, the analyses and discussion of the proposed action that appear in various sections of this framework adjustment document.

(1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

Based on the most recent stock assessment (SARC 50, 2010), overfishing is not occurring in either management area, and both stock components are not overfished, and above the biomass target. The assessment contains numerous cautionary statements as a result of scientific uncertainty about monkfish populations and biology. The proposed action incorporates MSRA requirements to set acceptable biological catch at a level that takes into account scientific uncertainty in the estimate of the overfishing level of catch, and also incorporates proactive measures to ensure accountability by setting catch targets (ACTs) at a level that is expected to prevent catches from exceeding the ACL. The Councils, therefore, are setting optimum yield equal to the ACTs, which is the highest level of catch that is expected to prevent overfishing while accounting for both scientific and management uncertainty.

(2) Conservation and management measures shall be based upon the best scientific information available.

The scientific information used in the development of the proposed action includes NMFS fishery data available through FY2008, and a stock assessment completed in August 2007. Subsequent to completion of the amendment development process, another stock assessment was conducted in June 2010. The results of that assessment re-affirmed the stock status with respect to overfishing and overfished condition, and data from this assessment was used in the final analysis of the proposed alternatives. These are the best and most recent scientific information available, and are compliant with the Information Quality Act (see Section 6.8). As noted in the discussion of NS 1 above, the Councils considered the cautionary and uncertain nature of the 2007 stock assessment in the development of the proposed action.

(3) To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The FMP established a two-area management program for monkfish, covering the exploitable range of the species. At that time, and up to the present, scientific information

is equivocal with respect to the single-stock or two-stock theories. Ongoing cooperative research is being done to attempt to resolve this issue. Nonetheless, the monkfish resource in the US EEZ is managed throughout its range, from the Gulf of Maine to waters off the coast of North Carolina, as a two stock unit.

(4) Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The proposed action does not discriminate between residents of different states. While the FMP measures developed to achieve the conservation goals of the FMP may have a differential impact on sectors (gear or area fished) of the industry, that differential impact is not the purpose. The two-area management program is based on differences in the fisheries between the two areas, and not based on allocation of fishing privileges differently among sectors of the industry. In fact, all limited access permit holders, with the exception of Category H permits, may fish in either management area, subject to the rules that apply in each. In Amendment 2, the Councils qualified a group of vessels for a limited access permit (Category H permits), that had not qualified under the original FMP, on the condition that on those vessels would be restricted to fishing only in their historical area, at the southernmost range of the fishery.

(5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The Councils propose several measures to improve efficiency, such as the provision to allow vessels to land a one-day overage of the trip limit (rather than discard the overage) and have the vessels' DAS accounts adjusted accordingly, and the provision to allow vessels to land monkfish heads. While the FMP generally, and the proposed action specifically, may have differential impacts on various fishery groups, economic allocation is not one of the goals or objectives, nor does the action proposed in this framework to directly allocate the fishery resource.

(6) Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

The two-area management approach of the FMP is specifically intended to take into account the differences in fisheries between the two areas. Other measures in the FMP, such as the permit categories and gear- and area-based incidental catch limits are also based on the differences among various fisheries that catch monkfish either as a target or incidental catch species. These considerations are not changed under the proposed action.

(7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

This FMP does not duplicate measures or regulations implemented under other FMPs, but coordinates with them. The inclusion of monkfish incidental catch limits for all fisheries enables those fisheries to operate with minimal restriction under the monkfish FMP. In addition, measures that improve efficiency of the fishery, such as those discussed under NS5 above, minimize the costs associated with discarding. To the extent the current plan and measures proposed in this amendment impose costs on vessels and processors, principally through gear requirements and/or reporting requirements, those costs are necessary for the successful management of the fishery.

(8) Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2), in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

The actions proposed in this amendment are not expected to have significant adverse effects on fishing communities (see Section 5.4), and some measures are likely to have positive effects, particularly those measures that increase allowable catch levels and minimize bycatch.

(9) Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

The FMP contains numerous measures to minimize bycatch and bycatch mortality, including large-mesh regulations, and incidental catch allowances for all fisheries. This amendment specifically includes an additional provision (allowing the landing of a trip limit overage) that further enhances the bycatch minimization aspects of the FMP by potentially reducing the amount of time gear is in the water.

(10) Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

This amendment does not substantially change the impact of the FMP on safety at sea since this action does not contain any management measures that would affect safety at sea. However, the trip limit overage provision may encourage safer fishing practices since it enables a vessel to retain up to an additional day's worth of monkfish catch when landing, but be charged the applicable number of DAS.

6.1.2 Required Provisions

Section 303 of the MSFCMA contains fifteen additional required provisions for FMPs, which are discussed below. Any FMP prepared by any Council, or by the Secretary, with respect to any fishery, shall:

- (1) contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are-- (A) necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery; (B) described in this subsection or subsection (b), or both; and (C) consistent with the National Standards, the other provisions of this Act, regulations implementing recommendations by international organizations in which the United States participates (including but not limited to closed areas, quotas, and size limits), and any other applicable law;*

The Monkfish FMP comprises conservation and management measures designed to achieve optimum yield from the fishery and prevent overfishing. Based on the results of the most recent stock assessment, monkfish is not overfished in either management area and overfishing is not occurring. The action proposed in this amendment would enable the fishery to continue to achieve optimum yield from the fishery while not causing overfishing, and promote stability in the fishery by setting 3-year catch targets that are designed to prevent catches from exceeding the ACL.

- (2) contain a description of the fishery, including, but not limited to, the number of vessels involved, the type and quantity of fishing gear used, the species of fish involved and their location, the cost likely to be incurred in management, actual and potential revenues from the fishery, any recreational interest in the fishery, and the nature and extent of foreign fishing and Indian treaty fishing rights, if any;*

The fishery and its components, including biological, social and economic aspects, are described in the Affected Environment section of the EIS for the original FMP, as well as in subsequent environmental documents accompanying plan amendments and framework adjustments, and updated in Section 4.0 of this document. There is no foreign fishing for monkfish, and there are no known Indian treaty fishing rights pertaining to monkfish.

- (3) assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, the fishery, and include a summary of the information utilized in making such specification;*

The most recent stock assessment (SARC 50, 2010) contains the best estimate of the present condition of the monkfish resource, as well as estimates of future stock growth under the proposed annual catch targets (see Section 5.1.2.2.3).

- (4) assess and specify-- (A) the capacity and the extent to which fishing vessels of the United States, on an annual basis, will harvest the optimum yield specified under paragraph (3); (B) the portion of such optimum yield which, on an annual basis, will not be harvested by fishing vessels of the United States and can be made available for foreign fishing; and (C) the capacity and extent to which United States fish processors, on an annual basis, will process that portion of such optimum yield that will be harvested by fishing vessels of the United States;*

There is sufficient capacity for United States' vessels to harvest the optimum yield from the monkfish resource, as evident by the fact that, even though the fishery is under a

limited access program, vessels are restricted in the number of DAS and the amount of monkfish they can land per DAS to stay within the catch targets. Thus, there is no amount of optimum yield available for foreign fishing. Furthermore, sufficient domestic processing capacity exists to utilize all monkfish harvested by United States vessels.

(5) specify the pertinent data which shall be submitted to the Secretary with respect to commercial, recreational, charter fishing, and fish processing in the fishery, including, but not limited to, information regarding the type and quantity of fishing gear used, catch by species in numbers of fish or weight thereof, areas in which fishing was engaged in, time of fishing, number of hauls, economic information necessary to meet the requirements of this Act, and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors;

The Monkfish FMP specifies pertinent data for the commercial fishery that shall be submitted to NMFS (e.g., IVR data, dealer data, etc.) Utilizing this information, the Monkfish Plan Development Team (PDT) compiles and publishes annually a description of the fishery, including affected communities, as part of the Stock Assessment and Fishery Evaluation (SAFE) Report. Section 4.5 of this document, Human Environment, updates, to the extent possible, the information contained in Framework 5. There is no significant recreational or charter fishery for monkfish.

(6) consider and provide for temporary adjustments, after consultation with the Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safe conduct of the fishery; except that the adjustment shall not adversely affect conservation efforts in other fisheries or discriminate among participants in the affected fishery;

The framework adjustment mechanism established in the FMP provides the Council with the ability to change regulations to address issues such as vessel safety within the context of the fishery management program on an annual, or as needed basis. The DAS carryover provision in the current FMP is specifically intended to enable vessels that are unable to use their allocation of DAS before the end of the year due to unforeseen circumstances, including weather, and this carryover provision now extends to unused DAS distributed to vessels engaged in cooperative research under the RSA program.

(7) describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat;

Section 4.4 contains the description of monkfish essential fish habitat, and Section 5.2 contains the analysis of impacts of the proposed action and alternatives on essential fish habitat.

(8) in the case of a fishery management plan that, after January 1, 1991, is submitted to the Secretary for review under section 304(a) (including any plan for which an

amendment is submitted to the Secretary for such review) or is prepared by the Secretary, assess and specify the nature and extent of scientific data which is needed for effective implementation of the plan;

The Council prepares annually a Stock Assessment and Fishery Evaluation (SAFE) Report which is used to monitor the fishery and the progress of the FMP. Section 4.0 of this document contains the information and data for the 2007 and 2008 fishing years. Furthermore, Section 6.8 discusses this FMP's consistency with the Information Quality Act.

- (9) include a fishery impact statement for the plan or amendment (in the case of a plan or amendment thereto submitted to or prepared by the Secretary after October 1, 1990) which shall assess, specify, and analyze the likely effects, if any, including the cumulative conservation, economic, and social impacts, of the conservation and management measures on, and possible mitigation measures for—(A) participants in the fisheries and fishing communities affected by the plan or amendment; (B) participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants; and (C) the safety of human life at sea, including whether and to what extent such measures may affect the safety of participants in the fishery*

The impacts of the proposed action and alternatives, including cumulative impacts, impacts on the physical and human environments are discussed in Section 5.0 of this document.

- (10) specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery) and, in the case of a fishery which the Council or the Secretary has determined is approaching an overfished condition or is overfished, contain conservation and management measures to prevent overfishing or end overfishing and rebuild the fishery;*

Based on the recommendations of the 2007 DPWG stock assessment, the Councils revised the reference point used to identify when the resource is overfished. Based on that assessment and the more recent SARC 50, including current and recommended revised reference points, the stock is not overfished in either management area, and overfishing is not occurring.

- (11) establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority-- (A) minimize bycatch; and (B) minimize the mortality of bycatch which cannot be avoided;*

NMFS currently has in place reporting requirements for all vessels participating in the Federal monkfish fishery, including requirements to report all bycatch on the Vessel Trip Reports (VTR), and maintains, to the extent the budget allows, a fishery observer program on board vessels. Additionally, VMS is mandatory on the majority of limited access monkfish vessels through the requirements of the Atlantic Sea Scallop and

Northeast Multispecies FMPs. Since VMS allows the tracking of fishing locations, coordination of this information with observer coverage may allow for more accurate bycatch assessment and projection. Also, the emerging Study Fleet Program can provide another source of bycatch information for the different gear types and areas. The Study Fleet Program is designed to enhance fishery-dependent data necessary for management decisions through the development of electronic reporting technology.

The establishment of a Standardized Bycatch Reporting Methodology (SBRM) is required pursuant to section 303(a)(11) of the Magnuson-Stevens Act. In January 2006, development began on the Northeast Region Omnibus SBRM Amendment. This amendment covers 13 FMPs, 39 managed species, and 14 types of fishing gear. The purpose of the amendment is to: Explain the methods and processes by which bycatch is currently monitored and assessed for Northeast Region fisheries; determine whether these methods and processes need to be modified and/or supplemented; establish standards of precision for bycatch estimation for all Northeast Region fisheries; and document the SBRM established for all fisheries managed through the FMPs of the Northeast Region. The SBRM Amendment was approved on October 22, 2007, and a final rule became effective on February 27, 2008.

For the reasons noted above, and given the fact that NMFS is approaching the bycatch issue on a national level versus on a fishery-by-fishery basis, the Councils determined that is not appropriate or practicable to implement a significantly new or expanded reporting methodology focused just on the monkfish fishery through amendments to the FMP. Therefore, no additional specific bycatch monitoring alternatives are being recommended in this action.

- (12) *assess the type and amount of fish caught and released alive during recreational fishing under catch and release fishery management programs and the mortality of such fish, and include conservation and management measures that, to the extent practicable, minimize mortality and ensure the extended survival of such fish;*

Monkfish catch in recreational fisheries is not significant enough to be recorded in the recreational catch data.

- (13) *include a description of the commercial, recreational, and charter fishing sectors which participate in the fishery, including its economic impact, and, to the extent practicable, quantify trends in landings of the managed fishery resource by the commercial, recreational, and charter fishing sectors;*

Monkfish catch in recreational fisheries is not significant enough to be recorded in the recreational catch and vessel data. Commercial fishery sectors are described in the Affected Environment section of the EIS for the FMP, as well as in subsequent environmental documents (Amendment 2 and Frameworks 2 - 6), and updated in Section 4.0 of this document.

- (14) *to the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate, taking into consideration the economic impact of the harvest restrictions or recovery*

benefits on the fishery participants in each sector, any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors in the fishery;

The monkfish fishery does not have a recreational component. As a result, the FMP only addresses the commercial fishery. As noted under the discussion of National Standard 4 in the previous section, while conservation measures may have a differential impact on different sectors of the industry, that differential impact is not the purpose of the regulations, and is done in a manner that is intended to achieve the conservation and management goals of the FMP. The two-area management program is based on differences in the fisheries between the two areas, and not based on allocating fishing privileges differently among sectors of the industry.

(15) establish a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability.

MSA Section 303 note states that this required provision does not take effect until fishing year 2010 for stocks that are subject to overfishing, and 2011 for all other stocks. Based on the most 2007 assessment overfishing is not occurring in either management area. Consequently, this amendment, which implements ACLs and AMs for the monkfish fishery is scheduled to take effect at the start of the 2011 fishing year.

6.1.3 EFH Assessment

According to the EFH Final Rule, “federal agencies are not required to provide NMFS with assessments regarding actions that they have determined would not adversely affect EFH.” The action proposed under this framework will not have an adverse effect on EFH of federally managed species, and, therefore, no EFH Assessment is required or provided.

6.2 National Environmental Policy Act (NEPA)

This section evaluates the proposed action in the context of NEPA, for determining the significance of Federal actions, in this case the setting of annual monkfish fishery specifications., and other adjustments to the FMP.

6.2.1 Finding of No Significant Impact (FONSI Statement)

NOAA has provided guidance for the determination of significance under NEPA in Section 6.01(b) of NOAA Administrative Order NAO 216-6, May 20, 1999, as well as in NMFS Instruction 3-124-1, July 22, 2005. NOAA Administrative Order 216-6 contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality regulations at 40 CFR 1508.27 state that the significance of an action should be analyzed both in terms of “context” and “intensity”. The analysis of significance of this action is, therefore, based on both the NAO 216-6 criteria and CEQ’s context and intensity criteria. Each criterion listed in the sixteen questions below is relevant in making a finding of no significant impact, and have been

considered individually, as well as in combination with the others. The sixteen criteria to be considered are addressed below:

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

Based on the analysis and conclusions of the DPWG assessment (Appendix I) and, more recently, SARC 50, the catch targets proposed in this amendment will not jeopardize the sustainability of monkfish. Both assessments also concluded that overfishing is not occurring and monkfish is rebuilt in both management areas. The proposed action, to the extent the measures modify the management program, is designed to provide additional assurance that the catch will not exceed the ACL, and, if an overage should occur, that automatic adjustments will take place.

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

As noted in Section 5.1, the proposed action is not expected to jeopardize the sustainability of any non-target species. The level of fishing effort resulting from the proposed action is the same as, or moderately below the levels analyzed in previous management actions, including the original FMP. Although information about bycatch is limited and inconclusive with respect to fishery-wide impacts, the impact of the monkfish fishery on non-target species is not significant, primarily as a result of the large-mesh gear requirements and low level of effort allocated. Additionally, this amendment contains a trip limit overage provision that may help reduce fishing effort, as noted in Section 5.1.

3. *Can the proposed action be reasonably expected to allow substantial damage to the ocean and coastal habitats and/or EFH as defined under the Magnuson-Stevens Fishery Conservation and Management Act and identified in FMPs?*

The alternatives under consideration in this action will not increase monkfish effort in either management area over the baseline effort level established in the original FMP and subsequent actions. The overall effect of the fishery on EFH was discussed and mitigated for in Amendment 2, and in Multispecies Amendment 13, and the alternatives under consideration do not change those findings. As discussed in Section 5.2, the action proposed in this amendment would not have an adverse impact on EFH for any federally managed species in the region.

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

None of the actions proposed in this amendment would create a safety or public health concern.

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

The activities and fishing effort levels conducted under the proposed action are within the scope of the original FMP, and do not change the basis for the determinations made in previous consultations, as noted in Section 5.1. The controlling of fishing effort, through the management measures in the FMP, in combination with NMFS' actions being proposed or taken to protect sea turtles, harbor porpoise and large whales will mitigate much of the impact of the fisheries (both the directed monkfish fishery and other fisheries in the region) on protected species, and keep such interactions within acceptable limits.

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)?*

The proposed action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. While the role of monkfish within the ecosystem is not well understood, SARC 50 observed that "monkfish is one of the dominant piscivores in the ecosystem, ...accounting for 2-6% of the total consumption by all finfish in the ecosystem." The maintenance of this predator and opportunistic feeder at historical and sustainable levels is likely to promote biodiversity and ecosystem function over the long term.

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

There are no significant social or economic impacts, nor are there any significant natural or physical environmental effects expected to result from the proposed action (Section 5.0, Environmental Consequences). Under the proposed action, some vessels and communities may experience an increase in revenues from monkfish fishing over the recent levels. There are no significant natural or physical environmental effects resulting from the proposed action that may have an impact on communities or the human environment in the context of NEPA. Furthermore, the proposed action is expected continue the long-term benefits of a stable and sustainable fishery through the achievement of optimum yield and prevention of overfishing.

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

The effects of the proposed action on the human environment are not expected to be highly controversial, as they are based on the best and most recent scientific information available and generally involve neutral or positive effects.

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?*

Other than the Stellwagen Bank National Marine Sanctuary (SBNMS), the proposed action does not affect areas of historic or cultural resources, park land, farmland, wetlands wild and scenic rivers or ecologically critical areas that are not already under protection (essential fish habitat areas and marine mammal protection zones). The effect on SBNMS is not likely to be substantial since the area is not a major monkfish fishing

ground. Fishing vessels intentionally avoid shipwrecks, such as the SS “Portland” which is located within the SBNMS and is listed on the National Register of Historic Places (see question 12).

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

The analysis of the effects on the human environment of the proposed adjustment is consistent with the analyses done for prior adjustments and a broad range of fishery management actions taken by the Councils. While these analyses have some inherent uncertainty because they involve predicting future impacts that depend on a wide range of variables, such as the response of the target species to the management measures and the short-term range of alternative fisheries for affected vessels, the effects are not considered highly uncertain. Thus, while the risks inherent in analyses of the effects on the human environment are due to some uncertainty, those risks are not unique or unknown.

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

The proposed action is related to other recent management actions beginning with the implementation of the Monkfish FMP in 1999 which put in place most of the management measures that are currently in effect. While the FMP and the associated monkfish rebuilding program resulted in some significant impacts to the human environment, the framework actions and Amendment 2 which followed and which refined the original FMP measures were found to not result in significant impacts. Thus, while the proposed action is related to a recent past action that was found to have significant impacts (the rebuilding plan under the FMP), as discussed and analyzed in the cumulative effects assessment (CEA), this action when combined with other past, present and RFFAs would not result in significant cumulative impacts (see the CEA in Section 5.4).

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 historic resources?

The proposed action is not likely to directly or indirectly affect objects listed in the National Register of Historic Places or cause significant impact to scientific, cultural or historical resources due to the spatial remoteness of the regulated activity relative to listed sites. The only object in the management area listed on the National Register of Historic Places is the wreck of the steamship “Portland”, within the Stellwagen Bank National Marine Sanctuary. The current regulations allow fishing within the Sanctuary, however, vessels typically avoid fishing near shipwrecks or bottom obstructions in order to avoid tangling and losing expensive fishing gear. Therefore, this action would not result in any adverse affects to the wreck of the “Portland”.

13. Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?

Although the proposed action would result in an increase in fishing effort in comparison to the status quo, it is not expected to result in the introduction or spread of a non-indigenous species. In 2002, an invasive colonial sea squirt (*Didemnum sp*) was observed on Georges Bank. The tunicate occurs on pebble gravel habitat, and does not occur on moving sand. NMFS has surveyed the area and is monitoring the growth. At this time, there is no evidence that fishing spreads this species more than it would spread naturally, however, the role of fishing gear in the spread of invasive tunicates should be regularly evaluated and monitored.

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?

No, the proposed action is not likely to establish a precedent for future action with significant effects, and it does not represent a decision in principle about future consideration. This action is taken under an existing fishery management program. The future management regime for the monkfish fishery, should changes become necessary, has not been defined, and will depend on the advancements made in the scientific understanding of the species and its population dynamics, or shifts in management philosophy. The impact of any future changes will be analyzed as to their significance in the process of developing and implementing them.

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?

No, the proposed action is not reasonably expected to threaten a violation of Federal, State or local laws or requirements imposed for the protection of the environment. This action does not propose any changes that would provide incentives for environmental laws to be broken.

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

Cumulative effects on target and non-target species, including protected species, related to the proposed action are discussed in Section 5.4 of this document. Based on that discussion, cumulative effects are not expected to be significant, and there is no change from the original analysis of cumulative impacts as assessed in the FMP and in the EIS for Amendment 2. This conclusion is based on the premise that controlling fishing effort at sustainable levels, while addressing issues such as bycatch and protected species interactions, will have a long-term positive effect on all components of the human environment.

FONSI Statement

In view of the analysis presented in this document, the EA/RIR/RFA for Amendment 5 to the Monkfish FMP, the proposed action will not have a significant effect on the human environment, with specific reference to the criteria contained in Section 6.02 of NOAA Administrative Order NAO 216-6, Environmental Review events for Implementing the National Environmental Policy Act, May 20, 1999. The impacts and alternatives in this document were analyzed with regard to both context and intensity, and are deemed not to be significant. Accordingly, the preparation of an Environmental Impact Statement for the proposed action is not necessary.

NMFS, Northeast Regional Administrator**Date**

6.3 Regulatory Impact Review and Initial Regulatory Flexibility Analysis (EO 12866 and IRFA)

6.3.1 Determination of significance under E.O. 12866

National Marine Fisheries Service 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.*

This action will have neither an annual effect on the economy of \$100 million, nor adversely effect in a material way the economy, a sector of the economy, productivity, competition, the environment, public health or safety, or State, local, tribal governments or communities. During fishing years 1998 through 2004, gross monkfish revenues averaged approximately \$41.4 million per fishing year. Monkfish revenues were \$37.5 million in fishing year 2005. Since 2005, monkfish revenue had a decreasing trend, which declined to \$25.2 million in fishing year 2006 and to \$24.2 million in fishing year 2007. Under the current regulations, the total value of monkfish landings would be \$12.3 million at the 2008 average price. The value under the proposed regulation would be \$15.1 million at the same price. Thus, there would be an impact on the National economy of \$2.8 million in additional revenues from monkfish landings relative to previous fishing year.

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

The proposed action does not create an inconsistency or otherwise interfere with an action taken or planned by another agency. The activity that would be allowed under this action involves commercial fishing for monkfish in Federal waters of the EEZ, for which the National Marine Fisheries Service is the sole agency responsible for regulation. Therefore, there is no interference with actions taken by another agency. Furthermore, this action would create no inconsistencies in the management and regulation of commercial fisheries in the Northeast.

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 includes measures that would change biological reference points; establish target ACLs and AMs for fishing year 2011-2013, which adjusts the trip limits and the portion of the total monkfish DAS allocation that may be used in the NMA and SMA; allow modifications to the FMP to improve the RSA program via a framework

adjustment; adjust DAS to account for trip limit overages to minimize bycatch and cost; and allow landing of monkfish heads. This action is unrelated to any entitlements, grants, user fees, or loan programs, and, therefore, cannot be considered significant under the third criterion specified in E.O. 12866.

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 is being taken to implement the MSRA mandated ACLs and measures to ensure accountability. Therefore, the proposed action would not be considered significant under the fourth criterion specified in E.O. 12866.

Because none of these criteria apply, the National Marine Fisheries Service has determined that the proposed action in the monkfish fishery to change the biological reference points, establish target ACLs and AMs, adjust the trip limits and DAS allocations that may be used in the NMA and SMA, adjust DAS to account for trip limit overages, allow or adjustments to the RSA program by framework adjustment, and retain monkfish heads is not significant for the purpose of E.O. 12866.

6.3.2 Initial Regulatory Flexibility Analysis (IRFA)

The following sections contain analyses of the effect of the proposed action on small entities in accordance with Section 603(b) of the Regulatory Flexibility Act.

6.3.2.1 Reasons for Considering the Action

In 2007, the Magnuson-Stevens Fishery Conservation and Management Act was reauthorized, and revised to include, among other things, the requirement that all FMPs establish ACLs and measures to ensure accountability (AMs). For stocks not subject to overfishing, such as monkfish, the Act set a deadline of 2011 for the implementation of ACLs and AMs. The primary reason for this amendment is to implement the MSRA mandated ACLs and AMs to prevent overfishing.

The objective is also to define and adopt management reference points in accordance with the revised NS1 Guidelines published on January 16th, 2009. The other objective of this amendment is to set the specifications of DAS, trip limits and other management measures to replace those adopted in Framework 4 for period 2011-2013 and beyond if necessary. The Councils are also proposing to make modifications to the FMP to improve the Research Set Aside (RSA) Program, to minimize bycatch resulting from trip limit overages, and to allow vessels to land monkfish heads.

6.3.2.2 Objectives and legal basis for the action

The regulations implementing the FMP, found at 50 CFR Part 648, authorize the Council to adjust management measures as needed to achieve the FMP goals. As was noted earlier (see Section 2.2), the objective of this action is to achieve the goals of the FMP through implementing ACL and AMs, adjusting biological and management reference points consistent with NS1 Guidelines, and updating catch targets, trip limits and

monkfish DAS allocations. Thus, the proposed action is consistent with the goals of the FMP and its implementing regulations.

6.3.2.3 Description and number of small entities to which the rule applies

All of the entities (fishing vessels) affected by this action are considered small entities under the SBA size standards for small fishing businesses (\$4.0 million in gross sales). As of September 2009, there were 758 limited access monkfish permit holders and 2,156 open access permit holders. Out of these, 573 limited access permit holders (76 percent) actively participated in the monkfish fishery in 2008, whereas this number was 504 for the open access permit holders (23 percent). Table 69 shows the number of vessels in each permit category. The proposed measures can potentially affect all the monkfish vessels actively participating in the NMA, SMA or both regions.

Permit Category	Only NMA Trips	Only SMA Trips	NMA and SMA Trips
A	0	13	2
B	0	33	4
C	17	59	198
D	56	55	129
E	104	266	134
H	0	7	0

Table 69 Number of active monkfish vessels fishing by permit category and fishing area (FY 2008 data)

6.3.2.4 Reporting, recordkeeping and other compliance requirements

This action proposes one measure that adds a reporting requirement but it does not change the total reporting burden associated with an activity because it reduces the reporting burden under another existing requirement. Under the proposed measure to allow vessels to land a one-day's overage of the trip limit, those vessels must report via the VMA or IVR their intent to land an overage prior to returning to port. While this is a new reporting requirement, for each such instance that a vessel is landing such an overage, the number of annual reporting events will be reduced as the vessel's DAS allocation is reduced to account for the overage. Thus, although this action modifies an existing reporting burden, it does not change the overall reporting burden..

6.3.2.5 Duplication, overlap or conflict with other Federal rules

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

6.3.2.6 Economic impacts on small entities resulting from the proposed action

The proposed management changes encompass a variety of measures that would impact vessels participating in the monkfish fishery. The following sections provide a discussion of the impacts for each alternative. Where possible, a quantitative assessment of the impacts is provided. If a quantitative assessment is not possible, an attempt is made to identify the types and number of vessels that may be reasonably expected to be affected.

6.3.2.6.1 Biological and Management Reference Points (BRP) Alternatives

The proposed change in BRP does not immediately affect any vessels because it does not change any management measures or otherwise modify vessel-level aspects of the management program.

6.3.2.6.2 Annual Catch Limits and Accountability Measures

The proposed alternative consists of series of actions.

6.3.2.6.2.1 ACL

The councils proposed to set ACLs for the NMA and SMA equal to the ABC, rather than below it. The actual limit to fishing is determined by the ACT, which is set relative to the ACL and takes into account management uncertainty. Assuming that the fishery remains sustainable, if management uncertainty can be reduced, maintaining the proposed ACL would allow for a higher ACT in the future. Similarly, if scientific uncertainty is reduced, this could lead to a higher ACL, and higher ACTs as a result. A higher ACT would result in greater revenue opportunities for fishing vessels.

6.3.2.6.2.2 Reactive AM

The proposed action calls for a reduction in the annual catch target (ACT) for a management area in the second year following the year that catch exceeds the annual catch limit (ACL) in that management area. How Councils reduce the ACT is not prescribed, other than the reduction in the ACT would equal the overage in ACL on a pound-for-pound basis. Should the Councils not act, NMFS would reduce the ACT and adjust DAS and trip limits accordingly.

Harvesting additional monkfish in excess of ACL would result in immediate short-term revenue increases for those fishing vessels that harvested more than they would have if the ACL had not been exceeded. With a positive interest rate, this gain would only be lost partly with a reduction in harvest and revenues two years later. If the reduction imposed affected all vessels equally then the negative impact will be less severe on those vessels that gained from the overage previously. Also, it is possible that by exceeding the ACL longer term impacts on the stock could lead to further future economic losses due to changes in the stock size resulting in more restrictive management measures. Therefore, reactive AMs will prevent such long-term losses that may potentially occur from unforeseen overages.

6.3.2.6.2.3 Proactive AMs (ACT)

The purpose for setting the ACT below the ACL is to account for uncertainty in the ability of management measures to limit catch to the prescribed level. The intention behind providing a buffer between the ACL and ACT is to prevent overfishing from occurring in the event the measures to limit catch are not fully successful. The ACT includes landings and discards of monkfish from all fisheries, including the directed monkfish fishery and fisheries where monkfish landed incidentally (e.g. scallops, multispecies, etc). Actions that reduce discards or reduce the uncertainty of the effectiveness of management actions would allow the ACT to be closer to the ACL.

From an economic perspective, assuming that prices do not decrease due to higher landings, a higher ACT would result in higher monkfish revenues and thus additional benefits to vessels and the nation. However, this is only the case if the higher allocation is actually landed, as opposed to discarded or left uncaught.

The preferred alternative would set the ACT at 11,513 mt (86% of ACL) in the SMA. In FY2008, monkfish landings exceeded the TAL by 32%. This suggests that some of the additional benefits from monkfish revenues under the preferred alternative are already being realized in the SMA. The proposed ACT under option 2 would increase landings by an additional 40 percent while option 1 would essentially maintain landings at current levels. Thus the preferred alternative should result in additional monkfish revenues for vessels and ports beyond those already being realized, while under option 1, revenues would be retained at or marginally above current levels.

In the NMA historical landings have exceeded the level associated with both ACT options; however, in FY2008 landings were only 71% of the allocation suggesting a higher ACT may not result in higher monkfish revenues. Thus, although the preferred alternative may result in higher landings and revenues than option 1 in theory, these landings may not be realized, and resulting changes to revenues may not substantially differ between the two options. Changes in the management of other fisheries, in particular the Multispecies FMP, could change this scenario.

Quantification of the economic impacts of the proposed ACTs requires specification of the management actions used to achieve the proposed levels. The impact of alternative DAS and trip limit levels are discussed below.

6.3.2.6.3 Specification of DAS and Trip Limits Alternatives

6.3.2.6.3.1 Das and Trip Limit Options

The trip limit and DAS alternatives would impact vessels fishing for monkfish in either area, to the extent that it impacts their normal fishing activity. As in previous annual adjustments, estimation of relative economic impacts was accomplished through the use of a trip limit model to estimate average changes in per-trip vessel returns net of operating costs and crew payments, as well as changes in monkfish revenue. The analysis uses data from observed trips to simulate outcomes under alternative trip limits and DAS allocations. The trip data is compiled from FY 2008 vessel trip reports and dealer weigh-out slips, with the former providing catch and location data and the latter providing average monthly prices, which are used to calculate revenue estimates.

The trip limit model was previously used to analyze changes in trip limits and DAS allocations while moving from higher to lower limits. The effect was evaluated based on a comparison of the expected return for alternative trip-taking strategies. A vessel may abandon a trip if the trip limit causes earnings to fall below zero, they may continue to fish while discarding any monkfish above the trip limit, or they may fish up to the trip limit and then return to port. Assuming that a trip is taken, vessels may choose to continue fishing while discarding monkfish over the trip limit so long as the revenue earned from other species offsets the costs of fishing. Trips where other species make up

a relatively small portion of the trip revenue may lead to trips being discontinued when the trip limit is reached, since the cost of continued fishing would exceed the additional revenue.

Previous monkfish frameworks and amendments proposed to reduce the trip limits or kept them the same; therefore, the trip model could have been used to analyze the economic effects of the proposed changes. However, this amendment proposes to increase the trip limits and DAS allocations, making a straight forward application of the trip limit model challenging. An increase in DAS allocation allows a vessel to take additional trips beyond the ones it has taken under the previous DAS allocation, and an increase in trip limit would allow a vessel to retain more of their catch and reduce discards on a trip. The trip limit model has been modified to accommodate these possible additional revenue opportunities.

Under this modified trip limit model, first, each trip was evaluated as in the existing model but incorporating the possibility of higher retention under the higher limit. Secondly, it is assumed that a vessel may take additional trips if DAS allocations are increased provided the vessel is in a directed fishery and it has used 75% or more of its DAS allocation. Further, it is assumed that the additional trips will be very similar to the trips the vessel has taken in the past. Accordingly, depending on the percentage of days absent and additional DAS allocation, a certain number of trips are chosen randomly from a vessel's past trips to augment the set of trips the vessels have taken previously.

For the purpose of this analysis, it is assumed that if vessels took trips in both the NMA and SMA, these vessels are indifferent between taking a trip in either area. Rather they will choose to take the trip that maximizes net trip revenue. To model this assumption, all trips taken by limited access monkfish permit holders landing monkfish in at least one trip were ordered by descending revenue for each vessel. Each trip is then analyzed as follows. A trip is unchanged if the total monkfish landed is less than the incidental trip limit or the relevant monkfish management area DAS limit and the trip limit.

If the DAS limit has been reached, then the monkfish catch is reduced to the relevant proposed incidental catch limit and the appropriate strategy for the vessel (i.e., ending the trip or continuing to fish while discarding any additional monkfish catch) is determined along with the return (in terms of revenue) from the strategy. If the DAS limit has not been reached and the monkfish catch is greater than the incidental limit and the current relevant trip limit, then the monkfish catch is reduced to the relevant trip limit and the vessel's revenue maximizing strategy and resulting return is determined. To take account of the increase in DAS allocation, we identify the vessels which might take addition trips and then augment their trip sets by the following criterion: first, we calculate the number of additional trips the vessel might take based on the percentage of days absent given their previous level of DAS allocation and the proposed DAS allocation. Secondly, we randomly pick the number of trips determined in the first step from their set of trips.

The relative change in net return to the vessel was estimated by calculating the average per-trip returns to the vessel owner using both the existing trip limits and the proposed FY2011 trip limits. These returns take into account operating costs, which were estimated using trip cost data collected on observer logs in FY 2008. Trips landing monkfish during FY 2008 in the NMA and SMA were identified, and the total trip cost was estimated as using a regression of the logarithm of trip cost against the logarithms of days absent, the number of crew, and a dummy variable indicating if the vessel gear type is gillnet. The parameters from this regression were then used to construct estimates of trip cost and cost per day absent for all trips landing monkfish during FY 2008. Returns to the vessel were calculated using a standard 60/40 lay system where 40 percent of the gross revenue goes to the vessel and 60 percent is shared among the crew, who pay for the operating expenses for the trip. Therefore, the net to the crew is the difference between the 60 percent share and the operating costs.

Since a necessary assumption of the trip limit model is that fishing location decisions are unchanged under new rules, an analysis of the impacts of the proposed measures is conducted separately for vessels fishing only in the NMA, vessels fishing only in the SMA, and vessels fishing in both areas. In reality, this is a simplification and a limitation of the model, since vessels could change their fishing location in order to mitigate some of the negative impacts or to access additional benefits from regulations. It should also be noted that the results are presented as the single year relative change from the FY 2008 baseline to each of the alternative combinations. In the absence of an ACL overage, the selected alternatives would remain in place until the end of the specifications period (FY2011-2013). Thus, there will be a cumulative effect of the measures over the entire three year period. However, the impacts may be mitigated by a possible fall in the monkfish prices due to the overall increase in monkfish landings. Due to the nature of the monkfish market, at this time, no model exists that can predict monkfish prices with a sufficient degree of accuracy to predict price changes due to changes in landings. In light of these limitations, the modifications made to take account of the increase in DAS/trip limit is considered to be a simplified solution. With time and more supporting data, it is possible to identify more sophisticated methods that can predict vessel's behavior under DAS/trip limit increase more accurately.

6.3.2.6.3.1.1 Vessels Fishing only in NMA

The impacts of the trip limit model on the vessels fishing only in the North are presented Table 70. The model predicts that under the proposed regulations per trip average vessel return will increase from 0.2% to 2.2% whereas average crew payment will increase from 0.5% to 1.8% depending on different DAS allocations and trip limit alternatives. The increase in total monkfish revenue ranges from 0.8% to 24.5% under the proposed options. The council voted on keeping the trip limits same for the AC permit holders at 1250 lbs and increasing it to 800 lbs for the BD permit holders as well as increasing DAS to 40. The proposed option will lead to a 0.8% increase in per trip average vessel return, 1.2% percent increase in crew payment and 11.0% increase in total monkfish revenue. Although, the maximum benefit in terms of percentage increase in average vessel return, average crew payment and monkfish revenue is expected to result from option 2B,

council adopted option 2C which is a combination of increase in trip limit for BD permit holder and in DAS.

Incidental Limit	TAC (mt) ACT Option	NMA Option	AC limit	BD limit	DAS	Change in Average Vessel Return	Change in Average crew Payment	Change in Monkfish Revenue
300	8,063 Option 1	1A	1250	700	31	0.2%	0.5%	0.8%
		1B	1250	470	45	1.7%	1.6%	16.1%
		1C	1250	600	40	0.5%	0.5%	10.0%
	10,750 Option 2	2A	1250	950	31	0.5%	1.2%	1.7%
		2B	1250	470	51	2.2%	1.8%	24.5%
		2C	1250	800	40	0.8%	1.2%	11.0%

Table 70 Changes from the no action alternative to proposed alternatives – vessels fishing only in NMA. The preferred alternative row is in bold.

6.3.2.6.3.1.2 Vessels Fishing only in SMA

The trip limit model for the SMA indicates mixed impacts on average vessel return, average crew payment and monkfish revenue (Table 71). The Council kept the trip limits of 550 pounds for the permit categories A, C and G, and of 450 pounds for permit categories B, D and H same at previous level. However, the Councils increased DAS to 28 from 23. As can be seen from the table, the proposed option leads to a maximum positive impact on Monkfish revenue compared to the other options considered for this amendment. Increasing DAS, as under the proposed alternative, has a more favorable impact on monkfish revenue, crew payment and average vessel return than increasing trip limits.

Incidental Limit	TAC (mt) ACT Option	SMA Option	ACG limit	BDH limit	DAS	Change in Average Vessel Return	Change in Average Crew Payment	Change in Monkfish Revenue
50	9,211 option 1	1A	550	450	23	-	-	-
		1B	550	450	23	-	-	-
		1C	700	600	15	-1.0%	-1.4%	-20.0%
	11,513 option 2	2A	700	600	23	0.5%	0.7%	7.9%
		2B	550	450	28	-0.0%	0.7%	32.0%
		2C	700	600	23	0.5%	0.7%	7.9%

Table 71 Change from current alternative to proposed alternatives – vessels fishing only in SMA. The preferred alternative row is in bold.

6.3.2.6.3.1.3. Vessels Fishing in Both NMA and SMA

Vessels fishing in both NMA and SMA will be simultaneously affected by DAS/trip limit alternatives chosen for NMA and SMA. While these vessels have a demonstrated capability to shift between areas and may be more likely to change fishing locations than

vessels that have historically fished solely in one area, the trip model does not incorporate this possibility. Rather, it is assumed that vessels continue fishing in the same locations they did previously and results are calculated for each possible combinations of NMA and SMA alternatives.

There are no single DAS/trip alternative combinations for SMA and NMA which lead to a best outcome in terms of impact on average vessel return, average crew payment and total monkfish revenue. As can be seen Table 72, the largest increase on monkfish revenue is realized under the alternative with an incidental limit of a 300 pound, 1250 pound trip limit for A and C vessels, 470 pound trip limit for B and D vessels, and 51 DAS in the NMA, in combination with the SMA levels of a 50 pound incidental limit, 550 pound trip limit for A, C, and G vessels, 450 pound trip limit for B, D and H vessels, and 28 DAS in the SMA. However these combinations of measures lead to a slight decrease in average vessel return and crew payment. Under the preferred alternatives for NMA and SMA, the monkfish revenue will increase by 17.9% with -1.3% decrease in both vessel return and crew payment.

NMA Alternatives				SMA Alternatives				Change in Average Vessel Return	Change in Average Crew payment	Change in Monkfish Revenue
Incidental limit	AC limit	BD limit	DAS	Incidental limit	ACG limit	BDH limit	DAS			
300	1250	470	31	50	550	450	23	-	-	-
					700	600	15	-0.4%	-0.7%	-6.1%
					700	600	23	0.2%	0.4%	2.7%
	550	450	28		-1.3%	-0.8%	7.0%			
	1250	700	31		550	450	23	0.0%	0.1%	0.3%
					700	600	15	-0.4%	-0.6%	-5.7%
					700	600	23	0.2%	0.4%	3.0%
					550	450	28	-1.2%	-0.7%	7.3%
					550	450	23	-0.6%	-0.5%	13.2%
					700	600	15	-0.7%	-1.4%	5.8%
	1250	470	45		700	600	23	-0.4%	-0.1%	16.1%
					550	450	28	-1.1%	-0.7%	22.9%
					550	450	23	-0.2%	-0.3%	8.1%
	1250	600	40		700	600	15	-0.5%	-1.1%	1.3%
					700	600	23	0.0%	0.1%	10.9%
					550	450	28	-1.4%	-1.4%	17.4%
					550	450	23	0.1%	0.2%	0.7%
					700	600	15	-0.3%	-0.5%	-5.2%
					700	600	23	0.2%	0.5%	3.4%
	1250	950	31		550	450	28	-1.2%	-0.7%	7.7%
					550	450	23	-0.4%	-1.0%	19.5%
					700	600	15	-0.9%	-1.9%	10.7%
	1250	470	51		700	600	23	-0.2%	-0.7%	22.4%
					550	450	28	-1.0%	-0.9%	30.0%
					550	450	23	-0.1%	-0.2%	8.6%
	1250	800	40		700	600	15	-0.5%	-1.0%	1.8%
					700	600	23	0.0%	0.2%	11.4%
					550	450	23	-0.1%	-0.2%	8.6%
700				600	15	-0.5%	-1.0%	1.8%		
				550	450	28	-1.3%	-1.3%	17.9%	

Table 72 Change from the no action alternative to proposed alternatives – vessels fishing in NMA and SMA. The preferred alternative row is in bold.

6.3.2.6.4 Other Adjustments to the DAS and Trip Limit Management Program

6.3.2.6.4.1 Automatic DAS adjustments for Trip Limit Overage

The Council chose option 3 under alternative 2, which would allow vessels to exceed the daily trip limit by one day's amount and have 24 hours and one minute deducted from their DAS account. From economic perspective any action that allows a vessel to retain more catch without staying out at sea or returning to sea results in an increase in revenues without an increase in costs, thus; vessel profits are higher. The preferred option provides the greatest benefit to vessels in comparison to taking no action, and in comparison to the other DAS charging options, since it allows vessels to make fewer trips to retain the same

amount of monkfish that they would under the current fishing practice, and utilize the same amount of DAS.

6.3.2.6.4.2 Permit Category C and D Groundfish DAS Usage

The preferred “No action” alternative will maintain the current regulation of vessels holding monkfish category C and D permit and a multispecies permit charge a multispecies A DAS for every monkfish DAS used. The Council did not vote for alternative 2 which would allow flexibility of choice when to use combined monkfish-multispecies DAS or a monkfish-only DAS which might have helped vessels plan their fishing pattern more efficiently and consequently realize more revenue. The proposed alternative will neither introduce new revenue opportunities nor eliminate existing revenue sources.

6.3.2.6.4.3 Monkfish Vessels in GF Sectors – GF DAS usage requirement

The Councils voted for the “No action” alternative which would continue to require vessels holding a monkfish category C and D permit and a multispecies permit be charged a multispecies category A DAS for every monkfish DAS used. Since vessels would not be able to take advantage of higher flexibility offered under alternative 2, there would be no potential to increase revenues as a result of this additional flexibility.

6.3.2.6.4.4 Carryover RSA DAS

When the Councils initiated this amendment, vessels were prohibited from carrying over allocated, but unused RSA DAS. On March 13, 2010, NMFS published a final rule for a technical amendment to the FMP that allowed vessels to carryover unused RSA DAS to the subsequent year, so the Councils terminated further consideration of this provision.

6.3.2.6.4.5 Allow Changes to RSA Program by Framework Adjustment

The Councils voted for the action that would allow changes in RSA program by framework adjustment. Overall, is an administrative change affecting only the procedures that may be used by the Councils to implement changes to the Monkfish RSA Program. As such, there are no costs to regulated entities associated with this provision. However, the preferred alternative would provide increased flexibility, in comparison to taking no action, to the Councils in terms of modifying RSA program to address needs and issues as they arise. This has the potential to increase the utilization of the program by researchers and industry members, potentially increasing revenues to vessels that participate in this program in the future.

6.3.2.6.4.6 Mandatory VMS

The preferred “No action” will not require limited access vessels to use mandatory VMS. The majority of active limited access monkfish vessels that have used some of their DAS allocation have used VMS either in the monkfish fishery, or in some other fishery (Table 64). This data is based on the DAS Allocation Management System (AMS) database. Trip activity codes were used to determine fishing location and trip source was used to determine if VMS or IVR was used. All trips for a limited access monkfish vessel, no matter the fishery, were used to determine if the vessel ever used VMS.

All vessels that fished in the NMA used VMS over the past two fishing years in some fishery. For vessels that fish only in the SMA, about 23% of the vessels did not have a VMS system installed and approximately 40% of the active vessels fishing in both areas did not have a VMS system installed. Under alternative 1, these vessels would not have to incur any additional cost of installing and operating VMS in this amendment, while under alternative 2 these vessels would incur such additional costs (see Section 5.3.5).

6.3.2.6.4.7 Allow Landing of Monkfish Heads

The preferred alternative would allow the fishermen to land unattached monkfish heads up to 2.32 times the weight of tails on board. In comparison to taking no action, this alternative would allow the conversion of “waste” that was previously discarded to be converted to a product that could either generate additional revenues or be used by fishermen to offset costs from purchasing bait. Both of these scenarios would provide an economic benefit to monkfish fishermen while allowing for better utilization of the resource.

6.4 Endangered Species Act (ESA)

Section 7 of the ESA 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 Councils have concluded that the proposed action in Amendment 5 is not likely to result in jeopardy to any ESA-listed species under NMFS jurisdiction, or alter or modify any critical habitat, based on the analyses and discussions in this document. For further information on the potential impacts of the fishery and proposed management action, see Section 5.1 of this document. When the Councils submit this document to NMFS, it is anticipated that the agency will initiate an informal consultation on this action under Section 7 of the ESA.

6.5 Marine Mammal Protection Act (MMPA)

The Councils have reviewed the impacts of Amendment 5 on marine mammals, and concluded that the proposed actions are consistent with the provisions of the MMPA, and would not alter existing measures to protect the species likely to inhabit the management unit of the monkfish fishery. For further information on the potential impacts of the fishery and the proposed management action, see Section 5.1 of this document.

6.6 Paperwork Reduction Act (PRA)

The purpose of the PRA is to control and, to the extent possible, minimize the paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the collection of information by or for the Federal Government. This action proposes one measure that adds a reporting requirement but it does not change the total reporting burden associated with an activity because it reduces the reporting burden under another existing requirement. Under the proposed measure to allow vessels to land a one-day’s overage of the trip limit, those vessels must report via the VMA or IVR their intent to land an overage prior to returning to port. While this is a new reporting requirement, for each such instance that a vessel is landing such an overage, the number of annual reporting events will be reduced as the vessel’s DAS allocation is reduced to account for the overage. Thus, although this action modifies an existing reporting burden,

it does not change the overall burden estimate. If NMFS concurs with this determination, it will submit the PRA package in support of this action and the information collection identified above, including required forms and supporting statements, following final submission of this amendment.

6.7 Coastal Zone Management Act (CZMA)

Section 307(c)(1) of the Federal CZMA of 1972 requires that all Federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. The NEFMC reviewed the approved coastal zone management plans of the following states to determine the consistency of the actions proposed in Amendment 5 to the Monkfish FMP with the enforceable policies of the state programs: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, and North Carolina. The NEFMC has determined that the proposed action is consistent to the maximum extent possible with the enforceable policies of the coastal zone management programs of these states. If NMFS agrees with the NEFMC's determination, it will notify the affected states of this determination in writing, and request concurrence in accordance with the provisions of 15 CFR 930 *et seq.*

6.8 Information Quality Act (IQA)

Pursuant to NMFS guidelines implementing Section 515 of Public Law 106-554 (the Information Quality Act), all information products released to the public must first undergo a Pre-Dissemination Review to ensure and maximize the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies. The following paragraphs address these requirements.

Utility

The information presented in this document is helpful to the intended users (the affected public) by presenting a clear description of the purpose and need of the proposed action, the measures proposed, and the impacts of those measures. A discussion of the reasons for selecting the proposed action is included so that intended users may have a full understanding of the proposed action and its implications. The intended users of the information contained in this document include individuals involved in the monkfish fishery, (e.g., fishing vessels, fish processors, fish processors, fishery managers), and other individuals interested in the management of the monkfish fishery. The information contained in this document will be helpful and beneficial to owners of vessels holding limited access monkfish permits since it will notify these individuals of the measures contained in this amendment. This information will enable these individuals to adjust their management practices and make appropriate business decisions based upon this revision to the FMP.

Until a proposed rule is prepared and published, this EA/RIR/IRFA is the principal means by which the information contained herein is available to the public. The information provided in this document is based on the most recent available information from the relevant data sources. The information contained in this document includes detailed, and relatively recent information on the monkfish resource and, therefore, represents an

improvement over previously available information. For example, the Affected Human Environment section of the EA includes the most recent (FY2007 and 2008) Stock Assessment and Fishery Evaluation Reports (SAFE Report) for the monkfish fishery. In addition, this document includes applicable information from the most recent monkfish stock assessment (July 2010), even though this information was not available during the development of this amendment. This EA/RIR/IRFA will be subject to public comment through proposed rulemaking, as required under the Administrative Procedure Act and, therefore, may be improved based on comments received.

This document is available in several formats, including printed publication, and online through the NEFMC's web page (www.nefmc.org). The Federal Register notice that announces the proposed rule and the final rule and implementing regulations will be made available in printed publication, on the website for the Northeast Regional Office (www.nero.noaa.gov), and through the Regulations.gov website. The Federal Register documents will provide metric conversions for all measurements.

Integrity

Prior to dissemination, information associated with this action, independent of the specific intended distribution mechanism, is safeguarded from improper access, modification, or destruction, to a degree commensurate with the risk and magnitude of harm that could result from the loss, misuse, or unauthorized access to or modification of such information. All electronic information disseminated by NMFS adheres to the standards set out in Appendix III, "Security of Automated Information Resources," of OMB Circular A-130; the Computer Security Act; and the Government Information Security Act. All confidential information (e.g., dealer purchase reports) is safeguarded pursuant to the Privacy Act; Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business, and financial information); the Confidentiality of Statistics provisions of the Magnuson-Stevens Act; and NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics.

Objectivity

For purposes of the Pre-Dissemination Review, this document is considered to be a "Natural Resource Plan." Accordingly, the document adheres to the published standards of the Magnuson-Stevens Act; the Operational Guidelines, Fishery Management Plan Process; the Essential Fish Habitat Guidelines; the National Standard Guidelines; and NOAA Administrative Order 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act.

This information product uses information of known quality from sources acceptable to the relevant scientific and technical communities. Several sources of data were used in the development of Amendment 5. These data sources included, but were not limited to, historical and current landings data from the Commercial Dealer Weighout database, vessel trip report (VTR) data, effort data collected through the monkfish DAS program, fisheries independent data collected through the NMFS bottom trawl surveys, and the July 2007 monkfish stock assessment. Subsequent to the Councils' final decisions on this action, another stock assessment was completed, and this information is included in this

final submission document and available for public review. Therefore, the analyses contained in this document were prepared using data from accepted sources. Furthermore, these analyses have been reviewed by members of the Monkfish Plan Development Team.

The amendment has been reviewed for compliance with all the applicable National Standards of the Magnuson-Stevens Act, 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 for this action were selected based upon the best scientific information available. The analyses conducted in support of the proposed action were conducted using information from the most recent fishing years through FY2008. Specialists (including professional members of plan development teams, technical teams, committees, and Council staff) who worked with these data are familiar with the most current analytical techniques and with the available data and information relevant to the monkfish fishery. In addition, this action utilizes information from the July 2007 monkfish stock assessment, which was considered the best and most recent scientific information available concerning the status of the monkfish resource. As noted above, updated information from the July 2010 assessment has been added to this final submission document.

The policy choices are clearly articulated, in Section 3.0 of this document, as the management alternatives considered in this action. The supporting science and analyses, upon which the policy choices are based, are summarized and described in Section 5.0 of this document. All supporting materials, information, data, and analyses within this document have been, to the maximum extent practicable, properly referenced according to commonly accepted standards for scientific literature to ensure transparency.

The review process used in preparation of this document involves the responsible Council (the NEFMC), the Northeast Fisheries Science Center (Center), the Northeast Regional Office (NERO), and NMFS Service 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 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 any proposed regulatory action, including any implementing regulations, is conducted by staff at NMFS Service Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget. In addition, the information contained in this document concerning monkfish stock status (Northeast "Data Poor" Stocks Working Group: Monkfish 2007, and Stock Assessment Review Committee, SARC 50, 2010) was peer reviewed according to standard methodology.

6.9 Executive Order 13132 (Federalism)

This E.O. established nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. The E.O. also lists a series of policy making criteria to which Federal agencies must adhere when formulating and implementing policies that have federalism implications. However, no federalism issues or implications have been identified relative to the measures proposed in Amendment 5. This action does not contain policies with federalism implications sufficient to warrant preparation of an assessment under E.O. 13132. The affected states have been closely involved in the development of the proposed management measures through their representation on the Council (all affected states are represented as voting members of at least one Regional Fishery Management Council). No comments were received from any state officials relative to any federalism implications that may be associated with this action.

6.10 Executive Order 13158 (Marine Protected Areas)

The Executive Order on Marine Protected Areas requires each Federal agency whose actions affect the natural or cultural resources that are protected by an MPA to identify such actions, and, to the extent permitted by law and to the maximum extent practicable, in taking such actions, avoid harm to the natural and cultural resources that are protected by an MPA. The E.O. directs Federal agencies to refer to the MPAs identified in a list of MPAs that meet the definition of MPA for the purposes of the Order. The E.O. requires that the Departments of Commerce and the Interior jointly publish and maintain such a list of MPAs. As of the date of submission of this FMP, the list of MPA sites has not been developed by the departments. No further guidance related to this Executive Order is available at this time.

6.11 Administrative Procedures Act (APA)

Section 553 of the APA establishes procedural requirements applicable to informal rulemaking by Federal agencies. The purpose of these requirements is to ensure public access to the Federal rulemaking process, and to give the public adequate notice and opportunity for comment. At this time, the NEFMC is not requesting any abridgement of the rulemaking process for this action.

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Amendment 5 to the Monkfish Fishery Management Plan Environmental Assessment Addendum

April 28, 2011

Introduction

Subsequent to the submission of Amendment 5 by New England Fishery Management Council (NEFMC) on September 20, 2010, NOAA's National Marine Fisheries Service (NMFS) published two Federal Register notices on October 6, 2010 (75 FR 61872 and 75 FR 61904) that proposed listing five distinct population segments (DPS) of Atlantic sturgeon under the Endangered Species Act (ESA) along the U.S. East Coast as either threatened or endangered species. As such, Amendment 5 does not include information on the proposed listing for this species, relevant information pertaining to the biology of this species and rationale for the proposed listing. Additionally, it does not specifically consider the potential impacts of the management measures contained in Amendment 5 on Atlantic sturgeon.

This document adds to the environmental assessment (EA) prepared by the NEFMC for Amendment 5 to include pertinent biological information on Atlantic sturgeon, the proposed listing, and updated bycatch estimates in both otter trawl and sink gillnet fisheries for the purpose of assessing the impacts of this action on Atlantic sturgeon. The analysis contained in this document assesses the incremental impacts of the No Action alternative relative to the proposed action. However, given the lack of information concerning the biological status of Atlantic sturgeon and how this status is impacted by takes of this species in the monkfish fishery, NMFS is establishing a Monitoring and Action Plan in conjunction with the partial approval of Amendment 5 to mitigate the cumulative impact of the monkfish fishery on Atlantic sturgeon. This Plan, which described in detail under point # 5 of this document, outlines that NMFS is conferencing under the ESA in an effort to gather new information to determine the magnitude of the impacts of the monkfish fishery on Atlantic sturgeon and begin development of measures to reduce such impacts; NMFS will establish reasonable and prudent measures (RPMs) to reduce the impacts of this fishery on Atlantic sturgeon if the species is listed under ESA; and NMFS will monitor the impacts of the monkfish fishery on Atlantic sturgeon through the annual review process established in the Monkfish Fishery Management Plan (FMP) regardless of whether or not the species is listed under ESA. This document also incorporates updated information concerning the new proposed loggerhead sea turtle listing, and general information on other candidate species (Atlantic bluefin tuna and cusk) and their potential for overlap with the monkfish fishery.

The information and analysis contained in this addendum resulted from the need to further inform decision makers of impacts to Atlantic sturgeon and loggerhead sea turtles resulting from this action based on a public comment received on the proposed rule to implement Framework 45 to the Northeast Multispecies Fishery Management Plan (FMP), which identified deficiencies in the EA prepared for that action. Although NMFS believes that the measures contained in Amendment 5 will not result in a jeopardy determination for Atlantic sturgeon between the anticipated effective date of this action (May 1, 2011) and when a final listing determination is made (anticipated October 6, 2011), sufficient information is lacking to make a no jeopardy

determination regarding the impacts of the monkfish fishery for the entire 2011 fishing year (FY) (through April 30, 2011), and beyond. Therefore as noted above, in conjunction with the partial approval of Amendment 5, NMFS will initiate a Monitoring and Action Plan that consists of the steps NMFS will take to mitigate the impacts of the monkfish fishery on Atlantic sturgeon from October 2011 through FY 2013 to avoid significant impacts to Atlantic sturgeon from the monkfish fishery. As outlined above, these steps are: 1) assessment of impacts and possible mitigation measures; 2) conferencing under ESA; 3) establishment of RPMs if species is listed under ESA; and 4) monitoring of impacts under Monkfish FMP annual review process regardless of listing determination, with Councils or NMFS taking action under applicable laws as necessary.

The additional information in this addendum was considered in conjunction with the information and analysis contained in the Amendment 5 EA in making the determination that this action, when combined with the Monitoring and Action Plan to mitigate the impacts of the monkfish fishery on Atlantic sturgeon, will not have a significant impact on the quality of the human environment. This addendum is incorporated as a separate document to distinguish this new information from the information that was available to the Council when it adopted final management measures for this action. Additionally, this addendum includes a revised Finding of No Significant Impact (FONSI) statement that incorporates the consideration of impacts of the proposed action on Atlantic sturgeon in the determination of non-significance. This revised FONSI overwrites the FONSI contained in the Amendment 5 EA.

Supplemental Information

1. The following supplements the information contained in Section 4.1.4.1 “Species Present in the Area”, and should be considered in context with the information presented in that section.

Candidate species are those petitioned species that are actively being considered for listing as endangered or threatened under the ESA, as well as those species for which NMFS has initiated an ESA status review that it has announced in the Federal Register. Atlantic bluefin tuna and cusk, both of which are NMFS Candidate species, are known to occur within the action area of the monkfish fishery and have documented interactions with types of gear used in the monkfish fishery.

The list provided below adds these two candidate fish species and one proposed fish species. These fish species should be considered along with the list of species provided in Section 4.1.4.1 that may occur in the operations area of the monkfish fishery.

Fish

<u>Species</u>	<u>Status</u>
Atlantic sturgeon (<i>Acipenser oxyrinchus</i>)	Proposed
Cusk (<i>Brosme brosme</i>)	Candidate
Atlantic Bluefin Tuna (<i>Thunnus thynnus</i>)	Candidate

At this time, only Atlantic sturgeon have been proposed for listing under the ESA. A status review for Atlantic sturgeon was completed in 2007. NMFS has concluded that the U.S. Atlantic sturgeon spawning populations comprise five Distinct Population Segments (DPSs) (ASSRT,

2007). On October 6, 2010, NMFS proposed listing five populations of Atlantic sturgeon along the U.S. East Coast as either threatened or endangered species. The Gulf of Maine DPS of Atlantic sturgeon is proposed to be listed as threatened, and the New York Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon are proposed as endangered. A final listing rule is expected by October 6, 2011.

Comprehensive information on current abundance of Atlantic sturgeon is lacking for all of the spawning rivers (ASSRT, 2007). Based on data through 1998, an estimate of 870 spawning adults per year was developed for the Hudson River (Kahnle *et al.*, 2007), and an estimate of 343 spawning adults per year is available for the Altamaha River, GA, based on data collected in 2004-2005 (Schueller and Peterson, 2006). Data collected from the Hudson River and Altamaha River studies cannot be used to estimate the total number of adults in either subpopulation, since mature Atlantic sturgeon may not spawn every year, and it is unclear to what extent mature fish in a non-spawning condition occur on the spawning grounds. Nevertheless, since the Hudson and Altamaha Rivers are presumed to have the healthiest Atlantic sturgeon subpopulations within the United States, other U.S. subpopulations are predicted to have fewer spawning adults than either the Hudson or the Altamaha (ASSRT, 2007). It is also important to note that the estimates above represent only a fraction of the total population size as spawning adults comprise only a portion of the total population (e.g., this estimate does not include sub-adults and early life stages).

Atlantic sturgeon from any of the five DPSs could occur in areas where the monkfish fishery operates, and the species has been captured in gear targeting monkfish (Stein *et al.* 2004a, ASMFC 2007). The proposed action to modify the monkfish fishery is expected to be completed before the anticipated date of a final listing determination for Atlantic sturgeon. However, the conference provisions of the ESA apply to actions proposed to be taken by Federal agencies once a species is proposed for listing (50 CFR 402.10). Therefore, this EA addendum includes information on the anticipated effects of the proposed action on Atlantic sturgeon, and indicates that NMFS has initiated conference procedures under the ESA, which includes gathering more information to better assess potential impacts of the monkfish fishery on Atlantic sturgeon and develop measures to reduce those impacts.

Candidate species receive no substantive or procedural protection under the ESA; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed project. The Protected Resources Division of the NMFS Northeast Regional Office has initiated review of recent stock assessments, bycatch information, and other information for the two candidate species of Atlantic bluefish tuna and cusk, which will be incorporated in the status review reports for both candidate species. The results of those efforts are needed to accurately characterize recent interactions between fisheries and the candidate species in the context of stock sizes. Any conservation measures deemed appropriate for these species will follow the information from these reviews. Please note that the conference provisions requirement applies only if a candidate species is proposed for listing (and thus, becomes a proposed species) (see 50 CFR 402.10).

2. The following supplements the information contained in the fourth paragraph of Section 4.1.4.3.1 “Sea Turtles”, and should be considered in context with the information presented in that section.

On March 16, 2010, NMFS and USFWS announced 12-month findings on the petitions to list the North Pacific populations and the Northwest Atlantic populations of the loggerhead sea turtle as DPSs with endangered status and published a proposed rule to designate nine loggerhead DPSs worldwide, seven as endangered (North Pacific Ocean DPS, South Pacific Ocean DPS, Northwest Atlantic Ocean DPS, Northeast Atlantic Ocean DPS, Mediterranean Sea DPS, North Indian Ocean DPS, and Southeast Indo-Pacific Ocean DPS) and two as threatened (Southwest Indian Ocean DPS and South Atlantic Ocean DPS). On March 22, 2011, the timeline for the final determination was extended for six months until September 16, 2011 (76 FR 15932).

3. The following supplements the information in Section 4.1.4.3 “Species Potentially Affected” by creating a new subsection titled “Atlantic Sturgeon DPSs.” This information should be considered in context with the information presented in that section.

Atlantic Sturgeon DPSs

Atlantic sturgeon is an anadromous species that spawns in relatively low salinity, river environments, but spends most of its life in the marine and estuarine environments from Labrador, Canada to the Saint Johns River, Florida (Holland and Yelverton 1973, Dovel and Berggen 1983, Waldman et al. 1996, Kynard and Horgan 2002, Dadswell 2006, ASSRT 2007). Tracking and tagging studies have shown that sub-adult and adult Atlantic sturgeon that originate from different rivers mix within the marine environment, utilizing ocean and estuarine waters for life functions such as foraging and overwintering (Stein et al. 2004a, Dadswell 2006, ASSRT 2007, Laney et al. 2007, Dunton et al. 2010). Fishery-dependent data as well as fishery-independent data demonstrate that Atlantic sturgeon use relatively shallow inshore areas of the continental shelf; primarily waters less than 50 m (Stein et al. 2004b, ASMFC TC 2007, Dunton et al. 2010). The data also suggest regional differences in Atlantic sturgeon depth distribution with sturgeon observed in waters primarily less than 20 m in the Mid-Atlantic Bight and in deeper waters in the Gulf of Maine (Stein et al. 2004b, ASMFC TC 2007, Dunton et al. 2010). Information on population sizes for each Atlantic sturgeon DPS is very limited. Based on the best available information, NMFS has concluded that bycatch, vessel strikes, water quality and water availability, dams, lack of regulatory mechanisms for protecting the fish, and dredging are the most significant threats to Atlantic sturgeon.

Atlantic sturgeon are known to be captured in sink gillnet, drift gillnet, and otter trawl gear (Stein et al. 2004a, ASMFC TC 2007). Of these gear types, sink gillnet gear poses the greatest known risk of mortality for bycaught sturgeon (ASMFC TC 2007). Sturgeon deaths were rarely reported in the otter trawl observer dataset (ASMFC TC 2007). However, the level of mortality after release from the gear is unknown (Stein et al. 2004a). In a review of the Northeast Fisheries Observer Program (NEFOP) database for the years 2001-2006, observed bycatch of Atlantic sturgeon was used to calculate bycatch rates that were then applied to commercial fishing effort to estimate overall bycatch of Atlantic sturgeon in commercial fisheries. This

review indicated sturgeon bycatch occurred in statistical areas abutting the coast from Massachusetts (statistical area 514) to North Carolina (statistical area 635) (ASMFC TC 2007). Based on the available data, participants in an Atlantic States Marine Fisheries Commission (ASMFC) bycatch workshop concluded that sturgeon encounters tended to occur in waters less than 50 m throughout the year, although seasonal patterns exist (ASMFC TC 2007). The ASMFC analysis determined that an average of 650 Atlantic sturgeon mortalities occurred per year (during the 2001 to 2006 timeframe) in sink gillnet fisheries. Stein et al (2004a), based on a review of the NEFOP database from 1989-2000, found clinal variation in the bycatch rate of sturgeon in sink gillnet gear with lowest rates occurring off of Maine and highest rates off of North Carolina for all months of the year.

In an updated analysis, the NEFSC was able to use data from the NEFOP database to provide updated estimates for the 2006 to 2010 timeframe. Data were limited by observer coverage to waters outside the coastal boundary (fzone>0) and north of Cape Hatteras, NC. The Atlantic sturgeon included in the data set were those identified by Federal observers as Atlantic sturgeon, as well as those categorized as unknown sturgeon. The frequency of encounters on observed trips were expanded by total landings recorded in vessel trip reports (VTR) rather than dealer data, since the dealer data does not include information on mesh sizes. Generally the VTR data represents greater than 90 percent of total landings. Originally the data were to be evaluated by year, month, 3-digit statistical area, gear type and mesh size. Unfortunately the level of observer coverage did not support that degree of partitioning in the data. Therefore, data were combined into divisions (identified as the first 2 digits in area codes), quarter, gear type (otter trawl, fish and sink gillnet) and mesh categories. Mesh sizes were categorized for otter trawl as small (<5.5") or large (greater than or equal to 5.5") and small (<5.5"), large (between 5.5" and 8") and extra large (>8") in sink gillnets.

Monkfish are primarily harvested using large mesh bottom otter trawl gear and extra large mesh sink gillnet gear. The majority of the monkfish trawl fishery occurs in conjunction with the Northeast multispecies fishery in the Northern Management Area (NMA), which is comprised mostly of the Gulf of Maine and Georges Bank. Conversely, the monkfish fishery is primarily a sink gillnet fishery in the Southern Management Area (SMA), which is comprised mainly of Southern New England and the Mid-Atlantic regions. (See Section 4.5.1.2 of Amendment 5 for information on landings and revenue by gear type and management area.)

Although based upon 1999 and 2001 VTR data, Figures 69 and 70 in Amendment 2 to the Monkfish FMP graphically display how directed monkfish otter trawl and sink gillnet effort are distributed. Given that monkfish regulations have not changed dramatically since the implementation of the FMP in November 1999, it is unlikely that this effort pattern has changed. However, it should be noted that directed monkfish trawl effort has declined in the SMA in recent years (see Section 4.5.1.2 of Amendment 5). As indicated in Figure 69 of Amendment 2, the majority of monkfish otter trawl effort in the Southern New England region occurs in Northeast statistical area 537 off Rhode Island and Southern Massachusetts, and tends to occur in deeper waters further offshore. Given that nearly all observed takes of Atlantic sturgeon in large mesh otter trawl gear during the 2006-2010 time period occurred in Northeast statistical areas 612 and 621 (Table 1) off New York and New Jersey, it is highly unlikely that these vessels were targeting monkfish. Conversely, directed monkfish sink gillnet effort in the Southern New

England region occurs primarily in the inshore waters of NE statistical areas 537, 612, 613, 614, and 621 (Southern Massachusetts, Rhode Island, New York and New Jersey). Observed takes associated with extra large mesh sink gillnet gear during this time period were distributed across several inshore statistical areas across Southern New England and the Mid-Atlantic regions (Table 2). Thus, it is highly likely that the majority of these observed takes occurred in sink gillnet gear targeting monkfish. As a result, the analyses contained in this Addendum to Amendment 5 focuses on the impacts to Atlantic sturgeon associated with extra large sink gillnet gear.

Table 1. Sturgeon encounters in observed large mesh otter trawl trips, 2006-2010.

Large mesh otter trawl

area	month											
	1	2	3	4	5	6	7	8	9	10	11	12
464	0		0		0					0	0	
465	0		0	0		0	0				0	0
511	0		0	0								0
512	0		0	0	0	0	0	0	0	0	0	0
513	0	0	0	0	0	0	0	0	0	0	0	0
514	3	0	0	0	0	0	0	0	0	0	0	0
515	0	0	0	0	0	0	0	0	0	0	0	0
521	0	0	0	0	0	0	0	0	0	0	0	0
522	0	0			0			0	0	0	0	
525				0	0			0				
526	0	0	0	0	0	0	0	0	0	0	0	0
537	0	0	0	0	0	0	0	0	0	0	0	0
538				0	0	0	0	0	0	0	0	
539	0	0	0	0	0	0	0	0	0	0	0	0
562					0			0				
611	0	0	0	0	0	0	0	0	0	0	0	0
612		1		0	25	5	5	0	33	1	0	0
613	0	0	0	1	0	0		0	0	0	0	0
614				1	0	0	0		0			
615	0		0		0	0	0	0	0		0	0
616	0	0	0	0						0	0	0
621	0	0	0		0	2	0	0	18	0	0	0
622	0	0	0	0							0	0
623			0	0								
625							0			0	0	0
626	0	0	0	0							0	0
627				0								
631	0	2										0
632		0										
635	0											0

Table 2. Sturgeon encounters in observed extra large mesh sink gillnet trawl trips, 2006-2010.

X-large sink gillnet

area	month											
	1	2	3	4	5	6	7	8	9	10	11	12
464												0
512										0		
513				0		0	0	0	0	0	0	0
514	0	0	0		0	0	0	0	1	0	0	0
515					0		0		0	0	0	0
521	1			0	0	0	1	0	1	1	2	1
522				0			0					0
526		0	0	0	0							
537	1	0	1	1	5	0	0	0	0	1	0	1
538					0							
539	0	0		0	4	0	0		0	0	0	0
611					0	1						
612	5	0	0	0	1	3	0			0	0	1
613	0	0		0	2	1		0	0	0	7	0
614	0			0	5	0					0	
615	0	0	0	0	2	2	0			0	0	1
616	0		0	0	0	0				0	0	0
621		0	0	0	2						0	
622					0							
625		2	2	2	4	0					1	3
626	0	0	0	1	5						0	0
631	2	6	1	5						0	0	2
635	0		58	69								

The information presented in Table 3 shows that the number of estimated annual takes of Atlantic sturgeon in extra large mesh sink gillnet gear range from 132 to 628 sturgeon annually, with an average of 350 individuals. As such, these data indicate that monkfish sink gillnet gear is likely to interact with Atlantic sturgeon during the time period covered by this action; FYs 2011 through 2013. Based upon this information, it appears that the majority of Atlantic sturgeon (over half) die as a result of an encounter with extra-large mesh sink gillnet gear, most likely due to the length of time this gear is soaked and the bagging effect associated with this type of gear, the latter of which would make it unlikely that a sturgeon could free itself once entangled. However, in 2009, the percentage of takes resulting in death declined to 36 percent. This could be in part due changes in observer coverage or other factors affecting fishing behavior such as weather, water temperature or abundance of bycatch species such as skate and dogfish. For example, fishermen have recently reported the need to move their gillnet gear to other areas in order to reduce skate bycatch. There were no changes to monkfish fishery regulations between 2008 and 2010 that would have resulted in a direct impact on fishing effort.

Table 3. 2006-2010 Estimated Atlantic Sturgeon Encounters in Extra Large Mesh Sink Gillnet Gear based upon NEFOP Data.

	Total Encounters	Dead Encounters	Percent Dead
2006	299	180	60%
2007	493	273	55%
2008	200	131	66%
2009	628	226	36%
2010	132	6	5%

As noted in #1 above, there are no total population size estimates for any of the five Atlantic sturgeon DPSs at this time. However, there are two estimates of spawning adults per year for two river systems (e.g., 870 spawning adults per year for the Hudson River, and 343 spawning adults per year for the Altamaha River). These estimates represent only a fraction of the total population size as Atlantic sturgeon do not appear to spawn every year and additionally, these estimates do not include sub-adults or early life stages. Between 2006 and 2009, an average of 203 Atlantic sturgeon mortalities occurred in all extra large mesh sink gillnet gear. This includes mortalities in all areas. The terminal year of 2010 was excluded from this average due to the fact that the low mortality rate for this year likely represents incomplete data. Based on the available information, it is not possible at this time to attribute these mortalities to the DPS(s) from which these fish originated. However, given the migratory nature of sub-adult and adult Atlantic sturgeon, it is expected that these mortalities represent takes from multiple DPSs. This conclusion is supported by preliminary genetic mixed stock analyses undertaken by Dr. Isaac Wirgin from New York University and Dr. Tim King from the U.S. Geological Survey. Wirgin and King's (unpublished) mixed stock analysis of Atlantic sturgeon samples taken by NMFS observers from Maine to North Carolina indicate that Atlantic sturgeon originated predominantly from the New York Bight DPS, with large components from the Southeast Atlantic, Chesapeake Bay, and Gulf of Maine DPSs as well. The number of fish originating from the Carolina DPS was low.

Based on additional results from the aforementioned mixed stock analysis (Wirgin and King, unpublished), the majority of the Atlantic sturgeon caught in areas off of Long Island (an area where bycatch in monkfish fisheries is higher) originated from the New York Bight DPS, and these samples are predominantly comprised of fish from the Hudson River. However, some fish originated from the Delaware River as well. The bycatch of Atlantic sturgeon from the Delaware River population of the New York Bight DPS is of particular concern given the very low level of that population. Fish from the other four DPSs represented a smaller component of the catch from this area. Off of North Carolina, where bycatch of Atlantic sturgeon is also higher, the majority of the fish from this area originated from the Chesapeake Bay DPS, with significant components from the New York Bight and Southeast DPSs as well. Fish caught in this location originated predominantly from the James, Ogeechee, Savannah, and Hudson Rivers with several fish from the Delaware River as well.

These additional data support the conclusion from the earlier bycatch estimate that the monkfish fishery may interact with Atlantic sturgeon from now until the time a final listing determination is made for the species. Between 8 to 32 percent of the total annual observations of Atlantic sturgeon in the monkfish fishery occurred during the May to October timeframe from 2006 to 2010. Given that interactions will most likely occur, NMFS is conferencing under the ESA to determine the magnitude of the effects to the species.

4. The following supplements the information in sub-Section 5.1 “Biological Impacts of Alternatives on Monkfish, Non-target Species and Protected Species” under Section 5.0 “Environmental Consequences of the Alternatives” and should be considered in context with the information presented in that section.
 - a) In Section 5.1.2.2.3.1 (NMA ACT Options), it should be noted that all ACT options are expected to have a neutral impact on Atlantic sturgeon with respect to taking no action. This determination is based on the fact that the majority of the monkfish fishery in the NMA is part of the large mesh trawl fishery for Northeast multispecies. Recent sturgeon encounter information (2006-2010) from the NEFOP shows that all encounters by vessels using large mesh trawl gear occurred off New York and New Jersey in Northeast statistical areas 612, 613, 614 and 621. Thus, any increase in trawl fishing activity in the NMA resulting from the proposed NMA ACT options, relative to taking no action, is not expected to result in increased encounters with Atlantic sturgeon during FY 2011. Monkfish landings by sink gillnet vessels only accounted for 20 percent of total NMA landings in 2008 (see Table 23 in Amendment 5). Further only 8 encounters between Atlantic sturgeon and extra large mesh sink gillnet gear occurred in the NMA during the 2006-2010 time period out of 218 total encounters reported between Maine and North Carolina during this time period. Thus, it is unlikely that any of the NMA ACT options will result in increased encounters between extra large sink gillnet gear and Atlantic sturgeon in the NMA during FY 2011. Finally, this determination is further supported by the fact that vessels have not achieved the existing NMA total allowable catch (TAC) level of 5,000 mt since FY 2007, likely due to constraints imposed on the Northeast multispecies fishery. Thus, it is unlikely that monkfish landings and effort will increase in the NMA under any of the proposed ACT options during FY 2011. Although a small number of Atlantic sturgeon mortalities associated with the monkfish fishery in the NMA are expected to occur during FY 2011, they are not likely to cause an appreciable reduction in the survival and recovery of any of the five DPSs.
 - b) In Section 5.1.2.2.3.2 (SMA ACT Options), it should be noted that the impact of the proposed ACT Options on Atlantic sturgeon is expected to be neutral to slightly negative under the proposed SMA ACT options. Unlike the NMA, the majority of monkfish landings in the SMA are attributed to sink gillnet gear (66 percent). Further, as discussed under the “Affected Environment” section (see # 3 above), the monkfish trawl fishery in the SMA occurs further offshore, while recorded encounters with Atlantic sturgeon using large mesh trawl gear occurred in inshore locations. Thus, the only gear type of concern in the SMA with respect to potential encounters with Atlantic sturgeon is extra large sink

gillnet gear. The number of estimated Atlantic sturgeon encounters with this gear type varies widely on an annual basis, from 132 to 628. The information presented in Table 3 above indicates that for 2006-2008, the majority of these encounters resulted in mortality (55-66 percent). In 2009, the mortality rate declined to 36 percent. In comparison to taking no action, only SMA ACT Option 2 is expected to increase fishing effort since it is the only option that would increase catch levels beyond that already occurring in the fishery. However, the degree of this impact hinges on whether the selection of this alternative coincides with an increased days-at-sea (DAS) allocation in comparison to taking no action. If the selection of SMA ACT Option 2 does not result in an increased DAS allocation, then the impact to Atlantic sturgeon is expected to be neutral since the alternative would not directly increase fishing opportunities to vessels, and thus have no impact on fishing effort. If the DAS allocation is increased from 23 DAS to 28 DAS under the proposed DAS and trip limit Option 2B, then the impact of the proposed SMA ACT alternative is expected to be slightly negative since this alternative would increase fishing opportunities to vessels; thus potentially increasing fishing effort. However, only a fraction of vessels fishing in the SMA utilize all of their available monkfish DAS (see the DAS and trip limit analysis in Appendix II of Amendment 5), minimizing any potential increase in fishing effort associated with the proposed action.

The continued operation of the monkfish fishery between the start of the fishing year on May 1, 2011, and time a final listing determination is made for Atlantic sturgeon under the ESA in October 2011, would not result in jeopardy, and thus a significant cumulative impact, to this species. If a listing does occur under ESA, a Biological Opinion will be issued with recommendations to limit interactions with this fishery. Given the decline of mortality rate in 2009 and the lack of population data, it is unknown at this point if the fishery will have a significant cumulative impact on the species after October 2011. However, if new information indicates that impacts are significant, the Monitoring and Action Plan outlines a method that the Councils or NMFS can take to further minimize the effects of the monkfish fishery on Atlantic sturgeon.

- c) In Section 5.1.3.1 (NMA DAS and trip limit options) it should be noted that the impact of all these alternatives to Atlantic sturgeon, relative to the status quo, is expected to be neutral. Although four of these options would increase the DAS allocation for vessels fishing in the NMA (Options 1B, 1C, 2B and 2C), as discussed in part (a) above, it is unlikely that any increase in DAS allocation would result in a commensurate increase in fishing effort since vessels are currently not utilizing the available NMA TAC of 5,000 mt. Further, if any increase in effort were to occur, it would likely be in the large mesh trawl fishery that has no known encounters with Atlantic sturgeon in the NMA based upon 2006-2010 NEFOP data. Although a small number of Atlantic sturgeon mortalities associated with the monkfish fishery in the NMA are expected to occur during FY 2011, they are not likely to cause an appreciable reduction in the survival and recovery of any of the five DPSs.
- d) In Section 5.1.3.2 (SMA DAS and trip limit options), it should be noted that the impacts of the proposed DAS and trip limit options to Atlantic sturgeon would be neutral to slightly negative in comparison to the status quo. This determination is based on the fact

that only one of these options would result in an increased DAS allocation for vessels fishing in the SMA (Option 2B), and the potential increase in sink gillnet fishing effort associated with the 5 DAS increase associated with this option is expected to be minimal for two reasons: 1) Only a fraction of monkfish vessels utilize their entire current SMA DAS allocation, and 2) only a portion of total fishing effort in the SMA (69 percent based on 2009 landings data) is associated with sink gillnet gear.

The continued operation of the monkfish fishery between the start of the fishing year on May 1, 2011, and time a final listing determination is made for Atlantic sturgeon under the ESA in October 2011, would not result in jeopardy, and thus a significant cumulative impact, to this species. If a listing does occur under ESA, a Biological Opinion will be issued with recommendations to limit interactions with this fishery. Given the decline of mortality rate in 2009 and the lack of population data, it is unknown at this point if the fishery will have a significant cumulative impact on the species after October 2011. However, if new information indicates that impacts are significant, the Monitoring and Action Plan outlines a method that the Councils or NMFS can take to further minimize the effects of the fishery on Atlantic sturgeon.

- e) In Section 5.1.4.1 (Automatic DAS Adjustment for Trip Limit Overage), it should be noted that the impacts of the proposed measure to Atlantic sturgeon would be neutral to slightly positive in comparison to the status quo. This determination is based on the fact that this measure may consolidate fishing effort, particularly for vessels that utilize sink gillnet gear in the SMA, since it would enable a vessel to land one additional monkfish trip limit than would otherwise be authorized based on the vessel's monkfish DAS usage, but adjust the vessel's monkfish DAS charged to account for the additional trip limit. Thus, the proposed measure is expected to make monkfish vessels, especially those that use sink gillnet gear, more efficient by enabling them to land more monkfish in less actual time at sea. Since this measure encourages efficiency, it will likely result in sink gillnet vessels taking fewer trips to harvest the same amount of monkfish they normally take in a given fishing year, while using their DAS allocation at a faster rate. As such, the proposed measure is likely to reduce the amount of time a vessel's sink gillnet gear is actively fishing, which may in turn reduce interactions with Atlantic sturgeon.
 - f) All of the remaining measures considered and analyzed in Section 5.1 are expected to have a neutral impact to Atlantic sturgeon. These measures, such as the establishment of biological and management reference points for the monkfish fishery, are generally administrative in nature and do not have a direct effect on monkfish fishing effort.
5. The following supplements the information contained in Section 5.4.5 "Cumulative Effects Summary" in the subsection titled "Protected Resources" and should be considered in context with the information presented in that section.

As discussed in #3, estimated encounters with Atlantic sturgeon by the gear predominantly used in the monkfish fishery (i.e., extra large mesh sink gillnet gear) average 350 sturgeon annually. Of these encounters, more than half (an average of 202) are expected to result in serious injury or

mortality. However, it is important to note that the mortality rate for Atlantic sturgeon associated with extra large mesh sink gillnet gear declined in 2009.

As noted in #2, DPS-specific population levels for Atlantic sturgeon are difficult to quantify at this time, and further work needs to be done to accurately quantify the population of this species. For this reason, NMFS is conferencing under the ESA on whether NMFS should seek to implement, under its discretionary authority, measures to reduce any adverse impacts on the Atlantic sturgeon. Current estimates indicate that the Hudson River DPS likely consists of approximately 870 spawning individuals in any one year. However, adult Atlantic sturgeon are not believed to spawn annually, but rather every other year for males and every two to five years for females. Although NMFS does not have information necessary to determine the sex or spawning condition of Atlantic sturgeon encountered by the monkfish fishery, these encounters may include both males and females and fish that may or may not spawn during that year. Therefore, encounters of Atlantic sturgeon by the monkfish fishery may be a subset of the entire population, as opposed to being comprised exclusively of the smaller annual spawning population.

It is important to note that there are no benefits Atlantic sturgeon associated with taking no action. The No Action alternative would not approve a slight increase in the days-at-sea (DAS) allocated to vessels fishing in the SMA (5 DAS), where most of the Atlantic sturgeon encounters occur. Although these additional DAS could result in an increase in total fishing effort associated with extra large mesh sink gillnet gear, another measure contained in Amendment 5 could serve to reduce total fishing effort by providing monkfish vessels the ability to land one additional monkfish trip limit in exchange for an increase in the amount of DAS charged to the vessel for that trip. This measure essentially enables a vessel to land more monkfish in less time on the water by having its effort allocation (i.e., DAS) adjusted to account for the additional monkfish, making the vessel more efficient. Thus, because this measure promotes efficiency, it will likely reducing the amount of time a vessel needs to actively fish (i.e., soak) its sink gillnet gear, which may reduce interactions with Atlantic sturgeon. Further, as outlined in the Purpose and Need (Section 2.2), the primary goal of Amendment 5 is to establish annual catch limits (ACLs) and accountability measures (AMs) for the monkfish fishery to comply with the new provisions of the Magnuson-Stevens Act. The purpose of these measures is to place stricter controls on fishing effort in the monkfish fishery in order to prevent overfishing from occurring on either stock. Placing tighter controls on fishing effort, including a penalty provision for ACL overages, helps mitigate the impact of the monkfish fishery on Atlantic sturgeon. Therefore, the implementation of ACLs and AMs for the monkfish fishery will serve to restrict fishing effort and prevent overfishing of monkfish stocks in a manner that is not possible under the No Action alternative. These measures have the potential to reduce soak time of sink gillnet gear, reducing the opportunity for interaction with non-target species including Atlantic sturgeon. Conversely, if the proposed action is not implemented, the current TACs and associated DAS and trip limits would remain in effect, maintaining fishing effort at current levels.

As noted under #4 of this addendum, the incremental impacts of the preferred alternatives in Amendment 5, relative to taking no action, are not likely to result in a significant negative impact on Atlantic sturgeon. The proposed action is not expected to result in negative cumulative impacts between the anticipated implementation date of May 1, 2011, and October 2011, when a

final listing determination under the ESA is expected, since only between 8 to 32 percent of the total annual observations of Atlantic sturgeon in the monkfish fishery occurred during the May to October timeframe based on 2006-2009 NEFOP data. However, this determination of cumulative non-significance cannot be extended beyond the October 2011 time period due to the lack of information on which to base a determination. As a result, NMFS is implementing the following Monitoring and Action Plan, which includes working with the NEFSC to gather new information that can be used to better assess the impacts of the monkfish fishery on Atlantic sturgeon and begin development of potential measures to reduce impacts to ensure that any negative impacts to Atlantic sturgeon that may occur during FYs 2011, 2012 and 2013 do not rise to the level of significance.

Monitoring and Action Plan

Due to the lack of currently available information on the status of Atlantic sturgeon, and due to the uncertain status of the proposed listing of this species under ESA, a cumulative determination of non-significance for the effect of the fishery during FY2011, 2012 and 2013 cannot be made without taking additional measures to avoid, if determined to be necessary, Atlantic sturgeon bycatch in the monkfish fishery in excess of historic levels during the immediate future and developing additional methods to reduce Atlantic sturgeon bycatch for the remainder of FY 2011 and beyond. As a result, NMFS will take the following action steps, in conjunction with its approval of Amendment 5, to ensure that any negative impacts to Atlantic sturgeon that may occur during FYs 2011, 2012 and 2013 do not rise to the level of significance.

Assessment of Impacts

As noted previously, sufficient information is lacking concerning the status of Atlantic sturgeon and the impacts of the monkfish fishery on this species to make a no jeopardy determination for this fishery for the entire FY 2011, and beyond. As a result, NMFS has initiated the collection of additional information concerning the potential impact of the monkfish fishery on Atlantic sturgeon, including information that can be utilized to develop measures to reduce impacts to this proposed listed species. The information that is currently available consists of bycatch estimates by gear type, mesh size and division (i.e., grouped Northeast statistical areas). Over the course of the summer and early fall 2011, the NMFS Northeast Regional Office will work with the NEFSC to establish Atlantic sturgeon bycatch estimates on an FMP basis, thereby providing a specific bycatch estimate for the Monkfish FMP. The NEFSC is also expected to provide an analysis of correlations between Atlantic sturgeon bycatch and factors such as depth, time, area, mesh size, and soak time. In addition, NMFS will more fully analyze mixed stock component information to be able to partition Atlantic sturgeon takes among the five DPSs. Once this analysis is completed, NMFS will be able to more accurately estimate the impact of the monkfish fishery on the five proposed DPSs of Atlantic sturgeon which would include estimation of incidental take levels and estimation of reductions necessary to avoid jeopardy and minimize impacts on the species. Based upon this information, NMFS will also be better able to suggest appropriate management measures to achieve the target level of reduction. Such measures are likely to include seasonal and/or area closures, reduced soak times for sink gillnet gear, and modifications to sink gillnet gear such as adjustments to tie-down hanging ratios.

Conferencing and Listing Provisions Under the ESA

Section 7(a)(4) of the ESA provides a mechanism for identifying and resolving potential conflicts between a proposed action and proposed species at an early planning stage. While consultations are required when the proposed action may affect listed species, a conference is only required when the proposed action may affect the continued existence of a proposed species. Entering the conference process enables the action agency to proceed with a close examination of the impacts of the proposed action on a proposed species, and develop measures aimed at avoiding or minimizing adverse effects to the proposed species. It is important to note that as soon as a listing determination is made and becomes effective, the prohibition against jeopardy applies regardless of the action's stage of completion. Thus, by closely examining the potential impacts of an action on a proposed species and developing measures to eliminate or minimize those impacts, the action agency is in a better position to take immediate action once a listing occurs to implement measures if a jeopardy determination is made with respect to the action. NMFS has initiated conference procedures under the ESA for the purpose of gathering more information to better assess potential impacts of the monkfish fishery on Atlantic sturgeon and develop measures to reduce those impacts.

Serious injuries and mortalities of Atlantic sturgeon in commercial fishing gear are a likely concern for the long term persistence and recovery of the DPSs, and was a primary reason cited for the proposals to list the DPSs under the ESA. Specifically, one of the factors cited in NMFS's proposed listing for the five DPSs of Atlantic sturgeon is bycatch. The ASMFC analysis concluded that to remain stable or grow, populations of Atlantic sturgeon can sustain only very low anthropogenic sources of mortality. It is apparent, therefore, that reductions in bycatch mortality may be required in order to recover Atlantic sturgeon. As noted under the "Monitoring and Assessment of Impacts" section of this Plan, NMFS is in the process of gathering additional information to assess the impact of the monkfish fishery on Atlantic sturgeon. Once all of this analysis is completed, NMFS would be able to more accurately estimate the impact of the monkfish fishery on the five DPSs of Atlantic sturgeon which would include estimation of incidental take levels and estimation of reductions necessary to avoid jeopardy and minimize impacts on the species. NMFS would also be able to suggest appropriate management measures to achieve the target level of reduction.

Final listing determinations for the Atlantic sturgeon DPSs are expected by October 6, 2011. If final listing determinations are issued, the existing Section 7 consultation for the monkfish fishery would need to be reinitiated consistent with the requirement to reinitiate formal consultation where discretionary Federal agency involvement or control of the action has been retained and a new species is listed that may be affected by the action. During the reinitiation, the effects of the monkfish fishery on the five DPSs would be fully examined. Along with a jeopardy analysis, the formal consultation process will result in conservation recommendations and, if pertinent, reasonable and prudent measures, which would be actions deemed necessary or appropriate to minimize the impact of take of Atlantic sturgeon. If appropriate, such measures could be imposed by emergency rulemaking during this fishing year.

Interim Monitoring and Mitigation

Pending completion of the steps outlined above, NMFS will closely monitor the take of Atlantic sturgeon in the monkfish fishery through NEFOP data, and will review those data immediately as they become available. If the data indicate that sturgeon takes in the fishery will exceed recent levels of take, NMFS will take immediate action to reduce sturgeon take, consistent with applicable law. Such action may include an emergency action under the MSA and would be targeted to address the area(s) and/or gear(s) that analysis determines are problematic, to achieve reductions in sturgeon/fishery interactions to levels consistent with recent interactions. For the reasons discussed above, NMFS cannot at the present time identify the precise measures that may be necessary to respond to any excessive Atlantic sturgeon take. NMFS will identify those measures based upon the best scientific and commercial information available, including any new information provided by the NEFSC resulting from the assessments described above. Such action may include gear restrictions and/or modification, time/area closures or restrictions, changes in fishing practices, and/or other measures deemed most effective and appropriate. These steps will ensure that Atlantic sturgeon takes in the monkfish fishery will be controlled in a timely manner to remain at or below recent levels while analysis of Atlantic sturgeon status proceeds under the ESA. As noted, continued takes at recent levels for the limited period through October 2011 is not expected to result in significant adverse cumulative impacts.

Future Council or Agency Action

NMFS will have a head start through its conferencing process to determine the need to mitigate any adverse impacts on Atlantic sturgeon. Further, NMFS will utilize available and new information provided by the NEFSC to assess the impact of the monkfish fishery on Atlantic sturgeon on a broader scale. If through the annual review process established in the FMP a determination is made that bycatch rates of Atlantic sturgeon in the monkfish fishery are having a substantial negative impact on this species, NMFS will request that the Councils take immediate action to establish management measures aimed at reducing the bycatch of Atlantic sturgeon in the monkfish fishery to ensure continued compliance of the Monkfish FMP with National Standard 9. If the Councils fail to take action, if deemed necessary, NMFS may utilize appropriate authorities under the Magnuson-Stevens Act, and other applicable laws, to establish management measures to reduce the bycatch of Atlantic sturgeon in the monkfish fishery. Such measures would likely include seasonal and/or area closures, reduced soak times for sink gillnet gear, and modifications to sink gillnet gear. Additionally, NMFS will continue to monitor the bycatch of Atlantic sturgeon in the monkfish fishery, as part of the annual review process established in the FMP, utilizing NEFOP data and any other new information that becomes available, and establish additional management measures as necessary. Further, the Northeast Regional Office of NMFS may request that the NEFSC make improvements to observer reporting and increase observer coverage for large mesh sink gillnet trips as a means of collecting more information on the bycatch of Atlantic sturgeon in the monkfish sink gillnet fishery.

6. The following supplements the information in Section 6.4 “Endangered Species Act”, and should be considered in context with the information presented in that section.

While ESA Section 7 consultations are required when the proposed action may affect listed species, a conference is required only when the proposed action is likely to jeopardize the continued existence of a proposed species or destroy or adversely modify proposed critical habitat. Therefore, a conference would be required if it was determined that the monkfish fishery, including implementation of Amendment 5, was likely to jeopardize one or more of the proposed five DPSs of Atlantic sturgeon or one or more of the nine DPSs of loggerhead sea turtles. Recent bycatch estimates (2006-2010) support the conclusion drawn from earlier bycatch estimates that the monkfish fishery may interact with Atlantic sturgeon. Based upon these recent bycatch estimates, between 8 to 32 percent of the total annual observations of Atlantic sturgeon in the monkfish fishery occurred during the May to October timeframe. Given that interactions will most likely occur, NMFS, in a proactive step, is conferencing to determine the magnitude of the effects to the species and possibly identify measures to mitigate negative impacts on Atlantic sturgeon.

A biological assessment evaluates the potential effects of an action on listed and proposed species and designated and proposed critical habitat to determine whether any such species or habitat are likely to be adversely affected by the action. A biological assessment is used in determining whether formal consultation or a conference is necessary. A formal Section 7 consultation was completed in October 2010 which analyzed the effects of the monkfish fishery on listed species and designated critical habitat, including loggerhead sea turtles. For listed species, therefore, the actions under Amendment 5 have been analyzed in the informal consultation dated March 4, 2011, and it has been determined that they are not likely to cause an effect to listed species or critical habitat not considered in the October 2010 Biological Opinion.

As noted previously, one of the factors cited in NMFS’ proposed listing for the five DPSs of Atlantic sturgeon is bycatch. The ASMFC analysis concluded that to remain stable or grow, populations of Atlantic sturgeon can sustain only very low anthropogenic sources of mortality. It is apparent, therefore, that should the proposed listing be finalized, reductions in bycatch mortality may be required in order to recover Atlantic sturgeon. Final listing determinations for the Atlantic sturgeon DPSs are expected by October 6, 2011. If final listing rules are published, they will likely become effective 30 days after publication. With the publication of a final listing rule, a Section 7 consultation would be required as the analysis conducted by the ASMFC and Stein et al (2004a) demonstrate that the monkfish fishery may affect Atlantic sturgeon. Through that consultation process, the effects would be estimated and analyzed. At this point, while Atlantic sturgeon is a proposed species, the question is whether the proposed action is likely to jeopardize the continued existence of the proposed species. Atlantic sturgeon is a proposed species only until a final listing determination is made. When a final listing determination is made, the proposed rules will either be withdrawn or final listing rules will be published. NMFS has considered whether the monkfish fishery, including implementation of Amendment 5, is likely to jeopardize the proposed Atlantic sturgeon DPSs and has concluded that jeopardy is not likely to occur between now and the time a final listing determination is expected to be made in October 2011. While it is possible that there may be interactions between Atlantic sturgeon and gear used in the monkfish fishery, the number of interactions that will occur between now and

the time a final listing determination will be made is not likely to cause an appreciable reduction in survival and recovery. This is supported by updated bycatch estimates based upon NEFOP observer data for the years 2006 through 2010. These additional data support the conclusion from the earlier bycatch estimates that the monkfish fishery may interact with Atlantic sturgeon from now until the time a final listing determination is made for the species, but the magnitude of that interaction during the timeframe of interest is not likely to result in jeopardy to the species based on current assessments of each DPS. Because of the uncertainties of these determinations, NMFS has elected to conference under the ESA to determine the magnitude of the effects to the species and possibly identify measures to mitigate any negative impacts.

Although NMFS believes that the measures contained in Amendment 5 will not result in a jeopardy determination for Atlantic sturgeon between the anticipated effective date of this action (May 1, 2011) and when a final listing determination is made, sufficient information is lacking to make a no jeopardy determination for the entire FY 2011, and beyond. As such, in conjunction with the partial approval of Amendment 5, NMFS will initiate a Monitoring and Action Plan that consists of the steps NMFS will take to mitigate the impacts of the monkfish fishery on Atlantic sturgeon from October 2011 through FY 2013 to avoid significant impacts to Atlantic sturgeon from the monkfish fishery.

Serious injuries and mortalities of Atlantic sturgeon in commercial fishing gear are a likely concern for the long term persistence and recovery of the DPSs, and was a primary reason cited for the proposals to list the DPSs under the ESA. If final listing determinations are issued, the existing Section 7 consultation for the monkfish fishery would need to be reinitiated consistent with the requirement to reinitiate formal consultation where discretionary Federal agency involvement or control of the action has been retained and a new species is listed that may be affected by the action. During the reinitiation, the effects of the monkfish fishery on the five DPSs would be fully examined.

The October 2010 Biological Opinion for the monkfish fishery concluded that the monkfish fishery may affect, but was not likely to jeopardize, loggerhead sea turtles. An incidental take statement and associated reasonable and prudent measures and terms and conditions were included with that Biological Opinion. In reaching that conclusion, the Biological Opinion considered the effect of the estimated take on nesting beach aggregations and ultimately to the global species as listed. The difference between the analysis contained in the October 2010 Biological Opinion and that conducted for the proposed species would be that it was conducted at the level of the global species and it was conducted for a species listed as threatened whereas the proposal is for nine DPSs, two of which are proposed to be listed as threatened and seven to be listed as endangered. The Northwest Atlantic DPS is the one affected the most by the monkfish fishery and it is proposed to be listed as endangered. It is important to note that the effects analysis was conducted by examining the estimated number of takes against what is known about the biological status of loggerhead sea turtles and did not explicitly include any specific variable that would be affected by the listing status (e.g. threatened or endangered). Since the October 2010 Biological Opinion considered effects at the nesting beach aggregation level first and then aggregated up to consider effects at the species level, an analysis considering effects at the DPS rather than species level and on an endangered rather than threatened species

would not change the jeopardy conclusion of that Biological Opinion. Therefore, we conclude that a conference for the proposed loggerhead DPSs is not required.

7. In Section 6.2.1, the Finding of No Significant Impact Statement is updated to take into consideration the impacts of the proposed action on Atlantic sturgeon.

Finding of No Significant Impact (FONSI Statement)

NOAA has provided guidance for the determination of significance under NEPA in Section 6.01(b) of NOAA Administrative Order NAO 216-6, May 20, 1999, as well as in NMFS Instruction 3-124-1, July 22, 2005. NOAA Administrative Order 216-6 contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality regulations at 40 CFR 1508.27 state that the significance of an action should be analyzed both in terms of “context” and “intensity.” The analysis of significance of this action is, therefore, based on both the NAO 216-6 criteria and CEQ’s context and intensity criteria. This FONSI statement overwrites the original FONSI contained in the Amendment 5 EA since it incorporates additional information concerning the impacts of the proposed action (incremental and cumulative) on Atlantic sturgeon, which is proposed for listing under the ESA. Each criterion listed in the sixteen questions below is relevant in making a finding of no significant impact, and have been considered individually, as well as in combination with the others. The sixteen criteria to be considered are addressed below:

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

Based on the analysis and conclusions of the DPWG assessment (Appendix I) and, more recently, SARC 50, the catch targets proposed in this amendment will not jeopardize the sustainability of monkfish. Both assessments also concluded that overfishing is not occurring and monkfish is rebuilt in both management areas. The proposed action, to the extent the measures modify the management program, is designed to provide additional assurance that the catch will not exceed the ACL, and, if an overage should occur, that automatic adjustments will take place.

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

As noted in Section 5.1, the proposed action is not expected to jeopardize the sustainability of any non-target species, including species proposed for listing under the Endangered Species Act (ESA). The level of fishing effort resulting from the proposed action is the same as, or moderately below the levels analyzed in previous management actions, including the original FMP. Additionally, this amendment contains a trip limit overage provision that may help reduce fishing effort.

Although information about bycatch is limited and inconclusive with respect to fishery-wide impacts, the impact of the proposed action in the monkfish fishery on non-target species is not expected to be significant, primarily as a result of the large-mesh gear requirements and low level of effort allocated. For impacts on Atlantic sturgeon, the proposed action is not expected to

be significant. To address the cumulative impacts of the fishery on Atlantic sturgeon NMFS is implementing a Monitoring and Action Plan in conjunction with the partial approval this amendment to mitigate any negative impacts. The combination of the incremental impacts of the proposed action with the steps to be taken to further analyze and address any adverse impacts on Atlantic sturgeon, as outlined in the Monitoring and Action Plan, likely ensures that any negative impacts to Atlantic sturgeon that may occur during FYs 2011, 2012 and 2013 do not rise to the level of significance.

3. *Can the proposed action be reasonably expected to allow substantial damage to the ocean and coastal habitats and/or EFH as defined under the Magnuson-Stevens Fishery Conservation and Management Act and identified in FMPs?*

The alternatives under consideration in this action will not increase monkfish effort in either management area over the baseline effort level established in the original FMP and subsequent actions. The overall effect of the fishery on EFH was discussed and mitigated for in Amendment 2, and in Multispecies Amendment 13, and the alternatives under consideration do not change those findings. As discussed in Section 5.2, the action proposed in this amendment would not have an adverse impact on EFH for any federally managed species in the region.

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

None of the actions proposed in this amendment would create a safety or public health concern.

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

With the exception of Atlantic sturgeon, which is currently proposed for listing under the ESA, the proposed action is not expected to adversely affect endangered or threatened species, marine mammals, or the critical habitat of these species. This is because, the activities and fishing effort levels anticipated under the proposed action are within the scope of those already occurring in the monkfish fishery, as noted in Section 5.1 of the EA. The controlling of fishing effort, through the management measures in the FMP, in combination with NMFS's actions being proposed or taken to protect sea turtles, harbor porpoise and large whales will mitigate much of the impact of the fisheries (both the directed monkfish fishery and other fisheries in the region) on protected species, and keep such interactions within acceptable limits.

Due to the lack of currently available information on the status of Atlantic sturgeon, and due to the uncertain status of the proposed listing of this species under ESA, a cumulative determination of non-significance for the effect of the fishery during FY2011, 2012 and 2013 cannot be made without considering additional methods to reduce Atlantic sturgeon bycatch in the monkfish fishery. As a result, NMFS will take the action steps outlined in the Monitoring and Action Plan outlined under point #5 of this addendum, in conjunction with its partial approval of Amendment 5, to ensure that any negative impacts to Atlantic sturgeon that may occur during FYs 2011, 2012 and 2013 do not rise to the level of significance.

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)?*

The proposed action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. While the role of monkfish within the ecosystem is not well understood, SARC 50 observed that “monkfish is one of the dominant piscivores in the ecosystem, ...accounting for 2-6 percent of the total consumption by all finfish in the ecosystem.” The maintenance of this predator and opportunistic feeder at historical and sustainable levels is likely to promote biodiversity and ecosystem function over the long term.

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

There are no significant social or economic impacts, nor are there any significant natural or physical environmental effects expected to result from the proposed action (Section 5.0, Environmental Consequences). Under the proposed action, some vessels and communities may experience an increase in revenues from monkfish fishing over the recent levels. There are no significant natural or physical environmental effects resulting from the proposed action that may have an impact on communities or the human environment in the context of NEPA. Furthermore, the proposed action is expected continue the long-term benefits of a stable and sustainable fishery through the achievement of optimum yield and prevention of overfishing.

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

The effects of the proposed action on the human environment are not expected to be highly controversial, as they are based on the best and most recent scientific information available and generally involve neutral or positive effects.

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?

The Proposed Action cannot be reasonably expected to result in substantial impacts to unique areas or ecological critical areas. There are no known parkland, prime farmlands, wetlands, or wild scenic rivers in the affected area. Vessel operations around the unique historical and cultural resources encompassed by the Stellwagen Bank National Marine Sanctuary (SBNMS) would not likely be altered by this action since this area is not a major monkfish fishing ground, and fishing vessels intentionally avoid shipwrecks such as those located within the SBNMS. As a result, no substantial impacts are expected from this action.

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

For all resources except Atlantic sturgeon, the analysis of the effects on the human environment of the proposed adjustment is consistent with the analyses done for prior adjustments and a broad range of fishery management actions taken by the Councils. While these analyses have some inherent uncertainty because they involve predicting future impacts that depend on a wide range of variables, such as the response of the target species to the management measures and the short-term range of alternative fisheries for affected vessels, the effects are not considered highly uncertain. Thus, while the risks inherent in analyses of the effects on the human environment are due to some uncertainty, those risks are not unique or unknown.

Regarding Atlantic sturgeon, in the context described above, the incremental impacts of the proposed action versus taking no action are not highly uncertain nor do they involve unique or unknown risks. However, due to the lack of currently available information on the status of Atlantic sturgeon, the cumulative effects of this fishery are not determinable at this time and cannot be made without considering additional methods to reduce Atlantic sturgeon bycatch in the monkfish fishery (see Monitoring and Action Plan described under point #4 of this addendum). For this reason, NMFS has elected to initiate a conference to help determine the magnitude of the effects to the species and possibly identify measures to mitigate any negative impacts. Moreover, if Atlantic sturgeon are listed on October 6, 2011, NMFS must reinitiate a section 7 consultation for the monkfish fishery, and, if necessary, measures must be established to reduce the incidental take of Atlantic sturgeon in this fishery. In addition, in connection with the conferencing and the need for a final listing determination, NERO is working with the NEFSC to more fully analyze Atlantic sturgeon takes and estimate the impact of bycatch to the various DPSs. Once the analysis is complete (late summer/fall 2011), NMFS will be able to more accurately estimate the impacts of the monkfish fishery on the five DPSs and take appropriate action if necessary.

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

The proposed action is related to other recent management actions beginning with the implementation of the Monkfish FMP in 1999 which put in place most of the management measures that are currently in effect. While the FMP and the associated monkfish rebuilding program resulted in some significant impacts to the human environment, the framework actions and Amendment 2 which followed and which refined the original FMP measures were found to not result in significant impacts. Thus, while the proposed action is related to a recent past action that was found to have significant impacts (the rebuilding plan under the FMP), as discussed and analyzed in the cumulative effects assessment (CEA), this action when combined with other past, present and RFFAs would not result in significant cumulative impacts (see the CEA in Section 5.4).

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 historic resources?

The fishing operations would take place on ocean waters and would not affect any human communities on the adjacent shorelines. Further, there are no known districts, sites, or highways in the area of the Proposed Action. The proposed action is not likely to directly or indirectly affect objects listed in the National Register of Historic Places or cause significant impact to scientific, cultural or historical resources due to the spatial remoteness of the regulated activity relative to listed sites. The only objects in the fishery area listed in the National Register of Historic Places are various ship wrecks. However, vessels typically avoid fishing near shipwrecks or bottom obstructions in order to avoid tangling and losing expensive fishing gear. Therefore, this action would not result in any adverse affects to these wrecks. Due to the minimal impact on the human environment, the effect of the approval of the Proposed Action would not be significant on scientific, cultural, or historical resources.

13. Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?

Although the proposed action may result in a slight increase in fishing effort in comparison to the status quo, it is not expected to result in the introduction or spread of a non-indigenous species. In 2002, an invasive colonial sea squirt (*Didemnum sp*) was observed on Georges Bank. The tunicate occurs on pebble gravel habitat, and does not occur on moving sand. NMFS has surveyed the area and is monitoring the growth. At this time, there is no evidence that fishing spreads this species more than it would spread naturally, however, the role of fishing gear in the spread of invasive tunicates should be regularly evaluated and monitored.

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?

No, the proposed action is not likely to establish a precedent for future action with significant effects, and it does not represent a decision in principle about future consideration. This action is taken under an existing fishery management program. The future management regime for the monkfish fishery, should changes become necessary, has not been defined, and will depend on the advancements made in the scientific understanding of the species and its population dynamics, or shifts in management philosophy. The impact of any future changes will be analyzed as to their significance in the process of developing and implementing them. Further, the proposed changes to the listing for loggerhead sea turtles and the proposed listing of Atlantic sturgeon under ESA are not affected by this action. If a listing is approved for Atlantic sturgeon, a formal Section 7 consultation under the ESA will be required for the monkfish fishery, and, if necessary, measures must be established to reduce the incidental take of Atlantic sturgeon in this fishery.

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?

No, the proposed action is not reasonably expected to threaten a violation of Federal, State or local laws or requirements imposed for the protection of the environment. This action does not propose any changes that would provide incentives for environmental laws to be broken.

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

Cumulative effects on target and non-target species, including protected species, related to the proposed action are discussed in Section 5.4 of the Amendment 5 EA. Additional information related to the impact of the proposed action on Atlantic sturgeon, which is proposed for listing under ESA, is contained in this addendum. As explained above, however, for the purposes of this FONSI determination, impacts on Atlantic sturgeon are analyzed from the perspective of the incremental impacts of the proposed action versus taking no action. Further, the cumulative impacts of the monkfish fishery on Atlantic sturgeon will be mitigated through the steps outlined in the Monitoring and Action. NMFS has determined that this combined approach likely ensures that any negative impacts to Atlantic sturgeon that may occur during FYs 2011, 2012 and 2013 do not rise to the level of significance. Based on this explanation and approach, the effects to

target and non-target species, including species listed or are proposed to be listed under the ESA, are not expected to be significant.

FONSI Statement

In view of the analysis presented in the EA/RIR/RFA for Amendment 5 to the Monkfish FMP and this addendum, the proposed action will not have a significant effect on the human environment, with specific reference to the criteria contained in Section 6.02 of NOAA Administrative Order NAO 216-6, Environmental Review events for Implementing the National Environmental Policy Act, May 20, 1999. The impacts and alternatives in this document were analyzed with regard to both context and intensity, and are deemed not to be significant. Accordingly, the preparation of an Environmental Impact Statement for the proposed action is not necessary.



NMFS, Northeast Regional Administrator

APR 28, 2011

Date

8. The following citations were utilized in the development in this Addendum to the Amendment 5 EA, and add to those contained in Section 7.0 "References".

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The monkfish fishery and its management in the northeastern USA

Phil Haring and J-J. Maguire

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The domestic monkfish (*Lophius americanus*) fishery off the northeastern USA is described, along with the management response to the expansion of the fishery and the challenges posed to the management and scientific processes. The US fishery was virtually non-existent in the early 1980s, but it expanded rapidly over the next decade to the point that a management plan became necessary to regulate harvesting. By law, US fishery management plans must include measurable biological reference points based on maximum sustainable yield or a proxy; management plans must stop overfishing and rebuild overfished stocks. For monkfish, the limited biological and historical fisheries information presented significant challenges to science and management and resulted in the adoption of innovative approaches to comply with the law.

Keywords: biological reference points, fishery management, monkfish.

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Introduction

Expansion of domestic directed monkfish (*Lophius americanus*) fishing off the northeastern United States (USA) from the mid-1980s on was so rapid that, by the early 1990s, the industry asked that a fishery management plan (FMP) be developed. The plan was implemented in 1999, and because of a dearth of scientific information about the species, managers have had to rely on several different, innovative approaches to evaluate stock status and to limit fishing effort. Effort was limited through target total allowable catches (TACs). These are not “hard” TACs (quotas) that lead to fishery closures once they are reached. Instead, they are used to establish input control management measures, such as days-at-sea (DAS) and trip limits. Innovation and adaptation at the science/management interface have been, and continue to be, necessary because until the most recent stock assessment (summer of 2007), absolute estimates of spawning-stock biomass and fishing mortality were unavailable. As US fishery management legislation requires management to stop overfishing and to rebuild overfished stocks using objective, measurable, and scientifically based management reference points, the absence of absolute estimates of stock size and fishing mortality complicated this process and posed challenges in the management of the monkfish fishery.

Here, we briefly review the history of the fishery, then examine the science/management interface, detailing the evolution of biological reference points and associated management measures. We also describe future challenges facing the scientific and management processes for monkfish.

Overview of the fishery and management

The monkfish fishery in the northeastern USA extends from Maine to North Carolina (Figure 1), and seasonally from inshore waters

out to the continental margin and deep-water basins. The fishery overlaps the areas of jurisdiction of both the New England Fishery Management Council (NEFMC) and the Mid-Atlantic Fishery Management Council (MAFMC). As a result, the fishery is jointly managed by the two Councils, with the NEFMC having the administrative lead. The Councils manage the fishery as two management units, the Northern Fishery Management Area (NMA) covering the Gulf of Maine and northern part of Georges Bank and the Southern Fishery Management Area (SMA) extending from the southern flank of Georges Bank through the Mid-Atlantic Bight to North Carolina.

This two-zone approach is more reflective of the differences in how the fishery is prosecuted in the two areas than of any distinct biological differences delimiting two stocks. Recruitment seems to have occurred mainly in the northern management area (NEFSC, 1997 *et seq.*), but this observation could be due to different recruitment patterns in the two management areas or to the existence of a nursery area in the northern management unit of single stock covering the two areas. Limited genetic studies have indicated no differences between monkfish sampled in the northern and southern management areas (Chikarmane *et al.*, 2000). Ongoing cooperative research projects, such as tagging and biochemical analysis, are expected to provide additional insight into the question of stock delimitation.

The monkfish fishery in the NMA is closely integrated with the multispecies groundfish fishery, and landings are predominantly (>70%) from otter trawlers fishing on groundfish trips. Although monkfish is a component of the mixed trawl catch, there is some evidence in observer data to suggest that vessels target monkfish on individual tows made during groundfish trips in the area. During the late 1980s and early 1990s, scallop dredge vessels accounted for 30–40% of total monkfish landings

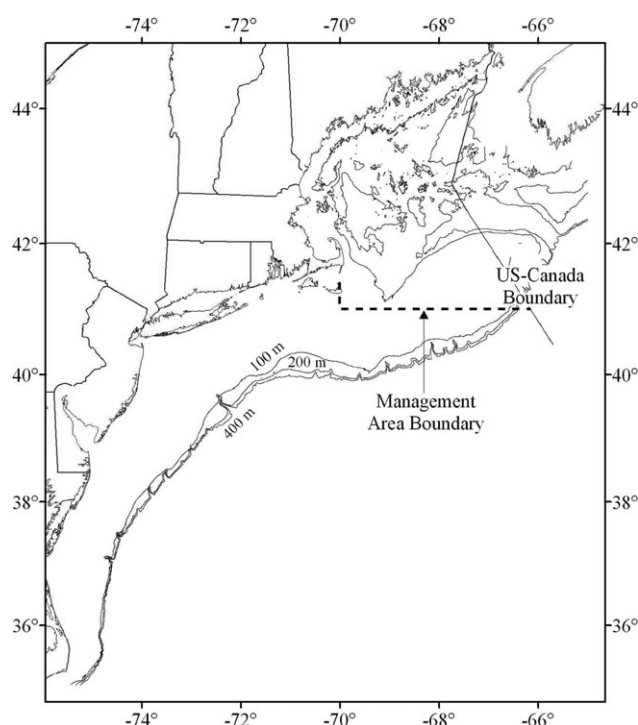


Figure 1. Map of northern and southern management areas for monkfish off the northeastern USA.

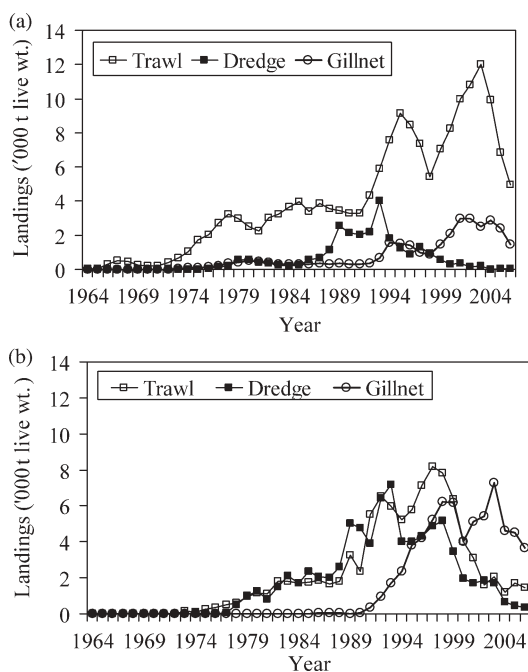


Figure 2. Reported commercial monkfish landings by gear from the US (a) northern and (b) southern management areas, 1964–2006 (after NEFSC, 2007).

from the NMA, but have since declined to <5%. The proportion of landings by gillnet vessels from the NMA has increased over the history of the fishery, accounting for 25–30% of the total (Figure 2).

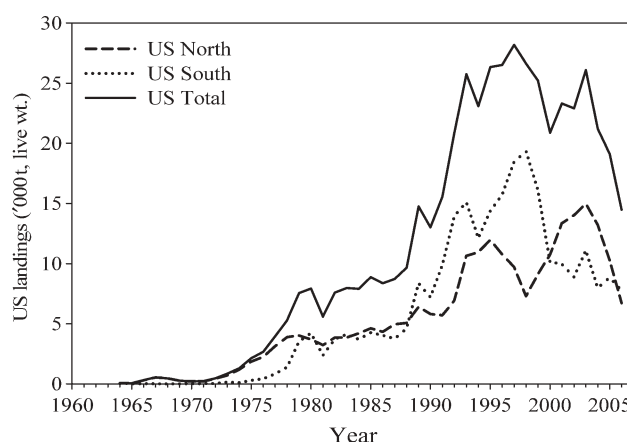


Figure 3. Reported commercial monkfish landings by area, and total from the US northern and southern management areas, 1964–2006 (after NEFSC, 2007).

In the SMA, the monkfish fishery is more of a directed fishery, because the groundfish fishery in the area is smaller scale, with fewer targeted species than in the NMA. Over the past 20 years, the proportion of monkfish landings by different gear types has shifted significantly in the SMA: in the 1980s, landings were fairly evenly split between trawl and dredge vessels, but during the 1990s the proportion of landings by gillnetters increased from <1 to 50%. With the implementation of the FMP, gillnets now account for ~65% of the total catch in the SMA, whereas the proportion of landings by dredge vessels has declined to 10% or less, and otter trawls to ~20–25% (Figure 2).

The proportion of landings from each area has fluctuated over the history of the fishery in response to recruitment events, management restrictions, and other factors. During the 1980s, landings from each area were equivalent. During the 1990s, annual landings from the SMA were 20–50% higher than those in the NMA. During the period 2001–2005, NMA landings were as much as 50% higher than those in the SMA. Recently, as NMA landings declined, landings from the two areas have again become roughly equivalent (Figure 3).

Pre-1980s

Until the 1980s, monkfish was an incidental catch in groundfish and sea scallop fisheries, but had little or no commercial value, and was allegedly discarded in significant quantity. In the 1960s domestic reported landings averaged <500 t, and revenues from monkfish were just a few hundred thousand dollars a year, as the price per pound, even for tails only, was <\$0.10 in nominal dollars. Foreign landings from Subareas 5 and 6 reported to the International Commission for Northwest Atlantic Fisheries (ICNAF), the predecessor of the Northwest Atlantic Fisheries Organization (NAFO), averaged some 2500 t annually from 1964 to 1975, but essentially ended with the establishment in 1976 of the US Exclusive Economic Zone and the departure of foreign groundfish fishing vessels.

1980s and 1990s: directed fishery, scallop, and groundfish catches

From the mid-1970s to the mid-1980s, a tenfold increase in the price of tails led to a 17-fold increase in trips reporting landings, and in landings themselves, as gillnet and sea scallop fishers

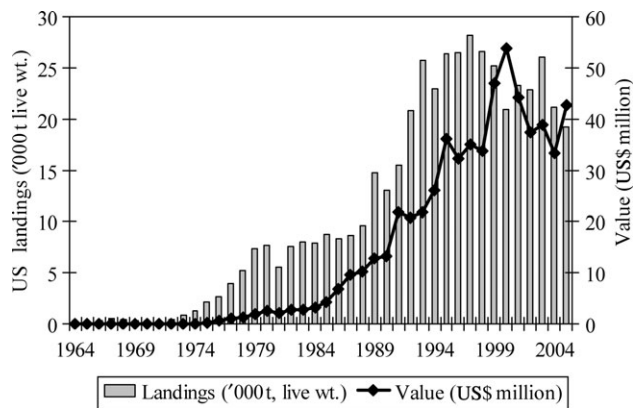


Figure 4. US monkfish landings ('000 t, live weight) and value (US\$ million), 1982–2005 (after NEFMC Framework 4, 2007).

joined trawlers in recording landings (Figure 3). Growth in the demand from Europe for monkfish tails, and from Japan and South Korea for livers and whole fish, fuelled the growth of US dockside markets through the 1980s and into the 1990s. By 1995, total live weight landings exceeded 26 000 t. Monkfish tails averaged >\$2.00 per pound, and livers \$5.00 per pound (Figure 4).

In the early 1990s, fishers and fish dealers expressed concern to the New England and Mid-Atlantic Fishery Management Councils that the burgeoning fishery was beginning to show signs of over-exploitation. They cited the increasing proportion of small fish being caught, as well as a greater frequency of gear conflicts, particularly with the offshore lobster fishery, as the directed trawl fishery expanded into areas not previously fished by ground-fish vessels. Fishers' reports of biological stress were substantiated by fishery-independent survey data that showed declining abundance and average size of fish in surveys (Figures 5 and 6). The fishers urged the Councils to adopt an FMP to limit entry to the fishery, and to establish controls on fishing effort, including a minimum fish size and gear (mesh size) restrictions.

Science/management interface: the development and evolution of management reference points and associated catch limits

From the beginning, management of the monkfish fishery has suffered from poor data and a lack of basic scientific information. Not only are the historical catches uncertain (both landings and discards, especially from the early period when there was only a limited market), but most of the other elements necessary for a reliable assessment have been lacking. The NEFSC bottom trawl survey, which extends back to 1963, catches relatively few monkfish, making the survey indices for the species highly variable. This is due in part to the type of gear used, but is also thought to be a result of the distribution of monkfish relative to the survey strata, which do not extend into the deeper water inhabited by monkfish. There is also considerable uncertainty regarding natural mortality, growth rate, reproduction, and other important assessment model inputs. These factors have forced fishery managers to be creative and adaptive in translating the scientific information into an effective management programme. For a more detailed discussion of some of the scientific challenges with monkfish, the reader is referred to Richards *et al.* (2008), in this issue.

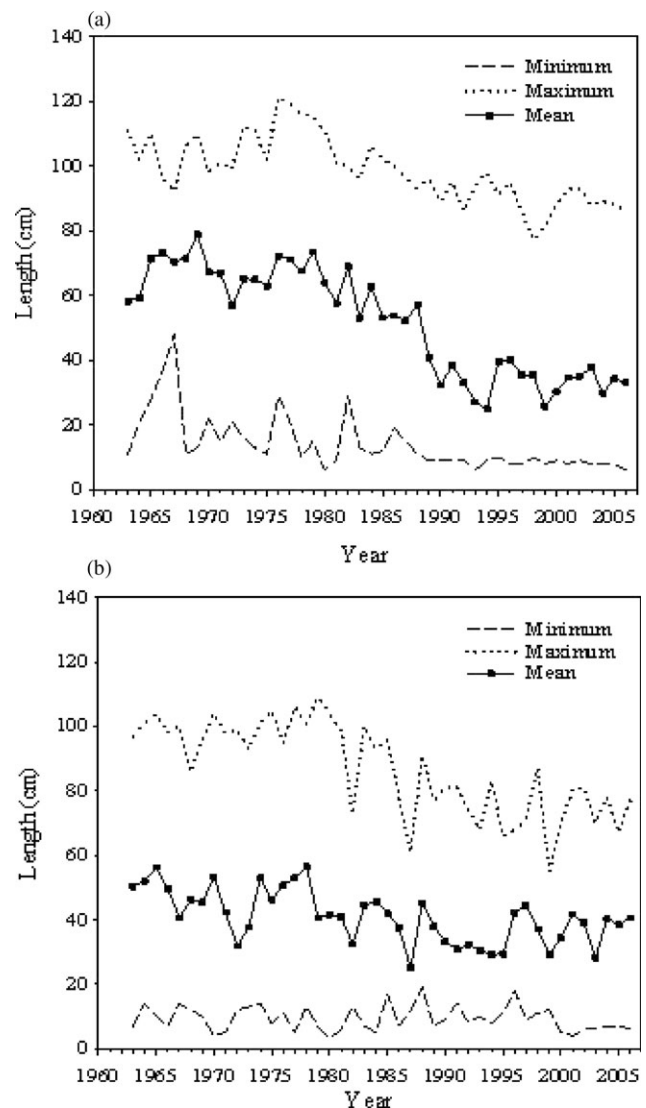


Figure 5. Monkfish minimum, mean, and maximum lengths from the NEFSC autumn bottom trawl survey for (a) northern and (b) southern management areas.

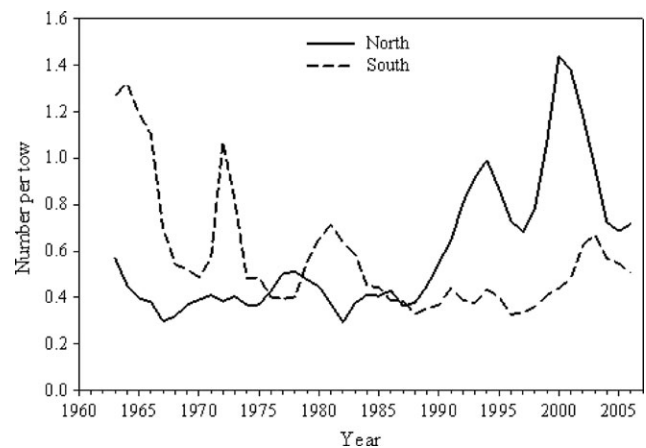


Figure 6. Monkfish smoothed (3-year running average) abundance indices from the NEFSC autumn bottom trawl survey, 1963–2006.

National Standard 1 of the US federal law, called the Magnuson–Stevens Act, requires FMPs to “prevent overfishing while achieving on a continuing basis, the optimum yield from each fishery”. Optimum yield is defined in the Act as “the amount of fish which (a) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems; (b) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor; and (c) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery”. To achieve this goal, FMPs must establish objective and measurable definitions of overfishing, as well as biomass targets that will produce maximum sustainable yield, or a proxy reference point, and a minimum biomass threshold reference point below which a stock is deemed to be “overfished”.

The reference points, in conjunction with the stock status relative to those reference points, provide the basis for calculating target TACs. The target TACs are, in turn, used to set input controls, specifically, for the monkfish fishery, DAS, and trip limits. This process of setting reference points is relatively straightforward when a historical time-series of absolute estimates of biomass and fishing mortality is available, but it was more complicated for monkfish, for which only relative indices were available.

The science/management interface is the process of determining the stock status relative to the biological reference points, and translating that status (overfished, rebuilding, or rebuilt) into a target TAC and appropriate management measures. The target TAC represents either optimum yield from the fishery, while allowing for rebuilding if the stock is below the biomass target, or a reduction in fishing mortality, if fishing mortality (or its proxy) is above the overfishing threshold. For monkfish, there are sources of uncertainty throughout the process: in setting reference points, in determining stock status, in setting appropriate catch targets to achieve management goals, and in translating those catch targets into effective management measures.

Initial FMP science background, adoption of reference points

The NEFMC convened an Overfishing Definition Review Panel (OFD Panel) in 1997 to evaluate all the overfishing definitions, including those being considered for the monkfish plan that was under development at that time, and to develop recommendations for new definitions, as needed, to bring the FMP into compliance with the 1996 Magnuson–Stevens Act reauthorization, known as the Sustainable Fisheries Act (SFA). The OFD Panel recommended (NEFMC, 1999) to the Council overfishing definitions based on NMFS guidelines for SFA National Standard 1 (prevent overfishing and achieve optimum yield) and National Standard 2 (using the best scientific information available). The Councils adopted, with modification, the panel’s recommendation for monkfish overfishing definitions, and these were incorporated in the original FMP in 1998.

The overfishing definitions developed by the OFD Panel had two basic parts; a stock-biomass component (B) and a fishing mortality rate (F) component. A stock is “overfished” when its biomass is less than the minimum biomass threshold ($B_{\text{threshold}}$), regardless of the reason for the biomass being below that threshold. The National Standards specify that “overfishing” is occurring when $F > F_{\text{threshold}}$. The $F_{\text{threshold}}$ has to be less than

or equal to the rate of fishing mortality that can produce maximum sustainable yield (F_{MSY}). If biomass is $< B_{\text{threshold}}$, then $F_{\text{threshold}}$ is the F that allows the stock to rebuild to B_{MSY} in a rebuilding period, which is not to exceed 10 years.

The Councils’ monkfish overfishing definition adopted into the FMP (NEFMC, 1998, p. 19) stated: “Monkfish in the northern and southern management areas are defined as being overfished when the three-year moving average autumn survey weight per tow falls below the 33rd percentile of the time series, 1963–1994, or when fishing mortality exceeds $F_{\text{threshold}}$. Monkfish are in danger of becoming overfished when the three-year moving average autumn survey weight per tow falls below the median of the three-year moving average during 1965–1981 and when fishing mortality is between F_{target} and $F_{\text{threshold}}$ ”.

“For the northern and southern areas, $F_{\text{threshold}}$ is based on conditions of stock stability at high abundance, calculated at the rate of fishing mortality that prevailed during the period 1970–1979. F_{target} for the southern area is $F_{0.1}$. For the northern area, F_{target} is currently undefined”.

The OFD Panel evaluated this definition and commented (NEFMC, 1999, p. 24) that “It is not known whether fishing at a level that prevailed during 1970 to 1979 would produce MSY, or that the biomass during that time period approximates B_{MSY} . Also unknown is whether fishing at $F_{0.1}$ would allow rebuilding to occur within 10 years or less”.

The OFD Panel expanded this evaluation later in the report: (NEFMC, 1999, p. 144) to say that “The existing overfishing definition has many characteristics that comply with the Sustainable Fisheries Act and the proposed guidelines. The target biomass and fishery mortality rates were based on a period of stability when the stock had a healthy age-structure. This management strategy appears to be sustainable and would, in the long-term, approximate MSY. The biomass and fishing mortality thresholds also appear to satisfactorily define an overfished condition and overfishing, respectively”.

“Unfortunately, the catch history for monkfish in the 1960s and 1970s is unreliable, making the results of a surplus production model unreliable. As an acceptable proxy for B_{MSY} , the panel recommends revising the biomass targets, so they are more equivalent to the MSY-based reference points that the proposed guidelines require. A suitable proxy for B_{MSY} is one-half the maximum survey value in the time series (4.9 kg/tow in the north, 5.8 kg/tow in the south). This strategy treats the maximum survey value as an approximation of the carrying capacity of monkfish. Based on reference points chosen for more resilient stocks, the control law strategies apply F_{min} when stock biomass is below $\frac{1}{4}B_{\text{MSY}}$. [Note: F_{min} is defined as the minimum achievable fishing mortality rate caused by reducing fishing activity to as close to zero as practicable.] The panel, therefore, recommends that the biomass thresholds be set at $\frac{1}{4}$ of the maximum survey value, a level equivalent to $\frac{1}{2}B_{\text{MSY}}$. Table 1 gives the survey values for the existing biomass thresholds and targets”.

The following excerpts from the original Monkfish FMP provide the Councils’ perspective on the overfishing definitions: (NEFMC, 1998; Monkfish FMP, p. 16): “The only data available to support a definition based on a minimum stock level are from fishery-independent surveys. A few state-supported surveys exist, but the most comprehensive are the bottom surveys conducted by NMFS. There are problems because the surveys do not encompass the entire range of the monkfish resource. No samples are taken offshore of the Continental Shelf edge where

Table 1. Biomass reference points for the monkfish overfishing definition and for MSY-based proxy values adopted in the original Monkfish FMP for the northern and southern fishery management areas (NMA and SMA).

Parameter	NMA	SMA
Biomass threshold (kg tow^{-1}) 33rd percentile, 1963–1994	1.460	0.750
Biomass target (kg tow^{-1}) median, 3-year average, 1965–1981	2.496	1.848
Maximum value for 3-year moving average (kg tow^{-1})	4.887	5.878
25% ($\frac{1}{4}$) of the maximum survey value (kg tow^{-1})	1.222	1.470
50% ($\frac{1}{2}$) of the maximum survey value (kg tow^{-1})	2.443	2.939

monkfish are known to occur. These surveys do, however, provide a reasonable estimate of stock abundance for that portion of the population occurring in coastal and shelf areas”.

“This method utilizes relative abundance to define when a stock is overfished. The survey data is the most complete source of information currently available. A measure of a minimum number or biomass is an attractive definition. On the downside, fishermen often distrust survey data and the survey is subject to inter-annual changes in availability. The latter may not be problematic for monkfish given its wide range and the extent of the survey, but it does argue for a longer-term approach than action based on one year of survey data”.

At the time the FMP was under development, the 3-year moving averages of the survey biomass index were 1.01 kg tow^{-1} for the northern area, and 0.41 kg tow^{-1} for the southern area. These values were below the minimum biomass threshold adopted in the overfishing definition (1.45 kg tow^{-1} in the northern area and 0.75 kg tow^{-1} in the southern area), prompting the Councils to adopt a 10-year rebuilding programme in the FMP. Target TACs were calculated to reduce current catches for the two areas based on a phased reduction in fishing mortality over 3 years, and the elimination of the directed fishery in Year 4, allowing only limited incidental catch of monkfish in other fisheries (Table 2).

Table 2. TACs corresponding to the fishing mortality objectives for the northern and southern fishery management areas (NMA and SMA).

Fishing year	Objective	NMA TAC (t)	SMA TAC (t)
1995–1996	Baseline	12 739	14 667
1 May 1998 to 30 April 1999	Partial implementation	Undefined	Undefined
1 May 1999 to 30 April 2000	Mortality reduction	5 673	6 024
1 May 2000 to 30 April 2001	Mortality reduction	5 673	6 024
1 May 2001 to 30 April 2002	Mortality reduction	5 673	6 024
1 May 2002 to 30 April 2003	Stop overfishing	4 047	3 252
1 May 2003 to 30 April 2004 and subsequent fishing years	Rebuilding	4 047	2 224

The Councils adopted a limited entry programme and a monkfish rebuilding plan in 1999, with the adoption of the Monkfish FMP. As noted above, the original FMP contained a 4-year implementation of management measures to reduce fishing effort and to rebuild the stocks within 10 years or less. Based on the target TACs, the Councils allocated 40 monkfish DAS for the first 3 years, 0 DAS in Year 4 (starting 1 May 2002), and adopted an array of trip limits, based on gear and area. The FMP also established incidental catch limits for most other gears and fisheries, to minimize the discards and to prevent increased effort targeting monkfish in those other, less selective fisheries. The directed fishery trip limits would be reduced to the incidental catch limits in Year 4, when DAS were to be reduced to zero. In the northern area, however, monkfish vessels fishing on a multispecies DAS had no monkfish trip limit, because monkfish was viewed as a component of the mixed trawl catch and the Councils felt that a trip limit would simply result in monkfish discards while vessels were fishing for other groundfish species. Therefore, the original monkfish FMP implied limited control on monkfish fishing in the northern area except as a consequence of restrictions being imposed under the multispecies FMP rebuilding programme.

Framework 1

During the first 3 years of the FMP, several events caused the Councils to adjust the management strategy. The 3-year average of the biomass indices doubled in the southern area and tripled in the northern area. Landings declined in the southern area, but continued to rise in the north, owing to a combination of good recruitment and a lack of direct control on monkfish fishing effort. In the northern area, as noted above, the management system for the monkfish fishery relied mostly on effort controls (DAS) in the multispecies FMP, and there were no monkfish trip limits. There was also considerable pressure from industry to develop an alternative to the anticipated closure of the directed fishery planned for Year 4, particularly given the positive signs shown in the survey. The Year 3 review resulted in Framework 1 (implemented by NMFS through a temporary emergency action) which delayed the default measures for one year so that the Councils could complete a more comprehensive adjustment to the FMP. (The management system provides for a relatively abbreviated process, 6 months to 1.5 years, for making certain changes to the management system, known as a “framework adjustment”).

The rationale for the action proposed in Framework 1 (delay the scheduled closure of the directed fishery) was based on an evaluation of the best available scientific information on stock status and trends in the fishery. First, the assumptions about recruitment and natural mortality used to calculate initial fishing mortality reference points in the 1997 stock assessment [Stock Assessment Workshop (SAW) 23; NEFSC, 1997] were invalidated by two more recent SAWs (SAW 31; NEFSC, 2000; and SAW 34; NEFSC, 2002). Application of updated data and a more scientifically defensible set of assumptions resulted in unfeasible (negative) estimate of the fishing mortality threshold in the NMA. This finding also indicated that the rates of fishing mortality estimated using length composition data from the NEFSC surveys were not reliable estimates of absolute fishing mortality exerted on monkfish and should not be used to set TACs. In autumn 2001, the Monkfish Monitoring Committee concluded that the TACs in the FMP for FY2002 (fishing year 2002) were inadequate targets on

Table 3. Monkfish target TACs for fishing year 2002/2003, northern and southern fishery management areas (NMA and SMA).

NMA	SMA	Total (OY)
11 674 t	7 921 t	19 595 t

which to measure fishery performance relative to the management objectives.

Second, SAW 31 (terminal year of data 1999, before the FMP took effect) concluded that estimates of F could not be estimated reliably, but it also stated that estimates of total mortality (Z) indicated that overfishing was occurring. SAW 34 (terminal year of data 2000) came to the same conclusion about fishing mortality (F could not be estimated reliably, but based on estimates of Z , overfishing was occurring), but observed that the biomass index in the north was increasing, whereas in the south it was fluctuating around the time-series low. SAW 34 recommended that the fishing mortality threshold be set at $F_{\max} = 0.2$ (from the yield-per-recruit analysis), but there were insufficient data to conduct short-term projections to set TACs.

Third, the relative exploitation index (catch divided by biomass index) based on FY landings and the autumn survey index declined substantially from FY1999 to FY2000. Seasonal landings patterns suggested that even without further restrictions, fishing mortality for calendar year 2001 was lower than that for calendar year 2000. Although not conclusive, the decline in the relative exploitation index provided some evidence that the management programme was having its intended effect and that closure of the directed fishery was not required.

Fourth, in the SMA, although the 3-year running average of the survey abundance index remained below the FMP threshold, the 2001 index rose for the third consecutive year to its highest since 1986. In the NMA, the 3-year average moved above the threshold in 2001, indicating that the NMA was no longer overfished. Upon review of the analysis and public comment, the Councils recommended, and NMFS adopted, revised target TACs for Year 4 (Table 3).

Framework 2

In 2002, as the Councils were developing Framework 2 (NEFMC, 2003) to replace the Framework 1/temporary emergency rules (under the US law, temporary rules expire after 180 d, but may be extended under certain circumstances to not more than 365 d), NMFS informed the Councils that the minimum biomass threshold reference point, although approved by the agency, was not compliant with the National Standard 1 Guidelines and needed to be revised to $\frac{1}{2}B_{\text{target}}$ or the minimum stock size at which rebuilding to B_{target} would be expected within 10 years if the stock were exploited at $F_{\text{threshold}}$. Because of data limitations and an inability to make reliable projections of monkfish rebuilding, the second approach was not practicable. In fact, the unreliability of F estimates, and the inability to project stock rebuilding under various scenarios of F , caused the Councils to adopt an innovative approach to setting TACs in Framework 2, to achieve the 10-year rebuilding goals.

In Framework 2 (68 FR 22325, 28 April 2003), the Councils adopted the revised fishing mortality threshold reference point of $F_{\max}$ as the proxy for the rate of fishing mortality that would

achieve maximum sustainable yield from a rebuilt stock. SAW 34 recommended using $F_{\max}$ as $F_{\text{threshold}}$, and NMFS incorporated that change into the 2002 emergency rule implementing the measures in Framework 1. SAW 34 calculated $F_{\max}$ to be $F = 0.2$. The Councils also revised the minimum biomass threshold, below which a stock is deemed to be in an overfished condition, to $\frac{1}{2}B_{\text{target}}$ or 1.25 kg tow^{-1} for the northern area and 0.93 kg tow^{-1} for the southern areas. These adjustments to the reference points did not, however, change the rebuilding plan adopted under the original FMP, which required rebuilding to B_{target} by 2009.

The Councils' Monkfish Monitoring Committee was faced with the task of setting annual TACs that would result in rebuilding monkfish in both management areas in the remaining 7 years of the programme, in the absence of a reliable estimate of F and an inability to project stock rebuilding under various target TACs. The Committee created an index- and landings-based method for setting TACs that compared current 3-year average biomass index values with annual index targets based on ten equal increments from the 1999 index (the start of the rebuilding programme) to the 2009 biomass target (the proxy for maximum sustainable yield biomass). The ratio of observed annual index values (3-year average) to the annual index targets was then applied to the previous year's landings to calculate the target TACs for the upcoming year. For example, if the observed biomass index was 10% below the target in a given year (observed index/target index = 0.90), then the target TAC for the subsequent year would be set at 10% below the previous year's landings.

Once the target TAC was calculated, using the method described above, it was then used to calculate DAS and trip limits using a formula established in the framework. As a precautionary measure, the Councils also set limits on potential increases in the target TAC, if the observed biomass index value was above the annual biomass index target. Under that scenario, the TAC would be increased from the previous year's landings by 50% of the ratio of the observed to target index values, up to a maximum of 20%. This approach was vetted through the New England Council's Scientific and Statistical Committee, which concluded that the procedure had the virtue of simplicity and clarity and was a reasonable proposal in concept for developing a rebuilding schedule.

In the second year of this new target TAC-setting procedure, however, a flaw prompted the Regional Administrator of NMFS to express the agency's concerns in a letter to the Council. In the method adopted in Framework 2, the target TAC for the next year is calculated by multiplying the previous (complete) year's landings by the ratio of the observed survey to the target survey index in the current year. The flaw is that if the previous year's landings are sufficiently high, the method would result in an increase in next year's target TAC from the current year landings, even when a reduction should have occurred. In other words, even if the stock was below its annual biomass target index, the TAC could increase because the calculation is based on the previous year's landings, because landings for the current year are not available when the calculations are made. Coincidentally, the upwards trend in biomass indices had slowed (in the SMA) or reversed (in the NMA), raising the urgency to revise the management programme. This was the basis for the Council undertaking in 2006 the development of Framework 4, to implement management measures for the remaining 3 years of the rebuilding programme.

Framework 3

The Council implemented Framework 3 in November 2006 as a joint action with the Multispecies FMP Framework 42. This adjustment modified the ability for vessels on restricted Multispecies DAS (so-called “B” days) to target monkfish. Although marginally reducing the ability of vessels to target monkfish when on a multispecies DAS, this action did not modify the allocation of monkfish DAS, nor did it address any science/management interface matters.

Framework 4

Following adoption of Framework 2 in May 2003, the Northeast Fisheries Science Center completed another monkfish stock assessment (SAW 40 in Autumn 2004). The data used in the 2004 assessment included NEFSC research survey data through 2003, data from the 2001 and 2004 Cooperative Monkfish Surveys, commercial fishery data from vessel trip reports, dealer landings records, and observer data. In summary, the Stock Assessment Review Committee concluded: “Based on existing reference points, the resource is not overfished in either stock management area (north or south). Fishing mortality rates (F) estimated from NEFSC and Cooperative survey data are currently not sufficiently reliable for evaluation of F with respect to the reference points” (NEFSC, 2005, p. 8).

With respect to recruitment, the report noted evidence of increased recruitment in the NMA during the 1990s, particularly for the 1999 year class. Conversely, the SAW 40 report noted that in the SMA, recruitment appeared to have fluctuated without trend during the 1990s. However, there were some indications that the 2002 year class in the SMA was above average.

The 2005 autumn survey indices were again below the minimum biomass threshold for both management areas, which implied that monkfish was deemed “overfished” (Figure 7). To meet the rebuilding objectives, the biomass indices would need to double over the remaining 3 years of the rebuilding programme. Although such growth appeared unlikely, equivalent or higher increases in the indices had already been observed during the first 3 years of the FMP, despite relatively high monkfish landings during that period. Nevertheless, the task before the Councils’ Monkfish Plan Development Team (PDT), identifying management measures that would rebuild monkfish within the remaining time of the FMP, was even more formidable than that in Framework 2, given the short-time remaining in the rebuilding programme and the lack of improvement in the scientific information that would form the basis of the effort. In reaction to the new information, the Councils initiated work on Framework 4 (NEFMC, 2007).

Given the absence of an analytical assessment and the inability to conduct projections of stock rebuilding under various scenarios of fishing mortality rates, the PDT used several approaches for estimating the fixed target TACs to be used for the rest of the rebuilding period (Table 4). The TACs were estimated either by comparing the relative exploitation generated by various TACs to time-series of relative exploitation (Figures 8 and 9), or by comparing the TAC with a time-series of landings (Figures 10 and 11). In these analyses, relative exploitation is defined as catch, in kg, divided by the relative biomass index from the NEFSC trawl survey, in kg tow^{-1} . The resulting units, therefore, represent the number of standardized tows that would be needed to achieve the total catch in each year. (Note that the

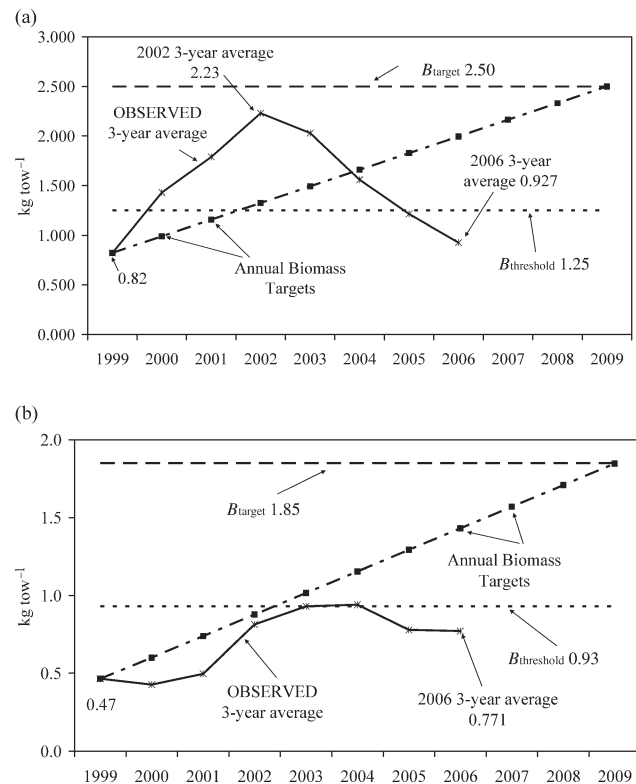


Figure 7. Monkfish biomass rebuilding programme targets (annual and final), and observed autumn bottom trawl indices (3-year average) for (a) northern and (b) southern management areas.

methods, M1–M9, referenced in the explanatory captions to Figures 8–11 are described in Table 4.).

The PDT then selected the median value of the results of these nine methods as the recommended TACs for each area. As shown in Figures 8–11, the nine estimates were relatively tightly clustered. The PDT estimates of target TACs were 5000 t for the northern management area and 5100 t for the southern management area (Table 4) for the remaining years of the FMP. The PDT concluded that these target TACs should reduce exploitation for the northern management area, and maintain exploitation near recent values for the southern management area. These TACs are similar to landings observed during the mid-1980s for both management areas. Although the recommended target TACs could not be analysed to determine whether they would in fact result in the needed rebuilding, they represented the PDT’s best estimates of target catches that could facilitate stock building and maintain a limited directed fishery, consistent with Framework 4 objectives.

The National Marine Fisheries Service delayed approval of Framework 4, pending the results of a special stock assessment to be made available in August 2007 (Northeast Data Poor Stocks Assessment Working Group, NEFSC, 2007). A number of assessment approaches [index-based, mortality estimates using various methods, general production models, catch-survey analysis (also known as a “Collie–Sissenwine Analysis”)] were used, but a statistical catch-at-length model (SCALE), incorporating several sources of information (landings, length composition of the landings, surveys, length composition of the surveys, etc.), was considered the most appropriate basis to provide management

Table 4. A range of monkfish TAC values for the northern and southern management areas.

Method	Source/method for calculating TAC	TAC ('000 t)	
		Northern management area	Southern management area
Label	FY 2006 <i>status quo</i>	7.7	3.7
M1	Median relative exploitation (1963–2005) × 3-year average of exploitable biomass index (2003–2005)	2.7	3.3
M2 ^a	Average relative exploitation (1963–2005) × 3-year average of exploitable biomass index (2003–2005)	6.0	9.4
M3	75% of average catch 1963–2005	4.3	5.0
M4	75% of average catch for 1970–2005	5.0	5.7
M5	Median catch (1963–2005)	4.3	4.6
M6 ^b	<i>Status quo</i> method	5.9	5.2
M7	0.75 × median of sensitivity analysis TAC	3.9	3.8
M8	Median of sensitivity analysis TAC	5.2	5.1
M9	1.25 × median of sensitivity analysis TAC	6.5	6.3
	Median of all TACs calculated in M1–M9	5.0	5.1

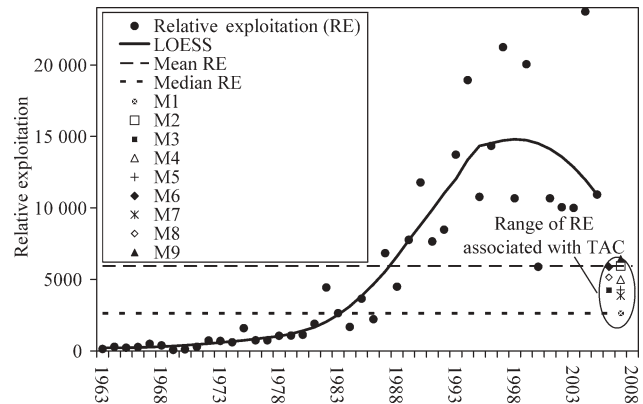
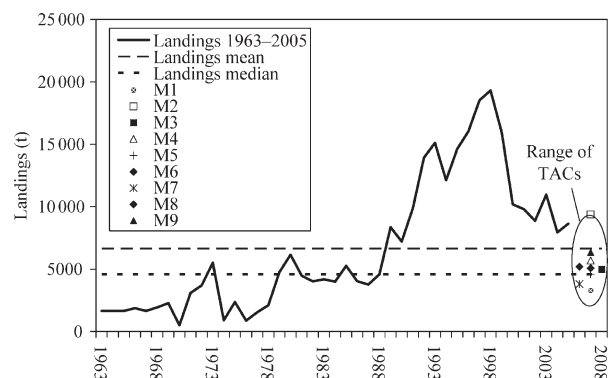
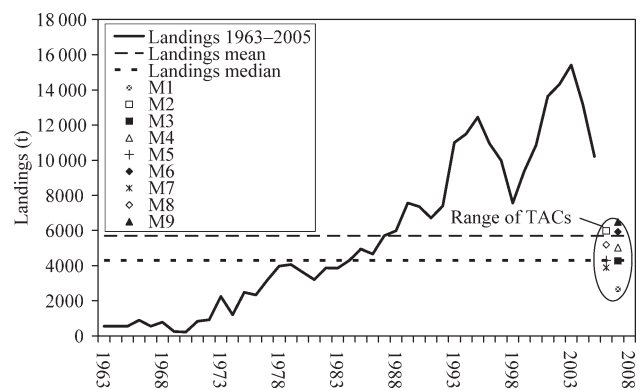
"Relative exploitation" is calculated as the catch divided by the NEFSC survey biomass index. This table describes the methods referenced in the legends for Figures 8–11.

^aRelative exploitation rates for the southern management area were extremely high in 1993 and 1996 as a result of high landings and an extremely low exploitable biomass index. These years are considered outliers and were not included in the calculation of the average for the southern management area.

^bEstimate of 2005 FY landings based on May 2004–January 2005 landings pro-rated to a full year using the ratio of landings in FY2004 to May 2003–January 2004 landings. Assumes that the 3-year average survey biomass does not change.

advice. New reference points were also suggested based on age-structured yield-per-recruit for fishing mortality (as before, but with a different assumption for M , the rate of natural mortality, which increased from 0.20 to 0.30), and on SCALE for biomass reference points. Existing and proposed reference points, with 2006 values, are summarized in the Table 5.

According to the existing reference points (in place at the time of the assessment), monkfish was overfished in both areas, but in the absence of reliable estimates of fishing mortality, status could not be determined with respect to whether or not overfishing was occurring. According to the new assessment model, monkfish is not overfished in either area and exceeds the biomass targets, meaning that monkfish in both management areas would now be considered "rebuilt". In fact, the new assessment suggests that the biomass never decreased below the biomass threshold in either area. The new assessment also concluded that fishing mortality is below the threshold, and, therefore, that overfishing

**Figure 8.** Time-series of the northern management area's relative exploitation (catch divided by survey biomass index) and relative exploitation associated with various TACs. Methods M1–M9, referenced in the explanatory caption, are described in Table 4.**Figure 9.** Southern area monkfish landings for the period 1963–2005 and the range of TACs estimated using various methods. Methods M1–M9, referenced in the explanatory caption, are described in Table 4.**Figure 10.** Northern monkfish landings for the period 1963–2005 and the range of TACs estimated using various methods. Methods M1–M9, referenced in the explanatory caption, are described in Table 4.

is not occurring in either area. In the northern management area, fishing mortality was above the target during 1993–2005, and above the threshold from 1994 to 1998. In the southern

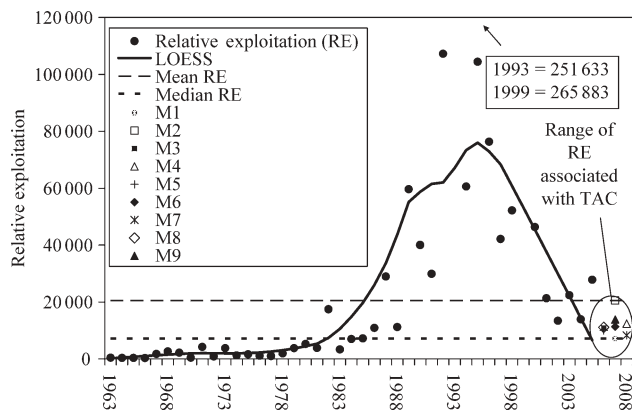


Figure 11. Time-series of the southern management area's relative exploitation (catch divided by survey biomass index) and relative exploitation associated with various TACs. Methods M1–M9, referenced in the explanatory caption, are described in Table 4.

management area, fishing mortality was above the target in 1996–1998, but it never exceeded the threshold.

This assessment, however, relies on a new analytical model and is reported with a number of caveats. Needless to say, this complete reversal of status determination (from overfished to rebuilt) poses a challenge to the management process in the near term, as a sufficiently precautionary management regime is developed for the next several years. [Note: At the time of the original drafting of this article, NMFS had not approved the new reference points as part of the FMP. On 28 April 2008, NMFS approved Framework 5, which contained the new biomass reference points.].

Future challenges at the science/management interface

In addition to the ongoing uncertainty about monkfish biology, improvements notwithstanding, several events and circumstances in the science arena are contributing to a changing, and very challenging, environment for managing the monkfish fishery in the next few years. New scientific information from a number of ongoing cooperative research projects may provide important insight into the stock structure, basic biology, and population dynamics of monkfish. These improvements could have important implications for managing the monkfish fishery. As new scientific information is incorporated into future stock assessments, the view of stock status and biological reference points will likely be revised, as uncertainty is reduced.

In addition, the National Marine Fisheries Service is replacing the primary fishery-independent survey vessel, the RV “Albatross IV”, with a new vessel, the RV “Bigelow”. This transition will require significant calibration work to adapt the new time-series

of data to the 44-year series collected on the RV “Albatross IV”. Calibration work was conducted in 2007 and 2008. Despite the tremendous effort and priority placed on this calibration work, it is unclear at this time whether the results will be robust enough to extend the RV “Albatross IV” time-series forward or if a new series will begin with the introduction of RV “Bigelow”. This situation presents yet another challenge to the science behind monkfish fishery management.

Whatever the outcome of these events, one thing is certain: the management of the monkfish fishery in the northeastern US will have to evolve and adapt as new scientific information becomes available. The challenge for the management process will be to incorporate this new information in a way that does not impose dramatic changes on the industry in different directions with each new piece of information.

Discussion

The development of the monkfish fishery and of its management off the northeastern USA provides a striking example of the difficulties of fisheries management in a data-poor environment. As fishing effort expanded and signs of heavy exploitation were detected, participants asked for a management plan. Given the paucity of information on monkfish biology and population dynamics, as well as on trends in stock sizes and exploitation rates, available information from fishery-independent surveys was used. At the time, in the absence of a reliable way of combining all available information into a modelling framework, the results of the autumn NEFSC survey were considered to best represent trends in stock size. The length composition in both the survey and the fishery was used to estimate the values of total mortality. These analyses led to the adoption of the original FMP in 1999, which anticipated that the monkfish-directed fishery would be closed in Year 4 of the plan.

Whether attributable to the implementation of management measures or to increased recruitment as a consequence of favourable environmental conditions, or both, the survey indices for monkfish increased rapidly during the late 1990s and early 2000s, which led in Year 3 to the withdrawal of the closure of the directed fishery planned for Year 4, and the adoption of a TAC-setting mechanism based on the previous year's landings and the ratio of the current 3 year average of the survey to the target survey index. Because the method to set the target TAC for the next year relied on the previous year's landings, rather than the current year landings which are not available when the decision has to be made, the target TAC could end up increasing, when the survey results indicated that it should be decreased. In addition, scientific analyses indicated that the method used to calculate fishing mortality from the survey and

Table 5. Summary of existing and proposed reference points based on the new assessment model (SCALE).

Area	Reference point	Existing	2006 value	Proposed	2006 value
North	B_{target}	2.6 kg tow ⁻¹	1.10 kg tow ⁻¹	92 200 t	118 700 t
	$B_{\text{threshold}}$	1.3 kg tow ⁻¹		65 200 t	
	$F_{\text{threshold}}$	0.2		0.31	0.09
South	B_{target}	1.84 kg tow ⁻¹	0.87 kg tow ⁻¹	122 500 t	135 500 t
	$B_{\text{threshold}}$	0.92 kg tow ⁻¹		96 400 t	
	$F_{\text{threshold}}$	0.2		0.40	0.12

Existing biomass reference points based on a 3-year running average of NEFSC autumn survey biomass index. $F_{\text{threshold}}$ is based on F_{max} . Note: “Proposed” reference points at the time of the original drafting of this article were adopted into the FMP as of 1 May 2008.

fishery length compositions was unreliable and could no longer be used.

Population estimates based on survey indices from 2002 to 2006 remained stable or declined, failing to increase as needed to meet rebuilding goals. Although the Monkfish PDT offered reasonable target TACs and management measures in Framework 4, the NMFS was considering more drastic measures to try to meet the rebuilding targets by 2009. The assessment results released in August 2007 suggest that this will not be necessary, because monkfish is not overfished in either management area nor is overfishing occurring.

Large changes in the perception of the status of the stock, or its exploitation, are not unique to monkfish off the northeastern USA. In fact, most stocks assessed for more than 15 years will have gone through at least one large change in perception attributable to changes in either the methodology, the data used, or the assumptions. For monkfish, the new assessment appears to be superior to previous ones, because it makes better use of more data. However, there remain considerable unknowns about the behaviour of the model and many of the input data. Users of the assessment results should, therefore, not be surprised if future assessments differ from the current one. This suggests that fishery managers should react with caution to the assessment results (that is, not immediately remove existing controls on the fishery) and be receptive to future assessment results that may differ markedly from previous ones, particularly when the methodology has changed.

Acknowledgements

We recognize and thank the members of the Monkfish PDT and MMC whose collaborative efforts over the past decade have resulted in the information and data described in this article. In particular, we wish to recognize Steve Correia, Anne Richards, and Matt Cieri, the PDT members principally responsible for developing the innovative methods for translating the data-poor scientific information into a format that could be applied by managers in a manner consistent with US governing laws. The PDT

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Monkfish Northern and Southern Fishery Management Area Daily Landings and Days-at-Sea Limit Allocations for FY2011-FY2013

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Abstract

The Monkfish Plan Development Team (PDT) has been tasked with analyzing the effects of effort controls, days-at-sea (DAS) allocations and daily landing limits, on estimated landings of monkfish in both the Northern Fishery Management Area (NMA) and the Southern Fishery Management Area (SMA) for FY2011-FY2013. Two alternative total allowable landing (TAL) levels were considered for each area in the analysis. In the NMA, at each of the two TAL levels, two sets of incidental landings were considered. Different days at sea and trip limit combinations were analyzed to offer management flexibility in the means by which effort is regulated in this fishery.

Introduction

The New England and Mid-Atlantic Fishery Management Councils (Councils) are developing Amendment 5 to the Monkfish Fishery Management Plan (FMP) to address the new requirements of the Magnuson-Stevens Fishery Conservation and Management Act, including the establishment of TALs for FY2011 - 2013. The objective of this analysis was to produce a range of monkfish trip limit and DAS allocation options under the target TAL alternatives being considered for both management areas.

Two total allowable landings (TAL) alternatives were used in an analysis of DAS and trip limit allocation setting for both the NMA and the SMA for fishing years 2011 through 2013. Alternative TALs are being considered in each area in an effort to accommodate newly-mandated measures to ensure accountability, and prevent or react to exceeding the Annual Catch Limit. The Councils have decided to use an Annual Catch Target (ACT) as a proactive accountability measure, providing a buffer between the ACT, used to set management specifications, and the ACL. This buffer is necessary to compensate for the management uncertainty inherent to this fishery. If the Annual Catch Limit were to be exceeded, reactive accountability measures that could potentially have a negative impact on the future of the fishery would be activated.

In the NMA, alternatives that increase the TAL by 50% and 100% over the current total allowable catch (TAC) level (5000 mt) were considered. In the SMA, TAL alternatives that represent a 40% and a 75% increase over the current TAC (5100 mt) were considered. Since the new requirements are based on *catch* rather than *landings*, monkfish discard estimates were used in calculating the ACT. The assumed discard rates, based on the most recent stock assessment were 7% and 29%, for NMA and SMA fisheries, respectively.

The PDT analyzed a range of three trip limit and DAS alternatives for each TAC alternative specified above. In the NMA, two incidental landing alternatives were also considered: 1) incidental landings are assumed to be the same as FY2008, the last year for which there exists reliable landings information for this fishery, and 2) incidental landings would be 50% of their FY2008 levels due to an assumed 50% reduction in groundfish effort with the anticipated implementation of Amendment 16 to the Northeast Multispecies FMP which will have a direct impact on the incidental catch of monkfish in the NMA.

The first trip limit/DAS allocation alternative analyzed kept monkfish DAS allocations (FY2007-FY2010) at status quo levels to gauge the effect of a TAL increase on daily landing limits for each permit category. The second trip limit/DAS allocation alternative kept monkfish daily landing limits (FY2007-FY2010) at status quo levels to gauge the effect of a TAL increase on DAS allocation. The third alternative considered set either daily landing limits or DAS allocations at a specified historic level to determine the appropriate corresponding DAS or trip limit level.

Recent advances in reporting in the Vessel Monitoring System (VMS) have allowed us to use VMS Activity Code Declarations along with Vessel Trip Reports (VTR) and dealer-reported data to more accurately describe monkfish landings. Prior to the use of VMS activity code declarations, landings by limited access monkfish-permitted boats could not be separated into directed and incidental monkfish trips. Matching VMS activity code declarations to dealer-reported data and VTRs has enabled a description of directed monkfish activity by limited access vessels by area, namely when a vessel has declared it is using a monkfish DAS. Monkfish landings by limited access vessels not on a monkfish DAS were considered to be incidental landings. These incidental landings by limited access vessels can then be subtracted from a management area monkfish allocation by permit category, allowing for a more accurate description of this fishery.

Because proposed TAL levels in both management areas represent increases over TAC levels in the recent past, the method laid out in 50 CFR 648.96(b)(3)(iii) to reduce DAS and/or trip limits was not applicable. Basically, this method has used fishing vessel trip reports, scaled to dealer-reported landings, to adjust trip-level and vessel-level aggregate data down incrementally in an effort to identify DAS levels and/or trip limits that will sum to an allocated TAC for each of two sets of monkfish permit categories (AC and BDH) after subtracting estimated incidental landings. Instead, a method that combined empirical data of both vessel-by-vessel and fleet-wide landings with a linear increase in DAS and/or trip limits, after subtracting for both limited access monkfish and other vessel incidental landings, was employed. In other words, if the allocation to permit category were increased by x%, either the trip limit or DAS allocation was increased by x%. The purpose of this report is to describe the assumptions and methods used to arrive at recommended DAS allocations for each TAC/trip limit combination by permit category and management area.

Methods

Data sources

Data from fishing year 2008 were used as our baseline set for this analysis. Several data sources were used for this analysis, including: dealer electronic reports, the vessel permits database, days at sea activity declaration (which can be transmitted into the database via the Vessel Monitoring System or the Interactive Voice Response (IVR) system), and the fishing vessel trip report database. Data from fishing year 2008 are the most recent available and can be matched to a very descriptive VMS activity declaration for monkfish directed effort trips. Starting in FY2007, DAS activity declaration codes in the monkfish fishery include the management area, which has advanced our ability to describe and understand the directed monkfish fishery in the two management areas. Prior to this activity code, fishing vessel trip reports, which contained no indication as to whether a vessel was on an incidental or directed monkfish trip, were matched to dealer information to determine days and area fished.

Dealer-reported monkfish landings, while considered more comprehensive than fishing vessel trip reports (FVTR), lack information on the location of a fishing trip. Both DAS activity declaration and DAS charged, along with FVTR data, which contain fishing location information, are thus used to prorate the dealer-reported data by area, fishing activity (directed or incidental monkfishing by a limited access monkfish vessel) and permit category.

Assumptions

- Landings from monkfish permit category E, state-only permitted vessels, and unknown category vessels will be exactly the same, in terms of live pounds landed, in FY2011-FY2013 as they were in FY2008. This assumption enables a reasonable reduction of the FY2011 monkfish quotas to account for the landings from monkfish permit category E, state-only permitted vessels, and unknown category vessels.
- Landings and effort on trips in FY2008 by limited access vessels on non-directed (incidental) monkfish trips will be the same in FY2011-FY2013. An alternative to this assumption was analyzed in the NMA that anticipated a 50% reduction in incidental landings by limited access vessels on non-directed (incidental) monkfish trips due to a reduction in groundfish effort associated with Amendment 16.
- Fishing and landing patterns will be similar in FY2011 to those experienced in FY2007 and FY2008 as detailed in the text below.

Procedures for identification of incidental monkfish landings

Incidental landings by permit category E, state-only permitted and unknown vessels

The regulations indicate that incidental landings of monkfish must be subtracted from the total allowable catch before the remainder can be allocated to the limited access monkfish fishery. Monkfish total reported live pounds from the dealer-reported landings database by FY2008 limited access monkfish permitted vessels were subtracted from total

monkfish live pounds in the database to determine landings by non-monkfish limited access vessels. These are landings by monkfish permit category E, state-only permitted vessels and unknown permit vessels. The proportions of these monkfish landed by management area were determined with VTR data and then subtracted from management area TALs.

Incidental landings by monkfish limited access permitted vessels

Incidental landings for each permit category by management area by monkfish limited access vessels was estimated by matching dealer-reported trips with a vessel's VMS activity declaration and to the Fishing Vessel Trip Report. The VMS activity code indicates whether the vessel was on a directed or incidental monkfish trip. If the vessel was on an incidental trip (which has a DAS activity code that lacks monkfish management area), the VTR for the trip indicates the management area fished on the trip.

Procedures for calculation of DAS allocation and/or trip limits for each TAC/management alternative

As mentioned, trip limits and DAS allocations for each set of permit categories (AC and BD) could not be analyzed according to the method laid out in 50 CFR 648.96(b)(3)(iii). This method uses the most recent and complete set of vessel trip reports, scaled to dealer-reported landings, to adjust trip-level and vessel-level aggregate data **down** incrementally in an effort to identify DAS levels and/or trip limits that will sum to the appropriate allocated TAC for each of the two sets of monkfish permit categories after subtracting for estimated incidental landings. Because we were not scaling down trip limits or DAS, but instead were examining the effects of status quo or increased Total Allowable Landing limits, the previously-employed method was no longer applicable. In instances where the allocated TAL was equal to recent landings (i.e. the SMA in FY2007 and FY2008), status quo DAS and trip limits were maintained. In cases where the TAL was set higher than recent fleet-wide total landings (i.e. the NMA), a linear increase in trip limits and/or DAS was calculated.

Results and Discussion

Results for identification of incidental monkfish landings

Incidental landings by permit category E, state-only permitted and unknown vessels

The dealer and vessel permits databases allowed for the categorization of landings of monkfish in FY2008 by permit category. Matching these records to Fishing Vessel Trip Reports (FVTR) enables the allocation of landings from the dealer landings database by management area and permit category and the allocation of FY2011-FY2013 TAC to each of the two permit categories based upon historical landings. For FY2008, landings by permit category E, state-permitted-only vessels, and unknown vessels totaled 2,823,621 live pounds (Table 1).

Table 1: Summary statistics for monkfish in FY2008.

	Live pounds
FY2008 Monkfish Landings by permit category E, unknown Permit Category and state-permitted-only vessels	2,823,621
FY2008 Monkfish Landings Limited Access Permit Category vessels	20,020,426
Total FY2008 Monkfish Landings	22,844,047

Source: NMFS Permits, Dealer and Vessel Trip Report Databases.

Table 2: FY2008 Monkfish Landings by permit category E, unknown permit category and state-permitted-only vessels by management area.

Management area	Live pounds
NMA	938,679
SMA	1,884,942
Total	2,823,621

Source: NMFS Permits, Dealer and Vessel Trip Report Databases.

Incidental landings by monkfish limited access permitted vessels

Incidental and directed monkfish landings for each limited access permit category by management area was estimated by matching dealer-reported landings data with vessel reported DAS activity codes and fishing vessel trip reports. In the NMA, almost twice as many monkfish were landed on incidental trips for both permit categories (Table 3). In the SMA, directed monkfish landings were considerably higher than incidental landings, particularly for BDH category vessels (Table 3).

Table 3. FY2008 Monkfish Directed and Incidental Landings by Management Area and Permit Category

Management Area	Permit Category	Incidental or Directed Landings	Prorated Total Live lbs	Percentage of directed fishery by permit category and area
NMA	AC	D	1,315,563	57%
		I	2,218,284	
	BD	D	991,095	43%
		I	1,909,203	
SMA	AC	D	3,455,101	33%
		I	2,146,004	
	BDH	D	6,974,191	67%
		I	1,010,984	

Source: NMFS Permits, Dealer, Days-at-Sea, and Vessel Trip Report Databases.

Results for calculation of DAS allocation and/or trip limits for each TAC/management alternative

After subtracting for estimated discards, the two alternative Total Allowable Landing level alternatives for both management areas could be determined (Table 4).

Table 4. TAL alternatives in metric tons and pounds.

TAL (t)	Management Area	TAL (lbs)
7,140	SMA	15,741,008
8,925	SMA	19,676,260
7,500	NMA	16,534,673
10,000	NMA	22,046,230

NMA

In the NMA, two TAL alternatives were considered, a 50% and a 100% increase over FY2007- FY2010 TAC. For each alternative, three DAS and trip limit combinations were analyzed: the first carried over the DAS allocation from FY2007-FY2010 (31), the second carried over the FY2007-FY2010 trip limits (1,250 lbs. tail wt. per DAS for AC, 470 lbs. tail wt. per DAS for BD), and the third examined trip limits at 40 days at sea, the DAS allocation in the NMA from FY2000-FY2006. In all of the scenarios, the trip limit for permit category AC was designated to be 1,250 lbs. tail weight per DAS, which was the highest daily average landings recorded for vessels in this permit category prior to the imposition of trip limits.

In the first scenario, the BD trip limit was increased by ~50% and ~100% (Table 5). For the second alternative, under the 50% increase in the TAC, allocated DAS increased by 50%. For the second alternative under a 100% increase in the TAC, DAS were increased by ~65%, in light of uncertainty over the effect of increasing DAS allocation. The third alternative, which represented a DAS increase and a trip limit increase for the BD permit category, increased DAS by ~30% along with a ~25% increase in the BD trip limit.

A linear increase in trip limit for the BD permit category for the two alternatives is likely an appropriate management strategy in light of uncertainty in landings and management in this fishery. The DAS and trip limits of 1,250 lbs. and 470 lbs. for permit categories AC and BD were appropriate in FY2007, as 101% of the TAC was taken. In FY2008, although the entire TAC was not landed, it does not appear that DAS and/or trip limits were limiting the fleet's ability to take the TAC. In fact, DAS usage information from FY 2008 indicates that most vessels fishing in the NMA use only a small number of monkfish DAS and do not land the trip limit (Figures 1 and 2. A linear increase in the TAC allows for greater landings while maintaining effort controls in this fishery in a changing management environment.

Figure 1. FY2008 NMA DAS usage frequency distribution

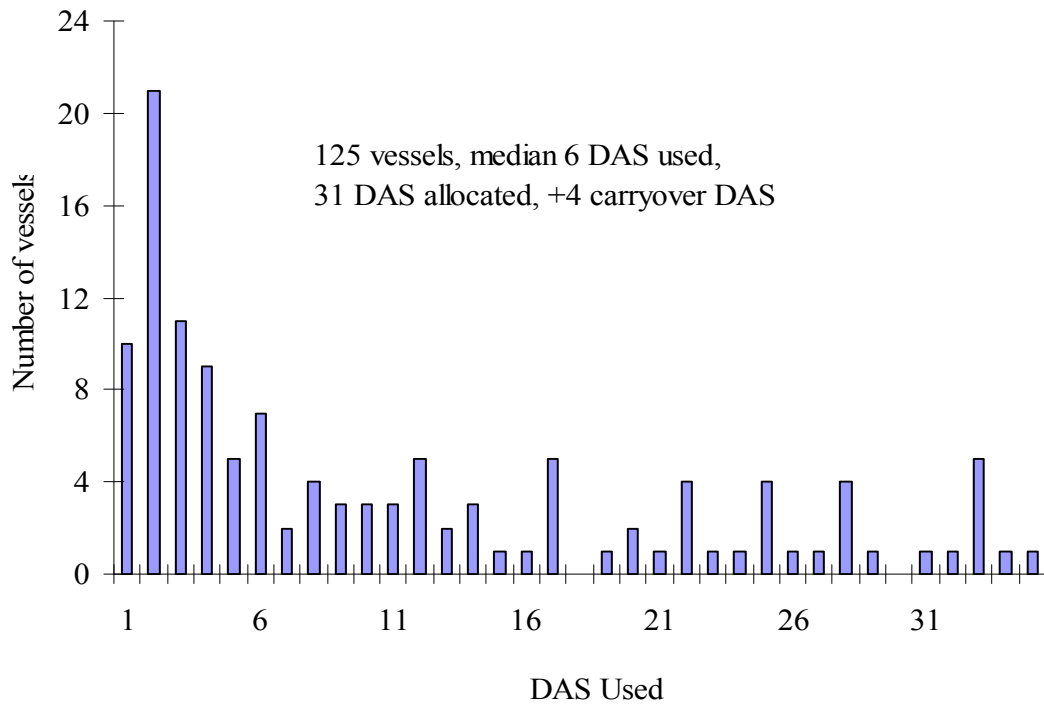
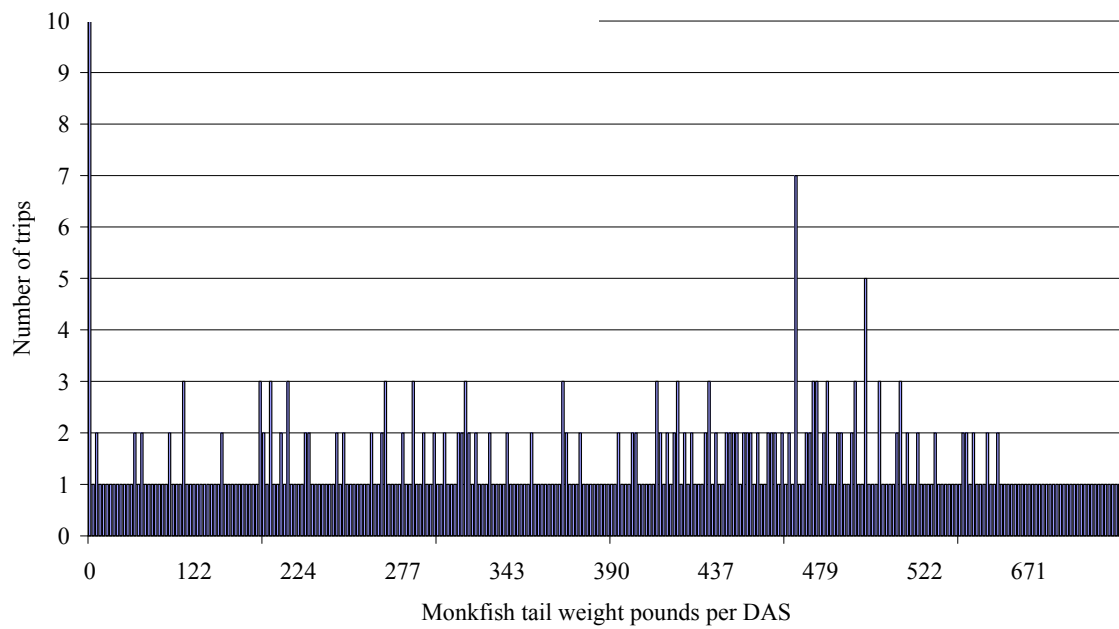


Figure 2. FY2008 NMA trip landings frequency distribution



Linear increases in trip limits in the BD permit category were also seen in the analyzed alternatives that cut incidental landings by 50% due to an assumption that anticipated allocations of groundfish species caught concurrently with monkfish will be constraining on vessels' ability to catch monkfish, either on directed or incidental trips. For both permit categories, allocated pounds increased by approximately 1,000,000 live lbs (Table 5). Given the fact that this fishery accommodates incidental landings in other directed fisheries (i.e. scallops and groundfish) prior to allocating to its own directed fleet, an assumption of decreased incidental landings opens the fishery to an increased risk of exposure to reactive accountability measures under the upcoming management regime, if the assumed reduction does not occur and the increased directed fishery allocation is taken. It is unclear at this time what an effect a change in groundfish management will mean to the monkfish fishery. It is clear from DAS usage in the NMA in FY2008 that monkfish DAS and trip limit allocations did not limit fleet landings. Two other constraining factors could have been responsible for holding FY2008 landings below the TAC: 1) available groundfish DAS, or 2) availability of monkfish to the fleet. If the former was the case and groundfish DAS did indeed limit monkfish landings, the loss of groundfish DAS, or reduced groundfish allocations to sectors might eventually result in an incidental-only monkfish fishery. This is because a case could be made that when a large segment of the groundfish fleet no longer needs to use groundfish DAS, as with Sectors, monkfish incidental landings could increase, resulting in no landings being allocated to the directed fishery. The effect of this assumption on incidental landings and DAS and trip limits has not been examined here. If the latter is the case and availability of monkfish in the NMA is waning, an increase in trip limits and or directed monkfish DAS is particularly uncalled for, as the fishery is providing an early indication of deteriorating stock status.

In the supplemental analysis requested by the Monkfish Committee, the alternatives that kept trip limits for both permit categories the same maintained the BD trip limits for both permit categories as these were the limits that were expected to land the BD permit category monkfish allocation (Table 5). Allocating landings from the AC permit category and giving them to the BD permit category would require a change in the regulations. Shifting permit category AC allocated landings to permit category BD to raise BD trip limits runs counter to the origins of the monkfish fishery management plan, which set up a two-tiered limited access permit system to reflect two distinct, and unequal, sets of qualifying criteria.

Table 5. TAC increase and DAS and trip limit options for FY2011-FY2013 for the Northern Fishery Management Area. Shading indicates the variable that has been solved.

Option	TAC Increase (percent)	NMA TAC	Discards (mt)	TAL (mt)	TAL (live lbs)	TAL (live lbs) Incidental landings subtracted	AC Incidental landings	BD Incidental landings	AC allocation of TAL	BD allocation of TAL	AC trip limit	BD trip limit	DAS
Incidental landings status quo	50	8,063	563	7,500	16,534,673	15,595,993	2,218,284	1,909,203	6,540,866	4,927,640	1250	700	31
							2,218,284	1,909,203	6,540,866	4,927,640	1250	470	45
							2,218,284	1,909,203	6,540,866	4,927,640	1250	600	40
Incidental landings status quo	100	10,750	750	10,000	22,046,230	21,107,551	2,218,284	1,909,203	9,684,288	7,295,776	1250	950	31
							2,218,284	1,909,203	9,684,288	7,295,776	1250	470	51
							2,218,284	1,909,203	9,684,288	7,295,776	1250	800	40
Incidental landings reduced 50%	50	8,063	563	7,500	16,534,673	15,595,993	1,109,142	954,601	7,717,887	5,814,363	1250	800	31
							1,109,142	954,601	7,717,887	5,814,363	1250	470	48
							1,109,142	954,601	7,717,887	5,814,363	1250	700	40
Incidental landings reduced 50%	100	10,750	750	10,000	22,046,230	21,107,551	1,109,142	954,601	10,861,309	8,182,498	1250	1000	31
							1,109,142	954,601	10,861,309	8,182,498	1250	470	58
							1,109,142	954,601	10,861,309	8,182,498	1250	900	40
Incidental landings status quo/ trip limits same	50	8,063	563	7,500	16,534,673	15,595,993	2,218,284	1,909,203	6,540,866	4,927,640	600	600	40
Incidental landings status quo/ trip limits same	100	10,750	750	10,000	22,046,230	22,046,230	2,218,284	1,909,203	9,684,288	7,295,776	800	800	40
Incidental landings reduced 50%/ trip limits same	50	8,063	563	7,500	16,534,673	16,534,673	1,109,142	954,601	7,717,887	5,814,363	700	700	40
Incidental landings reduced 50%/ trip limits same	100	10,750	750	10,000	22,046,230	22,046,230	1,109,142	954,601	10,861,309	8,182,498	900	900	40

SMA

For the SMA, the two TAL alternatives represented a 40% and a 75% increase over the current TAC of 5000 mt (Table 6). Maintaining status quo DAS and trip limit allocations with a 40% increase in the TAL was empirically-derived. In FY2007 and FY2008, the fleet in the SMA landed approximately 40% over the allocated TAC. As a result, increasing the TAL by 40% results in status quo DAS and trip limit allocations for both permit categories (Table 6). A 75% increase in the TAL results in a ~30% increase in trip limits or a 22% increase in DAS. Setting the trip limits to 700 and 600 lbs/DAS for AC and BDH permit categories, respectively, results in a 35% decrease in DAS at the 40% TAL increase or status quo DAS at a 75% TAL increase (Table 6). In the SMA, the fleet generally uses all allocated DAS, as well as all carryover DAS, and generally maximizes available trip limits on every fishing excursion. Based on DAS and trip limit information from FY 2008 (Figures 3 and 4), it appears that trip limits and DAS allocations constrain the monkfish fishery in the SMA.

Figure 3. FY2008 SMA DAS usage frequency distribution

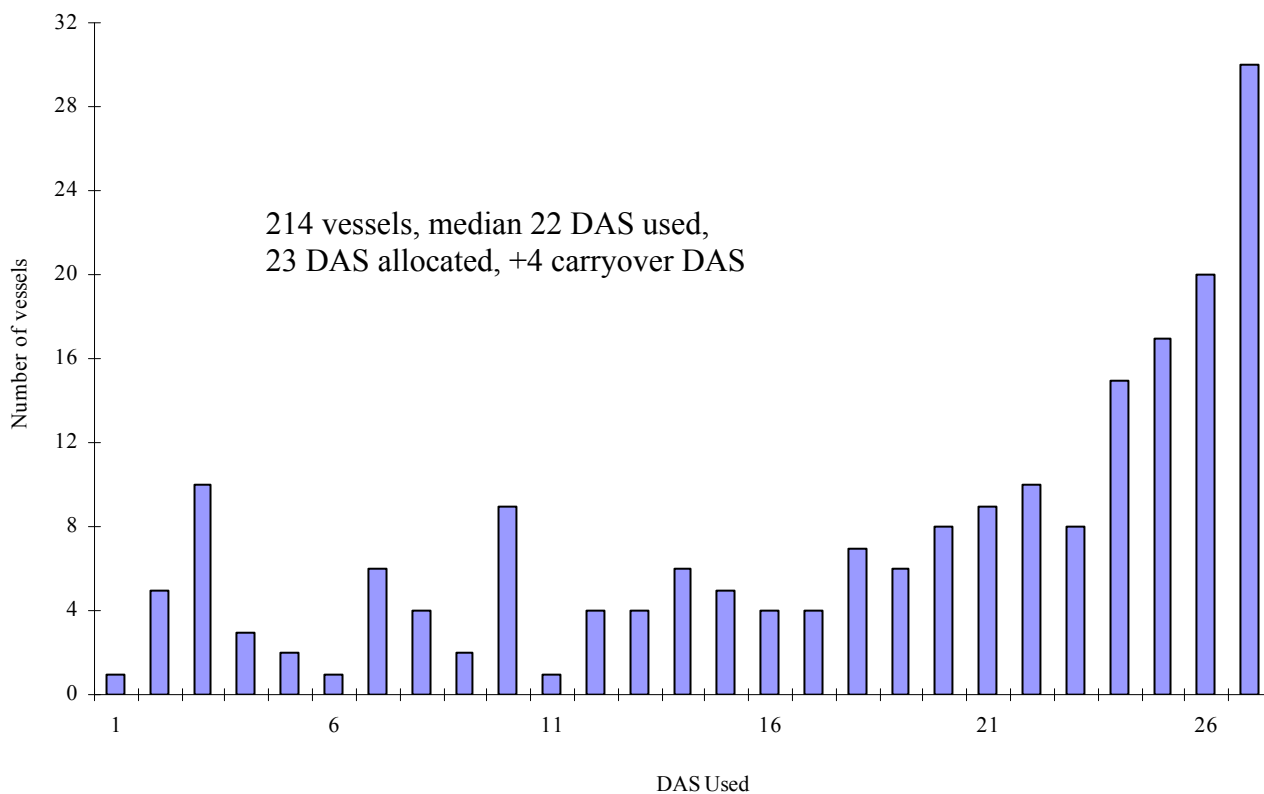


Figure 4. FY2008 SMA trip landings frequency distribution

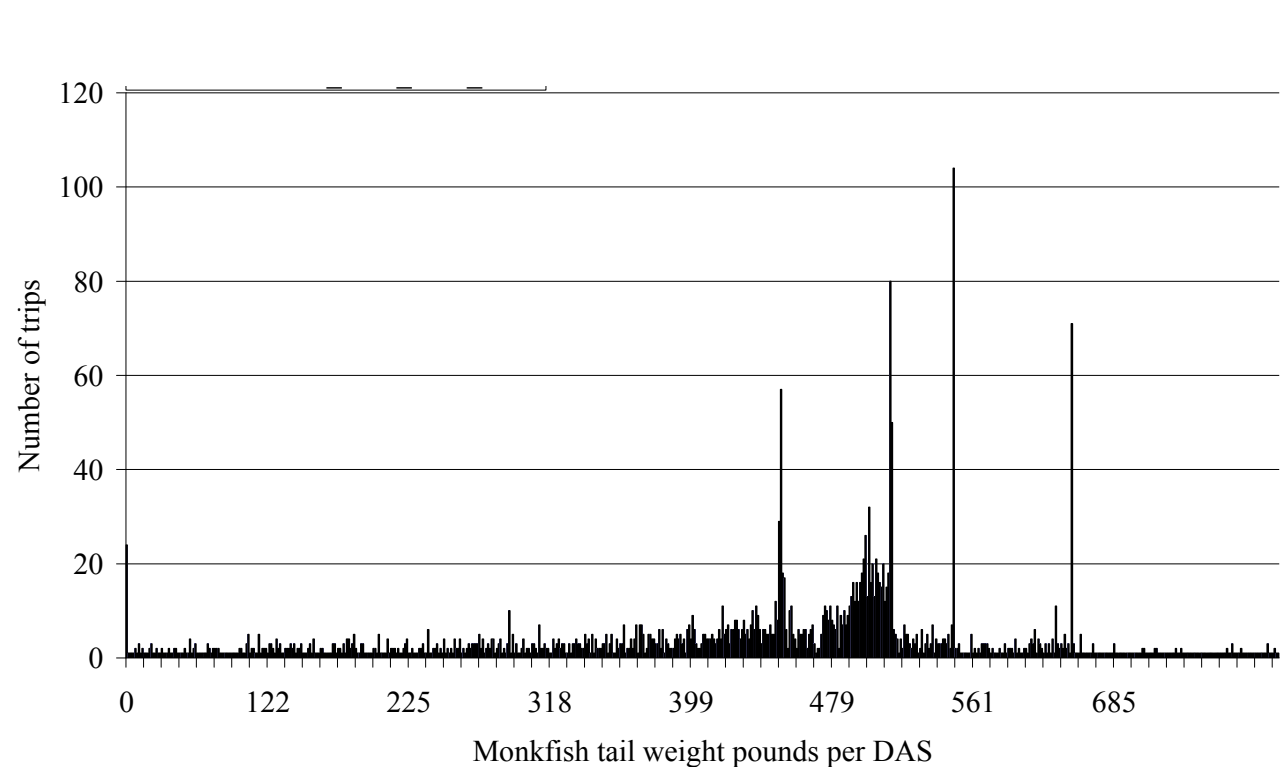


Table 6. TAC increase and DAS and trip limit options for FY2011-FY2013 for the Southern Fishery Management Area.

TAC Increase (percent)	SMA TAC	Discards	TAL (mt)	TAL (live lbs)	TAL (live lbs) Incidental landings subtracted	AC Incidental landings	BDH Incidental landings	AC allocation of TAL	BDH allocation of TAL	AC trip limit	BDH trip limit	DAS
40	9,211	2,071	7,140	15,741,008	13,856,066	2,146,004	1,010,984	3,544,478	7,154,600	550	450	23
						2,146,004	1,010,984	3,544,478	7,154,600	550	450	23
						2,146,004	1,010,984	3,544,478	7,154,600	700	600	15
75	11,513	2,588	8,925	19,676,260	17,791,318	2,146,004	1,010,984	4,848,180	9,786,150	700	600	23
						2,146,004	1,010,984	4,848,180	9,786,150	550	450	28
						2,146,004	1,010,984	4,848,180	9,786,150	700	600	23

Population biology of monkfish *Lophius americanus*

R. Anne Richards, Paul C. Nitschke, and Katherine A. Sosebee

Richards, R. A., Nitschke, P. C., and Sosebee, K. A. 2008. Population biology of monkfish *Lophius americanus*. – ICES Journal of Marine Science, 65.

This paper provides an overview of the biology of monkfish in US waters of the Northwest Atlantic Ocean using data from resource surveys spanning the period 1948–2007. Monkfish exhibited seasonal onshore–offshore shifts in distribution, migrated out of the southern Mid-Atlantic Bight (MAB) in mid-spring, and re-appeared there in autumn. Sex ratios at length for fish 40–65-cm long were skewed towards males in the southern MAB, but approximated unity elsewhere, suggesting that a portion of the population resides outside sampled areas. Growth was linear at 9.9 cm year^{-1} and did not differ by region or sex. Maximum observed size was 138 cm for females and 85 cm for males. Length at 50% maturity for males was 35.6 cm (4.1 years old) in the north and 37.9 cm (4.3 years old) in the south; for females 38.8 cm (4.6 years old) in the north and 43.8 cm (4.9 years old) in the south. Ripe females were found in shallow ($<50 \text{ m}$) and deep ($>200 \text{ m}$) water in the south, and in shallow water ($<50 \text{ m}$) in the north.

Keywords: anglerfish, distribution, goosefish, growth, life history, *Lophius americanus*, maturation, monkfish, movement, population biology, sex ratio, temperature.

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Introduction

The American monkfish (or goosefish, *Lophius americanus*) supports one of the most lucrative fisheries in US waters of the Northwest Atlantic Ocean. The fishery developed during the 1980s, and by the mid-1990s monkfish surpassed traditional groundfish species (cod *Gadus morhua*, haddock *Melanogrammus aeglefinus*, flounders) and became the highest valued finfish in the northeastern US (http://www.st.nmfs.gov/st1/commercial/landings/annual_landings.html). However, monkfish biology has been poorly understood, in part because monkfish are not well sampled by the gear used in long-standing annual resource surveys of the US continental shelf.

Monkfish are distributed in the Northwest Atlantic from the Grand Banks and northern Gulf of St Lawrence south to Cape Hatteras, NC (Caruso, 2002), from just below the tide line (Bigelow and Schroeder, 1953) to depths of at least 900 m (Markle and Musick, 1974; Wenner, 1978; NEFSC, 2002). Stock structure is not clearly understood. No genetic divergence was found among goosefish collected between North Carolina and Maine in depths up to 300 m (Chikarmane *et al.*, 2000), but growth patterns and recruitment differed in northern and southern areas (Armstrong *et al.*, 1992; Hartley, 1995). Two management areas [Northern Management Area (NMA)—Gulf of Maine and northern Georges Bank; Southern Management Area (SMA)—southern Georges Bank and Mid-Atlantic Bight, MAB; Figure 1] were established for monkfish in 1999. The basis for establishing two management regions was perceived differences in biology and substantial differences in how fisheries are prosecuted in the two regions (Haring and Maguire, 2008).

Commercial fisheries for monkfish in US Northwest Atlantic waters operate year-round using gillnets, trawls, and scallop

dredges. Total reported annual landings increased from $\sim 100 \text{ t}$ in the mid-1960s to a peak of 28 000 t in 1997 (Figure 2), but subsequently declined to 14 000 t in 2006 as a result of fishery restrictions (days-at-sea and trip limits; Haring and Maguire, 2008). Trends in autumn trawl survey catches show relatively high biomass in both management areas before the mid-1980s, followed by a decline through the 1990s (Northeast Data Poor Stocks Working Group, 2007; Figure 3). In the NMA, biomass increased in the late 1990s, but then declined. In the SMA, biomass has fluctuated around relatively low levels since the mid-1980s.

Seminal studies on monkfish population biology were conducted by Armstrong *et al.* (1992) and Hartley (1995). Armstrong *et al.* (1992) developed methods for determining the age of monkfish using vertebrae, and applied the method to estimate length- and age-based population parameters for monkfish collected from the SMA. Hartley (1995) applied the methods of Armstrong *et al.* (1992) to monkfish collected in the NMA. Here, we build on this foundation using information from resource surveys conducted annually since 1963 by the Northeast Fisheries Science Center (NEFSC) in US waters of the Northwest Atlantic Ocean, and from industry-based monkfish surveys (IBMS) conducted in the same region.

Methods

Annual fishery-independent surveys conducted by the NEFSC and two IBMS in 2001 and 2004 were our primary sources of biological information on monkfish. The NEFSC surveys have been conducted in offshore waters (depth range ~ 27 –365 m) in autumn since 1963 (bottom trawl survey), in spring since 1968 (bottom trawl survey), in summer since 1984 (sea scallop dredge survey), and in winter since 1992 (flatfish bottom trawl survey; Table 1).

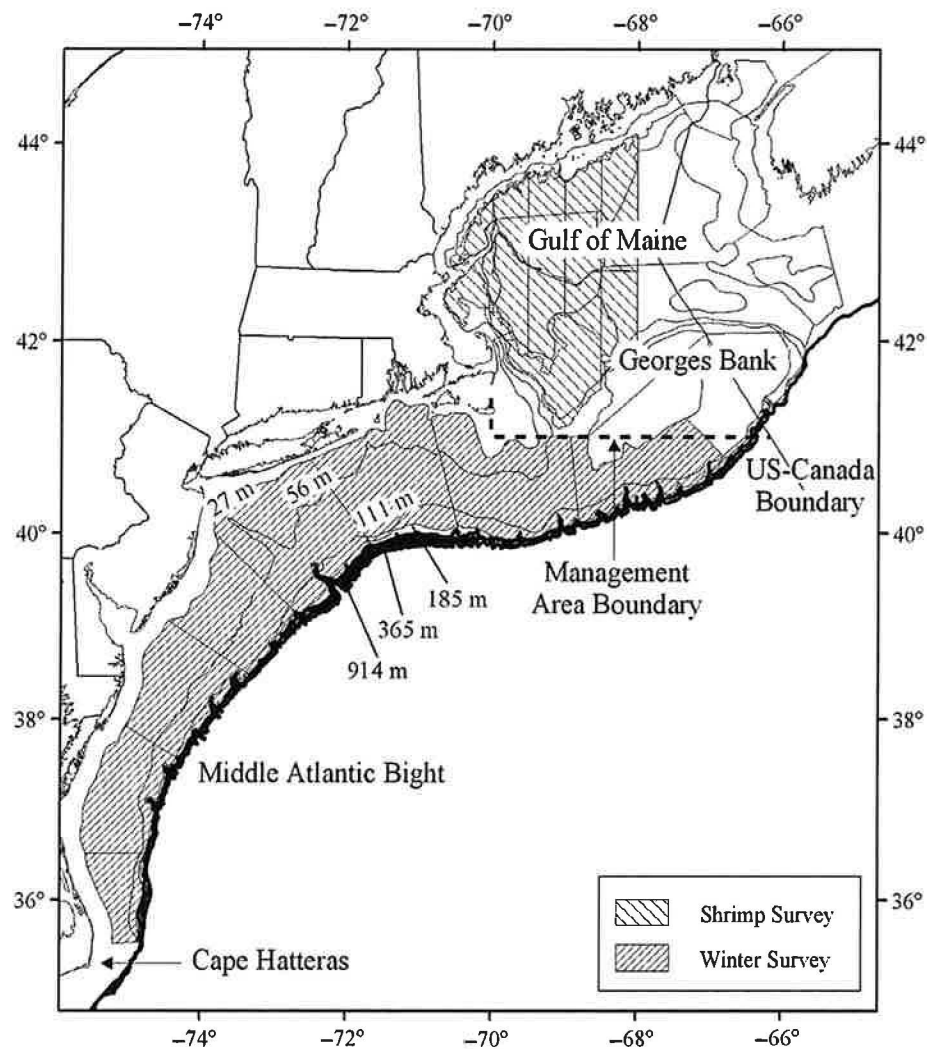


Figure 1. Survey stratification scheme for NEFSC trawl surveys. The entire area is sampled during NEFSC spring and autumn trawl surveys. Hatched areas show strata sampled during NEFSC winter trawl surveys and shrimp surveys. Additional deep-water strata sampled during IBMS are indicated in black.

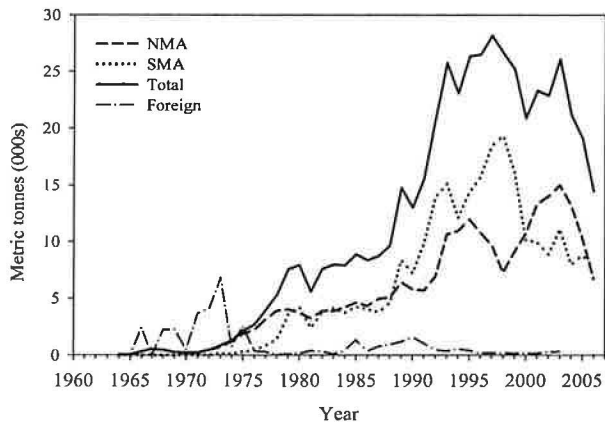


Figure 2. Reported commercial fishery landings ('000 t) of monkfish in US waters, 1964–2006. Foreign landings are from NAFO areas 5 and 6 (<http://www.nafo.int/>).

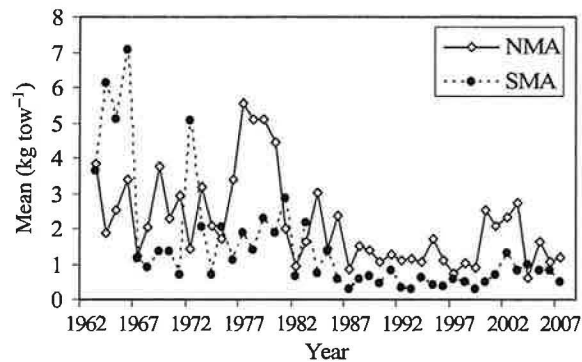


Figure 3. Biomass trends for monkfish (stratified delta distribution mean kg tow⁻¹) from NEFSC autumn trawl surveys in the NMA and SMA.

Table 1. Surveys used in the analysis of monkfish biology.

	Survey name						
	NEFSC Winter Trawl	IBMS ^a	NEFSC Spring Trawl	NEFSC Summer Trawl	Shrimp	NEFSC Sea Scallop	NEFSC Autumn Trawl
Season	Winter	Winter/Spring	Spring	Summer	Summer	Summer	Autumn
Gear	Flatfish Bottom Trawl	Commercial Bottom Trawl	Survey Bottom Trawl	Survey Bottom Trawl	Shrimp Trawl	Scallop Dredge	Survey Bottom Trawl
Geographic coverage	Southern Georges Bank to Cape Hatteras, NC	Gulf of Maine to Cape Hatteras, NC	Gulf of Maine to Cape Hatteras, NC	Northern Georges Bank and Gulf of Maine	Western Gulf of Maine	Southern Georges Bank to Cape Hatteras, NC	Gulf of Maine to Cape Hatteras, NC
Depth range (m)							
NMA	–	26–256	22–337	21–298	85–263	–	25–331
SMA	16–314	24–430	9–325	9–272	–	31–102	9–329
Management area	SMA ^b	NMA ^c , SMA	NMA, SMA	NMA	NMA	SMA	NMA, SMA
Years	1964–1966, 1972, 1978, 1981, 1992–2007	2001, 2004	1968–2007	1948/1949, 1963–1965, 1969, 1977–1981, 1991, 1993–1995	1984–1987, 1989–2007	1975, 1978, 1981–2006	1963–2006
Number of tows							
NMA	–	236	3 902	972	936	–	4 427
SMA	2 467	417	8 628	1 410	–	4 492	8 981
Total	2 467	659	13 071	2 464	936	4 492	14 070
Number of tows with monkfish (%)							
NMA	–	215 (91)	1 151 (29)	289 (30)	697 (74)	–	1 470 (33)
SMA	1 499 (61)	396 (95)	1 812 (21)	184 (13)	–	1 805 (40)	1 595 (18)
Total	1 499 (61)	617 (94)	3 057 (23)	485 (19)	697 (74)	1 805 (40)	3 206 (23)
Number of monkfish caught (average)							
NMA	–	4 208 (2 104)	2 302 (58)	555 (37)	3 677 (160)	–	2 801 (64)
SMA	10 067 (458)	12 847 (6 424)	4 676 (117)	309 (21)	–	5 400 (193)	4 337 (99)
Total	10 067 (458)	17 396 (8 698)	7 193 (180)	881 (59)	3 677 (160)	5 400 (193)	7 358 (167)

Totals may include additional stations not assigned to management area. Depth ranges are 1–99 percentiles of station average depth.

^aIndustry-based monkfish survey.

^bSouthern Management Area.

^cNorthern Management Area.

Additional survey data were available for monkfish from shrimp trawl surveys conducted by the Atlantic States Marine Fisheries Commission during the years 1992–2007. Details of the sampling designs and operating procedures can be found in Azarovitz (1981; NEFSC trawl surveys), Serchuk and Wigley (1986; sea scallop dredge survey), and Clark *et al.* (2000; shrimp trawl survey). In brief, the surveys were conducted using a stratified random sampling design, with sample allocation proportional to stratum area. NEFSC trawl survey strata are defined by depth zones of 27–55, 56–110, 111–185, and 186–365 m, which are further subdivided to create smaller sampling units (Figure 1). During the period 1963–1966, southern geographic coverage in the NEFSC autumn trawl surveys was limited to the northern MAB, but thereafter the sampling area (in both NEFSC autumn and NEFSC spring trawl surveys) extended south to Cape Hatteras, NC. Inshore strata (9–27 m) were added in 1972 (MAB) and 1979 (Gulf of Maine). The NEFSC winter trawl and summer sea scallop surveys cover the area between Georges Bank and Cape Hatteras, and the shrimp survey covers the western Gulf of Maine (Figure 1). Biological sampling of monkfish for age and growth, maturity, and food habits began in autumn 1992.

The IBMS were conducted using a stratified random sampling design with sample allocation proportional to fishing effort during the years 1995–1999. Additional non-random station locations were chosen by fishers (~30% of all stations). Stratum boundaries were the same as for the NEFSC trawl surveys, but a further set of strata was included in depths ranging from 366 to 914 m (Figure 1). The IBMS were conducted during 2001 and 2004 using commercial trawlers equipped with nets with codends of mesh size 15.2 cm (6 inches; NEFSC, 2002, 2005). Standard protocols for tow speed, tow time, scope ratios, and biological sampling were followed in each survey. The IBMS were conducted between 26 February and 6 April 2001 and between 1 March and 16 June 2004.

The age of monkfish was determined using vertebrae, following the methods developed by Armstrong *et al.* (1992). Vertebra number 8 was extracted from the vertebral column, cleaned of soft tissue, and baked in a drying oven at 230°C for 1–1.5 h to enhance the visibility of zonation. Presumed annuli on the centrum of the vertebra were counted under $\times 60$ magnification. Known-age specimens of monkfish were not available for validation studies, but minimum criteria for the use of vertebrae for ageing were met (Armstrong *et al.*, 1992), and quality-control studies indicated high levels of precision of age estimates in blind tests (~94% agreement; Fishery Biology Branch, Northeast Fisheries Science Center, unpublished data). Seasonal patterns in growth were estimated using NEFSC winter, spring, and autumn trawl survey data, summer shrimp survey data, NEFSC summer sea scallop survey data (1993–2007), and IBMS data (2001 and 2004). Effects of management area and sex of monkfish on the age–length relationship were tested using ANCOVA of age sample data for age 2–6 males and females collected in winter and spring surveys during 2001 and 2004 (NEFSC winter trawl survey and IBMS).

Gonad stage was assigned by gross visual inspection of gonads using a 5-stage classification system based on gonad size, colour, texture, and presence or absence of ova or milt (Armstrong *et al.*, 1992). We subsequently combined spent and resting stages (post-spawning), and ripe and running ripe (ripe). Monkfish smaller than ~20 cm were difficult to assign to gender, but the sex of larger monkfish was easily determined. For analysis of

spawning patterns, the SMA was subdivided into two areas: Northern Mid-Atlantic (Cape Cod to Delaware Bay, 39–41.5°N) and Southern Mid-Atlantic (Delaware Bay to North Carolina, 35–39°N). Stations north of 41.5°N latitude were considered to be in the NMA.

Maturation rates were estimated for males and females using data on length, age, and maturity stage collected during the 2001 and 2004 IBMS. The proportion mature at length and age was estimated using the logistic regression

$$P = \frac{1}{1 + e^{-(\alpha + \beta x)}},$$

where p is the proportion mature at length or age, x the length or age, and α and β the model parameters to be estimated. The model was fitted using maximum likelihood methods (SAS version 9.1; SAS Institute, Cary, NC, USA).

Seasonal length–weight relationships were determined for males and females using measurements taken during NEFSC winter, spring, and autumn trawl surveys, summer shrimp and NEFSC sea scallop surveys (1993–2007), and IBMS (2001 and 2004). The regression model used was $\log W = \log a + b \log L$, where W is the weight (kg), L the total length (cm), a the y -intercept, and b the slope. Tests for the effects of sex and season on the length–weight relationship excluded fish >70 cm because males >70 cm were scarce.

Sex ratios were estimated by 3-cm length interval for each management area using samples of monkfish (≥ 20 cm) from NEFSC winter, spring, and autumn trawl surveys, summer shrimp and NEFSC sea scallop surveys (1993–2007), and IBMS (2001 and 2004). Stratified mean number at length (3-cm intervals) by sex was derived using stratum area as the weighting factor. To examine detailed spatial patterns in sex ratio at length, only NEFSC winter and spring trawl survey and IBMS data were used, because sample sizes in the other surveys were too small. For the spatial analysis, survey strata were grouped into four regional sets (Gulf of Maine, Georges Bank, Northern Mid-Atlantic, and Southern Mid-Atlantic), and three depth zones (21–110, 111–185, and >185 m). This grouping of strata resulted in a similar north–south split of the MAB as used in the spawning pattern analysis.

Results

Distribution patterns

Monkfish in the SMA were distributed across the MAB and southern flank of Georges Bank in February, but had largely disappeared from the southern MAB by April (Figure 4). Concentrations re-appeared along the outer shelf of the southern MAB in September and October. Few monkfish were present on the northwest part of Georges Bank in any season, but they were distributed throughout the Gulf of Maine in all months. The abundance-weighted depth distribution of monkfish in the Gulf of Maine was shallowest in summer (Figure 5).

Monkfish occupied a broad range of depths in all seasons (Figure 5). Overall, 90% of the monkfish caught in NEFSC winter, spring, summer, and autumn trawl surveys were in depths of 32–339 m, similar to the overall range of depths sampled (90% within 24–346 m). During winter and spring, monkfish were associated with relatively deep water (compared with the depth distribution of all stations), but in summer they more closely matched the sampled depth distribution.

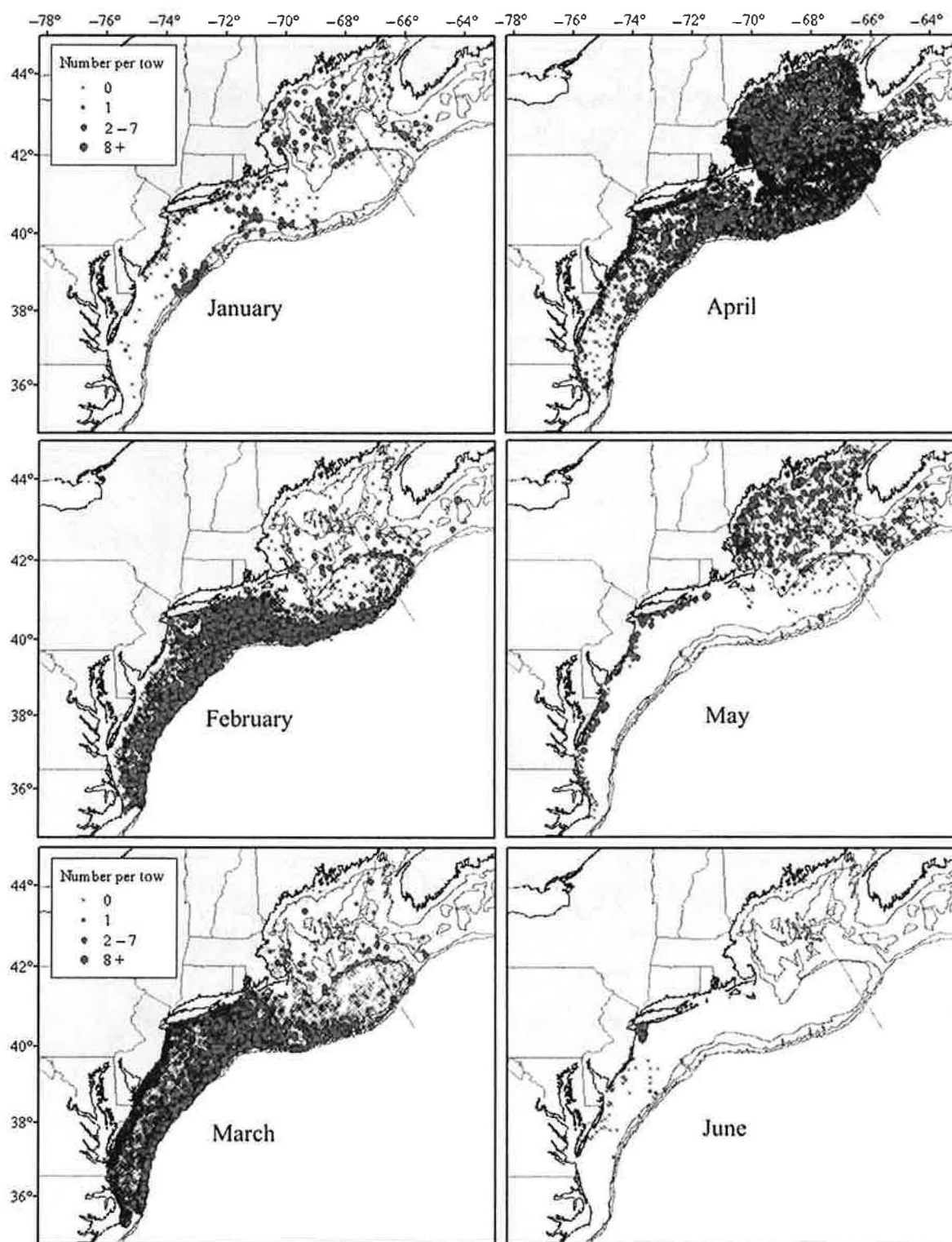


Figure 4. Monthly distribution (number per tow) of monkfish caught in NEFSC winter, spring, summer, and autumn bottom trawl surveys, 1948/1949 and 1963–2007 (continued on next page).

In autumn, monkfish distribution was similar to the sampled depths in the NMA, but was relatively deep in the SMA. Monkfish distribution with respect to temperature was more restricted than the depth distribution. Overall, 90% of monkfish were caught at bottom temperatures of 4.5–13.0°C, and 90% of

the stations encompassed the range 3.8–19.3°C. In the NMA, temperatures occupied by monkfish mirrored the distribution of bottom temperature of the stations (Figure 6). In the SMA, monkfish were associated with relatively warm temperature in winter and spring, and cool temperature in summer and autumn (Figure 6).

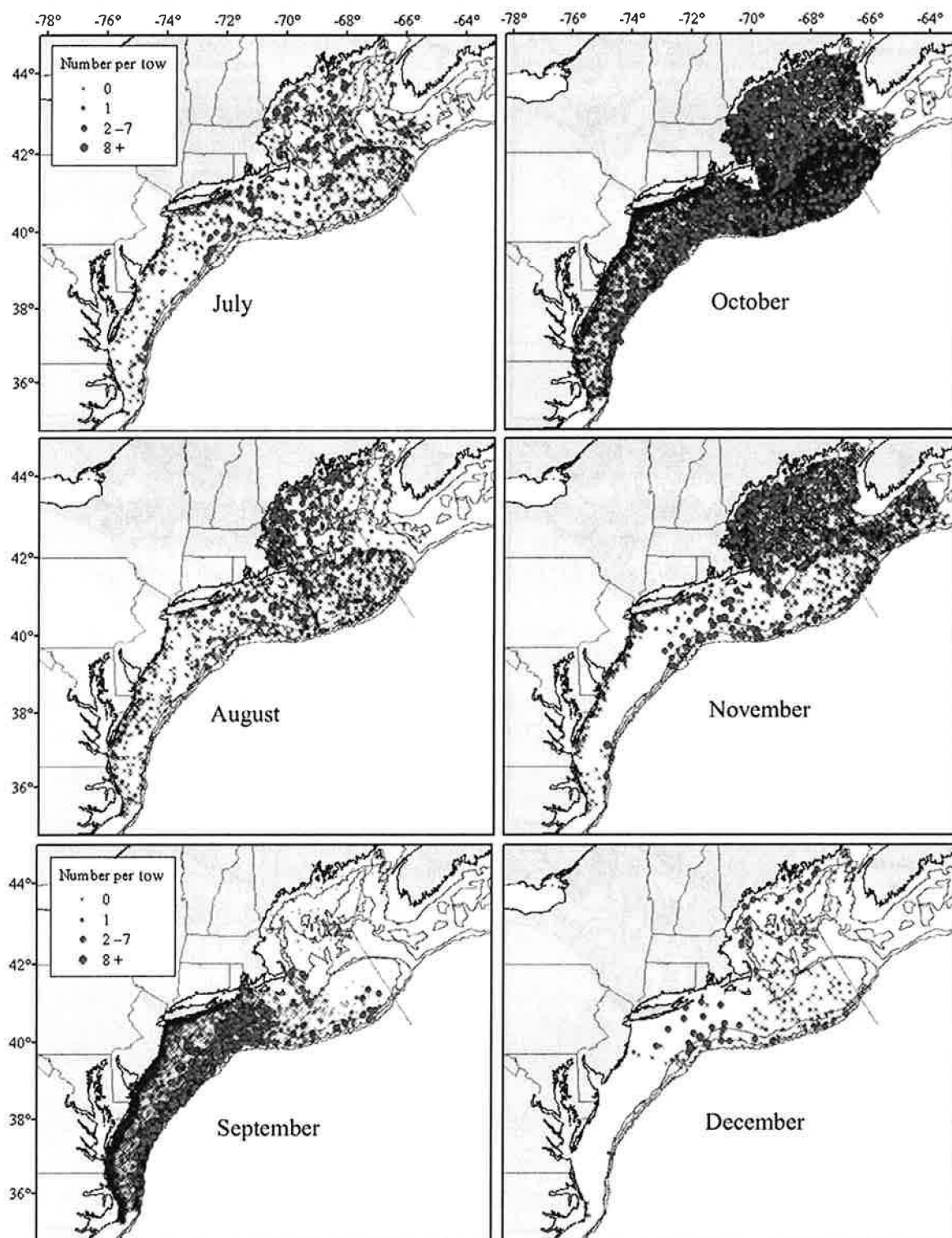


Figure 4. Continued.

Temporal and spatial patterns in sex ratio at length are shown in Figures 7 and 8. In the NMA, sex ratios approximated unity in fish up to ~55 cm, then increased steadily to 100% female by ~70 cm (Figure 7). In the SMA, sex ratios of 40–65 cm monkfish were strongly skewed towards males (Figure 7). The skewing in the

SMA was more pronounced in deeper water and farther south (Figure 8). In shallow waters of the northern MAB, sex ratios at length resembled those in the Gulf of Maine, where sex ratios did not become skewed towards males. On Georges Bank, the skewed pattern was not apparent in shallow (27–100 m) water,

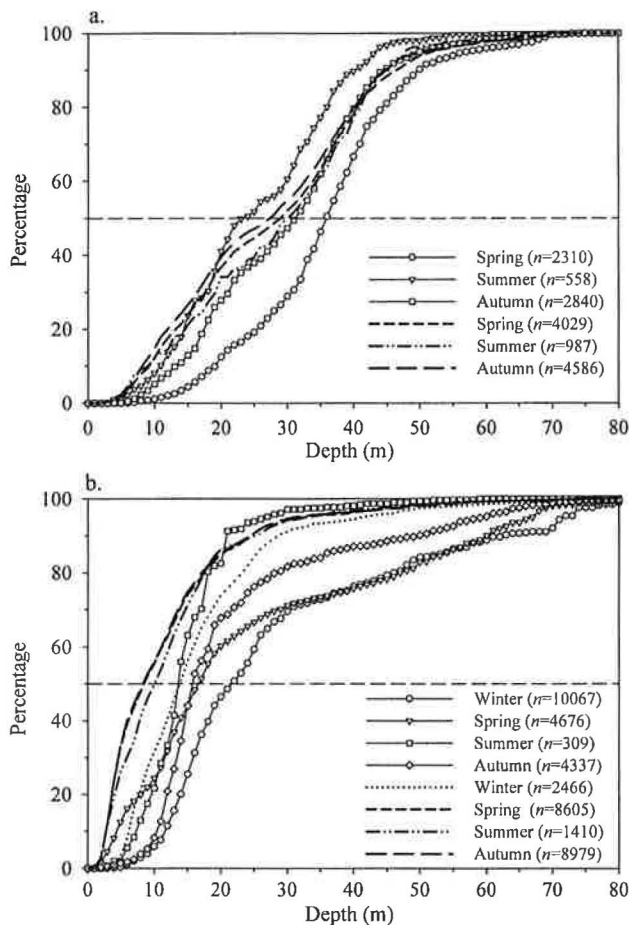


Figure 5. Cumulative frequency distributions of sampled depth in NEFSC winter, spring, summer and autumn trawl surveys (unweighted), and abundance-weighted depth, 1948/1949 and 1963–2007. (a) NMA, and (b) SMA. Dashed lines unweighted, symbols abundance-weighted.

but appeared in deeper (111–185 m) water. In the Gulf of Maine, sex ratios were ~ unity in monkfish up to ~60-cm long in all depths. Figure 9 shows the spatial distribution of sex ratios of 40–65 cm monkfish in winter and spring surveys. Strata in the southern MAB and deep strata in the northern MAB and on the southern flank of Georges Bank were dominated (>60%) by males. Few strata were dominated by females, and there were no strata with >80% females.

Age and growth

The largest monkfish recorded from NEFSC survey sampling was 138 cm, collected in 1978. Longevity of males appears to be less than for females, because few males >70 cm and older than 7 years have been collected. The largest male was 85 cm (9 years old) and the 99th percentile for male length was 66 cm. The largest aged female was 110 cm (10 years old) and the 99th percentile was 88 cm.

Growth of monkfish up to age 10 was linear, with annual increments averaging 9.9 cm for ages 2–9 (Figure 10, Table 2). Length-at-age did not differ significantly between management areas or by sex (ANCOVA, $p > 0.05$), but significant seasonal differences were detected (ANCOVA, $p < 0.001$). Most growth

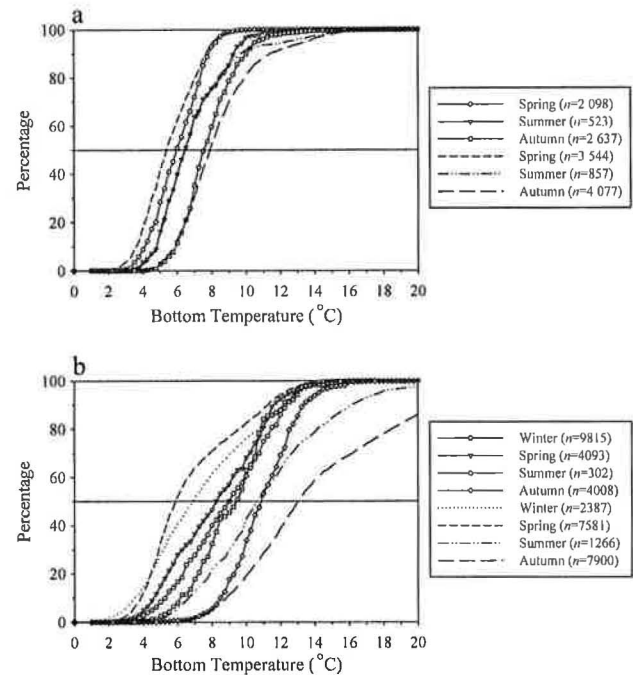


Figure 6. Cumulative frequency distributions of bottom temperature at stations sampled in NEFSC winter, spring, summer, and autumn trawl surveys (unweighted) and abundance-weighted temperature, 1948/1949 and 1963–2007. (a) NMA, and (b) SMA. Dashed lines unweighted, symbols abundance-weighted.

was in late spring and early summer, during the period between spring and summer surveys (Table 2). Year effects were also significant in the two age–length datasets (1993–2007, all seasons; 2001 and 2004, winter–spring surveys). However, year accounted for $\leq 0.1\%$ of the total sums of squares in each analysis and was therefore ignored.

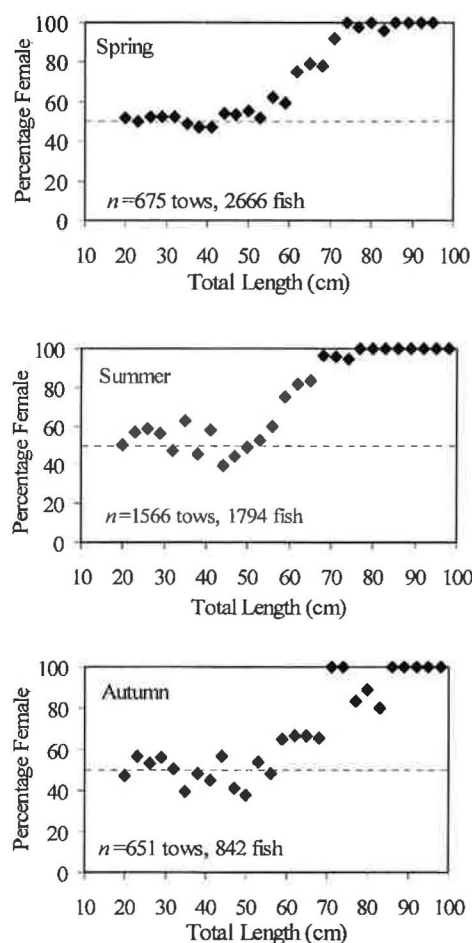
Length–weight relationships differed significantly ($p < 0.001$) by sex and season. The allometric growth parameter (b) ranged between 2.76 (males in spring) and 3.12 (females in spring). The length–weight relationship had a lower r^2 during spring (Table 3) when many fish were in developing or spawning condition (Figure 11).

Reproduction

Parameter estimates for maturity ogives for females and males are given in Table 4. Estimated median length (L_{50}) and age (A_{50}) at maturity for females was 39 cm (4.6 years) in the NMA and 44 cm (4.9 years) in the SMA. For males, L_{50} was 36 cm (4.1 years) in the NMA and 38 cm (4.3 years) in the SMA. Differences between the two management regions in L_{50} and A_{50} were significant ($p < 0.05$) for both sexes.

Samples of reproductive state were not available for all months of the year, but the available data suggest earlier spawning in the MAB than in the Gulf of Maine (Figure 11). Few ripe females were found in autumn, but ripe males were found in all seasons and all months sampled except January. Ripe females were found mainly in shallow water (<50 m) or >200 m (Figure 12). Ripe males were distributed across all depths, except in the Gulf of Maine, where they were found mainly in depths <50 or >300 m (Figure 12).

Northern Management Area



Southern Management Area

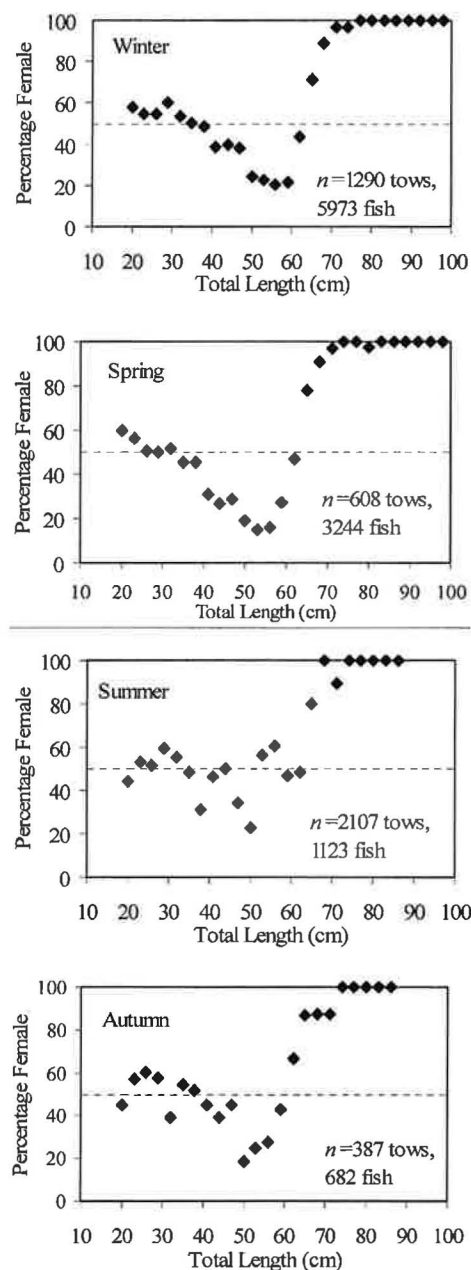


Figure 7. Sex ratio at length estimated from NEFSC winter, spring, and autumn trawl surveys, NEFSC scallop surveys, ASMFC shrimp trawl surveys (1993–2007), and IBMS (2001 and 2004). Estimates are derived from stratified mean number per tow at length, by sex (3-cm bins, lower bound shown).

Discussion

Monkfish are broadly distributed across the US continental shelf, except the shallows of Georges Bank. Seasonal distribution patterns suggest onshore–offshore movement, particularly in the southern MAB (Figures 4 and 5), and an apparent northward or deep-water (>365 m) excursion from the southern MAB in mid-spring. Onshore–offshore seasonal migrations have been noted previously for *L. americanus* (Jean, 1965; Almeida *et al.*, 1995; Steimle *et al.*, 1999); but a mid-spring movement of monkfish out of the southern MAB has not been reported previously.

Plotting the distributions by decade and season did not reveal obvious changes in distribution patterns over time, but during the 1970s (before escalation of fishing effort), monkfish may have been more broadly distributed across the continental shelf in the southern MAB.

Persistent features of monkfish distribution are their general absence on the northwest part of Georges Bank and their continuous presence in the area bounded by 70–72°W and 40–41°N (dubbed “The Mudhole” by fishers; Figure 4). These two regions have habitat characteristics which differ from the surrounding

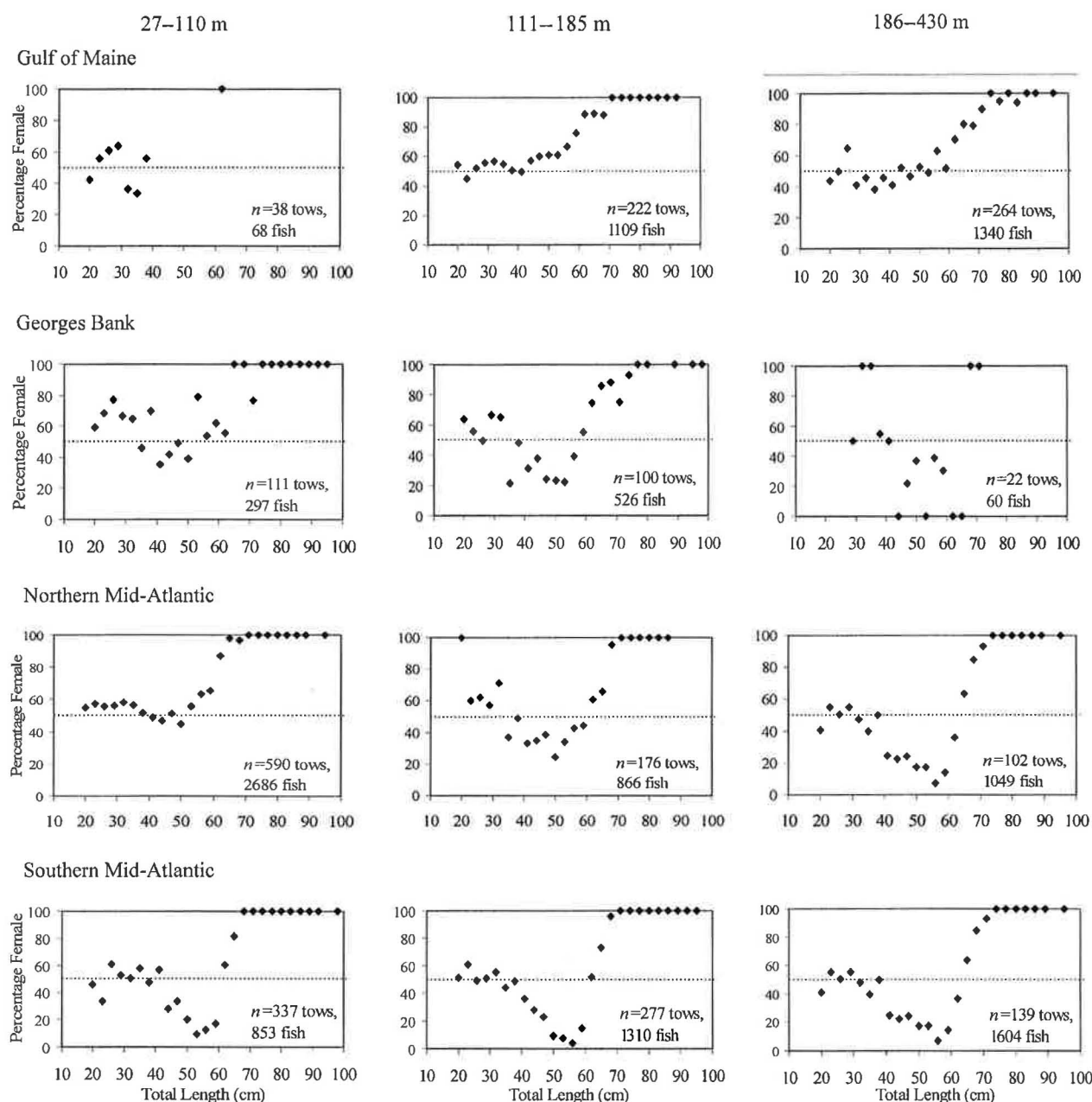


Figure 8. Sex ratio at length from NEFSC winter and spring trawl surveys (1993–2007) and IBMS (2001 and 2004) in three depth zones and four regions (Gulf of Maine, Georges Bank, Northern Mid-Atlantic, Southern Mid-Atlantic). Estimates are derived from stratified mean number per tow at length by gender (3-cm bins, lower bound shown).

areas. The Mudhole contains clayey and silty sand (Poppe *et al.*, 2005), whereas the rest of the MAB is primarily sand with sandy silt along the edge of the continental shelf. The northwest part of Georges Bank has large areas of coarse sediment (sand and gravel) because of strong tidal action (Backus, 1987; Poppe *et al.*, 2005). In a study of habitat associations of groundfish on the Scotian shelf, Scott (1982) found that *L. americanus* was more abundant in fine sediments and less abundant on coarse sediments. The same pattern seems to hold in US waters of the Northwest Atlantic.

Despite seasonal shifts in distribution, monkfish inhabit a wide range of depths throughout the year (Figure 5). However, the distribution probably extends much deeper than the areas sampled.

Monkfish have been caught at ~900 m (Markle and Musick, 1974; NEFSC, 2002), and deep-water studies in two regions in the SMA found that monkfish catch rates did not decline until depths greater than ~700 m (Wenner, 1978; Balcom, 1997). The amount of habitat represented by these depths is relatively small owing to the steepness of the continental slope, but the portion of the monkfish population residing outside sampled areas is unknown and could be significant, particularly during late autumn and winter, when the distribution shifts offshore.

Monkfish in the SMA were associated with relatively warm temperature in winter and spring, and relatively cool temperature in summer and autumn, but little selection for temperature was evident in any season in the NMA (Figure 6). This suggests that

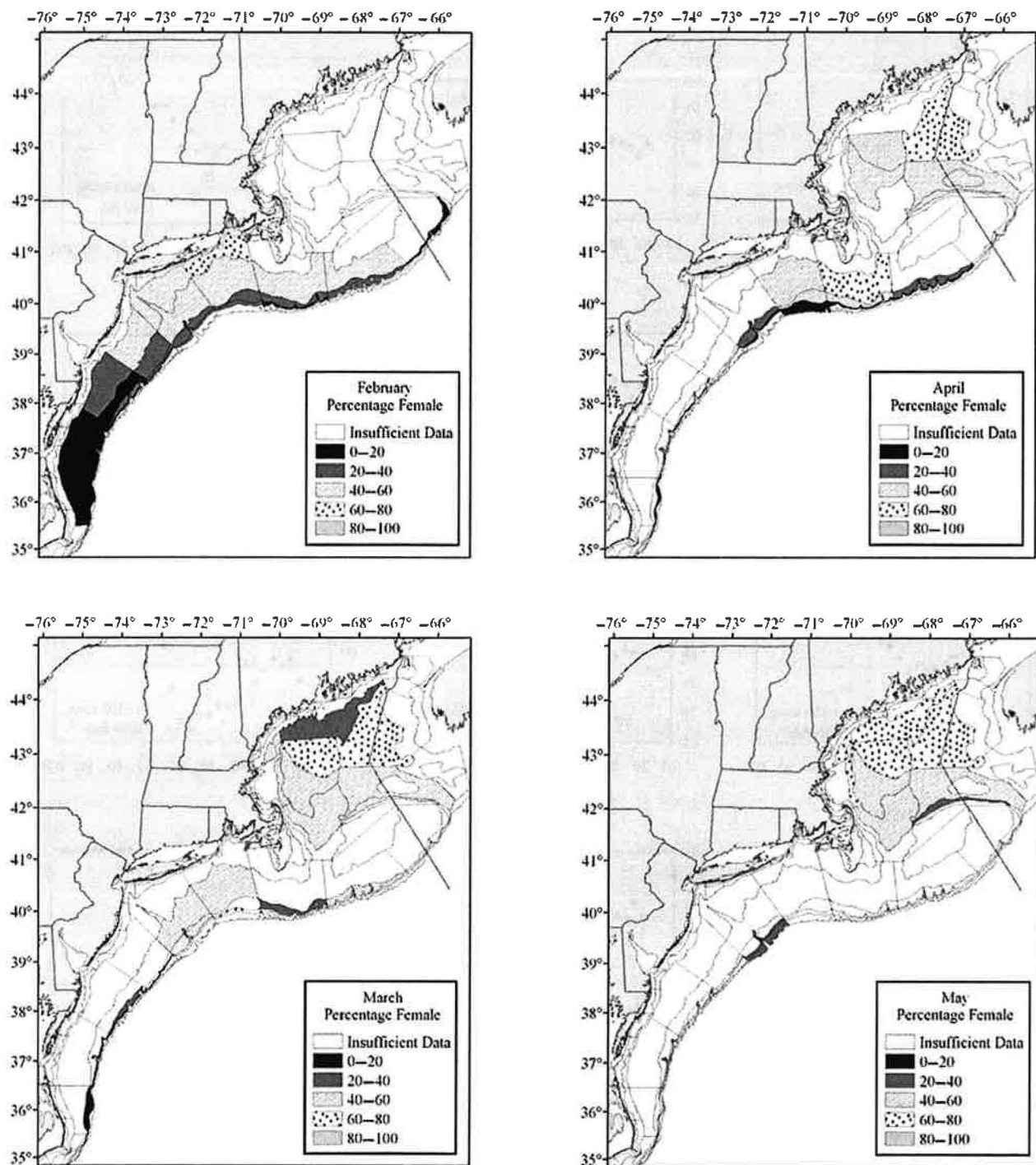


Figure 9. Spatial distribution of sex ratios for monkfish 40–65-cm long from NEFSC winter and spring trawl surveys (1993–2007) and IBMS (2001 and 2004), February–May. The number of fish sampled was 6284, and strata with fewer than 20 fish sampled in the 40–65 cm size range are not included.

temperatures in the NMA are within the preferred range for the species and that monkfish distribution shifts away from warm waters in the SMA (Figures 5 and 6). Shifts in the distribution of *Lophius* associated with changes in temperature have been reported for *L. americanus* in the Northwest Atlantic (Murawski, 1993), *Lophius piscatorius* in the North Sea (Perry et al., 2005), and *L. piscatorius* in the North Atlantic (Solmundsson et al.,

2007). In Icelandic waters, *L. piscatorius* has expanded its range and increased in abundance concurrent with a doubling of the volume of warm water (bottom temperatures $>5^{\circ}\text{C}$) since the mid-1980s (Solmundsson et al., 2007). These observations suggest that changes in thermal environment can affect monkfish distribution, and therefore availability of monkfish to fisheries. In light of recent warming trends in the Northwest Atlantic

(Mountain, 2004), a closer examination of monkfish responses to thermal habitat is warranted.

Skewed sex ratios have been reported for other populations of *Lophius* (*L. piscatorius*—Ofstad and Laurenson, 2007; *L. piscatorius* and *Lophius budegassa*—Duarte *et al.*, 2001). Always, the ratios approximate unity in small fish, but become skewed towards

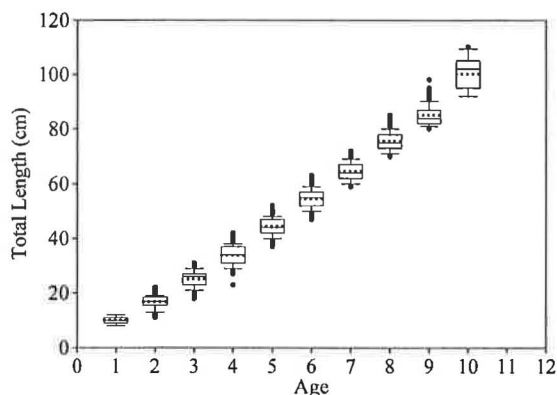


Figure 10. Box and whisker plots of monkfish length-at-age from NEFSC winter and spring trawl surveys (1993–2007) and IBMS (2001 and 2004); $n = 4630$. The box encloses the 25–75th percentile with median (solid line) and mean (dashed line), the whiskers indicate tenth and 90th percentiles, and the dots are values lying outside the tenth and 90th percentiles.

males in larger fish, before eventually becoming 100% female in the largest fish. Several explanations can be invoked to explain this pattern. The most obvious is that male growth slows or stops, so that male numbers accumulate near the maximum size, skewing the sex ratio. This was the explanation invoked for *L. piscatorius* and *L. budegassa* (Duarte *et al.*, 2001; Ofstad and Laurenson, 2007), but it does not seem to fit for *L. americanus*. We found no difference in the growth rates of male and female *L. americanus*, nor any evidence of a broad range in age at size in large *L. americanus* (Figure 10), which would be expected if male growth slowed significantly. Another explanation is differential mortality of males and females in the 40–65-cm size range, possibly resulting from a selectivity factor in fisheries (such as recorded for spiny dogfish by Rago *et al.*, 1998). This, however, would seem to be an unlikely explanation, because there is no apparent sexual dimorphism in *L. americanus*. Finally, there could be behavioural differences such as sex-specific movement patterns that lead to skewed sex ratios. The spatial and temporal distribution of sex ratios suggests that this may be the case in *L. americanus*. In the SMA, the magnitude of the skewed pattern differed with season and location, with stronger skewing in winter and spring (Figure 7) and in deep water (Figure 8). The skewed pattern or its inverse (skewing towards females) was not generally detected in the NMA (Figure 7). However, there were survey strata in the Gulf of Maine and on Georges Bank where sex ratios in spring were skewed towards females (Figure 9). These sex ratio patterns suggest that mature female monkfish in

Table 2. Mean length (cm, and standard error, s.e.) at age by season for monkfish samples from NEFSC winter, spring, and autumn trawl surveys, NEFSC sea scallop surveys, shrimp surveys, and IBMS.

Age	Mean length (s.e.)				n
	Winter	Spring	Summer	Autumn	
1	10.4 (0.27)	11.0 (0.32)	15.1 (0.19)	14.7 (0.15)	474
2	16.1 (0.29)	17.1 (0.14)	22.7 (0.19)	23.4 (0.17)	948
3	25.5 (0.11)	25.0 (0.12)	32.6 (0.17)	33.5 (0.19)	1 812
4	34.0 (0.10)	34.0 (0.11)	42.9 (0.23)	44.0 (0.20)	2 458
5	44.1 (0.09)	44.9 (0.11)	53.5 (0.34)	54.1 (0.22)	2 462
6	54.2 (0.09)	54.6 (0.12)	64.4 (0.20)	64.0 (0.32)	2 329
7	63.7 (0.17)	64.7 (0.14)	71.1 (0.42)	74.3 (0.64)	1 114
8	74.6 (0.34)	75.7 (0.18)	80.8 (0.98)	85.4 (0.86)	536
9	85.7 (0.79)	85.4 (0.32)	91.5 (3.80)	92.8 (0.63)	174
10	90.7 (2.91)	100.2 (1.63)	87.1 (19.1)	–	18
n	4 765	4 470	1 378	1 712	12 325

Table 3. Parameter estimates for length–weight relationships for male and female monkfish from NEFSC winter, spring, and autumn trawl surveys, NEFSC sea scallop surveys, shrimp surveys, and IBMS.

Season	Sex	Length range (cm)	n	log(a)	s(a)	b	s(b)	r ²
Winter	Male	10–74	3 110	–1.4932	0.01581	2.8153	0.00971	0.96
	Female	11–101	2 679	–1.7120	0.01575	2.9615	0.00978	0.97
Spring	Male	40–85	2 913	–1.4165	0.04645	2.7604	0.02715	0.85
	Female	40–110	3 229	–2.0180	0.03393	3.1228	0.01904	0.93
Summer	Male	12–75	915	–1.5540	0.02343	2.8548	0.01527	0.97
	Female	11–111	1 314	–1.6355	0.01812	2.9179	0.01113	0.98
Autumn	Male	8–83	852	–1.5841	0.01969	2.8748	0.01282	0.98
	Female	10–98	852	–1.6527	0.02182	2.9260	0.01383	0.98

Length is total length (cm), weight in g.

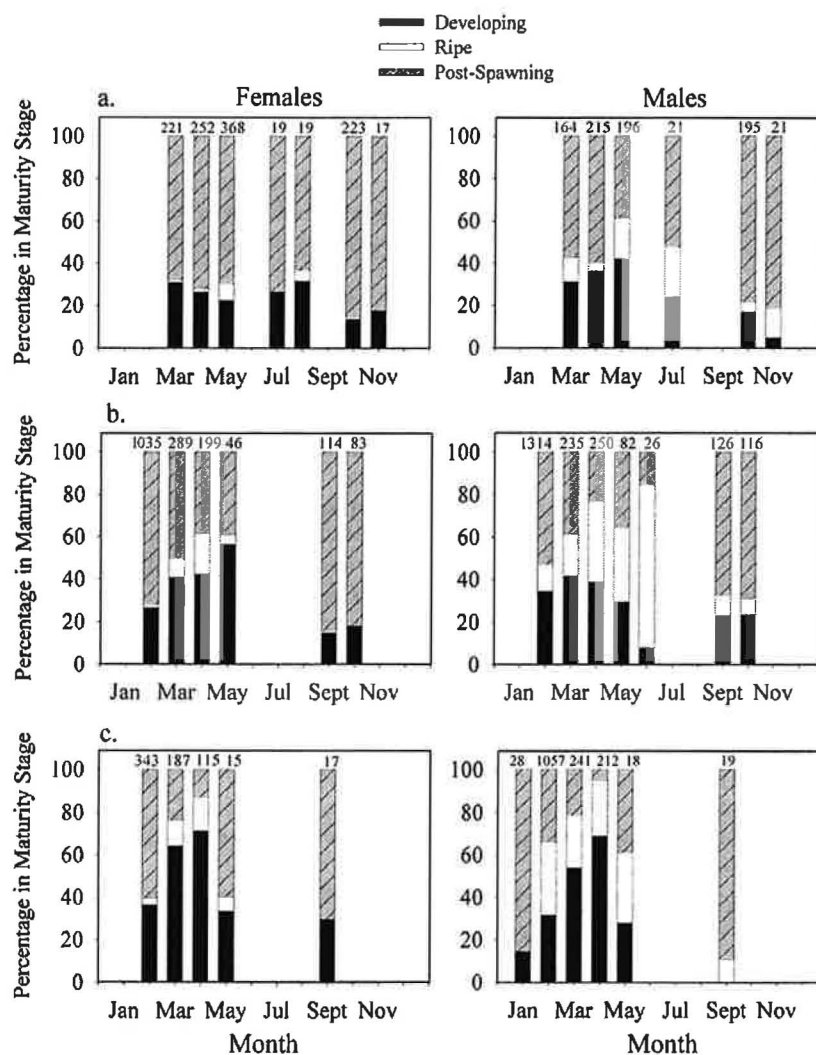


Figure 11. Percentage of mature monkfish females and males in developing, ripe, and post-spawning condition by month in samples from NEFSC winter, spring, summer, and autumn trawl surveys (1992–2007) and IBMS (2001 and 2004). (a) Gulf of Maine, (b) northern MAB, and (c) southern MAB. The sample size is given above the bars.

Table 4. Parameter estimates (*a*, *b*) from logistic regression of (top panel) length and (bottom panel) age on maturity, standard error (s.e.) of regression estimates, median length at maturity ($L_{50} = -a/b$), and the number of fish sampled (*n*).

Region	Sex	<i>n</i>	<i>a</i>	s.e.(<i>a</i>)	<i>b</i>	s.e.(<i>b</i>)	L_{50}
NMA	Female	1 159	−9.765	0.647	0.252	0.016	38.8
SMA	Female	1 304	−9.029	0.533	0.206	0.012	43.8
NMA + SMA	Female	2 463	−9.056	0.404	0.221	0.010	41.0
NMA	Male	792	−11.571	0.904	0.325	0.025	35.6
SMA	Male	1 364	−12.123	0.750	0.320	0.019	37.9
NMA + SMA	Male	2 156	−11.486	0.556	0.312	0.015	36.8
Region	Sex	<i>n</i>	<i>a</i>	s.e.(<i>a</i>)	<i>b</i>	s.e.(<i>b</i>)	A_{50}
NMA	Female	826	−10.354	0.778	2.273	0.168	4.6
SMA	Female	888	−9.647	0.700	1.956	0.141	4.9
NMA + SMA	Female	1 714	−9.791	0.520	2.078	0.109	4.7
NMA	Male	519	−12.233	1.168	2.951	0.279	4.1
SMA	Male	812	−15.798	1.234	3.665	0.283	4.3
NMA + SMA	Male	1 331	−13.870	0.849	3.274	0.198	4.2

Data are from IBMS.

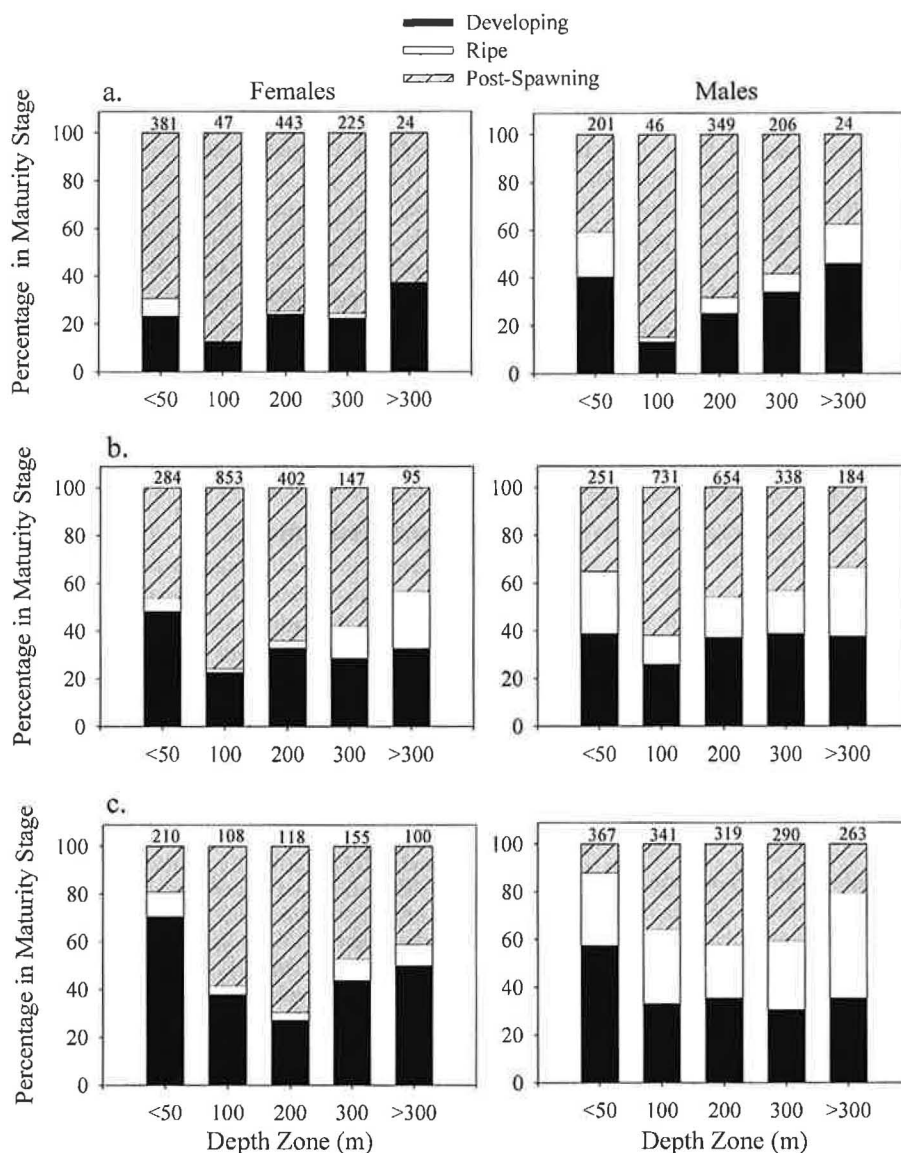


Figure 12. Percentage of mature monkfish females and males in developing, ripe, and post-spawning condition by depth zone in samples from NEFSC winter, spring, summer, and autumn trawl surveys (1992–2007) and IBMS (2001 and 2004). (a) Gulf of Maine, (b) northern MAB, and (c) southern MAB. The sample size is shown above the bars, and the x-axis label is the upper bound of non-overlapping depth zones.

the SMA move into deep water (outside the sampling area) or to the north in late spring, perhaps to spawn again. Monkfish have been assumed to spawn only once per year because of the presumed large energetic investment in producing egg veils. However, Martinez (1999) found evidence from histochemical studies that *L. americanus* may spawn more than once per year, and Yoneda *et al.* (2001) have suggested the same possibility for *Lophius litulon*.

The location of monkfish spawning is not clearly understood. Bigelow and Schroeder (1953) concluded that monkfish are indifferent to the depth at which they spawn because egg veils have been found close to shore and over deep water (~2000 m). Our observations of the depth distribution of ripe females (Figure 12) suggest that in the Gulf of Maine, monkfish spawn in shallow (<50 m) water, but that in the SMA they may spawn in both shallow (<50 m) and deep (>200 m) water. Monkfish larvae in the MAB are found almost exclusively in deep water along the

shelf–slope break in April, but across the shelf from May to July, the distribution moving progressively northwards with time (Steimle *et al.*, 1999). Water temperatures in the MAB are colder on the mid- and outer continental shelf than over the slope during the early part of the year (Houghton *et al.*, 1982), so the distribution of larvae may reflect the seasonal availability of suitable thermal habitat. Steimle *et al.* (1999) reported that larvae were most abundant at 10–16°C, and peak catches were obtained at 11–15°C, regardless of month or area.

Basic life-history parameters for *L. americanus* (growth, maturity, and longevity) have been estimated in the past using samples from surveys and commercial fisheries (Armstrong *et al.*, 1992; Almeida *et al.*, 1995; Hartley, 1995). Our results are similar in many ways, but they include some important differences. Previous studies indicated faster growth in the SMA (Armstrong *et al.*, 1992) than in the NMA (Hartley, 1995), and these growth differences were part of the justification for establishing two

management areas. However, we found no differences in growth between the NMA and the SMA. This discrepancy in growth between studies may be due partly to the exploitation history of the stock at the time of each of the studies. The 610 samples of Armstrong *et al.* (1992) were collected from 1982 to 1985, before the rapid development of the fishery (Figure 2), whereas the 671 samples of Hartley (1995) were collected in 1992 and 1993, when landings were approaching their peak (Figure 2). Observed mean lengths-at-ages 2–9 in our study (Figure 10) were similar to those of Hartley (1995), but ~6 cm lower on average than the back-calculated mean lengths-at-age and 11 cm less than the observed mean lengths-at-age documented by Armstrong *et al.* (1992).

Previously published rates of maturation for *L. americanus* are variable, L_{50} ranging from 32.0 to 43.4 cm for males and from 36.1 to 48.5 cm for females (Armstrong *et al.*, 1992; Almeida *et al.*, 1995; Hartley, 1995). Our results fall in the middle of these ranges, but it is inappropriate to compare the results of these studies directly because of the differences in seasons and years sampled. The estimate by Armstrong *et al.* (1992) for the SMA combined spring and autumn samples for the sampling years 1982–1985, Hartley's (1995) estimate for the NMA was based on samples collected during summer a decade later (in 1992 and 1993), and Almeida *et al.* (1995) estimated L_{50} by season and area using samples collected from 1975 to 1993. Our study cannot resolve these discrepancies, but it does provide estimates (Table 4) based on large samples collected in both areas during winter and spring, when the advanced reproductive state is most apparent.

Important aspects of monkfish biology remain poorly understood and will require new approaches to resolve. Our conceptual framework for monkfish biology in the Northwest Atlantic has assumed that surveys sample a representative portion of the population and that exchange between management regions is limited. However, the observation of relatively high densities of monkfish at depths far exceeding the limits of sampling (Wenner, 1978; Balcom, 1997) and the unbalanced sex ratios across the continental shelf (Figures 7–9) suggest that a segment of the population is poorly represented in survey sampling. Further studies to examine the density and size and sex composition of monkfish outside regularly sampled areas need to be conducted to evaluate the importance of this segment of the overall population.

The assumption that exchange between management regions is relatively limited underlies monkfish fishery management in the USA. However, movement between regions may prove more important than previously thought. Tagging studies with other species of *Lophius* have demonstrated extensive movements by some fish (e.g. 876 km by *L. piscatorius*; Laurenson *et al.*, 2005), and it is likely that *L. americanus* has similar dispersal capability. The buoyant egg veils and wing-like pectoral fins of late-stage larvae (Martin and Drewry, 1978), juveniles, and adult monkfish suggest a capacity for transport by currents. Selective tidal stream transport is suggested by the spring off-bottom behaviour of an archival-tagged *L. americanus* (Rountree *et al.*, 2006), and the same mechanism has been proposed for migration in *L. piscatorius* (Hislop *et al.*, 2000; Laurenson *et al.*, 2005). The dispersal of monkfish out of the southern MAB in spring (Figure 4) indicates that *L. americanus* can and do move substantial distances. These pieces of evidence paint an incomplete picture, but suggest that monkfish patterns of movement and distribution may be more dynamic than previously thought. A better understanding of the

spatial and temporal dynamics of monkfish distribution in the Northwest Atlantic, including Canadian waters, is therefore crucial to fishery management.

Lophius americanus shares life-history traits with other members of the genus, including apparently linear growth rates over a large part of the observed life history (e.g. Griffiths and Hecht, 1986; Landa *et al.*, 2001, 2008; García-Rodríguez *et al.*, 2005), shifts in sex ratios with length (Duarte *et al.*, 2001; García-Rodríguez *et al.*, 2005; Maartens and Booth, 2005; Ofstad and Laurenson, 2007), shorter longevity of males than females (Duarte *et al.*, 2001; García-Rodríguez *et al.*, 2005; Ofstad and Laurenson, 2007), and some degree of spatial segregation by sex (Yoneda *et al.*, 2001; García-Rodríguez *et al.*, 2005). Such commonalities are intriguing and suggest that advances in understanding the biology of one species could help in developing new perspectives for understanding the dynamics of related species.

Acknowledgements

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Monkfish Assessment Summary for 2007

by Northeast Data Poor Stocks Working Group

August 2007

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Monkfish Assessment Summary for 2007

by Northeast Data Poor Stocks Working Group

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Monkfish Assessment Summary for 2007

State of Stock

Based on existing biomass reference points in the Monkfish Fishery Management Plan, the resource would be considered overfished in both the northern and southern stock management areas (Figure 1). In the northern area, the most recent biomass index, based on the 2004-2006 NEFSC fall survey 3-yr average, is 1.1 kg per tow. This is lower than the current $B_{\text{threshold}}$ value for the northern management area (1.30 kg/tow), and also lower than B_{target} (2.60 kg/tow). In the southern area, the most recent biomass index, based on the 2004-2006 NEFSC fall survey 3-yr average, is 0.87 kg per tow. This is lower than the $B_{\text{threshold}}$ (0.92 kg/tow) and B_{target} (1.84 kg/tow) for the southern area.

New reference points were developed as part of the 2007 assessment, based on a revised yield-per-recruit analysis (using a revised value of M) and results of a length-tuned model that incorporates multiple survey indices and catch data. Based on these new reference points, monkfish in both management regions are not overfished and overfishing is not occurring (Figure 2). New estimates of $B_{\text{threshold}}$ are 65,200 mt of total biomass in the north and 96,400 mt of total biomass in the south. Estimates of B_{target} are 92,200 mt in the north and 122,500 mt in the south. Estimates of total biomass for 2006 are 118,700 mt in the north and 135,500 mt in the south, both of which are greater than their respective biomass targets. The existing overfishing threshold is based on F_{max} , and this was retained, although new values were estimated. The new, updated estimates of F_{max} are 0.31 per year in the north and 0.40 per year in the south. Estimates of current F (2006) are 0.09 per year in the north and 0.12 per year in the south, both of which are lower than their respective overfishing thresholds.

The development of a new analytic model (“SCALE”) for monkfish is a significant advance. However, the new assessment results are accompanied by substantial uncertainty, and therefore need to be viewed with caution. Reservations stem from: (a) input uncertainties (under-reported landings and unknown discards during the 1980s and incomplete understanding of key biological parameters such as age and growth, longevity, natural mortality and stock structure); (b) the shorter assessment time frame (1980-2006) than in previous assessments (1963-2006); and (c) the relatively recent development of the assessment model. Compared to the previous monkfish assessment approach, the new model integrates more types of information and incorporates temporal variation in fishery selectivity patterns. It was not possible to utilize all sources of information with the previous approach. (See “Special Comments” section below.)

As indicated by NEFSC survey recruit abundance indices for approximate ages 1 and 2 (inferred from lengths, Figure 3), the frequency of better than average recruitment events increased since the late 1980s in the northern area. Relatively strong year classes were

produced in 1993, 1999 and 2001. In the south, recruitment has varied without trend during 1963-2006; however, a relatively strong 2001 year class is apparent in the south (Figure 3).

The median size of monkfish in both regions declined as landings increased in the 1980s (Figure 4). Maximum sizes have also declined, from about 110 cm during the 1960s to 90 cm since the early 1990s in the north, and from about 100 cm in the 1960s to 75 cm since the 1990s in the south.

Projections

The SCALE (Statistical Catch-at-Length) assessment model was used to evaluate the impacts of TACs proposed in Framework 4 (5,000 mt in the north and 5,100 mt in the south), assuming long-term average recruitment. The results indicate that total biomass in both regions would continue to increase through 2009 and remain above B_{target} (Figure 5). These results did not incorporate any uncertainty associated with the stock size estimates for 2006. Further work is necessary to develop a complete forecasting approach.

Catches

Reported total landings (live weight) increased from an annual average of 2,500 mt in the 1970s to 8,700 mt in the 1980s, 23,000 mt in the 1990s, and 22,000 mt during 2000-2005. Total landings in 2006 declined to 14,500 mt, the lowest level since 1990, due to management regulations (Figure 6). Landings in the early part of the time series are thought to be under-reported. The accuracy of landings data has likely improved with mandatory reporting, which began in 1994. In the northern area, landings peaked in 2003 (15,000 mt), and have since declined to 6,700 mt in 2006. In the southern area, landings peaked in 1998 (19,300 mt), and declined to 7,800 mt in 2006.

During 1990-1999, 53% of USA monkfish landings were taken in otter trawls, 28% in sea scallop dredges, and 18% in gillnets. During 2000-2006, 53% of USA monkfish landings were taken in otter trawls, 7% in sea scallop dredges, 35% in gillnets, and 6% other gear. While trawl gear accounts for most of the landings in the northern area (75% during 2000-2006, Figure 7), gillnets now account for the majority of the landings in the southern area (54% during 2000-2006, Figure 7).

Estimated total discards of monkfish have ranged between 1,600 mt (1992) and 7,500 mt (2001) per year, with a long-term discard/kept ratio of 0.15 (1989-2006, north and south combined). Discard rates have been highest in the sea scallop dredge fisheries in the southern area, particularly since 2000, and lowest in the gillnet fisheries. Discard ratios and discard levels (mt) increased in the southern area after 2000 (overall discard/kept ratio for 2001-2006 =0.34).

Table 1. Catch and status table (weights in '000 mt): monkfish.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Max ¹	Min ¹	Mean ¹
USA Commercial landings													
Northern area	9.7	7.3	9.1	10.7	13.3	14.0	15.0	13.2	10.3	6.7	15.0	3.2	8.0
Southern area	18.5	19.3	16.1	10.1	10.0	8.9	11.1	8.0	8.8	7.8	19.3	3.7	9.4
Total	28.2	26.6	25.2	20.9	23.3	22.9	26.1	21.2	19.1	14.5	28.2	7.3	17.4
USA Commercial discards													
Northern area	1.3	0.9	0.8	1.0	2.9	1.4	1.3	0.9	0.9	0.5	2.9	0.4	1.1
Southern area	1.2	1.1	1.2	1.5	4.6	3.4	3.2	2.7	2.5	1.8	4.6	0.6	2.1
Total	2.5	2.0	2.0	2.5	7.5	4.8	4.5	3.6	3.4	2.3	7.5	1.6	3.2
Foreign landings ²	0.2	0.2	0.2	0.2	0.1	0.3	0.3	-	-	-	0.3	0.1	0.5
Total Catch	30.9	28.8	27.4	23.6	30.9	28.0	30.9	24.7	22.5	16.7	31.0	16.7	25.5
Northern area													
Biomass index ³	0.67	0.97	0.83	2.50	2.07	2.32	2.72	0.63	1.62	1.04	5.6	0.6	2.1
Southern area													
Biomass index ³	0.59	0.50	0.30	0.48	0.71	1.32	0.83	0.97	0.80	0.83	7.0	0.3	1.5
Northern area													
Total Biomass ⁴	65.3	69.1	78.3	88.3	97.9	103.0	108.3	110.1	112.9	118.7	65.2	127.3	92.2
Fishing Mortality rate (F) ⁴	0.32	0.20	0.20	0.22	0.30	0.30	0.32	0.23	0.16	0.09	0.43	0.05	0.19
Southern area													
Total Biomass ⁴	100.2	98.4	96.4	99.8	107.4	112.6	120.1	124.3	130.0	135.5	96.4	152.7	122.6
Fishing Mortality rate (F) ⁴	0.37	0.36	0.29	0.19	0.23	0.19	0.20	0.15	0.15	0.12	0.37	0.04	0.16

¹ Landings data based on 1980-2006 . Commercial fishery discard estimates not available before 1989; discard means from 1989-2006.

Biomass index time span is 1963-2006. Total biomass and F time span is 1980-2006.

² Foreign landings are for NAFO Areas 5 and 6. Foreign landings not available for 2004-2006.

³ NEFSC fall survey, stratified mean weight (kg) per tow.

⁴ Annual estimates from SCALE model ('000 mt for biomass).

Stock Distribution and Identification

The monkfish resource in US waters is distributed from the Gulf of Maine through Cape Hatteras, NC. Current management practice divides US waters into two regions north and south of Georges Bank to accommodate differences in fishery practices; however, there is no strong biological evidence (growth, maturity, and genetic information) of separate stocks.

Data and Assessment

Monkfish were last assessed at SAW-40 in November 2004. Data used in the current assessment include NEFSC research survey data, data from cooperative monkfish surveys conducted in 2001 and 2004, and commercial fishery data from (a) vessel trip reports, (b) dealer landings records, and (c) on-board fishery observers. The assessment assumed a natural

mortality rate (M) = 0.3; previous assessments used $M=0.2$. Fishing mortality rates were estimated from survey catch-per-tow-at-age from NEFSC research surveys, and using several length-based approaches (catch-survey analysis, statistical catch-at-length analysis (SCALE), length-based mortality, stage-based mortality). Although these methods were useful for exploratory data analysis, the only method deemed adequate for assessment was the SCALE model. The model could only be applied to the period from 1980 to the present, because the early (pre-1980) commercial catch data were too uncertain.

Biological Reference Points

Existing biological reference points (BRPs) for monkfish are from Framework 2 of the Fishery Management Plan for Monkfish (2003). For both management areas, the existing B_{target} was established as the median of the 3-year moving average of NEFSC fall survey biomass indices during 1965-1981. $F_{\text{threshold}}$ was set equal to F_{max} ($F=0.2$ per year). The Framework 2 overfishing definition did not include an F_{target} reference point.

New biomass reference points were developed as part of the new assessment, based on an updated age-based yield-per-recruit analysis, and results of the SCALE model, both of which assumed $M=0.3$ (previous assessments used $M=0.2$). The new B_{target} is the average of total biomass during the 1980 – 2006 period, estimated as 92,200 mt in the north and 122,500 mt in the south. The new $B_{\text{threshold}}$ is defined as the lowest value of total biomass in the assessment time series (1980 - 2006) from which the stock subsequently increased (termed “ B_{Loss} ”), estimated as 65,200 mt in the north and 96,400 mt in the south.

The existing overfishing threshold is based on F_{max} , and this was retained in the new assessment, although the value was updated. The revised estimates of F_{max} are 0.31 per year in the north and 0.40 per year in the south. The recommended F_{target} is F at 40% of maximum spawning potential ($F_{40\%}$), estimated to be 0.18 per year in the north and 0.31 per year in the south. $F_{40\%}$ was chosen to ensure some adequacy in spawning potential and because it has been used in managing other fisheries. The differences between areas in the $F_{40\%}$ estimates are due to different selectivity patterns of the predominant gears in the two regions (otter trawls in the north, large mesh gillnets in the south).

Monkfish is a data-poor species, and there are significant uncertainties associated with the assessment results. This should be considered when developing management measures.

Fishing Mortality

Previous assessment reviews (SAWs -31, -34 and -40) concluded that instantaneous fishing mortality rates (F) estimated from NEFSC research survey length frequency distributions were not sufficiently reliable to allow evaluation of current F with respect to reference points.

In the current assessment, fishing mortality in 2006, estimated using the SCALE assessment model (assuming $M=0.3$ per year), was $F=0.09$ per year in the north, and $F=0.12$ per year in the south. Fishing mortality has declined in both regions since 2003 (Figure 2).

Recruitment

Size-based indices of abundance indicate strong recruitment in the northern area in 1993, 1999 and 2001 (Figure 3). The strong recruitment in 1999 and 2001 led to rebuilding of stock biomass in the north. Recruitment has been stable in the south, with a strong year class produced in 2001 (Figure 3).

Stock Biomass

Total biomass in the northern region declined steadily from the early 1980s through the early 1990s, remained at a relatively low level during the 1990s, and then increased after 1999, reflecting strong recruitment and management efforts from 2000 onwards (Figure 2). Biomass in the north was estimated to be 118,700 mt in 2006. In the south, total biomass increased until the late 1980s and then declined during the 1990s. Since 2000, biomass has increased in the south, and was estimated to be 135,500 mt in 2006 (Figure 2).

Median body size of monkfish, in fall NEFSC bottom trawl surveys of the northern area, declined rapidly during the 1980s, but since 1990, has stabilized at a relatively small body size (20-40 cm recently, compared to 60-80 cm before 1982) (Figure 4). Maximum size has also declined, from approximately 100-120 cm to 80-100 cm. In the southern area, median size has been more variable, but shows a gradual decline over time (Figure 4), and maximum size has declined from around 100 cm before 1982 to 60-80 cm since 1990.

Special Comments

This assessment is uncertain for a number of reasons, including poor quality of some data and uncertainties in life history parameters. The assessment hinges critically on assumptions regarding growth, longevity, and natural mortality of monkfish, all of which are poorly known. In addition, commercial catches prior to 1993 are not well characterized. Model results are sensitive to the assumed value of natural mortality, revised in this assessment from 0.2 to 0.3 per year. This decision was based on the observed longevity of male and female fish in the resource; however, the actual lifespan of monkfish may be greater than that which has been thus far observed. Uncertainties in key life history parameters and historical catches are unlikely to be resolved in the short term.

In developing management alternatives, it should be recognized that monkfish is a “data-poor” species and this assessment has significant uncertainty. Landings on the order of 5,000 mt in

each management area (roughly the proposed TACs in FMP Framework Adjustment 4) are unlikely to result in a change in stock status, and should allow monkfish resources in both regions to increase.

The SCALE model used for assessment could only be applied to the period from 1980 to the present. Monkfish biomass indices in NEFSC surveys were approximately twice as high prior to 1980 than after this time. As such, the productivity of the resource may be higher than reflected in this assessment and thus, the possibility of attaining higher biomass levels in the future should not be discounted. Reconsideration of the newly proposed biomass reference points might thus be justified in the future.

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Figure 1. Trends in NEFSC fall survey biomass indices (3-year moving average) of monkfish relative to existing biomass overfishing definitions, in the northern and southern management regions.

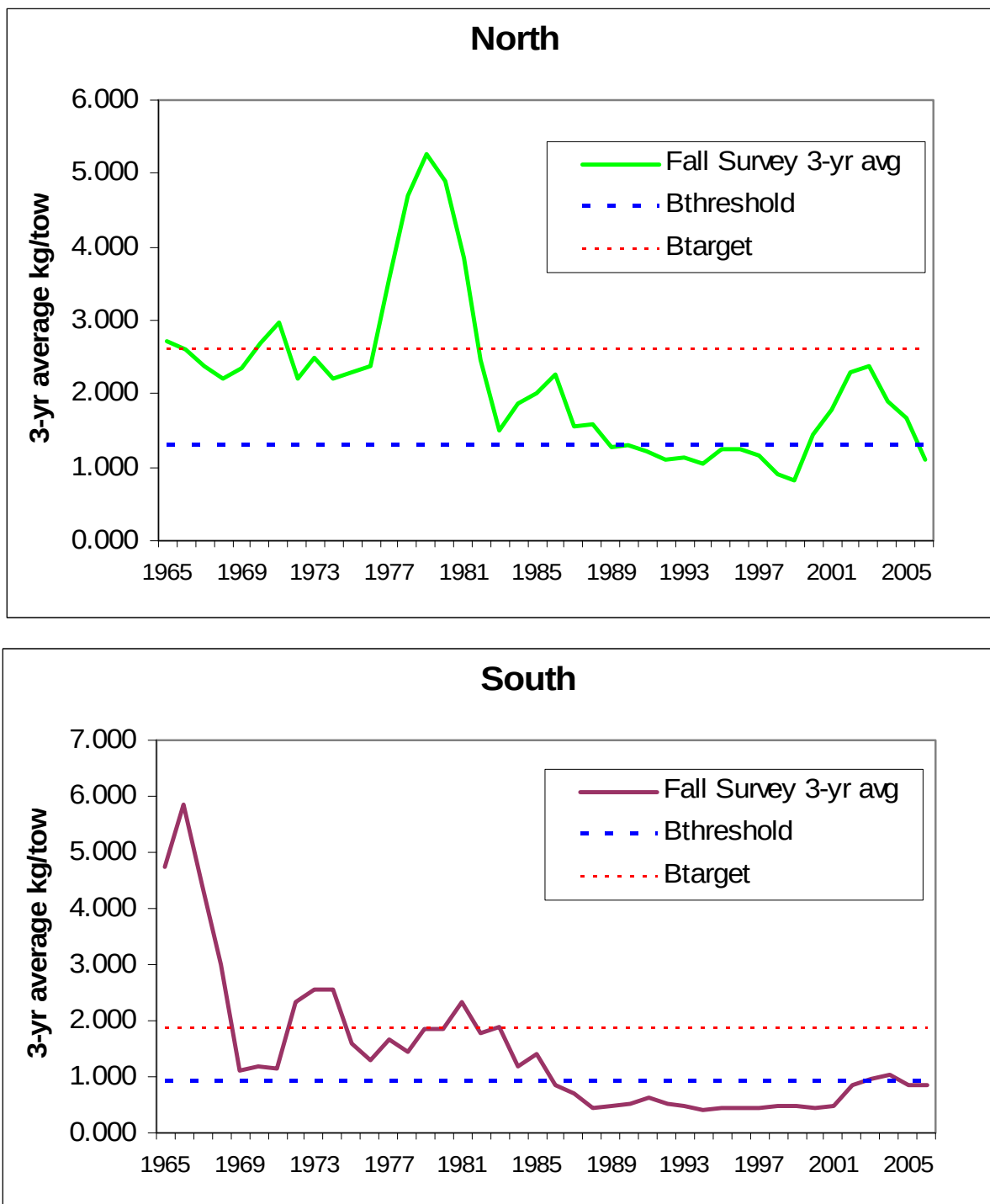


Figure 2. Trends in total biomass and fishing mortality rate (F), from the assessment model (SCALE), along with new (proposed) biological reference points for monkfish from the 2007 assessment. (A) northern management region, (B) southern management region.

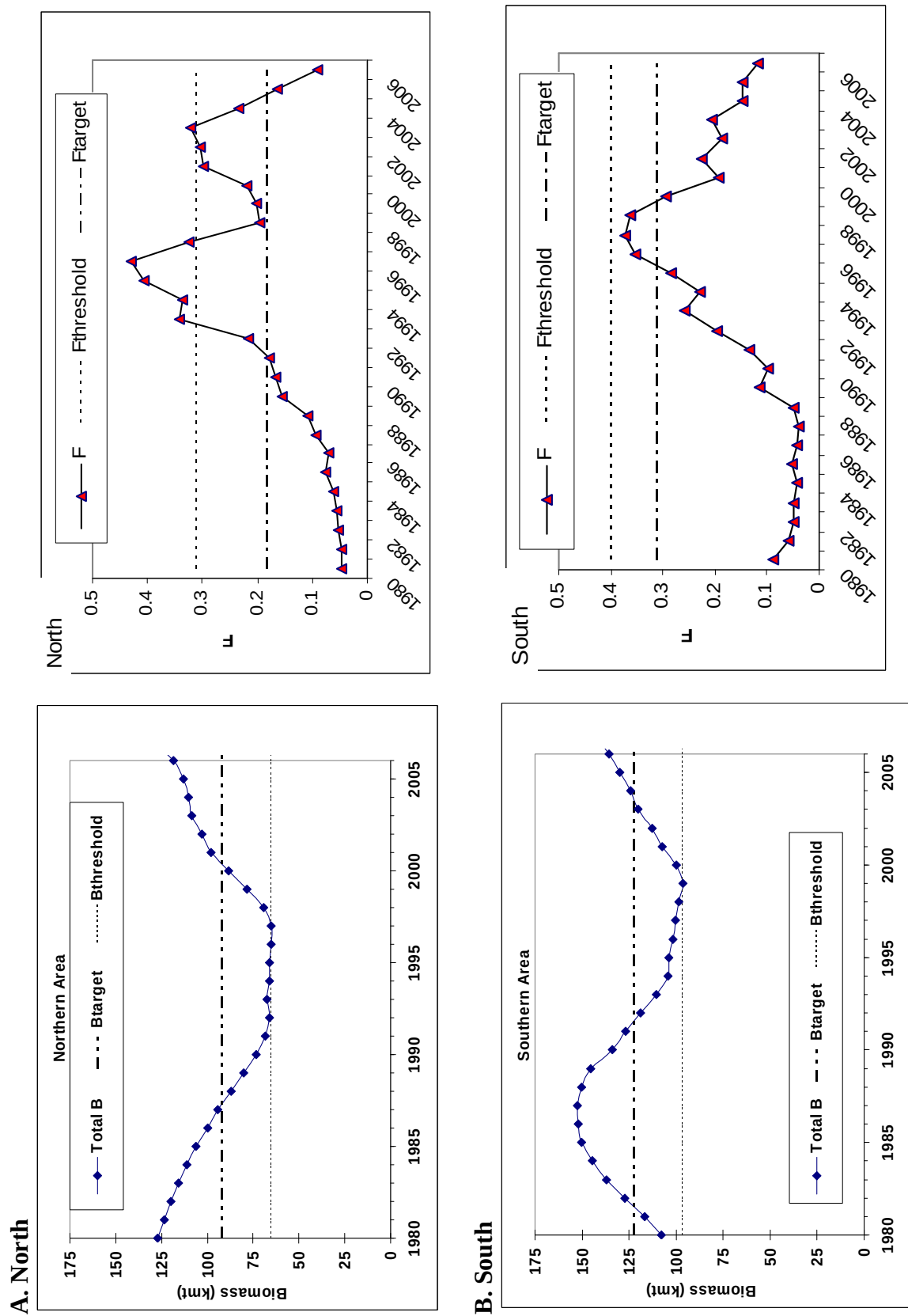


Figure 3. Recruitment indices (stratified mean number per tow) for monkfish from winter, spring, summer (shrimp, scallop), and autumn NEFSC surveys for the northern and southern management regions.

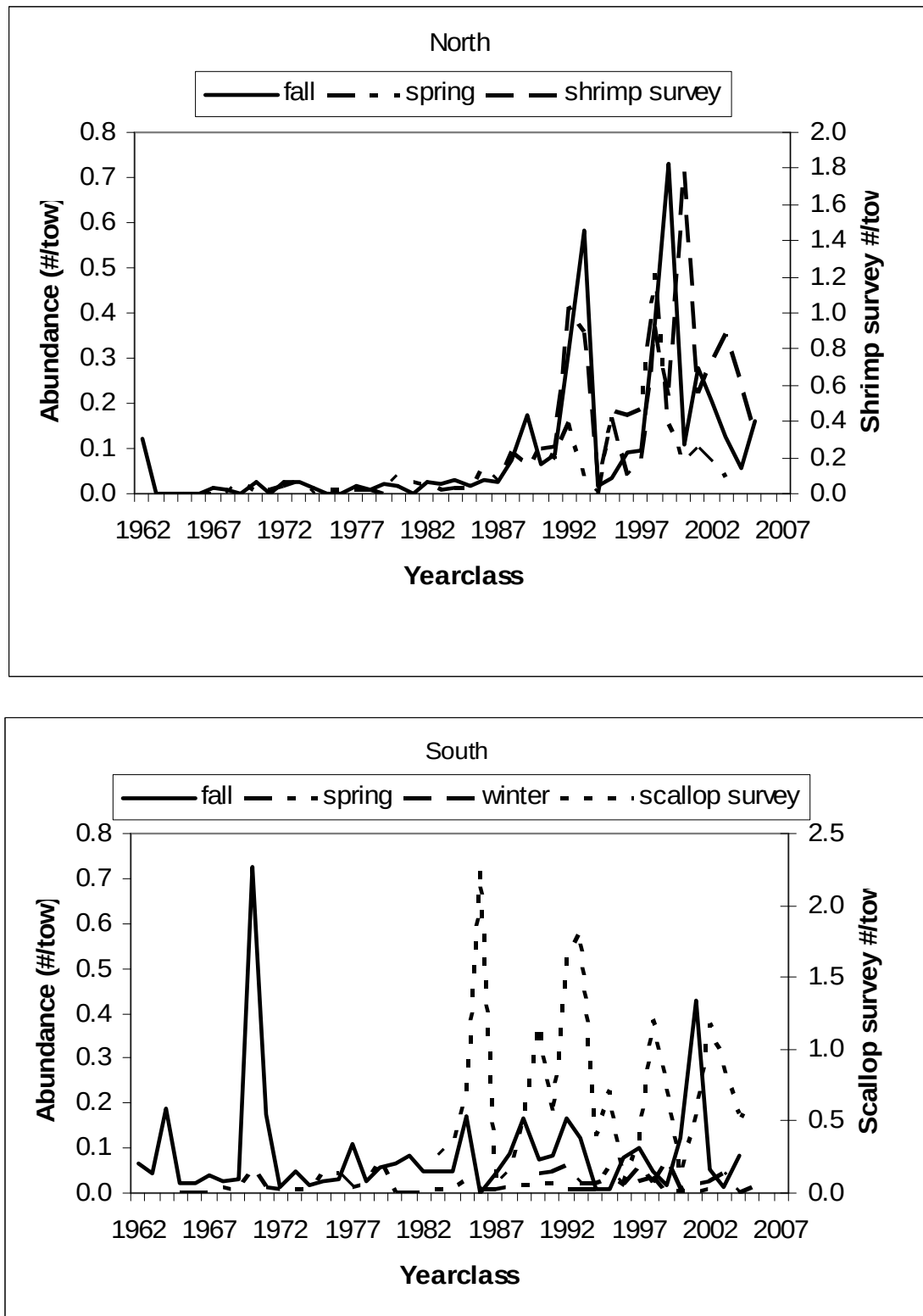
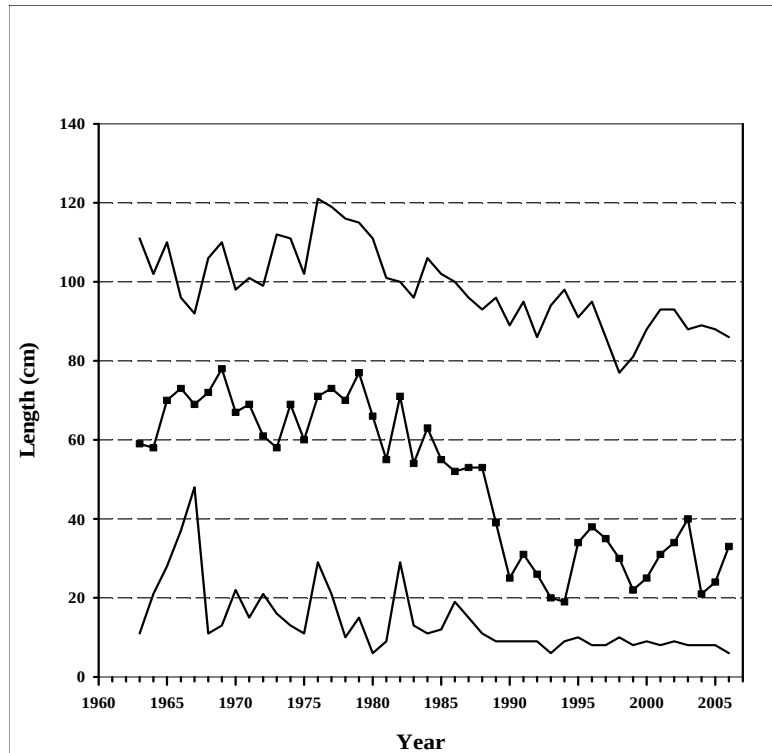


Figure 4. Body length of monkfish (minimum, median, maximum) over time in the NEFSC autumn bottom trawl survey. (A) northern management region and (B) southern management region.

A.



B.

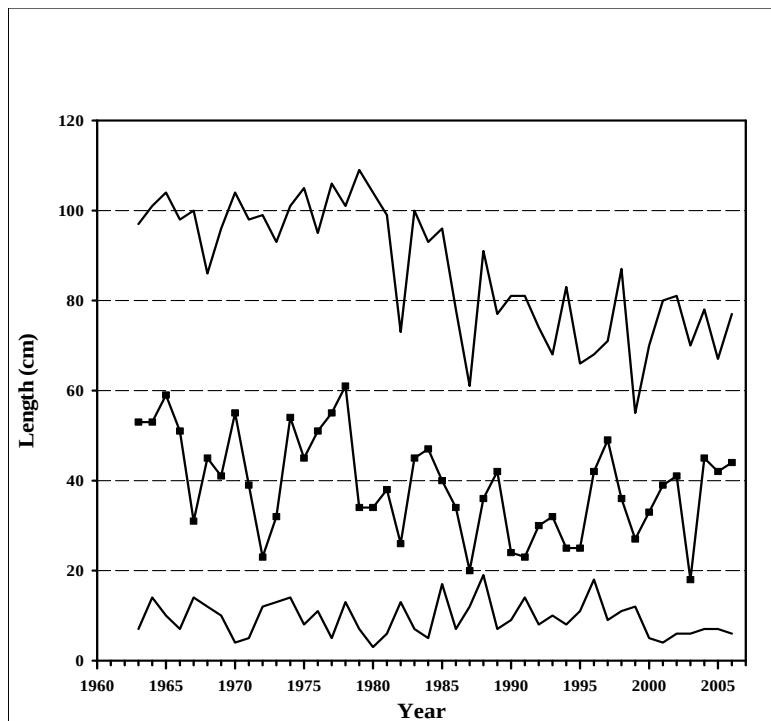


Figure 5. Projection of total biomass to 2009 based on the Statistical Catch-At-Length (SCALE) model in the northern and southern management regions.

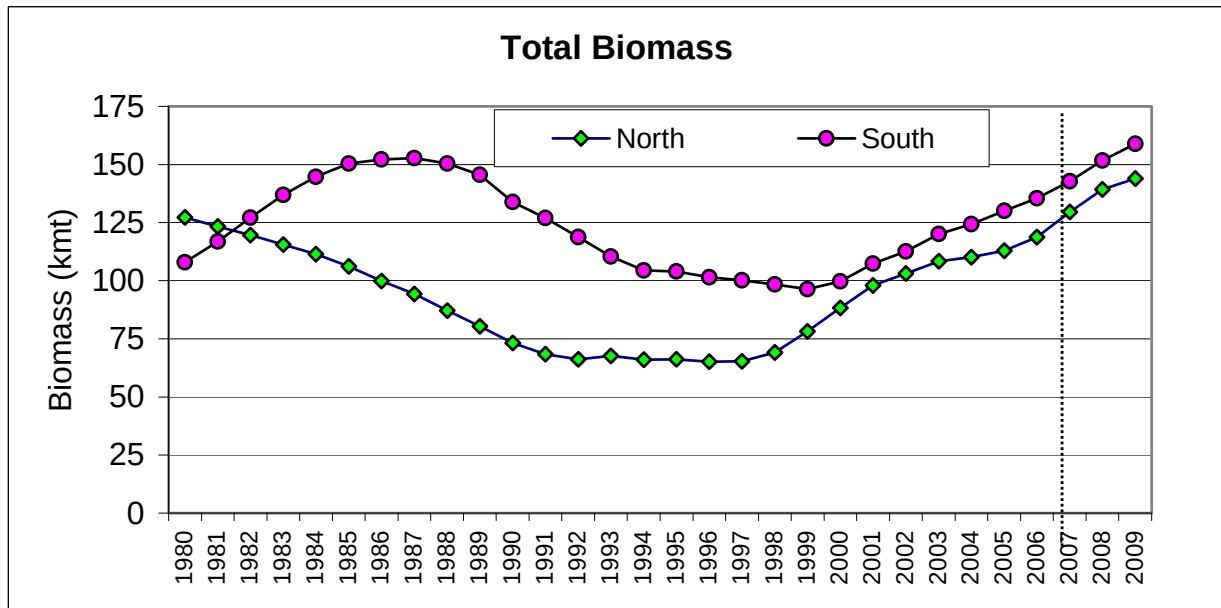


Figure 6. Monkfish commercial fishery landings, by management region and total, 1964-2006.

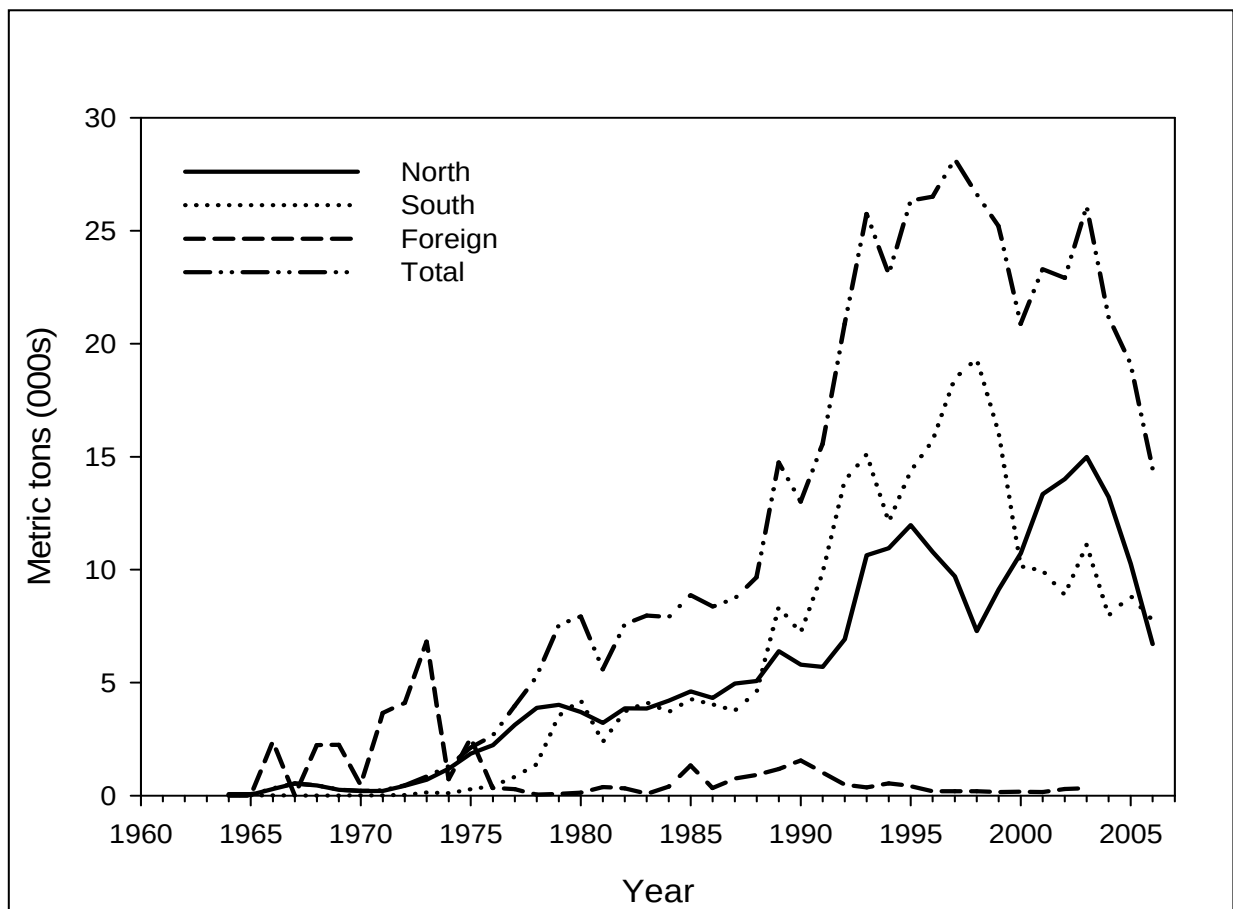
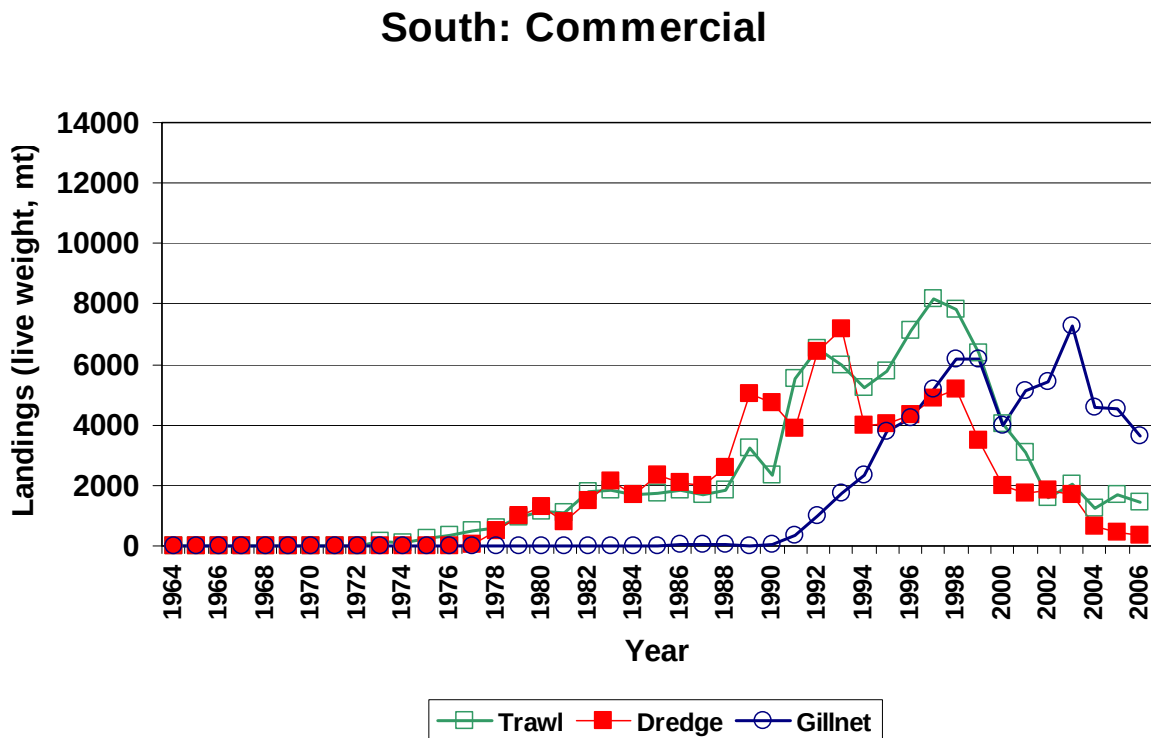
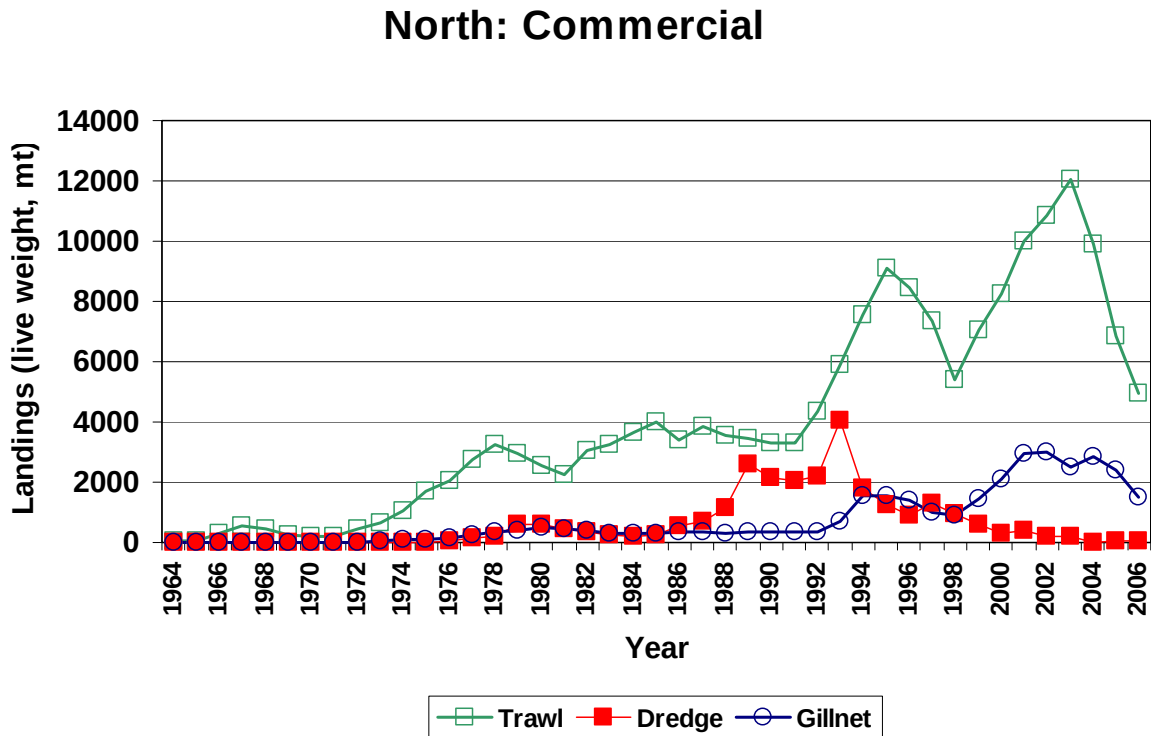


Figure 7. Monkfish commercial fishery landings by major gear type, northern and southern management regions.



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**MEDIA
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Publications and Reports of the Northeast Fisheries Science Center

The mission of NOAA's National Marine Fisheries Service (NMFS) is "stewardship of living marine resources for the benefit of the nation through their science-based conservation and management and promotion of the health of their environment." As the research arm of the NMFS's Northeast Region, the Northeast Fisheries Science Center (NEFSC) supports the NMFS mission by "conducting ecosystem-based research and assessments of living marine resources, with a focus on the Northeast Shelf, to promote the recovery and long-term sustainability of these resources and to generate social and economic opportunities and benefits from their use." Results of NEFSC research are largely reported in primary scientific media (*e.g.*, anonymously-peer-reviewed scientific journals). However, to assist itself in providing data, information, and advice to its constituents, the NEFSC occasionally releases its results in its own media. Currently, there are three such media:

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**Monkfish FMP
Amendment 5**

Appendix 5

Northeast Region Fishing Community Profiles

MONTAUK, NY¹

Community Profile²

PEOPLE AND PLACES

Regional orientation

Montauk (41.00°N, 71.57°W) is located in Suffolk County at the eastern tip of the South Fork of Long Island in New York. It is situated between the Atlantic Ocean to the south, and Block Island Sound to the north, about 20 miles off the Connecticut coast. The total area of Montauk is about 20mi², of which 2.3 mi² of it (11.5%) is water (USGS 2008).



Map 1. Location of Montauk, NY

Historical/Background

Montauk was originally inhabited by the Montauket tribe, who granted early settlers permission to pasture livestock here, essentially the only function of this area until the late 1800s. The owner of the Long Island Railroad extended the rail line here in 1895, hoping to develop Montauk “the first port of landing on the East Coast, from which goods and passengers would be transported to New York via the rail. While his grandiose vision was not fulfilled, the rail provided the necessary infrastructure for the transportation of seafood, and Montauk soon became the principal commercial fishing port on the East End. In the early 1900s, the railroad also brought recreational fishermen to the area from the city by the car-load aboard 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.”

‘Fishermen’s Special’, depositing them right at the dock where they could board sportfishing charter and party boats.” Montauk developed into a tourist destination around that time, and much of the tourism has catered to the sportfishing industry since (Montauk Sportfishing 2005).

Demographics³

According to Census 2000 data, Montauk had a total population of 3,851, up 28.3% from a reported population of 3,001 in 1990. Of this 2000 total, 51.3% were males and 48.7% were females. The median age was 39.3 years and 77.4% of the population was 21 years or older while 17.7% were 62 or older.

Montauk’s age structure (Figure 1) showed large variation between sexes in different age groups. It is important to note that the differences appear dramatic because this population is small. In the age group including people from 20 to 29 years old, there were more than twice as many males as females in Montauk. A similar pattern exists in the 30 to 39 year age group. This is probably because males come to the area to work after high school for demanding labor jobs such as landscaping and construction. Females do not traditionally seek after these types of jobs that are available in Montauk.

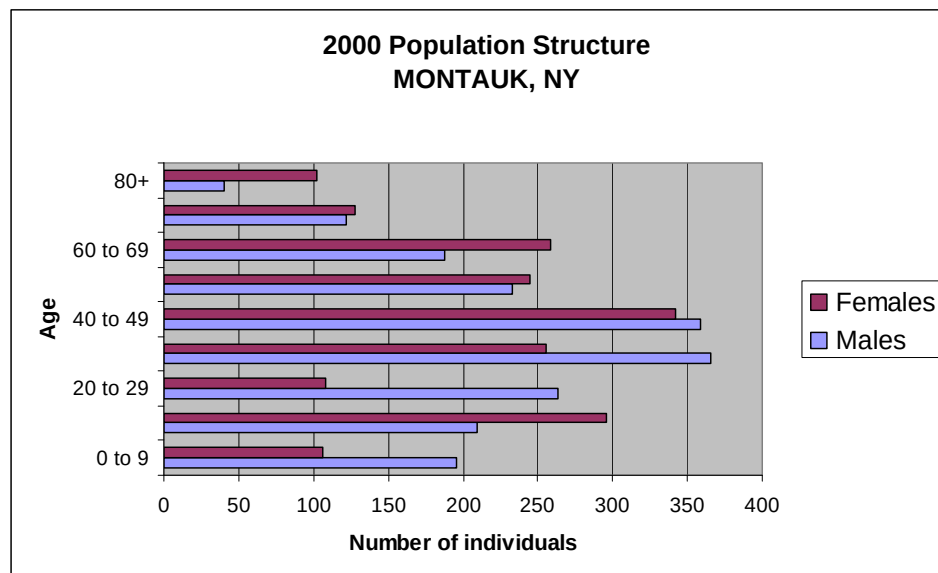


Figure 1. Montauk’s population structure by sex in 2000 (US Census Bureau 2000)

The majority of the population of Montauk was White (88.2%), with 0.9% of residents Black or African American, 0.1% Native American, 0.8% Asian, and none Pacific Islander or Hawaiian (Figure 2). A reported 23.9% of the population identified themselves as Hispanic/Latino (Figure 3). Residents linked their backgrounds to a number of different ancestries including: Irish (26.5%), German (17.3%) and Italian (13.1%). With regard to region of birth, 61.1% were born in New York, 11.1% were born in a different state and 27.0% were born outside of the U.S. (including 21.2% 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.

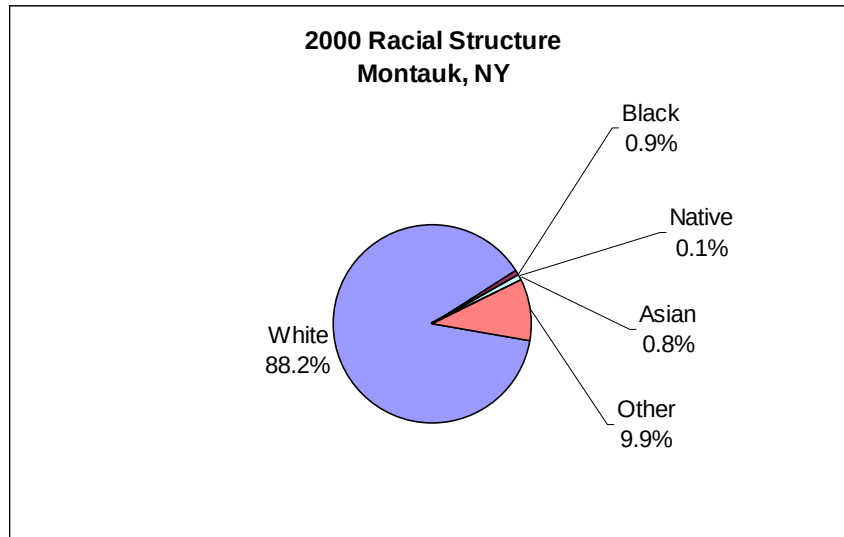


Figure 2. Racial Structure in 2000 (US Census Bureau 2000)

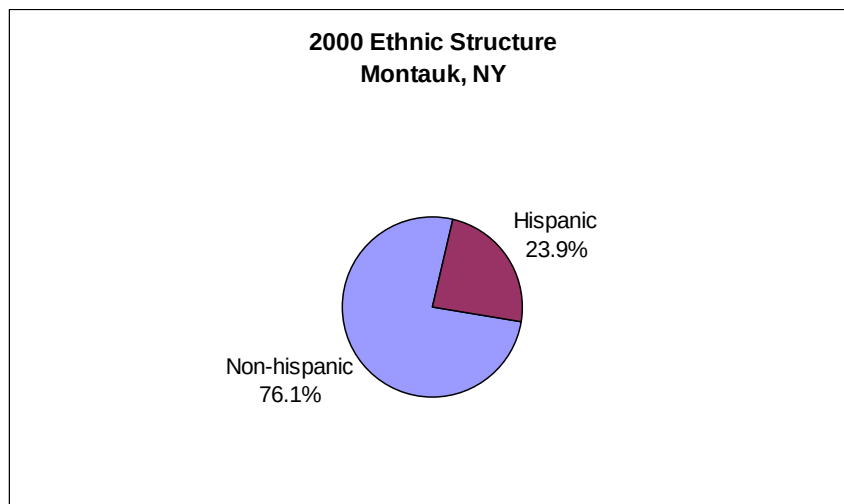


Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000)

For 69.7% of the population, only English was spoken in the home, leaving 30.3% in homes where a language other than English was spoken, including 15.6% of the population spoke English less than “very well” according to the 2000 Census.

Of the population 25 years and over, 84% were high school graduates or higher and 24.8% had a bachelor’s degree or higher. Again of the population 25 years and over, 7.6% did not reach ninth grade, 8.4% attended some high school but did not graduate, 31.9% completed high school, 19.6% had some college with no degree, 7.8% received an associate’s degree, 17.0% earned a bachelor’s degree, and 7.8% 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 (ARDA) in 2000, the religion with the highest number of congregations and adherents in Suffolk County was Catholic with 72 congregations and 734,147 adherents. Other prominent congregations in the county were Jewish (48 with 100,000 adherents), United Methodist (47 with 22,448 adherents), Episcopal (40 with 16,234 adherents),

Evangelical Lutheran Church (26 with 19,378 adherents), and Muslim (9 with 12,139 adherents). The total number of adherents to any religion was up 3.8% from 1990 (ARDA 2000).

Issues/Processes

Some fishermen are concerned about the accuracy of their assigned historical landings by species for fisheries (often used for promulgating new regulations), as the method used to land fish in New York varies from that in most other states. Called the “box method” it involves fish being boxed at sea, then landed at a consignment dock and from there shipped to Hunts Point Market in the Bronx, New York. Prior to the implementation of dealer electronic reporting NMFS port agents counted the number of boxes landed from each vessel and received a species breakdown from the dock manager (who did not open the boxes but rather based the breakdown on his knowledge of the vessel’s general fishing patterns). This system allowed greater potential for accidental misreporting. Now, the boxes are landed at the consignment dock and immediately shipped to Fulton, where the dealer opens the boxes and reports the landings. (Further, individual fishermen report using VTR, logbooks and other methods.)

While this method is more accurate in terms of the number and type of fish landed, it can still lead to another type of accidental reporting error. That is, landings are assigned to the incorrect state. This can have inequitable effects on states should an allocation scheme be developed, such as the one for summer flounder, that bases a state’s allocation on the landings of a particular species in that state.

The docks make money by charging \$10-12 per box (2007 prices) and by selling fuel. Catch limits and trip limits reduce the number of boxes to be shipped, and have made it very difficult for the docks to stay in business. New York is losing much of its infrastructure, and many of the docks have closed or changed hands in recent years.⁴

Inlet Seafood, the largest seafood packing operation in the state, recently expanded their facility to include a restaurant and convenience store, which met with considerable opposition from those living in the surrounding neighborhood, as residents were concerned about a resulting increase in traffic (Packer and McCarthy 2005). There are very strict zoning regulations in the town, which make it very difficult for any industry located on the waterfront to expand (McCay and Cieri 2000). There was also a bill proposed recently to limit beach access by vehicles in areas where coastal erosion is a problem, which would restrict access to many of the spots favored by surf casters in Montauk (Anonymous 2005a). There is also concern that recent regulations reducing allowable catches of certain species by recreational fishermen will have a negative impact on the party and charter fishing industry (Anonymous 2004).

The Long Island Power Authority is seeking permission to construct a wind farm off Long Island, a proposal which has met with opposition from commercial fishermen in Montauk and elsewhere on the island, because the turbines will block access to a highly productive squid fishery (Anonymous 2005b). The lobstermen working out of Montauk have seen their industry decline largely because of the prevalence of shell disease in lobsters taken from Long Island Sound (von Bubnoff 2005).

Cultural attributes

Montauk has several annual festivities that celebrate sport fishing and one that celebrates commercial fishing. The Blessing of the Montauk Fleet takes place in June. The Grand Slam Fishing Tournament has been in Montauk since 2002. The Harbor Festival at Sag Harbor, which

⁴ Personal Communication, Erik Braun, NMFS port agent, E. Hampton, NY, July 22, 2005

is located next to Montauk, is celebrated in September. There is also a Redbone Fishing Tournament, the Annual Striped Bass Derby (13th year in 2005), and the Annual Fall Festival (24th year in 2005), which includes shellfish related activities such as a clam chowder festival and clam shucking (Montauk Chamber of Commerce nd). There is also a monument in Montauk dedicated to over 100 commercial fishermen from the East End who have lost their lives at sea over the years (Oles 2005).

INFRASTRUCTURE

Current Economy

The majority of the employers in Montauk are seasonal and dependent on the tourist industry, including restaurants and hotels. Probably the largest seasonal employer is Gurney's Inn, which is a resort hotel, spa, and conference center, open year round, with 350 employees during the summer months.⁵ "With the exception of a few resorts and retail businesses, (Inlet Seafood) is one of the only full-time, year-round employers in Montauk, employing between four and six dock workers, a secretary, and a manager. All of the employees live in Montauk or East Hampton, but housing is a problem due to the high cost of living in the area. Labor turnover is low due to the ability of the dock to provide equitable wages and predictable pay throughout the year. The dock does compete with landscaping and construction companies for labor, especially from among immigrant populations. All of the dock workers are immigrants from Central and South America" (Oles 2005). Many of the fishermen have had to learn Spanish to communicate with the dock workers. This has been a dramatic change within the last 5 years, said NMFS port Agent Erik Braun. He also stated that there are no new fishermen starting up, and the children of fishermen, even those that are doing well, are not encouraged to enter into this business.⁶ The marinas here also employ a large number of people, including Montauk Marine Basin, with 21 employees during the summer months.⁷

According to the U.S. Census 2000⁸, 61.5% (1,944 individuals) of the total population 16 years of age and over were in the labor force (Figure 4), of which 7.7% were unemployed, none were in the Armed Forces, and 53.8% were employed.

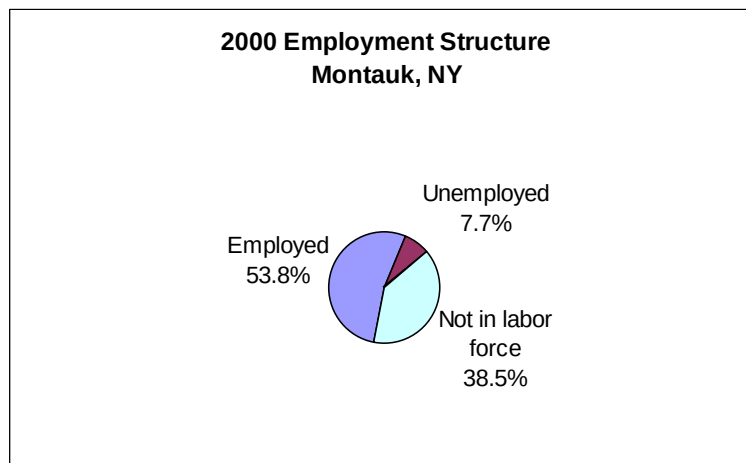


Figure 4. Employment Structure in 2000 (US Census Bureau 2000)

⁵ Personal communication, Gurney's Inn, 290 Old Montauk Highway, Montauk, NY 11954, July 19, 2005.

⁶ Personal Communication, Erik Braun, NMFS port agent, E. Hampton, NY, July 22, 2005

⁷ Personal communication, Montauk Marine Basin, 426 W. Lake Dr., Montauk, NY 11954, July 19, 2005

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.

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 103 positions or 6.1% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 314 positions or 18.5% of jobs. Arts, entertainment, recreation, accommodation and food services (20.3%), construction (18.5%) and retail trade (10.1%) were the primary industries.

Median household income in Montauk was \$42,329 (up 32.9% from \$23,875 in 1990 [US Census Bureau 1990]). For full-time year round workers, males made approximately 41.6% more per year than females.

The average family in Montauk consists of 2.90 persons. With respect to poverty, 8.3% of families (unchanged from 1990 [US Census Bureau 1990]) and 10.6% of individuals earned below the official U.S. Census poverty threshold. This threshold is \$8,794 for individuals and ranges from \$11,239-35,060 for families, depending on number of persons (2-9) (US Census Bureau 2000b). In 2000, 40.0% of all families (of any size) earned less than \$35,000 per year.

In 2000, Montauk had a total of 4,815 housing units of which 33.1% were occupied and 61.7% were detached one unit homes. Less than 10% (9.4%) of these homes were built before 1940. Mobile homes, boats, RVs, and vans accounted for 4.0% of the total housing units; 84.1% of detached units had between 2 and 9 rooms. In 2000, the median cost for a home in this area was \$290,400. Of vacant housing units, 62.9% were used for seasonal, recreational, or occasional use, while of occupied units 34.3% were renter occupied.

Government

Montauk is an unincorporated village within East Hampton Township. The Town Board runs the town (Town of East Hampton nd). The town was established in 1788. Although Montauk is not incorporated, there is one incorporated village situated within the East Hampton's borders, the Village of East Hampton, and part of a second village, Sag Harbor (Town of East Hampton nd).

Fishery involvement in government

The Town Board of East Hampton organized a “Fishing Committee” to represent the fishing industry’s interests in the development of the town’s comprehensive plan (Oles 2005).

Institutional

Fishing associations

The Long Island Commercial Fishing Association, located in Montauk, promotes commercial fishing throughout Long Island (Oles 2005). The Montauk Tilefish Association (MTA) “is a registered non-profit organization whose objective is to provide an organizational structure for making collective decisions for its members. “The MTA also provides member protection under the Fishermen’s Collective Marketing Act” (Oles 2005). Further, it “has worked to create and foster a fisheries management regime that is efficient and encourages resource stewardship at the local level. Other important outcomes from this collaboration include fresher fish for the market and a more stable operating environment” (Kitts et al. 2007).

The New York Seafood Council is the larger association representing fishing interests in the state. “The New York Seafood Council (NYSC) is an industry membership organization comprised of individuals, businesses, or organizations involved in the harvesting, processing, wholesale, distribution or sale of seafood products or services to the seafood industry in New York” (NYSC 2008).

Fishing assistance centers

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

Other fishing-related organizations

The Montauk Boatmen's and Captain's Association has a membership of over 100 captains of charter and party boats, and is one of the only organized, politically active charter boat associations in New York (Oles 2005). The Montauk Surfcasters Association is an organization of surf fishermen with over 900 members who wish to preserve their access to surf casting on the East End beaches of Long Island. They hold beach clean-ups and educate the public about the proper use of the beach (Montauk Surfcasters Association nd).

Physical

The fishing fleet is located in Lake Montauk, which opens to the north onto Block Island Sound. "Montauk is connected to points west via Route 27, and the Metropolitan Transportation Authority's Long Island Rail Road." Montauk Airport on East Lake Drive provides another mode of access to the area, but is strictly for small, private aircraft. On the easternmost tip of Long Island, Montauk is roughly 117 miles from New York City, but only about 20 miles by boat from New London, CT. There is one small airport in Montauk, and Long Island Islip MacArthur Airport is 67 miles away (MapQuest 2005). During the summers, a ferry service runs between Montauk and New London on weekends, daily to Block Island, RI, and occasionally to Martha's Vineyard (Viking Fleet nd). There are also three different ferry services that run between New London and nearby Sag Harbor (Easthampton.com nd). Most fish landed in Montauk is sold at the Fulton Fish Market in New York City (McCay and Cieri 2000).

The infrastructure needed for a commercial and sport fishing fleet is available in the village, including docks with off-loading facilities and other services that commercial fishermen need to land their catch (NYSC 2008). Montauk used to have five docks used by the commercial fishing industry for packing out fish, but they now only have two.⁹ Inlet Seafood Company, a corporation owned by six Montauk fishermen (NYSC 2008), includes a dock with unloading and other services, and is the largest fish packing facility in the state (Easthampton Star 2003). There is another dock servicing commercial fishermen, but this dock is barely surviving financially.¹⁰ There are also at least fourteen marinas used by the sportfishing industry (Oles 2005).

⁹ Personal Communication, Erik Braun, NMFS port agent, E. Hampton, NY, July 22, 2005

¹⁰ Personal Communication, Erik Braun, NMFS port agent, E. Hampton, NY, July 22, 2005

INVOLVEMENT IN NORTHEAST FISHERIES¹¹

Commercial

The village of Montauk is the largest fishing port in the state of New York. Montauk's main industry has been fishing since colonial times, and it continues to be an important part of its economy and traditions (Oles 2005). Montauk is the only port in New York still holding on to a commercial fishing industry.¹² Montauk's location naturally provides a large protected harbor on Lake Montauk and is close to important fishing grounds for both commercial and recreational fishermen.

Montauk has a very diverse fishery, using a number of different gear types and catching a variety of species; in 1998, there were a total of 90 species landed in Montauk (McCay and Cieri 2000). According to NMFS Landings Data, the top three valued fisheries in 2003 were Squid (\$2.3million), Golden Tilefish (\$2.1million), and Silver Hake (\$2.1million). There was a striking difference between the 2006 scallop landings value and the value for the 1997-2006 average. The 2006 values were over \$1.5 more than the nine year average (Table 1).

There used to be a number of longline vessels that fish out of Montauk, including 4-5 fishing for tilefish and up to 8 fishing for tuna and swordfish. Additionally, a number of longline vessels from elsewhere in New York State and New Jersey sometimes land their catch at Montauk (NYSC 2008). As of April 2007, there were 3 tilefish longliners in Montauk, one of which has bought out a fourth.¹³ There were also 35-40 trawlers based in Montauk, with a number of others that unload their catch here, and between 10-15 lobster vessels (NYSC 2008). The six owners of Inlet Seafood each own 1-2 trawlers.¹⁴ There are also a number of baymen working in the bays around Montauk catching clams, scallops, conch, eels, and crab as well as some that may fish for bluefish and striped bass. However, these baymen may move from one area to another depending on the season and fishery, and as a result may not be a part of the permanent fleet here (NYSC 2008).

The number of vessels home ported in Montauk showed a slightly decreasing trend between 1997 and 2006, while the number of vessels whose owner's city was Montauk showed a slight increasing trend over the same time period. Both the level of fishing home port and landed port also stayed fairly consistent, with a jump in 2005, but generally ranging from over \$9 million to over \$16 million for the 1997-2006 year period (Table 2).

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.

¹² Personal Communication, Erik Braun, NMFS port agent, E. Hampton, NY, July 22, 2005

¹³ José Montañez, MAFMC, April 18, 2007; NMFS landings data.

¹⁴ Personal Communication, Erik Braun, NMFS port agent, E. Hampton, NY, July 22, 2005

Landings by Species

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

	Average from 1997-2006	2006 only
Squid, Mackerel, Butterfish	3,146,620	3,640,565
Tilefish	2,366,489	2,942,310
Smallmesh Groundfish ¹⁵	2,028,574	1,198,711
Summer Flounder, Scup, Black Sea Bass	1,964,880	3,900,690
Other ¹⁶	1,652,214	1,379,958
Largemesh Groundfish ¹⁷	646,634	426,272
Lobster	585,627	613,598
Monkfish	373,486	643,731
Scallop	366,169	1,869,196
Bluefish	91,346	123,277
Skate	29,360	40,981
Dogfish	9,895	1,323
Herring	413	874
Surf Clams, Ocean Quahog	20	150
Salmon	9	90
Red Crab	5	CONFIDENTIAL

Vessels by Year¹⁸

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	165	89	9,222,288	13,556,572
1998	146	88	9,652,978	12,080,693
1999	158	98	10,863,508	12,124,707
2000	166	103	10,286,306	13,139,382
2001	160	103	12,302,916	13,231,619
2002	153	99	11,981,882	11,131,789
2003	152	104	12,405,663	11,033,366
2004	152	98	11,243,881	13,061,890
2005	144	96	14,104,902	16,475,642
2006	145	96	13,517,890	16,781,742

Vessels home ported = No. of permitted vessels with location as homeport

Vessels (owner's city) = No. of permitted vessels with location as owner residence¹⁹

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

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

¹⁶ "Other" species includes any species not accounted for in a federally managed group

¹⁷ Largemesh groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

¹⁸ 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.

¹⁹ 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

Montauk is the home port of a large charter and party boat fleet, and a major site of recreational fishing activity (Oles 2005). The facilities supporting the recreational fishing industry include six bait and tackle shops and 19 fishing guide and charter businesses.

According to one website there are at least 27 fishing charters in Montauk. Montauk has been called the “sport fishing capital of the world”, and even has its own magazine dedicated to Montauk sportfishing (Montauk Sportfishing nd). Between 2001- 2005, there were 122 charter and party vessels making 18,345 total trips registered in logbook data by charter and party vessels in Montauk carrying a total of 185,164 anglers.

Subsistence

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

FUTURE

The comprehensive plan for the town of East Hampton recognizes the importance of the commercial and recreational fishing industries here, and includes a commitment to supporting and retaining this traditional industry (Oles 2005). There has been discussion of developing a large wholesale seafood market on Long Island similar to the Fulton Fish Market so that fish caught here could be sold directly on Long Island rather than being shipped to New York City (NY Sea Grant nd).

Nonetheless Erik Braun, the port agent for this part of New York, was not hopeful about the future of the fishing industry. He said there are no new fishermen getting into commercial fishing, and that even those who have done well are not encouraging their children to get into the industry. Much of the fishing infrastructure is disappearing, and those who own docks can make much more by turning them into restaurants. Montauk is the one port still holding on to a commercial fishing industry, however.²⁰

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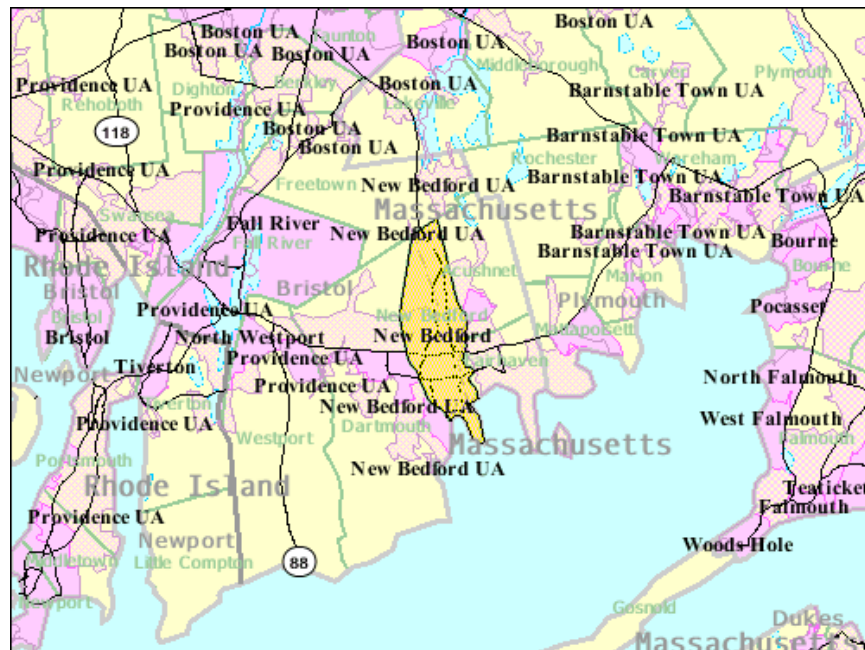
NEW BEDFORD, MA¹

Community Profile²

PEOPLE AND PLACES

Regional orientation

New Bedford is the fourth largest city in the commonwealth of Massachusetts. It is situated on Buzzards Bay, located in the southeastern section of the state in Bristol County. New Bedford is bordered by Dartmouth on the west, Freetown on the north, Fairhaven and Acushnet on the east, and Buzzards Bay on the south. The city is 54 miles south of Boston (State of Massachusetts 2006), and has a total area of 24 mi², of which about 4 mi² (16.2%) is water (USGS 2008).



Map 1. Location of New Bedford, MA (US Census Bureau 2000a)

Historical/Background

New Bedford, originally part of Dartmouth, was settled by Plymouth colonists in 1652. Fishermen established a community in 1760 and developed it into a small whaling port and shipbuilding center within five years. By the early 1800s, New Bedford had become one of the world's leading whaling ports. Over one half of the U.S. whaling fleet, which totaled more than 700 vessels, was registered in New Bedford by the mid 1800s. However, the discovery of petroleum greatly decreased the demand for sperm oil, bringing economic devastation to New

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."

Bedford and all other whaling ports in New England. The last whale ship sailed out of New Bedford in 1925 (New Bedford Whaling Museum 2006). In attempts to diversify its economy, the town manufactured textiles until the southeast cotton boom in the 1920s. Since then, New Bedford has continued to diversify, but the city is still a major commercial fishing port (USGenNet 2006). It consistently ranks in the top two ports in the U.S. for landed value.

Demographics³

According to Census 2000 data (US Census Bureau 2000a), New Bedford had a total population of 93,768, down 6.2% from a reported population of 99,922 in 1990 (US Census Bureau 1990). Of this 2000 total, 47.1% were males and 52.9% were females. The median age was 35.9 years and 71.2 % of the population was 21 years or older while 18.9% was 62 or older.

New Bedford's age structure (see Figure 1) by sex shows a higher number of females in each age group between 20 and over 80 years. There is no drop in the 20-29 age group (as occurs in many smaller fishing communities), which could be due to New Bedford's proximity to Boston (several universities), the local sailing school, the Northeast Maritime Institute, or a large number of employment opportunities.

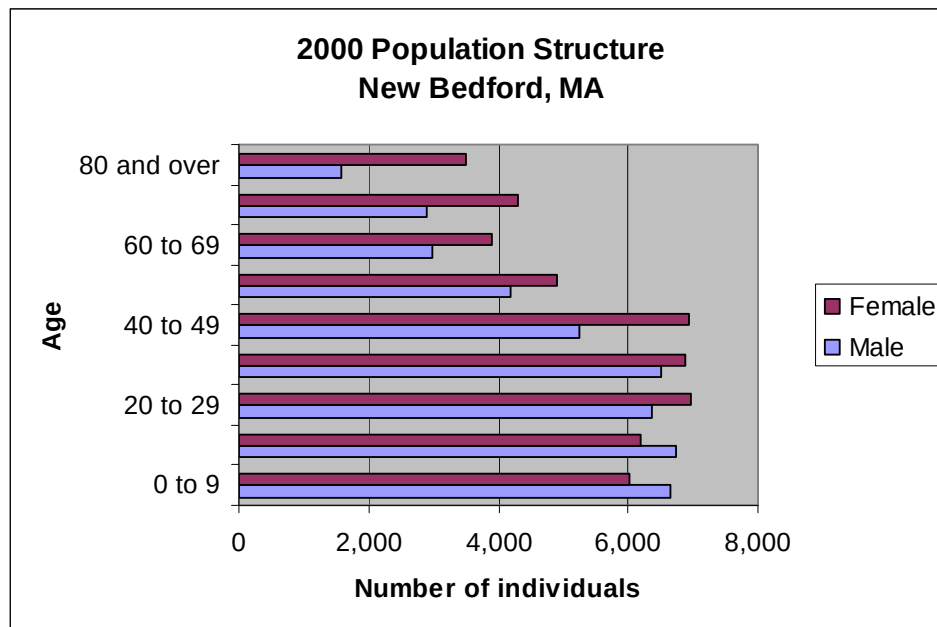


Figure 1. New Bedford's population structure by sex in 2000 (US Census Bureau 2000a)

The majority of the population was white (83.8%), with 4.7% of residents black or African American, 0.7% Asian, 0.6% Native American, and 0.05% Pacific Islander or Hawaiian (see Figure 2). Only 10.2% of the population identified themselves as Hispanic/Latino (see Figure 3). (One community member noted that this number is probably much higher, but many undocumented immigrants do not respond to the Census. He noted that many Hispanics/Latinos

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.

work on fishing vessels and in processing plants.)⁴ Residents linked their backgrounds to a number of different ancestries including: Portuguese (38.6%), French (9.1%), and Sub-Saharan African (8.2%) (the vast majority of which are Cape Verdean) . With regard to region of birth, 67.8% were born in Massachusetts, 8.0% were born in a different state, and 19.6% were born outside of the U.S. (including 9.2% who were not United States citizens).

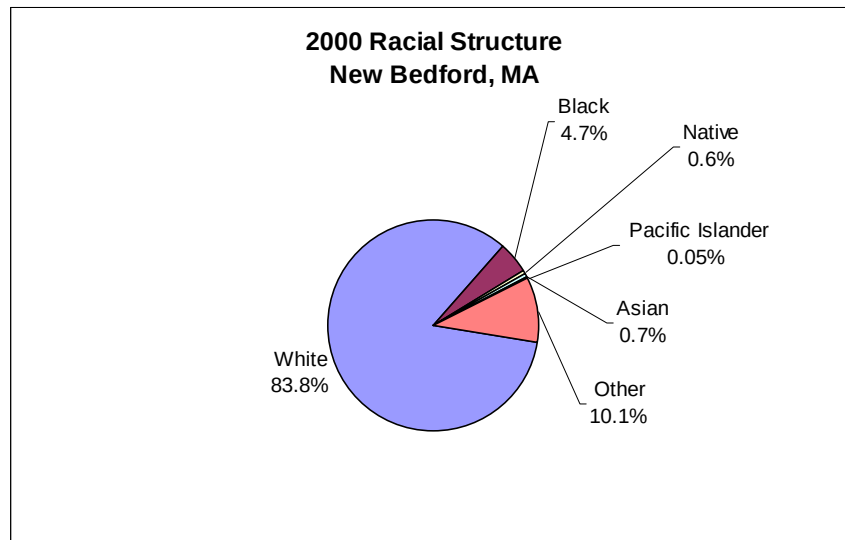


Figure 2. Racial Structure in 2000 (US Census Bureau 2000a)

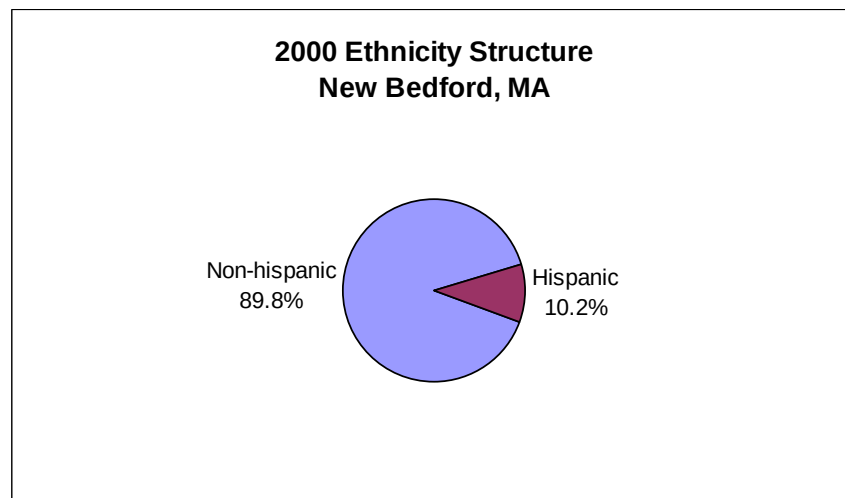


Figure 3. Ethnic structure in 2000 (US Census Bureau 2000a)

For 62.2% of the population, only English was spoken in the home, leaving 37.8% in homes where a language other than English was spoken, including 17.3% of the population who spoke English less than “very well” according to the 2000 Census.

Of the population 25 years and over, 57.6% were high school graduates or higher and 10.7% had a bachelor’s degree or higher. Again of the population 25 years and over, 24.3% did

⁴ Profile review comment, Rodney Avila, former commercial fisherman, 369 Belair St., New Bedford, MA 02745, August 14, 2007

not reach ninth grade, 18.1% attended some high school but did not graduate, 27.7% completed high school, 13.9% had some college with no degree, 5.3% received an associate's degree, 7.5% earned a bachelor's degree, and 3.2% received either a graduate or professional degree.

Although 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 the Bristol County was Catholic with 85 congregations and 268,434 adherents. Other prominent congregations in the county were United Methodist (17 with 3,583 adherents), United Church of Christ (19 with 5,728 adherents) and Episcopal (18 with 5,100 adherents). The total number of adherents to any religion was up 9.4% from 1990 (ARDA 2000).

Issues/Processes

New Bedford struggles with highly contaminated harbor water and harbor sediment. New Bedford Harbor is contaminated with metals and organic compounds, including polychlorinated biphenyls (PCBs) (US Department of Commerce 2002). Because of the high concentrations of PCBs in the sediment, New Bedford Harbor was listed by the U.S. EPA as a Superfund site in 1982 and cleanup is underway. Significant levels of these pollutants have accumulated in sediments, water, fish, lobsters, and shellfish in the Harbor and adjacent areas. New Bedford is also the only major municipality in the Buzzards Bay area to discharge significant amounts of untreated combined sewage, industrial waste, and storm water from combined sewer overflows (BBNEP 1991).

The pollution problem not only affects human health and the ecosystem, but has a large impact on New Bedford's economy. For example, closures of fishing areas in the harbor have caused economic losses in the millions for the quahog landings alone. Closure of the lobster fishery resulted in an estimated loss of \$250,000 per year and the finfish industry and recreational fishing have also been negatively affected (Comprehensive Conservation and Management Plan 1991). In addition to contaminated harbor sediments, numerous brownfield properties are located in proximity to the port, especially on the New Bedford side (US Department of Commerce 2002).

Another issue in New Bedford is in regards to fishing crew members. According to a 2002 newspaper article, fishing vessel owners complain of a shortage of crewmen. They attribute this scarcity to low unemployment rates that have kept laborers from the docks. Many choose to bypass work that government statistics place among the most dangerous jobs in the country. Many crewmembers are either inexperienced or come from foreign countries. Both present safety issues, according to one fisherman, because inexperienced crew get hurt more often and foreign crew have significant language barriers that impede communication. Additionally, the article noted, those willing to work sometimes struggle with alcohol and drug dependency. Ship captains have applicants roll up their shirt sleeves to check for traces of heroin use (Paul NC, Scriptor C 2002). However, a community member and former fisherman commented that this is not normal procedure; most of the drug problems in the city come from crew members on out-of-town boats. He also noted that with a decrease in days at sea vessels are allowed to fish, crew members have been more steady, most working on more than one vessel owned by a single owner.⁵

⁵ Profile review comment, Rodney Avila, former commercial fisherman, 369 Belair St., New Bedford, MA 02745, August 14, 2007

Cultural attributes

In September 2007, New Bedford hosted the fourth annual Working Waterfront Festival, dedicated to the commercial fishing industry in New Bedford. This festival is a chance for the commercial fishing industry to educate the public about its role in the community and in providing seafood to consumers, through boat tours, demonstrations, and contests. The annual Blessing of the Fleet is held as part of the Working Waterfront Festival <http://www.workingwaterfrontfestival.org/>.

The New Bedford community celebrates its maritime history with a culmination of activities in the New Bedford Summerfest. The Summerfest is held annually in July in conjunction with the New Bedford State Pier and the New Bedford National Whaling Historical Park. Summerfest also includes the Cape Verdean Recognition Day Parade and the Cape Verdean American Family Festival <http://www.newbedfordsummerfest.com/>.

The community has taken an active role in the remembrance of its maritime heritage. The Azorean Maritime Heritage Society, the New Bedford Whaling Museum and the New Bedford Whaling National Historical Park have cooperated to raise awareness of the maritime history of the Azorean community on both sides of the Atlantic.

The [New Bedford Whaling Museum](#) was established by the Old Dartmouth Historical Society in 1907 to tell the story of American whaling and to describe the role that New Bedford played as the whaling capital of the world in the nineteenth century. Today the whaling Museum is the largest museum in America devoted to the history of the American whaling industry and its greatest port.

The New Bedford Whaling National Historical Park was created in 1996 and focuses in the city's whaling history. The park covers 13 city blocks and includes a visitor center, the New Bedford Whaling Museum, and the Rotch-Jones-Duff House and Garden Museum (US Department of the Interior 2006).

Every summer, the City of New Bedford offers a free monthly cultural night in downtown called "[Aha!](#)" (Art, History & Architecture). Started in 1999, the series includes music, open galleries, vendors, and music on the second Thursday of each month.

INFRASTRUCTURE

Current Economy

The New Bedford Economic Development Council (NBEDC), Inc. was established in 1998 to improve the city's economic development by helping to attract business and job opportunities to the city. The NBEDC also provides small business funds and offers financial support (in loans) for new businesses or those who want to expand. One of their loan funds is specifically targeted at fishermen (NBEDC 2006).

With a federal grant and local funds, the city and the Harbor Development Council (HDC) in 2005 began construction on a \$1 million, 8,500-square foot passenger terminal at State Pier to support passenger ferry service. The HDC received a federal grant for more than \$700,000 to construct the passenger terminal and to improve berthing at the New Bedford Ferry Terminal (NBEDC 2006). The city has also redeveloped Standard Times Field, a brownfield site, into an industrial park targeted towards the seafood industry; a number of seafood processors have relocated to this site.⁶

⁶ Profile review comment, Dave Janik, Massachusetts Department of Coastal Zone Management, South Coast CZM Regional Coordinator, 2870 Cranberry Highway, Wareham, MA 02538, October 5, 2007

According to a 1993 survey, major employers that provided over 100 jobs in New Bedford included the following businesses with the number of employees in parentheses: Acushnet Company (1,600), Cliftex (1,400 – now out of business⁷), Aerovox (800), Calish Clothing (750), and Polaroid (465) (City of New Bedford 2006). “According to a study conducted in July 1998, harbor-related businesses account for an estimated \$671 million in sales and 3,700 jobs within the local area. The core seafood industry, comprising harvesting vessels and dealers/processors, contributes nearly \$609 million in sales and 2,600 local jobs (State of Massachusetts 2002).” New Bedford accounts for 45% of employment in the seafood harvesting sector in the state of Massachusetts (State of Massachusetts 2002).

According to the U.S. Census 2000⁸, 57.7% (42,308 individuals) of the total population 16 years of age and over were in the labor force (see Figure 4), of which 5.0% were unemployed, 0.2% were in the Armed Forces, and 52.5% were employed.

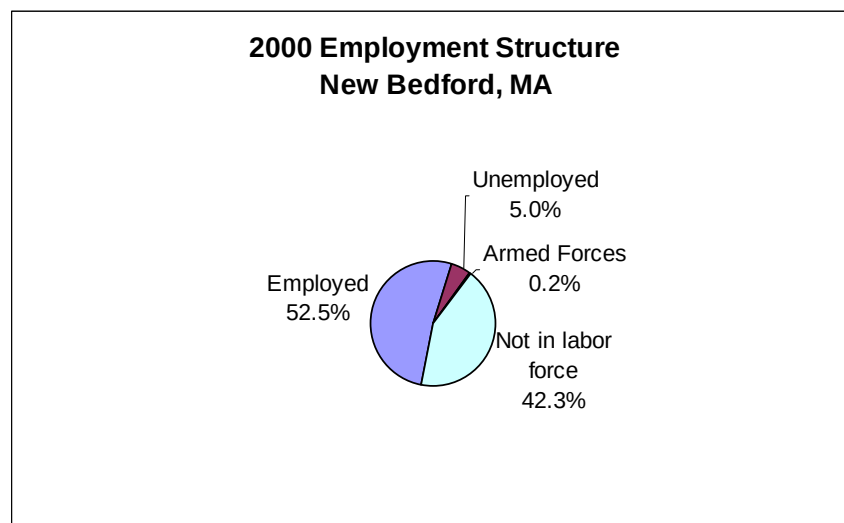


Figure 4. Employment structure in 2000 (US Census Bureau 2000a)

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 407 or 1.1% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 1,485 or 3.9% of the labor force. Educational, health and social services (20.9%), manufacturing (20.7%), retail trade (12.1%), entertainment, recreation, accommodation and food services (7.4%), and construction (7.1%) were the primary industries.

Median household income in New Bedford was \$27,569 (up 21.7% from \$22,647 in 1990 (US Census Bureau 1990a)) and median per capita income was \$15,602. For full-time year round workers, males made approximately 29.0% more per year than females.

The average family in New Bedford consisted of 3.01 persons. With respect to poverty, 17.3% of families (up from 16.8% in 1990 (US Census Bureau 1990a)) and 20.2% of individuals earned 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)

⁷ Profile review comment, Rodney Avila, former commercial fisherman, 369 Belair St., New Bedford, MA 02745, August 14, 2007

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.

(US Census Bureau 2000b). In 2000, 48.8% of all families (of any size) earned less than \$35,000 per year.

In 2000, New Bedford had a total of 41,511 housing units of which 92.0% were occupied and 30.2% were detached one unit homes. Approximately half (49.9%) of these homes were built before 1940. Mobile homes in this area accounted for 0.3% of the total housing units; 95.0% of detached units had between 2 and 9 rooms. In 2000, the median cost for a home in this area was \$113,500. Of vacant housing units, 0.3% were used for seasonal, recreational, or occasional use. Of occupied units 56.2% were renter occupied.

Government

New Bedford was incorporated as a town in 1787 and as a city in 1847. The city of New Bedford has a Mayor and a City Council (City of New Bedford 2006).

Fishery involvement in government

The Harbor Development Commission includes representatives from the fish-processing and harvest sectors of the industry. NOAA Fisheries, [Fisheries Statistics Office](#), has two port agents based in New Bedford. Port agents sample fish landings and provide a ‘finger-on-the-pulse’ of their respective fishing communities. “The HDC has jurisdiction over all the waters in New Bedford, including the entire coastline of the peninsula, the harbor, and north along the Acushnet River to the city’s boundaries. The HDC manages city property on the waterfront, including Homer’s, Leonard’s, Steamship, Coal Pocket and Fisherman’s Wharves and a 198-slip recreational marina at Pope’s Island. The HDC also assigns moorings and enforces rules regarding use of piers, wharves, and adjacent parking areas under its jurisdiction. The Harbormaster acts as an agent of the HDC (City of New Bedford 2006).” New Bedford also has a Shellfish Warden.

Institutional

Fishing associations

There are a variety of fishing associations which aid the fishing industry in New Bedford, including the American Dogfish Association, the American Scallop Association, and the Commercial Anglers Association. New Bedford also is home to a Fishermen’s Wives Association which began in the early 1960s. Additionally, New Bedford has the Offshore Mariner’s Wives Association which includes a handful of participants that organize the “Blessing of the Fleet” (Hall-Arber et al. 2001).

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

[Shore Support](#) has been the primary fishing assistance center in New Bedford since 2000 (Hall-Arber et al. 2001). Their mission is “to identify and organize the rank and file fishermen in the port of New Bedford, to keep fishing families aware of retraining opportunities and human services when necessary, and to create a liaison between the rank and file fishermen and the regulatory system.” The New Bedford Fishermen and Families Assistance Center, formerly

active here, has closed its doors, and the Trawlers Survival Fund is no longer active. The Industry Survival Fund, which deals with the scallop industry, is active in New Bedford at present.⁹

Other fishing related organizations

There are several other fishing related organizations and associations that are vital to the fishing industry such as the Fisheries' Survival Fund (Fairhaven), the New Bedford Fishermen's Union, the New Bedford Seafood Coalition, and the New Bedford Seafood Council (Hall-Arber 2001).

The Community Economic Development Center is a non-profit organization vested in the economic development of the local community. The organization is unique in that it is involved with fisheries management. The center is currently engaged in a research project to better understand the employment status in the fishing industry. The center is a liaison for migrant workers and other newcomers to the community to have access to the benefits provided by the city. In the past the center at one time had a re-training program for displaced fishermen to move into aquaculture.

The [School for Marine Science and Technology](#) (SMAST), part of the University of Massachusetts at Dartmouth, is based in New Bedford. SMAST is a graduate school offering interdisciplinary degrees in ocean and marine science, including fisheries science and management.

Physical

Interstate 195 and State routes 24 and 140 provide access to the airports, ports, and facilities of Providence and Boston. In addition to being only about 50 miles from Boston, New Bedford is located 33 miles southeast of Providence, RI and approximately 208 miles from New York City. "New Bedford Harbor is at the mouth of the Acushnet River, which flows south into Buzzards Bay and the Atlantic Ocean. The entrance to the harbor is nine nautical miles from the beginning of the Cape Cod Canal shipping channel. The Port of New Bedford is a deep-water port with depths of 30 feet. The harbor features a hurricane barrier that stretches across the water from the south end of New Bedford to the Town of Fairhaven. The barrier's 150-foot opening is closed during hurricane conditions and coastal storms. As a result, the harbor is one of the safest havens on the eastern seaboard (City of New Bedford 2006)."

The Consolidated Rail Corporation (Conrail) provides services into New Bedford. The New Bedford Municipal Airport is located 2 miles NW of the city. Cape Air, located in Hyannis on Cape Cod, offers flights to and from New Bedford, as does Bayside Air Charter (located at the New Bedford Regional Airport). Ferry service to the island of Martha's Vineyard is available daily (year-round) from the State Pier in the city. Whaling City Harbor Tours & Water Taxi Service offers mooring-to-dock services in the summer months to recreational boaters. They also offer tours of the commercial fishing fleet and the lighthouse, also in the summer season. Intercity bus service is offered by American Eagle Motor Coach, Inc. and Bonanza Bus Lines to Cape Cod, Providence, Newport, and Boston. [Southeastern Regional Transit Authority](#) offers local bus service throughout the New Bedford area. The Massachusetts Bay Transportation Authority has been considering extending the commuter rail service to New Bedford from Boston. In the summer of 2007, a pilot fast ferry service started between New

⁹ Profile review comment, Rodney Avila, former commercial fisherman, 369 Belair St., New Bedford, MA 02745, August 14, 2007

Bedford and Woods Hole; the service ran for four months, and will be evaluated by city officials to determine whether it will continue (Urbon 2007).

There are several marinas in New Bedford and nearby Fairhaven, in addition to the major commercial docks. The HDC operates the 198-slip public marina at Pope's Island, which is located within the Hurricane Barrier in the upper harbor east of the New Bedford/Fairhaven Bridge. Pope's Island Marina is situated along the south side of the island and receives financial assistance from the Massachusetts Department of Conservation and Recreation. Services include on-site laundry facilities, pump out facilities, shower rooms, and conference room, with dockside water and electricity available <http://www.ci.newbedford.ma.us/PortofNewBedford/GettingAround/PopesIsland.html>. There are more than 950 recreational boat slips in New Bedford/Fairhaven Harbor (City of New Bedford 2006).

INVOLVEMENT IN NORTHEAST FISHERIES¹⁰

Commercial

In the 1980s, fishermen experienced high landings and bought new boats due to a booming fishing industry. In the 1990s, however, due to exhausted fish stocks, the fishing industry experienced a dramatic decrease in groundfish catches and a subsequent vessel buyback program, and strict federal regulations in attempts to rebuild the depleted fish stocks. A new decade brought more changes for the fishing industry (Kennedy 2001). By 2000 and 2001 New Bedford was the highest value port in the U.S. (generating \$150.5 million in dockside revenue) (Plante 2002).

The range of species landed in New Bedford is quite diverse and can be separated by State and Federal (see Table 1) permits, however this profile displays only Federal landings data. It is important to note that according to State permits, the largest landings were of cod, haddock, and lobster, and with impressive representation by a number of different species. According to the federal commercial landings data, New Bedford's most successful fishery in the past ten years has been scallops, followed by groundfish. Scallops were worth significantly more in 2006 than the 1997-2006 average values, and the total value of landings for New Bedford generally increased over the same time period. The value of groundfish in 2006, however, was considerably less than the ten-year average value. The number of vessels whose home port was New Bedford increased somewhat between 1997 and 2006, while the value of fishing for home port vessels more than doubled from \$80 million to \$184 million over the same time period. The number of vessels whose owner's city was New Bedford fluctuated between 137 and 199 vessels, while the value of landings in New Bedford tripled from \$94 million in 1998 to and \$281 million in 2006 (see Table 2). One community member notes that the number of vessels in

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.

the harbor as of 2007 is up to 232. The number of fishing vessels based out of New Bedford has increased in the last few years due a loss of infrastructure in other ports; New Bedford has seen vessels relocate here from Gloucester, Portland, Plymouth, Newport, and even as far away as Virginia.¹¹

New Bedford has approximately 44 fish wholesale companies, 75 seafood processors, and some 200 shore side industries (Hall-Arber 2001). [Maritime International](#) has one of the largest U.S. Department of Agriculture-approved cold treatment centers on the East Coast. Its terminal receives approximately 25 vessels a year, most carrying about 1,000 tons of fish each. [American Seafoods](#), one of the largest seafood companies in the United States, has a large processing facility in New Bedford where they process primarily scallops. [Norpel](#) (Northern Pelagic Group, LLC), also in New Bedford, is one of the largest pelagic processing companies in the United States, catching and processing both mackerel and herring with a dedicated fleet of mid-water trawlers. New Bedford's auction house, [Whaling City Seafood Display Auction](#), opened in 1994, allowing fishermen to get fair prices for their catch and providing buyers with a more predictable supply of seafood. One of the recommendations of the New Bedford/Fairhaven Harbor Plan was to establish effective public oversight of the auction process (State of Massachusetts 2002).

Landings by Species

Table 1. Dollar value of Federally Managed Groups of landings in New Bedford

	Average from 1997-2006	2006 only
Scallop	108,387,505	216,937,686
Largemouth Groundfish¹²	30,921,996	23,978,055
Monkfish	10,202,039	8,180,015
Surf Clams, Ocean Quahog	7,990,366	9,855,093
Lobster	4,682,873	5,872,100
Other¹³	4,200,323	2,270,579
Skate	2,054,062	3,554,808
Squid, Mackerel, Butterfish	1,916,647	5,084,463
Summer Flounder, Scup, Black Sea Bass	1,481,161	2,227,973
Smallmouth Groundfish¹⁴	897,392	1,302,488
Herring	767,283	2,037,784
Dogfish	89,071	13,607
Bluefish	25,828	10,751
Tilefish	2,675	1,084

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

¹¹ Profile review comment, Rodney Avila, former commercial fisherman, 369 Belair St., New Bedford, MA 02745, August 14, 2007

¹² Largemouth groundfish: cod, winter flounder, witch flounder, yellowtail flounder, am. plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

¹³ "Other" species includes any species not accounted for in a federally managed group

¹⁴ Smallmouth multi-species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)

Vessels by Year¹⁵

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	244	162	80,472,279	103,723,261
1998	213	137	74,686,581	94,880,103
1999	204	140	89,092,544	129,880,525
2000	211	148	101,633,975	148,806,074
2001	226	153	111,508,249	151,382,187
2002	237	164	120,426,514	168,612,006
2003	245	181	129,670,762	176,200,566
2004	257	185	159,815,443	206,273,974
2005	271	195	200,399,633	282,510,202
2006	273	199	184,415,796	281,326,486

(Note: # Vessels home ported = No. of permitted vessels with location as homeport

Vessels (owner's city) = No. of permitted vessels with location as owner residence¹⁶

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

While recreational fishing in New Bedford Harbor is discouraged due to heavy metal contamination (Department of Health and Human Services), a number of companies in New Bedford offer the public [recreational fishing excursions including boat charters](#). There are also several bait and tackle stores, many of which serve as [official state fishing derby weigh-in stations](#). “In 1999 there were approximately 950 slips in New Bedford Harbor and 85% were visitor based. According to FXM Associates, marina operators agreed that an additional 200 slips could be filled. A few owners of fishing boats in the 45 to 50 foot range have obtained licenses for summer party boat fishing. Tuna is a popular object for recreational fishing as are stripped bass” (Hall-Arber et al. 2001).

Subsistence

While no information on subsistence fishing in New Bedford was obtained through secondary data collection, the large number of ethnic groups in New Bedford may indicate subsistence fishing does occur.

FUTURE

For several years, work was underway to construct the New Bedford Oceanarium that would include exhibits on New Bedford’s history as a whaling and fishing port, and was expected to revitalize the city’s tourist industry and create jobs for the area. The Oceanarium

¹⁵ 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.

¹⁶ 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.

project failed to receive its necessary funding in 2003 and 2004, and while the project has not been abandoned, it seems unlikely the Oceanarium will be built anytime in the near future.

According to a 2002 newspaper article, many fishermen believe that based on the quantity and ages of the species they catch, the fish are coming back faster than studies indicate. While most admit that regulations have worked, they believe further restrictions are unnecessary and could effectively wipe out the industry. "If they push these [regulations] too hard, the whole infrastructure of fishing here could collapse," according to a New Bedford fishermen (Paul, Scriptor 2002).

New Bedford has a Harbor Plan for New Bedford/Fairhaven harbor, which is focused on developing traditional harbor industries, capturing new opportunities for tourism and recreational use, rebuilding harbor infrastructure, and enhancing the harbor environment. Projects completed or underway as part of the Harbor Plan include a revitalization of the State Pier and redevelopment of the Standard Times Field as an industrial park to house fishing-related businesses (State of Massachusetts 2002). The plan received state approval in 2002, and was recognized as one of the most progressive harbor plans produced in the state.¹⁷

The [Massachusetts Fisheries Institute](#) is planned for New Bedford; the institute is collaboration between the University of Massachusetts, the Massachusetts Intercampus Graduate School of Marine Sciences and Technology, the Department of Marine Fisheries, and the Executive Office of Environmental Affairs. The project intends to team up scientists, fishermen, and graduate and undergraduate students to develop practical and innovative fisheries management applications.

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¹⁷ Profile review comment, Dave Janik, Massachusetts Department of Coastal Zone Management, South Coast CZM Regional Coordinator, 2870 Cranberry Highway, Wareham, MA 02538, October 5, 2007

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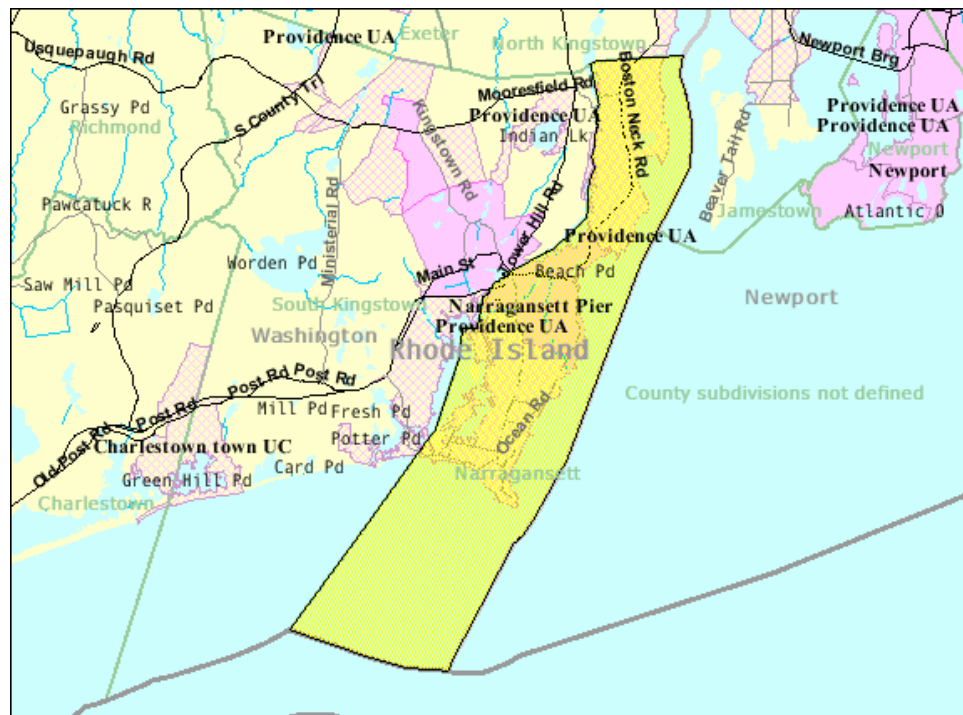
POINT JUDITH/NARRAGANSETT, RI¹

Community Profile²

PEOPLE AND PLACES

Regional orientation

Narragansett (41.45°N, 71.45°W) (USGS 2008) is located in Washington County, 30 miles south of Providence. Point Judith is located in the southern end of Narragansett along Highway 108 near Galilee State Beach, at the western side of the mouth of Rhode Island Sound. Point Judith itself is not a CDP or incorporated town, and as such has no census data associated with it. Thus, this profile provides census data from Narragansett Town (town-wide) and other data from both Point Judith itself and Narragansett. According to the state of Rhode Island both Point Judith and Galilee are considered villages within the town of Narragansett (State of Rhode Island 2008).



Map 1. Location of Narragansett, RI (US Census Bureau 200a)

Historical/Background

The land now called Narragansett was originally inhabited by the Narragansett Indians until Roland Robinson purchased it in 1675 (Town of Narragansett nd). Over the next half-

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."

century, the Rhode Island, Connecticut and Massachusetts colonies all vied for control of Narragansett until the British crown placed the area under the control of Rhode Island (State of Rhode Island 2008). By the 1660s, settlers put the fertile soil to use by developing agriculture in the area. Soon the area's economy depended on the export of agricultural products to markets such as Boston, Providence, and Newport. At this time, Point Judith was connected to the sea by a deep, wide breachway, which was used to ship the agricultural goods to market. By the 1700s there was a thriving ship building industry and a busy port. In the early 1800's Narragansett, like the rest of the country experienced rapid industrial growth, particularly in the textile industry. By the mid 1800's the resort tourism industry developed in Narragansett including the once popular Narragansett Casino. The Narragansett Casino was destroyed by fire on September 12, 1900; most of the remaining tourism resorts were destroyed by fire in the early 1900s (Narragansett nd; Encyclopaedia Britannica 2008). Fishing did not come into prominence again until the 1930s (Griffith and Dyer 1996)

By the 1800s many farmers began to supplement their income by fishing for bass and alewife, or harvesting oysters. Eventually, the Port of Galilee was established in the mid 1800's as a small fishing village. By the early 1900's Point Judith's Port of Galilee became one of the largest fishing ports on the east coast. This was largely due to a series of construction projects that included dredging the present breachway and stabilizing it with stone jetties and the construction of three miles of breakwater that provided refuge from the full force of the ocean. By the 1930's wharves were constructed to facilitate large ocean-going fishing vessels (Eckilson 2007). At this point the port became important to the entire region's economy (Griffith and Dyer 1996). Today, Point Judith is not only an active commercial fishing port, but it supports a thriving tourism industry that includes restaurants, shops, whale watching, recreational fishing, and a ferry to Block Island. Point Judith sits on a knob of land that extends out into the open Atlantic Ocean, making it a popular spot for surfing if the ocean swell is angled properly to produce a breaking wave near the seawall.

Demographics³

No Census data are available for Point Judith itself, but they are available for the county subdivision Narragansett Town which includes Point Judith. As Point Judith is not actually a residential area, and those who fish from Point Judith live in surrounding communities, this is more representative of the "fishing community" than would be any data on Point Judith alone. However, it should be noted that fishermen fishing out of Point Judith are likely to live all over Rhode Island.

According to Census 2000 data, Narragansett had a total population of 16,361, up 9.2% from a reported population of 14,985 in 1990 (US Census Bureau 1990). Of this 2000 total, 48.6% were males and 51.4% were females. The median age was 36.4 years and 76.2% of the population was 21 years or older while 16.1% were 62 or older.

The population structure of Narragansett (see Figure 1) had an unusually high percentage of the population in the 20-29 year age group, far outnumbering all other age categories. This is likely due to the presence of nearby University of Rhode Island; many students at the university live in Narragansett. Others may stay in the area for employment after graduation, which would also contribute to the population structure.

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.

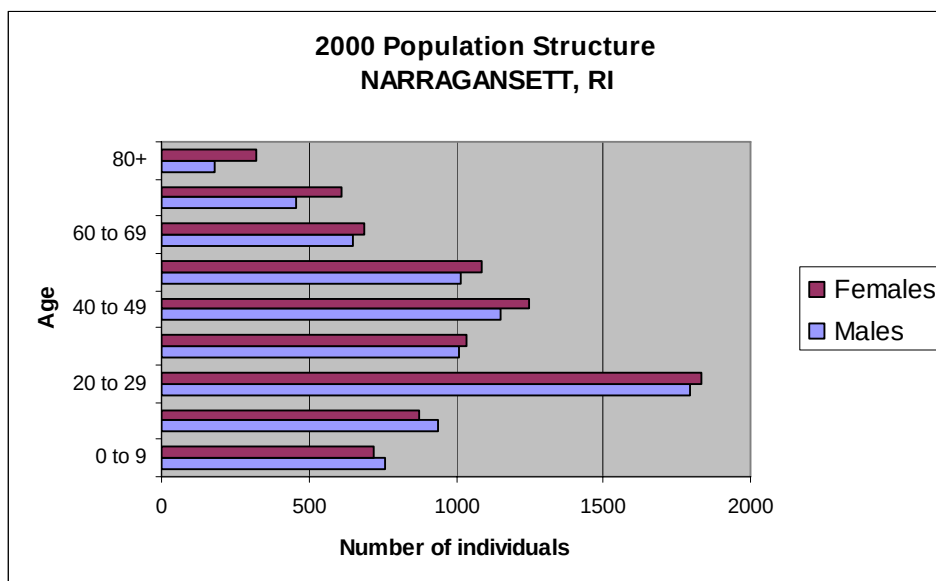


Figure 1. Narragansett's population structure by sex in 2000 (US Census Bureau 2000a)

The majority of the population was white (95.6%), with 1.3% black or African American, 1.0% Asian, 1.4% Native American, and 0.1% Pacific Islander or Hawaiian (see Figure 2). Only 1.2% of the population identified themselves as Hispanic/Latino (see Figure 3). Residents traced their backgrounds to a number of different ancestries including: Irish (31.8%), Italian (20.6%) and English (18.9%) (US Census Bureau 2000a).

With regard to region of birth, 62.5% were born in Rhode Island, 34.3% were born in a different state and 2.5% were born outside of the U.S. (including 0.8% who were not United States citizens).

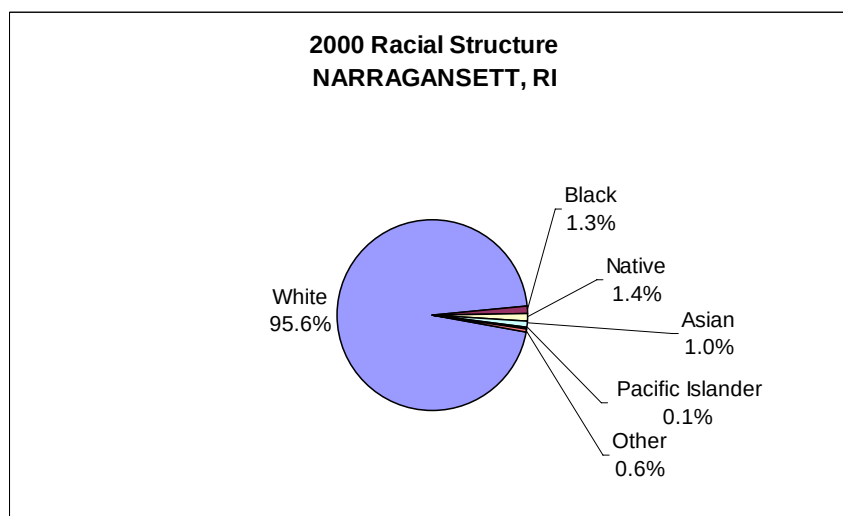


Figure 2. Racial Structure in 2000 (US Census Bureau 2000)

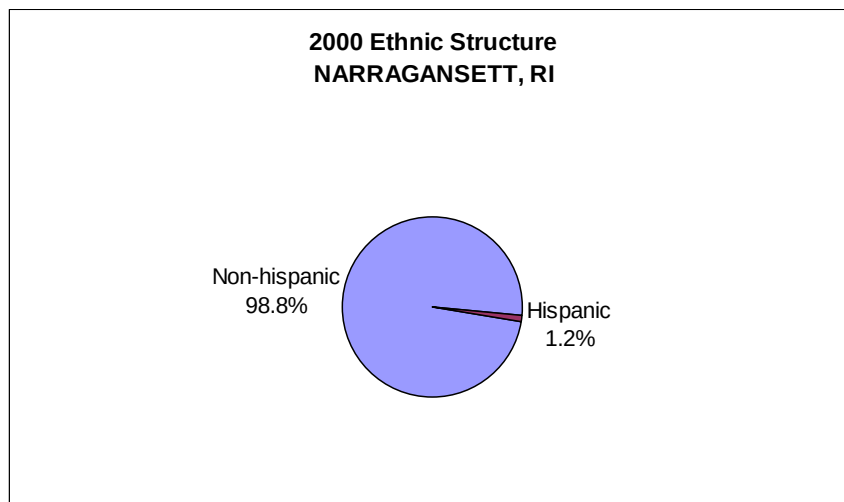


Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000)

For 94.4% of the population, only English was spoken in the home, leaving 5.6% in homes where a language other than English was spoken, including 0.6% of the population who spoke English less than “very well” according to the 2000 Census.

Of the population 25 years and over, 91.3% were high school graduates or higher and 41.8% had a bachelor’s degree or higher. Again of the population 25 years and over, 2.1% did not reach ninth grade, 6.6% attended some high school but did not graduate, 22.5% completed high school, 18.0% had some college with no degree, 9.0% received their associate degree, 24.2% earned their bachelor’s degree, and 17.6% received either their graduate or professional degree.

Although 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 Washington County was Catholic with 20 congregations and 58,668 adherents. Other prominent congregations in the county were American Baptist Churches (15 congregations with 3,022 adherents) and Episcopal (10 with 4,720 adherents). The total number of adherents to any religion was up 57.3% from 1990 (ARDA 2000).

Issues/Processes

Not unlike many fishing communities in the Northeast, increasingly stringent state and federal fishing regulations could jeopardize the viability of Point Judith as a fishing port, affecting both commercial and recreational fishermen. In addition to affecting the fishermen directly, Point Judith processing companies have difficulty handling drastic deviations in the number of landings, commonly due to the lifting or expanding of quotas, as well as sudden changes in what species are landed. It is also important to note that Point Judith fishermen harvest both species managed by the New England Fishery Management Council and the Mid-Atlantic Fishery Management Council, which increases the level of management measures they must follow.⁴

⁴ Profile review comment, David Beutel, Fisheries Extension Specialist, RI Sea Grant, University of Rhode Island, South Ferry Road, Narragansett, RI 02882, August 23, 3007

Additionally, the boom in tourism at Point Judith has had an adverse effect on the commercial fishing industry. Not only do fishermen battle parking issues but shore front rents for fish processing companies and the cost of dockage and wharfage for vessels have increased (Griffith and Dyer 1996).

Cultural attributes

The Narragansett/ Point Judith community celebrates its maritime history with the annual Blessing of the Fleet (Griffith and Dyer 1996), an event that is sponsored by the [Narragansett Lions Club](#). The festival includes the Blessing of the Fleet Road Race of 10 miles of the surrounding area, a Seafood Festival, and rides at Veteran's Memorial Park that last throughout the last weekend of July. The 2004 Blessing of the Fleet included approximately 20 commercial and 70 recreational vessels and gathered an estimated crowd of 200 to 300 to view the passing. The Fishermen's Memorial Park is located in Point Judith and features recreational activities and a playground. Each Saturday in the summer months, the park hosts a Farmer's Market, featuring local produce and often lobsters caught on local vessels. There is a new fishermen's memorial project underway, to be situated near the Coast Guard light.⁵

INFRASTRUCTURE

Current Economy

Besides an active fishing port, Point Judith supports a thriving seasonal tourism industry that includes restaurants, shops, whale watching, recreational fishing, and a ferry to Block Island (Griffith and Dyer 1996). It also has a number of fish processing companies that do business locally, nationally, and internationally. Point Judith's largest fish processors are the [Town Dock Company](#) and the Point [Judith Fishermen's Company](#) – a subsidiary of M. Slavin & Sons based in NY.

Town Dock came to Point Judith in 1980 and is now one of the largest seafood processing companies in Rhode Island. Its facility supports unloading, processing, and freezing facilities under one roof and services “over half of the port's boats (approximately 30 full time deep sea fishing trawlers) as well as a large day-boat fleet . . . and handle[s] all the southern New England and Mid-Atlantic species of fish including Squid, Monkfish, Flounder, Whiting, Scup, Butterfish, and Fluke.”

The Point Judith Fishermen's Company (with approximately 15 employees) unloads boats and processes squid which are then taken by M. Slavin & Sons to sell wholesale at the Fulton Fish Market in NY.⁶ Handrigan's is another unloading facility located here.⁷ Several smaller processors are also located in the Point Judith area: Deep Sea Fish of RI, Ocean State Lobster Co., Narragansett Bay Lobster Co., Fox Seafood, South Pier Fish Company, Osprey Seafood, and Sea Fresh America (USFDA 2008). Paiva's Shellfish has their own lobster dock in Point Judith but in 2003 after some time experimenting with finfish for auction and horseshoe crabs for bait and biomedical purposes, they relocated to Cranston and became a wholesaler.^{8,9} Economic history up to 1970 can be found in Poggie and Gersuny (1978).

⁵ Profile review comment, David Beutel, Fisheries Extension Specialist, RI Sea Grant, University of Rhode Island, South Ferry Road, Narragansett, RI 02882, August 23, 3007

⁶ Phone conversation with employee (401-782-1500)

⁷ Profile review comment, David Beutel, Fisheries Extension Specialist, RI Sea Grant, University of Rhode Island, South Ferry Road, Narragansett, RI 02882, August 23, 3007

⁸ Phone call to owner, Stopped processing last year (401-941-3850)

According to the U.S. Census 2000¹⁰, of the total population 16 years of age and over, 67.0% were in the labor force (see Figure 4), of which 2.2% were unemployed, 0.2% were in the Armed Forces, and 64.6% were employed.

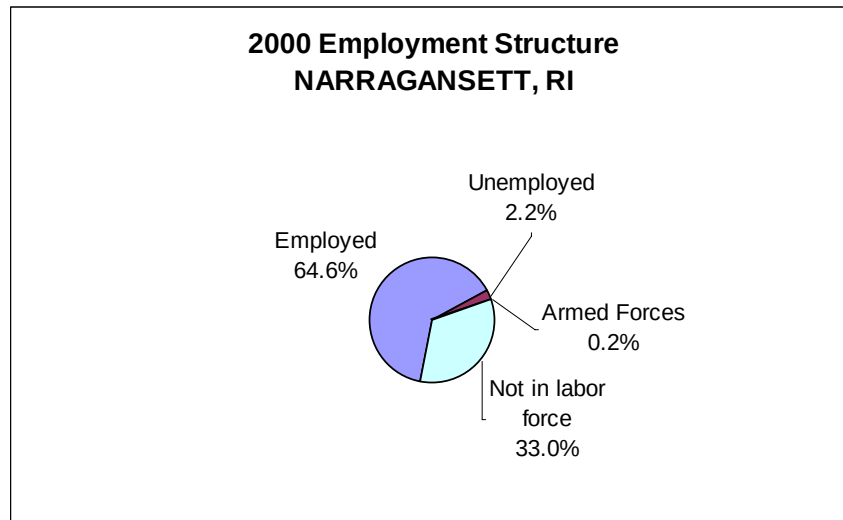


Figure 4. Employment structure in 2000 (US Census Bureau 2000a)

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 239 positions or 2.7% of all jobs (the majority of which is likely to be fishing based on limited activity in the other categories)¹¹. Self employed workers, a category where fishermen might be found, accounted for 171 positions or 8.6% of jobs. Educational, health and social services (26.0%), arts, entertainment, recreation, accommodation and food services (11.8%), professional, scientific, management, administrative, and waste management services (10.8%), and retail trade (10.4%) were the primary industries.

Median household income in Narragansett was \$50,363, up 41.7% from \$35,545 in 1990 (US Census Bureau 1990) and median per capita income was \$28,194. For full-time year round workers, males made approximately 43.1% more per year than females.

The average family in Narragansett consisted of 2.86 persons. With respect to poverty, 4.9% of families, up from 2.9% in 1990 (US Census Bureau 1990) and 16.0% of individuals earned 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, 21.8% of all families (of any size) earned less than \$35,000 per year.

In 2000, Narragansett had a total of 9,159 housing units, of which 74.7% were occupied and 79.4% were detached one unit homes. Less than one tenth (9.8%) of these homes were built before 1940. Mobile homes, boats, RVs, vans, etc. accounted for 0.9% of the housing units;

⁹ Community Review Comments, Walter Anoushian, NMFS Port Agent, 83 State St 2nd Flr, P.O. Box 547, Narragansett, RI 02882-0547, January 31, 2008

¹⁰ 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.

¹¹ Profile review comment, Michael DeLuca, Town of Narragansett, Department of Community Development, 25 Fifth Avenue, Narragansett, RI 02882 December 18, 2007

90.3% of detached units have between 2 and 9 rooms. In 2000, the median cost for a home in this area was \$163,500. Of vacant housing units, 88.0% were used for seasonal, recreational, or occasional use. Of occupied units, 38.1% were renter occupied.

Government

Narragansett's form of government is a town manager and a five-member town council, headed by a council president. Narragansett was established in 1888 and incorporated in 1901 (State of Rhode Island nd).

Fishery involvement in government

Narragansett has a town Harbor Management Commission and a designated Harbormaster. Narragansett has a town Harbor Management Commission, appointed by the Town Council (HMC nd). The Harbor Management Commission meets once each month to address issues related to management of the town's waters, particularly Point Judith Pond and the Narrow River. Galilee has special zoning which designates certain areas for fishing-related uses only.¹² NOAA Fisheries Statistics Office also has a port agent based here. Port agents sample fish landings and provide a 'finger-on-the-pulse' of their respective fishing communities (NERO FOS 2008). NOAA Northeast Fisheries Science Center's Narragansett Laboratory is located on the Bay Campus of the University of Rhode Island (URI). "It is adjacent to URI's Graduate School of Oceanography and the National Health and Environmental Effects Research Laboratory of the Environmental Protection Agency (EPA). The facility consists of one main building and aquarium, and four adjacent office/laboratory modular buildings. The laboratory is a facility with a specialized staff of 50 supported by advanced oceanographic and biological systems for carrying out research on the effects of changing environmental conditions on the growth and survival of fish stocks from an ecosystems perspective" (NEFSC nd). Rhode Island Sea Grant is also located at URI's Narragansett Bay Campus. The RI Department of Environmental Management Division of Enforcement has a small office in Point Judith.¹³

Institutional

Fishing associations

Point Judith Fishermen's Cooperative went defunct in 1994 as the victim of declining stocks¹⁴, and is now run as an independent fish marketing organization.¹⁵ Rhode Island Seafood Council, a now-defunct not-for-profit organization established in 1976, was located here and promoted quality seafood products. The American Seafood Institute was established in 1982 in conjunction with the Rhode Island Seafood Council and provides assistance to the fishing industry in exporting product overseas (Hall-Arber et al. 2001). The Point Club is a self-insurance group for fishermen to protect against price gouging, etc.¹⁶ The Rhode Island Commercial Fishermen's Association has members throughout Point Judith and the state. The

¹² Profile review comment, Michael DeLuca, Town of Narragansett, Department of Community Development, 25 Fifth Avenue, Narragansett, RI 02882 December 18, 2007

¹³ Profile review comment, David Beutel, Fisheries Extension Specialist, RI Sea Grant, University of Rhode Island, South Ferry Road, Narragansett, RI 02882, August 23, 2007

¹⁴ Profile review comment, Chris Brown, Rhode Island Commercial Fishermen's Association, 35 Erica Court West Kingston, RI 02892, October 19, 2007

¹⁵ Personal communication, Dr. Madeleine Hall-Arber, MIT Sea Grant.

¹⁶ Profile review comment, Chris Brown, Rhode Island Commercial Fishermen's Association, 35 Erica Court West Kingston, RI 02892, October 19, 2007

organization is based at the Commercial Fisheries Center at East Farm on the University of Rhode Island's main campus. The Rhode Island Lobstermen's Association and the Rhode Island Fishermen's Alliance are well represented in Point Judith, and the RI Shellfishermen's Association is likely to also have members fishing from here.¹⁷

Fishing assistance centers

The Bay Company was developed under the Rhode Island Marine Trade Education Initiative and attempts to link academia to the marine industry to improve productivity and economic viability; it is now defunct since the funding disappeared in 2003 (Hall-Arber et al. 2001).

Other fishing related organizations

The [Commercial Fisheries Center of Rhode Island](#) was founded in 2004 and is home to nonprofit commercial fishing organizations, and serves "as a headquarters for bringing fishermen, scientists, managers, and elected officials together to discuss issues." The goals of the center are "to improve fisheries and understanding of the marine environment through education, collaborative research, and cooperation" (CFCRI nd).

Physical

Point Judith is about 22 miles from Newport, 36 miles from Providence, and 52 miles from New Bedford. TF Green Airport in Warwick, RI is about 25 miles from Point Judith, and Westerly State Airport, a smaller airport, is 17 miles away. A ferry runs from Block Island to Point Judith. From Block Island it is possible to take another ferry to Montauk, NY (BICC 2007; RIPTA nd; State of Rhode Island nd). The Rhode Island Public Transportation Association (RIPTA) runs a bus to Galilee. Buses to other New England destinations are available at T.F. Green airport and from Newport and Providence (RIPTA nd; State of Rhode Island nd). Point Judith also boasts a lighthouse that doubles as a popular surfing spot.

Great Island Road at Point Judith has several docking facilities for both commercial and charter vessels (DEM 2005a). There is a marine supply store where most fishermen shop, and a commercial bait store serving the local trap fishermen. In addition to the dockside infrastructure, there are seasonal restaurants along the main street area and tourism predominately from the ferry crowds the streets and often frustrates residents in the summer.¹⁸ The Point Judith Fishermen's Company unloads boats and processes squid which are then taken by M. Slavin & Sons to sell wholesale at the Fulton Fish Market in NY.¹⁹ Handrigan's is another unloading facility located here.²⁰ Several smaller processors are also located in the Point Judith area: Deep Sea Fish of RI, Ocean State Lobster Co., MC Fresh Inc., Narragansett Bay Lobster Co., Inc., Fox Seafood, South Pier Fish Company, Osprey Seafood, and Sea Fresh America (USFDA 2008). In 2003 Paiva's Shellfish quit the fillet business and relocated to Cranston as a wholesaler.²¹ [Trawlworks, Inc.](#) in Narragansett is a supplier and distributor of marine hardware and rigging supplies for industrial, institutional, and commercial fishing for both mid-water and bottom use.

¹⁷ Profile review comment, David Beutel, Fisheries Extension Specialist, RI Sea Grant, University of Rhode Island, South Ferry Road, Narragansett, RI 02882, August 23, 3007

¹⁸ Pers. Comm. Point Judith resident, 06/29/2007

¹⁹ Phone conversation with employee (401-782-1500)

²⁰ Profile review comment, David Beutel, Fisheries Extension Specialist, RI Sea Grant, University of Rhode Island, South Ferry Road, Narragansett, RI 02882, August 23, 3007

²¹ Phone call to owner, Stopped processing last year (401-941-3850)

The corporation was formed in 1980. Superior Trawl is also located in Narragansett, and builds fishing gear sold throughout New England and the Mid-Atlantic. Wilcox Marine Supply, located in Point Judith, supplies vessels, and The Bait Company sells bait to local lobstermen.²² Point Judith Marina has been designated as a “Clean Marina” by the State of RI (CMRC 2008).

INVOLVEMENT IN NORTHEAST FISHERIES²³

Commercial

According to the RI Department of Environmental Management, the number of commercial vessels in port in Galilee (Point Judith) 2004 was 230 (RIDEM 2004). Vessels ranged from 45-99 feet, with most being groundfish trawlers. Of these, 55 were between 45 and 75 feet, and 17 over 75 feet (Hall-Arber et al. 2001). In 2004, Point Judith was ranked 24th in value of landings by port in the U.S. (sixth on the East Coast) (FUS 2007).

The state's marine fisheries are divided into three major sectors: shellfish, lobster, and finfish. The shellfish sector includes oysters, soft shell clams, and most importantly, quahogs. The lobster sector is primarily comprised of the highly valued American lobster with some crabs as well. The finfish sector targets a variety of species including winter, yellowtail and summer flounder, tautog, striped bass, black sea bass, scup, bluefish, butterfish, squid, whiting, skate, and dogfish. A wide range of gear including otter trawl nets, floating fish traps, lobster traps, gill nets, fish pots, rod and reel, and clam rakes are used to harvest these species. The state currently issues about 4,500 commercial fishing licenses (Lazar and Lake 2001).

Over the ten year period from 1997-2006, the value of landings in Point Judith varied but seemed to show a declining trend between 1997-2006, from a high of just over \$51 million to a low of \$31 million in 2002-2003. However, in 2004 the landings value began to increase again, back to just under \$47 million in 2006. The landings value for the squid, mackerel, and butterfish species grouping was higher in 2006 than the average value for 1997-2006 (see Table 1). The value of lobster in 2006, second most valuable in terms of landings, was lower in 2006 than the average value for the same time period. Vessel data is combined here for Point Judith and Narragansett; there are no vessel owners listed for Point Judith (because the name refers only to the port), indicating that many fishermen live in the Narragansett area and fish out of Point Judith. In total, the number of vessels home ported in either Point Judith or Narragansett reached a high of 186 in 2001, and a low of 168 in 2006. The number of vessels with owners living in Narragansett was much lower in all years than the number of vessels home ported here, indicating that many of the vessels in Point Judith have owners residing in other communities.

²² Profile review comment, David Beutel, Fisheries Extension Specialist, RI Sea Grant, University of Rhode Island, South Ferry Road, Narragansett, RI 02882, August 23, 2007

²³ 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 of Federally Managed Groups of landings in Point Judith

	Average from 1997-2006	2006 only
Squid, Mackerel, Butterfish	11,298,781	13,188,211
Lobster	11,022,301	8,675,086
Summer Flounder, Scup, Black Sea Bass	4,718,136	6,495,568
Smallmesh Groundfish²⁴	2,816,677	1,799,479
Monkfish	2,687,563	2,110,227
Largemesh Groundfish²⁵	2,451,647	3,383,452
Other²⁶	2,056,576	2,697,425
Scallop	1,457,702	7,420,396
Skate	618,033	604,990
Herring	470,065	376,506
Tilefish	230,142	32,985
Bluefish	112,378	118,466
Dogfish	48,031	45,000
Red Crab	9,593	0

Vessels by Year²⁷

Table 2. All columns represent vessel permits or landings value between 1997 and 2006 for Point Judith/Narragansett

Year	# Vessels (home ported)	# Vessels (owner's city)	Level of fishing home port (\$)	Level of fishing landed port (\$)
1997	181	61	33,021,800	47,529,746
1998	175	55	32,870,223	42,614,251
1999	181	60	36,324,182	51,144,479
2000	184	61	33,911,658	41,399,853
2001	186	62	30,121,535	33,550,542
2002	179	53	30,014,709	31,341,472
2003	173	52	32,793,425	31,171,867
2004	174	51	37,058,022	36,016,307
2005	171	52	37,150,241	38,259,922
2006	168	51	41,021,147	46,947,791

(Note: # Vessels home ported = No. of permitted vessels with location as homeport

Vessels (owner's city) = No. of permitted vessels with location as owner residence²⁸

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)

²⁴ Smallmesh multi-species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)

²⁵ Largemesh groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

²⁶ "Other" species includes any species not accounted for in a federally managed group

²⁷ 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.

²⁸ 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

Rhode Island marine waters also support a sizable recreational fishing sector. “In Rhode Island, nearly 362,000 recreational marine anglers - more than half from out-of-state - made over 1.5 million trips, catching 4.3 million pounds of sport fish and releasing about 55 percent in 2004” (RIDEM 2004). This indicates that the recreational component is significant both in terms of the associated revenues generated (support industries) and harvesting capacity. Between 2001- 2005, there were 66 charter and party vessels making 7,709 total trips registered in logbook data by charter and party vessels in Point Judith carrying a total of 96,383 anglers (MRFSS data). A 2005 survey by the RI Dept. of Environmental Management showed Point Judith to be the most popular site in the state for shore based recreational fishing (RIDEM 2005). Narragansett has two public saltwater boat ramps (RIDEM 2005a).

Subsistence

Observations by local officials indicate subsistence fishing occurs around Narragansett. Most subsistence fishermen fish at night and in the early morning. No data has been collected on this practice.²⁹

FUTURE

Point Judith fishermen are not very positive about the future of Point Judith as a fishing port. Besides the main concern of stringent fishing regulations Point Judith fishermen also must contend with the ever increasing tourism at the port. This has caused parking issues and rent increases.

Oceanlinx Limited (formerly Energetech Australia) is a wave power company working on a pilot project to build and install a wave power plant off Point Judith. Called “Project GreenWave”, the effort is a non-profit pilot, with funding from Massachusetts, Rhode Island and Connecticut and would become the first wave power installation in the U.S. if successful. As the effort is a first, there has been confusion over whether the regulatory jurisdiction is state or federal, which has slowed the projects commencement. “The station would be located just outside the Point Judith breakwater and about a mile offshore. Care is being taken not to disrupt commercial ship traffic or recreational boaters. The station will be designed to: withstand ‘100 year storm criteria’, be easily towed to port, make 100 times less noise than an outboard motor; and have only one moving part — the turbine.” (RD 2007) In addition, the Rhode Island Wind Energy Project has mapped several potential sites for future wind turbine placement offshore; one of the possible sites is just off Point Judith (ATM 2007).

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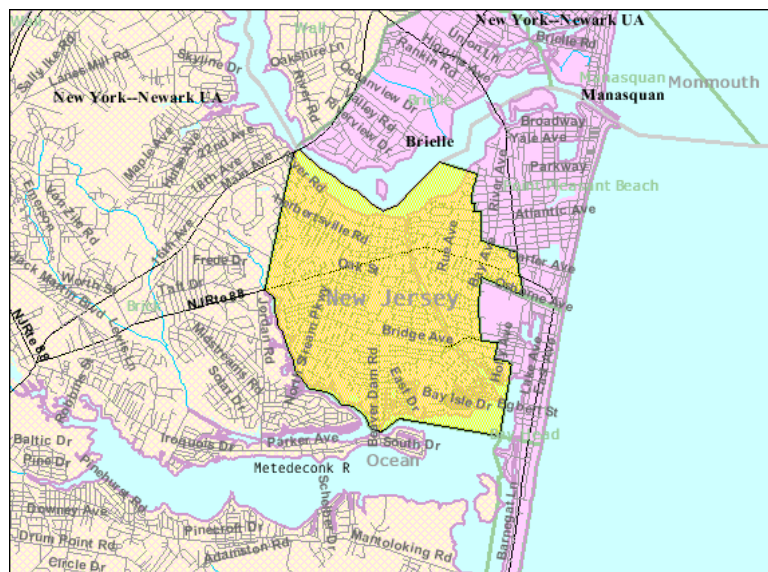
POINT PLEASANT and POINT PLEASANT BEACH, NJ¹

Community Profile²

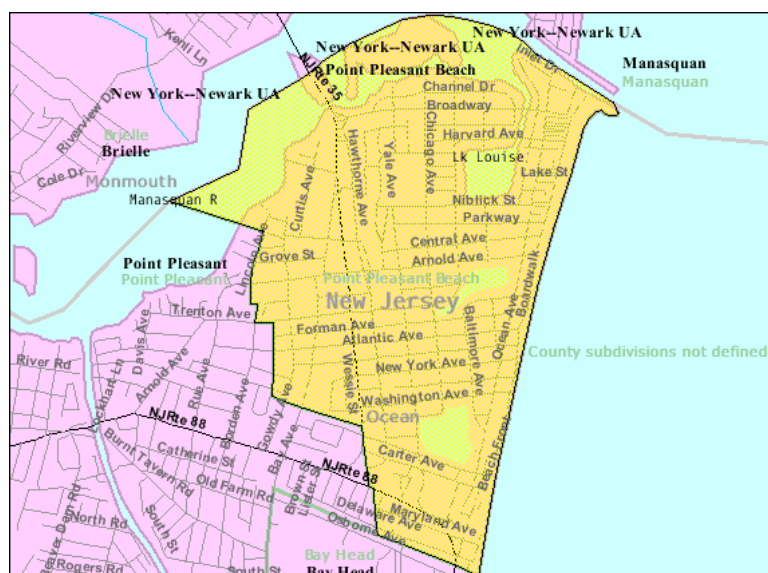
PEOPLE AND PLACES

Regional orientation

The community of Point Pleasant (40.08°N, 74.07°W) is located in Ocean County in the state of New Jersey. Point Pleasant encompasses the adjacent boroughs of Point Pleasant and Point Pleasant Beach and is situated 16 miles from Toms River. Due to the close relation between Point Pleasant and Point Pleasant Beach with regard to the commercial and recreational fishing industries, they are being considered here as a single community.



Map 1. Location of Point Pleasant, NJ (US Census Bureau 2000a)



Map 2. Location of Point Pleasant Beach, NJ (US Census Bureau 2000a)

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."

Historical/Background

The first community in the Point Pleasant area was called Lovelandtown, and was made up of settlers who fished, clammed, hunted, and otherwise subsisted from the bay environment. The first of the Lovelands probably arrived in the 1810s, and were proficient in boat building, fishing, decoy carving, guiding and gunning (NJDA nd). Over the years, Point Pleasant has transitioned from an existence as a summer resort town to becoming a family and community of about 19,000 year-round residents (Borough of Point Pleasant nd). Point Pleasant Beach, NJ, located 1.5 miles from Point Pleasant, is known as a destination for recreational fishermen. Some of the most popular areas to fish are: the Manasquan Inlet Wall, which produces fish year round as it connects the Atlantic to the Manasquan River; the Manasquan River itself; and the “Canal” connecting the Manasquan River to the upper Barnegat Bay (NJMetroNET Inc nd). Point Pleasant supports a large recreational fishing fleet (Monmouth County nd), and a small commercial fleet targeting fluke, squid, silver and red hake, and scallops (mostly in local waters) and surfclams. Though the surfclam fishery was pioneered here and surf clams continue to be landed, there are no longer any processing plants in Point Pleasant (NJ Fishing nd).

Demographics³

Point Pleasant - According to Census 2000 data⁴, Point Pleasant had a total population of 19,306, up 6.2% from the reported population of 18,177 in 1990. Of this 2000 total, 49.1% were male and 50.9% were female. The median age was 39.4 years and 73.5% of the population was 21 years or older while 17.2% was 62 or older.

Point Pleasant’s age structure (Figure 1) showed a preponderance of the 30 to 49 years age groups. The age group of 20-29 year old residents was smaller compared to the other age groups, showing that apparently young people are leaving the community after high school.

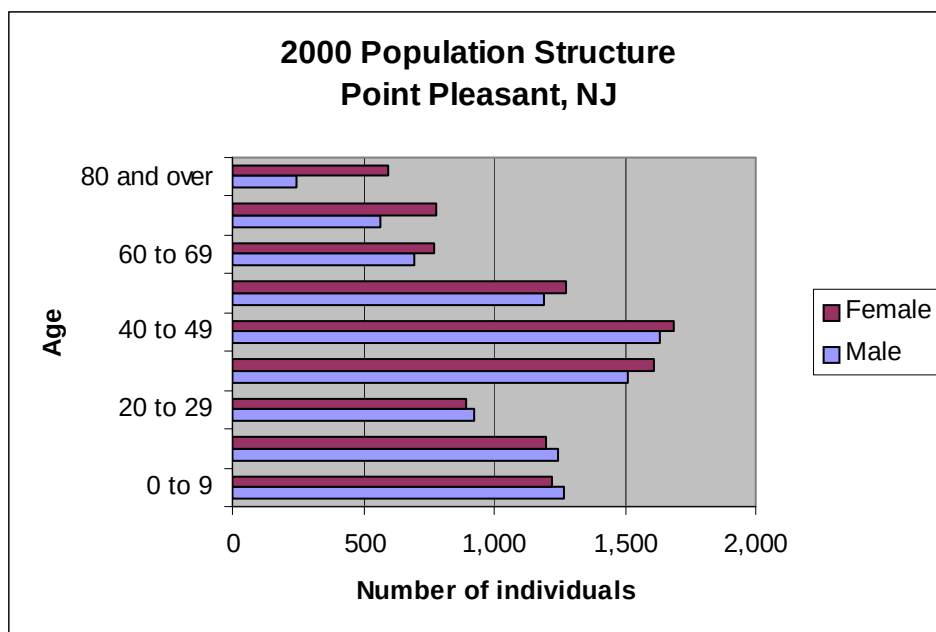


Figure 1. Point Pleasants population structure by sex in 2000

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 Point Pleasant borough and Point Pleasant Beach borough; (accessed June 28, 2007)

The majority of the population was white (97.8%) with 0.3% of residents black or African American, 0.5% Asian, 0.1% Native American, and none Pacific Islander or Hawaiian (see Figure 2). Only 2.4% of the population identified themselves as Hispanic/Latino (see Figure 3). Residents linked their background to a number of different ancestries including: Irish (32.7%), Italian (25.2%), German (21.5%), English (10%), and Polish (10%). With regard to region of birth, 79.7% were born in New Jersey, 16.5% were born in a different state and 3.1% were born outside of the U.S. (including 1.1% who were not United States citizens).

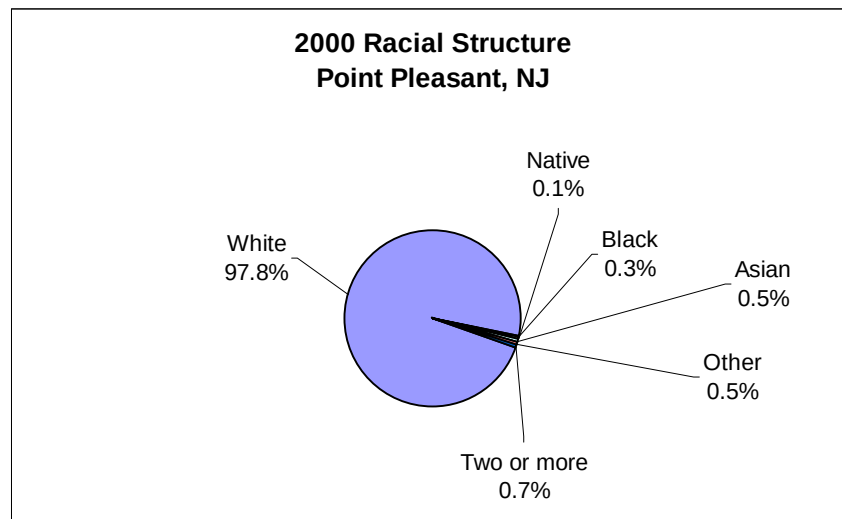


Figure 2. Racial Structure in 2000 (US Census Bureau 2000a)

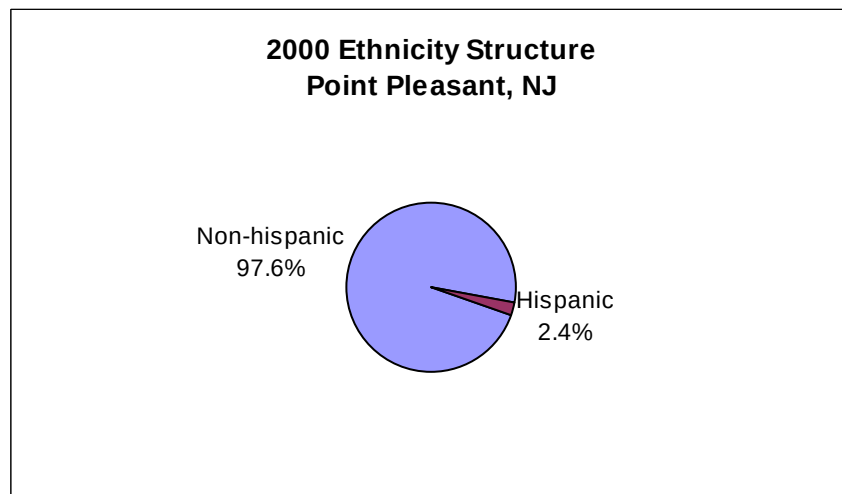


Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000a)

For 94.5% of the population, only English was spoken in the home, leaving 5.5% in homes where a language other than English was spoken, including 0.9% of the population who spoke English less than “very well” according to the 2000 Census.

Of the population 25 years and over, 88.5% were high school graduates or higher and 27.8% had a bachelor’s degree or higher. Again of the population 25 years and over, 2.6% did not reach ninth grade, 8.8% attended some high school but did not graduate, 34.7% completed high school, 20.2% had some college with no degree, 5.8% received an associate’s degree, 20.1% earned a bachelor’s degree, and 7.7% received a graduate or professional degree.

Point Pleasant Beach - According to Census 2000 data, Point Pleasant Beach had a total population of 5,314, up 4.0% from a reported population of 5,112 in 1990. Of this 2000 total, 50.4% were male and 49.6% were female. The median age was 42.6 years and 78.1% of the population was 21 years or older while 21.6% was 62 or older.

Point Pleasant Beach's age structure (see Figure 4) was similar to that of Point Pleasant in that it showed a preponderance of those in the 30 to 59 year age groups. Again, like Point Pleasant, the age group of 20-29 was small compared to the other age groups, showing that apparently young people are leaving the community after high school. The median age, however, was three years older, and a higher percentage of the population was over 62, indicating that Point Pleasant Beach may be more of a retirement community.

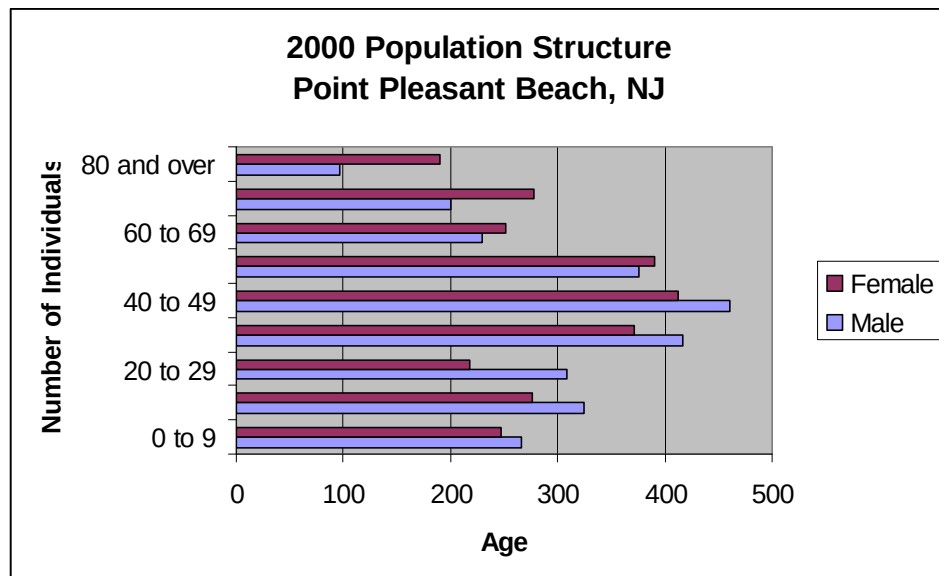


Figure 4. Population structure by sex in 2000 (US Census Bureau 2000a)

Like Point Pleasant, the majority of the population was white (96.7%) with 0.5% of residents black or African American, 1.0% Asian, 0.3% Native American, and 0.02% Pacific Islander or Hawaiian (see Figure 5). Only 4.4% of the population identified themselves as Hispanic/Latino (see Figure 6). Residents linked their backgrounds to a number of different ancestries including: Irish (28.5%), Italian (22.2%), German (19.5%), English (13.8%), and Polish (8.4%). With regard to region of birth, 68.6% were born in New Jersey, 24.7% were born in a different state and 5.8% were born outside of the U.S. (including 3.4% who were not United States citizens).

For 90.5% of the population, only English was spoken in the home, leaving 9.5% in homes where a language other than English was spoken, including 3.4% of the population who spoke English less than "very well" according to the 2000 Census.

Of the population 25 years and over, 87.1% were high school graduates or higher and 34.1% had a bachelor's degree or higher. Again of the population 25 years and over, 3.8% did not reach ninth grade, 9.1% attended some high school but did not graduate, 24.3% completed high school, 21.3% had some college with no degree, 7.5% received an associate's degree, 22.5% earned a bachelor's degree, and 11.6% received either a graduate or professional degree.

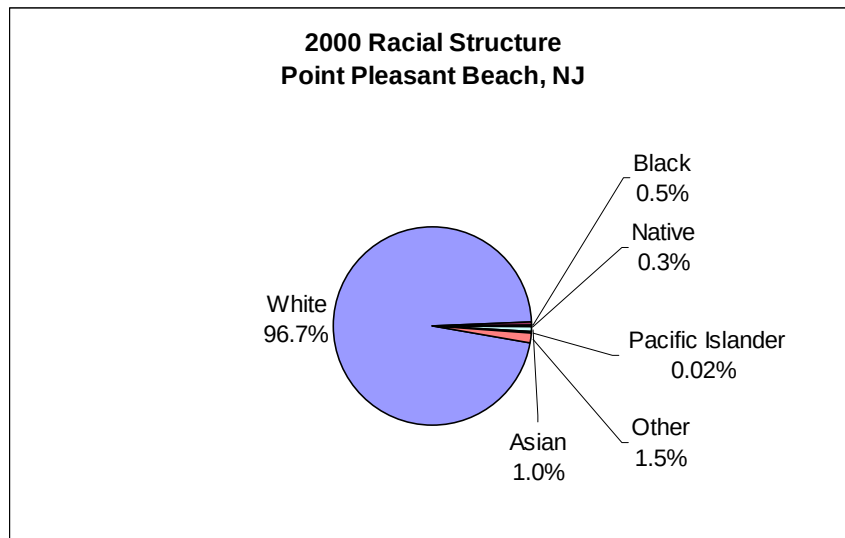


Figure 5. Racial Structure in 2000 (US Census Bureau 2000a)

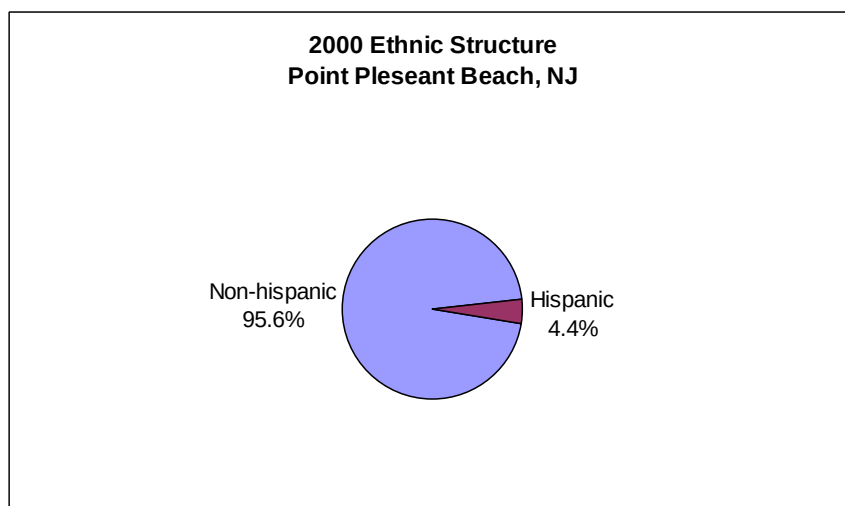


Figure 6. Ethnic Structure in 2000 (US Census Bureau 2000)

Although religion percentages are not available through the U.S. Census, according to the Association of Religion Data Archives (ARDA) in 2000, the religion with the highest number of congregations and adherents in Ocean County was Catholic with 33 congregations and 212,482 adherents. Other prominent congregations in the county were Jewish (35 with 11,500 adherents), and the United Methodist Church (28 with 9,534 adherents). The total number of adherents to any religion was up 21.9% from 1990 (ARDA 2000).

Issues/Processes

In 2005 a Virginia company was pushing to open the waters off New Jersey for pursuing menhaden with seine nets, an idea to which recreational fishermen were strongly opposed. Menhaden are a favorite bait fish for striped bass fishermen, and menhaden are also an important food source for striped bass (Asbury Park Press 2005).

There had been discussions in 2004 about further limiting the catch of certain recreationally targeted species, including striped bass (Freda 2004) and winter flounder, greatly concerning those involved in the recreational fishing business, whether as party boat captains or bait sellers. The Recreational Fishing Alliance has played a large role in lobbying the Atlantic States Marine Fisheries Commission and the State to minimize restrictions for the economic health of the recreational fishery (Moran 2005).

Cultural attributes

[Festival of the Sea](#) is an event held every September since 1975, where area restaurants present local seafood dishes. The [Greater Point Pleasant Charter Boat Association](#) holds the yearly two-day Mako Mania, considered by many to be the premier shark-fishing tournament in New Jersey.

INFRASTRUCTURE

Current Economy

The majority of the docks, bait and tackle shops, and other infrastructure for the commercial fishing industry are located in Point Pleasant Beach. However, because real estate is likely to be much more expensive within the borough of Point Pleasant Beach, the majority of fishermen are likely to live in the borough of Point Pleasant. Point Pleasant, located along the Manasquan Inlet, is also in itself an important destination for recreational fishing, with numerous boats docked in Point Pleasant along the river.

Point Pleasant - According to the U.S. Census 2000⁵, 66.5% (10,113 individuals) of the total population 16 years of age and over were in the labor force (see Figure 7), of which 2.5% were unemployed, 0.1% were in the Armed Forces, and 63.9% were employed.

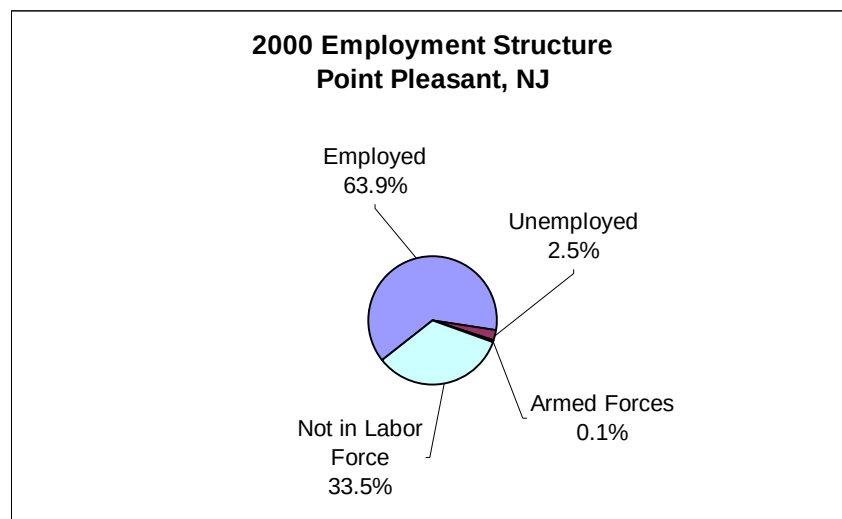


Figure 7. Employment structure in 2000 (US Census Bureau 2000)

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 31 positions or 0.3% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 619 positions or 6.4% of jobs. Educational health and social services (23.4%), retail trade (12.4%), construction (10.9%), professional, scientific, management, administrative and waste management services (9.3%), arts, entertainment, recreation, accommodation and food services (8.2%), and finance, insurance, real estate and rental and leasing (7%) were the primary industries.

Median household income in Point Pleasant was \$55,987 (up 37.3% from \$40,798 in 1990 [US Census Bureau 1990]) and median per capita income was \$25,715. For full-time year round workers, males made approximately 54.5% more per year than females.

⁵ 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.

The average family in Point Pleasant consisted of 3.06 persons. With respect to poverty, 2% of families (up from 1.6% in 1990) and 3.2% of individuals earned 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, 15.9% of all families (of any size) earned less than \$35,000 per year.

In 2000, Point Pleasant had a total of 8,350 housing units of which 90.5% were occupied and 83.1% were detached one unit homes. Less than 10% (8%) of these homes were built before 1940. Mobile homes, vans, boats accounted for none of the housing units; 92.2% of detached units had between 2 and 9 rooms. In 2000, the median cost for a home in this area was \$160,100. Of vacant housing units, 6.4% were used for seasonal, recreational, or occasional use. Of occupied units 20.2% were renter occupied.

Point Pleasant Beach - Much of the economy of Point Pleasant and Point Pleasant Beach is based on tourism, and a substantial segment of the tourist population travel to this area to fish. Even during the winter, Point Pleasant will sometimes maintain some tourism during years when fish are more plentiful during the winter months (Stoffle et al. 2008). The largest employers in Point Pleasant Beach are mostly related to the tourist industry: Jenkinson's Beach and Boardwalk (with a beach, amusement rides, aquarium, night club, and restaurants), Meridian Health Center, Food Town, Chef's International (restaurant chain), and motels.⁶ The most significant sources of employment in Point Pleasant, by contrast, are banks and car dealerships.⁷

According to the U.S. Census 2000⁸, 58.7% (2,617 individuals) of the total population 16 years of age and over were in the labor force (see Figure 8), of which 3.1% were unemployed, none were in the Armed Forces, and 55.6% were employed.

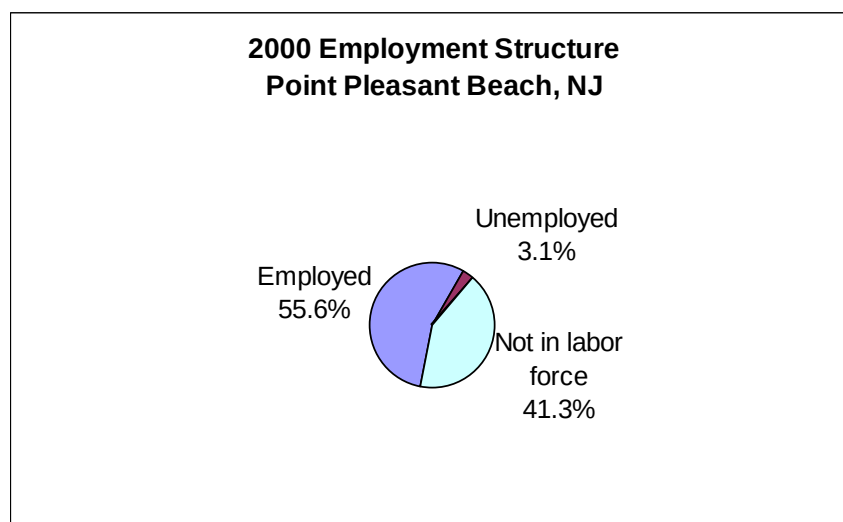


Figure 8. Employment structure in 2000 (US Census Bureau 2000)

⁶ Personal Communication, Point Pleasant Beach Chamber of Commerce, 2810 Bridge Ave., Point Pleasant Beach, NJ 08742, 6/24/05

⁷ Personal Communication, Point Pleasant Chamber of Commerce, 2803 Bridge Ave., Point Pleasant, NJ 08742, 6/27/05

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.

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 65 positions or 2.6% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 104 positions or 4.4% of jobs. Educational health and social services (19.2%), arts, entertainment, recreation, accommodation and food services (14.6%), retail trade (11.8%), public administration (10.2%), professional, scientific, management, administrative and waste management services (9.4%), and finance, insurance, real estate and rental and leasing (7.2%) were the primary industries.

Median household income in Point Pleasant Beach was \$51,105 (up 48.9% from \$34,799 in 1990 [US Census Bureau 1990]) and median per capita income was \$27,853. For full-time year round workers, males made approximately 8.0% more per year than females (significantly different than in Point Pleasant).

The average family in Point Pleasant Beach consisted of 2.96 persons. With respect to poverty, 5% of families (up from 1.6% in 1990) and 6.1% of individuals earned 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, 18.3% of all families (of any size) earned less than \$35,000 per year.

In 2000, Point Pleasant Beach had a total of 3,558 housing units, of which 65.1% were occupied and 68.5% were detached one unit homes. Less than one third (28.4%) of these homes were built before 1940. Mobile homes, vans, boats accounted for none of the total housing units; 83.9% of detached units had between 2 and 9 rooms. In 2000, the median cost for a home in this area was \$223,600. Of vacant housing units, 26.6% were used for seasonal, recreational, or occasional use. Of occupied units 37.1% were renter occupied.

Government

The City of Point Pleasant operates under the Council/Manager form of government. There are six members of Council, in addition to the Mayor. The Mayor has a four-year term, and the Council has staggered three-year terms (Borough of Point Pleasant nd).

Fishery involvement in government

Information on fishery involvement in government in Point Pleasant is unavailable through secondary data collection.

Institutional

Fishing associations

The [Fishermen's Dock Cooperative](#) on Channel Drive in Point Pleasant Beach is one of two active fishing cooperatives in New Jersey. Incorporated as a cooperative in the early 1950s, the "Co-op" is an integral part of the waterfront community of Point Pleasant Beach. The Co-op markets its members' catch, and offers them fuel, packing, and ice at a discounted rate. Becoming a member of the Co-op is difficult; it requires a vacancy and proof of being an able fishermen, as well as the purchase of a share in the Co-op (McCay et al. 1995). Many existing members of the Co-op are the sons of the original founders, and some are third or fourth generation fishermen (NJ Fishing nd).

The [Garden State Seafood Association](#) in Trenton is a statewide organization of commercial fishermen and fishing companies, related businesses and individuals working in common cause to promote the interests of the commercial fishing industry and seafood consumers in New Jersey.

The [Jersey Coast Anglers Association](#) (JCAA) is an association of over 75 saltwater fishing clubs throughout the state. Founded in 1981, the purpose of the organization is to

unite and represent marine sport anglers to work towards common goals. The JCAA website (www.jcaa.org) also provides links for many NJ anglers associations.

Fishing assistance centers

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

Other fishing related organizations

The [Greater Point Pleasant Charter Boat Association](#) in Township was formed in 1981. Its goals are: “To enhance the recreational fishing industry on the Manasquan River, and to aid in the improvement of the coastal fishery and collectively voice concerns on marine conservation and environmental issues”

The [Manasquan River Watershed Association](#) is a non-profit organization focused on protecting and restoring the Manasquan River through public education, restoration, and regional planning initiatives.

Physical

Point Pleasant is within easy reach of Newark Airport and Port Newark/ Elizabeth and only a bridge crossing away from both New York and Philadelphia (NJ Fishing nd). Specifically, Point Pleasant is located about 42 miles from Trenton, NJ and 67 miles from New York City. Point Pleasant is only a few miles from the Garden State Parkway which links to major highways such as I-195. The borough is about 2 miles from the open Atlantic Ocean, and is in close proximity to a portion of the large Barneget Bay. [New Jersey Transit](#) provides service from Point Pleasant to throughout the state and region. Because of its large recreational fishing component, there are many bait and tackle stores in town (Ocean City Maryland 1997; Okuma Fishing Tackle Co 2004).

INVOLVEMENT IN NORTHEAST FISHERIES⁹

Commercial

The fleet of the [Fishermen’s Dock Cooperative](#) is comprised mostly of smaller draggers, up to about 80 feet in length. They fish mostly in the New York Bight, in mixed trawl fisheries. “They primarily target fluke, silver hake and squid but in the past have also had significant landings of winter flounder, bluefish, monkfish and scallop. While most of the Co-op member's harvest is sold to wholesale markets in the Mid-Atlantic States and Southern New England, a significant amount makes its way directly to consumers via the seafood market and restaurant adjacent to the dock.” Members of the Co-op recently got together to raise \$1 million for necessary repairs to their dock (Stoffle et al. 2008).

⁹ 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.

The development of the shellfishery here has been very important to maintaining a commercial fishing industry in Point Pleasant. Point Pleasant Beach was listed as the eighth largest commercial fishing port on the East Coast in 2003. There were no landings values listed for Point Pleasant Beach; home port landings values and data on vessels have been combined for Point Pleasant and Point Pleasant Beach here. The landings values for Point Pleasant show the highest value species as surf clams and ocean quahogs, followed by scallops and summer flounder, scup, black sea bass (see Table 1). The value of the sea scallop fishery was much higher in 2006 than in the 10-year average. Other fisheries have declined in both the commercial and recreational sectors resulting from both a decrease in catches and an increase in regulation, and facilities previously used for processing finfish are now used for offloading and trucking quahogs and surfclams. The ocean quahogs and scallops as well as most of the surfclams are trucked away elsewhere for shucking, as Point Pleasant no longer has a processing plant here with the exception of a small facility where some surfclams are shucked by hand. Otter trawls and gillnetting continue to be important for this fleet as well, and other important species include monkfish, *Loligo* squid, and summer flounder (Stoffle et al. 2008). Despite declining catches in some areas, the overall value of this fishery increased for both home-ported vessels and the value of landings brought into Point Pleasant from 1997-2006 (see Table 2). The number of vessels and the level of fishing increased over the 10-year time period for Point Pleasant and Point Pleasant Beach.

Landings by Species

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

	Average from 1997-2006	2006 only
Surf Clams, Ocean Quahog	9,252,589	8,342,197
Scallop	3,931,203	7,875,964
Summer Flounder, Scup, Black Sea Bass	1,782,580	2,657,675
Monkfish	1,515,511	888,104
Lobster	800,994	1,322,967
Other¹⁰	704,087	326,210
Squid, Mackerel, Butterfish	555,114	584,369
Largemouth Groundfish¹¹	354,799	456,840
Smallmouth Groundfish¹²	250,357	66,052
Dogfish	132,702	0
Bluefish	97,360	69,352
Skate	37,860	36,549
Tilefish	2,757	CONFIDENTIAL
Herring	374	3,088

¹⁰ "Other" species includes any species not accounted for in a federally managed group

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

¹² Smallmouth multi-species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)

Vessels by Year¹³

Table 2. All columns represent vessel permits or landings value combined between 1997-2006 for Point Pleasant / Point Pleasant Beach

Year	# Vessels (home ported)	# Vessels (owner's city)	Level of fishing home port (\$)	Level of fishing landed port (\$)
1997	66	28	6,172,651	16,905,177
1998	58	24	8,171,193	16,712,151
1999	63	23	10,612,851	17,862,091
2000	71	26	9,855,759	17,769,138
2001	78	27	8,245,705	18,924,389
2002	79	27	8,897,148	22,849,561
2003	71	29	10,994,699	22,849,561
2004	71	27	12,732,616	19,222,163
2005	72	24	15,733,873	21,653,319
2006	71	26	17,164,411	22,632,286

Vessels home ported = No. of permitted vessels with location as homeport

Vessels (owner's city) = No. of permitted vessels with location as owner residence¹⁴

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

Point Pleasant is the most important community in New Jersey for recreational fishing. Fishermen travel from all over the state and beyond to fish from the numerous party and charter boats, from their own private recreational boats, or to participate in surf-fishing from several key spots. The New Jersey Department of Environmental Protection, Division of Fish and Wildlife, which licenses party and charter boats, lists 29 for Point Pleasant and Point Pleasant Beach (Giordan et al. 2000), but in some cases fishermen may own a charter license but rarely if ever use their boat for charter trips (Stoffle et al. 2008). There are at least 18 charter boats listed as members of the [Greater Point Pleasant Charter Boat Association](#). Between 2001- 2005, there were 40 charter and party vessels making 8,032 total trips registered in NMFS logbook data by charter and party vessels in Point Pleasant carrying a total of 161,601 anglers.

In New Jersey, the charter/party fleet is the largest on east coast. Many vessels are over 120ft long and carry over 150 people.¹⁵

Subsistence

Some owners of charter and party boats claim that before the bag limits for recreational fishing were increased, many of their clientele were coming fishing primarily as a means of consumption rather than sport, but that the clientele has shifted to represent more tourists fishing for the fun of it (Stoffle et al. 2008).

¹³ 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.

¹⁴ 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.

¹⁵ Community Review Comments, Bruce Freeman, NJ Coast Anglers Association, 1201 Route 37 East, Suite 9, Toms River, NJ 08753, October 2, 2007

FUTURE

Information on future plans or people's perception of the future in Point Pleasant is unavailable through secondary data collection.

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PORTLAND, ME¹

Community Profile²

PEOPLE AND PLACES

Regional orientation

The city of Portland, Maine (43.66 N, 70.2 W) has 56.92 miles of coastline (Sheehan and Copperthwaite 2002), a terrestrial area of 54.9 square miles, and 31.4 square miles of water. It is located in Cumberland County on Casco Bay, and is adjacent to South Portland, Westbrook, and Falmouth. Portsmouth and Manchester, New Hampshire are the closest large cities (MapQuest 2006). Portland is the largest city in Maine and has the highest population in New England north of Boston.



Map 1. Location of Portland City, ME (US Census Bureau 2000)

Historical/Background

Prior to English settlement in 1632, resident Native Americans referred to this region as *Machigonne*, meaning “Great Neck.” This fishing and trading settlement changed names several times before it became Portland in 1786. The city was destroyed four times by various sources including Native American attacks, the British Navy during the American Revolution, and a fire. Each time it was rebuilt and now it is well-known for its preservation of Victorian-style architecture.

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.”

The city's port industries have driven its economy since its settlement. From the mid-1800s until World War I, Portland provided the only port for Montreal, Canada. Railroads from the south to the north fed through the city, facilitating trade and travel. Although Canada developed its own ports, and other cities in southern New England states built larger ports, the city remained tied to its maritime roots by depending on the fishing industry. More recently, it has become a popular cruise ship destination. Although tourism plays a major role in the city's economy, Portland functions as the second largest oil port on the east coast of the U.S., and as a valuable fishing port (Monroe nd). For a more detailed history of Portland and the surrounding fishing communities, refer to Hall Arber et al. (2001).

Demographics³

According to Census 2000 data⁴, Portland City has a total population of 64,249, down 0.2% from a reported population of 64,358 in 1990 (US Census Bureau 1990). Of this 2000 total, 47.9% were males and 52.1% were female. The median age was 35.7 years and 77.4% of the population was 21 years or older, while 15.7% of the population was 62 or older.

Portland's age structure (Figure 1) varies from smaller fishing cities in that the age groups with the highest population in Portland were 20-29 years, 30-39 years and 40-49, while smaller fishing towns often had a much lower portion of its population between 20-29 years and higher between 0-19 years than Portland. This difference in age structure may be because Portland offers employment opportunities to 20-29 year olds (recent high school or college graduates) that smaller cities or rural towns cannot offer, especially in Maine.

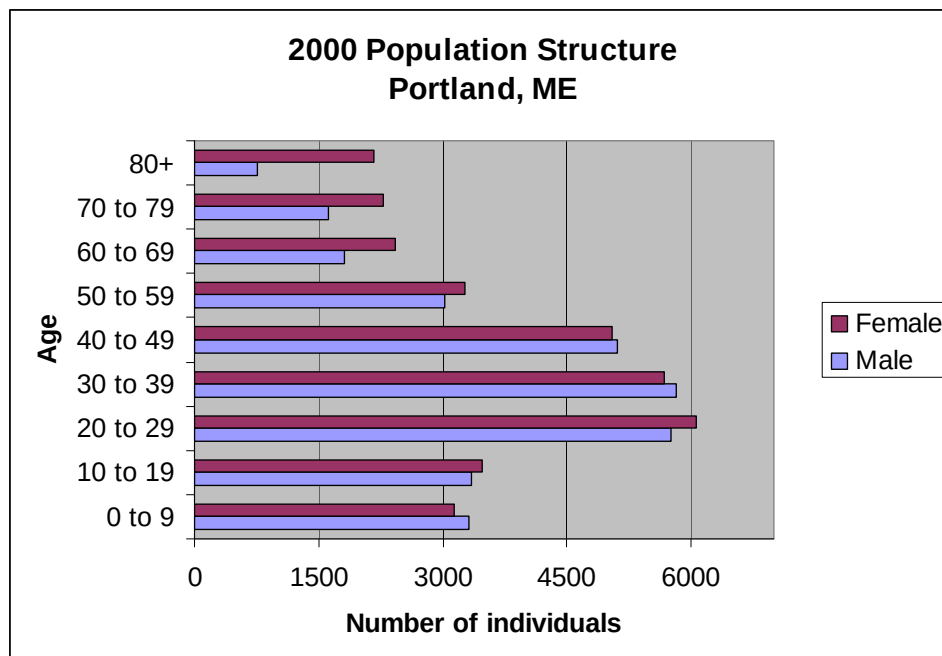


Figure 1. Portland's population structure by sex in 2000 (US Census Bureau 2000)

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 Portland City, Maine

The majority of the population was white (91.1%), with 2.6% black or African American, 3.1% Asian, 0.5% Native American, and 0.1% Pacific Islander or Native 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 (19.2%), French (10.5%), French Canadian (4.9%), German (6.9%) and Irish (21.2%). With regard to region of birth, 59.1% of residents were born in Maine, 32.4% were born in a different state and 7.6% were born outside the U.S. (including 5.0% who were not US citizens).

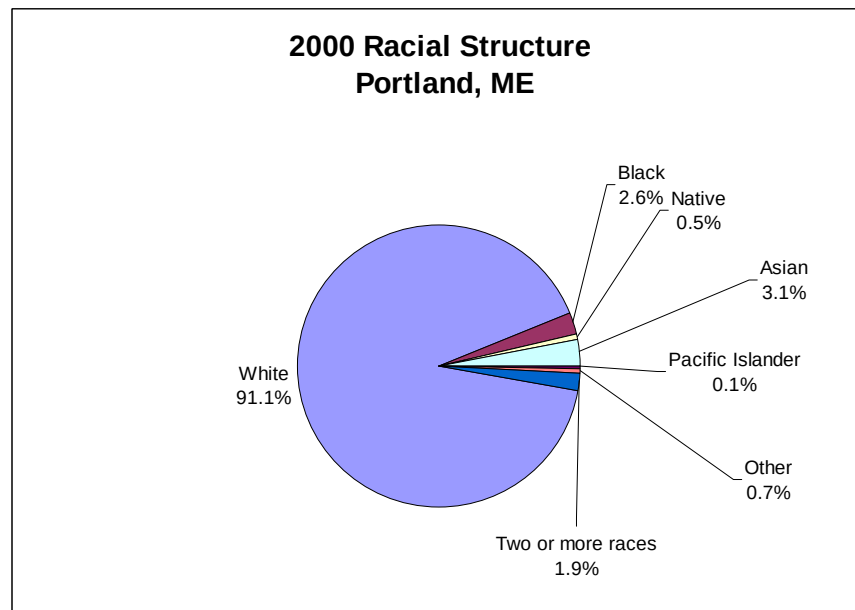


Figure 2. Racial Structure in 2000 (US Census Bureau 2000)

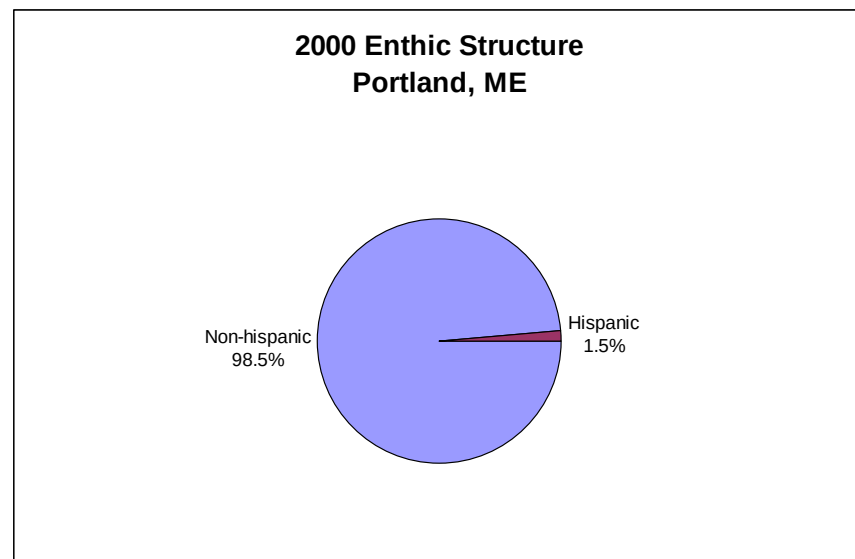


Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000)

For 90.1% of the population, only English was spoken in the home, leaving 9.9% in homes where a language other than English was spoken, including 3.8% of the population who spoke English less than “very well” according to the 2000 Census.

Of the population 25 years and over, 88.3% were high school graduates or higher and 36.4% had a bachelor's degree or higher. Again of the population 25 years and over, 4.3% did not reach ninth grade, 7.5% attended some high school but did not graduate, 25.9% completed high school, 19.3% had some college with no degree, 6.7% received an associate's degree, 23.4% earned a bachelor's degree, and 13% received a graduate or professional degree.

Although 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 the metro area of Portland was the United Church of Christ with 33 congregations and 10,160 adherents. Other prominent congregations in the county were Catholic (31 with 61,495 adherents), United Methodist (26 with 5,690 adherents), Baptist (15 with 2,446 adherents), and Episcopal (11 with 4,577 adherents). The total number of adherents to any religion was up 24.6% from 1990 (ARDA 2000).

Issues/Processes

Media attention has focused on the impacts of Amendment 13 on the fishermen of Portland and surrounding fishing communities. Amendment 13 limited fishermen's Days at Sea throughout the Northeast, but Maine fishermen feel they were put at more of a disadvantage than Southern New England because Maine is farther from George's Bank, which requires fishermen to use more of their allowed Days at Sea for travel rather than fishing.

Another issue in newspapers during this same time period is the question of how Portland's land-based fishing industry infrastructure will remain in business if landings become more sporadic. For example, if the Portland Fish Exchange were to go out of business, fishermen would have to travel to other large ports to sell their landings. To avoid this disaster, the federal government implemented a program to keep the Fish Exchange afloat during the current strict groundfish regulations.

The main issue of worry for the fishing community in Portland and other towns in Maine is whether the fishing infrastructure can be maintained as Days at Sea and catches are limited. Most recently, there has been concern that herring fishing is threatening groundfish stocks (Hench 2004).

There is a current (late 2007) request for proposals out to developers to redevelop the Maine State Pier. This facility is owned by the city and was recently rezoned to allow uses outside the strict marine uses allowed in the rest of the Central Waterfront Zone. Two developers have submitted bids that would preserve a 1000-foot berthing space for ships, existing public access, three windjammer charter boats and the bay's ferry terminal (Casco Bay Lines). The City is still trying to select a developer for this venture.⁵

In 2006, the State of Maine passed the Working Waterfront Tax Law, to address the problem of working waterfront property being heavily taxed based on its projected market value. The goal of this tax is "to encourage the preservation of working waterfront land and to prevent the conversion of working waterfront land to other uses as the result of economic pressures caused by the assessment of that land for purposes of property taxation." The law requires the tax assessor to value the property based on what it is worth as working waterfront land, rather than what its market value would be if it were sold and converted to residential or other uses (State of Maine 2005).

⁵ Profile review comment, Jon Kachmar, Maine State Planning Office, Coastal Division, 38 State House Station, Augusta, ME 04333, October 18, 2007

Cultural attributes

In 2004, Portland's annual Blessing of the Fleet, coordinated by the Maine Fishermen's Wives Association⁶ and the [Seafarer's Friends Society](#), was celebrated in mid-June.

INFRASTRUCTURE

Current Economy

Portland's waterfront provides most of the community's fishing industry infrastructure (e.g., Portland Fish Exchange). However, it also is the site of many other industries: recreation, tourism, light industry, transportation, cargo, and marine-related research, many of which compete for space with the fishing industry (State of Maine/City of Portland, no date). Cianbro, a major construction company from northern Maine, recently developed a permanent facility on Portland's waterfront where two ships are currently being refitted to become sulfur carrying vessels.⁷ Potential additions to the waterfront property include the additions of commercial businesses or strengthening the current fishing industry infrastructure so that it can deal with predicted increases in groundfish stocks (Portland Press Herald 2004).

According to the U.S. Census 2000⁸, 70.1% (15,266 individuals) of the total population 16 years of age and over were in the labor force (Figure 4), of which 3.3% were unemployed, 0.1% were in the Armed Forces, and 65.7% were employed.

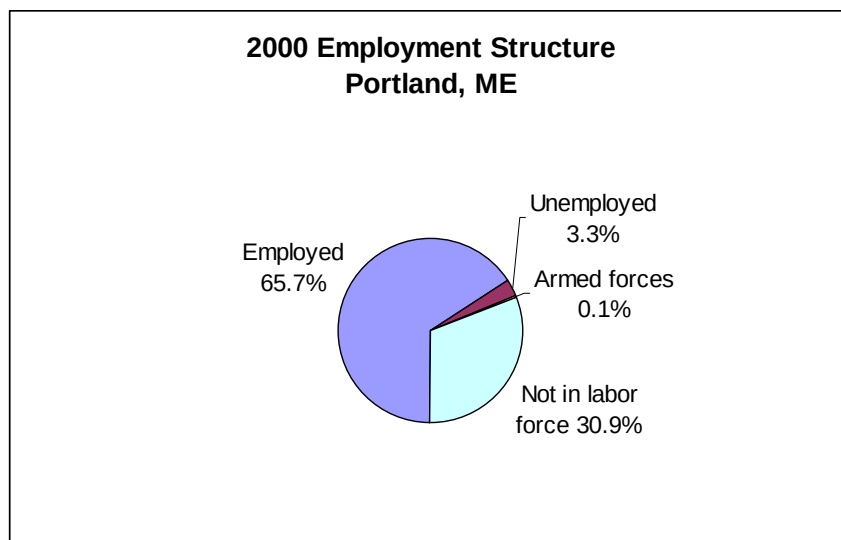


Figure 4. Employment structure in 2000 (US Census Bureau 2000)

According to Census 2000 data, jobs which in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 144 positions or 0.4% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 2,512 positions or 7.1% of jobs. Educational, health and social services (21.8%), retail trade (13.5%), professional, scientific, management, administrative, and waste management services (11.2%), and finance, insurance, real estate, and rental and leasing (10.6%) were the primary industries.

⁶ Contact information: 207.729.5739

⁷ Profile review comment, Jon Kachmar, Maine State Planning Office, Coastal Division, 38 State House Station, Augusta, ME 04333, October 18, 2007

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.

The major employers of Portland include: Maine Medical Center (over 5,000 employees); L.L. Bean Inc. (over 4,000 employees); and Unum Provident (over 3,000 employees) and others.

Median household income in Portland was \$48,763 (up 83.5% from \$26,576 in 1990 [US Census Bureau 1990]) and median per capita income was \$22,698. For full-time year round workers, males made approximately 14.6% more per year than females.

The average family in Portland consisted of 2.83 persons. With respect to poverty, 9.2% of families (down from 10.3% in 1990 [US Census Bureau 1990]) and 14.1% of individuals earned 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 2000a). In 2000, 33.4% of all families (of any size) earned less than \$35,000 per year.

In 2000, Portland had a total of 31,862 housing units of which 93.3% were occupied and 35.1% were detached one unit homes. Just less than fifty percent (49%) of these homes were built before 1940. Mobile homes accounted for 0.2% of housing units; 29.6% of detached housing units had between 2 and 9 units. In 2000, the median cost for a home in this area was \$121,200. Of vacant housing units, 3.0% were used for seasonal, recreational, or occasional use while 57.5% of occupied housing units were renter occupied.

Government

Portland's city governance is by a city council and a mayor, selected by the City Council and rotated to a new councilor each year. Unique to many communities, the city has a tradition of putting development issues out for public debate through forums or a vote via public referenda; however, many development decisions are made directly by the City Council.⁹

Fishery involvement in government

NOAA Fisheries, Fisheries Statistics Office, has three port agents based in Portland. Port agents sample fish landings and provide a 'finger-on-the-pulse' of their respective fishing communities (NMFS 2008). The Board of Harbor Commissioners supports a Harbormaster; they work in conjunction to regulate moorings, pilot and docking master licensing, and marine construction activities.¹⁰

Portland implemented ordinances to protect the working waterfront in the 1980s, made changes in the 1990s, and recently (2006) rezoned the Maine State Pier out of the Central Waterfront Zone in order to facilitate redevelopment. A large segment of Portland's waterfront from the Maine State Pier to the International Marine Terminal is zoned to preserve working waterfront business. This includes the requirement that the first floors of all buildings in the zone be limited to marine-dependent businesses or organizations.¹¹

The City of Portland created the Portland Fish Pier Authority to manage the Fish Exchange and associated Fish Pier activities. The Fish Pier includes the Fish Exchange as well as the privately run Marine Trade Center and associated berthing space.¹²

⁹ Profile review comment, Jon Kachmar, Maine State Planning Office, Coastal Division, 38 State House Station, Augusta, ME 04333, October 18, 2007

¹⁰ Profile review comment, Jon Kachmar, Maine State Planning Office, Coastal Division, 38 State House Station, Augusta, ME 04333, October 18, 2007

¹¹ Profile review comment, Jon Kachmar, Maine State Planning Office, Coastal Division, 38 State House Station, Augusta, ME 04333, October 18, 2007

¹² Profile review comment, Jon Kachmar, Maine State Planning Office, Coastal Division, 38 State House Station, Augusta, ME 04333, October 18, 2007

Institutional

Fishing associations

One of the most important fishing associations in Portland is the [Portland Fish Exchange](#). A non-profit organization owned by the city of Portland, it was the first open display fish auction in the United States. Currently the auction receives landings in the mornings and auctions the fish at noon Sunday through Thursday. The viability of the Fish Exchange has decreased in recent years, as much of Maine's fleet has moved to Massachusetts.¹³

The [Maine Lobstermen's Association](#) (MLA) was founded in 1954, and works to protect the lobster resource and the lobstermen's way of life. The association was founded by lobstermen with a goal of empowering Maine's lobster industry by representing lobstermen with a united front. The MLA is the largest commercial fishing industry group on the east coast, and represents the interests of 1200 lobstermen (MLA 2007). Other fishing associations in Portland include Maine Urchin Harvesters Association, and the Associated Fisheries of Maine (AFM).

Fishing assistance centers

The Working Waterfront Coalition is a statewide collaboration of various industry associations, non-profits, and government agencies with the goal to support Maine's working waterfronts. The [Working Waterfront Access Pilot Program](#) (WWAPP), administered by the Department of Marine Resources, provides money to applicants such as municipalities, fishing co-ops, private commercial fisheries businesses and more, ranging from \$7,000 to \$475,000. The intention of the program is to preserve commercial fisheries working waterfronts and to help secure property for these businesses. As of December 2007, the \$2 million pilot program has reportedly supported over 400 jobs, 194 boats, and assured access to clam flats, parking, wharfage and fisheries in six towns (State of Maine 2005). Voters [approved an additional \\$3 million](#) to continue the program in 2007.

Other fishing related organizations

[Seafarers Friend](#) is a non-denominational Christian organization that assists fishermen and other seafarers at three New England ports: Boston, Portsmouth, and Portland. Recently the Portland Fishermen's Monument Commission was established to increase awareness of the fishing industry by building a monument once they have raised necessary funds (Richardson 2004).

The [Maine Fishermen's Forum](#) was founded in 1976, and its goal is to provide continuous opportunities to educate the public and the fishing industry about marine resource issues and fisheries, as well as to provide a platform for discussion and decision making. The Forum also holds an annual three day event which focuses awareness on issues that affect the commercial fishing industry.

Physical

The city of Portland has infrastructure that provides full access to and within the city. Portland has its own international airport, and it has several transportation options within and to the city. Amtrak, public buses, and interstate and state highway systems provide public access to the city. Public transit within the city includes a bus and a street car system. Portland is located off I-295 which meets up with I95 (Maine Turnpike). These highways provide access to

¹³ Profile review comment, Jon Kachmar, Maine State Planning Office, Coastal Division, 38 State House Station, Augusta, ME 04333, October 18, 2007

Portsmouth, NH (about 53 miles away) and Boston, MA (about 112 miles away). There are several ferry routes operating out of the ferry dock in Portland, including service to ports in Canada. These include the Portland-Yarmouth International Ferry, which provides high speed ferry service to Nova Scotia in 5.5 hours, and the Casco Bay Ferry. There are several islands in Casco Bay accessible by ferry from Portland, the most significant of which are; Peaks Island, Great Diamond, Great Chebeague, and Cliff Island.

The commercial fish pier in Portland (the Portland Fish Exchange) is where vessels unload and sell their catch to the auction. Knighville Landing is a new landing with docking facilities and access to restaurants and shopping. The landing is open to recreational boaters, water taxis and fishing boats and seasonal floats are available April to October (Portland's Downtown District 2005). There are several marinas listed for Portland and South Portland, most of which offer full-services to recreational boaters (Maine Harbors 2006).

The International Marine Terminal is owned by the City of Portland and is located adjacent to the Casco Bay Bridge. This facility currently provides berthing space for Bay Ferries and the port's container service for shipping to Halifax, NS.¹⁴

INVOLVEMENT IN NORTHEAST FISHERIES¹⁵

Commercial

In 2004 there are a total of 500 moorings, berthings, slips, and tie ups for commercial and recreational fishermen, of which 30% were used by commercial fishermen in Portland. A 2002 report by Coastal Enterprises, Inc. to the Maine State Planning Office recorded 271 commercial harvesters. Portland has 22 commercial private and public waterfront facilities, of which nine are dedicated to commercial fishing use. Further, commercial fishing access is perceived as a problem, and issues of development pressures, increased competition from tourism/recreational use, and deterioration of infrastructure are reported as current threats to the commercial fishing access (Sheehan and Copperthwaite 2002). Much of Maine's fishing fleet are now berthed in Massachusetts in order to take advantage of being closer to fishing grounds, being able to sell lobsters caught as bycatch, and reduced taxes on ice, oil, and other supplies.¹⁶

Portland's landings come primarily from the large mesh groundfish species and from lobster, with over \$14 million and \$12 million respectively over the ten year average (Table 1). Monkfish and herring are also important species. There were also a variety of other species

¹⁴ Profile review comment, Jon Kachmar, Maine State Planning Office, Coastal Division, 38 State House Station, Augusta, ME 04333, October 18, 2007

¹⁵ 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.

¹⁶ Profile review comment, Jon Kachmar, Maine State Planning Office, Coastal Division, 38 State House Station, Augusta, ME 04333, October 18, 2007

landed in Portland between the years 1997-2006. Both the number of vessels home ported and number of vessels registered with owner's living in Portland slightly decreased between 1997 and 2006. The level of fishing home port value increased until 2006, where there was a drop from over \$18 million in the previous year to over \$13 million. The level of fishing landed port experienced a similar trend, with a dip from 2005 to 2006 of over \$6 million (Table 2).

Landings by Species

Table 1. Dollar value of Federally Managed Groups of landings in Portland

	Average from 1997-2006	2006 only
Largemouth Groundfish¹⁷	14,433,950	10,756,311
Lobster	12,616,286	8,737,373
Monkfish	4,908,022	3,094,679
Herring	2,524,047	4,423,437
Other¹⁸	2,007,356	684,362
Scallop	65,950	72,250
Smallmouth Groundfish¹⁹	44,811	168
Skate	44,582	933
Squid, Mackerel, Butterfish	17,444	CONFIDENTIAL
Tilefish	15,623	CONFIDENTIAL
Summer Flounder, Scup, Black Sea Bass	12,334	CONFIDENTIAL
Dogfish	12,023	12,211
Bluefish	151	73

Vessels by Year²⁰

Table 1. 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	123	49	14,260,267	43,219,804
1998	104	43	11,898,155	35,203,041
1999	116	47	14,781,969	42,393,247
2000	115	43	16,486,230	45,434,740
2001	109	39	15,488,517	34,356,660
2002	107	40	15,208,020	40,396,946
2003	114	40	15,478,904	28,892,963
2004	111	38	17,763,527	34,690,050
2005	111	43	18,051,059	34,613,266
2006	104	44	13,255,702	27,825,058

(Note: # Vessels home ported = No. of permitted vessels with location as homeport

Vessels (owner's city) = No. of permitted vessels with location as owner residence²¹

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)

¹⁷ Largemouth groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

¹⁸ "Other" species includes any species not accounted for in a federally managed group

¹⁹ Smallmouth multi-Species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)

²⁰ 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.

²¹ 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

Portland contains a number of recreational fishing companies (Maine DMR 2006). They offer boat charters and fishing excursions.

Subsistence

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

FUTURE

Currently, in 2004, there is a heated conflict regarding the future use of the waterfront property in Portland. There are only three miles of waterfront and several industries are trying to expand, including private real estate development, commercial fisheries, cruise ship industry, and tourism/entertainment industries (Tapley 2002; Irvine 2005). The city is also in the process of building Ocean Gate – a \$20 million facility for the international ferry and visiting cruise ships, located next to the Maine State Pier.²²

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²² Profile review comment, Jon Kachmar, Maine State Planning Office, Coastal Division, 38 State House Station, Augusta, ME 04333, October 18, 2007

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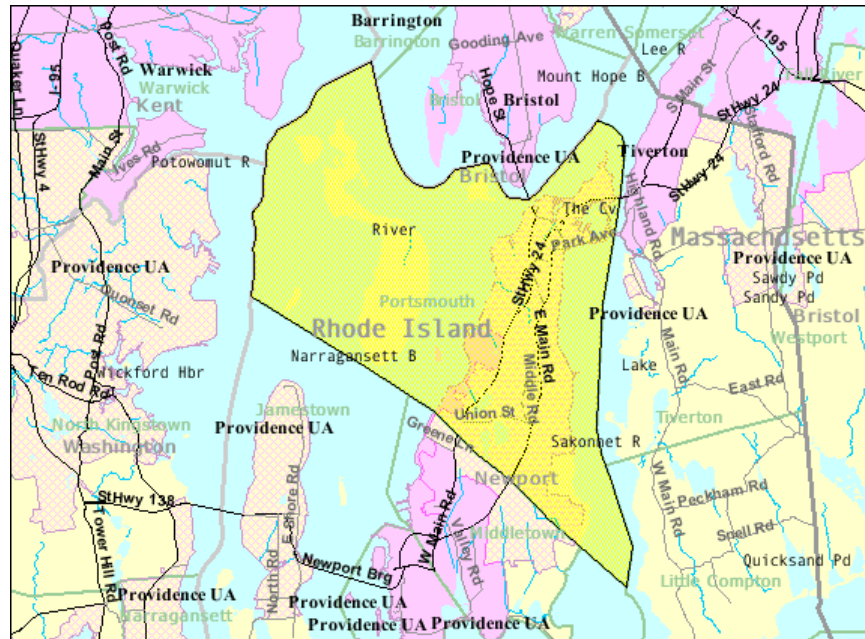
PORTSMOUTH, RI¹

Community Profile²

PEOPLE AND PLACES

Regional orientation

The Town of Portsmouth (41.60° N, 71.25° W) (USGS 2008) is located in Southeastern Rhode Island in Newport County, and is one of three towns on Aquidneck Island. Portsmouth has 56 miles of shoreline (Town of Portsmouth nd). Portsmouth includes Prudence, Hope, and Patience Islands, located in Narragansett Bay, and is located in the middle of Narragansett Bay.



Map 1. Location of Portsmouth, RI (US Census Bureau 2000a)

Historical/Background

Portsmouth was founded in 1638 by Anne Hutchinson, making it the first town in America to be founded by a woman. It calls itself “the birthplace of American democracy”, because some consider it the nation’s first true democracy. All other towns founded in America prior to Portsmouth were under the Church of England. “The Portsmouth Compact of 1638 is the first authentic guarantee of civil and religious freedom in the new world” (Town of Portsmouth nd). The Navy also plays an important role in Portsmouth’s history. In 1869, a torpedo testing station was established on Goat Island, off the coast of neighboring Middletown. The Naval War College was founded in Newport in 1884. The naval base here continued to

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.”

expand through World War II, becoming one of the Navy's most important bases of operation. The Navy continued to acquire land, and encompassed portions of Portsmouth, Middletown, and Newport. While the Navy's operations here have declined in subsequent years, today this area hosts the Naval War College, the Surface Warfare Officers School, and the Naval Undersea Warfare Center (NUWC 2008).

In addition to having an extensive coastline, Portsmouth has numerous farms, resulting from a highly progressive farm preservation program (Town of Portsmouth nd). Prudence Island is a sparsely inhabited island of which the majority is a state park. Prudence and Hope Islands are uninhabited. Much of the land on these islands is part of the Narragansett Bay National Estuarine Research Reserve (NBNERR nd).

Demographics³

According to Census 2000 data, Portsmouth had a total population of 17,149, up 2.0% from the reported population of 16,817 in 1990 (US Census Bureau 1990). Of this 2000 total, 49.1% were males and 50.9% were females. The median age was 39.9 years and 72.4% of the population was 21 years or older while 15.7% was 62 or older.

The most populous age group (Figure 1) for both men and women was the 40-49 year old grouping, followed closely by both the 30-39 and 50-59 age groups. The age structure shows a dip in population for both men and women in the 20-29 age bracket, indicating an out-migration of young people moving elsewhere for college and/or to seek jobs that is common in many fishing communities.

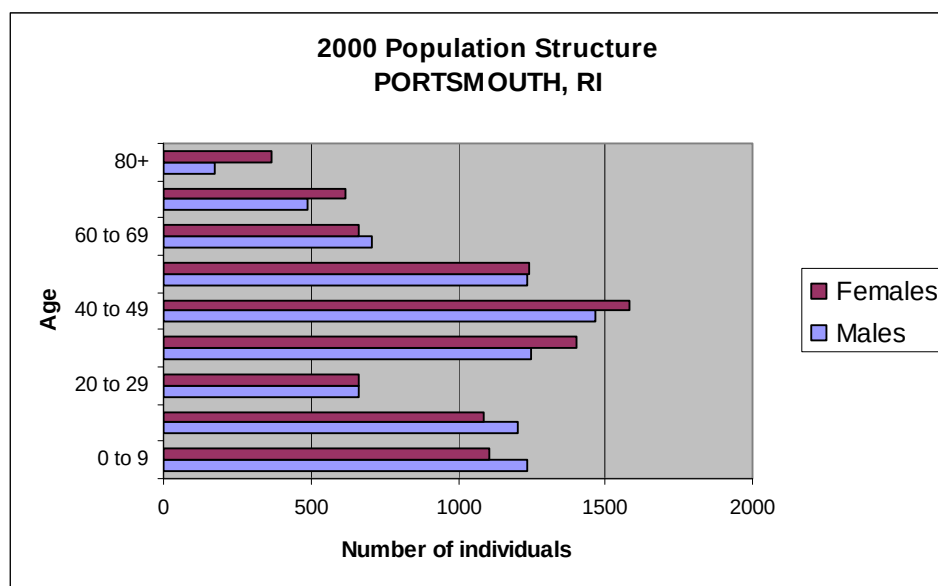


Figure 1. Portsmouth's population structure by sex in 2000 (US Census Bureau 2000)

The majority of the population was white (96.7%), with 1.2% of residents black or African American, 1.4% Asian, 0.2% Native American, and 0.03% Pacific Islander or Hawaiian (Figure 2). Only 1.5% of the population identified themselves as Hispanic/Latino (Figure 3).

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.

Residents linked their backgrounds to a number of different ancestries including: Irish (24.9%), English (18.5%), Portuguese (14.3%), and German (12.4%), and Italian (10.9%).

With regard to region of birth, 40.3% were born in Rhode Island, 54.6% were born in a different state and 4.0% were born outside of the U.S. (including 1.7% who were not United States citizens).

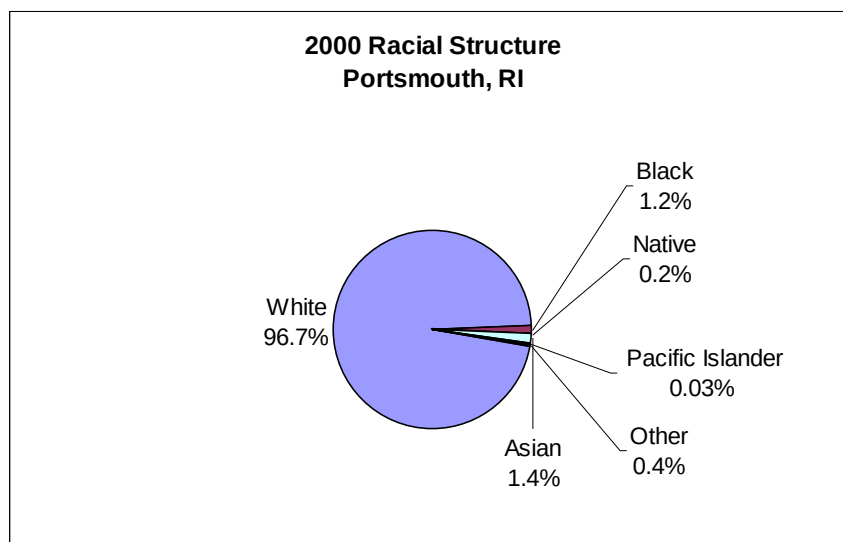


Figure 2. Racial Structure in 2000 (US Census Bureau 2000)

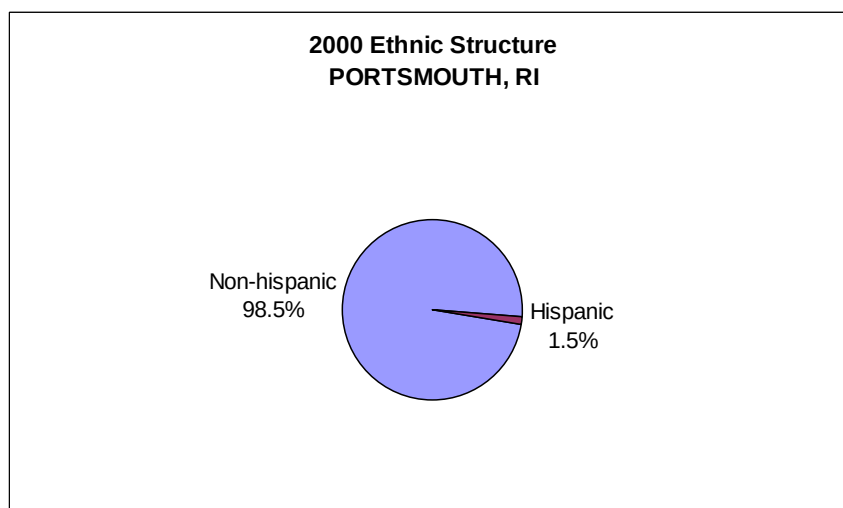


Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000)

For 94.3% of the population, only English was spoken in the home, leaving 5.7% in homes where a language other than English was spoken, and including 1.5% of the population who spoke English less than 'very well' according to the 2000 Census.

Of the population 25 years and over, 90.9% were high school graduates or higher and 42.9% had a bachelor's degree or higher. Again of the population 25 years and over, 3.4% did not reach ninth grade, 5.7% attended some high school but did not graduate, 23.6% completed high school, 17.7% had some college with no degree, 6.7% received an associate degree, 25.9% earned a bachelor's degree, and 17.0% received either their graduate or professional degree.

Although 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 Newport County was Catholic with 13 congregations and 68,668 adherents. Other prominent congregations in the county were Episcopal (10 with 4,720), and American Baptist (15 with 3,022). The total number of adherents to any religion was up 57.3% from 1990 (ARDA 2000).

Issues/Processes

There are a number of future development plans for Portsmouth's underutilized waterfront, including a large marina and luxury condominiums (Portsmouth n.d.).

Cultural attributes

Portsmouth does not have any cultural attributes directly related to fishing. However, there are a number of cultural attributes in nearby Newport. With such a diverse background, the city of Newport makes every effort to embrace its heritage through the many festivals that the city holds. One of the major events for the city is [The Tall Ships Rhode Island](#). The event includes tours of historic national and international Tall Ships, an international marketplace, and family entertainment. The Great Chowder Cook Off and the Taste of Rhode Island festivals both celebrate the region's past and present ties with the fishing industry, at least indirectly, through a celebration of the state's culinary heritage (NHC 2008).

The annual Blessing of the Fleet takes place in early December as part of the [Christmas in Newport](#) festival, and includes a parade by both commercial and recreational vessels decorated for the holidays. The city also celebrates both Irish Heritage Month (RIHPHC 2008) and Oktoberfest (HPC 2008) to remember and embrace its roots.

INFRASTRUCTURE

Current Economy

According to the U.S. Census 2000⁴, 68.7% (13,327 individuals) of the total population 16 years of age and over were in the labor force (Figure 4), of which 2.4% were unemployed, 2.2% were in the Armed Forces, and 64.2% were employed.

⁴ 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.

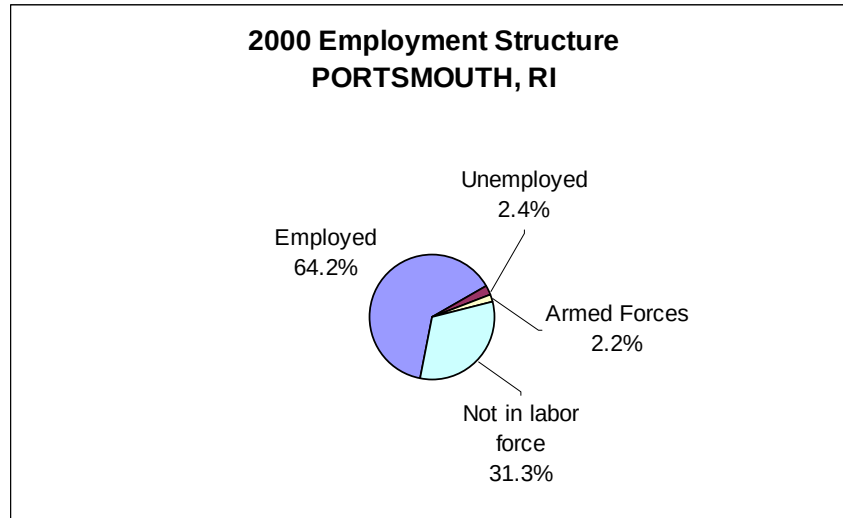


Figure 4. Employment Structure in 2000 (US Census Bureau 2000a)

“Major industries on Aquidneck Island include: Oceanography, underwater systems development, navigational equipment, advanced thermoplastic composites, programmers, small boat, sailboat, luxury yacht and ship building, marinas, tourism, printing, awards, and 4,000 acres of farms. A wide variety of skills exists in Portsmouth and adjacent towns. An impressive community of management, engineers and scientists has grown around Naval Undersea Warfare Center and Raytheon, including many small consulting firms. About 70% of Rhode Island's software industry is on Aquidneck Island. While Portsmouth tends to be home to the more highly skilled, a substantial population with a full range of skills lives within a 10 mile radius.” Portsmouth also has an Enterprise Zone created to attract businesses, providing them with tax incentives. Four out of five of Rhode Island's top boat dealers are located in Portsmouth, as are a number of yacht and small boat manufacturers. Marine-related businesses in Portsmouth include: Alden Yachts, Brewer Street Boatworks, North Sails, Vanguard Sailboats, and a number of other businesses providing electronic, rigging, marine engineering, and other services (Town of Portsmouth nd).

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 57 positions or 0.7% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 506 positions or 5.9% of jobs. Education, health, and social services (26.5%), professional, scientific, management, administrative, and waste management services (14.4%), retail trade (10.0%), and manufacturing (9.8%) were the primary industries.

Median household income in Portsmouth was \$58,835, up 38.5% from \$42,474 in 1990 (US Census Bureau 1990) and per capita income was \$28,161. For full-time year round workers, males made approximately 45.8% more per year than females.

The average family in Portsmouth consisted of 3.00 persons. With respect to poverty, 2.0% of families, down from 3.3% in 1990 (US Census Bureau 1990) and 3.4% of individuals earn 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, 13.6% of all families (of any size) earned less than \$35,000 per year.

In 2000, Portsmouth had a total of 7,386 housing units of which 91.5% were occupied and 75.3% were detached one unit homes. Close to fifteen percent (14.8%) of these homes were built before 1940. Mobile homes, boats, RVs, vans, etc. accounted for 4.9% of the total housing units; 91.2% of detached units have between 2 and 9 rooms. In 2000, the median cost for a home in this area was \$167,800. Of vacant housing units, 5.2% were used for seasonal, recreational, or occasional use. Of occupied units, 26.1% were renter occupied.

Government

The town of Portsmouth operates under a Council-Administrator form of government, with a seven-member council elected to two-year terms (Town of Portsmouth nd).

Fishery involvement in government

Portsmouth's Community Comprehensive Plan (as updated through 2002) includes a focus on enhancing marine-related activities in the town and maintaining public access to the waterfront (Town of Portsmouth nd). The town also has a harbormaster.

Institutional

Fishing associations

The [Rhode Island Saltwater Anglers' Association](#) is dedicated to conservation of the marine environment and of fisheries, and to protecting the rights of saltwater recreational fishermen in Rhode Island. Rhode Island has several other fishery associations to which fishermen in Portsmouth might belong, including: the Ocean State Fishermen's Association, the Rhode Island Shellfishermen's Association, the Rhode Island Inshore Fishermen's Association, the Rhode Island Lobstermen's Association, and the Rhode Island Commercial Fishermen's Association (URI 2005).

Fishing assistance centers

Information on fishery assistance centers in Portsmouth is unavailable through secondary data collection.

Other fishing related organizations

The [Commercial Fisheries Center of Rhode Island](#) was founded in 2004 and is home to nonprofit commercial fishing organizations, and serves "as a headquarters for bringing fishermen, scientists, managers, and elected officials together to discuss issues." The goals of the center are "to improve fisheries and understanding of the marine environment through education, collaborative research, and cooperation" (CFCRI nd).

[Save the Bay](#) is a non-profit organization dedicated to restoring and protecting the environmental quality of Narragansett Bay. The organization works towards this goal by monitoring the health of the Bay, initiating action to clean up the Bay, and through advocacy and education programs.

Physical

Portsmouth is accessible by the Sakonnet River and Mount Hope Bridges, and by the Newport Pell Bridge via Newport. The Newport State Airport is two miles away, and T.F. Green State Airport is 36 miles away in Warwick. Route 24 ends in Portsmouth, providing easy access to Providence and Boston. Newport is 9 miles, New Bedford, MA is 22 miles away, and

Providence is 29 miles from Portsmouth. The Rhode Island Public Transit Authority runs a bus between Newport and Providence which stops in Portsmouth (RIPTA nd). According to the 2002 update of the Portsmouth Comprehensive Community Plan, the Prudence Ferry runs to Prudence Island from Bristol (Town of Portsmouth nd).

Portsmouth has six marinas, a public boat launch, and 1,000 private moorings. The marinas include Brewer's Sakonnet Marina, East Passage Yachting Center, Pirate Cove Marina, Stone Bridge Marina, Little Harbor Marine (Town of Portsmouth nd), and a small, private marina with limited public access at the end of Willow Lane.⁵ [Brewer's Sakonnet Marina](#) 320 slips, service facilities, and a fuel dock. The [East Passage Yachting Center](#) has 360 deep-water berths and a full service marina with winter storage. New England Boatworks, a boatbuilding company, is also located here. There are public boat ramps in Portsmouth located at Weaver Cove, Cedar Cove, and Stone Bridge (Town of Portsmouth nd).

INVOLVEMENT IN NORTHEAST FISHERIES⁶

Commercial

Almost all landings in Portsmouth in 2006 were from the "other" species grouping; red crab, which had the most valuable landings on average from 1997-2006, had no landings in 2006 (see Table 1). The highest landings in Portsmouth were in 2000, followed by 2001, with a low level of landings in most other years. Home ported vessels in Portsmouth declined, from a high of six in 1997 and 1998, down to just one in 2004 and 2006. There are considerably more vessels with owners living in Portsmouth than there are vessels home ported here. There were a maximum of 19 vessels with owners in Portsmouth in 1997, down to nine in 2002 – 2004 (see Table 2). Many of these vessel owners may keep their boats in Newport.

⁵ Profile review comment, Gary Crosby, Assistant Planner, 2200 E. Main Rd. Portsmouth, RI 02871, August 29, 2007

⁶ 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. Rank Value of Landings for Federally Managed Groups

Species	Rank Value of Average Landings from 1997-2006
Red Crab	1
Other ⁷	2
Squid, Mackerel, Butterfish	3
Herring	4
Surf Clams, Ocean Quahog	5
Lobster	6
Monkfish	7
Summer Flounder, Scup, Black Sea Bass	8
Skate	9
Largemouth Groundfish ⁸	10
Scallop	11
Bluefish	12
Dogfish	13
Smallmouth Groundfish ⁹	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 Year¹⁰

Table 2. Federal Vessel Permits Between 1997-2006

Year	# Vessels (home ported)	# Vessels (owner's city)
1997	6	19
1998	6	18
1999	5	15
2000	5	13
2001	4	10
2002	4	9
2003	3	9
2004	1	9
2005	2	10
2006	1	9

(Note: # Vessels home ported = No. of permitted vessels with location as homeport,
Vessels (owner's city) = No. of permitted vessels with location as owner residence¹¹)

⁷ "Other" species includes any species not accounted for in a federally managed group

⁸ Largemouth groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

⁹ Smallmouth multi-species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)

¹⁰ 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 is a large recreational fishing sector in Rhode Island. “In Rhode Island, nearly 362,000 recreational marine anglers - more than half from out-of-state - made over 1.5 million trips, catching 4.3 million pounds of sport fish and releasing about 55 percent in 2004” (RIDEM 2004).

Subsistence

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

FUTURE

There a number of areas of land in Portsmouth which were formerly part of Naval Station Newport and which are no longer in use; many of these properties have water views and are likely to be developed in some capacity in the future. In particular, the town wishes to increase the development of marine-related industries, enhancing its position within the industry. One plan includes the development of a “marina village” at Weaver Cove which would include a marina, housing, restaurant and retail uses (Town of Portsmouth nd). It would be the largest single marina in New England, with 1,495 slips, and a number of condominiums with waterfront access (ProJo 2006).

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¹¹ 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.

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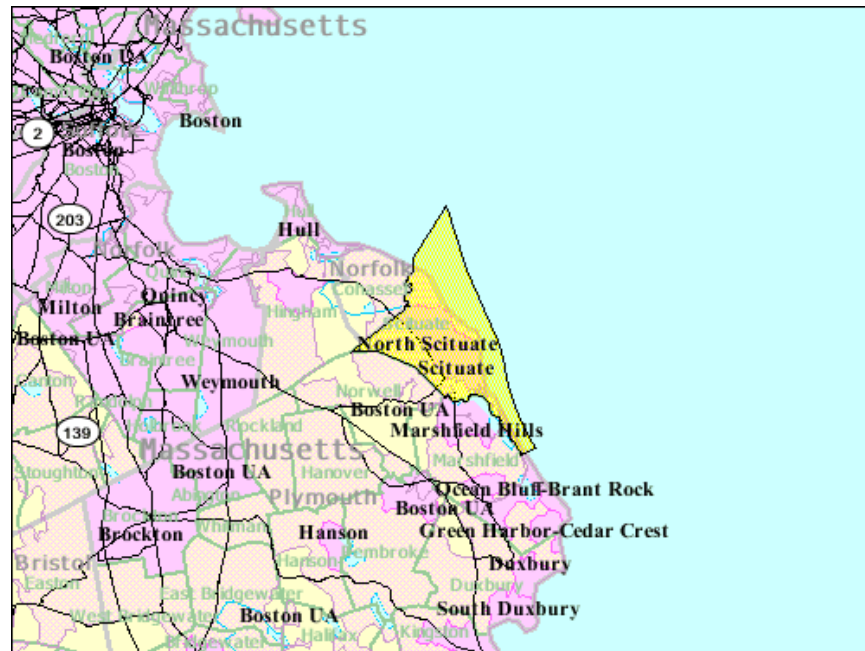
SCITUATE, MA¹

Community Profile²

PEOPLE AND PLACES

Regional orientation

The Town of Scituate (42.20° N, 70.73° W) is located in the South Shore region of Massachusetts, in Plymouth County, 30 miles south of Boston. Scituate faces Cape Cod Bay and is bordered by Marshfield and Norwell to the south and Cohasset to the north. It encompasses 31.79 square miles, of which 17.18 square miles is land, and 14.61 square miles is water (State of Massachusetts 2006).



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

Historical/Background

The name Scituate comes from a Wampanoag Indian word meaning “cold brook” (Town of Scituate 2006). The first permanent European settlement in Scituate was in 1627 or 1628, when a group from Plymouth headed north looking for fertile lands to cultivate. The town was incorporated in 1636 (Town of Scituate 2006). Portions of the area that originally made up Scituate later became the towns of Norwell and Hanover, and a portion of Scituate was ceded to Marshfield. Scituate was an important fishing port by the end of the eighteenth century because of its protected harbor, but mud flats and shallow water made the harbor difficult to enter, so the town built Scituate Light here, completing construction in 1811 (D’Entremont 2006).

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.”

Shipbuilding was also an important industry to residents of Scituate; between 1645-1871 there were over 1,000 ships built in the North River, which separates Scituate from Marshfield (Marshfield Chamber of Commerce 2006). At the start of the 20th century, Scituate was still a small town with around 2,000 residents. Scituate has since transitioned from a summer colony to a residential community, rapidly expanding in recent years because of its proximity to Boston, its miles of beaches, and its excellent school system, all of which draw residents to this town (Town of Scituate 2006). It also has one of the lowest crime rates in the state (Norwell and Scituate Real Estate 2006). Scituate has 21 miles of waterways, including five beaches, four rivers, and a large, sheltered harbor (Town of Scituate 2006a). Scituate's commercial fishing fleet adds to the town's appeal and historical ties. "The Town of Scituate is a delightful mix of rural, suburban and seaside lifestyles within a 25 mile ride to the City of Boston" (Town of Scituate 2006).

Demographics³

According to Census 2000 data, Scituate had a total population of 17,863, up 6.4% from the reported population of 16,786 in 1990 (US Census Bureau 1990). Of this 2000 total in, 47.7% were males and 52.3% were females. The median age was 40.7 years and 71.8% of the population was 21 years or older while 18.1% was 62 or older.

Scituate's population structure (Figure 1) is typical of a relatively young, family-oriented community. The most populous age bracket is 40-49, followed by 30-39, and there are also lots of children and teenagers. The population takes a dip for the 20-29 age bracket, as is common in many communities when young people leave to go to college or to seek jobs. There are also more women than men in all age brackets past the age of 20, indicating that either men are leaving the town or that women are migrating to Scituate for jobs or some other reason.

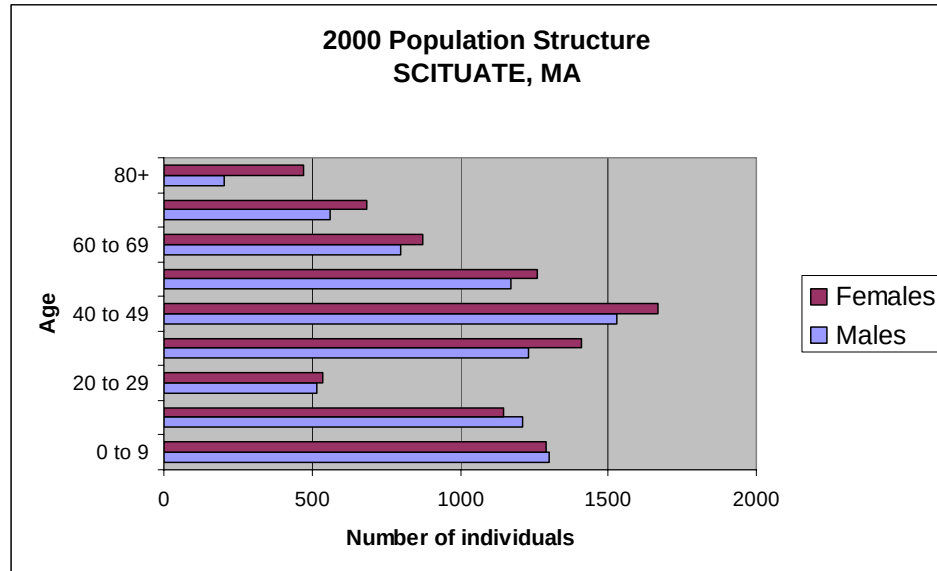


Figure 1. Scituate's population structure by sex in 2000

The majority of the population was white (97.7%), with 0.5% of residents Black or African American, 0.4% Asian, 0.03% Native American, and 0.01% Pacific Islander or

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.

Hawaiian (see Figure 2). Only 0.8% of the population identified themselves as Hispanic/Latino (see Figure 3). Residents linked their backgrounds to a number of different ancestries including: Irish (44.2%), English (17.9%), Italian (14.4%), and German (8.6%). With regard to region of birth, 74.3% were born in Massachusetts, 21.7% were born in a different state and 3.8% were born outside of the U.S. (including 1.6% who were not United States citizens).

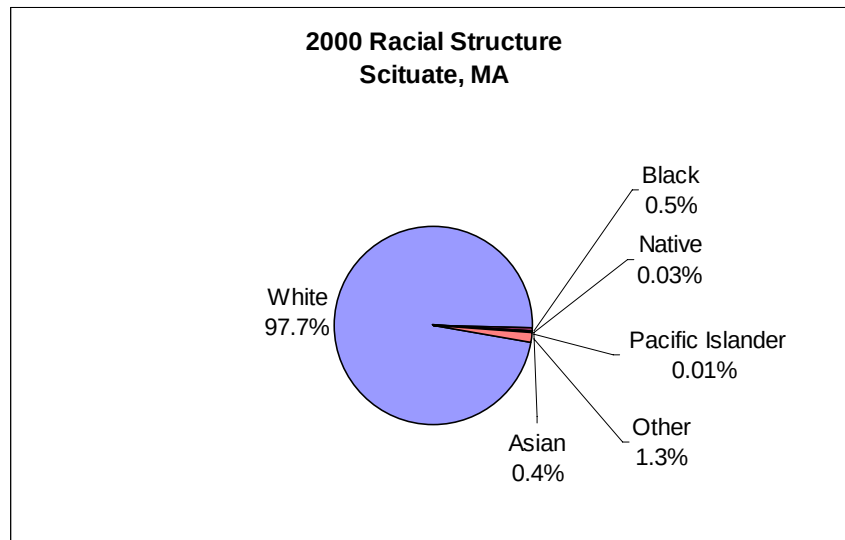


Figure 2. Racial Structure in 2000 (US Census Bureau 2000)

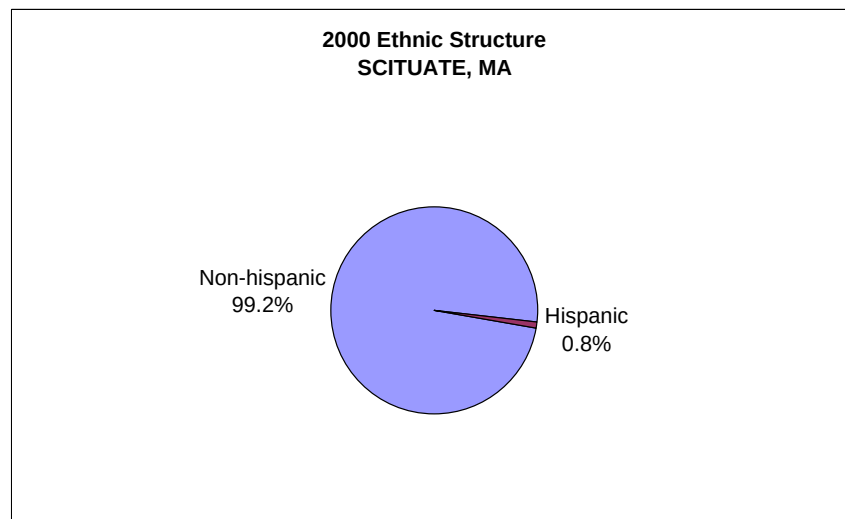


Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000)

For 94.5% of the population, only English was spoken in the home, leaving 5.5% in homes where a language other than English was spoken, and including 2.0% of the population who spoke English less than “very well” according to the 2000 Census.

Of the population 25 years and over, 95.8% were high school graduates or higher and 47.6% had a bachelor’s degree or higher. Again of the population 25 years and over, 0.9% did not reach ninth grade, 3.3% attended some high school but did not graduate, 20.4% completed high school, 18.9% had some college with no degree, 8.9% received an associate’s degree,

32.1% earned a bachelor's degree, and 15.4% 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 (ARDA) in 2000, the religion with the highest number of congregations and adherents in Plymouth County was Catholic with 40 congregations and 205,060 adherents. Other prominent congregations in the county were Jewish (8 with 23,600 adherents), United Church of Christ (25 with 9,491 adherents) and Episcopal (15 with 6,894 adherents). The total number of adherents to any religion was down 36.1% from 1990 (ARDA 2000).

Issues/Processes

A 2004 report noted that the Town Pier, which is the only deep-water facility in Scituate, was run-down, and the groundfishing fleet and lobstermen were competing for the same limited space (Michaud 2004). In 2005 some immediate improvements were made to the pier to improve the working conditions, but it is still aging (Town of Scituate 2005).

The US Coast Guard closed their Scituate base; they maintain a small office next to the harbor master's building, but most of their larger vessels, including search and rescue vessels, must now travel from Hull or Sandwich to reach this area.⁴ Discussions on closing all or part of the Stellwagen Bank National Marine Sanctuary off the coast of Scituate to fishing also have many fishermen worried (DeLory 2004).

Cultural attributes

Each August, Scituate celebrates its heritage with the Heritage Days festival, featuring a fishing tournament for striped bass and bluefish, and a lobster bake. In the fall, the town holds a ChowderFest as part of its Fall for Scituate festival (Scituate Chamber of Commerce 2006). Scituate's Maritime and Irish Mossing Museum is dedicated to the town's maritime heritage, including the shipbuilding industry that once thrived here, and the historically important trade of harvesting Irish Moss algae in Scituate (Scituate Historical Society 2006).

INFRASTRUCTURE

Current Economy

The largest employer in the town of Scituate is by far the town itself, which, including town government, services, and the school district, employs 600-700 people. Other sizable employers are Jamie's Grille and Pub and the Village Market.⁵ There are several large buildings in the Greenbush area housing physicians, clinics, and other medical services which are likely to employ a number of people.⁶

According to the U.S. Census 2000⁷, 65.9% (9,243 individuals) of the total population 16 years of age and over were in the labor force (see Figure 4), of which 1.6% were unemployed, 0.2% were in the Armed Forces, and 65.9% were employed.

⁴ Profile review comment, William Adler, Massachusetts Lobstermen's Association, 8 Otis Place, Scituate, MA 02066, August 29, 2007

⁵ Personal Communication, Laura Harbottle, Scituate Town Planner, Town Hall, 600 Chief Justice Cushing Way, Scituate, MA 02066, 8/9/05

⁶ Profile review comment, William Adler, Massachusetts Lobstermen's Association, 8 Otis Place, Scituate, MA 02066, August 29, 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.

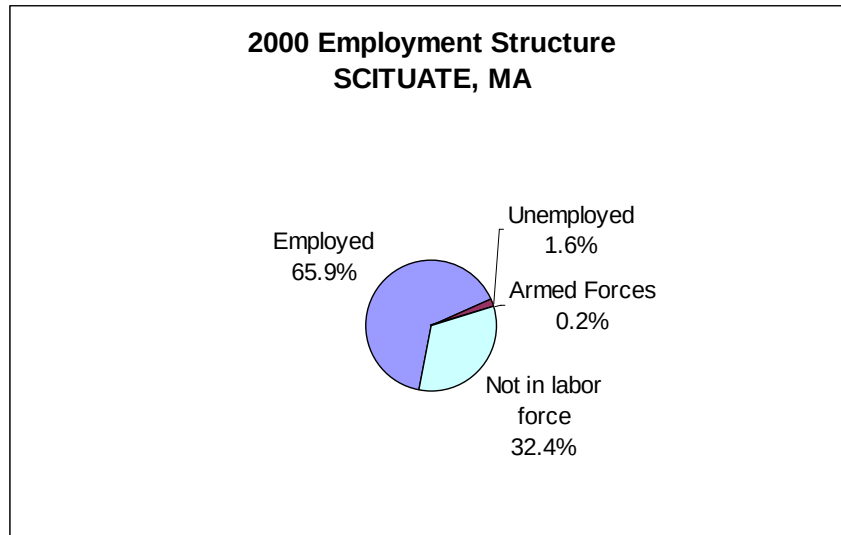


Figure 4. Employment Structure in 2000 (US Census Bureau 2000)

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 77 positions or 0.9% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 837 positions or 9.3% of jobs. Education, health, and social services (22.1%), finance, insurance, real estate, and rental and leasing (12.9%), professional, scientific, management, administrative and waste management services (10.9%), and retail trade (10.3%) were the primary industries.

Median household income in Scituate was \$70,868 (up 36.2% from \$52,044 in 1990 [US Census Bureau 1990]) and per capita income was \$33,940. For full-time year round workers, males made approximately 50.0% more per year than females.

The average family in Scituate consisted of 3.13 persons. With respect to poverty, 1.4% of families (down from 1.8% in 1990 [US Census Bureau 1990]) and 2.6% of individuals earned below the U.S. Census poverty threshold. This threshold is \$8,794 for individuals and ranges from \$11,239-35,060 for families, depending on number of persons (2-9) (US Census Bureau 2000b). In 2000, 11.1% of all families of any size earned less than \$35,000 per year.

In 2000, Scituate had a total of 7,685 housing units of which 87.1% were occupied and 86.2% were detached one unit homes. Nearly 30% of these homes were built before 1940. Mobile homes accounted for 0.2% of the total housing units; 84.3% of detached units had between 2 and 9 rooms. In 2000, the median cost for a home in this area was \$276,000. Of vacant housing units, 10.6% were used for seasonal, recreational, or occasional use. Of occupied units 17.0% were renter occupied.

Government

The Town of Scituate is governed by a Board of Selectmen, with five members elected to three year terms, and has a Town Meeting form of government (Town of Scituate 2006).

Fishery involvement in government

Scituate has a Shellfish Officer who is given authority to enforce shellfishing regulations within the town. The Board of Selectmen is responsible for issuing shellfish permits (Town of Scituate 2006). Scituate also has a harbor master's office.

Institutional

Fishing associations

The [Massachusetts Lobstermen's Association](#) is located in Scituate; this organization represents the interests of commercial lobstermen throughout Massachusetts. The South Shore Lobstermen's Association recently moved to Marshfield from Scituate, but holds some of their meetings in Scituate.⁸

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. 2000).

Fishing assistance centers

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

Other fishing related organizations

The headquarters of the [Stellwagen Bank National Marine Sanctuary](#) is located in Scituate; the Sanctuary Advisory Council includes fishermen, and the activities of the Sanctuary can affect fishing in Scituate and other communities. The [North and South Rivers Watershed Association](#) aims to protect the watershed of these two rivers, restore water quality and habitat, and educate the public about the watershed through public education, outreach, and recreation programs. The watershed is located in twelve towns on the South Shore of Massachusetts, including Scituate. The Association has taken a lead in monitoring the rivers for pollutants and mitigating identifiable sources of pollution.⁹

Physical

Scituate is 20 miles from Plymouth and 30 miles from Boston. State Routes 3A and 123 connect Scituate with Route 3, which travels between Cape Cod and Boston. Neighboring Marshfield has its own municipal airport; the closest large airport is Logan International Airport in Boston, 19 miles away. The Massachusetts Bay Transportation Authority provides public transportation via commuter rail to Boston via the [Greenbush Commuter Rail Line](#) that passes directly through Scituate, completed in October 2007. The Plymouth and Brockton Street Railway Company provides bus service between Scituate and Boston.

There are three harbors in Scituate: Scituate Harbor, and the North and South Rivers (Michaud 2004). Scituate Harbor is on the landward side of two protected coves. Scituate has a Town Pier with space for about 15 vessels, located in the harbor. One section of the harbor's moorings is also designated solely for commercial vessels (Hall-Arber et al. 2001). The groundfish vessels tie up at the Town Pier, while the lobster boats use the moorings. The Town Pier is used exclusively by the commercial fishing fleet; catches are unloaded here onto trucks where they are shipped to dealers and processors. Ice is also shipped here from New Bedford or Gloucester; access to ice is a big problem here. The lobstermen have created their own landing,

⁸ Profile review comment, William Adler, Massachusetts Lobstermen's Association, 8 Otis Place, Scituate, MA 02066, August 29, 2007

⁹ Profile review comment, Joseph Strazdes, Scituate Shellfish Warden, Town of Scituate, 600 Chief Justice Cushing Way, Scituate, MA 02066, September 20, 2007

with marina floats donated by the harbormaster. Lobstermen use the Cole Parkway Marina as well for landings.¹⁰

There are also eleven marinas in Scituate. The town has a total of 673 moorings and 650 slips for use by both commercial and recreational vessels (Michaud 2004). Diesel fuel is available from the pier (Hall-Arber 2001). There are two boat ramps in town (Town of Scituate 2006). [Belsan Bait and Tackle](#) in Scituate serves primarily recreational fishermen.

INVOLVEMENT IN NORTHEAST FISHERIES¹¹

Commercial

The majority of commercial vessels in Scituate are lobster vessels; there are about 15 groundfish vessels located at the town pier. Three retail markets, Nautical Mile Seafood, Mulaney's Harborside, and Fourth Cliff buy lobsters from the local lobstermen (Michaud 2004). Irish moss, a type of seaweed, was traditionally harvested in Scituate for many years and was a significant industry, but is now generally harvested from cheaper sources outside of the United States.¹²

Scituate has a very diverse fishery, with a number of different species and gear types. Lobster was the most valuable species landed here in 2006, bringing in nearly \$1.8 million (see Table 1). The second most valuable species grouping in 2006 was largemouth groundfish, followed by monkfish. The landings values for lobster in 2006 was much higher than the average landings values for 1997-2006; the landings for groundfish in 2006 had declined from the ten-year average however. The total landings in Scituate had their highest point in 2000, at close to \$4.8 million, then declined somewhat in subsequent years. Overall, the number of vessels home ported in Scituate varied from 1997-2006, reaching a high of 81 in 2002, and declining to 63 by 2006. The value of fishing to home ported vessels in Scituate increased somewhat during this time period, to \$3.4 million in 2006 (see Table 2). Also of interest is that the number of vessels owned by Scituate residents declined over the same period, indicating that perhaps the vessel owners are moving out of Scituate, or that the vessels are changing hands.

The Massachusetts Division of Marine Fisheries reported 45 commercial lobstermen fishing out of Scituate in 2006. Scituate was ranked 11th in the state in catch (pounds) for state landings.¹³

¹⁰ Profile review comment, William Adler, Massachusetts Lobstermen's Association, 8 Otis Place, Scituate, MA 02066, August 29, 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.

¹² Profile review comment, William Adler, Massachusetts Lobstermen's Association, 8 Otis Place, Scituate, MA 02066, August 29, 2007

¹³ Data provided by William Adler, Massachusetts Lobstermen's Association, 8 Otis Place, Scituate, MA 02066, September 5, 2007

Landings by Species

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

	Average from 1997-2006	2006 only
Largemouth Groundfish¹⁴	1,423,269	1,221,144
Lobster	1,258,349	1,773,974
Monkfish	402,945	188,020
Dogfish	74,765	17,572
Other¹⁵	29,467	34,964
Skate	16,538	23,924
Squid, Mackerel, Butterfish	12,405	668
Scallop	9,034	28,418
Bluefish	4,775	1,290
Summer Flounder, Scup, Black Sea Bass	3,539	1,452
Surf Clams, Ocean Quahog	2,459	0
Smallmouth Groundfish¹⁶	1,926	31
Tilefish	144	0

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

Vessels by Year¹⁷

Table 1. 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	79	55	2,573,583	1,371,648
1998	70	50	2,727,569	2,855,762
1999	78	59	2,015,519	2,092,982
2000	75	53	2,934,249	4,770,224
2001	79	50	2,093,487	3,484,206
2002	81	50	2,258,030	3,837,513
2003	74	49	2,597,671	4,219,873
2004	77	53	2,798,574	3,815,547
2005	68	48	2,845,396	2,763,997
2006	63	44	3,460,992	3,291,457

(Note: # Vessels home ported = No. of permitted vessels with location as homeport

Vessels (owner's city) = No. of permitted vessels with location as owner residence¹⁸

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)

¹⁴ Largemouth groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

¹⁵ "Other" species includes any species not accounted for in a federally managed group

¹⁶ Smallmouth multi-species : red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)

¹⁷ 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.

¹⁸ 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

Scituate has a few [fishing charter companies](#) that fish for striped bass, bluefish, bluefin tuna, cod, and [other species](#), including one boat that specializes in [shark fishing](#). Fishing off bridges, docks, and beaches is popular in Scituate as well. Scituate also has shellfishing in many of its beaches and estuaries. Recreational shellfishing in the North and South Rivers has been limited due to non-point specific pollution problems, especially after rain events.¹⁹

Subsistence

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

FUTURE

The town is working on plans to improve Scituate Harbor village; design improvements were conceived with the goal of increasing the town's physical connection to its maritime heritage by making the waterfront more attractive and accessible. This plan is, however, focused on improving the village's commercial district, and makes little mention of the commercial fishing fleet or existing infrastructure (Cecil Group, Inc. 2002).

[T.K.O. Malley's](#), a harborfront restaurant, has requested permission to add dock slips to its facility, including two that will be designated for use by commercial vessels. The Scituate town marina also has plans to expand their facilities; this will allow for more recreational vessels in Scituate Harbor, where recreational boating is constantly expanding, but represents a further transition from a commercial harbor to one catering to recreational vessels.²⁰

The town pier in Scituate reports a steady demand for dockage among commercial fishing boats, indicating that the industry here is also relatively steady.

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²⁰ Personal Communication, Laura Harbottle, Scituate Town Planner, Town Hall, 600 Chief Justice Cushing Way, Scituate, MA 02066, 8/9/05

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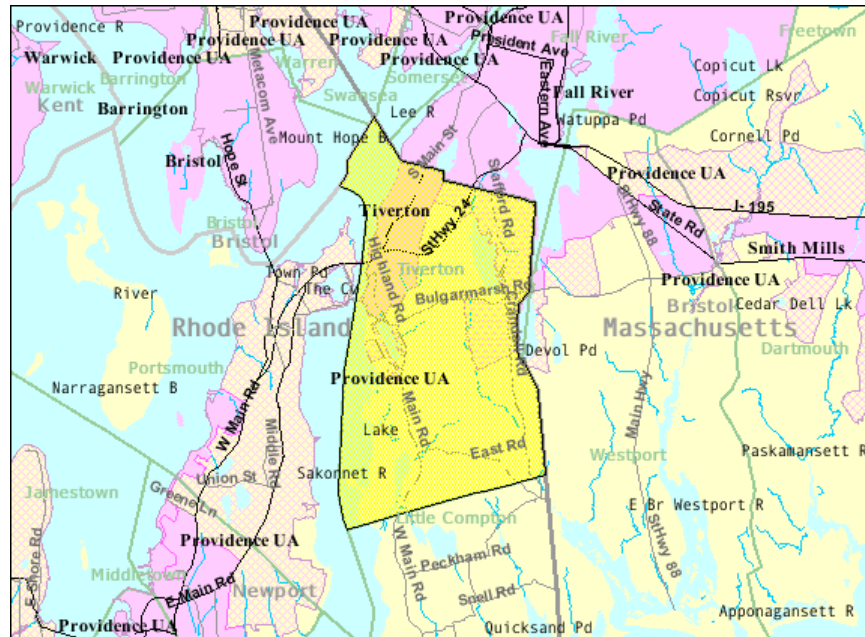
TIVERTON, RI¹

Community Profile²

PEOPLE AND PLACES

Regional orientation

The Town of Tiverton (41.63° N, 71.21° W) is located in Southeastern Rhode Island in Newport County, along the Massachusetts border. It borders Fall River and Westport, MA and has a total land area of the town is 29.6 square miles. Tiverton is located along the Sakonnet River, part of Narragansett Bay (USGS 2008).



Map 1. Location of Tiverton, RI (US Census Bureau 2000)

Historical/Background

The town of Tiverton was named after Tiverton, England. “Tiverton was originally incorporated in 1694, as part of the Massachusetts Bay Colony. A long boundary dispute between Rhode Island and Massachusetts was settled in 1746, and Tiverton, by Royal Decree, together with the Towns of Cumberland, Barrington, Bristol and Little Compton was annexed to Rhode Island. The town was incorporated in 1747. For approximately three years during the Revolution when the British held Aquidneck Island, Tiverton was an asylum for Americans fleeing from British occupation, and the town became a mustering point for Colonial forces who gathered together to drive the British off the island. In its early day, Tiverton was chiefly a

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.”

farming community with some fishing and boat construction. Until 1900 the manufacture of menhaden oil, a fish derivative, was one of the primary industrial pursuits. Cotton and woolen mills were established as early as 1827. Today, trade establishments are the major employers in the town. Recent years have seen Tiverton grow as a summer resort and residential area. Development has been concentrated in the area known as North Tiverton” (Town of Tiverton nd). North Tiverton borders Fall River and is densely populated.

Demographics³

According to Census 2000 data⁴, Tiverton had a total population of 15,260, up 110.2% from the reported population of 7,259 in 1990 (US Census Bureau 1990). Of this 2000 total, 48.7% were male and 51.3% were female. The median age was 40.8 years and 75.1% of the population was 21 years or older while 19.3% was 62 or older.

The population structure of Tiverton (see Figure 1) shows the most populous age group for both men and women was the 40-49 year old grouping, followed closely by both the 30-39 and 50-59 age groups. The age structure showed a dip in population for both men and women in the 20-29 age bracket, indicating an out-migration of young people moving elsewhere for college and/or to seek jobs that is common in many fishing communities.

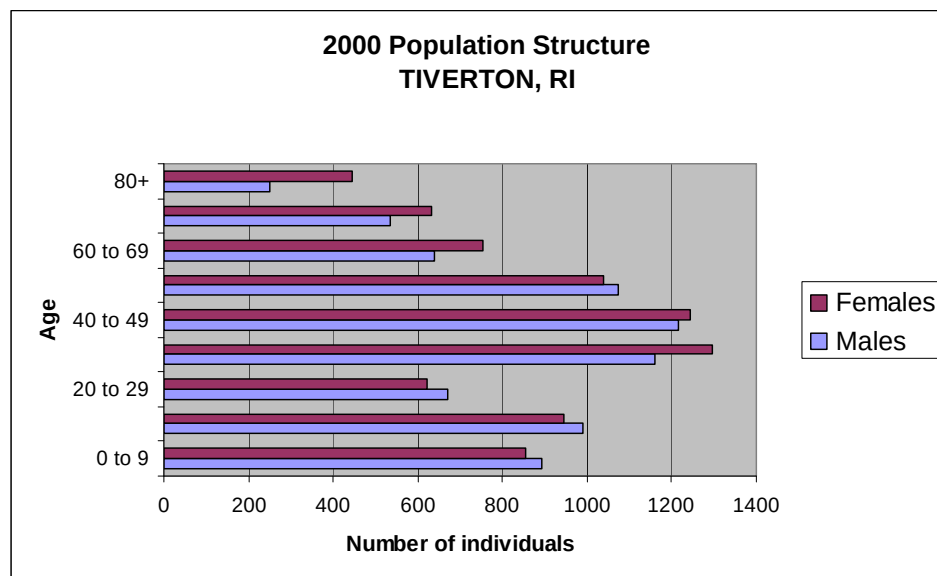


Figure 1. Tiverton's population structure by sex in 2000 (US Census Bureau 2000)

The majority of the population was white (97.9%), with 0.6% of residents black or African American, 0.6% Asian, 0.6% Native American, and 0.1% Pacific Islander or Hawaiian (see Figure 2). Only 0.7% of the total population identified themselves as Hispanic/Latino (see Figure 3). Residents linked their backgrounds to a number of different ancestries including: Portuguese (31.3%), Irish (16.3%), French (14.4%), and English (14.3%). With regard to region

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 Tiverton town, Newport County RI (accessed July 2, 2007)

of birth, 19.8% were born in Rhode Island, 75.6% were born in a different state and 4.1% were born outside of the U.S. (including 1.3% who were not United States citizens).

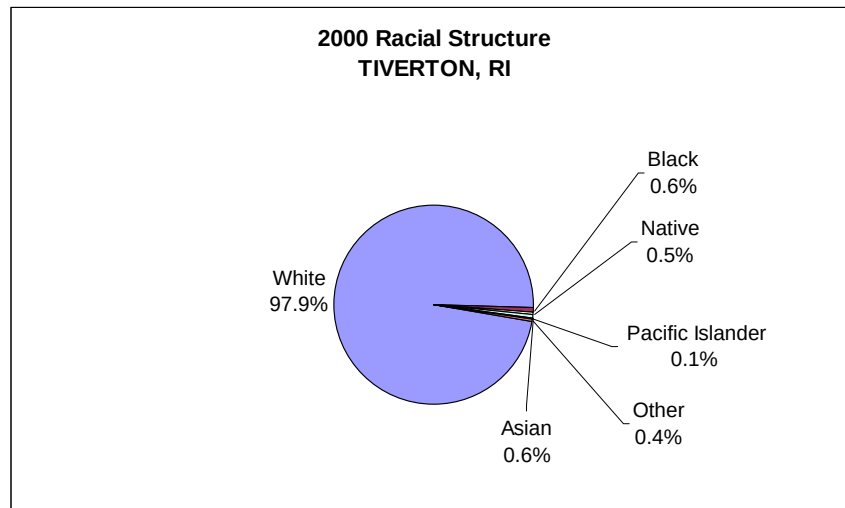


Figure 2. Racial Structure in 2000 (US Census Bureau 2000)

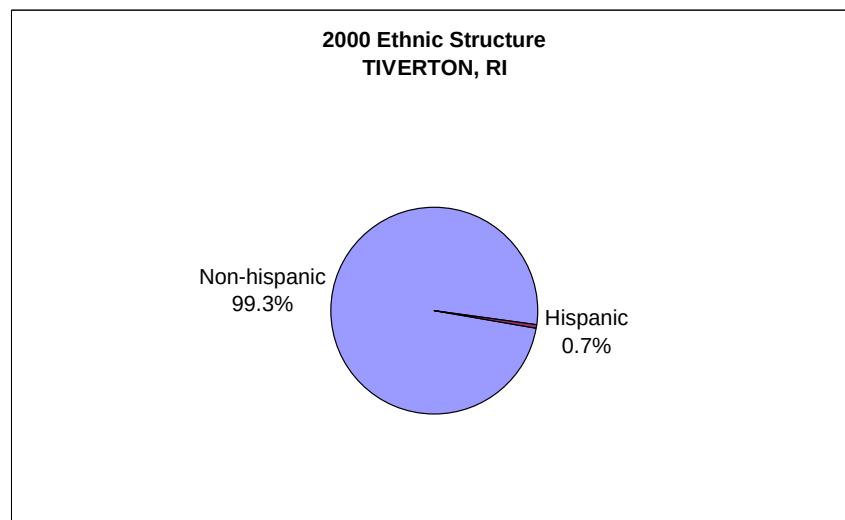


Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000)

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, and including 2.8% of the population who spoke English less than “very well” according to the 2000 Census.

Of the population 25 years and over, 79.5% were high school graduates or higher and 24.0% had a bachelor’s degree or higher. Again of the population 25 years and over, 8.5% did not reach ninth grade, 11.9% attended some high school but did not graduate, 29.6% completed high school, 18.7% had some college with no degree, 7.2% received an associate’s degree, 14.7% earned a Bachelor’s degree, and 9.3% received either a graduate or professional degree.

Although religion percentages are not available through U.S. Census data, according to the Association of Religion Data Archives in 2000, the religions with the highest number of congregations in Newport County was Catholic with 13 congregations and over 68,668

adherents. Other prominent congregations in the county were Episcopal (10 with 4,720 adherents), and American Baptist (15 with 3,022 adherents). The total number of adherents to any religion was up 57.3% from 1990 (ARDA 2000). There are twelve houses of worship listed in Tiverton, of which four are Catholic, one is Mormon, and the rest are various Protestant denominations (Town of Tiverton nd).

Issues/Processes

Like many coastal communities in the area, Tiverton has a problem with loss of waterfront access (Sakonnet Times 2004b). A property known as Manchester's, which has been in the past leased to fishing companies for use as a wholesale and retail market, and where a number of fishing vessels were docked, was sold in 2005 to a couple who intend to develop this area for retail and tourism (East Bay Newspapers 2005).

A highly controversial proposal in this area is one to bring liquid natural gas (LNG) tankers into Fall River, which borders Tiverton. These tankers would have to pass closeby a segment of Tiverton's shore (Sakonnet Times 2004a). In addition to the safety concerns over having LNG tankers in the area, this would possibly present an access problem for fishermen in Narragansett Bay, as security regulations surrounding the tanker would restrict the use of part of the bay as the tankers are passing through. This would also require dredging parts of the bay to allow the tanker to pass through, a plan that Save the Bay, an organization dedicated to the protection of Narragansett Bay, claims would hurt the area's already sensitive fisheries (Sakonnet Times 2005).

The community is also contending with a couple of proposed large-scale retail developments in the town, and many residents are concerned about this and future plans for developing here, and their potential to change the character of the community (Town of Tiverton nd). The Stone Bridge, formerly a bridge and currently used as a fishing pier, was damaged in a 2005 storm. The town received federal funding to repair the structure, which protects Tiverton Basin (where the town's harbor is located) from storm waves coming up the length of the Sakonnet River (Burdett 2004).

Cultural attributes

The Tiverton Four Corners village hosts a number of art-related festivals throughout the year (Tiverton4Corners nd), but little in the way of fishing related cultural events.

INFRASTRUCTURE

Current Economy

According to the U.S. Census 2000⁵, 63.4% (8,247 individuals) of the total population 16 years of age and over were in the labor force (see Figure 4), of which 3.4% were unemployed, 0.2% were in the Armed Forces, and 63.4% were employed.

⁵ 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)

The largest employers in Tiverton in 2004 were the Town of Tiverton (400 employees) and LIFE (235 employees) which provides group home support for persons with disabilities (RIEDC 2004).

Tiverton had an aquaculture facility, Eastern Fish, which closed in 2000; the facility mostly produced hydroponically grown lettuce, however (NBEP nd). Most of the seafood landed in processed in Tiverton is shipped elsewhere, to Boston, New York, or across the country (Hall-Arber et al. 2001).

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 94 positions or 1.2% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 426 positions or 5.5% of jobs. Education, health, and social services (23.8%), manufacturing (12.7%), and retail trade (12.4%) were the primary industries. Median household income in Tiverton was \$49,977 (up 43.7% from \$34,787 in 1990 [US Census Bureau 1990]) and per capita income was \$22,866. For full-time year round workers, males made approximately 40.5% more per year than females.

The average family in Tiverton consisted of 2.95 persons. With respect to poverty, 2.9% of families (down from 3.2% in 1990 [US Census Bureau 1990]) and 4.5% of individuals earned 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, 22.6% of all families (of any size) earned less than \$35,000 per year.

In 2000, Tiverton had a total of 6,474 housing units of which 93.3% were occupied and 77.6% were detached one unit homes. Just over 20% (20.6%) of these homes were built before 1940. Mobile homes accounted for 4.2% of the total housing units; 91.0% of detached units had between 2 and 9 rooms. In 2000, the median cost for a home in this area was \$144,400. Of vacant housing units, 3.0% were used for seasonal, recreational, or occasional use. Of occupied units 20.1% were renter occupied.

Government

Tiverton has a Town Meeting form of government with a seven-member Town Council and a Town Clerk (Town of Tiverton nd).

Fishery involvement in government

Tiverton has a Harbor & Coastal Waters Management Commission which always includes a member of the Planning Board, and also has waterfront zoning for water-dependent commercial uses (Town of Tiverton nd). The town also has a harbormaster.

Institutional

Fishing associations

The [Rhode Island Saltwater Anglers' Association](#) is dedicated to the conservation of the marine environment and of fisheries, and to protecting the rights of saltwater recreational fishermen in Rhode Island. Rhode Island has several other fishery associations to which fishermen in Tiverton might belong, including: the Ocean State Fishermen's Association, the Rhode Island Shellfishermen's Association, the Rhode Island Inshore Fishermen's Association, and the Rhode Island Commercial Fishermen's Association (RIMRU 2002).

Fishing assistance centers

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

Other fishing-related institutions

[Save the Bay](#) is a non-profit organization dedicated to restoring and protecting the environmental quality of Narragansett Bay. The organization works towards this goal by monitoring the health of the Bay, initiating action to clean up the Bay, and through advocacy and education programs.

The [Commercial Fisheries Center of Rhode Island](#) was founded in 2004 and is home to nonprofit commercial fishing organizations, and serves "as a headquarters for bringing fishermen, scientists, managers, and elected officials together to discuss issues." The goals of the center are "to improve fisheries and understanding of the marine environment through education, collaborative research, and cooperation."

Physical

The southern portion of Tiverton for the most part maintains a rural character with numerous farms and open space. Tiverton is roughly 20 miles away from New Bedford by car, and about 25 miles from Providence. The closest airport is T.F. Green Airport in Warwick, RI, roughly 32 miles away. One highway, Route 24, runs through North Tiverton.

Many of Tiverton's fishing boats were previously found tied along a property known as Manchester's in a sheltered cove just outside Nanaquaket Pond. However, this property was purchased in 2005 for development and fishermen are no longer allowed to tie up here (East Bay Newspapers 2005). Other fishing vessels are found in Tiverton Basin, an area of the Sakonnet River protected on one side by the Sakonnet River Bridge and on the other side by the Old Stone Bridge that serves as the town's harbor. Tiverton has two boat ramps, one at Sapowet Point and one at Fogland, and one boat yard, Standish Boat Yard (NCCVB nd). There is also a herring ladder in the town (Reel-Time 2003).

INVOLVEMENT IN NORTHEAST FISHERIES⁶

Commercial

Tiverton has a relatively large lobster fishery, as well as a small niche conch fishery. Tiverton also has a red crab fishery, identified in the Red Crab FMP (NEFMC nd). In 2001, Tiverton had 122-150 lobster boats, 12-15 conch boats, and 16 finfish boats (Hall-Arber et al. 2001). Bridgeport Seafood in Tiverton is both a retail and wholesale operation.

According to landings data, Tiverton has a highly diversified fishery, with landings in almost every category (see Table 1). The most valuable landings by species based on average values for 1997-2006 is the “other” species category, followed by monkfish, and then lobster. The value of most of these species groupings in 2006 was lower than the ten-year average value. The total value of landings in Tiverton increased sharply between the years 1997-1999, declining again in 2003. The number of home ported vessels in Tiverton increased from 12 in 1997 to 17 in 2000, back to 11 in 2006. The number of vessels with owners living in Tiverton declined from a high of 20 in 2000 to 12 in 2006 (see Table 2).

Recreational

Recreational fishing is a popular activity in Tiverton. The town’s Old Stone Bridge fishing pier is the remainder of an old bridge and is a popular spot for fishing from shore, although it was recently closed for safety reasons after a storm damaged the remaining structure (Burdett 2004). Tiverton also has a couple of fishing charters listed (Forte Marketing nd).

Subsistence

Hall-Arber et al. (2001) notes: “Lots of the people who participate in recreational fishing in Tiverton are Cambodian or have other ethnic backgrounds. Some of this “recreational” activity may actually support a fisheries- based subsistence life style.” However, no firm data on subsistence fishing in Tiverton have yet been found.

FUTURE

A facility which formerly housed a wholesale and retail company and was used by a number of vessels has been recently purchased with plans to convert the property into an inn, spa, restaurant, and retail outlets, with a charter fishing company present here as well (East Bay Newspapers 2005). A number of new slips are proposed for a marina in Tiverton. There are also controversial plans to bring LNG tankers into neighboring Fall River, passing by Tiverton, and to develop large-scale retail facilities in the town.

⁶ 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. Rank Value of Landings for Federally Managed Groups

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

(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 Year¹⁰

Table 2. Federal Vessel Permits Between 1997-2006

Year	# Vessels (home ported)	# Vessels (owner's city)
1997	12	19
1998	12	15
1999	10	15
2000	17	20
2001	16	17
2002	13	13
2003	14	17
2004	13	18
2005	12	16
2006	11	12

(Note: # Vessels home ported = No. of permitted vessels with location as homeport,
Vessels (owner's city) = No. of permitted vessels with location as owner residence¹¹)

⁷ "Other" species includes any species not accounted for in a federally managed group

⁸ Largemouth groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

⁹ Smallmouth multi-species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)

¹⁰ 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.

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¹¹ 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.

WARETOWN, NJ¹

Community Profile²

PEOPLE AND PLACES

Regional orientation

Waretown (39.79°N, 74.19°W) is located within Ocean Township, Ocean County, in the state of New Jersey. The CDP lies on the mainland (west) side of Barnegat Bay, across from the adjacent ends of Island Beach State Park and Barnegat Light (Barnegat Inlet). Waretown has a total land area of 0.9mi² (USGS 2008).



Map 1. Location of Waretown, NJ (US Census Bureau 2000a)

Historical/Background

Waretown is believed to have originated from the mill of Abraham Waier, an early settler and Rogerine (Quaker Baptist). The creation of the mill resulted from the exclusion of the Rogerines from Connecticut, enacted due to their hostile actions against the Puritan Sabbath laws of New England. The group found temporary refuge here in 1739, but eventually moved elsewhere. Abraham Waier built a mill in the location and remained. The village has undergone a series of name changes since its creation that included: Waier Creek/Waier Mills (1762), Wiretown (1802), Waretown (1809), Weartown (1828), Wiretown Branch (1839), Waretown Mill (1866), and Waretown P.O. (1872) (Ocean County Tourism nd).

Waretown's industry has also varied throughout its history. "From 1700 to 1900, Waretown was a shipbuilding center, but by the end of the 19th century the main industries had

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."

become lumbering, cutting pine and oak wood, and the making of charcoal for the New York market. As the timber sources were depleted, the residents turned to gathering swamp moss, which found a ready market among florists. When the moss supply was exhausted, they began picking cranberries and huckleberries. Until about 1920, oyster beds were plentiful, and for many years Waretown was a focal point for the clamming industry in Ocean County. Throughout most of this century, fishing and crabbing have been major activities, and in recent years charter boat fishing and pleasure boating have become increasingly popular with summer residents and weekend visitors” (Ocean County Library nd). Waretown is the major village of those incorporated into what is known as Ocean Township. In 1876, the land area from Waretown to Brookville (Millville prior to 1892), 7 miles west, was combined to form the Township. Today, Waretown exists as a CDP within Ocean Township, but the two are often referred to as the same place (Ocean County Library nd).

Demographics³

According to Census 2000 data⁴, Waretown CDP had a total population of 1,582 up 21.9% from a reported population of 1,298 in 1990 (US Census Bureau 1990). Of this 2000 total, 49.2% were males and 50.8% were females. The median age was 40.1 years and 74.5% of the population was 21 years or older while 19.2% was 62 or older.

The largest population segment in Waretown (see Figure 1) was from the ages of 30-39, followed by 40-49 and 50-59. There were also large numbers of children, indicating that Waretown had a large number of families. As is common in smaller fishing towns and cities, there is a dip in the ages 20-29. The older populations are considerably smaller; it is likely that either older, retired residents move out of Waretown, or that younger residents are migrating here for jobs in New York, surrounding areas, or within Waretown itself.

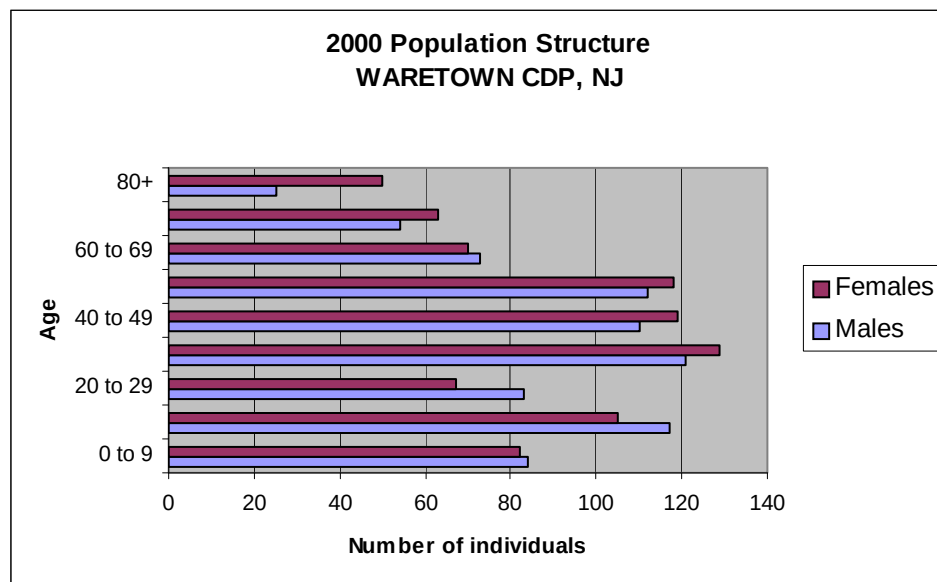


Figure 1. Waretown's population structure by sex in 2000 (US Census Bureau 2000a)

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 Waretown CDP; (accessed July 13, 2007)

The majority of the population was white (97.4%), with 0.8% black or African American, 0.6% Asian, 0.8% Native American, 0.1% Pacific Islander or Hawaiian (see Figure 2). Only 2.3% of the population identified themselves as Hispanic/Latino (see Figure 3). Residents linked their backgrounds to a number of different ancestries including: Irish (33.8%), German (18.8%), Italian (13.8%), Polish (12.7%), and English (8.9%). With regard to region of birth, 66.0% were born in New Jersey, 29.4% were born in a different state and 2.0% were born outside of the U.S. (all were United States citizens).

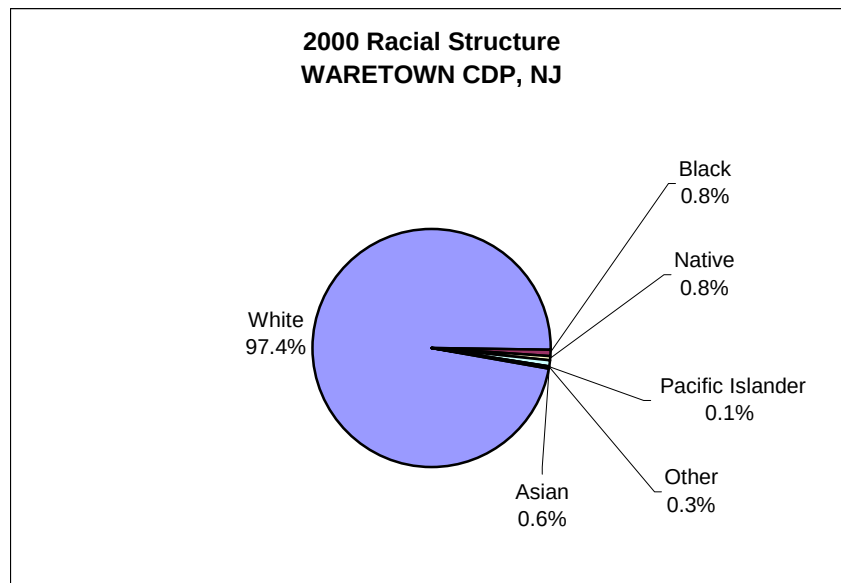


Figure 2. Racial Structure in 2000 (US Census Bureau 2000a)

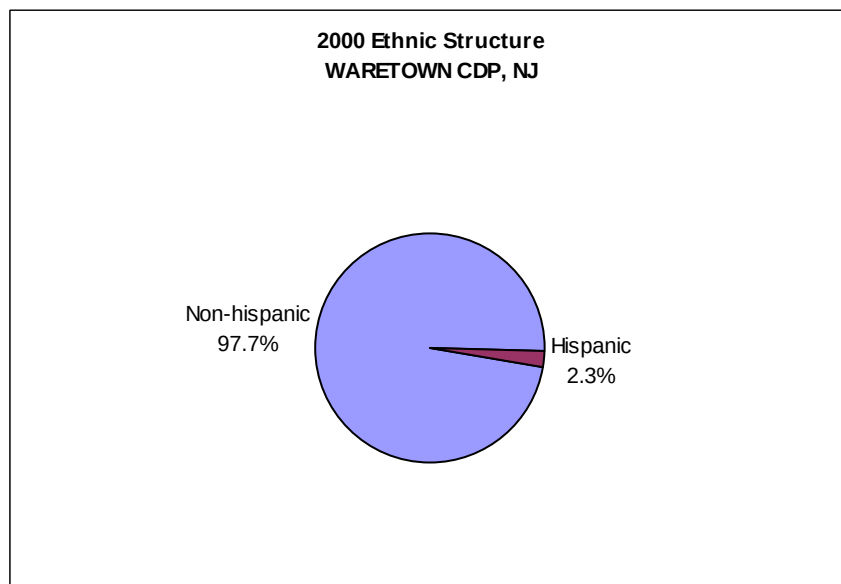


Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000a)

For 94.8% of the population, only English was spoken in the home, leaving only 5.2% of homes where a language other than English was spoken, including 0.9% of the population who spoke English less than “very well” according to the 2000 Census.

Of the population 25 years and over, 84.8% were high school graduates or higher, and 14.3% had a bachelor's degree or higher. Again of the population 25 years and over, 2.9% did not reach ninth grade, 12.3% attended some high school but did not graduate, 47.6% completed high school, 18.6% had some college with no degree, 4.3% received an associate's degree, 10.6% earned a bachelor's degree, and 3.7% received either a graduate or professional degree.

Although 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 Ocean County was Jewish with 35 congregations and 11,500 adherents. Other prominent congregations in the county were Catholic (33 with 212,482 adherents), United Methodist Church (28 with 9,534 adherents), and Episcopal (12 with 5,539 adherents), Evangelical Lutheran Church in America (11 with 6,731 adherents), and Presbyterian Church (U.S.A.) (11 with 6,489 adherents). The total numbers of adherents to any religion was up 21.9% from 1990 (ARDA 2000).

Issues/Processes

Waretown is undergoing a 'Town Center Project' aimed to increase industry development by introducing jobs, recreation, and housing to the town's center. Development is focused along Route 9 and Volunteer Way, adding commercial buildings, apartments, and increasing traffic flow through the town's center via an extension of Volunteer Way. The proposed cost of the project is \$35 - \$50 million (Pharo 2007).

Cultural attributes

Waretown is home to the famous Pinelands Cultural Society (Albert Hall). The PCS is a music hall that hosts weekly performances by country, folk, and bluegrass musicians, as well as two bluegrass festivals annually (Ocean County Library nd).

INFRASTRUCTURE

Current Economy

According to the U.S. Census 2000⁵, 59.6% (782 individuals) of the total population 16 years of age and over were in the labor force (see

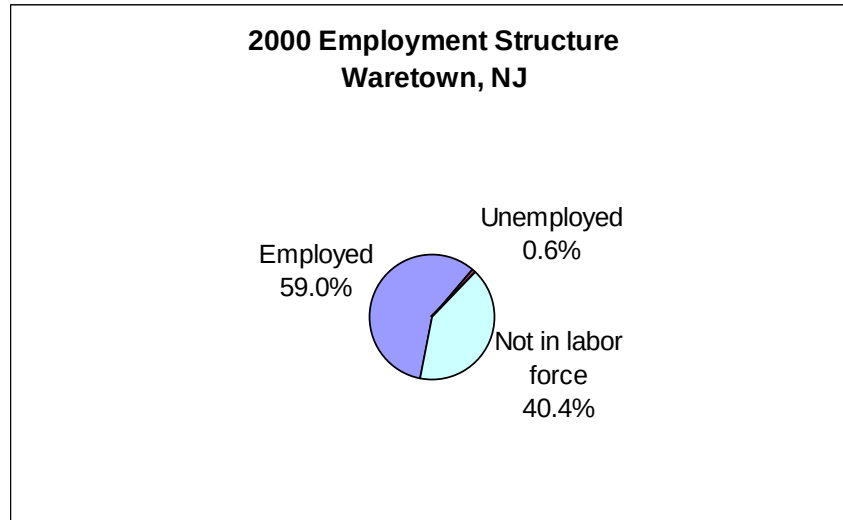


Figure), of which 0.6% were unemployed, none were in the Armed Forces, and 59.0% were employed.

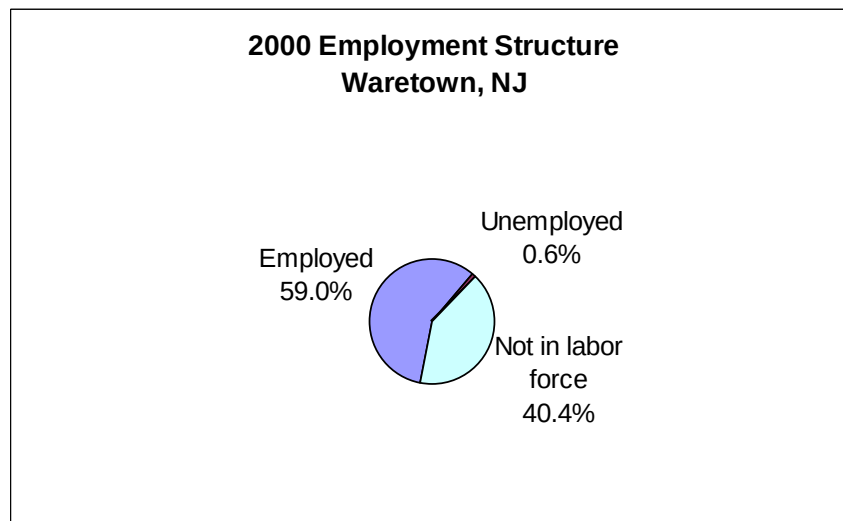


Figure 4. Employment Structure in 2000 (US Census Bureau 2000a)

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for no jobs. Self employed workers, a category where fishermen might be found, accounted for 87 positions or 11.2% of jobs. Educational, health and social services (16.9%), professional, scientific, management, administrative, and waste management services (15.1%), construction (14.7%), retail trade

⁵ 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.

(12.7%), arts, entertainment, recreation, accommodation and food services (10.7%), and transportation and warehousing, and utilities (10.1%) were the primary industries.

Median household income in Waretown was \$44,410 (up 31.1% from \$29,512 in 1990 [US Census Bureau 1990]) and median per capita income was \$22,061. For full-time year round workers, males made approximately 25% more per year than females.

The average family in Waretown consisted of 2.98 persons. With respect to poverty, 1.7% of families (down from 8.9% in 1990 [US Census Bureau 1990]) and 5.6% of individuals earned 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, 20.3% of all families (of any size) earned less than \$35,000 per year.

In 2000, Waretown had a total of 823 housing units of which 77.9% were occupied and 88.3% were detached one unit homes. Only 7.7% of these homes were built before 1940. Mobile homes accounted for none of the housing units; 89.7% of detached units have between 2 and 9 rooms. In 2000, the median cost for a home in this area was \$109,400. Of vacant housing units, 15.0% were used for seasonal, recreational, or occasional use. Of occupied units, 17.5% were renter occupied.

Government

Waretown's Mayor is Daniel Van Pelt and has a town meeting form of government which includes a town clerk and various committees. Two of these committees are the Land Use Board and the Environmental Commission (Ocean County Tourism nd).

Fishery involvement in government

Information on fishery involvement in Waretown's government is unavailable through secondary data collection.

Institutional

Fishing associations

[Garden State Seafood Association](#) in Trenton is a statewide organization of commercial fishermen and fishing companies, related businesses and individuals working in common cause to promote the interests of the commercial fishing industry and seafood consumers in New Jersey.

The [Jersey Coast Anglers Association](#) (JCAA) is an association of over 75 saltwater fishing clubs throughout the state. Founded in 1981, the purpose of the organization is to unite and represent marine sport anglers to work towards common goals. The JCAA website (www.jcaa.org) also provides links for many NJ anglers associations.

Fishing assistance centers

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

Other fishing related organizations

Waretown contains three marinas that are 'Pledged Clean marinas' within the New Jersey Clean Marina Program of the Department of Environmental Protection. "The CMP encourages marina owners, yacht clubs, boatyards and boaters to voluntarily adopt practices that help

prevent adverse impacts to water quality, sensitive habitats, and living resources in proximity to marinas” (NJDEP 2008). Marinas may choose to be ‘Certified Clean Marinas’ by actively practicing clean behavior in the intent to enhance fish and wildlife habitats, and promote environmentally sound boating. ‘Pledged Clean Marinas’ sign into the CMP establishing they will implement environmentally friendly practices, with the intent of becoming a ‘Certified Clean Marina.’ Waretown’s ‘Pledged Clean Marinas’ are Key Harbor Marina, Spencer’s Bayside Marina, and Lemmings Marina Inc. (NJDEP 2008).

Waretown is involved in the [Barnegat Bay National Estuary Program](#) (BBNEP). “The BBNEP is ‘a partnership of federal, state, and local interests’ overseeing the development of a management plan and the community efforts in the Bay area. The Program is made up of subcommittees who oversee the various aspects of the management plan: the Policy Committee, the Advisory Committee, and the Science and Technical Advisory Committee.”

Physical

Waretown makes up the center third of Ocean Township’s (Ocean County) Barnegat Bay coast. Bordered by Barnegat Bay to the East, the CDP stretches north to Oyster Creek and south to Barnegat Beach. In relation to large cities of the region, Waretown’s location is 13.2mi from Toms River (NJ), 65mi from Jersey City (NJ), and 65.9mi from New York City (NY). Nearby, smaller cities of N.J. include Forked River (2.5mi), Barnegat Light (6.0mi), Manahawkin (7.9mi), and Beach Haven West (9.0mi) (MapQuest nd).

Waretown is easily accessible by roadway because it is located only a few miles east of the Garden State Parkway, at the junction of Route 9 and Mills Lane Rd (Rt. 532) (MapQuest nd). Large airports/carrier ports near Waretown are Lakehurst Nais/Maxfield Field (21mi), McGuire Air Force Base (31mi), and Atlantic City International (36mi). Smaller public-use airports of closer proximity are Robert J. Miller Air Park (11mi), Eagles Nest (13mi), and Lakewood Airport (20mi) (MapQuest nd).

Waretown contains many marinas, three of which are ‘Pledged Clean Marinas’ under the NJDEP’s Clean Marina Program. These marinas include Key Harbor Marina (Point Road), Spencer’s Bayside Marina (Pennsylvania Ave.), and Lemmings Marina, Inc. (Marina Road, Barnegat Beach) (NJDEP 2008). Additional Marinas (N to S) include Holiday Harbor Marina (Tiller Drive), Waretown Fishing Station (Bryant Road), Sanborn Marine (Baltic Ave.), and Cape Island Marina & Yacht Sales (Marine Road) (Harbor Guides 2005).

Waretown has many recognized sections, most of which are distinguished in relation to a coastal area. These include: Brookville, Wells Mills, Pebble Beach, Barnegat Beach, Holiday Beach, Sands Point Harbor, Skipper’s Cove, Bay Haven, and Dogtown (Ocean County Tourism nd).

INVOLVEMENT IN NORTHEAST FISHERIES⁶

Commercial

Fishing interests in Waretown are mainly focused on recreation, but commercial fishing ports exist in nearby Barnegat Light, Point Pleasant, and Atlantic City. Barnegat Light is the closest of the three ports (6.0mi) (MapQuest nd) and is located east of Waretown, across Barnegat Bay. It is a center for the East Coast tilefish fishery, also contains members of the East Coast longline fleet, scallop vessels, and inshore gillnets vessels. Point Pleasant and Atlantic City land a large amount of the nation's and the world's surf clams and ocean quahogs (NJ Fishing nd).

Landings in Waretown in all years were relatively small, with no landings at all from 1997-1999. The most valuable species grouping in Waretown averaged for the years 1997-2006 was monkfish; monkfish was also the most valuable species in 2006 (see Table 1). There were no landings associated with vessels home ported in Waretown in 1997 and 1998, but then home port value increased considerably in the following years. Both the number of vessels home ported in Waretown and the number of vessels whose owner's city is Waretown increased over this time period. Vessels home ported in Waretown went from seven in 1997 and 1998 to 18 in 2005, while owner's city vessels went from six in 1997 to 16 in 2001, dropping down to 11 in 2006 (see Table 2).

⁶ 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. Rank Value of Landings for Federally Managed Groups

Species	Rank Value of Average Landings from 1997-2006
Monkfish	1
Other ⁷	2
Bluefish	3
Scallop	4
Skate	5
Lobster	6
Summer Flounder, Scup, Black Sea Bass	7
Squid, Mackerel, Butterfish	8
Largemouth Groundfish ⁸	9
Herring	10

(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 Year⁹

Table 2. Federal Vessel Permits Between 1997-2006

Year	# Vessels (home ported)	# Vessels (owner's city)
1997	7	6
1998	7	6
1999	10	8
2000	17	14
2001	17	16
2002	13	12
2003	15	12
2004	15	13
2005	18	13
2006	14	11

(Note: # Vessels home ported = No. of permitted vessels with location as homeport,
Vessels (owner's city) = No. of permitted vessels with location as owner residence¹⁰)

⁷ "Other" species includes any species not accounted for in a federally managed group

⁸ Largemouth groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

⁹ 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.

¹⁰ 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

Areas of Barnegat Bay in Ocean Township (Waretown) are considered “some of the finest” recreational fishing and duck hunting waters in Ocean County (Ocean County Tourism nd). Charter fishing is abundant in the surrounding area of Barnegat Bay and Barnegat Inlet. Commonly targeted inshore and offshore species are striped bass, fluke, bluefish, shark, tuna, dolphin, and marlin (Sportsman’s Resource nd).

Charter boats include: *Tuna-Tic* (Capt. Mike) of Barnegat Inlet; *Pop’s Pride* (Capt. John Koegler), *Fish Trap* (Capt. Bob Beideman), *Real Trouble* (Capt. Bill DuBois), *Wave Rider II* (Capt. Bill Godel), *June Bug* (Capt. Lindsay Fuller), and *Star Fish* (Capt. Carl Sheppard) of Beach Haven, and *Double Trouble* (Capt. Stan Shepanski), *Super Chic* (Capt. Ted White), *Four Aces II* (Capt. Joe Pires), *The Shark* (Capt. Bob Carton), *The Instigator* (Capt. Dave Wentley), *Jersey Devil* (Capt. Russ Jacobus), *Skirt Chaser* (Capt. Frank Hutchco), *The Stingray* (Capt. Greg Eastburn), and *Little Chic* (Capt. Les Osborn) of Barnegat Light (Fishermen’s Headquarters nd).

Party boats include: *Carolyn Ann II* (Capt. Hammarstrom), *Doris Mae IV* (Capt. Chales Eble), *White Star IV* (Capts. Paul Casio and Paul Bonnell), and *Miss Barnegat Light* (Capt. John Larson) (Fishermen’s Headquarters nd).

In New Jersey, the charter/party fleet is the largest on east coast. Many vessels are over 120ft long and carry over 150 people.¹¹

Subsistence

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

FUTURE

New Jersey’s commercial oyster fishery has declined in recent years, signaling a decline in oyster populations in the state’s waters. To help improve oyster populations, it has been suggested that empty clam and quahog shells from processing plants be dumped into the Delaware Bay. These thousands of discarded shells will serve to attract juvenile oysters and effectively rebuild live oyster reefs. The recruited oysters will help to filter pathogens entering the bay through run-off waters, ultimately minimizing pollution and improving water quality in the bay (Daily Journal 2007).

“In the future, Waretown will be physically linked by the evolving Ocean County Rail Trail System. The trail will connect South Toms River with Barnegat and allow county residents an even greater opportunity to enjoy Waretown’s beautiful environment” (Van Pelt nd).

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¹¹ Community Review Comments, Bruce Freeman, NJ Coast Anglers Association, October 2, 2007

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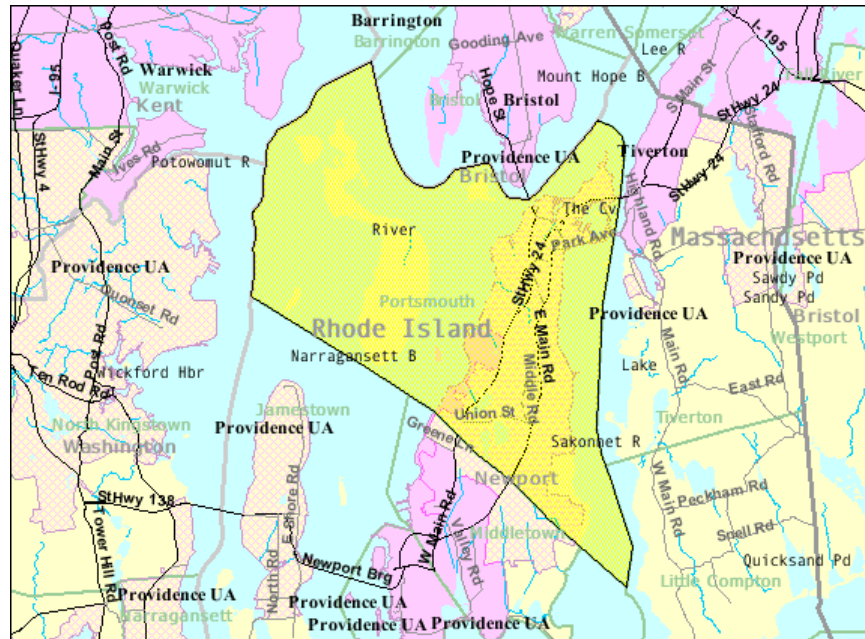
PORTSMOUTH, RI¹

Community Profile²

PEOPLE AND PLACES

Regional orientation

The Town of Portsmouth (41.60° N, 71.25° W) (USGS 2008) is located in Southeastern Rhode Island in Newport County, and is one of three towns on Aquidneck Island. Portsmouth has 56 miles of shoreline (Town of Portsmouth nd). Portsmouth includes Prudence, Hope, and Patience Islands, located in Narragansett Bay, and is located in the middle of Narragansett Bay.



Map 1. Location of Portsmouth, RI (US Census Bureau 2000a)

Historical/Background

Portsmouth was founded in 1638 by Anne Hutchinson, making it the first town in America to be founded by a woman. It calls itself “the birthplace of American democracy”, because some consider it the nation’s first true democracy. All other towns founded in America prior to Portsmouth were under the Church of England. “The Portsmouth Compact of 1638 is the first authentic guarantee of civil and religious freedom in the new world” (Town of Portsmouth nd). The Navy also plays an important role in Portsmouth’s history. In 1869, a torpedo testing station was established on Goat Island, off the coast of neighboring Middletown. The Naval War College was founded in Newport in 1884. The naval base here continued to

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.”

expand through World War II, becoming one of the Navy's most important bases of operation. The Navy continued to acquire land, and encompassed portions of Portsmouth, Middletown, and Newport. While the Navy's operations here have declined in subsequent years, today this area hosts the Naval War College, the Surface Warfare Officers School, and the Naval Undersea Warfare Center (NUWC 2008).

In addition to having an extensive coastline, Portsmouth has numerous farms, resulting from a highly progressive farm preservation program (Town of Portsmouth nd). Prudence Island is a sparsely inhabited island of which the majority is a state park. Prudence and Hope Islands are uninhabited. Much of the land on these islands is part of the Narragansett Bay National Estuarine Research Reserve (NBNERR nd).

Demographics³

According to Census 2000 data, Portsmouth had a total population of 17,149, up 2.0% from the reported population of 16,817 in 1990 (US Census Bureau 1990). Of this 2000 total, 49.1% were males and 50.9% were females. The median age was 39.9 years and 72.4% of the population was 21 years or older while 15.7% was 62 or older.

The most populous age group (Figure 1) for both men and women was the 40-49 year old grouping, followed closely by both the 30-39 and 50-59 age groups. The age structure shows a dip in population for both men and women in the 20-29 age bracket, indicating an out-migration of young people moving elsewhere for college and/or to seek jobs that is common in many fishing communities.

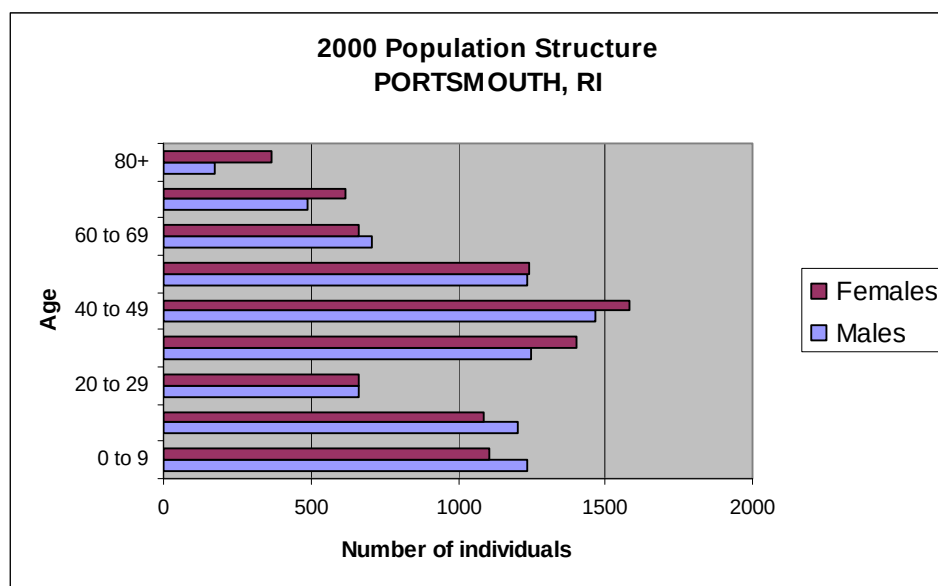


Figure 1. Portsmouth's population structure by sex in 2000 (US Census Bureau 2000)

The majority of the population was white (96.7%), with 1.2% of residents black or African American, 1.4% Asian, 0.2% Native American, and 0.03% Pacific Islander or Hawaiian (Figure 2). Only 1.5% of the population identified themselves as Hispanic/Latino (Figure 3).

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.

Residents linked their backgrounds to a number of different ancestries including: Irish (24.9%), English (18.5%), Portuguese (14.3%), and German (12.4%), and Italian (10.9%).

With regard to region of birth, 40.3% were born in Rhode Island, 54.6% were born in a different state and 4.0% were born outside of the U.S. (including 1.7% who were not United States citizens).

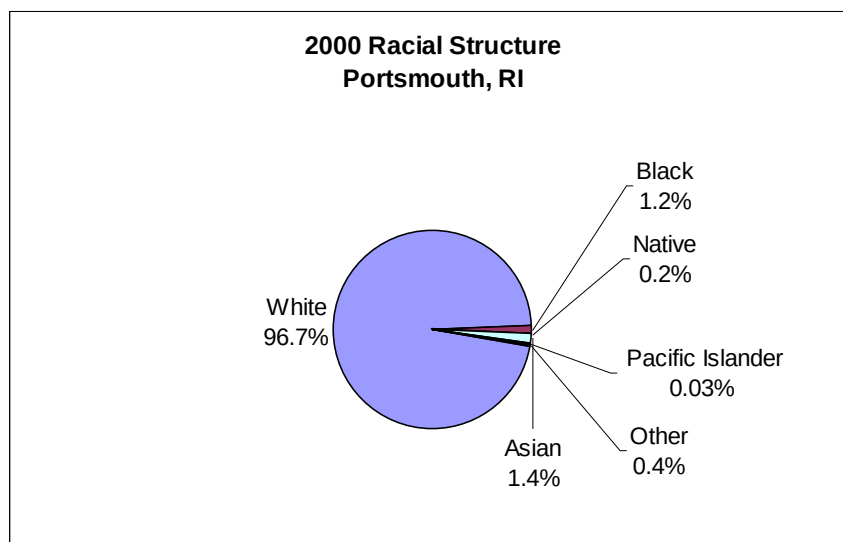


Figure 2. Racial Structure in 2000 (US Census Bureau 2000)

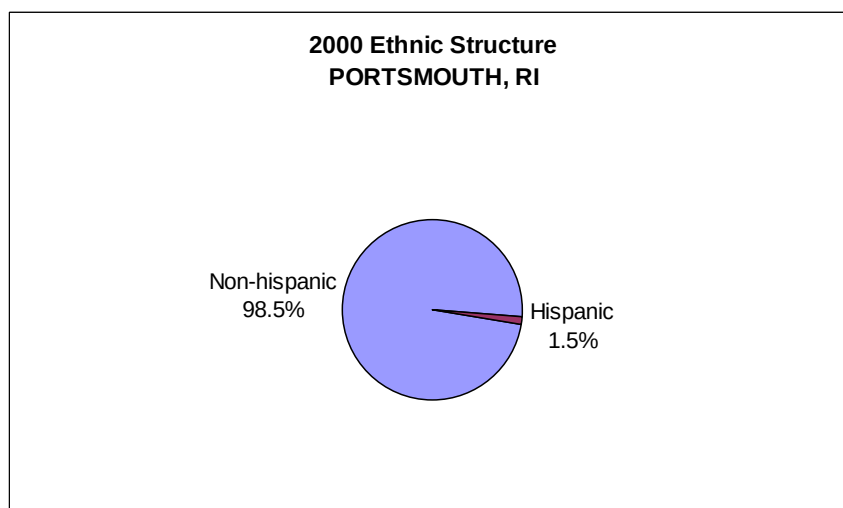


Figure 3. Ethnic Structure in 2000 (US Census Bureau 2000)

For 94.3% of the population, only English was spoken in the home, leaving 5.7% in homes where a language other than English was spoken, and including 1.5% of the population who spoke English less than 'very well' according to the 2000 Census.

Of the population 25 years and over, 90.9% were high school graduates or higher and 42.9% had a bachelor's degree or higher. Again of the population 25 years and over, 3.4% did not reach ninth grade, 5.7% attended some high school but did not graduate, 23.6% completed high school, 17.7% had some college with no degree, 6.7% received an associate degree, 25.9% earned a bachelor's degree, and 17.0% received either their graduate or professional degree.

Although 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 Newport County was Catholic with 13 congregations and 68,668 adherents. Other prominent congregations in the county were Episcopal (10 with 4,720), and American Baptist (15 with 3,022). The total number of adherents to any religion was up 57.3% from 1990 (ARDA 2000).

Issues/Processes

There are a number of future development plans for Portsmouth's underutilized waterfront, including a large marina and luxury condominiums (Portsmouth n.d.).

Cultural attributes

Portsmouth does not have any cultural attributes directly related to fishing. However, there are a number of cultural attributes in nearby Newport. With such a diverse background, the city of Newport makes every effort to embrace its heritage through the many festivals that the city holds. One of the major events for the city is [The Tall Ships Rhode Island](#). The event includes tours of historic national and international Tall Ships, an international marketplace, and family entertainment. The Great Chowder Cook Off and the Taste of Rhode Island festivals both celebrate the region's past and present ties with the fishing industry, at least indirectly, through a celebration of the state's culinary heritage (NHC 2008).

The annual Blessing of the Fleet takes place in early December as part of the [Christmas in Newport](#) festival, and includes a parade by both commercial and recreational vessels decorated for the holidays. The city also celebrates both Irish Heritage Month (RIHPHC 2008) and Oktoberfest (HPC 2008) to remember and embrace its roots.

INFRASTRUCTURE

Current Economy

According to the U.S. Census 2000⁴, 68.7% (13,327 individuals) of the total population 16 years of age and over were in the labor force (Figure 4), of which 2.4% were unemployed, 2.2% were in the Armed Forces, and 64.2% were employed.

⁴ 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.

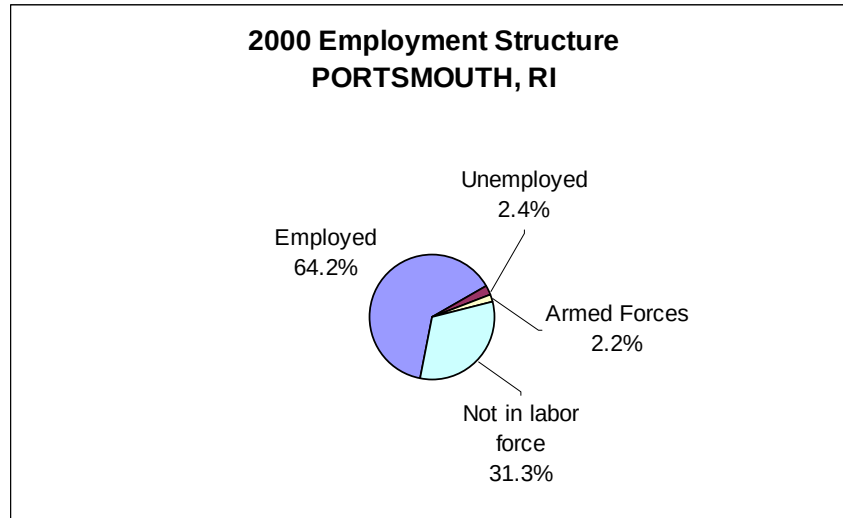


Figure 4. Employment Structure in 2000 (US Census Bureau 2000a)

“Major industries on Aquidneck Island include: Oceanography, underwater systems development, navigational equipment, advanced thermoplastic composites, programmers, small boat, sailboat, luxury yacht and ship building, marinas, tourism, printing, awards, and 4,000 acres of farms. A wide variety of skills exists in Portsmouth and adjacent towns. An impressive community of management, engineers and scientists has grown around Naval Undersea Warfare Center and Raytheon, including many small consulting firms. About 70% of Rhode Island's software industry is on Aquidneck Island. While Portsmouth tends to be home to the more highly skilled, a substantial population with a full range of skills lives within a 10 mile radius.” Portsmouth also has an Enterprise Zone created to attract businesses, providing them with tax incentives. Four out of five of Rhode Island's top boat dealers are located in Portsmouth, as are a number of yacht and small boat manufacturers. Marine-related businesses in Portsmouth include: Alden Yachts, Brewer Street Boatworks, North Sails, Vanguard Sailboats, and a number of other businesses providing electronic, rigging, marine engineering, and other services (Town of Portsmouth nd).

According to Census 2000 data, jobs in the census grouping which includes agriculture, forestry, fishing and hunting, and mining accounted for 57 positions or 0.7% of all jobs. Self employed workers, a category where fishermen might be found, accounted for 506 positions or 5.9% of jobs. Education, health, and social services (26.5%), professional, scientific, management, administrative, and waste management services (14.4%), retail trade (10.0%), and manufacturing (9.8%) were the primary industries.

Median household income in Portsmouth was \$58,835, up 38.5% from \$42,474 in 1990 (US Census Bureau 1990) and per capita income was \$28,161. For full-time year round workers, males made approximately 45.8% more per year than females.

The average family in Portsmouth consisted of 3.00 persons. With respect to poverty, 2.0% of families, down from 3.3% in 1990 (US Census Bureau 1990) and 3.4% of individuals earn 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, 13.6% of all families (of any size) earned less than \$35,000 per year.

In 2000, Portsmouth had a total of 7,386 housing units of which 91.5% were occupied and 75.3% were detached one unit homes. Close to fifteen percent (14.8%) of these homes were built before 1940. Mobile homes, boats, RVs, vans, etc. accounted for 4.9% of the total housing units; 91.2% of detached units have between 2 and 9 rooms. In 2000, the median cost for a home in this area was \$167,800. Of vacant housing units, 5.2% were used for seasonal, recreational, or occasional use. Of occupied units, 26.1% were renter occupied.

Government

The town of Portsmouth operates under a Council-Administrator form of government, with a seven-member council elected to two-year terms (Town of Portsmouth nd).

Fishery involvement in government

Portsmouth's Community Comprehensive Plan (as updated through 2002) includes a focus on enhancing marine-related activities in the town and maintaining public access to the waterfront (Town of Portsmouth nd). The town also has a harbormaster.

Institutional

Fishing associations

The [Rhode Island Saltwater Anglers' Association](#) is dedicated to conservation of the marine environment and of fisheries, and to protecting the rights of saltwater recreational fishermen in Rhode Island. Rhode Island has several other fishery associations to which fishermen in Portsmouth might belong, including: the Ocean State Fishermen's Association, the Rhode Island Shellfishermen's Association, the Rhode Island Inshore Fishermen's Association, the Rhode Island Lobstermen's Association, and the Rhode Island Commercial Fishermen's Association (URI 2005).

Fishing assistance centers

Information on fishery assistance centers in Portsmouth is unavailable through secondary data collection.

Other fishing related organizations

The [Commercial Fisheries Center of Rhode Island](#) was founded in 2004 and is home to nonprofit commercial fishing organizations, and serves "as a headquarters for bringing fishermen, scientists, managers, and elected officials together to discuss issues." The goals of the center are "to improve fisheries and understanding of the marine environment through education, collaborative research, and cooperation" (CFCRI nd).

[Save the Bay](#) is a non-profit organization dedicated to restoring and protecting the environmental quality of Narragansett Bay. The organization works towards this goal by monitoring the health of the Bay, initiating action to clean up the Bay, and through advocacy and education programs.

Physical

Portsmouth is accessible by the Sakonnet River and Mount Hope Bridges, and by the Newport Pell Bridge via Newport. The Newport State Airport is two miles away, and T.F. Green State Airport is 36 miles away in Warwick. Route 24 ends in Portsmouth, providing easy access to Providence and Boston. Newport is 9 miles, New Bedford, MA is 22 miles away, and

Providence is 29 miles from Portsmouth. The Rhode Island Public Transit Authority runs a bus between Newport and Providence which stops in Portsmouth (RIPTA nd). According to the 2002 update of the Portsmouth Comprehensive Community Plan, the Prudence Ferry runs to Prudence Island from Bristol (Town of Portsmouth nd).

Portsmouth has six marinas, a public boat launch, and 1,000 private moorings. The marinas include Brewer's Sakonnet Marina, East Passage Yachting Center, Pirate Cove Marina, Stone Bridge Marina, Little Harbor Marine (Town of Portsmouth nd), and a small, private marina with limited public access at the end of Willow Lane.⁵ [Brewer's Sakonnet Marina](#) 320 slips, service facilities, and a fuel dock. The [East Passage Yachting Center](#) has 360 deep-water berths and a full service marina with winter storage. New England Boatworks, a boatbuilding company, is also located here. There are public boat ramps in Portsmouth located at Weaver Cove, Cedar Cove, and Stone Bridge (Town of Portsmouth nd).

INVOLVEMENT IN NORTHEAST FISHERIES⁶

Commercial

Almost all landings in Portsmouth in 2006 were from the "other" species grouping; red crab, which had the most valuable landings on average from 1997-2006, had no landings in 2006 (see Table 1). The highest landings in Portsmouth were in 2000, followed by 2001, with a low level of landings in most other years. Home ported vessels in Portsmouth declined, from a high of six in 1997 and 1998, down to just one in 2004 and 2006. There are considerably more vessels with owners living in Portsmouth than there are vessels home ported here. There were a maximum of 19 vessels with owners in Portsmouth in 1997, down to nine in 2002 – 2004 (see Table 2). Many of these vessel owners may keep their boats in Newport.

⁵ Profile review comment, Gary Crosby, Assistant Planner, 2200 E. Main Rd. Portsmouth, RI 02871, August 29, 2007

⁶ 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. Rank Value of Landings for Federally Managed Groups

Species	Rank Value of Average Landings from 1997-2006
Red Crab	1
Other ⁷	2
Squid, Mackerel, Butterfish	3
Herring	4
Surf Clams, Ocean Quahog	5
Lobster	6
Monkfish	7
Summer Flounder, Scup, Black Sea Bass	8
Skate	9
Largemouth Groundfish ⁸	10
Scallop	11
Bluefish	12
Dogfish	13
Smallmouth Groundfish ⁹	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 Year¹⁰

Table 2. Federal Vessel Permits Between 1997-2006

Year	# Vessels (home ported)	# Vessels (owner's city)
1997	6	19
1998	6	18
1999	5	15
2000	5	13
2001	4	10
2002	4	9
2003	3	9
2004	1	9
2005	2	10
2006	1	9

(Note: # Vessels home ported = No. of permitted vessels with location as homeport,
Vessels (owner's city) = No. of permitted vessels with location as owner residence¹¹)

⁷ "Other" species includes any species not accounted for in a federally managed group

⁸ Largemouth groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and pollock

⁹ Smallmouth multi-species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting)

¹⁰ 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 is a large recreational fishing sector in Rhode Island. “In Rhode Island, nearly 362,000 recreational marine anglers - more than half from out-of-state - made over 1.5 million trips, catching 4.3 million pounds of sport fish and releasing about 55 percent in 2004” (RIDEM 2004).

Subsistence

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

FUTURE

There a number of areas of land in Portsmouth which were formerly part of Naval Station Newport and which are no longer in use; many of these properties have water views and are likely to be developed in some capacity in the future. In particular, the town wishes to increase the development of marine-related industries, enhancing its position within the industry. One plan includes the development of a “marina village” at Weaver Cove which would include a marina, housing, restaurant and retail uses (Town of Portsmouth nd). It would be the largest single marina in New England, with 1,495 slips, and a number of condominiums with waterfront access (ProJo 2006).

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¹¹ 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.

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Appendix 6

Summary of Past, Present, or Reasonably Foreseeable Future Actions

APPENDIX 6

The actions summarized in the table below are presented in chronological order, and codes indicate whether an action relates to the past (P), present (Pr), or reasonably foreseeable future (RFF). When any of these abbreviations occur together, it indicates that some past actions are still relevant to the present and/or future. A brief explanation of the rationale for concluding what effect each action has (or will have) had on each of the VECs is provided in the table and is not repeated here.

Impacts of Past, Present and Reasonably Foreseeable Future Actions on the five VECs. These actions do not include those which were considered to have little impact on the fishery or actions under consideration in this framework.

Action	Description	Impacts on Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
MONKFISH FISHERY-RELATED ACTIONS						
^P direct or incidental catch of monkfish by foreign fleets in the area that would become the U.S. EEZ (pre-MSA)	Foreign fishing pressure peaked in the 1960s and slowly declined until passage of the MSA in 1974	Potentially Direct High Negative Limited information but foreign fishing may have had a significant impact on monkfish stocks	Potentially Direct High Negative Limited information on discarding, but fishing effort was very high and there were no gear requirements to reduce bycatch	Potentially Direct High Negative Limited information on protected resources encounters, but fishing effort was very high	Potentially Direct High Negative Limited information on habitat, but fishing effort was very high	Potentially Indirect Negative Revenue from fishing was split between foreign and domestic communities, rather than just domestic communities
^P direct or incidental catch of monkfish by domestic vessels (post-MSA, 1976-1999)	Very limited markets resulted in anecdotally high levels of discards and unknown landings early in the period, but rapid growth of the directed fishery in the 1980's	Direct High Negative Rapid growth of the fishery starting in the 1980's reduced stock sizes significantly and likely caused recruitment overfishing	Potentially Direct High Negative Uncontrolled effort and lack of gear restrictions probably caused significant incidental catch of non-target species, especially skates and dogfish	Potentially Direct High Negative Limited information on protected resources encounters, but fishing effort was very high especially in the latter half of the period	Potentially Direct High Negative Limited information on habitat, but fishing effort was very high especially in the latter half of the period	Mixed Initial growth of markets for monkfish had a positive impact, but unsustainable levels of effort resulted in declining stocks and likely overfishing

Action	Description	Impacts on Regulated Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
MONKFISH FISHERY-RELATED ACTIONS CONTINUED						
^P Original FMP implemented in 1999	Limited entry, effort controls, gear restrictions and other measures designed to stop overfishing and rebuild stocks including default closure of the directed fishery in year 4	Direct Positive Provided slight effort reductions and regulatory tools available to rebuild and manage stocks	Indirect Positive Reduced directed fishing and associated impacts on non-target species	Indirect Positive Reduced fishing effort, thus reduced interactions with protected species	Indirect Positive Reduced fishing effort, thus reduced gear interactions with habitat	Indirect Positive Increased probability of long term sustainability Potential direct negative Default year 4 closure would adversely affect dependent communities
^P Amendment 1 (1999)	Designated EFH for monkfish and required Federal agencies to consult with NMFS on actions that may adversely effect EFH	Indirect Low Positive A consultation with NFMS that leads to the protection of monkfish EFH is beneficial to multispecies stocks	Indirect Low Positive A consultation with NFMS that leads to the protection of monkfish EFH is beneficial to other stocks that share the same EFH	Indirect Low Positive Consultation with NFMS that leads to the protection of monkfish EFH is beneficial to protected resources that share a need for the same habitat	Direct High Positive Consultation with NMFS on activities that may adversely effect habitat provides NMFS the opportunity to mitigate or even prevent EFH impacts	Indirect Low Positive Where NMFS consults on projects impacting monkfish EFH, the overall health of the stocks should improve which would lead to long term sustainability

Action	Description	Impacts on Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
MONKFISH FISHERY-RELATED ACTIONS CONTINUED						
^P Framework 1 to the Monkfish FMP (2002)	Specifications for FY2002, 1-year delay in year 4 closure; aligned gillnet and trawl trip limits per court order	Mixed Uncertain scientific information suggested end or reversal of stock declines; impact of closure of directed fishery not clear due to likely increased discards of incidentally caught monkfish	Indirect Positive Reduced directed fishing effort which resulted in discard/bycatch reductions	Indirect Positive Reduced fishing effort, thus reduced interactions with protected species	Indirect Positive Reduced fishing effort, thus reduced gear interactions with habitat	Mixed One-year delay in closure of directed fishery benefitted dependent communities; changes to trip limits reduced viability of offshore trawl fishery
^P Framework 2 to the Monkfish FMP (2003)	Incorporated updated scientific information; revised reference points, adopted index-based TAC setting method; specifications for FY2003	Direct Positive Established a rebuilding program based on survey index relative to annual growth targets	Indirect Positive Reduced directed fishing effort which resulted in discard/bycatch reductions	Indirect Positive Reduced fishing effort, thus reduced interactions with protected species	Indirect Positive Reduced fishing effort, thus reduced gear interactions with habitat	Indirect Positive Increased probability of long term sustainability; eliminated year-4 closure of the directed fishery

Action	Description	Impacts on Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
MONKFISH FISHERY-RELATED ACTIONS CONTINUED						
P, Amendment 2 to the FMP (2005)	Addressed EFH and bycatch issues: a new limited access permit for NC-VA vessels; SMA offshore monkfish fishery program); SMA trawl roller limit; 2 deep-sea canyon closures; research DAS set-aside program, and other measures;	Neutral Measures did not have a direct impact on fishing effort or stock rebuilding	Neutral Measures did not have a direct impact on fishing effort or incidental catch of non-target species	Neutral or indirect positive Other than protection of deep-sea corals from future effort shifts, measures did not have a direct impact on fishing effort or interaction with protected species	Direct Positive Canyon area closures and gear restrictions reduced impact of fishery on EFH	Direct positive Provided access to NC-VA fishermen with historical participation; cooperative research program to improve science underlying management
P, Framework 3/ Multispecies FMP Framework 42 (joint, 2006)	Prohibited targeting monkfish on a Multispecies B DAS	Direct Positive Prevented expansion of directed fishing effort	Indirect Positive Prevented expansion of directed fishing effort which resulted in discard/bycatch reductions	Indirect Positive Prevented expansion of directed fishing effort, thus limited interactions with protected species	Indirect Positive Prevented expansion of directed fishing effort, thus limited gear interactions with habitat	Mixed Increased probability of long term sustainability but effort limitations result in short term lost revenues for fishermen and communities

Action	Description	Impacts on Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
MONKFISH FISHERY-RELATED ACTIONS CONTINUED						
P, Pr, Framework 4 (2007)	Eliminated survey-based TAC setting; set 3-year specifications to achieve rebuilding, including trip limits and DAS for NMA for 2007-2009 with automatic extension;	Direct High Positive Controlled directed fishing effort to achieve rebuilding in 3 years.	Indirect Positive controlled directed fishing effort which resulted in discard/bycatch reductions	Neutral or Indirect Positive controlled fishing effort, thus reduced interactions with protected species	Neutral or Indirect Positive controlled fishing effort, thus reduced gear interactions with habitat	Mixed Increased probability of long term sustainability but NMA effort reductions result in short term lost revenues for some fishermen and communities; stability of 3-year specifications benefits fishermen;
P, Pr Framework 5 (2008)	Revised biological reference points based on stock assessment; closed loopholes in DAS program; revised SMA incidental catch limit	Direct Positive Improved effectiveness of DAS program	Neutral No major change to directed effort levels or incidental catch of non-target species	Neutral No major change to directed effort levels or interaction with protected species	Neutral No major change to directed effort levels or interactions with habitat	Direct Positive New reference points result in stock status improvement to rebuilt and no overfishing;

Action	Description	Impacts on Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
MONKFISH FISHERY-RELATED ACTIONS CONTINUED						
P , Framework 6 (2008)	Eliminated a backstop provision that would have adjusted and possibly closed the monkfish fishery in FY 2009 if landings exceeded the target total allowable catch by more than 30 percent	Neutral No change to directed fishing effort	Neutral No change to directed fishing effort	Neutral No change to directed fishing effort	Neutral No change to directed fishing effort	Direct Positive Eliminated the non-warranted closure of the directed fishery for TAC overages in excess of 30%, in light of rebuilt stock status
RFF Amendment 4 (in development)	Monkfish component of the Omnibus EFH Amendment; would revise EFH designations for all New England fisheries, possibly establish new HAPCs and consider measures to further protect critical habitat	Unknown or potentially positive Final measures not defined, but protection of monkfish EFH likely positive for monkfish stocks	Unknown or potentially positive Final measures not defined, but protection of monkfish and other species' EFH likely positive for non-target species	Unknown Final measures not defined,	Likely Direct positive Final measures not defined, but purpose of amendment is protection of monkfish and other species' EFH	Unknown Final measures not defined,

Action	Description	Impacts on Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
OTHER FISHERY-RELATED ACTIONS						
P, Pr, RFF Atlantic Sea Scallop FMP – a series of amendment and framework actions from the mid-1990s through the present	Implementation of the Atlantic Sea Scallop FMP and continued management of the fishery, primarily through effort controls	Direct Positive Effort reductions taken over time have resulted in a sustainable scallop fishery and reduction in both directed and incidental catch of monkfish	Indirect Positive Effort reductions taken over time also reduced bycatch, including gear modifications that improved bycatch escapement	Mixed Effort reductions taken over time reduced interactions with protected species however, turtle interactions remain problematic	Indirect Positive Effort reductions reduced gear contact with habitat and the current rotational access program focuses fishing effort on sandy substrates which are less susceptible to habitat impacts	Indirect Positive Initial negative impacts due to effort reductions have been supplanted by a sustainable, profitable fishery

Action	Description	Impacts on Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
OTHER FISHERY-RELATED ACTIONS CONTINUED						
P, Pr, RFF Groundfish FMP – a series of amendment and framework actions from implementation of the FMP in 1977 through the present	Implementation of the NE Multispecies FMP and continued management of the fishery, primarily through effort controls, and, recently also through sectors	Direct Positive Multispecies FMP effort controls and reductions have resulted in a fishery that is no longer overfished, nor is overfishing occurring	Indirect Positive Effort reductions and gear controls taken over time also reduced bycatch	Indirect Positive Reducing effort and other measures reduced opportunities for interactions with protected species	Indirect Positive Reducing effort and other measures reduced opportunities for habitat interactions	Indirect Positive Reducing effort has created a sustainable fishery
Pr, RFF Large Whale Take Reduction Plan Amendment (2008)	Removed the DAM program, will implement sinking ground lines for lobster gear, includes more trap/pot and gillnet fisheries under the protection plan and requires additional markings on gear to improve information regarding where and how entanglements occur	Negligible Changes implemented through the amendment are not expected to have substantial changes on groundfish	Negligible Changes implemented through the amendment are not expected to have substantial changes on non-groundfish species	Direct Positive New regulations implemented to protect large whales are expected to have a positive impact on large whales by reducing incidental takes	Negligible Changes implemented through the amendment are not expected to have substantial changes to habitat	Indirect Negative Changes implemented through the amendment require some gear changes for gillnet fisheries which have minor negative economic impacts

Action	Description	Impacts on Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
OTHER FISHERY-RELATED ACTIONS CONTINUED						
^{RFF} Harbor Porpoise Take Reduction Plan Amendment (~2010)	Options are currently under development to reduce takes of harbor porpoise toward the long-term zero mortality rate goal	Unknown If current measures such as closure areas and the use of pingers are expanded upon or modified, it could impact groundfish	Unknown If current measures such as closure areas and the use of pingers are expanded upon or modified, it could impact non-groundfish species	Direct Positive Changes to protect harbor porpoise have a positive impact on protected species	Unknown If current measures such as closure areas and the use of pingers are expanded upon or modified, it could impact habitat	Unknown If current measures such as closure areas and the use of pingers are expanded upon or modified, it could impact human communities
^{RFF} Amendment 3 to the Skate FMP (2010)	This amendment addresses rebuilding of winter and thorny skates and reduce mortality on little and smooth skates; reduces trip limits, adopts ACLs and AMs	Minor Negative Lower skate possession limits and closures may cause vessels to use DAS for monkfish	Mixed Actions taken to reduce skate mortality; they could lead to increased targeting of non-monkfish species	Unknown If actions are taken to reduce skate mortality, they could impact protected species	Unknown If actions are taken to reduce skate mortality, they could impact habitat	Minor negative Actions taken to reduce skate mortality negatively impact human communities

Action	Description	Impacts on Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
NON FISHERY-RELATED ACTIONS						
P, Pr, RFFA Agriculture runoff	Nutrients applied to agriculture land are introduced into aquatic systems	Indirect Negative Reduced habitat quality in the immediate project area	Indirect Negative Reduced habitat quality in the immediate project area	Direct Negative Reduced habitat quality in the immediate project area	Indirect Negative Reduced habitat quality in the immediate project area	Indirect Negative Reduced habitat quality negatively affects resource viability and can lead to reduced income from fishery resources
P, Pr, RFFA Port maintenance	Dredging of wetlands, coastal, port and harbor areas for port maintenance	Indirect Negative Localized decreases in habitat quality	Indirect Negative Localized decreases in habitat quality	Direct Negative Reduced habitat quality in the immediate project area	Indirect Negative Localized decreases in habitat quality in the immediate project area	Indirect Negative Reduced habitat quality negatively affects resource viability in the immediate project area
P, Pr, RFFA Offshore disposal of dredged materials	Disposal of dredged materials	Indirect Negative Localized decreases in habitat quality in the immediate project area	Indirect Negative Localized decreases in habitat quality in the immediate project area	Direct Negative Reduced habitat quality in the immediate project area	Indirect Negative Localized decreases in habitat quality in the immediate project area	Indirect Negative Reduced habitat quality negatively affects resource viability in the immediate project area

Action	Description	Impacts on Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
NON FISHERY-RELATED ACTIONS CONTINUED						
P, Pr, RFFA Beach nourishment	Offshore mining of sand for beaches	Indirect Negative Localized decreases in habitat quality in the immediate project area	Indirect Negative Localized decreases in habitat quality in the immediate project area	Direct Negative Reduced habitat quality in the immediate project area	Indirect Negative Localized decreases in habitat quality in the immediate project area	Mixed Positive for mining companies, possibly negative for fisheries
	Placement of sand to nourish beach shorelines	Indirect Negative Localized decreases in habitat quality in the immediate project area	Indirect Negative Localized decreases in habitat quality in the immediate project area	Direct Negative Reduced habitat quality in the immediate project area	Indirect Negative Localized decreases in habitat quality in the immediate project area	Positive Improves beaches and can help protect homes along the shore line
P, Pr, RFFA Marine transportation	Expansion of port facilities, vessel operations and recreational marinas	Indirect Negative Localized decreases in habitat quality in the immediate project area	Indirect Negative Localized decreases in habitat quality in the immediate project area	Direct Negative Reduced habitat quality in the immediate project area	Indirect Negative Localized decreases in habitat quality in the immediate project area	Mixed Positive for some interests, potential displacement for others
P, Pr, RFFA Installation of pipelines, utility lines and cables	Transportation of oil, gas and energy through pipelines, utility lines and cables	Indirect Negative Initially localized decreases in habitat quality in the immediate project area	Indirect Negative Initially localized decreases in habitat quality in the immediate project area	Indirect Negative Initially localized decreases in habitat quality in the immediate project area	Potentially Direct Negative Initially reduced habitat quality in the immediate project area	Mixed End users benefit from improved pipelines, cables, etc., but reduced habitat quality may impact fisheries and revenues

Action	Description	Impacts on Monkfish Stocks	Impacts on Non-target species	Impacts on Endangered and Other Protected Species	Impacts on Habitat – Including Non-fishing Effects	Impacts on Human Communities
NON FISHERY-RELATED ACTIONS CONTINUED						
Pr, RFFA Liquefied Natural Gas (LNG) terminals (w/in 5 years)	Transportation of natural gas via tanker to terminals located offshore and onshore (Several LNG terminals are proposed, including ME, MA, NY, NJ and MD)	Indirect Negative Initially localized decreases in habitat quality in the immediate project area	Indirect Negative Initially localized decreases in habitat quality in the immediate project area	Indirect Negative Initially localized decreases in habitat quality in the immediate project area	Potentially Direct Negative Localized decreases in habitat quality possible in the immediate project area	Mixed End users benefit from a steady supply of natural gas but reduced habitat quality may impact fisheries and revenues
RFFA Offshore Wind Energy Facilities (w/in 5 years)	Construction of wind turbines to harness electrical power (Several facilities proposed from ME through NC, including off the coast of MA)	Indirect Negative Initially localized decreases in habitat quality in the immediate project area	Indirect Negative Initially localized decreases in habitat quality in the immediate project area	Potentially Direct Negative Localized decreases in habitat quality possible in the immediate project area	Potentially Direct Negative Localized decreases in habitat quality possible in the immediate project area	Mixed End users benefit from a clean energy production but reduced habitat quality may impact fisheries and revenues

A: MONKFISH (GOOSEFISH) ASSESSMENT SUMMARY FOR 2010

State of Stock

The new 2010 assessment has updated the biological reference points based on an updated yield-per-recruit analysis and the results of the SCALE length-tuned population model that incorporates multiple survey indices and catch data. Based on accepted reference points from these updated analyses, monkfish in both the northern and southern management areas are not overfished and overfishing is not occurring (Figures A1 and A2).

The existing overfishing threshold is based on F_{max} , and this was retained in the 2010 assessment. The updated estimates of F_{max} are 0.43 per year in the northern area and 0.46 per year in the southern area. Estimates of current F (2009) are 0.10 per year in the northern area and 0.07 per year in the southern area, both less than the respective overfishing thresholds.

The new recommended estimates of B_{target} are 52,930 mt in the northern area and 74,490 mt in the southern area, and estimates of $B_{threshold}$ are 26,465 mt in the northern area and 37,245 mt in the southern area. The current (2009) estimates of total biomass are 66,062 mt in the northern area and 131,218 mt in the southern area. The total catch produced from the long-term B_{target} at the respective values of F_{max} (i.e., proxy for F_{msy}), is 10,745 mt for the northern area and 15,279 mt for the southern area. These updated biomass reference points are based upon a new methodology.

If the previous assessment reference points had been used, both resources would have been declared not overfished and overfishing not occurring (Figure A1).

This represents our current best scientific understanding of the monkfish stock status; however, the SARC-50 panel expressed serious concerns regarding the high levels of uncertainty throughout this assessment. The assessment results continue to be uncertain due to cumulative effects of under-reported landings, unknown discards during the 1980s, uncertainty in survey indices, and incomplete understanding of key biological parameters such as age and growth, longevity, natural mortality and stock structure contributing to retrospective patterns primarily in the northern management area [see Special Comments].

Projections

Uncertainty in the current state for the northern management area makes it difficult to predict stock dynamics in that area. Keeping this in mind, SCALE model results and AGEPRO projections were used to evaluate stock trends during 2011-2016. Projections were done using $F_{threshold}$ and NEFMC-proposed Annual Catch Targets (ACTs) and Acceptable Biological Catches (ABCs). Stochastic long-term recruitment was assumed. Projections also assumed that F in 2010 would equal the estimated F in 2009 from the SCALE model.

Projections for the northern management area (NMA) are more likely to be unrealistic than for the southern area, given the relatively strong retrospective pattern in the model observed since 2002. The projections indicate that the northern area is more likely than the southern area to experience overfishing during 2011-2016 if total catches approach the proposed ABC.

Projection Tables

Northern Management Area Projection Table

Annual P relative to BRP

Catch and Biomass in Metric tons

Basis for Projection = Proposed ACT

Year	F	Total Catch	Total Biomass	P < 0.5*Bmax	P > Fmax
2010	0.10	4,447	74,102	0%	0%
2011	0.22	10,750	81,907	0%	0%
2012	0.22	10,750	81,204	0%	0%
2013	0.22	10,750	80,225	0%	0%
2014	0.23	10,750	78,944	0%	0%
2015	0.24	10,750	77,548	0%	0%
2016	0.24	10,750	76,383	0%	0%

Basis for Projection = Proposed ABC

Year	F	Total Catch	Total Biomass	P < 0.5*Bmax	P > Fmax
2010	0.10	4,447	74,102	0%	0%
2011	0.38	17,485	81,907	0%	4%
2012	0.44	17,485	73,769	0%	52%
2013	0.54	17,485	64,796	0%	94%
2014	0.71	17,485	55,815	0%	99%
2015	1.01	17,485	46,871	0%	100%
2016	1.69	17,485	37,631	12%	100%

Basis for Projection = Fthreshold

n/a = not applicable

Year	F	Total Catch	Total Biomass	P < 0.5*Bmax	P > Fmax
2010	0.10	4,447	74,102	0%	0%
2011	0.43	19,557	81,907	0%	n/a
2012	0.43	16,553	70,831	0%	n/a
2013	0.43	14,120	62,846	0%	n/a
2014	0.43	12,402	57,627	0%	n/a
2015	0.43	11,384	54,619	0%	n/a
2016	0.43	10,883	53,298	0%	n/a

Southern Management Area Projection Table

Annual P relative to BRP

Catch and Biomass in Metric tons

Basis for Projection = Proposed ACT

Year	F	Total Catch	Total Biomass	P < 0.5*Bmax	P > Fmax
2010	0.07	6,235	131,344	0%	0%
2011	0.13	11,469	132,243	0%	0%
2012	0.14	11,469	126,295	0%	0%
2013	0.15	11,469	121,055	0%	0%
2014	0.16	11,469	116,674	0%	0%
2015	0.17	11,469	113,979	0%	0%
2016	0.17	11,469	113,777	0%	0%

Basis for Projection = Proposed ABC

Year	F	Total Catch	Total Biomass	P < 0.5*Bmax	P > Fmax
2010	0.07	6,235	131,344	0%	0%
2011	0.15	13,326	132,243	0%	0%
2012	0.16	13,326	124,255	0%	0%
2013	0.18	13,326	114,149	0%	0%
2014	0.20	13,326	111,160	0%	0%
2015	0.22	13,326	107,047	0%	0%
2016	0.23	13,326	105,443	0%	0%

Basis for Projection = Fthreshold

n/a = not applicable

Year	F	Total Catch	Total Biomass	P < 0.5*Bmax	P > Fmax
2010	0.07	6,235	131,344	0%	0%
2011	0.46	36,245	132,243	0%	n/a
2012	0.46	25,171	99,182	0%	n/a
2013	0.46	18,484	80,735	0%	n/a
2014	0.46	15,033	72,167	0%	n/a
2015	0.46	13,857	69,597	0%	n/a
2016	0.46	13,878	69,949	0%	n/a

Catches

Reported total landings (live weight) increased from an average of 2,500 mt in the 1970s to 8,700 mt in the 1980s, 23,000 mt in the 1990s, 22,000 mt from 2000-2005 and 11,600 mt during 2006-2009 (Figure A5). Total landings have declined since 2003 due to management regulations including TACs during 2007-2009 of 5,000 mt in the northern region and 5,100 mt in the southern region. Landings in 2009 were 3,255 mt in the northern region and 5,302 mt in the southern region. Landings in the early part of the time series are thought to be under-reported. The accuracy of landings data has likely improved with mandatory reporting beginning in 1994.

During 1990-1999, 53% of USA monkfish landings were taken in otter trawls, 28% in scallop dredges, and 18% in gill nets (Figure A6). During 2000-2009, 50% of USA monkfish landings were taken in otter trawls, 6% in scallop dredges, 36% in gill nets, and 8% other gear. While trawl gear accounts for most of the landings in the northern area (75% during 2000-2009), gillnets now account for the majority of the landings in the southern area (54% during 2000-2009).

Estimated total discards of monkfish have ranged between 1,600 mt (1992) and 7,500 mt (2001) per year, with a long-term discard/kept ratio of 0.15 (1989-2009, northern and southern areas combined). Discard rates have been highest in the scallop dredge fisheries in the southern area, and lowest in gillnets in both areas. Discard ratios and discard levels (mt) increased in both areas after 2000, and have since declined somewhat (overall discard/kept ratio for 2000-2004 =0.20; for 2005-2009=0.17).

Catch and Status Table (weights in '000 mt): Monkfish (Goosefish)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Max ¹	Min ¹	Mean ¹
USA Commercial landings													
Northern area	10.7	13.3	14.0	15.0	13.2	10.3	6.7	4.9	4.0	3.3	15.0	3.2	7.6
Southern area	10.1	10.0	8.9	11.1	8.0	8.8	7.9	7.3	6.9	5.3	19.3	3.7	9.1
Total	20.9	23.3	22.9	26.1	21.2	19.1	14.6	12.1	11.0	8.6	28.2	7.3	16.7
USA Commercial discards													
Northern area	1.0	2.9	1.4	1.3	0.9	0.9	0.5	0.4	0.4	0.5	2.9	0.4	1.0
Southern area	1.5	4.6	3.4	3.2	2.7	2.5	1.8	1.8	1.1	0.8	4.6	0.6	2.0
Total	2.5	7.5	4.8	4.5	3.6	3.4	2.3	1.2	1.5	1.3	7.5	1.6	3.0
Foreign landings ²	0.2	0.1	0.3	0.3	0.2	0.2	0.3	0	0	0	0.3	<0.1	0.4
Total Catch	23.6	30.9	28.0	30.9	24.9	22.7	17.2	13.3	12.5	9.9	31.0	9.9	24.1
Northern area													
Total Biomass ³	56.0	63.2	65.5	65.5	57.1	50.6	47.9	51.4	58.2	66.1	100.4	41.2	62.0
F	0.46	0.68	0.82	1.13	0.96	0.71	0.38	0.22	0.14	0.10	1.13	0.10	0.56
Age-1 recruitment ⁴	44,137	29,071	18,412	18,771	19,798	14,750	25,032	18,373	17,459	16,147	44,137	14,750	22,195
Southern area													
Total Biomass ³	102.2	108.5	111.9	117.1	119.2	123.0	125.7	129.2	131.1	131.2	146.7	99.2	121.3
F	0.17	0.21	0.20	0.22	0.16	0.16	0.13	0.12	0.10	0.07	0.22	0.07	0.15
Age-1 recruitment ⁴	33,286	16,235	32,177	41,825	24,292	16,460	14,451	13,113	17,880	18,988	41,825	13,113	22,871

¹Landings data based on 1980-2009 ('000 mt). Commercial fishery discard means from 1989-2009.

²Foreign landings are for NAFO Areas 5 and 6.

³Estimates from SCALE model ('000 mt)

⁴Estimates from SCALE model (thousands of fish)

Stock Distribution and Identification

The monkfish resource in US waters is distributed from the Gulf of Maine through Cape Hatteras, NC. Current management practice divides US waters into two areas north and south of Georges Bank to accommodate differences in fishery practices. Information on growth, maturity, and genetics tends to support the hypothesis of a single biological stock. Information from recent and ongoing tagging studies is equivocal, but indicates limited movement of fish from the northern management area to the southern area. Patterns in recruitment tend to support the hypothesis of two biological stocks. In the past, fishing practices and estimated fishery selectivity also tended to support management and assessment for two areas; however, the current mix of removals by gear provides model estimates indicating very similar average fishery selectivity in the two areas.

Data and Assessment

Data used in the 2010 assessment include data from NEFSC surveys, ME/NH surveys, and cooperative monkfish surveys conducted in 2001, 2004 and 2009 (see below) as well as commercial fishery data from vessel trip reports, dealer landings records and on-board fishery observers through 2009. The assessment assumed a natural mortality rate (M) = 0.3. Fishing mortality rates and stock sizes were estimated using the SCALE statistical catch-at-length model.

A cooperative monkfish survey was conducted during February-April 2009 using two industry trawlers and 3 nets (2 flat, 1 rockhopper). The survey design differed slightly from previous cooperative surveys (in 2001, 2004) because sampling effort was allocated proportional to stratum area (with extra sampling in strata designated by industry) rather than proportional to spatial patterns of fishing effort. A total of 204 successful survey tows and 91 gear experiment tows were completed in USA waters from Cape Hatteras through the Gulf of Maine. Absolute estimates of biomass, abundance and length composition were developed using catch and area swept by each tow and net efficiency estimates from depletion experiments. Proportion at length from the cooperative surveys was used in the SCALE model; however, the estimates of absolute population biomass and abundance were not included in the final model runs due to poor model fit.

The model for the northern area exhibited retrospective patterns in fishing mortality and stock size that were strongest for the 2002-2006 terminal years and weaker for the 2007-2008 terminal years (Figure A3). The retrospective underestimation of fishing mortality averaged -66% for the 2002-2008 terminal years, ranging from -21% for the 2008 terminal year to -84% for the 2003 terminal year. The retrospective overestimation of total biomass averaged +108% for the 2002-2008 terminal years, ranging from +17% for the 2008 terminal year to +163% for the 2003 terminal year. The retrospective estimation error in recruitment at age 1 averaged +36% for the 2002-2008 terminal years, ranging from -2% for the 2008 terminal year to +89% for the 2003 terminal year.

The model for the southern area exhibited moderate retrospective patterns in fishing mortality and stock size since 2002 (Figure A4). The retrospective underestimation of fishing mortality averaged -13% for the 2002-2008 terminal years, ranging from -9% for the 2008 terminal year to -21% for the 2006 terminal year. The retrospective overestimation of total biomass averaged +16% for the 2002-2008 terminal years, ranging from +8% for the 2008 terminal year to +22% for the 2006 terminal year. The retrospective overestimation of recruitment at age 1 averaged +48% for the 2002-2008 terminal years, ranging from +12% for the 2008 terminal year to +130% for the 2006 terminal year.

Biological Reference Points

Previous monkfish biomass targets and thresholds (NEFSC 2007) were based on long-term average biomass and a low point in the biomass time series from which the stock recovered, respectively. The current assessment recommends using a different approach that is used for New England groundfish stocks based on the long-term projected biomass corresponding to F_{msy} or its proxy. For monkfish this proxy is F_{max} . Based on the new approach, total biomass targets (i.e., B_{max} at F_{max}) and thresholds ($0.5 \times B_{max}$) were calculated for monkfish for the northern and southern management areas. B_{target} is 52,930 mt in the northern area and 74,490 mt in the southern area, and $B_{threshold}$ is 26,465 mt in the northern area and 37,245 mt in the southern area. The total catch produced from the long-term B_{target} at the respective values of

Fmax (i.e., proxy for Fmsy), is 10,745 mt for the northern management area and 15,279 mt for the southern management area.

The existing overfishing threshold is based on Fmax, and this was retained in the 2010 assessment, with updated estimates of Fmax = 0.43 per year in the northern area and Fmax = 0.46 per year in the southern area.

The following table summarizes biological reference points for monkfish from the 2007 and 2010 assessments. These were calculated using different methods as indicated in the 'Basis' column.

Management Area		Biomass BRPs in metric tons		
North	BRP	Basis	NEFSC 2007	SAW 2010
	Fmax	YPR	0.31	0.43
	Bthreshold	Bloss 1980-2006	65,200	
	Bthreshold	Bloss 1980-2009		41,238
	Bthreshold	0.5*Bmax Projected		26,465
	Btarget	Bavg 1980-2006	92,200	62,371
	Btarget	Bavg 1980-2009		61,991
	Btarget	Bmax Projected		52,930
	MSY	Fmax Projected		10,745
South	BRP	Basis	NEFSC 2007	SAW 2010
	Fmax	YPR	0.40	0.46
	Bthreshold	Bloss 1980-2006	96,400	
	Bthreshold	Bloss 1980-2009		99,181
	Bthreshold	0.5*Bmax Projected		37,245
	Btarget	Bavg 1980-2006	122,500	120,292
	Btarget	Bavg 1980-2009		121,313
	Btarget	Bmax Projected		74,490
	MSY	Fmax Projected		15,279

Fishing Mortality

Fishing mortality estimated for 2009 from the SCALE model (assuming M=0.3 per year) was F = 0.10 per year in the northern area, and F = 0.07 per year in the southern area (Figure A1). Fishing mortality has declined in both areas since 2003.

Recruitment

Northern area SCALE model results (Figure A3) indicate that the strongest year classes were produced in 1997-1999. Recruitment was generally below average in the 1980s, and has been about average since 2001. The time series average recruitment is about 20 million age 1 fish. Southern area results (Figure A4) indicate that the strongest year classes were produced in 1992, 1997, and 2002, with the weakest year class produced in 1987. Recruitment has been below average since 2004. The time series average recruitment is about 23 million age 1 fish.

Stock Biomass

Total stock biomass in the northern area declined steadily from the early 1980s through the early 1990s, remained at a relatively low level during the 1990s and then began to increase after 1999 (Figure A2). Biomass in the northern area has been relatively stable since 2003, and was estimated to be 66,062 mt in 2009. In the southern area, total biomass increased until the late 1980s and then declined throughout the 1990s. Biomass has increased in the southern area since 1999, and was estimated to be 131,218 mt in 2009 (Figure A2).

Ecosystem Considerations

Monkfish is potentially one of the dominant piscivores in the ecosystem. The amount of food consumed by monkfish is 0.005-0.02% of all energy flows in the ecosystem, and monkfish account for 2-6% of the total consumption by all finfish in the ecosystem (1-4 % in the northern area, 2-8% in the southern area). The amount of food eaten and per capita consumption peaked in the early 1980s for both stocks, driven by larger fish. Monkfish consumption of mackerel and herring is equivalent to 20-50% of landings, and they consume the same magnitude of squid as the landings of squid, and potentially consume more than the landings of silver hake and skates.

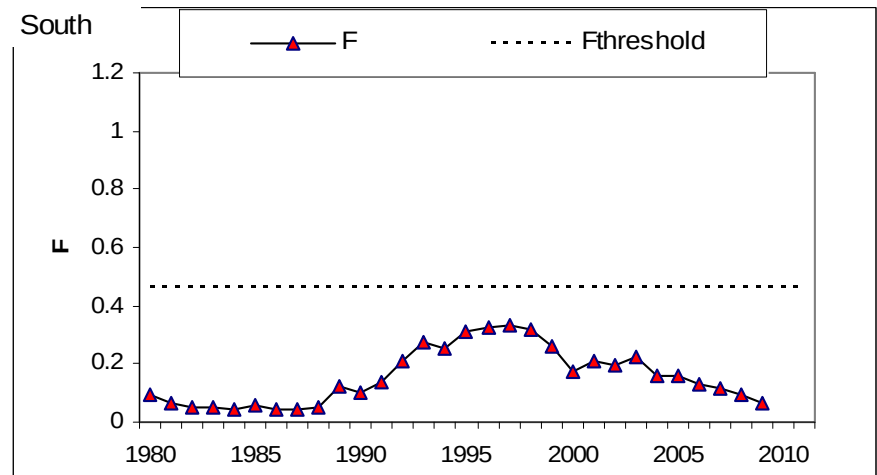
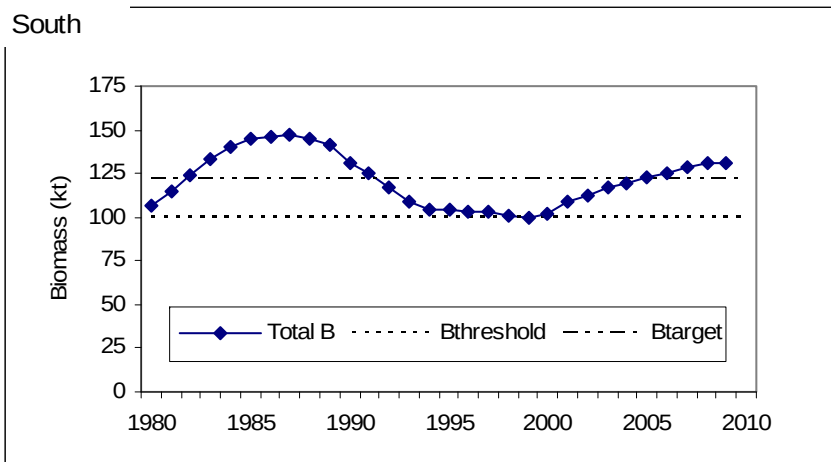
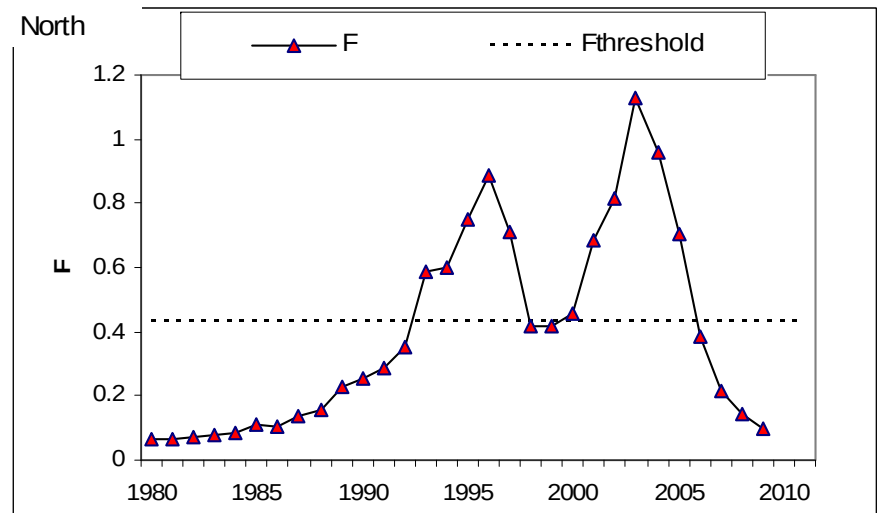
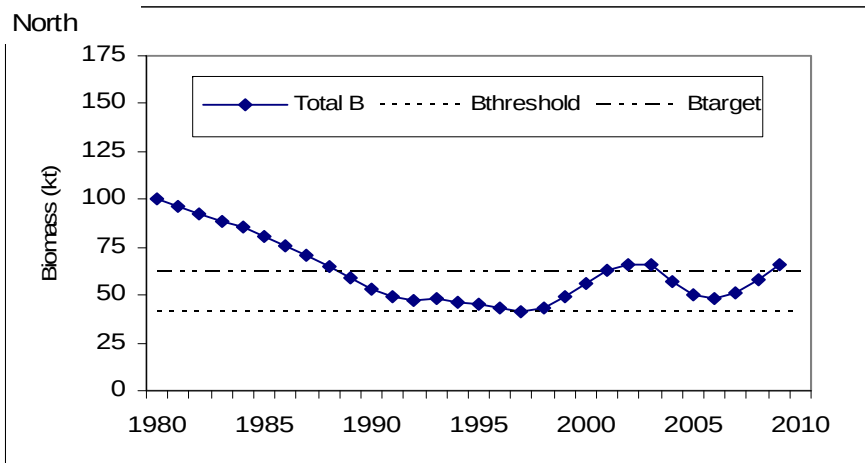
Special Comments

- Without knowing the reason(s) for the retrospective pattern in the model, it is not possible to know if the 2010 assessment is biased. In the north, if the 2010 assessment suffers from a retrospective bias equal to that seen on average over the past 7 years, a projection at the proposed ACT = 10,750 mt using retrospective adjusted 2009 stock sizes indicates a 65% chance that total biomass will fall below the adjusted Bthreshold by 2016. This is a very different result from the unadjusted analyses (see Projections).
- The assessment is uncertain for a number of reasons, including uncertainty due to cumulative effects of under-reported landings, unknown discards during the 1980s, uncertainty in survey indices, distribution of monkfish outside the survey areas, and incomplete understanding of key biological parameters such as age and growth, longevity, natural mortality and stock structure contributing to retrospective patterns primarily in the northern management area. The model results are sensitive to the assumed value of natural mortality (M) of 0.3 per year, adopted by NEFSC (2007). This value was adjusted in 2007 as a compromise between the observed longevity of males (~7 yr) and females (at least age 13); however, both sexes may potentially have longer lifespans. Uncertainties in key life history parameters and historical catches are unlikely to be resolved in the short term.
- The SCALE model allows integration of a wide variety of input information and facilitates estimation of uncertainty of fishery selectivity and stock sizes; these estimates can then be used in stochastic projections to provide measures of uncertainty of future trends of the monkfish populations in the management areas. However, these projections are subject to the same uncertainties that are of concern regarding the assessment model.
- The higher monkfish catch efficiency of the new NOAA vessel *Henry Bigelow* is expected to improve our ability to monitor trends in abundance.

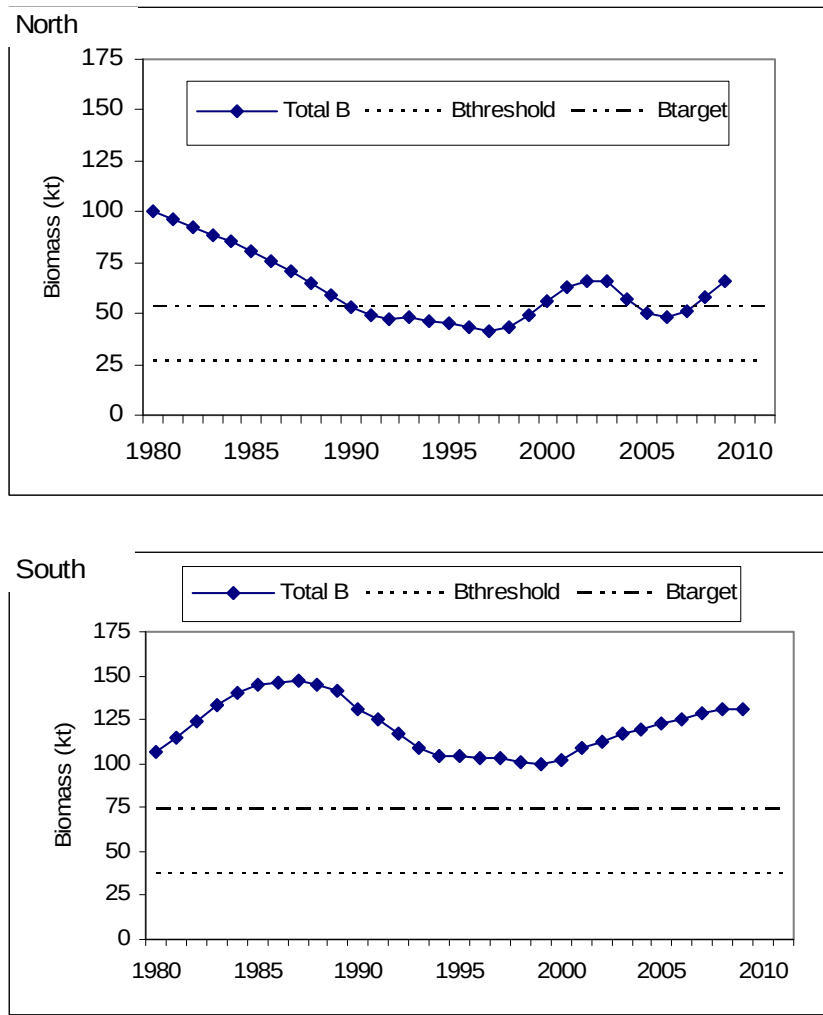
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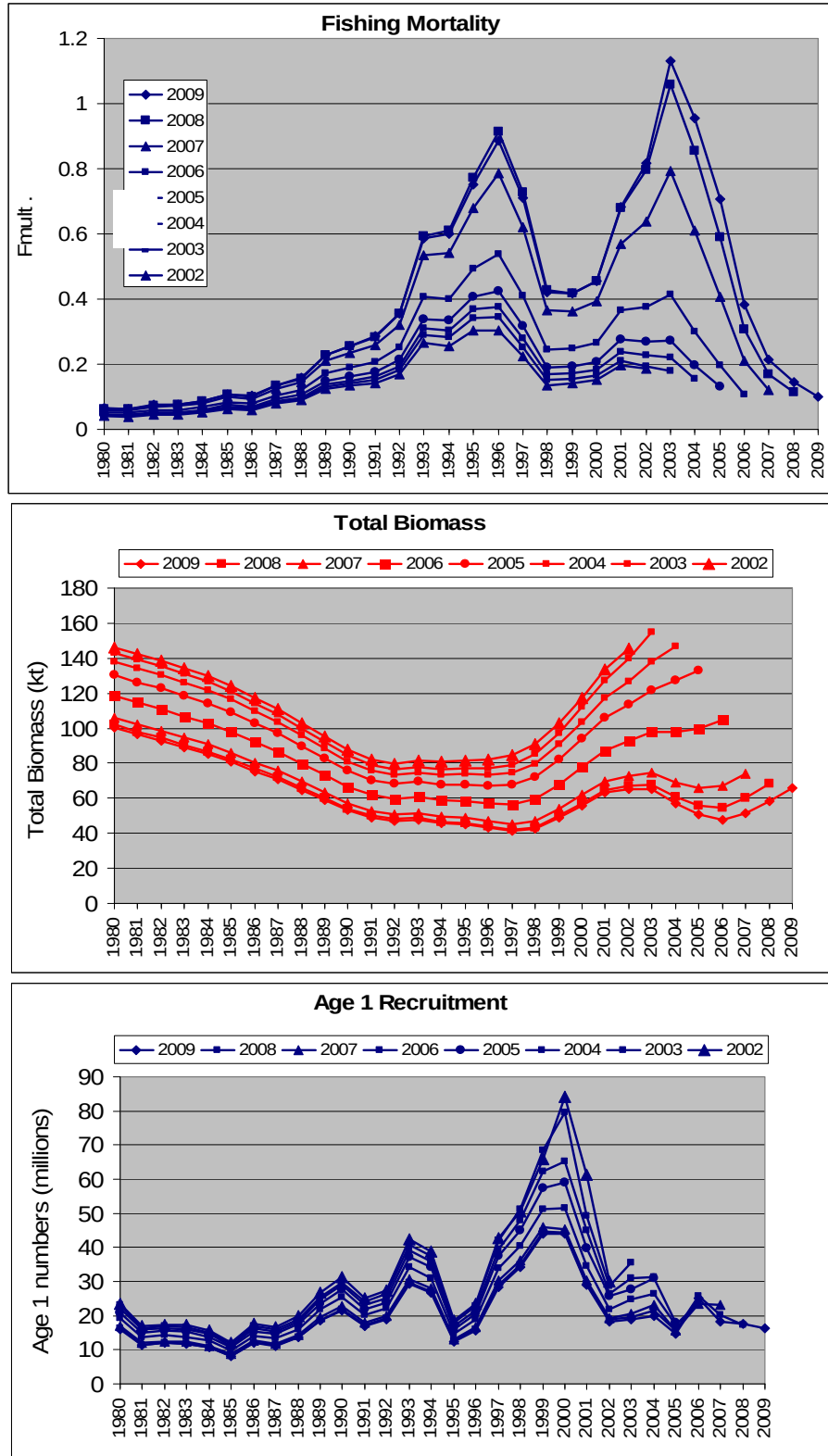
Figures:



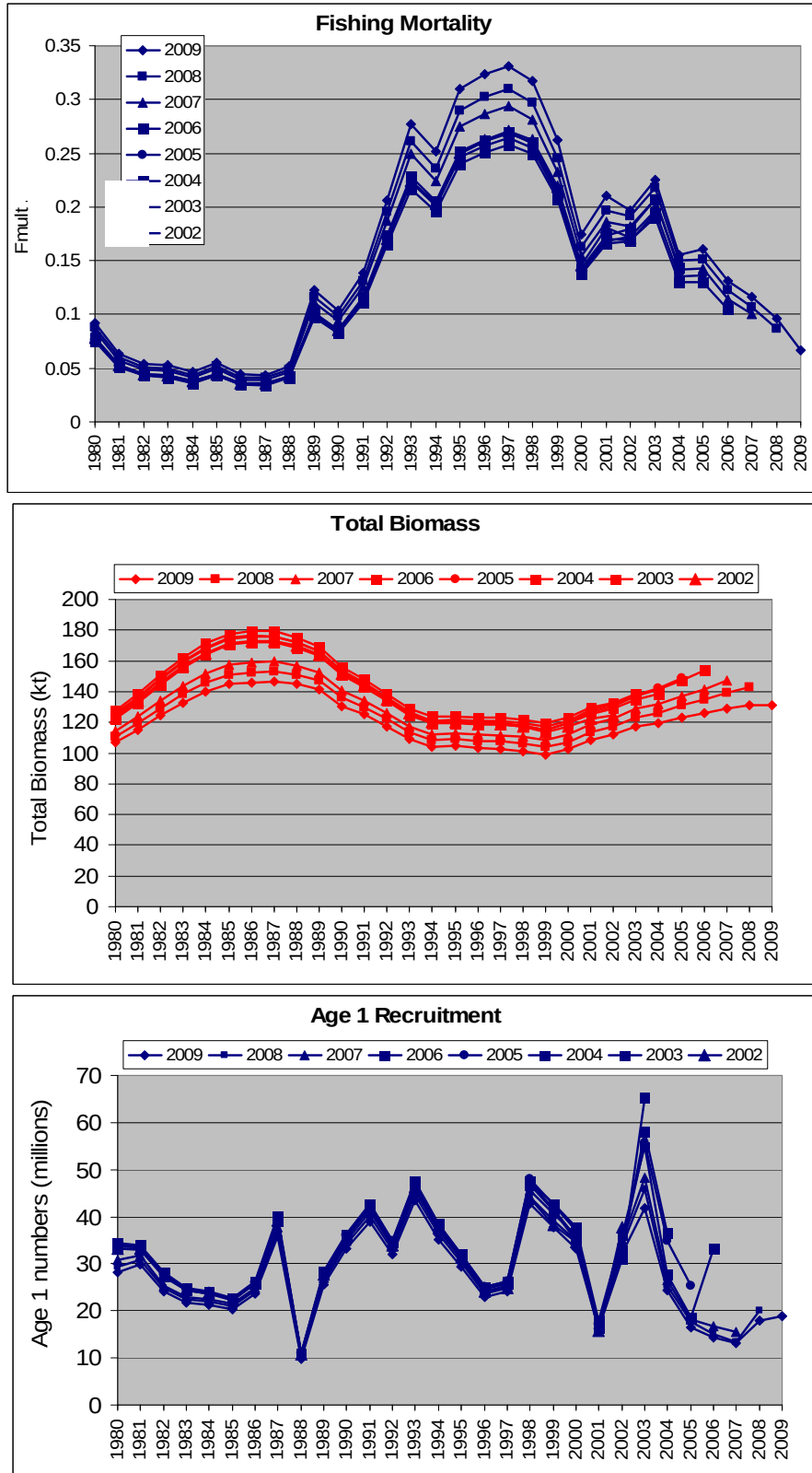
A1. Trends in total biomass and fishing mortality rate (F) from the 2010 assessment model (SCALE) relative to updated biological reference points using previous (NEFSC 2007) definitions in the monkfish fishery management plan for northern and southern areas. Panels on the right can be used to determine status with respect to overfishing.



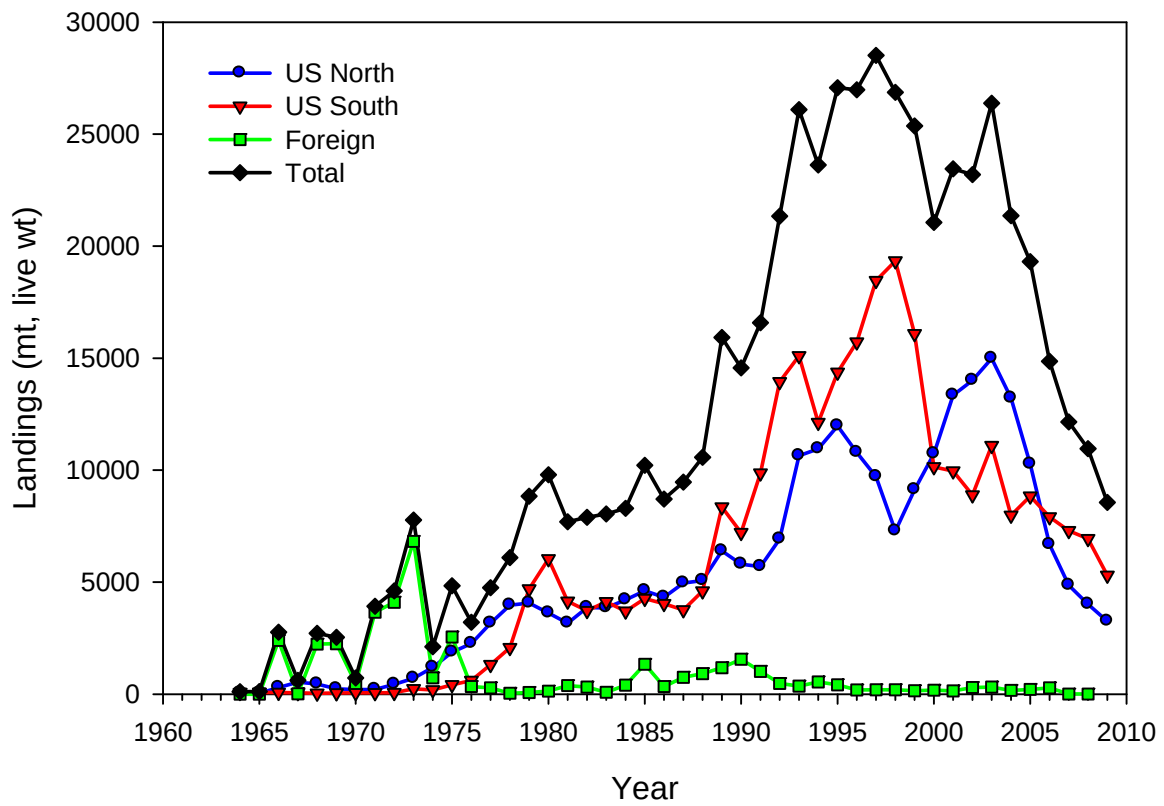
A2. Trends in total biomass from the assessment model (SCALE) relative to new recommended biomass reference points for the northern and southern management areas. This figure can be used to determine status with respect to whether stocks are overfished.



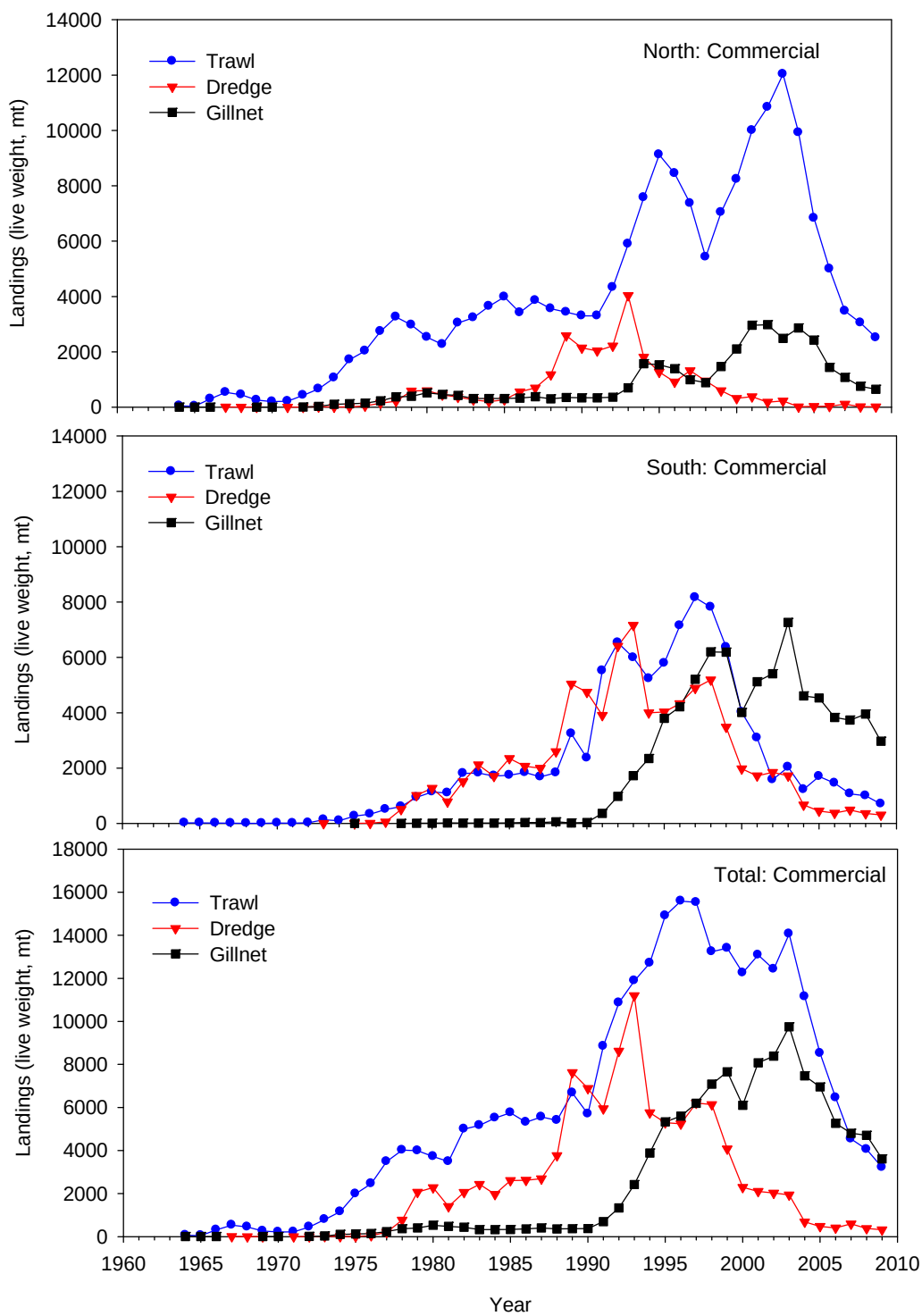
A3. Retrospective patterns in estimated monkfish fishing mortality, biomass and recruitment from the SCALE model for the **northern** management region.



A4. Retrospective patterns in estimated monkfish fishing mortality, biomass and recruitment from the SCALE model for the **southern** management region.



A5. Monkfish commercial fishery landings, by management region and total, 1964-2009.



A6. Monkfish commercial fishery landings by major gear type, northern, southern and combined management regions.

**Monkfish FMP
Amendment 5**

Appendix 8

Scoping Comments
Summary of Public Hearings
Written Comments

SCOPING COMMENTS

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

I am a gillnet fisherman and I am writing for the scoping document regarding Monkfish Amendment 5. I think we should go with multi year specifications over annual specifications with the reasoning that it takes a couple of years for the impacts to be realized on the fishery. We make regulations this year and next year we make more restrictive measures never giving the first a chance to work.

At this time I would like to see more days at sea fishing instead of a higher trip limit. More days means more fish for the fish buyers throughout the year and more opportunity for better fish prices. After we get back to the initial 40 DAS allocated in the beginning, which was not that much to start with, we could then go with a higher trip limit if need be. The system we have now is the one responsible for rebuilding the fishery. Due to the most recent scientific data and research, the monkfish have been rebuilt. This was because of a reduction of DAS. It obviously worked and now it is time to increase the allotted days at sea to the fisherman.

I am against ITQ or sectors at this time because we know what we have now and how it works. ITQ's were going to save the snapper and grouper fisheries in the south. But now I see they might be facing a five month shutdown next year. I am also against ITQ's because of the years we were going to use to qualify. For someone who fishes solely in the south with his days, we were only allowed 996 lbs whole weight some years and 1826 lbs. whole weight other years. Also in the north there was no difference between monkfish days and multispecies days which had A and B days. How is my history going to compete with someone who fishes in the north with no trip limit?

When the time comes I would like to see more days for someone who qualified with 50,000 lb tail weight vs. someone who qualified with 7,500 lbs. tail weight. I don't understand why someone who qualified with 6 1/2 times more fish only gets 100 lbs. more fish. I don't want to be able to requalify, however, it should be based upon what poundage that was sent in to qualify for the initial permit.

SEA Queen Carl Lachin
3/3/09

----- Original Message -----

Subject: PUBLIC COMMENT ON FEDERAL REGISTER

Date: Fri, 20 Feb 2009 14:41:46 -0800 (PST)

From: jean public <jeanpublic@yahoo.com>

Reply-To: jeanpublic@yahoo.com

To: monkfish.five@noaa.gov, FOE@FOE.ORG,
INFORMATION@SIERRACLUB.ORG

CUT DAS BY ONE HALF THE FORMER QUOTA. THIS IS THE AGENCY THAT HAS PRESIDED, FOR THE LAST SIXTY YEARS, OVER THE DEDIMATION OF SPECIES AFTER SPECIES AFTER SPECIES. THIS IS THE AGENCY THAT NEVER GOT INTO ACTION THE ORIGINAL MAGNUSTON STEVENS AND WE ARE ONTO THE "REAUTHORIZED MAGNUSON" BILL ALREALDY. THIS AGENCY SITS ON LEGISLATION TO SAVE THE FISH. MEANWHILE MARINE LIFE IS STARVING BECAUSE THIS AGENCY ALLOWS ENDLESS TAKINGS BY COMMERCIAL FISH PROFITEERS. COMMERCIAL FISH PROFITEERS OWN THIS AGENCY, NOT THE AMERICANPUBLIC. NOTHING THIS AGENCY DOES IS FOR THE GOOD OF THE ENTIRE AMERICAN PUBLIC. EVERYTHING THEY DO IS FOR THE PROFITEERING OF THE COMMERCIAL FISH INDUSTRY. THIS IS MYCOMMETN FOR THE PUBLIC RECORD.
B. SACHAU 15 ELM ST FLORHAM PARK NJ 07392

ASSOCIATED FISHERIES OF MAINE

PO Box 287, South Berwick, ME 03908

207-384-4854

March 26, 2009

Ms. Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

Dear Pat:

RE: Monkfish Amendment 5 scoping comments

Attached herewith please find a monkfish catch share allocation and ITQ referendum proposal developed by Associated Fisheries of Maine (AFM).

This letter also serves as a formal request that the New England Fishery Management Council consider adoption of a sector proposal by AFM in Amendment 5 for implementation in fishing year 2011.

Sincerely,

M. Raymond

Maggie Raymond

Associated Fisheries of Maine is a trade association of fishing and fishing dependent businesses. Membership includes harvesters, processors, fuel/gear/ice dealers, marine insurers and lenders, and other public and private individuals and businesses with an interest in commercial fishing.

Monkfish Catch Share Allocation
And ITQ referendum Proposal

Objectives**Biological**

- Sustainable management of monkfish (accounting for open access (bycatch) and limited access fisheries).
- Minimize discarding (by eliminating trip limits in the directed fishery)

Economic

- Allow full utilization of monkfish resource (optimum yield)
- Allow consolidation so that vessels are economically viable
- Acknowledge investments of time and capital in the fishery

Social

- Maintain the existing structure of the fleet (pyramid structure of large-medium-small vessels; open access and limited access)
- Allow individuals to operate vessels under safe weather conditions
- Allow fleet consolidation so that:
 - o Full-time vessels can provide full-time jobs to crewmembers
 - o All vessels can secure enough income to operate safely (e.g. maintenance, safety equipment & training).

Initial catch share allocation:

The initial allocation between open access and limited access vessels will be as follows:

- **Open access share**

The cumulative stock specific landings¹ by category E vessels during the qualification period will be calculated. This value will be divided by the total stock specific landings of all permit holders during the qualification period to arrive at a percentage that will be designated as “open access share”.

- **Limited access share**

The remaining percentage of stock-specific landings during the qualification period, after calculating the open access share, will be designated as the “limited access share” in the form of an individual transferable quota (ITQ) or potential sector contribution (PSC).

Qualification period:

Fishing years 1999²-2008³

¹ When calculating landings, landed weight will be converted to live weight. This is necessary so that landings of different products (dressed or whole) are evaluated on a consistent basis.

² 1999 is the initial year of the monkfish FMP, and the beginning of mandatory reporting for monkfish vessels (i.e. beyond reporting requirements in other fisheries).

³ Intent is to capture the longest timeframe practicable.

Limited access catch share converted to ITQ or PSC

ITQs are defined as the fixed percentage of the limited access share of the total allowable catch (TAC) denominated in shares equal to 1 millionth of the total. At the beginning of the fishing year, each ITQ share generates annual catch entitlement (ACE) equal to 1 millionth of the limited access percentage of the total allowable catch.

In order to allocate an ITQ or PSC to limited access permits, the permit history for each permit must be calculated.

Qualification and Allocation – Category A, B, C and D limited access permits

- Stock specific landings history⁴ of each limited access permit (A, B, C, and D) during the qualification period will be calculated. Landings history will be based on the information in the NMFS commercial dealer database and vessel trip reports (VTRs) for stock specific landings. For each permit, landings will be summed over the qualification period. This value will be divided by the total stock specific landings for all A, B, C and D permits during the qualification period to derive each permit's fixed percentage of the limited access share. The permit holder would then be allocated this percentage of the overall ITQ shares for the A,B,C and D permit categories.

Qualification period

Fishing years 1999-2008

Qualification and Allocation – Category H limited access permits

Stock specific landings history of each H permit during the qualification period will be calculated. Landings history will be based on the information in the NMFS commercial dealer database and VTRs. For each permit, stock-specific landings will be summed over the qualification period. This value will be divided the landings by all H permits during the qualification period to derive each permit's fixed percentage share of the limited access share. The permit holder would then be allocated this percentage of the overall ITQ shares for the H permit category.

Qualification period

Fishing years 2005-2008⁵

⁴ The allocation of ITQ shares based on historical landings is considered to be an equitable way to recognize both present and historical participants in the fishery, as required by the Magnuson-Stevens Act (section 303(b)(6)). Landings history has been used to establish initial quota allocation for ITQ programs in the U.S. and around the world and stakeholders perceive it as a fair measure of participation in the fishery.

⁵ 2005 marks the implementation of the category H permit. This permit is restricted to the portion of the SFMA south of 38° 40' N latitude, and will continue to be restricted to that area under an ITQ or sector program.

Category F permits – under an ITQ or sector system, the existing Category F (offshore, SFMA) permit will no longer be necessary.

Appeals

The items subject to appeal under the limited access catch share system would be initial eligibility for IFQ or PSC shares based on ownership of a category A, B, C, D or H permit, the accuracy of the amount of landings, and correct assignment of landings to the permit holder.

Transferability (ITQs)

- Permit holders can make permanent and temporary transfers of ITQ's (subject to approval by NMFS). Transfers are made on a stock-specific basis.
- Permanent transfers are in ITQ shares as defined above.
- No more than 20% of a permit's ITQ share, by stock area, may be permanently transferred outside of the permit's length/hp class.
- Within year transfers are carried out through buying and selling of ACE, which is expressed in live weights in terms of x pounds or x metric tons. ACE is valid for the current fishing year and cannot be carried forward except by the ITQ holder as described below.
- Transfers are not limited by gear type.
- Transfers between permit categories are limited only to those in category H.
- No more than 20% of a permit's ACE, by stock area, may be transferred outside of the permit's length/hp class.

Quota Overage / Underage

- In the event of an overage, a permit has 30 days to acquire additional ACE to quota balance. Overages will be paid back in pounds, on a pound per pound basis. If additional ACE is not secured, the permit's ACE will be reduced by an amount equivalent to the overage, in the subsequent fishing year.
- ITQ holders can 'carry forward' ACE into the following year up to 20% of the permit's ACE allocation for that year for each stock area.

ITQ Referendum**Voters**

- Holders of A, B, C, D, and H limited access permits on record on the date the ballot is mailed to permit holders.
- Captains of A, B, C, D and H permitted vessels (non-owners) that certify employment⁶ during the respective qualification periods (i.e. 1999-2008 for A, B, C, D vessels, and 2005-2008 for H vessels.).
- No double voting by owner-operators.

Vote weighting process**Option 1:**

Category A and C permit holders: 4 votes

Category B, D, and H permit holders: 2 votes

Captains: 1 vote

This vote weighting acknowledges that limited access permit holders qualified at differing levels⁷ during the original qualification period, as well as acknowledging the differing financial interests of owners and hired captains.

Option 2:

Landings categories:

0-7500 lbs tailweight

7501-50,000 tailweight

50,001 + tailweight

The total landings between the period 1996-2008, associated with each permit, will be attributed to the appropriate category. The overall average pounds landed attributed to each category will be determined. That average number of pounds will be the base applied to the vote-weighting factor for each eligible voter whose landings fall within that category.

For example: If the average landings for vessels in the 0 – 7500 lb category, is 6000 lbs, each permit holder will receive 6000 x 1.0 votes. And qualifying captains would receive 6000 x 0.25 votes.

⁶ A notice that describes the referendum procedures and provides a 20-day period for submittal of detailed information for self-certification by captains, will be widely distributed to all monkfish permittees, including dealers, and to major fishing organizations, state fisheries directors, and others

⁷ Category A and C permits qualified at 50,000 lbs; Category B, D and H permits qualified at 7500 lbs.

Sector Provisions

Sectors implemented under Amendment 5 will receive universal exemptions from the following provisions of the monkfish FMP.

- Days at Sea
- Trip/possession limits
- Gillnet permit declarations and net restrictions
- Any new input controls implemented in Amendment 5 (closures, gear restrictions, etc.)

Additional background information:

In 2006, there were 765 monkfish limited access vessels, of which 348 were Category C permits holding limited access permits in either a Multispecies (60%) or Scallop (47%) fisheries, and 357 were Category D permits, primarily (99%) holding limited access Multispecies permits (Table 7). Overall, 74% of monkfish limited access permit holders also hold multispecies limited access permits.

The number of category E permits increased rapidly during the first few years of the FMP but has remained relatively steady since 2004, averaging 2,315 permits.⁸

Numbers of permits

Category A 14

Category B 39

Category C 348

Category D 357

Category H 7

⁸ New England Fishery Management Council, Monkfish Framework Adjustment 5, February 13, 2008.

----- Original Message -----

Subject: "Monkfish Amendment 5 Scoping Comments"

Date: Tue, 31 Mar 2009 18:46:00 -0500

From: Chris Rainone <annicemarie@gmail.com>

To: monkfish.five@noaa.gov

Ms. P. Kurkul

On March 3rd, 2009 I attended the monkfish scoping meeting and once again left with more questions than answers. Questions like, what direction this fishery is heading and what an IFQ or Sector means for me as well as other monk fisherman who rely on this fishery. I had the pleasure of meeting you, Ms. Kurkul, a few years ago in Barnegat Light. We discussed what impact the proposed 12day fishery would have, especially for me who after working on deck for 9 years and had just purchased my own boat. Recent information implies that our Monkfish stocks are rebounding if not rebuilt and dare to give hope to this fisherman the possibility of some stabilization in the monk fishery. In short, I feel more confused on wether IFQ's or sectors will help or hurt me. Therefore I must vote no to IFQs and no to sectors. For the time being, until more information can be relayed to commercial fisherman, I think we should stay with a hard TAC with accountability measures. Additionally, I feel something needs to be done with latent permits because I do not want to see another scallop fiasco in this fishery with all the displaced boats.

Thank you for your concerned interest,

Christopher Rainone
F/V Annice Marie
Barnegat Light, NJ

----- Original Message -----

Subject: monkfish scoping comments

Date: Wed, 25 Mar 2009 02:36:35 -0700 (PDT)

From: Ted Platz <theoplatz@yahoo.com>

To: monkfish.five@noaa.gov

I am writing to make several proposals for the upcoming monkfish amendment.

1. Increase in the minimum legal mesh size to 12".
2. Increase the minimum legal whole fish size to 21" with a corresponding increase in the minimum legal tail size.
3. Institute a regulation requiring the use of twine of at least 30 gauge for monkfish gillnet gear.
4. Allow a provision for forming sectors in the monkfish fishery.
5. Higher trip limits with a corresponding drop in monkfish DAS will produce a cleaner fishery , while producing a higher profit margin per trip. This will also help vessels fishing further offshore to be more cost effective and more able to participate in the fishery. The higher DAS and lower landing limit formula is very prejudicial against this group.
6. Eliminate use of groundfish VMS line from application in the monkfish fishery through special VMS "monkfish only" designation.
7. Drop horsepower, tonnage, and length calculations for permit transfers in the monkfish fishery.
8. Consider the formula and requirements for an ITQ vote.
9. Create a provision for permit stacking to allow greater efficiency in the fleet.

Ted Platz
Newport, R.I.

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

Monkfish Amendment 5 Scoping Comments

My name is Dean Pesante. I am the owner/operator of a commercial fishing vessel out of Point Judith, RI. I have fished in the directed monkfishery since 1991. Throughout this period of time, I have been involved in the management process, including being on the Monkfish Advisory Panel for 4 years. I have seen the fishery and the management undergo many changes throughout this period of time.

We have stabilized this fishery at a sustainable rate. Now is an excellent opportunity to better the fishery as a whole, including allowing for more flexibility within the fishery. The following are some things that could be changed.

- 1) Preventing waste – Not holding fishermen to daily trip limits will eliminate waste, minimize discards, and prevent gillnet fishermen from being forced to leave fish in nets.
- 2) Allowing fishermen to be more efficient – Allowing fishermen to make fewer trips to land the same amount of fish. This will allow fishermen to spend less time on the water, burn less fuel, leave fishing gear in the water for less time, eliminate avoidable wear and tear on the boat, crew, and gear, and reduce mammal interaction.
- 3) Safety - Not being forced to stay out to run clock in bad weather to cover the amount of fish on a boat. Or, stay out to finish a trip in bad weather after committing to a D.A.S. Also, this will stop fishermen from being pressured to go fishing in bad weather to get back to gillnets left with fish.
- 4) Gill net limits – Reduce gillnet limits from 150 to a more logical number of 80 nets. Less nets in the water means more fish per net. This will also mean less gear to purchase and maintain, create fewer mammal interactions, and less gear conflicts. We have had problems in the past when effort increased due to high trip limits. Or recently, more D.A.S. for fishermen with research D.A.S. This is more of a problem in the inshore fishery (but to 30 miles) where space is limited.
- 5) Size limits – increasing mesh size to 12” and fish size to 21” whole fish to allow spawning.

We could achieve these management measures with I.T.Q.'s or Sectors, but both methods would be very complicated and expensive. Different management plans in the north and south kept fishermen in the south very restricted while fishermen in the north

had no trip limits. Three hour D.A.S. trip limits was a loophole exploited by many fishermen while others could or would not. Also vessels with research D.A.S. could complicate allocations. These are just a few of the complications that I.T.Q.'s and Sectors could present. I.T.Q.'s and Sectors would most likely benefit a few at the expense of the majority.

The same benefits and flexibility could be achieved much more simply and fairly by maintaining the current system, but, allowing fishermen to run the clock afterwards to cover the amount of fish landed, and D.A.S. would then be subtracted accordingly.

A maximum of three limits would be allowed per trip. A minimum of fifteen hours deducted for trips up to one limit, twenty-five hours up to two limits, and forty-nine hours up to three limits for gillnet vessels. These amounts reflect the current system.

Sincerely,

A handwritten signature in black ink, appearing to be 'DP' or similar initials, followed by a long horizontal flourish.

Dean Pesante
FV Oceana

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

I am a gillnet fisherman and I am writing for the scoping document regarding Monkfish Amendment 5. I think we should go with multi year specifications over annual specifications with the reasoning that it takes a couple of years for the impacts to be realized on the fishery. We make regulations this year and next year we make more restrictive measures never giving the first a chance to work.

At this time I would like to see more days at sea fishing instead of a higher trip limit. More days means more fish for the fish buyers throughout the year and more opportunity for better fish prices. After we get back to the initial 40 DAS allocated in the beginning, which was not that much to start with, we could then go with a higher trip limit if need be. The system we have now is the one responsible for rebuilding the fishery. Due to the most recent scientific data and research, the monkfish have been rebuilt. This was because of a reduction of DAS. It obviously worked and now it is time to increase the allotted days at sea to the fisherman.

I am against ITQ or sectors at this time because we know what we have now and how it works. ITQ's were going to save the snapper and grouper fisheries in the south. But now I see they might be facing a five month shutdown next year. I am also against ITQ's because of the years we were going to use to qualify. For someone who fishes solely in the south with his days, we were only allowed 996 lbs whole weight some years and 1826 lbs. whole weight other years. Also in the north there was no difference between monkfish days and multispecies days which had A and B days. How is my history going to compete with someone who fishes in the north with no trip limit?

When the time comes I would like to see more days for someone who qualified with 50,000 lb tail weight vs. someone who qualified with 7,500 lbs. tail weight. I don't understand why someone who qualified with 6 ½ times more fish only gets 100 lbs. more fish. I don't want to be able to requalify, however, it should be based upon what poundage that was sent in to qualify for the initial permit.

Brandon Trickett
F/C Miss Independence

----- Original Message -----

Subject:monk amendment 5

Date:Mon, 30 Mar 2009 21:23:11 -0400

From:Louise <weeziem@comcast.net>

Reply-To:Louise <weeziem@comcast.net>

To:monkfish.five@noaa.gov

CC:Eric Brazer <eric@ccchfa.org>

Dear Pat,

I am a gillnet fisherman, operating under the fixed gear sector here in Chatham, Ma. We have seen a very beneficial couple of years operating under a quota based system. Although the idea is good to get us to a quota system, we shouldn't run away from the system that got the fishery rebuilt. Initially, I see allocation problems with their being two management areas, where only one had a trip limit for years (unless we used just last years landings) we would give harvesters a more equitable distribution . We need to get to a system that is fair and equitable for all users. Groundfish boats in the gulf of maine catch a lot of monk as part of their fishery, and they will continue to do so. This should not be an issue. For those of us who work in the southern management area, we target monk directly with 12" mesh. This should be the minimum size, it allows smaller fish to escape which works better for us, because we don't won't the small fish anyway, and its better for ecology. By letting the smaller fish reproduce more before being caught. There is lots to consider here and taking the time to get it right is important for everyone involved. I don't think that we can rush forward with Amendment 5, allocating itq's, with the time frame of a year and a half scheduled to get it completed. I would urge you to work with the system we have been under for the last few years; trip limits and DAS, hopefully increasing either as the resource rebuilds.

Regards,

Jan Margeson

F/V Decisive

F/V Great Pumpkin

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

I am a gillnet fisherman and I am writing for the scoping document regarding Monkfish Amendment 5. I think we should go with multi year specifications over annual specifications with the reasoning that it takes a couple of years for the impacts to be realized on the fishery. We make regulations this year and next year we make more restrictive measures never giving the first a chance to work.

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Timothy Fendall 3/3/09
F/V Liberty

----- Original Message -----

Subject:monk fish amendment 5 scoping comments

Date:Fri, 27 Feb 2009 14:14:21 -0800 (PST)

From:Gary Libby <pcredale@yahoo.com>

Reply-To:pcredale@yahoo.com

To:monkfish.five@noaa.gov

I'm a commercial ground fisherman from Port Clyde Maine, and my concern is the access to monk fish in the northeastern gulf of Maine, It is one of the most relied on stocks for our area, and in these economic times the fishery needs to maximize all the opportunity it can. Also with the interim action by NMFS we are under the gun and we are also mandated by national standard one to catch OY, and we are also mandated by national standard eight to not adversely effect our community's and there are others that should be consisted such as standard ten which is safety at sea, but it all comes down to access and opportunity for fisherman if the resource is sustainable to support fishing, and if it is access should be granted if not, there should be a relief package to keep our fishing fleet intact.

Gary Libby concerned fisherman Port Clyde Maine
never stop fighting till the fight is done



Georges Bank Cod Fixed Gear Sector, Inc.
P.O. Box 2
North Chatham, MA
02650
Phone: 508-945-2432
Fax: 508-945-0307
Email: eric@ccchfa.org

March 31, 2009

Patricia A. Kurkul, Regional Administrator
NMFS, Northeast Regional Office
55 Great Republic Drive
Gloucester, MA 01930

RE: Fixed Gear Sector Comments on Monkfish Amendment 5 (RIN 0648-AX70)

Dear Ms. Kurkul,

Thank you for the opportunity to provide comment on the Amendment 5 to the Monkfish Fishery Management Plan (FMP).

Amendment 5 is necessary to update the Monkfish FMP and bring it into compliance with the reauthorized Magnuson-Stevens Fishery Management and Conservation Act (Magnuson Act). It will achieve this by establishing and implementing Annual Catch Limits (ACLs) and Accountability Measures (AMs) by 2011. Furthermore, this Amendment will adopt multi-year target Total Allowable Catch (TAC) specifications.

The Georges Bank Cod Fixed Gear Sector (Fixed Gear Sector) represents a cooperative group of fishermen who are invested in forward-thinking solutions to today's fisheries problems. The Fixed Gear Sector promotes sound science, community-based decision making, and well-monitored hard TACs as important to a successful and viable fishing industry and resources. We'd like to use this opportunity to promote key components of a vision that we helped develop and is currently shared by much of the industry.

Implementation Timeline

Implementation of Amendment 5 requires an aggressive timeline for completion: alternatives will be chosen for analysis by June 2009, finalized in April 2010, and sent out for publication in June 2010. The Amendment will be implemented in May 2011, as required by the Magnuson Act. As such, it is important that the Councils quickly identify what can be achieved in this time period and what cannot, and collectively agree to address only what can be accomplished in this time period. We cannot afford to start down a path of management that will lead us to a delayed Amendment and possible secretarial interim action, as is the case in the groundfish management arena.

Shift to Quota Management

Sectors are the most appropriate and viable output-based management options presently available to the Councils and should be cultivated in this Amendment. Sectors provide communities of fishermen the opportunity to collectively manage an annual allocation of monkfish. They offer flexibility in determining how to access the quota, relief from



Georges Bank Cod Fixed Gear Sector, Inc.
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Email: eric@ccchfa.org

inappropriate and ineffective regulations, and protection from those fishermen who continue to overfish. The Sector concept has worked well in the groundfish fishery (over half of the groundfish fishermen have initially signed into one of nineteen Sectors for 2010), and a similar template could be easily applied to the monkfish fishery. Allowing the formation of monkfish sectors, or allowing monkfish fishermen to participate in groundfish sectors, will allow monkfish fishermen to balance conservation goals with business objectives.

The monkfish fishery is primarily managed through days-at-sea (DAS) and trip limits. However, there is a growing body of fishermen that would like the opportunity to operate under a system of quotas. This option currently exists in the groundfish fishery – fishermen can remain in the Common Pool if they choose to operate with DAS and trip limits, or they can opt into Sectors if they would like to receive exemptions from DAS and trip limits and instead fish under a quota system. Similar flexibility should be available to those in the monkfish fishery: fishermen who prefer to operate under DAS and trip limits should have the option to continue to do so, as long as there's a hard TAC backstop to ensure that an input-controlled fishery does not contribute to overfishing. Fishermen who want to fish under a Sector system should have that option.

Individual Transferrable Quotas (ITQ), on the other hand, may present substantial problems at this time, including consolidation, quota/permit migration, and a loss of community vision/cohesion. Furthermore, an ITQ program to be developed in New England must undergo a referendum process that requires a supermajority vote of all participants – a timely and costly requirement. Given the inherent and unresolved issues with an ITQ program and the aggressive timeline as required by the Councils, it may be inappropriate to consider ITQs in A5 but rather in a subsequent Amendment.

Finally, given the similarities and overlap between the groundfish fishery and the monkfish fishery, there should be consideration of the former when developing a management plan for the latter. Specifically, Monkfish Amendment 5 and its components should be compatible, to the proper extent, with the groundfish Amendment 16.

Monitoring

The priority of the Amendment is to implement ACLs and AMs. Implementing a Sector program, while important, should be viewed as a secondary objective. Implementing ACLs/AMs through Sectors should be considered. However, regardless of which management path is taken, a robust and transparent monitoring program is essential for achieving the success of ACLs/AMs and Sector TACs. There is a strong need for high quality, accurate data that allows managers and fishermen to track progress toward both ACLs and Sector TACs. Furthermore, increased monitoring will allow for reduced management uncertainty. This would promote ACTs being set closer to the ACL, which would allow fishermen to access more monkfish than they would if the “precautionary cushion” were larger.

Specifications



Georges Bank Cod Fixed Gear Sector, Inc.
P.O. Box 2
North Chatham, MA
02650
Phone: 508-945-2432
Fax: 508-945-0307
Email: eric@ccchfa.org

Amendment 5 allows for a change to the monkfish specifications process, and would implement a one- or a 3-year plan. One year specs allow for use of timely data, while 3 year specs allow for time to develop plan without reshuffling the deck annually. It is important to have both timely data and stability in the fishery, and to eliminate the “whipsaw” effect that this fishery has historically seen, with drastic annual changes in regulations. Optimally, this would occur with one-year specs.

Data

A lack of data will continue to hamper monkfish management. The Mid-Atlantic and New England Fishery Management Councils (Councils), the National Marine Fisheries Service (NMFS), and independent research organizations should continue to provide opportunity for additional research for use in management. A research set-aside (RSA), or other opportunity for cooperative research should be made available as part of the Amendment.

Amendment 5 allows the Councils to meet the mandates of the Magnuson Act by 2011. However, it also provides an opportunity to implement a management strategy that will have positive effects on the fish and the fishermen. Sector management is developing quickly in the groundfish fishery, and should be considered a viable tool for monkfish fishermen as well given its existing success and the timeline we’re working under. Robust monitoring and additional opportunity for cooperative research will provide managers with more timely and accurate data to use in better management decisions. This will build stability into the management system and allow fishermen to develop stable business plans for the fishermen in our communities.

The Fixed Gear Sector looks forward to working with you to develop a viable management plan, including Sectors and ACLs/AMs, to meet the mandate of the Magnuson Act by 2011.

Sincerely,

Eric Brazer Jr.
Manager

----- Original Message -----

Subject: Monkfish Amendment 5

Date: Sun, 22 Mar 2009 13:18:50 -0700 (PDT)

From: chuck etzel <chucketzel@yahoo.com>

Reply-To: chucketzel@yahoo.com

To: monkfish.five@noaa.gov

To Whom It May Concern,

Charles Etzel
99 Cedar Dr
East Hampton, Ny
11937

The multi year specification of TTAC has provides the stability that we needed in the monk fish fishery. I would like to see this management renewed for the post 2010 fishing year.

I would urge the council and NMFS to take a step back and watch the General Sea Scallop fishery with it new implementation of an ITQ system and the sector management in the Multispecies fishery.

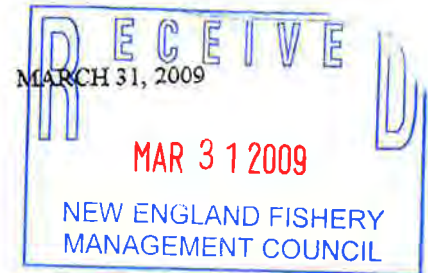
A question to consider when commenting was "Should there be a precautionary cap of an increase in TAC?" My answer to that should be yes. I do not want to see sharp increases and decreases in monk fish quota from year to year.

I am not an advocate for a sector management system and feel an ITQ system may be right for the fishery in the future. Allocation shares should be issued to permit holders and recent catch history must reflect share allocation . However there is nothing wrong with the current DAS system that cannot be amended. I would like to see the day gill net 3 hour provision implemented again to allow for mechanical breakdowns and adverse weather conditions encountered early in the trip. NO fish landed on these short trips! Right now the way it is stated I am accrued 15 hours for any trip. It could be ten minutes into my trip and I have a breakdown.

Thank you for considering my comment.

Charles Etzel

PATRICIA KURKEL , REGIONAL ADMINISTRATOR
NATIONAL MARINE FISHERIES SERVICE
55 GREAT REPUBLIC DRIVE
GLOUCESTER, MA 01930



MONKFISH AMENDMENT 5 SCOPING COMMENTS

My name is Eric Lundvall , I own the F/V Rayna & Kerstin fishing from the port of Barnegat Light , New Jersey. I am a participant in the directed monkfish fishery.

The development of ITQs , IFQs and Sectors SHOULD NOT be considered for monkfish. As I have seen most recently with the development of the general category scallop fishery IFQ program, IFQs re allocate permits and quota to a very select few who can afford to buy them. Scallop IFQ contribution factors (not even the actual IFQ) are now for sale for approximately \$10. Lb. The majority of the general category quota will be in the hands of the few people who speculated and purchased qualifying scallop history before scallop ammendment 11 went into effect or the wealthy who can now afford to buy it now, some of whom just plan on leasing the quota and not even fishing.

I feel the same scenerio will occur if the monk fishery goes to ITQs. When the notice of the Amendment 5 scoping hearings came out in February, I noticed a sudden rush of interest in purchasing monk permits and vessels with permits. Most who suddenly purchased another boat or permit already had one or two monk boats.

An uneven playing field amongst monk fishermen is another reason ITQs should not exist for monkfish. I am sure previous landings would be used for ITQ allocation. How could this be possibley fair? Some vessels with monk permits targeted other species while the monk fishery was re building. There was even the possibility of the directed monk fishery being shut down in 2009 if the prior years TAC was exceeded. Why should a monk permit holder be penalized for not targeting a rebuilding fishery? The southern area has been under strict trip and DAS limits, while the northern area has basically had no trip limit and could use ground fish DAS to target monk. Also , prior to this year the 3 hour rule has been abused by some fisherman and the different trip limits from year to year in the southern area, would benefit some larger vessels while hurt some smaller vessels(eg 6000 lb head on trip limit in 2003).

With the monk fishery at rebuilt levels in the southern area, why is there thoughts of fixing something that is not broken?

I belive our current monkfish DAS rules work , although the following measures should be considered: allow fish for time (charge DAS clock for the fish on board)

Maximum of 80 gillnets so the fish for time rule would work and not be abused
Implement a hard TAC to be in compliace with new Magnuson requirements

for ACLs an AMs

sincerely,

A handwritten signature in black ink, appearing to read "Eric L. Lundvall".

Eric L. Lunvall, owner F/V Rayna & Kerstin
400 Wood Street
LittleEgg Harbor , NJ 08087

CHRIS EINSELEN

75 Antioch Road
High Bar Harbor
Long Beach Township, NJ 08008

Fax (609) 361-1706
c.einselen@comcast.net

March 23, 2009

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great republic Drive
Gloucester, MA 01930

Dear Ms. Kurkul,

I am writing to respond to the structure of Amendment 5 to the Monkfish Management Plan. As a holder of two Monkfish permits I am not in favor of I.T.Q's. I have witnessed how the system has been abused by people and those same individuals would benefit under these terms because of their increased landings. For example, the three hour day.

Also, I.T.Q's would ultimately result in fewer boats fishing and fewer employees, which seems at odds with the national goals of increasing employment and establishing a stable economy.

The current system seems to work fine and a few adjustments could improve the overall efficiency. Thank you for your thoughtful consideration of this very important matter.

Sincerely,



Owner/Operator
F/V ANTOINETTE (222036)
F/V ANNE ELIZABETH (250853)

Received 3/21/92
Mark OS
meeting

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

I am a gillnet fisherman and I am writing for the scoping document regarding Monkfish Amendment 5. I think we should go with multi year specifications over annual specifications with the reasoning that it takes a couple of years for the impacts to be realized on the fishery. We make regulations this year and next year we make more restrictive measures never giving the first a chance to work.

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Edwin Chiofalo
F/V Hustler
16 BLAIR LANE
BROOKLYN NY 11719

Received 5/31
@ Mark os
meeting.

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

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Mark LaRocca
11 Happy Acres Dr.
Shirley, N.Y. 11967



CAPE COD COMMERCIAL HOOK FISHERMEN'S ASSOCIATION, Inc.
210-E Orleans Road
North Chatham, MA 02650
508-945-2432 • 508-945-0981 (fax)
www.ccchfa.org • contact@ccchfa.org

Patricia A. Kurkul, Regional Administrator
NMFS, Northeast Regional Office
55 Great Republic Drive
Gloucester, MA 01930

March 31, 2009

RE: CCCHFA Comments on Monkfish Framework Adjustment 5 (RIN 0648-AX70)

Dear Ms. Kurkul,

Thank you for the opportunity to provide comment on the Amendment 5 to the Monkfish Fishery Management Plan (FMP).

The Cape Cod Commercial Hook Fishermen's Association (CCCHFA) is committed to working with the National Marine Fisheries Service (NMFS) and other interested parties to ensure a viable future for our fish, our fishermen, and our fishing communities. CCCHFA continues to promote well-monitored, community allocations (Sectors) as a solution to the problems that plague our fisheries.

Amendment 5 to the Monkfish Fishery Management Plan (FMP) will implement Annual Catch Limits (ACLs) and Accountability Measures (AMs), as required by the law. CCCHFA urges the timely implementation of sound science-based ACLs and AMs, and a robust catch monitoring program (discards and landings) to ensure the ACLs are not exceeded.

The Amendment further provides an opportunity to revise the tools in the current FMP, if time allows. CCCHFA believes that Sectors would be an invaluable tool to implement in Amendment 5. Sectors offer the chance for a community of fishermen to voluntarily and collectively manage an annual allocation of fish. In exchange for operating at standards of accountability higher than in the Common Pool, including increased and robust monitoring and reporting, Sector members are afforded exemptions from ineffective and inefficient regulations. Fishing businesses are allowed to increase profitability while fishermen agree not to exceed their annual hard total allowable catch (TAC). Sectors will be commonplace in the groundfish plan by 2010, and given the overlap and similarities between the groundfish and monkfish fisheries, it only makes sense to allow monkfish fishermen the opportunity to participate in a well-monitored Sector program.

The Amendment 5 timeline is short – there is little time to address what's mandated (ACLs/AMs) and what's further preferred (Sectors, or other alternative management tools). It's important that the mandates of the law are met, and any additional time is spent developing a well-monitored, robust, Sector management program that aligns with the one being developed in the groundfish fishery. A delay in implementation is unacceptable to all, and could prove costly. CCCHFA urges the timely implementation of this Amendment.

Thank you very much for your consideration of these matters. We look forward to continuing to work with you on measures to improve conditions for groundfish and the fishermen who depend on these stocks.

Sincerely,

Susan Nickerson
Executive Director

Protecting a Resource, a Tradition, and a Way of Life

Printed on 100% Post-Consumer Content Chlorine Free Paper

----- Original Message -----

Subject: Support ITQs

Date: Tue, 03 Mar 2009 07:02:14 -0500

From: Amanda Odlin <aodlin@maine.rr.com>

To: monkfish.five@noaa.gov

To Whom This May Concern,

We (Chris & Amanda Odlin), stakeholders in the Monkfish fishery, Support an ITQ approach to its management.

Sincerely,

Christopher & Amanda Odlin

207-885-1335

aodlin@maine.rr.com

F/V Lydia & Maya

F/V Bethany Jean

----- Original Message -----

Subject:Public Comment on Monkfish

Date:Mon, 09 Mar 2009 11:56:45 -0400

From:Amanda Odlin <aodlin@maine.rr.com>

To:monkfish.five@noaa.gov

To: NOAA/NMFS

We write to comment on Monkfish. As commercial fisheries stakeholders, we feel that it would be for the overall good to place ITQs for the monkfishery.

Sincerely,

Christopher & Amanda Odlin
F/V Lydia & Maya
F/V Bethany Jean
47 Dresser Rd., Scarborough, ME 04074
207-885-1335
207-885-5775 fax

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

See back →

Monkfish Amendment 5 Scoping Comments

My name is Dean Pesante. I am the owner/operator of a commercial fishing vessel out of Point Judith, RI. I have fished in the directed monkfishery since 1991. Throughout this period of time, I have been involved in the management process, including being on the Monkfish Advisory Panel for 4 years. I have seen the fishery and the management undergo many changes throughout this period of time.

We have stabilized this fishery at a sustainable rate. Now is an excellent opportunity to better the fishery as a whole, including allowing for more flexibility within the fishery. The following are some things that could be changed.

- 1) Preventing waste – Not holding fishermen to daily trip limits will eliminate waste, minimize discards, and prevent gillnet fishermen from being forced to leave fish in nets.
- 2) Allowing fishermen to be more efficient – Allowing fishermen to make fewer trips to land the same amount of fish. This will allow fishermen to spend less time on the water, burn less fuel, leave fishing gear in the water for less time, eliminate avoidable wear and tear on the boat, crew, and gear, and reduce mammal interaction.
- 3) Safety - Not being forced to stay out to run clock in bad weather to cover the amount of fish on a boat. Or, stay out to finish a trip in bad weather after committing to a D.A.S. Also, this will stop fishermen from being pressured to go fishing in bad weather to get back to gillnets left with fish.
- 4) Gill net limits – Reduce gillnet limits from 150 to a more logical number of 80 nets. Less nets in the water means more fish per net. This will also mean less gear to purchase and maintain, create fewer mammal interactions, and less gear conflicts. We have had problems in the past when effort increased due to high trip limits. Or recently, more D.A.S. for fishermen with research D.A.S. This is more of a problem in the inshore fishery (but to 30 miles) where space is limited.
- 5) Size limits – increasing mesh size to 12" and fish size to 21" whole fish to allow spawning.

We could achieve these management measures with I.T.Q.'s or Sectors, but both methods would be very complicated and expensive. Different management plans in the north and south kept fishermen in the south very restricted while fishermen in the north

had no trip limits. Three hour D.A.S. trip limits was a loophole exploited by many fishermen while others could or would not. Also vessels with research D.A.S. could complicate allocations. These are just a few of the complications that I.T.Q.'s and Sectors could present. I.T.Q.'s and Sectors would most likely benefit a few at the expense of the majority.

The same benefits and flexibility could be achieved much more simply and fairly by maintaining the current system, but, allowing fishermen to run the clock afterwards to cover the amount of fish landed, and D.A.S. would then be subtracted accordingly.

A maximum of three limits would be allowed per trip. A minimum of fifteen hours deducted for trips up to one limit, twenty-five hours up to two limits, and forty-nine hours up to three limits for gillnet vessels. These amounts reflect the current system.

Sincerely,



Dean Pesante
FV Oceana



Patricia Kurkul,

My NAME is Robert Buscher. I have been a commercial Fisherman out of Pt. Judith R.I. for 25 years, I have been involved in the Monkfish Gillnet Fishery for 11 yrs. Mr. Pesante's Plan makes the most sense of any proposal I have seen to date. I agree whole heartedly with this plan and would love to see it or something like it put into effect as soon as possible so we don't lose our home.

Thank you

Robert P
Buscher
& Family

----- Original Message -----

Subject:Amendment 5

Date:Mon, 09 Mar 2009 15:13:47 -0400 (EDT)

From:Jlinc1000@aol.com

To:monkfish.five@noaa.gov

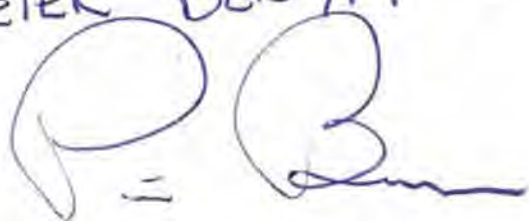
I am writing to support ITQ option in amendment 5. Most of the vessels that catch Monkfish in the Northern Management area catch them along with groundfish. It only makes sense to give us an ITQ on them also seeing how most of the vessels are going to be fishing under a quota in the sectors.

Thank You
Terry Alexander
F/V Jocka
F/V Rachel T
67 Grover Lane
Harpwell, Maine 04079

ATT: PATRICIA KURKUL,
MONKFISH Amendment 5
SCOPING COMMENT

- NO ITQ's
- NO SECTORS
- Keep DAS with Modifications
- IMPLEMENT HARD TAC
- ALLOW VESSELS TO BE CHARGED
TIME FOR THE FISH ON BOARD
IF THE VESSEL RETURNS EARLY,
15 hrs — 24.1 hrs — 48.1 hrs

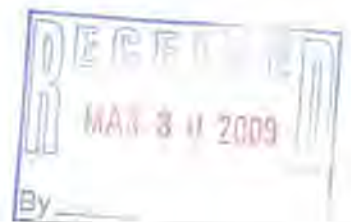
PETER BENYA - F/V RESOLUTE



ATT: PATRICIA KURKUL,
MONKFISH Amendment 5
SCOPING COMMENT

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15 hrs — 24.1 hrs — 48.1 hrs

Carl Janson
FV Pretty Lady



ATT: PATRICIA KURKUL,
MONKFISH Amendment 5
SCOPING COMMENT

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IF THE VESSEL RETURNS EARLY,
15 hrs — 24.1 hrs — 48.1 hrs

Frank Myers



ATT: PATRICIA KURKUL,
MONKFISH Amendment 5
SCOPING COMMENT

- NO ITQ's
- NO SECTORS
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IF THE VESSEL RETURNS EARLY,
15 hrs — 24.1 hrs — 48.1 hrs

F/V OSPREY
MIKE TEVIS

Michael Tevis



FAX TO 978-221-9125

ATT: PATRICIA KURKUL,
MONKFISH Amendment 5
SCOPING COMMENT

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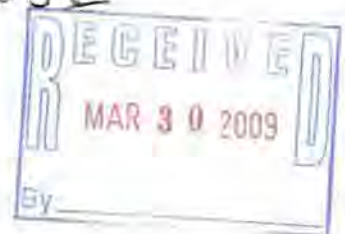
Jim Brindley
F/V SCOTT NATHAN
F/V TNT



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MONKFISH Amendment 5
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- ALLOW VESSELS TO BE CHARGED
TIME FOR THE FISH ON BOARD
IF THE VESSEL RETURNS EARLY,
15 hrs — 24.1 hrs — 48.1 hrs

Tim Brindley
F/V VIKING ROSE



Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

I am a gillnet fisherman and I am writing for the scoping document regarding Monkfish Amendment 5. I think we should go with multi year specifications over annual specifications with the reasoning that it takes a couple of years for the impacts to be realized on the fishery. We make regulations this year and next year we make more restrictive measures never giving the first a chance to work.

At this time I would like to see more days at sea fishing instead of a higher trip limit. More days means more fish for the fish buyers throughout the year and more opportunity for better fish prices. After we get back to the initial 40 DAS allocated in the beginning, which was not that much to start with, we could then go with a higher trip limit if need be. The system we have now is the one responsible for rebuilding the fishery. Due to the most recent scientific data and research, the monkfish have been rebuilt. This was because of a reduction of DAS. It obviously worked and now it is time to increase the allotted days at sea to the fisherman.

I am against ITQ or sectors at this time because we know what we have now and how it works. ITQ's were going to save the snapper and grouper fisheries in the south. But now I see they might be facing a five month shutdown next year. I am also against ITQ's because of the years we were going to use to qualify. For someone who fishes solely in the south with his days, we were only allowed 996 lbs whole weight some years and 1826 lbs. whole weight other years. Also in the north there was no difference between monkfish days and multispecies days which had A and B days. How is my history going to compete with someone who fishes in the north with no trip limit?

When the time comes I would like to see more days for someone who qualified with 50,000 lb tail weight vs. someone who qualified with 7,500 lbs. tail weight. I don't understand why someone who qualified with 6 1/2 times more fish only gets 100 lbs. more fish. I don't want to be able to requalify, however, it should be based upon what poundage that was sent in to qualify for the initial permit.

RICHARD T LARocca
F/V DOUBLE VISION
F/V DOUBLE VISION
97 HEWITT BLVD
CENTER MORICHES NY 11934

Richard T Larocca

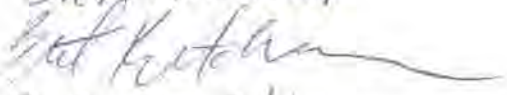
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When the time comes I would like to see more days for someone who qualified with 50,000 lb tail weight vs. someone who qualified with 7,500 lbs. tail weight. I don't understand why someone who qualified with 6 ½ times more fish only gets 100 lbs. more fish. I don't want to be able to requalify, however, it should be based upon what poundage that was sent in to qualify for the initial permit.

Bret Ketcham

9 Ashford Drive
Ridge N.Y.

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

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George Henry
160 Beemer DR.
MASTIC BEACH 11951
N.Y.

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

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Christophy N. Allen 3/5/09
6 PORT ELIZABETH DR.
HAMPTON BAYS, NY 11946

----- Original Message -----

Subject: Monkfish Amendment 5 Scoping Comments

Date: Mon, 30 Mar 2009 10:02:26 -0400

From: Krista Walker <4walkers1@verizon.net>

To: monkfish.five@noaa.gov

Brief description of Monkfish practices in my area catagory H permit below 3830. There is a large mesh closure Feb. 15-March 15 (harbor porpose). This year the Delmarva Scallop bottom is open, which means NO fishing because of the likely hood of gear conflict. April 15 there is the Turtle line between 3756-3820 which limits the area in which I can fish. With these factors in mind, also the factor of competition from other boats which do not have the 33820 degree restriction, leads me to believe that if forced to change from DAS the IIQ system would be best for my practice of Monk fishing. Compared to the sectors, which would seem to be too complicated. My personal opinion would be that I wouldn't want to be responsible for the fishermen and what they do. Independent from others would give me flexability to fish at my own pace. The ITQ system would allow me to catch my fish early.....what I mean is...say the push of fish occurs April 1- May 1, I would be able to take advantage of it by keeping my gear cleaned out, sell all I catch and be done prior to any threat of warm water. There are several advantages to this idea: Quality of product, by keeping gear clean means fresher fish, creating less waste. Gear would be removed from the ocean before turtles, sting rays & sharks show up. Fishermen have been doing a very good job of removing nets prior to the presence of these marine inhabitants, but would be able to do so even earlier by establishing an ITQ. Very simple--take full advantage of the time when fishing is the best-catch fish,remove gear from ocean,move on to something else. I feel that discards would be less because gear would stay cleaned out meaning no old fish. Days at Sea seem to be wasteful for several reasons: Leaving fish in nets when they could be sold. Days At Sea put the fishermen and crew at risk because of the factor of commitment after calling in for a trip. Example: Weather to rough and have to go regardless, or loss a DAS.

A multi year information pool would be my pick for management because it gives the fishermen a chance to plan for the future, with the benefit of three year blocks a fisherman could utilize his gear, see into the future somewhat and adjust to changes.

It seems that keeping track of an individual ITQ would be similar to the DAS system in the way of --call in with catch amount you catch-enforced by reports and buyer information.

The problem of who gets allocation is probably the one thing that will be very difficult in my opinion. To treat everyone equal may not be fair at all. Example: ITQ limits go so low that you must purchase more from inactive fishermen. This would place less fortunate fishermen at a disadvantage because all fishermen may not be able to afford to buy quota. The fear of corporate fishing puts me in the mind of exactly what happened to the surf clam business. It turns into such a thing as a few get the fish and alot go unemployed. I feel that there should be a great deal of thought put in the allocation issue, from my perspective, holding a H permit which was just created a few years ago would have to be considered with any idea of catch history, meaning the years I wasn't allowed to catch fish because of the movement of the boundry line shouldn't be used because it may hold me to a disadvantage. My opinion of how things should be managed are probably very different from others holding different catagory permits. There are alot of restrictions that the H permit has that others do not, as mentioned before.Possibly through discussion at the next meeting some of these differences can be brought out.

David Christopher Walker
Monkfish Advisory Panel
Chincoteague Island, Va.
F/V Krista~Caleb 149830

PUBLIC HEARING SUMMARIES

PUBLIC HEARING SUMMARY Monkfish Amendment 5

**Fairhaven, MA
February 8, 2010**

Hearing Officer: Terry Stockwell

Attendance: Approx. 25, Council members Mark Alexander, David Pierce, Jim Odlin (in audience)

The following comments are arranged in the order of measures described in the public hearing document.

Biological and Management Reference Points – Section 3.1

Two commenters supported the proposed reference points (Alternative 2).

Annual Catch Limits and Accountability Measures – Section 3.2

Three commenters stated support for ACT Option 2 (10,750 mt North and 11,469 mt South). One of those stated that the stocks are fully rebuilt, and the higher ACT is still adequately below the ACL.

Specification of DAS and Trip Limits – Section 3.3.1

Four commenters supported Option 2B for the Southern Management Area. Option 2b would retain the current trip limits and increase DAS from 23 to 28. Commenters were concerned that an increase in the trip limit would result in an increase in the numbers of nets being deployed. On this subject, several commenters expressed concern that the number of allowable gillnets (150) is too high and should be reduced, citing gear conflicts, trip limit overages that result in discards, and greater potential for marine mammal interactions. While a reduction in nets is not proposed in Amendment 5, it should be considered in the next action. One commenter also stated that increasing the number of DAS would benefit small boats, rather than an increase in the trip limit.

Two commenters stated support for Option 2C in the Northern Management Area. Option 2C would increase DAS from 31 to 40, and increase the trip limit for permit categories B and D from 470 lbs. to 800 lbs., tail wt. per DAS.

Automatic Adjustment for DAS Overages – Section 3.3.2.1

Four commenters stated support for Option 3, which would allow one day's overage of the trip limit, and charge the vessel 24 hours and one minute for the terminal day of the trip.

Permit Category C & D Groundfish DAS Usage – Section 3.3.2.2

Two commenters supported the proposed action to allow vessels to choose when they will use their groundfish DAS in combination with their monkfish DAS in those cases where the groundfish DAS allocation is less than the monkfish DAS allocation. One

commenter observed that, while it is a great idea, it is too late, because the current requirement has resulted in vessels using their groundfish DAS at the start of the fishing year, where vessels do not catch any groundfish while fishing for monkfish and they did not generate any groundfish history.

Monkfish Vessels in Groundfish Sectors – Section 3.3.2.3

One commenter supported Alternative 2, which would eliminate the groundfish DAS usage requirement for vessels in groundfish sectors fishing on a monkfish DAS, stating that the provision is cumbersome and unnecessary. Two commenters opposed this proposal. They were very concerned that vessels that normally fish for groundfish and monkfish in the Northern Area will redirect their effort to fish for monkfish in the Southern Area where the groundfish incidental catch is low, and then fish their groundfish ACE in the north. Alternatively, those vessels could fish until their groundfish ACE is nearly used up, and then shift to the south and direct on monkfish. In either case, they felt, there would be an unsustainable increase in effort in the southern area.

Research Set-Aside DAS Carryover – Section 3.4.1

Staff pointed out that NMFS has initiated a technical amendment which would implement Option 2, allowing vessels to carryover unused RSA DAS to the following year, and to be able to use those DAS at any time during the fishing year. A proposed rule has been published and a final rule is pending. Nevertheless, two individuals stated their support for Option 2. One of those commenters also stated that there should be a mechanism that ensures RSA DAS are distributed evenly along the coast. He asserted that even though the DAS are deducted evenly from all vessels, they appear to be used mostly in the southern area.

Allow Changes to the RSA Program by Framework Adjustment – 3.4.2

There were no comments in this proposal.

Mandatory VMS – Section 3.5

Four people stated their opposition to the mandatory VMS. They are concerned about the reliability of the system, noting that the reports are usually late and inaccurate, and do not believe it will be effecting in monitoring the trip limit overage proposal. Further, many vessels are kept on a mooring, which increases the cost of the VMS due to the need to replace batteries. One commenter stated that he has spent \$500 on replacement batteries this winter alone. Several commenters stated that the phone system is much more reliable, except that in some places cell phone coverage does not extend to the VMS demarcation line.

Allow Landing of Monkfish Heads – Section 3.5

One commenter supported the proposal to allow landing of monkfish heads. He noted that the heads have a value as lobster bait, and should not be discarded.

Other Comments

As noted earlier, several individuals called for a reduction in the number of allowable gillnets. They said that most fishermen are not using that number of nets because it is not

necessary to catch the trip limit. Those who are, they claim, are causing monkfish discards and gear conflicts. Furthermore, a lower number of nets would reduce the interaction with protected species.

Two commenters stated their desire to have the Council develop a catch share program for monkfish as soon as possible, with one specifically favoring ITQs. One commenter expressed concern about the problems with the overlap of the groundfish sector program with the monkfish DAS program.

**PUBLIC HEARING SUMMARY
Monkfish Amendment 5**

**Gloucester, MA
February 9, 2010**

Hearing Officer: Terry Stockwell

Attendance: 5, including one NMFS Regional Office staff

The following comments are arranged in the order of measures described in the public hearing document.

Biological and Management Reference Points – Section 3.1

There were no comments on this section.

Annual Catch Limits and Accountability Measures – Section 3.2

One commenter supported ACT Option 2 for the Northern Management Area (10,750 mt), and stated that the buffer between the ACT and the ACL is still unjustifiably too large given that the resource is rebuilt.

Specification of DAS and Trip Limits – Section 3.3.1

One commenter questioned why there is no “no trip limit option” for the Northern Management Area, since during the period of substantial stock growth there was no monkfish trip limit. This same commenter supported a higher trip limit for permit category A and C vessels, compared to B and D vessels to reflect their higher qualification standard.

Automatic Adjustment for DAS Overages – Section 3.3.2.1

There were no comments on this section.

Permit Category C & D Groundfish DAS Usage – Section 3.3.2.2

There were no comments on this section.

Monkfish Vessels in Groundfish Sectors – Section 3.3.2.3

One commenter supported Alternative 2, which would eliminate the groundfish DAS usage requirement for vessels in groundfish sectors fishing on a monkfish DAS.

Research Set-Aside DAS Carryover – Section 3.4.1

There were no comments on this section.

Allow Changes to the RSA Program by Framework Adjustment – 3.4.2

There were no comments on this section.

Mandatory VMS – Section 3.5

One individual questioned the rationale for mandatory VMS in the Southern Management Area unless there are catch shares.

Allow Landing of Monkfish Heads – Section 3.5

There were no comments on this section.

Other Comments

Three commenters stated their desire to have the Council develop a catch share program for monkfish as soon as possible. One commenter added that the proposed amendment will cause confusion among vessels participating in the groundfish catch shares program.

Mid-Atlantic Fishery Management Council

SUMMARY

Monkfish Amendment 5 Public Hearing
Hyatt Regency Chesapeake Bay, Cambridge, MD
February 11, 2010

Attendance: 7 public

Verbal Testimony: 1 person

8:05 AM. Public Hearing called to order by Mid-Atlantic Fishery Management Council Chairman Rick Robins.

Jim Armstrong, Mid-Atlantic Council staff presented an overview of the Amendment 5 alternatives.

A single commenter stated that the "Monkfish Defense Fund" is looking over options in this Amendment and will provide written comments.

8:35 AM. Public Hearing ended.

**PUBLIC HEARING SUMMARY
Monkfish Amendment 5**

**Rockland, ME
March 5, 2010**

Hearing Officer: Terry Stockwell

Attendance: Approx. 40, (Maine Fishermen's Forum)

The following comments are arranged in the order of measures described in the public hearing document.

Biological and Management Reference Points – Section 3.1

There were no comments on this section.

Annual Catch Limits and Accountability Measures – Section 3.2

Two commenters supported ACT Option 2 for the Northern Management Area (10,750 mt). Another commenter stated that the NMA ACT is too far below the ABC given the status of the stock, and urged the Councils to develop an ACT that is at least 80% of ABC.

Specification of DAS and Trip Limits – Section 3.3.1

One commenter suggested that the NMA does not need a trip limit, since the stock growth occurred during a period when there was not trip limit.

Automatic Adjustment for DAS Overages – Section 3.3.2.1

One commenter supported Option 3, 24 hours and one minute.

Permit Category C & D Groundfish DAS Usage – Section 3.3.2.2

There were no comments on this section.

Monkfish Vessels in Groundfish Sectors – Section 3.3.2.3

There were no comments on this section.

Research Set-Aside DAS Carryover – Section 3.4.1

There were no comments on this section.

Allow Changes to the RSA Program by Framework Adjustment – 3.4.2

There were no comments on this section.

Mandatory VMS – Section 3.5

A member of NMFS' Regional Office staff clarified for the audience that NMFS is concerned about the power-down provision in the proposed action. Another individual suggested that mid-Atlantic fishermen are generally opposed to the mandatory VMS,

**PUBLIC HEARING SUMMARY
Monkfish Amendment 5**

**Riverhead, NY
March 8, 2010**

Hearing Officer: Phil Haring (for Terry Stockwell)

Attendance: Approx. 20

The following comments are arranged in the order of measures described in the public hearing document.

Biological and Management Reference Points – Section 3.1

There were no comments on this section.

Annual Catch Limits and Accountability Measures – Section 3.2

Eight commenters supported SMA ACT Option 2 (11,469 mt).

Specification of DAS and Trip Limits – Section 3.3.1

The same eight commenters supported the SMA specification option with the higher DAS and no change to the trip limit (Option 2B). Several suggested that an increase in the trip limit will result in more gillnets being deployed which will result in more discards, more gear conflict, and potential marine mammal interactions.

Automatic Adjustment for DAS Overages – Section 3.3.2.1

One commenter preferred Option 3, 24 hours and one minute, but would also accept Option 1 (30 hours). Another supported Option 3.

Permit Category C & D Groundfish DAS Usage – Section 3.3.2.2

There were no comments on this section.

Monkfish Vessels in Groundfish Sectors – Section 3.3.2.3

Five commenters opposed removing the requirement for Category C and D vessels in groundfish sectors to use a groundfish DAS when on a monkfish DAS (supported the no action alternative). They are concerned that, if allowed, those vessels would fish all of their groundfish allocations in the NMA, and all of their monkfish-only DAS in the SMA where there are monkfish exempted fisheries for both trawl and gillnet vessels. They feel that such a shift in effort would have severe consequences for the stocks in the SMA. Sector vessels fishing in exempted fisheries for monkfish will not be required to have sector ACE for the groundfish species in those areas, but if required to use a groundfish DAS, then those monkfish trips would require a sector to have ACE for the stocks in that area.

Research Set-Aside DAS Carryover – Section 3.4.1

There were no comments on this section.

Allow Changes to the RSA Program by Framework Adjustment – 3.4.2

There were no comments on this section.

Mandatory VMS – Section 3.5

Six commenters opposed the mandatory VMS. They all agreed that the costs do not outweigh the benefits. Several cited the recently added costs to vessels of expanded harbor porpoise pinger requirements. Some commenters also felt that the additional equipment would be impractical to install on small vessels. The commenters also agreed that the current call-in system was working fine and should not be changed. One commenter suggested that eventually VMS will be required to enforce marine mammal closures.

Allow Landing of Monkfish Heads – Section 3.5

One commenter supported the proposal to allow landing of heads.

Other Comments

One commenter stated that New England boats are pushing for sectors or ITQs, and that if such an approach is going to be considered for the monkfish fishery, it should be developed throughout the range of the fishery simultaneously. Another individual expressed concern about potential consolidation in the monkfish fishery and the loss of the small boat component of the fishery. He said that vessel size and horsepower baselines should be retained in an allocation system in order to preserve fleet diversity. He also believes that discards will increase because vessels will not want to shut down if the quota for one species is about to be reached while there are other species with additional quota available to be caught. This commenter is happy with DAS management, but if the plan converts to catch shares that it be an ITQ system rather than sectors, and that the allocation be done using the most recent years for history.

especially without the power-down provision, and also stated that the document does not adequately explain the rationale for requiring the VMS in the SMA.

Allow Landing of Monkfish Heads – Section 3.5

Two commenters supported the proposal to allow landing of heads, stating that it reduces waste, and adds value to the catch. There is a market for heads as lobster bait.

Other Comments

One commenter stated opposition to DAS management and his belief that monkfish should be managed under a catch share system.

**PUBLIC HEARING SUMMARY
Monkfish Amendment 5**

**Lakewood, NJ
March 9, 2010**

Hearing Officer: Peter Himchak (MAFMC)

Attendance: Approx. 12

The following comments are arranged in the order of measures described in the public hearing document.

Biological and Management Reference Points – Section 3.1

There were no comments on this section.

Annual Catch Limits and Accountability Measures – Section 3.2

Four commenters supported SMA ACT Option 2 (11,469 mt).

Specification of DAS and Trip Limits – Section 3.3.1

The same four commenters supported the SMA specification option with the higher DAS and no change to the trip limit (Option 2B). In supporting this option, one commenter said that retaining the current trip limits will keep the amount of gear deployed to a reasonable level which will minimize gear conflicts and potential marine mammal interactions.

Automatic Adjustment for DAS Overages – Section 3.3.2.1

Four commenters preferred Option 3, 24 hours and one minute. One of them suggested that this provision will cut waste and discards, enhance safety and reduce marine mammal interactions.

Permit Category C & D Groundfish DAS Usage – Section 3.3.2.2

Two commenters opposed the proposed action (Alternative 2). One suggested that most monkfish vessels fishing in the SMA do not have groundfish DAS, and the proposed action could result in effort shifting from the NMA to the SMA.

Monkfish Vessels in Groundfish Sectors – Section 3.3.2.3

Four commenters opposed removing the requirement for Category C and D vessels in groundfish sectors to use a groundfish DAS when on a monkfish DAS (supported the no action alternative). They are opposed to any measure that will result in a shift in monkfish effort to the SMA.

Research Set-Aside DAS Carryover – Section 3.4.1

There were no comments on this section.

Allow Changes to the RSA Program by Framework Adjustment – 3.4.2

There were no comments on this section.

Mandatory VMS – Section 3.5

Four commenters opposed the mandatory VMS proposal, citing the cost for installation, usage and batteries. They all agreed that this would be an unnecessary cost burden since the current call-in system is working and at much lower cost.

Allow Landing of Monkfish Heads – Section 3.5

One commenter supported the proposal to allow landing of heads.

Other Comments

Following the specific comments on Amendment 5, several participants raised questions about the efforts to develop catch shares in the monkfish fishery. While not asserting any clear opinions for or against catch shares, many shared the concerns expressed in other hearings about establishing a fair allocation scheme, preserving a diverse fleet with small owner operator businesses and minimizing consolidation and investor ownership of quota.

WRITTEN COMMENTS



PORTLAND FISH EXCHANGE

"Monkfish Amendment 5 Public Hearing Comments"

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

Dear Ms. Kurkul:

I am writing to provide comments to Monkfish Amendment 5.

First, I wish to say that monkfish landings create significant economic returns to both seller and processor. National and international demand for monkfish is strong, with ex-vessel pricing for large tails reaching over \$5/lb during peak seasonal times. Given these market conditions, monkfish landings should be maximized, but at sustainable levels to maintain flow into the market.

The public hearing document provides a number of options. My recommendations are as follows:

Northern ACT option #2; allowing 10,750MT, DAS and trip limit option 2C, in conjunction with monkfish vessels in groundfish sectors Alternative #2 that eliminates the DAS usage. A concern remains however that the two ACT northern options are only 40% & 60% of the ACL. A target ACT for the NFMA should be closer to 80% of the ACL.

Insuring continued incremental landings of monkfish through higher trip limits and DAS allocations to category A & C permits is imperative to sellers, buyers and the Portland Fish Exchange. An endorsement is given to also allow landings of monkfish heads.

A priority is to have the management of monkfish transitioned to catch-shares. The duality of management schemes currently applied to the fishery is redundant and complicated.

Respectfully submitted,



Bert Jongerden, General Manager

Fairhaven 2/8/10
File

2/6/10

To Phil Haring, Monkfish Oversight Committee,

Please consider the following suggestions for Amendment five to the monkfish management plan.

Net Limits- Reduce the current number of net limits from 150 to 75 in near shore waters within 40 miles. This is necessary for the following reasons:

- Overcrowding in near shore grounds will cause gear conflict.
- Not being able to keep up with gear or tend to nets. As a result fish are left to rot or be eaten in nets by crabs, dogfish, etc. This is extremely wasteful.
- Fewer nets equal more fish per net. This has been proven in the past. When trip limits were higher more gear was fished, there were a lot less gear per net. This forced people to haul more gear for the same amount of fish, creating Derby style of fishing.
- Because fewer nets will be fished there will be fewer nets to purchase. This ultimately reduces gear cost
- Less nets will result in less mammal interaction

Net limits are a very important management tool in the gillnet fishery. The large majority of gillnet fishermen in the S.F.M.A would support this proposal.

Thank you



Dean Peasnte
F/V Oceana

HOFFMAN SILVER GILMAN & BLASCO P.C.

Washington, D.C. · Juncau, AK · Anchorage, AK

2300 CLARENDON BLVD, SUITE 1010
ARLINGTON, VA 22201
Phone: 703-527-4414
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E-Mail: remarks@romea-dc.com

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FAX

To: PAT KURKUL - NMES NE RA	From: Rick Marks
Fax: 978-281-9135	Date: 3/4/10
Phone:	Pages 3
	Code: 9-9
Re: MontFish Am5 public Hearing comments	

Pat -

please accept on behalf of the MDF.

Thanks


MONKFISH DEFENSE FUND

March 4, 2010

Ms. Patricia Kurkul, Regional Administrator
NOAA/National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930
via facsimile to 978-281-9135

RE: Monkfish Amendment 5 Public Hearing Comments (See 75 FR 2111)

Dear Pat:

I provide the following comments on behalf of the Monkfish Defense Fund (MDF) on Amendment 5 to the Monkfish FMP.

Annual Catch Limits and Accountability Measures: The primary purpose of Amendment 5 is to establish annual catch limits (ACLs) and accountability measures (AMs) for the monkfish fishery. As a proactive AM, Amendment 5 proposes to set annual catch targets (ACT) that are lower than the ACL to account for uncertainty. We are concerned that the ACT options provided for the two areas are extremely precautionary and overly conservative. We request development and approval of ACTs for each management area that are at least 80% of the ACL.

DAS/Trip Limits: As a result of increase in total allowable catch that can now occur since monkfish is not overfished, nor is overfishing occurring, Amendment 5 proposes to increase the current DAS and/or trip limit allocations, depending on which ACT option is chosen (per area) and permit category.

The MDF supports adoption of a trip limit/DAS combination for both areas that would be consistent with an ACT that is at least 80% of the ACL, otherwise we support DAS and trip limit option 2C for the NFMA and Option 2B for the SFMA. For the SFMA, our target trip limit (in tail weight per DAS) for AC/BD permits is 550/450 and the corresponding number of DAS allowable under these limits.

Automatic DAS Adjustment for trip limit overage: We support the common sense approach embodied in Alternative 2 Option 3. We believe this provision will enhance safety by lessening the time vessels will remain at sea and also reduce waste by reducing soak time.

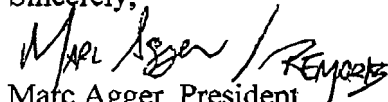
Mandatory VMS: We support Alternative 1 for *no action* at this time. We do not support added VMS requirements in the SFMA. Rather, the call-in system has worked just fine for many years without the added maintenance costs associated with VMS units.

Catch Shares: We urge the New England and Mid-Atlantic Fishery Management Councils and the National Marine Fisheries Service to work closely with affected fishermen in each management area to determine how the fishery should operate. We believe, if crafted properly,

that it is possible for the NFMA to operate under a catch share program while the SFMA remains under a controlled limited access program. We prefer to allow full-time fishermen in each area decide what works best for them. The MDF membership is not prepared to advocate for a catch share program in the SFMA at this time but will support efforts by fishermen in the NFMA to develop a catch share program specific to that management area.

Thank you for the opportunity to comment on Amendment 5 to the Monkfish FMP.

Sincerely,

A handwritten signature in black ink, appearing to read "Marc Agger". To the right of the signature, the word "REMOVED" is written vertically in a smaller, less legible script.

Marc Agger, President
Monkfish Defense Fund

----- Original Message -----

Subject: "monkfish amendment 5 public hearing comments"

Date: Tue, 09 Mar 2010 22:21:39 -0500

From: Louise <weeziem@comcast.net>

Reply-To: Louise <weeziem@comcast.net>

To: MonkAmendment5@noaa.gov

Given the fact that the monkfish resource has been rebuilt, for the Biological and Reference Points, alternative 2, I would urge you to be proactive with the Accountability Measure, with option 2 in both the north and south. For DAS and trip limits, again because the resource has been rebuilt, option 2C in the north and 2B in the south.

I primarily fish in the southern area and would look for more days versus a trip limit increase. For the DAS adjustment for trip limit overage, option 3, 24 hours and 1 minute. This is what the industry has been doing for years and would be the simplest option. I would like to see alternative 2 for Monkfish Vessels in Groundfish Sectors, noting that vessels in the sector are working under ACE and not DAS. Option 2 on the RSA will give the program more flexibility, and on Mandatory VMS, alternative 1 with no VMS is appropriate at this time. Finally, Monkfish Heads should be allowed to be landed, alternative 2, simply stating that the heads could be used for bait instead of being thrown over.

I appreciate the opportunity to comment.

Jan Margeson

F/V Decisive, F/V Great Pumpkin

March 5, 10
Eastport N.Y.

Dear Mr Kunkel

As a former Munkfish
adviser (over 20 yrs.) I ask that
the U.M.S. requirement be
waived for boats under 45'
fishing in the Southern management
area. My reasons are as follows

① Most gillnet boats in the
south are around 36'. It is
impractical to have a U.M.S.
on board. Some of these boats
are forward bridge boats exposed
to the weather. We simply don't
have the space.

② It's the larger choppers in
the North that are asking for
this requirement. They've
had carte blanche for a long
time, i.e. unrestricted landings
in the Northern management area.

③ The D.A.S. system is
working in the South.

④ Many fishermen are against
this amendment. Why force
this additional ~~over~~ requirement
on them.

(2)

When I started monkfishing over 30 years ago (my landings well attest to this) there were no days at sea. There were no restrictions. We fished for monkfish for 120 days. Now were down to 21.

As an advisor I proposed a 1,000 lb trip limit for all monkfish vessels. No one listened. I'm still asking for the same conservation measure, it would also increase the price paid to fishermen.

Perhaps a poll of all Monkfish boats in the fishery, asking them if they want a U.M.S. Particularly in the South I'm sure the answer would be no.

The N.M.F.S has done a good job managing monkfish. Please don't place this onerous requirement on us:

Yours truly
Richard LaRocca Sr.
F/UCAPT RICH II
146737

①

Eastport NY
March 5, 2010

Dear Ms. Kuehl

As a former Monkfish advisor I ask that the U.M.S requirement be dropped. In my area (The Southern Fishery Management Area) we have sacrificed much over the years. Emergency closures, greatly reduced days at sea, gear restrictions and heavy observer coverage plus safety requirements.

I believe that boats in the "daily" monkfish category should be exempted from carrying a U.M.S on board. Boats that declare into "trip" category should be required to have it. I have also taken full observers on my boat more than 100 times. If I am required to have U.M.S on board I will sell my permit. It's just not worth the trouble. There just isn't the room for it.

(2)

On a separate note, I am personally against sectors or F.T.Q. in the Southern management area. Most fishermen here feel the same way. The D.A.S system works. Why fix something that isn't broken just because the large corporate boats in the North need huge amounts of fish to sustain themselves. Why penalize us in the South, when I was an advisor, I suggested a 1,000 lb trip limit. That suggestion fell on deaf ears. Reduce the trip limit and give us a few more D.A.S. That would be ensuring fish for future generations. The U.M.S

is an onerous amendment. Please do not enact it.

Yours truly
Richard LaRocca Sr
30 East Pondia
Eastford NY 11941
F/U CAPT RICH II
146737

ENDEAVOR FISHERIES, INC.

8 WEST 8TH ST.

P.O. BOX 31

BARNEGAT LIGHT, NJ 08006-0031

To : Patricia Kurkul

From Captian Kevin Wark

FX Dana Christine

Monkfish Comments

Section 3.3 Automatic DAS Adjustment for trip limit overage.

I prefer alternative 2 option 3 -- Rationale, This is really the way the fishery has been conducted over the years and this provision will make it safer and help cut waste with no drifting at sea for C and D vessels and less soak time for all categories. And as a member of the Large whale and Harbor porpoise T.R.T.S I see this as a very good provision that makes good common sense.

Section 3.5 Mandatory VMS

I prefer alternative 1 no action-- Rationale, In the southern area we don't need the VMS the call in system has worked fine for many years , the VMS will give fisherman added expense with the cost of the unit as well as the monthly fees and battery maintenance and all of this comes at a time when we should cutting cost not increasing them. The fisherman have already have a lot to deal with between Cost Guard regulations, gear modifications for protected resource issues , observer coverage as well as the fishing rules I see this as a unnecessary burden to the monkfish only boats in the southern area.

Kevin Wark
F/V Dana Christine
Barnegat Light NJ

2/24/10

Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
Northeast Regional Office
55 Great Republic drive
Gloucester, MA 01930
Subject: Monkfish Amendment 5 Public Hearing Comments

Dear Patricia,

Section 3.1- Biological and Management Reference Points- Alt. 2
Section 3.2- Annual Catch Limits and Accountability Measures- Alt. 2 South Option 2
Section 3.3.1- Specification of Days-at-Sea and Trip limits- Alt. 2 South 2B
Section 3.3.2.1- Automatic DAS Adjustment for Trip Limit Overage- Alt. 2 Option 3
Section 3.3.2.2- Permit Category C & D Groundfish DAS Usage- Alt. 1
Section 3.3.2.3- Monkfish Vessels in Groundfish Sectors- Groundfish DAS Usage- Alt. 1
Section 3.4.1- Research Set- Aside (RSA) DAS Carryover- Alt. 2 Option 2
Section 3.4.2- Allow Changes to RSA Program by Framework Adjustment- Alt 2

- Decrease cost of RSA days

Section 3.5- Mandatory VMS- Alt 1

- Category C boats without A DAS would be agonized all year for 23 monkfish days. The VMS is inefficient and often does not work correctly. The IVR is the simplest, easiest choice.

Section 3.6 Allow Landing of Monkfish Heads- Alt. 2

P.S. I would be willing to reduce the number of nets to 90 in near sore ground within 40 miles.

Sincerely,

Kevin Sullivan
F/V Seamus and Liam III
Permit No. 150460



MAR - 3 2010

ASSOCIATED FISHERIES OF MAINE

PO Box 287, South Berwick, ME 03908

207-384-4854

February 22, 2010

Ms. Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930

RE: "Monkfish Amendment 5 Public Hearing Comments"

Dear Pat:

I write, on behalf of Associated Fisheries of Maine, to provide comments on Monkfish Amendment 5.

1. Catch Shares

If catch share management is to be effective in NE groundfish, it is essential to transition the monkfish fishery to catch shares as soon as possible. We urge the New England and Mid Atlantic Fishery Management Councils and the National Marine Fisheries Service to resume work, at the earliest opportunity, on the development of Amendment 6 and a catch share management program for the monkfish fishery.

2. Annual Catch Limits and Accountability Measures

The primary purpose of Amendment 5 is to establish annual catch limits (ACLs) and accountability measures (AMs) for the monkfish fishery. As a "proactive" AM, Amendment 5 proposes to set an "annual catch target" (ACT) that is lower than the ACL. We are concerned that the two ACT options for the northern fishery management area (NFMA) are 40% and 60% of the ACL. These options are overly conservative. We request development and approval of an ACT for the NFMA that is at least 80% of the ACL.

3. DAS/Trip Limits

As a result of increase in total allowable catch that can now occur since monkfish is not overfished, nor is overfishing occurring, Amendment 5 proposes to increase the current DAS and/or trip limit allocations, depending on which ACT option is chosen (per area) and permit category.

AFM supports adoption of a trip limit/DAS combination for the NFMA that would be consistent with an ACT that is at least 80% of the ACL, otherwise we support DAS and trip limit option 2C. In addition, we support continuation of the allocation of higher trip limits and DAS allocations to category A & C, as this is consistent with a recognition that these permit holders qualified for limited access permits at higher landing thresholds, as well as their greater dependence on the resource.

Sincerely,

M. Raymond

Maggie Raymond

JORDAN LYNN INC.
F/V JOCKA
F/V RACHEL T
TERRY ALEXANDER

67 Grover Lane
Harpwell, Maine
04079
207-729-2538
207-725-7009

March 8, 2010

Patricia Kurkel, Regional Administrator

Dear Pat,

Comments on Amendment 5 Monkfish Plan

Section 3.3.1

DAS and Trip Limits- In the NMA I would pick Option 2B C permits 125 a day for 51 DAS

Section 3.3.2.1

Automatic DAS Adjustment for Trip Limit Overage- Option 3 24 hours + 1 Minute

Section 3.3.2.3

Monkfish Vessels in Groundfish Sectors- Alternative 2, Eliminate GF DAS usage requirement

Section 3.6

Allow Landing Monkfish Heads

Alternative 2- Allow Landing of Monkfish Heads

Thank you,

Terry Alexander