Final Framework 23

to the Scallop Fishery Management Plan

Including a
Final Environmental Assessment (EA)

Prepared by the New England Fishery Management Council, in consultation with the National Marine Fisheries Service and the Mid-Atlantic Fishery Management Council

Initial Council Meeting: January 25-27, 2011
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Executive Summary

This framework and Environmental Assessment (EA) presents and evaluates management measures and alternatives to achieve specific goals and objectives for the Atlantic sea scallop fishery. This document was prepared by the New England Fishery Management Council and its Scallop Plan Development Team (PDT) in consultation with the National Marine Fisheries Service (NMFS, NOAA Fisheries) and the Mid-Atlantic Fishery Management Council (MAFMC). This framework was developed in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA, M-S Act) and the National Environmental Policy Act (NEPA), the former being the primary domestic legislation governing fisheries management in the U.S. Exclusive Economic Zone (EEZ). This document also addresses the requirements of other applicable laws (See Section 6.0).

In addition to the No Action alternative, the Council considered various other alternatives to address the purpose and need of this action. The primary purpose of this action is to address four very specific issues identified by the public and Council to improve the overall effectiveness of the Scallop FMP. The need is to develop measures to minimize impacts on sea turtles through the requirement of a turtle deflector dredge; to improve the effectiveness of the accountability measure adopted under Amendment 15 for the YT flounder sub-ACL, consider specific changes to the general category NGOM management program to address potential inconsistencies, and to consider modifications to the vessel monitoring system to improve fleet operations.

The preferred action is summarized in Table 1. To minimize impacts on sea turtles the preferred action includes requirement of a turtle deflector dredge for all limited access vessels and all LAGC vessels that fish with a dredge greater than or equal to ten feet six inches in waters west of 71W between May 1 and October 31. Under the preferred action this requirement would be effective one year after FW23 is implemented. To improve the effectiveness of accountability measures for YT flounder sub-ACLs, the preferred action revises the YT AM schedule for limited access vessels and implements a mechanism to adjust the AM based on final estimates of catch. To address potential inconsistencies with the LAGC NGOM management program the preferred action includes an allowance for LAGC NGOM vessels to declare a state water trip and catch on those trips would not count against the NGOM hard-TAC. To improve fleet operations and safety the preferred action includes a revision to the vessel monitoring system that would allow scallop vessels to declare into the fishery from inshore of the VMS demarcation line rather than from port.

Table 1 – Summary of preferred action for Framework 23 based on final Council recommendations

Section	Alternative
2.1	**TURTLE DEFLECTOR DREDGE (TDD)**
2.1.2	**TDD Requirement Alternative**
2.1.2.1.1	TDD Spatial boundary options – Option 1 (71° W)
2.1.2.2.2	TDD Seasonal options – Option 2 (May 1 – October 31)
2.1.2.3.3	Vessel options for TDD – Option 3 (All limited access scallop vessels and all limited access general category IFQ vessels that use a dredge greater than ten feet six inches)
2.1.2.4.2	Implementation options for TDD – Option 2 – One year
2.2	**REVIEW AND REVISE AMS FOR YT FLOUNDER SUB-ACL**
2.2.1.2	Refine YT AM seasonal closure schedule for SNE/MA and GB YT stocks (Table 3, Table 4, and Table 5)
2.2.2	Mechanism to adjust AMs for bycatch sub-ACLs in the scallop fishery
2.3	**MODIFICATION TO THE NGOM MANAGEMENT PROGRAM**
2.3.2	**NGOM Alternative**
2.3.2.1.2	Options for which vessels – Option 2 – All NGOM vessels
2.3.2.3.1	Options to adjust 2012 and 2013 NGOM hard-TAC – Option 1 (No Action - 70,000 lbs.)
2.4	**MODIFICATION TO VMS**
2.4.2	**VMS Alternative**

Analyses of the preferred alternatives, as well as all management alternatives considered during the development of this action are provided in this document across a series of valued ecosystem components, or VECs. VECs represent the resources, areas, and human communities that may be affected by a proposed management action or alternatives, and by other actions that have occurred or will occur outside the preferred action. The descriptive and analytic components of this document are constructed in a consistent manner. The Affected Environment section (Section 4.0) of this document traces the history of each VEC and consequently addresses the impacts of past actions. The Affected Environment section is designed to enhance the readers' understanding of the historical, current, and near-future conditions (baselines and trends) in order to fully understand the anticipated environmental impacts of the management alternatives under consideration in this amendment, which are described in Section 5.0.

Requirement of the turtle deflector dredge is expected to have potentially positive impacts on the scallop resource since the TDD is estimated to be slightly more efficient; four percent more scallop catch than the standard dredge. The TDD is expected to have substantial positive impacts on sea turtles, reducing mortality by a minimum of 56% compared to standard dredge without a chain mat. There will be an increase in costs for the fishery in the short-term, but positive indirect economic impacts on the fishery over the long-term if implementation of the TDD results in fewer effort limits placed on this fishery under the Endangered Species Act.

Overall the changes to the YT AM seasonal closure schedules proposed in this action are not expected to have major impacts on the scallop resource or limited access fishery. The adjustments are expected to reduce improve the effectiveness of the YT AMs by modifying the

schedule so that months with the highest bycatch rates are closed first, compared to the No Action AM schedule that begins on March 1 the start of the fishing year.

This action proposes to change the NGOM management program so that a vessel with a Federal NGOM permit can fish exclusively in state waters and that catch would not apply against the federal NGOM TAC. Vessels could still fish in federal waters, but if they do all catch from that trip would apply against the federal TAC. The impacts of this change are neutral because current effort levels are very low in this area and most fishing activity in the NGOM is within state waters already. Beneficial impacts are expected for vessels with federal NGOM permits so they have more flexibility to fish in state waters and that activity not impact the federal NGOM TAC. The Council decided to allow this modification for all NGOM permit holders and maintain the Federal NGOM TAC at 70,000 pounds to provide more access to the resource for all federal scallop permit holders and to reduce the chance the TAC is exceeded from catch in state waters by LAGC IFQ vessels, since that catch will still be applied against the Federal NGOM TAC.

Finally, this action is proposing an adjustment to the VMS system to enable a scallop vessel to declare into the fishery just inshore the VMS demarcation line, rather than from port. This measure is not expected to have direct impacts on the scallop resource, EFH, protected resources or bycatch since this is an administrative issue and DAS used are already calculated from the demarcation line. Therefore, the estimate of fishing time will not increase as a result of this change so no impacts are expected on the scallop resource. This measure is expected to have beneficial impacts on the fishery by improving safety and reducing the fuel costs and other costs associated with the steam time from a port rather than from the VMS demarcation line.

Overall, the cumulative effects of the preferred action on the scallop resource, EFH, protected resources, fishery businesses and communities, other fisheries and non-target species should yield non-significant neutral to positive impacts.

Table of Contents

Appendices

I – Economic and Social Trends in the Scallop Fishery

II – Using Sea Turtle Carcasses to Assess the Conservation Potential of a Turtle Excluder Dredge (Smolowitz et al., 2010)

III – Tracking a large sea scallop recruitment event with high resolution video survey in the Gulf of Maine (SMAST Semi-Annual Report, 2010)

Table of Tables

Table of Figures

List of Acronyms

A10 – Amendment 10 to the Atlantic Sea Scallop Fishery Management Plan
A11 – Amendment 11 to the Atlantic Sea Scallop Fishery Management Plan
A15 – Amendment 15 to the Atlantic Sea Scallop Fishery Management Plan
AA – Access Area
ABC – Acceptable Biological Catch
ACL – Annual Catch Limit
ACT – Annual Catch Target
AM – Accountability Measure(s)
AP – Advisory Panel
BiOp, BO – Biological Opinion
B_{MSY} – Biomass at Maximum Sustainable Yield
CEQ – Council on Environmental Quality
CA – Closed Area
CAI – Closed Area I
CAII – Closed Area II
CASA – Catch-At-Age Size-At-Age (model)
CF – Coonamessett Farm Foundation
DAS – Day-at-sea
DMV – Delmarva
CPUE – Catch Per Unit Effort
EA – Environnemental Assessment
EEZ – Exclusive Economic Zone
ESA – Endangered Species Act
EFH – Essential Fish Habitat
    EFH designation life stages
        A – Adult life stage
        J – Juvenile life stage
        E – Egg life stage
ET, ETA – Elephant Trunk Area
F_{MSY} – Fishing Mortality at Maximum Sustainable Yield
FMP – Fishery Management Plan
FR – Federal Register
FW18 – Framework Adjustment 18 to the Atlantic Sea Scallop Fishery Management Plan
FW19 – Framework Adjustment 19 to the Atlantic Sea Scallop Fishery Management Plan
FW21 – Framework Adjustment 21 to the Atlantic Sea Scallop Fishery Management Plan
FW22 – Framework Adjustment 22 to the Atlantic Sea Scallop Fishery Management Plan
FY – Fishing Year
GB – Georges Bank
GF – Groundfish
GC – General Category
GOM – Gulf of Maine
HC – Hudson Canyon
HP – Horsepower
LA – Limited Access
LAGC – Limited Access General Category
LPUE – Landings per unit effort, usually a DAS in this document
IFQ – Individual Fishing Quota
IRFA – Initial Regulatory Flexibility Analysis
LA – Limited Access

LAGC – Limited Access General Category
LIPA – Long Island Power Authority
LNG – Liquefied Natural Gas
LPUE – Landings Per Unit Effort
MA – Mid-Atlantic
MAFMC – Mid-Atlantic Fishery Management Council
M-S Act – Magnuson Stevens Act
MSY – Maximum Sustainable Yield
NB – New Bedford
NE – New England or Northeast
NEFMC – New England Fishery Management Council
NEFSC – Northeast Fisheries Science Center
NEPA – National Environmental Policy Act
NGOM – Northern Gulf of Maine
NL, NLAA – Nantucket Lightship Access Area
NMFS – National Marine Fisheries Service
NOAA – National Oceanographic Atmospheric Administration
OA – Open Area
OFD – Overfishing Definition
OFL – Overfishing Limit
OY – Optimum Yield
PDT – Scallop Plan Development Team
RIR – Regulatory Impact Review
RPM – Reasonable and Prudent Measure
RSA – Research Set-Aside
SASI – Swept Area Seabed Impact (model)
SAW – Stock assessment workshop
SBRM – Standardized bycatch reporting methodology
SCH – Great South Channel
SH/MW – Shell Height-Meat Weight (relationship)
SMAST –School of Marine Science and Technology, University of Massachusetts, Dartmouth
SNE – Southern New England
SNE/MA – Southern New England/Mid-Atlantic
SSC – Science and Statistical Committee
TAC – Total Allowable Catch
TDD – Turtle deflector dredge
U10 – A classification for large scallops, less than 10 meats per pound.
USGS – United States Geological Survey
VEC – Valued Ecosystem Component
VIMS – Virginia Institute of Marine Science
VMS – Vessel Monitoring System
VTR – Vessel Trip Reports
WGOM – Western Gulf of Maine
WHOI – Woods Hole Oceanographic Institute
YTF/YT – Yellowtail flounder

1.0 BACKGROUND AND PURPOSE

1.1 BACKGROUND

This is not a typical framework to the Scallop FMP that sets fishery specifications for the following fishing years. Instead the Council initiated this framework with a very limited scope to address four specific issues. At the November 2010 Council meeting the Council adopted several work priorities for this action including: requirement of a turtle deflector dredge; review and revise the accountability measure adopted under Amendment 15 for the YT flounder sub-ACL for the scallop fishery, and consider specific changes to the general category NGOM management program.

The Council initiated this action in January 2011 and added one additional issue to consider; modifications to the vessel monitoring system to improve fleet operations. The Council took final action on this framework in September 2011, with implementation targeted before March 1, 2012.

1.2 PURPOSE AND NEED

The primary purpose of this action is to address four very specific issues identified by the public and Council to improve the overall effectiveness of the Scallop FMP. The need is to develop measures to minimize impacts on sea turtles through the requirement of a turtle deflector dredge; to improve the effectiveness of the accountability measure adopted under Amendment 15 for the YT flounder sub-ACL, consider specific changes to the general category NGOM management program to address potential inconsistencies, and to consider modifications to the vessel monitoring system to improve fleet operations.

2.0 MANAGEMENT ALTERNATIVES UNDER CONSIDERATION

2.1 TURTLE DEFLECTOR DREDGE

The Council is considering the requirement of a turtle deflector dredge to minimize impacts on sea turtles. National Standard 9 of the Magnuson Act requires that FMPs shall, to the extent practicable, minimize bycatch, and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch. Bycatch includes the take of protected resources including marine mammals and other threatened and endangered species such as sea turtles.

The scallop fishery interacts with sea turtles; predominantly loggerhead sea turtles during the summer and fall in the Mid-Atlantic. Interactions between sea turtles and dredges are thought to occur in the water column during haul back as well as on the sea floor during active fishing. In 2006, NMFS issued a final rule that required all scallop dredge vessels fishing south of 41 9' N latitude from May 1 through November 30 to modify their dredges with a chain mat (August 25, 2006, 71 FR 50361). The chain mat consists of horizontal and vertical chains hung between the cutting bar and the sweep. The purpose of the chain mat is to prevent most, if not all, captures of sea turtles in the dredge bag as well as any ensuing injuries and mortalities as a result of being

caught in the dredge. While the chain mat was anticipated to reduce sea turtle captures in the water column, reducing benthic interactions had not yet been addressed.

For several years researchers in this region have been working with the scallop industry to develop a turtle deflector dredge to further reduce the severity of impact and mortality of sea turtles from potential interactions on the sea floor. Figure 1 highlights the evolution of this dredge over the years from the typical New Bedford style dredge at the bottom of the figure, to the fifth version of the dredge under consideration in this action. Figure 1 and Figure 2 compares the standard commercial dredge to the turtle deflector dredge.

In 2005, sea turtle carcasses were placed in the path of a standard New Bedford dredge to evaluate interactions and injuries, and prototypes of a modified dredge were developed, tested and further adjusted in 2005 and 2006 (Milliken et al. 2007). In 2008, the turtle deflector dredge was evaluated in Cape Cod Bay, Massachusetts (Smolowitz et al. 2010). Seven frozen sea turtle carcasses were placed in the path of the modified dredge, interactions were videoed, and the five recovered carcasses were evaluated for injuries. The only observed carcass damage was superficial scratches and chips, and in the nine video recorded interactions, all carcasses hit the dredge at some point and passed over the dredge frame.

The PDT reviewed the preliminary analyses available for this gear modification and agreed that it is a viable alternative that would reduce impacts on sea turtle mortality with limited impacts on scallop catch and the fishery. Therefore, the Scallop Committee developed several alternatives for this dredge including a range of options for which areas and seasons the requirement should apply to, and which vessels or permit types.

RPM #2 in the 2008 Biological Opinion on the Atlantic sea scallop FMP states that NMFS must continue to investigate and implement, as appropriate, gear modifications for scallop dredge and trawl gear to reduce the capture of sea turtles and/or the severity of the interactions that occur. While that non-discretionary measure is not the only reason the Council developed this measure, if this gear modification is implemented it is expected to reduce the severity of benthic sea turtle/dredge interactions. It is possible that some level of injury could still occur since turtles would still come into contact with the dredge frame and this gear modification was tested on carcasses so impacts to live animals are relatively uncertain. However, it is not feasible to test a modified dredge frame on live animals, and the information obtained from previous studies represents the best currently available information. Therefore, since conservation benefits are expected, implementing this turtle deflector dredge through Framework 23 would likely satisfy the reasonable and prudent measure specified in the 2008 Biological Opinion related to implementing a gear modification for scallop dredge gear that is reasonable and feasible, and will help minimize the severity of benthic interactions.

Figure 1 – Evolution of the standard New Bedford commercial scallop dredge to the turtle deflector dredge (Source: Smolowitz et al, 2010)

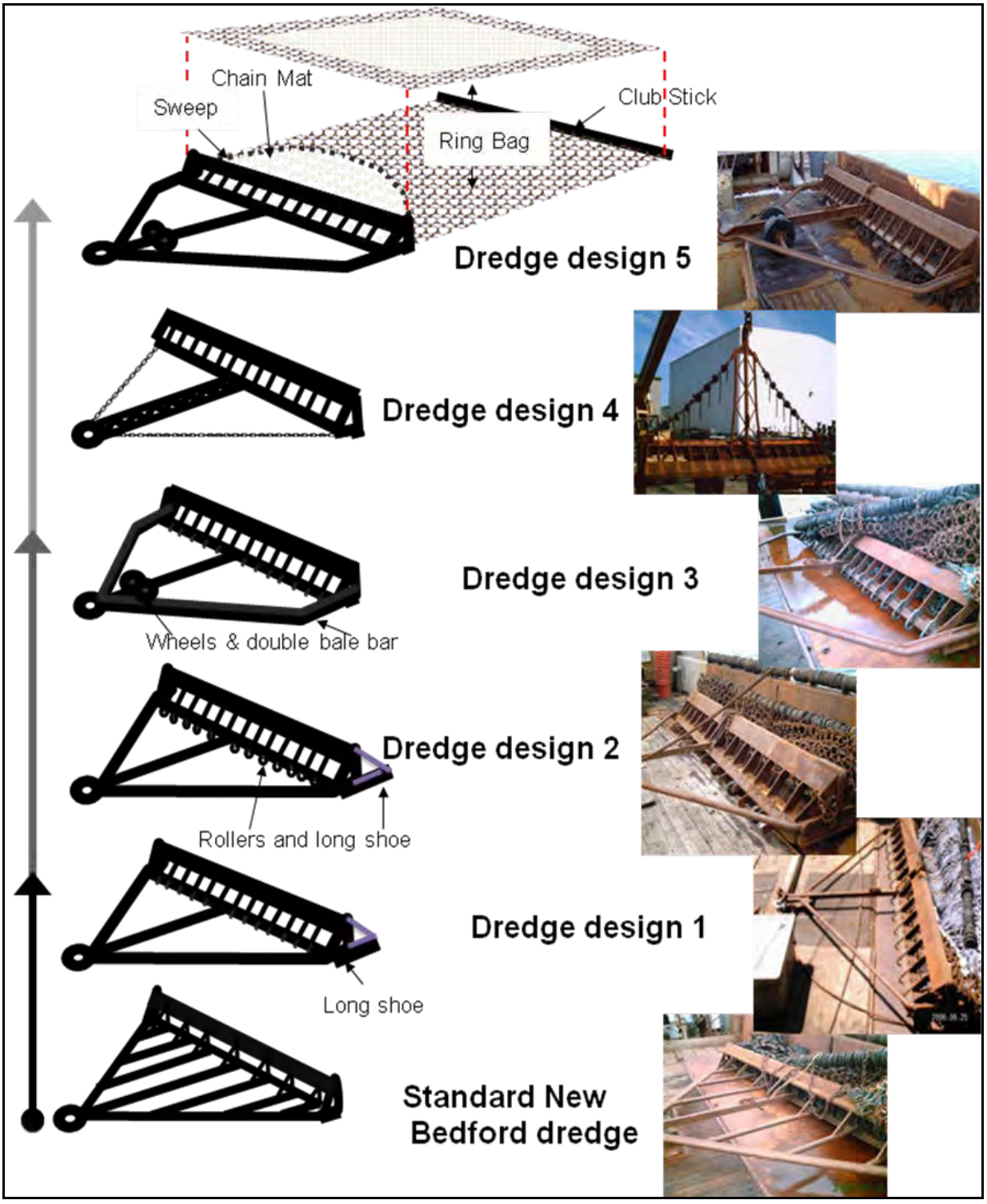


Figure 2 – Comparison of standard commercial scallop dredge (left) and turtle deflector dredge (right)

(Photos: Courtesy of Coonamessett Farm Foundation)

2.1.1 No Action related to turtle deflector dredge (No Action TDD)

Under the No Action TDD alternative, the turtle deflector dredge (TDD) would not be required for scallop vessels fishing in the Mid-Atlantic. Vessels would continue to use the standard commercial dredge or chose to use the TDD without a regulatory requirement.

2.1.2 Require turtle deflector dredge (TDD Requirement Alternative) (Preferred Alternative)

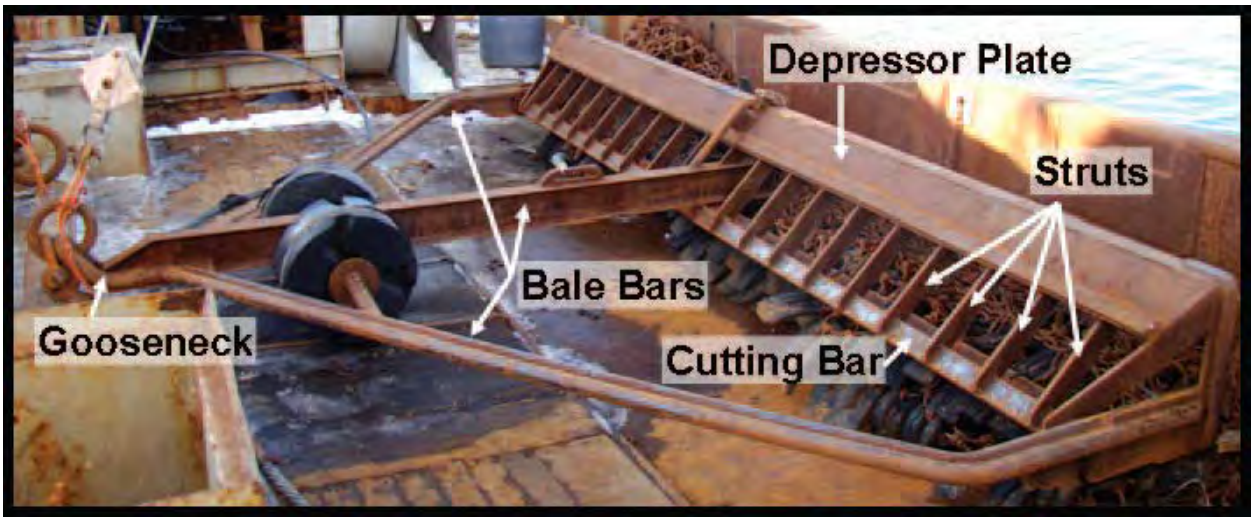
If this alternative is selected the Council recommends that the turtle deflector dredge be required in the scallop fishery. The specific area, season, and which vessels or permit types would be required to use this dredge are specified in the options considered below.

The turtle deflector dredge is designed to reduce the likelihood of a turtle passing under the frame when the dredge fishes on the seafloor and getting injured/crushed. The turtle deflector dredge is also anticipated to reduce the likelihood of a turtle getting stuck in the dredge frame. Key elements of the modified dredge are: a forward cutting bar, a reduced number of bale bars, and a reduction in the sources of entrapment between the depressor plate and the cutting bar – reduced spacing of struts (Figure 3). In summary, these modifications are designed to reduce

injury and mortality of sea turtles that come into contact with the dredge on the sea floor by allowing them to be deflected up and above the dredge frame and bag.
The dredge requirement itself is described below. There are five overall components of this dredge modification:

1. Cutting bar must be forward of the dredge frame;
2. Angle between the cutting bar and the top of the frame must be less than or equal to 45 degrees;
3. All bale bars must be removed except the outer bale (single or double) and center support beam less than six inches wide; leaving an otherwise unobstructed space between the cutting bar and forward bale wheels, if present;
4. Strut spacing not to exceed 12 inches; and
5. Frame extension or "bump out" required, exceeding 12 inches.

Figure 3 – Turtle deflector dredge with primary elements of gear modifications identified (Source: Smolowitz et al, 2010)



Each element of this dredge is based on direct field research that has been conducted over several years. For example, the first element that the cutting bar must be forward of the dredge frame is intended to direct turtle up and over dredge, and is based on early field tests conducted in Panama City in 2005. The cutting bar in a standard dredge is behind and under the depressor plate preventing a turtle from rising above the dredge.

The specification that the angle between the cutting bar and the top of the frame must be less than or equal to 45 degrees is intended to provide a smoother transition for a turtle to get over the dredge, but still maintain the same overall height of the standard dredge. This angle has been directly tested in the field and steeper angles provide a greater barrier. Research is currently being conducted using lower angles, or a lower profile dredge to test the impacts of a lower angle.

Third, the requirement that specifies that all bale bars must be removed except the outer bale and center support bar has evolved from several trials with different versions of this dredge. This combination of two outside bale bars and one center bar creates an unobstructed space for turtles to escape up and over the dredge; it maximizes escapement upward without compromising the structural integrity of the dredge design.

The requirement that strut spacing not exceed 12 inches has been directly tested in the field, and it has been found that 12 inch spacing is a good compromise that prevents turtles from entering the dredge and does not compromise the integrity of the dredge design.

Lastly, the requirement of a frame extension or "bump out" that must be at least 12 inches is an element that was designed to address a potential hang up point for turtles. By bumping out the dredge frame, a greater area is created for turtles to escape up and over a dredge and not get hung up in the corners of the dredge. This element was also tested directly in the field and showed improved escapement without compromising the integrity of the dredge.

The combination of these elements is designed to reduce the likelihood of a turtle passing under the frame when the dredge fishes on the seafloor and getting injured/crushed. It is possible that these elements could be modified by future actions if additional components or modifications are developed to further minimize impacts on turtles.

2.1.2.1 TDD spatial boundary options

2.1.2.1.1 Option 1 - Turtle deflector dredge required in all waters west of 71° W (Preferred Alternative)

This area was developed by the PDT to include the majority of overlap of the scallop fishery and expected turtle interactions in the Mid-Atlantic. This area is primarily based on the distribution of the scallop stock found in the Mid-Atlantic, as well as results from Murray, 2011. This area does not include Georges Bank where scallop dredge interactions with turtles are very rare.

Several figures are included to display these boundaries relative to locations of observed turtle takes and scallop fishing effort. The scallop fishing effort data is VTR reports from fishing year 2010 only. The dataset of turtle takes is from the Northeast Fisheries Observer Program database of all gear types over the entire time series, 1989 -May 2011, removing gear codes with 3 or fewer turtle takes to safeguard against any confidentiality issues. Using this dataset there have been a total of 942 observed takes over this time period for all gear types and turtle species. The scallop fishery makes up 109 of the total 924 takes, 94 on scallop dredge vessels and 15 with scallop trawl gear. The majority of takes for the scallop fishery have been loggerheads, but other turtle species have been observed with scallop gear as well.

Figure 4 depicts the two boundary alternatives under consideration as well as the location of all observed turtle takes by all gear types. The takes observed in the scallop dredge fishery are denoted with black triangles, and primarily occurred between 40-80 meters off the coast from New Jersey to Virginia. It should be noted that pelagic drift gillnets are no longer used in this region, the takes along the southern flank of Georges Bank (purple dots).
Figure 5 shows where scallop fishing occurred in 2010 by limited access vessels (black) and general category vessels (gray) based on VTR data.

2.1.2.1.2 Option 2 - Turtle deflector dredge required in "RPM" area only

If this alternative is selected vessels would be required to use the turtle deflector dredge in the same area specified in the 2008 biological opinion. All waters south of the northern boundaries of statistical areas 612, 613, 533, 534, 541, 542, and 543. This area was identified in the 2008 biological opinion primarily as the greatest area of overlap in the distribution of scallop fishing gear and sea turtles.

Figure 4 depicts the two boundary alternatives under consideration as well as the location of all observed turtle takes by all gear types. The takes observed in the scallop dredge fishery are denoted with black triangles, and primarily occurred between 40-80 meters off the coast from New Jersey to Virginia. It should be noted that pelagic drift gillnets are no longer used in this region, the takes along the southern flank of Georges Bank (purple dots).
Figure 5 shows where scallop fishing occurred in 2010 by limited access vessels (black) and general category vessels (gray) based on VTR data.

Overall the two boundary options are relatively similar in terms of the spatial area and location of observed takes they include, except for waters due south of Rhode Island in statistical areas 539 and the western third of area 537. Option 1 (71º W) does include that area, while Option 2 would not require the TDD in that area east of 72º W.

Figure 4 – Two boundary options under consideration for the turtle deflector dredge overlaid with observed takes of turtles from 1989 to May 2011by gear type (scallop dredge gear = black triangles and scallop trawl gear = green triangles)

Option 1 - waters west of 71ºW (purple line) and Option 2 - Mid-Atlantic waters as defined in the biological opinion (red line). Note that pelagic drift gillnet gear is no longer in use in this region (purple circles)

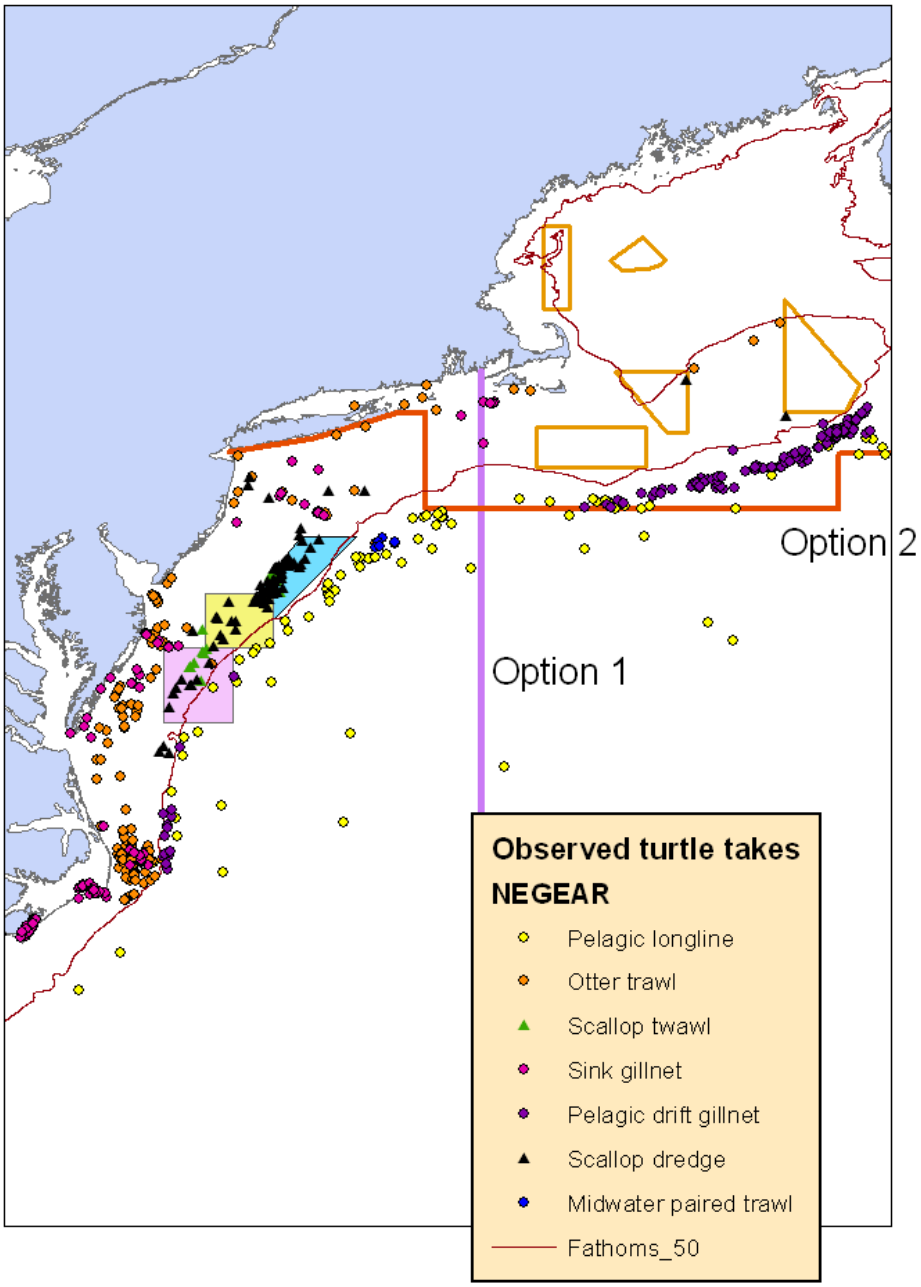
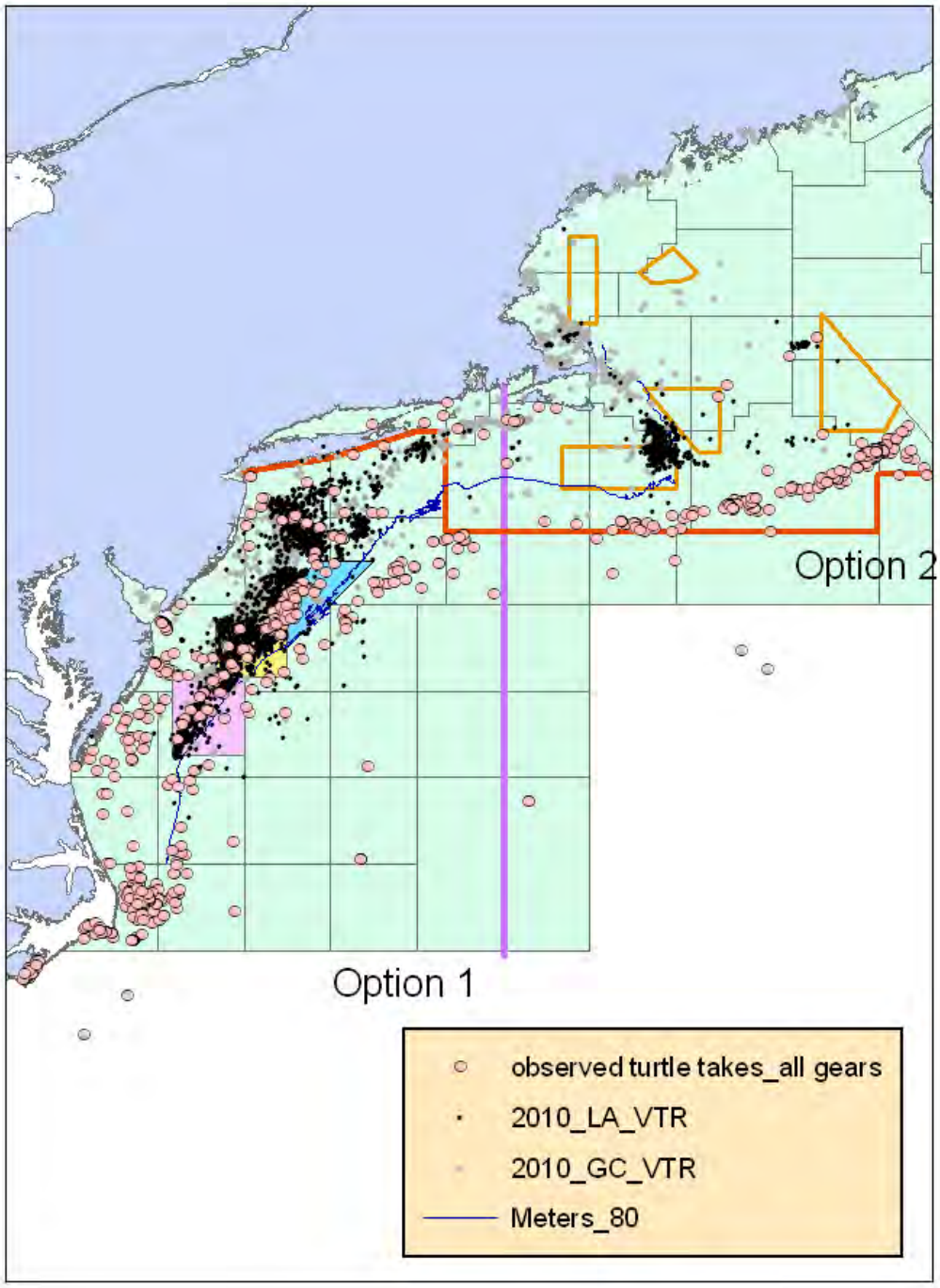


Figure 5 – Two TDD area boundary options with location of all observed turtle takes from all gears (pink circles) and location of scallop effort [VTR data for LA (in black) and LAGC (in grey) fleets]



2.1.2.2 TDD seasonal options

The PDT considered a variety of sources considered to be the most comprehensive and relevant for this region when developing a range of season alternatives. Satellite data for live turtles offshore, strandings data of dead turtles along the coast, and projections of when and where turtle bycatch will occur by federal fisheries were all used to help identify which months there is more potential for overlap of sea turtle distribution and scallop dredge fishing. Section 0 of this action includes a summary of these sources related to turtle distribution in the Northwest Atlantic. Overall, the data suggest that turtles are most likely to be present in areas that overlap with the scallop fishery in the Mid-Atlantic between May and October. There is more uncertainty in the data available relative to the month of November, but some sources suggest there would be some level of overlap during that month as well, in particular Morreale, 1999 and Braun-McNeill et al., 2008.

Based on these findings, the PDT recommended that the Committee consider three seasons for the TDD alternative.

2.1.2.2.1 Option 1 - June 1 – October 31

Similar to the months used for the effort limitation reasonable and prudent measure (RPM) adopted in Framework 22 (June 15-Oct 31), but extended to be more conservative and include all of June when turtles are known to be present in the Mid-Atlantic.

2.1.2.2.2 Option 2 - May 1 – October 31 (Preferred Alternative)

This option includes the months when all observed takes have occurred in the scallop dredge fishery (June-October) but also includes May because turtles are expected to be in that area based primarily on satellite, stranding, and projected turtle bycatch data for the scallop fishery (See Section 0). Specifically, several sources of satellite data recorded turtles in offshore waters that overlap with the scallop fishery, sea surface temperature (SST) and turtle distribution information indicate that waters are warm enough to support sea turtles in May, and there have been observed turtle takes in both the bottom trawl and sink gillnet fisheries in May. Therefore, it is likely that turtles are in the general area that overlaps with the scallop fishery in May as well.

2.1.2.2.3 Option 3 - May 1 – November 30

This option includes the months when all observed takes have occurred in the scallop dredge fishery (June-October) but also includes May and November to be even more precautionary for turtles, given sightings, modeling information, SST analyses which predict occurrence, and trawl and sink gillnet fishery observer data indicating overlap in the southern Mid-Atlantic in May and November (See Section 0). The degree of overlap may depend on the timing of turtles' seasonal migrations, which can vary year to year depending on environmental parameters; therefore this season is extended to compensate for that variation. Finally, the May-November season is the same one currently used for the turtle chain requirement, so there may be some benefit to have all turtle restrictions use the same season to reduce complexity of the regulations.

2.1.2.3 Vessel options for TDD

2.1.2.3.1 Option 1 - Limited access vessels only

If this alternative is selected the turtle gear restriction will only apply to limited access vessels – all full-time, part-time and occasional vessels.

If a limited access vessel fishes with a dredge less than ten feet six inches it would only be required to comply with the first four elements of the TDD; not the fifth element related to a "bump out" (Section 2.1.2). Dredges less than ten feet six inches would be exempt from the bump out provision because the bump out is not feasible with smaller dredges, and that modification has not been tested on smaller dredges.

2.1.2.3.2 Option 2 - All vessels (limited access and LAGC IFQ vessels)

If this alternative is selected the turtle gear restriction will apply to both limited access vessels (full-time, part-time and occasional vessels) as well as limited access general category IFQ vessels. Vessels with a limited access NGOM and limited access incidental scallop catch permit would not be subject to this gear restriction; NGOM vessels are not allowed to fish in either of the areas under consideration and vessels with incidental catch permits do not generally fish with scallop dredges.

If a limited access or LAGC IFQ vessel fishes with a dredge less than ten feet six inches it would only be required to comply with the first four elements of the TDD; not the fifth element related to a "bump out" (Section 2.1.2). Dredges less than ten feet six inches would be exempt from the bump out provision because the bump out is not feasible with smaller dredges, and that modification has not been tested on smaller dredges.

2.1.2.3.3 Option 3 - All limited access scallop vessels (All permit categories, regardless of dredge size) and all limited access general category IFQ vessels that use a dredge greater than or equal to ten feet six inches (Preferred Alternative)

If this alternative is selected all limited access vessels (all permit categories), and all limited access general category IFQ vessels that fish with dredge gear greater than or equal to10 feet six inches (10.5 feet) in the area and season identified above would be required to use a turtle deflector dredge. The only vessels that would be exempt from the TDD requirement would be LAGC IFQ vessels that use a dredge less than ten feet six inches. Table 2 summarizes the number of active LAGC and LA vessels by dredge width. Out of the 179 active LAGC vessels, 85 (47% of active vessels) would be required to use a TDD under this alternative, and the rest (94 vessels) would be exempt. All LA vessels would be required to use the TDD regardless of dredge width.

If a limited access vessel fishes with a dredge less than ten feet six inches it would only be required to comply with the first four elements of the TDD; not the fifth element related to a "bump out" (Section 2.1.2). Dredges less than ten feet six inches would be exempt from the bump out provision because the bump out is not feasible with smaller dredges, and that modification has not been tested on smaller dredges.

Table 2 - Number of active vessels by permit category and dredge length (2010 Fishing year)

Plan	Category	NA	Less than 8ft	8ft to 10.49ft	10.5ft or greater	Grand Total
LGC	IFQ	48	8	38	85	179
	% of total	27%	3%	19%	51%	100%
Limited Access	FT		3	3	244	250
	FTSD	4		9	39	52
	PT				2	2
	PTSD	1		9	22	32
	All	5	3	22	306	336
	% of Total	1%	1%	7%	91%	100%
Grand total		53	11	60	391	515
% of grand total		10%	2%	12%	76%	100%

2.1.2.4 Implementation options for TDD

2.1.2.4.1 Option 1 - Effective 90-180 days after Framework 23 is implemented

If this option is selected, vessels would be required to use a TDD 90-180 days after FW23 is implemented. The Council will determine the precise length of time, between 90-180 days, the delay of effectiveness would be for this gear requirement at the final meeting.

This option was developed to recognize that it may be advantageous to have this gear requirement in place as soon as possible if NMFS reinitiates the biological opinion of this fishery related to impacts on sea turtles. The status of this gear could influence the ultimate estimate of mortality from takes in this fishery, which is related to the reasonable and prudent measures developed.

2.1.2.4.2 Option 2 – Effective one year after Framework 23 is implemented (scheduled to be March 1, 2013) (Preferred Alternative)

The PDT recommends this option be added to the document so that there is a timing alternative that is between the two currently under consideration: 90-180 days and 2 years. It was discussed that 90-180 days is likely too short; 90 days (about June 1 assuming FW23 effective on March 1, 2012) is not feasible since so many dredges need to be built, and 180 days (September 1) does not benefit turtles much for that fishing year since the majority of the turtle season has already passed.

It was clarified at the July PDT meeting that if a biological opinion is reinitiated and the TDD is proposed, but not effective yet, it can be factored in the opinion and updated mortality estimate. The Agency can consider a future action if it is proposed, but the reduced impact of that gear cannot be assumed until it is effective. Therefore, it may be advantageous to have a gear modification effective sooner so the conservation benefit of that modification can be accounted for as soon as possible.

Therefore, the PDT suggested adding an alternative of a 1-year delay for effectiveness, about March 1, 2013 to give ample time to build the dredges and give vessels time over the winter to fish with the new dredge before the turtle season begins.

2.1.2.4.3 Option 3 - Effective two years after Framework 23 is implemented (scheduled to be March 1, 2014)

If this option is selected, vessels would be required to use a TDD two years after FW23 is implemented. Currently Framework 23 is expected to be implemented by March 1, 2012, so if that is the case this requirement would be effective March 1, 2014.

2.1.3 Background about how the turtle deflector dredge alternatives impact existing reasonable and prudent measures (RPMs)

The current RPM #1, see italics below, will still be required until it is eliminated, or replaced by a new Section 7 consultation completed on the scallop fishery. If this dredge is required through Council action it would change the estimate of take in terms of severity and impact on turtles, but the number of takes are expected to remain the same. Requiring this dredge would not automatically trigger a new consultation. NMFS has voiced that it will likely reinitiate Section 7 consultation as a result of other issues. It is not clear at this point if RPM#1 would change, how long the consultation process would take, and how the timing would impact FW23.

Therefore, it is possible that RPM#1 will still be required in the near future even if this is adopted. Note that adopting a turtle deflector dredge likely complies with RPM #2, see italics below. In order to be exempt from the prohibitions of section 9 of the ESA, and regulations issued pursuant to section 4(d), NMFS must comply with the terms and conditions, which implement the reasonable and prudent measures described below. These terms and conditions are non-discretionary.

RPM #1: NMFS must limit the amount of allocated scallop fishing effort by "Limited access scallop vessels" as such vessels are defined in the regulations (50 CFR 648.2), that can be used in the area and during the time of year when sea turtle distribution overlaps with scallop fishing activity (amended February 5, 2009).

> *Term and Condition for RPM #1: To comply with 1 above, no later than the 2010 scallop fishing year, NMFS must limit the amount of allocated limited access scallop fishing effort that can be used in waters south of the northern boundaries of statistical areas 612, 613, 533, 534, 541-543 during the periods in which turtle takes have occurred. Restrictions on fishing effort described above shall be limited to a level that will not result in more than a minor impact on the fishery. (amended February 5, 2009)*

RPM #2: NMFS must continue to investigate and implement, as appropriate, gear modifications for scallop dredge and trawl gear to reduce the capture of sea turtles and/or the severity of the interactions that occur.

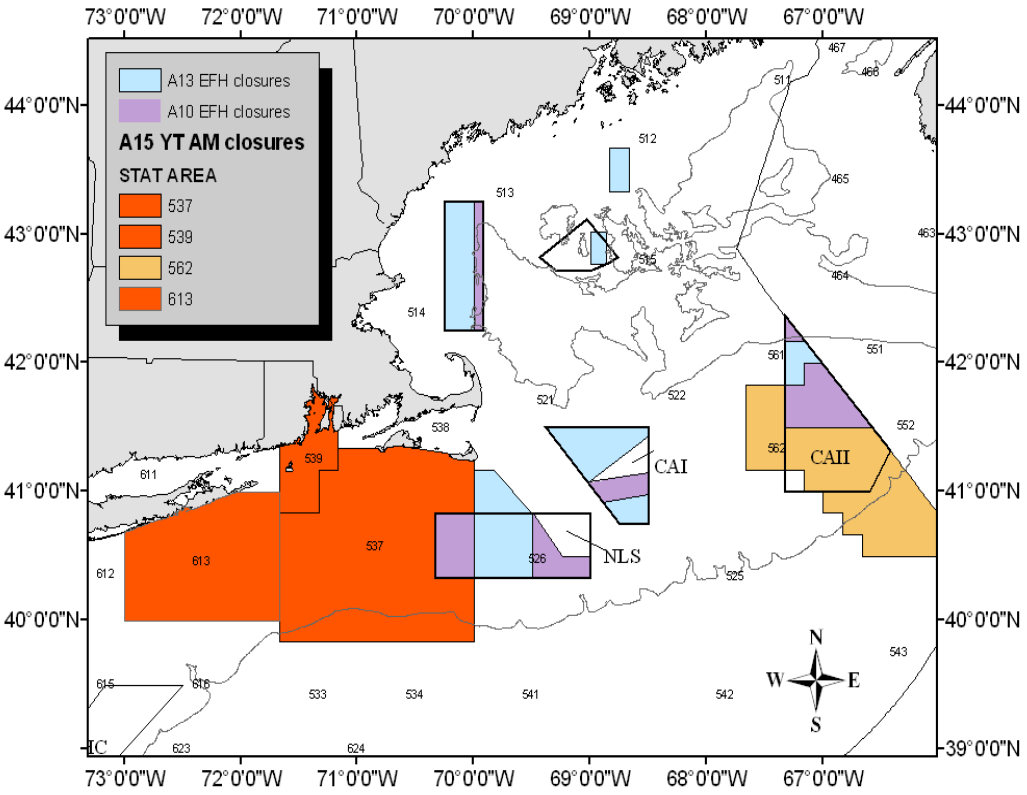
> *Term and Condition for RPM#2: To comply with 2 above, NMFS must continue to investigate modifications of scallop trawl and dredge gear. Within a reasonable amount of time following completion of an experimental gear trial from or by any source, NMFS must review all data collected from the experimental gear trials, determine the next appropriate course of action (e.g., expanded gear testing, further gear modification, rulemaking to require the gear modification),*

and initiate action based on the determination. The goal of this RPM is ultimately to require modification of fishing gear used in the scallop fishery operating under the Atlantic Sea Scallop FMP within a reasonable timeframe following sound research that demonstrates that the gear modification is reasonable and feasible and will help to minimize the number and/or severity of sea turtle interactions with scallop fishing gear.

2.2 REVIEW AND REVISE ACCOUNTABILITY MEASURES FOR THE YELLOWTAIL FLOUNDER SUB-ACL

The Council recently approved Amendment 15, which included an AM for the YT sub-ACLs (GB and SNE/MA stocks) for the scallop fishery. If a sub-ACL is exceeded, starting March 1 the following fishing year a pre-identified area (Figure 6) would close to all limited access scallop vessels for a specified period of time. Because the area for the Southern New England/Mid-Atlantic spans a large amount of the LAGC fishing grounds in that area and bycatch by the fleet is relatively low since the fleet is only allocated 5.5% of the projected scallop catch, the Council decided that the LAGC should be exempt from this AM in areas where they are allowed to fish under NE Multispecies FMP exempted fisheries.

Figure 6- Map showing statistical areas subject to closure under Option A of this alternative *(Orange is SNE/MA stock area, and yellow is GB, Note that GB AM area includes the access area in CA2).*



While the amendment considered several AM alternatives over the last few years, much of the details of the preferred alternative were developed later in the Amendment 15 process. Therefore, it has been discussed that the effectiveness could be improved with additional work. The specific areas identified that could be refined in this action are related to: 1) modifying the YT seasonal closure AM schedule to better reflect bycatch rates, and 2) address YT bycatch by the LAGC fishery in a more direct way. At the final Council meeting the Council decided to move the second issue to the Considered and Rejected section of Framework 23 based on new information about YT bycatch in the LAGC dredge and trawl fisheries (Section 3.3).

The Council also added a new measure that would improve the flexibility and effectiveness of YT AMs by authorizing the Regional Administrator to revise decisions regarding implementation of approved AMs based on final estimates of bycatch, if they differ from preliminary estimates. Finally, the Council wants to document the number of "proactive" AMs that have been in place in this FMP that help reduce YT bycatch in the scallop fishery.

2.2.1 Refine YT AM seasonal closure schedule

2.2.1.1 No Action

If this alternative is selected there will be no changes to the yellowtail flounder accountability measures adopted under Amendment 15. The final rule for Amendment 15 was recently published and Section 3.2.3.11.2 of the Council's Amendment 15 document describes the accountability measures for the limited access scallop fishery if the sub-ACL of YT is exceeded. These measures were effective on July 21, 2011 and the first fishing year they could be adopted if triggered would be in FY2012.

2.2.1.2 Refine YT AM seasonal closure schedule (Preferred Alternative)

The PDT re-evaluated all observer data from scallop trips from 2003 to 2010 and determined that there are more opportune times that AMs could be effective rather than starting on March 1 and being closed consecutively by month. In order to determine this, a general linear model (GLM) was developed to evaluate if there are year and month effects that are influencing the bycatch rates. An assumption needs to be made about where effort is going to go if the area is closed. This model assumes that any YT that would have been caught that month is not caught at all, so all of these results are a maximum savings. In addition, there are some holes in observer data from periods of time when the industry funded observer program was interrupted, and for other reasons. The PDT also completed a "missing cells analyses" to address the fact that there are some periods of time with little or no observer data.

- ***Southern New England / Mid-Atlantic YT AM***

Table 3 compares the current AM schedule for SNE/MA with the proposed AM schedule; the major difference is that the proposed closure is primarily in the early spring and winter first, rather than starting with the spring and summer under the current AM. AMs would occur in the same fishing year, with the winter closures occurring at the end of the fishing year.

Table 3 – Comparison of current SNE/MA AM schedule under Amendment 15 and proposed schedule under Framework 23

A15 - CURRENT AM SCHEDULE			FW23 - PROPOSED	
Overage	LA Closure		Overage	LA Closure
1-2%	March		2% or less	Mar-Apr
3-5%	Mar-Apr		2.1-3%	Mar-Apr, Feb
6-8%	Mar-May		3.1-7%	Mar-May, Feb
9-12%	Mar-June		7.1-9%	Mar-May, Jan, Feb
13-14%	Mar-July		9.1-12%	Mar-May, Dec-Feb
15%	Mar-Aug		12.1-15%	Mar-June, Dec-Feb
16%	Mar-Sept		15.1-16%	Mar-June, Nov-Feb
17%	Mar-Oct		16.1-18%	Mar-July, Nov-Feb
18%	Mar-Nov		18.1-19%	Mar-Aug, Oct-Feb
19%	Mar-Jan		19.1% or more	All year, Mar-Feb
20% and higher	Mar-Feb			

- ***Georges Bank YT AM (when CAII open or closed)***

For GB the AM schedule is still complex because it varies depending on whether Closed Area II is open or not as an access area the year following an overage. Table 4 compares the current and proposed AM schedule for GB when Closed Area II is OPEN, and Table 5 compares the AM schedule for GB when Closed Area II is CLOSED. In general, the major difference is that the AM closures begin in the fall followed by the winter months, when YT bycatch rates are highest. This is also the time of year when scallop meat weights are lowest, so impacts on the scallop resource and fishery should be lower compared to closing the area beginning in March through the spring and summer when scallop meat weights are larger.

It should be noted that even with these schedule revisions, the total YT bycatch "saved" by closing the areas during months with higher bycatch rates is still limited to a maximum value based on the estimated bycatch from that area. For example, even if the GB AM area is closed all year during a year when there is an access area trip in CA2, the maximum YT "savings" would be 56%; 6% if CA2 is closed, and 19% if the SNE/MA AM area was closed all year. So if the scallop fishery exceeds an AM more than those amounts the AM is not expected to reduce YT catch the following year by more than those percentages.

Table 4 - Comparison of current GB AM schedule under Amendment 15 and proposed schedule under Framework 23 for years when Closed Area II is OPEN

A15 - CURRENT AM SCHEDULE			FW23 - PROPOSED	
Overage	LA Closure		Overage	LA Closure
1%	Mar-May		3% or less	Oct-Nov
2-24%	Mar-June		3.1-14%	Sept-Nov
25-38%	Mar-July		14.1-16%	Sept-Jan
39-57%	Mar-Aug		16.1-39%	Aug-Jan
58-63%	Mar-Sept		39.1-56%	Jul-Jan
64-65%	Mar-Oct		Greater than 56%	All year, Mar-Feb
66-68%	Mar-Nov			
69%	Mar-Dec			
70% and higher	All year			

Table 5 - Comparison of current GB AM schedule under Amendment 15 and proposed schedule under Framework 23 for years when Closed Area II is CLOSED

A15 - CURRENT AM SCHEDULE			FW23 - PROPOSED	
Overage	LA Closure		Overage	LA Closure
1%	Mar-May		1.9% or less	Sept-Nov
2%	Mar-June		2.0 - 2.9%	Aug-Jan
3%	Mar-July		3.0 – 3.9%	Mar, Aug-Feb
4-5%	Mar-Aug		4.0 – 4.9%	Mar, Jul-Feb
6% and higher	All year		5.0 – 5.9%	Mar-May, Jul-Feb
			6% or greater	All year

2.2.2 Mechanism to adjust accountability measures for bycatch sub-ACLs in the scallop fishery

2.2.2.1 No Action (Option 1)

Currently the only bycatch sub-ACLs allocated to the scallop fishery are for SNE/MA YT and GB YT. On or before January 15 of each year, the Regional Administrator will determine if the bycatch sub-ACL is projected to be exceeded for that fishing year. For example, the projection of 2012 YT catch in the scallop fishery will be available by January 15, 2013 using all available data from that fishing year to date (i.e. March 1, 2012 through December 2012). Projections will need to be made for the remaining months of the fishing year using data from the previous year; for example, January and February values for 2013 will be projected using data from January and February 2012 in order to calculate a total estimate of YT catch for the 2012 fishing year. This projection will be used to determine whether or not accountability measures are triggered, and the overage amount will determine the length of an area closure. This will go into effect on March 1 the next fishing year, about 1.5 months after the projection is made, and will not change based on final results after the fishgin year is complete.

2.2.2.2 Implement a mechanism to adjust accountability measures for bycatch sub-ACLs in the scallop fishery (Option 2) (Preferred Alternative)

Several months after the fishing year is complete a final estimate of YT bycatch in the scallop fishery will be completed when all observer and scallop catch data are available. The timing of the final YT year-end estimate is ultimately based on the availability of the observer data, particularly that of open areas, for the previous FY. For example, this year the January and February 2011 data were not available until September 2011 and the final estimate was provided shortly thereafter. Ideally, observer data in open areas will be available 90 days after the completion of an observed trip. As such, the earliest month that a full FY's observer data would be available would be June, roughly 3 months after the last observed trip during the previous FY. If the final estimate of YT catch for Year 1, available several months after the start of the fishing year in Year 2, differs from the original estimate provided in January, this alternative would give the Regional Administrator authority to revise decisions regarding implementation of an approved accountability measure for bycatch ACLs based on the final estimate of catch.

The YT AMs in place are seasonal closures that remain closed for a specified length of time based on the overage of the YT sub-ACL. This complicates the utility of this measure since some of the AM closure schedules begin during the first few months of the fishing year and may have passed before final estimates of YT catch are available. For example, if the preliminary estimate of 2012 SNE/MA YT catch in January 2013 is estimated to be 5% over the sub-ACL, AMs will trigger and the limited access fishery will be prohibited from fishing in statistical areas 539, 537 and 613 for the months of March 2013, April 2013, May 2013 and February 2014, based on the preferred schedule in this action (Table 3). If the final estimate of SNE/MA YT catch concludes that the scallop fishery caught only 2% over the sub-ACL (requiring a 2 month closure in March and April), then this measure would allow flexibility to adjust the AM closure to reflect new information. For example, perhaps the areas would open for the last month of the AM closure, February 2013, since the overage was less than the original projection. In this example the area would have already been closed during the month of May, one month longer than would have been required for a 2% overage, but the final estimate was not available sooner.

If the final estimate is higher than the original projection, this alternative would also give the Regional Administrator the authority to close the area for longer than the original schedule based on a preliminary estimate of catch that was actually lower than the final estimate.

This alternative does not give the Regional Administrator authority to impose accountability measures outside the scope of approved measures. For example, gear modifications or DAS reductions etc., are not part of the current accountability measures for the YT sub-ACL. Finally, due to the timing of the current AMs there may not always be an opportunity to adjust AMs if the seasonal closure has already occurred during that fishing year.

2.2.3 Description of proactive AMs already in place in Scallop FMP

There are currently several measures in the Scallop and Northeast Multispecies Fishery Management Plans that were designed to reduce finfish bycatch, specifically yellowtail flounder in the scallop fishery. These measures can be considered "proactive" AMs, even though they were implemented well before AMs were required under the reauthorized MSA (2007). A proactive AM is an in-season measure designed to help ensure that an ACL, or sub-ACL in this case, is not exceeded. A rotational area management plan was implemented to concentrate scallop fishing effort in areas of high catch-per-unit-effort, effectively reducing the area swept of the fishery on an annual basis (Amendment 10 - NEFMC, 2004). Effort reductions to manage scallops and yellowtail flounder have reduced the number of days at sea to approximately 50-55 days per year (Framework 21 - NEFMC, 2010). The rotational access area boundaries of Closed Areas I, II and the Nantucket Lightship were defined based on scallop biomass and productivity as well as overlap with historic finfish distributions and essential fish habitat (Framework 16/39 - NEFMC, 2004). The specific access areas were chosen to minimize groundfish bycatch and mortality, and protect essential fish habitat for juvenile finfish without significantly affecting access to the scallop resource.

The access areas on Georges Bank open on June 15th to minimize groundfish bycatch during peak spawning times in the spring. Only scallop dredge gear is allowed in these areas in order to minimize groundfish bycatch, specifically due to the potential of reaching the yellowtail flounder TAC before the scallop target with the use of trawl gear (Framework 16/39 - NEFMC, 2004). Scallop dredges are required to use 4" rings in the dredge bag, which has reduced the bycatch of juvenile finfish (Amendment 10 - NEFMC, 2004). This gear does not fully select for yellowtail flounder <35 cm (Legault et al., 2010 - TRAC, 2010 DRAFT). Dredges must use 10" mesh twine top to reduce finfish bycatch, specifically flatfish like yellowtail flounder (Framework 11/29 - NEFMC, 1999 for GB access area and all areas in Amendment 10 – NEFMC, 2004). The scallop fishery is limited to 10% of the yellowtail flounder ACL in the Georges Bank access areas (Framework 16/39 - NEFMC, 2004). In-season closures of scallop rotational areas occur when the projected estimate of yellowtail flounder allocation is reached. These measures have been implemented separately since 1998; however all have been in place in combination since 2004. In combination, all of these measures have reduced bycatch in the scallop fishery, in particular YT bycatch in access areas on GB.

In addition, voluntary bycatch reduction measures have been employed by the scallop fleet for several years. Voluntary gear modifications and altered fishing behavior, including a reduction

in the hanging ratio to 2:1, reduction of number of rings between the club stick and twine top, shorter tow distance/duration and hanging the dredge at the side of the vessel before haul back to allow yellowtail escapement, have greatly reduced the amount of yellowtail bycatch in the scallop fishery. In 2010, a bycatch avoidance program was started in the Nantucket Lightship access area. The SMAST Yellowtail Flounder Bycatch Avoidance System is a voluntary program to exchange real-time, spatially-specific information on yellowtail flounder bycatch in the scallop rotational areas of Georges Bank. The system uses fishery-dependent data to provide advice on bycatch hotspots. The system was implemented in 2010 with 35% of limited access scallop vessels participating. Thirty-five percent of the limited access scallop vessels participated in the program in 2010, and the Nantucket Lightship access area fishery harvested the full target of scallops while catching less than 32% of the yellowtail TAC, based on final estimates of YT bycatch (NMFS NERO website http://www.nero.noaa.gov/ro/fso/Reports/ScallopProgram/YT_bycatch_20110303.pdf).

The program will be used in 2011 in Closed Areas I and II as well. The hope is that the more vessels that participate and voluntarily choose to fish in areas with lower YT bycatch rates based on real-time data, this voluntary proactive AM will help prevent the GB YT sub-ACL from being exceeded overall.

Extensive research has been conducted on reducing bycatch in the scallop fishery. The Scallop Research Set-Aside Program has consistently funded cooperative research to examine gear modifications and fishing behaviors that reduce bycatch of yellowtail flounder, and has included "Identification and evaluation of methods to reduce bycatch of all managed species (i.e. gear research)" as a top priority for 2011. An RSA funded survey to examine seasonal yellowtail flounder bycatch rates in Closed Areas I and II is currently underway. Additionally, the scallop fleet funds observer coverage in the closed areas of Georges Bank through the Industry-Funded Observer program, which allows near real-time monitoring of the area-specific yellowtail flounder TACs. All of these required and voluntary measures are considered proactive AMs, which further reduce the chance of a sub-ACL from being exceeded. However, since the current guidance of the AM requirement is that there must be an automatic measure in place that is triggered and implemented as soon as possible to correct for an ACL overage, this FMP must also include "reactive" AMs if a fishery exceeds an ACL or sub-ACL.

2.3 MODIFICATION TO THE NGOM LAGC PROGRAM

In Amendment 11 the Council approved a separate LAGC program for the NGOM (Figure 7). The program was designed to provide continued access for vessels from Northern New England that would likely not qualify for a LAGC IFQ permit because of the sporadic booms and busts of the scallop resource in that area. Therefore, a separate limited entry program was developed for this area with a reduced possession limit (200 pounds) and no landings criteria. In order to satisfy NMFS that this program was going to provide conservation benefit, have minimal administrative burden, and adequate enforceability several provisions were included in this program that have caused concern for permit holders. First, the provision that all catch by NGOM vessels count against the federal TAC even if scallops were caught in NGOM state waters has been viewed as inconsistent since the TAC is supposed to be based on the federal

resource only. Second, once the NGOM TAC is reached all NGOM permitted vessels are prohibited from all scallop fishing, even in state waters. This too has been viewed as inconsistent and unfair for NGOM permitted vessels that also hold state scallop permits.

To date, these issues have not been included for consideration in recent scallop actions primarily because of other demands. The Council decided to include possible modifications to the NGOM program in this action so long as the specific alternatives developed do not trigger an amendment, and are frameworkable changes.

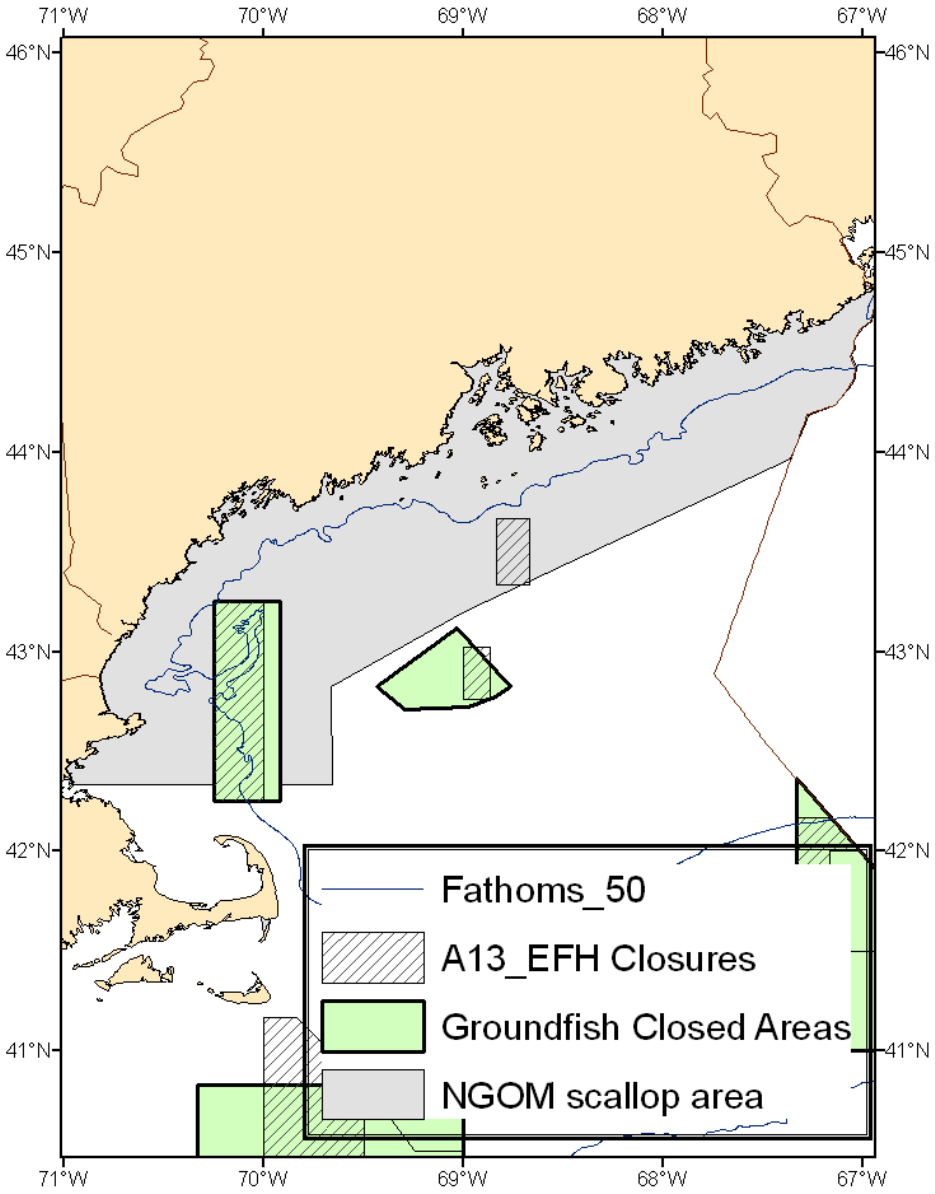
Several specific issues raised during Amendment 15 scoping were:

- Landings from state waters should not count against NGOM TAC so that people can still fish in state waters after the federal TAC has been reached.
- GC scallops caught in the NGOM should not count against IFQ tailored to scallops outside the NGOM.
- All scallop vessels should need to abide by the 200 lb daily limit in the NGOM, instead of allowing the LA vessels 18000 lbs while restricting only those with state permits.

The Council discussed these precise aspects of the program during development of Amendment 11 and decided that in order to ensure that the TAC is not exceeded all landings in the area would have to count against the TAC (including landings on IFQ and from state waters on all federal vessels). Although limited access vessels can fish under a DAS in the NGOM area and not have landings applied to the NGOM TAC, once the NGOM TAC is fully harvested, that area would also be closed to scallop fishing by limited access vessels. Amendment 11 was specific in what catch should be considered in calculating the TAC and what catch should count against the TAC once the fishery begins. Advice at the time was that the actual TAC can be changed by framework, but the foundation of what catch history is used, what catch is applied against the TAC, and what catch is not applied should potentially be considered in an amendment. Therefore, depending on the range of issues considered, some may need to wait for an amendment.

The PDT discussed these issues and recommended that one way to address the issue of catch from state waters counting against the federal TAC, the first bulleted item above, is to allow a vessel with a federal NGOM permit to fish in state waters and not have that catch count toward the Federal NGOM TAC, but restrict that vessel to only fish in state waters for the entire trip. If a vessel wants to fish all or part of a trip in federal waters all scallop catch from those trips will have to count against the Federal NGOM TAC. Under this approach all vessels would still be prohibited from fishing in the NGOM area once the TAC is reached, but NGOM vessels could declare a state water only trip during the year, so the likelihood of the federal TAC being reached is greatly reduced since the majority of scallop catch from NGOM vessels is within state waters. Catch from LAGC IFQ vessels in state waters would still count against the Federal NGOM TAC.

Figure 7 – NGOM management area, implemented under Amendment 11



2.3.1 No Action related to NGOM management program (No Action NGOM)

If this alternative is selected there will be no changes to the NGOM management program. Vessels with Federal NGOM permits will continue to have landings applied to the NGOM TAC, regardless of whether or not they are fishing in the state or Federal portion of that management area.

2.3.2 Require that if a vessel with a federal NGOM wants to fish in state waters and not have that catch apply to the federal NGOM TAC, that vessel is restricted to fish in state waters only for that trip (NGOM Alternative) (Preferred Alternative)

A vessel with a federal NGOM permit will have to declare before it leaves on a trip whether it will be fishing exclusively in state waters or not (this alternative would require a new VMS code be added to indicate a state-only NGOM trip). If the vessel decides to fish exclusively in state waters within the NGOM area (i.e., MA, NH, and ME state waters), on a trip by trip basis, the scallop catch from state water only trips will not be applied against the federal NGOM TAC. On a trip by trip basis, each vessel can decide which area it is going to fish in (i.e., Federal or state NGOM trip). A vessel can still fish in both state and Federal waters on a single trip, but if it does, that vessel needs to declare a Federal trip before leaving, and the entire catch from that trip would be applied to the Federal TAC, even if some of it was harvested in state waters. This alternative does not change the current rule that when the NGOM Federal TAC is reached, no vessels with Federal scallop permits are allowed to fish in any portion of the NGOM.

This alternative includes options as to which vessels could have NGOM state-water landings excluded from the Federal NGOM TAC and options to adjust the Federal TAC to account for a change in how landings from within the NGOM are applied.

Note that Federal NGOM permit holders would still have to abide by the more restrictive possession limit of either their state or Federal NGOM scallop permit. This alternative does not exempt vessels from their Federal possession limit when fishing in state waters of the NGOM. To be exempt from Federal scallop possession limits, a state would have to apply for such exemption through the state waters exemption program.

2.3.2.1 Options for which vessels

The impacts of this measure could impact state fisheries differently so the Committee decided to develop several alternatives in terms of which states this change would apply to. Table 6 summarizes the number of NGOM permits, as well as the number of active NGOM permits per year. The number of active vessels in this permit category is very low, about 15-20% in the last two years. Table 7 summarizes the NGOM permits by primary port state. About half of the NGOM permits are issues to vessels with primary ports in Massachusetts (just over 60 permits), followed by over 30 vessels from Maine. New Hampshire has about a dozen vessels with NGOM permits, and RI, NJ, NY and NC have less than a handful each.

Table 6 - Number of NGOM permits and active permits in 2008-2010

AP_YEAR	Limited access NGOM permit (B)	Number of Active NGOM permits
2008	99	4
2009	127	19
2010	122	22

Table 7 – Number of NGOM permits by primary port state

Plan	Primary Port State	2009	2010
LGC - NGOM			
	MA	66	63
	ME	33	32
	NC	3	4
	NH	11	12
	NJ/NY	6	6
	RI	6	4
	Other	2	1
LGC Total		127	122

2.3.2.1.1 Option 1 - This exemption would only be for vessels with a federal NGOM permit that are homeported in Maine

Based on the permit data, there are about 30 vessels with a Federal NGOM permit with a homeport in the state of Maine. If this alternative is selected these vessels would be permitted to fish in state waters within the NGOM area, provided that state allows it and the vessel/operator has necessary permits to do so. Catch from those trips would not count against the NGOM hard TAC. Table 7 summarizes the vessels by homeport state that have a Federal NGOM permit.

2.3.2.1.2 Option 2 - This exemption would be for all vessels with a federal NGOM permit, regardless of homeport state (Preferred Alternative)

Based on the permit data in 2010, there are less than a dozen different states that have vessels with NGOM permits. If this alternative is selected these vessels would be permitted to fish in state waters within the NGOM area, provided that state allows it and the vessel/operator has necessary permits to do so. Catch from those trips would not count against the NGOM hard TAC. Table 7 summarizes the vessels by homeport state that have a Federal NGOM permit.

2.3.2.2 Options to adjust the 2012 and default 2013 NGOM hard-TAC implemented under Framework 22

If the NGOM Alternative is selected, the Council may want to adjust the 2012 (and default allocation for 2013) federal NGOM hard-TAC set in Framework 22. FW22 set the TAC at 70,000 pounds for FY2012. That allocation will rollover for 2013 unless modified by a future scallop action scheduled to set fishery specifications for FY2013 and 2014, Framework 24. The TAC set in Framework 22 includes an estimate of 31,000 pounds from the federal resource, and an additional 39,000 pounds to recognize that a substantial portion of catch in the NGOM comes from state waters. If the alternative above is selected that would allow a vessel with a federal NGOM permit to declare that it is fishing exclusively in state waters, and that catch will no longer be applied against the federal TAC. Therefore, the Council may want to consider whether the federal TAC should be adjusted downward to prevent excess fishing in the NGOM if that alternative is chosen.

2.3.2.2.1 Option 1 - No Action (70,000 pounds) (Preferred Alternative)

The federal NGOM hard TAC will remain at 70,000 pounds regardless of whether the NGOM Alternative (2.3.2) is adopted. It was raised during discussion of this alternative that if catch

from LAGC IFQ vessels fishing in the NGOM area, including within state waters, still counts against the federal NGOM TAC, then the TAC should remain higher to provide more access to the resource to all federal scallop permit holders. Since this alternative would only allow state water catch from NGOM vessels not to count against the federal NGOM TAC if fishing in state waters, concerns were raised that if inshore resources rebound due to strict state water management programs, the federal TAC should remain higher so that it does not close and prevent fishing in the NGOM due to state water catches. Therefore, this alternative keeps the federal TAC at 70,000 pounds to address the fact that any potential catch from LAGC IFQ vessels in state waters will still be applied against the federal NGOM TAC.

2.3.2.2.2 Option 2 - Reduce the federal NGOM hard TAC to 31,000 pounds, as analyzed in Framework 22, if NGOM Alternative (2.3.2) is selected

Since catch from vessels with a federal NGOM permit that declare they are fishing exclusively in state waters per trip will not be applied against the federal TAC in this area, the federal TAC would be reduced to equal 31,000 pounds. That is the value recommended by the PDT during Framework 22 that is equal to the estimate of exploitable biomass in federal waters in the NGOM from a 2009 survey, using the lower 25the percentile at a 0.25 exploitation rate and 0.5 dredge efficiency. Section 2.6.2.3.1 of Framework 22 summarizes the updated survey information that supports setting the TAC at 31,000 pounds.

2.4 MODIFICATION TO VESSEL MONITORING SYSTEM

The Council added an issue to consider in this action related to modifying the current VMS regulations to improve scallop fleet operations. This issue is related to how DAS are charged and how a vessel declares into a fishery, and not related to the cost of VMS units and polling frequency. Polling frequency and costs associated with VMS were considered in a previous action, Framework 22, and the Council decided not to change those provisions.

Initially it was not clear exactly what issue was being raised related to VMS. It was later clarified that a handful of vessels homeported on the margins of the primary fishing grounds (i.e. Virginia and North Carolina) raised issue with not being able to declare both in and out of the fishery for their long steam to and from the fishing grounds. It was explained that a vessel used to be able to start a trip at the demarcation line rather than from port. There are a handful of locations along the coast that have been identified where a vessel can declare into the fishery that are not a fishing port, such as a lighthouse or breakwater. For example, the buoy in the center of Delaware Bay is an approved point, not port, vessels can make declarations. These non-port declaration points have addressed this issue to some degree, but not in all cases.

The Scallop advisors discussed this issue as well and recommended that this action include alternatives to address the steam time to fishing grounds, but not the return because it raises too many issues related to enforcement and impacting how DAS are determined since some of that steam time vessels are actually cutting scallops, which is still considered “fishing”. Instead, the advisors recommended that vessels be allowed to declare into the limited access scallop fishery west of the demarcation line not necessarily from a port, but vessels still be declared in the scallop fishery until they reach a port to maintain adequate enforcement when scallop are onboard.

The Enforcement Committee reviewed this alternative at a meeting on June 15, 2011 and supported consideration of this alternative if it is expected to improve fleet operations and safety. **The committee and advisors approved a motion, 8-0-0, to allow limited access and limited access general category (LAGC) scallop vessels to declare trips inside the demarcation line.**

In addition, the Scallop PDT discussed this idea in terms of the potential increase in effort. It was confirmed that the current estimate of landings per unit of effort (LPUE) is already calculated based on DAS charged, which is the time a vessel crosses the VMS demarcation line to and from the fishing grounds. Therefore, this will not change how LPUE is estimated; thus increases in catch are not expected from this alternative.

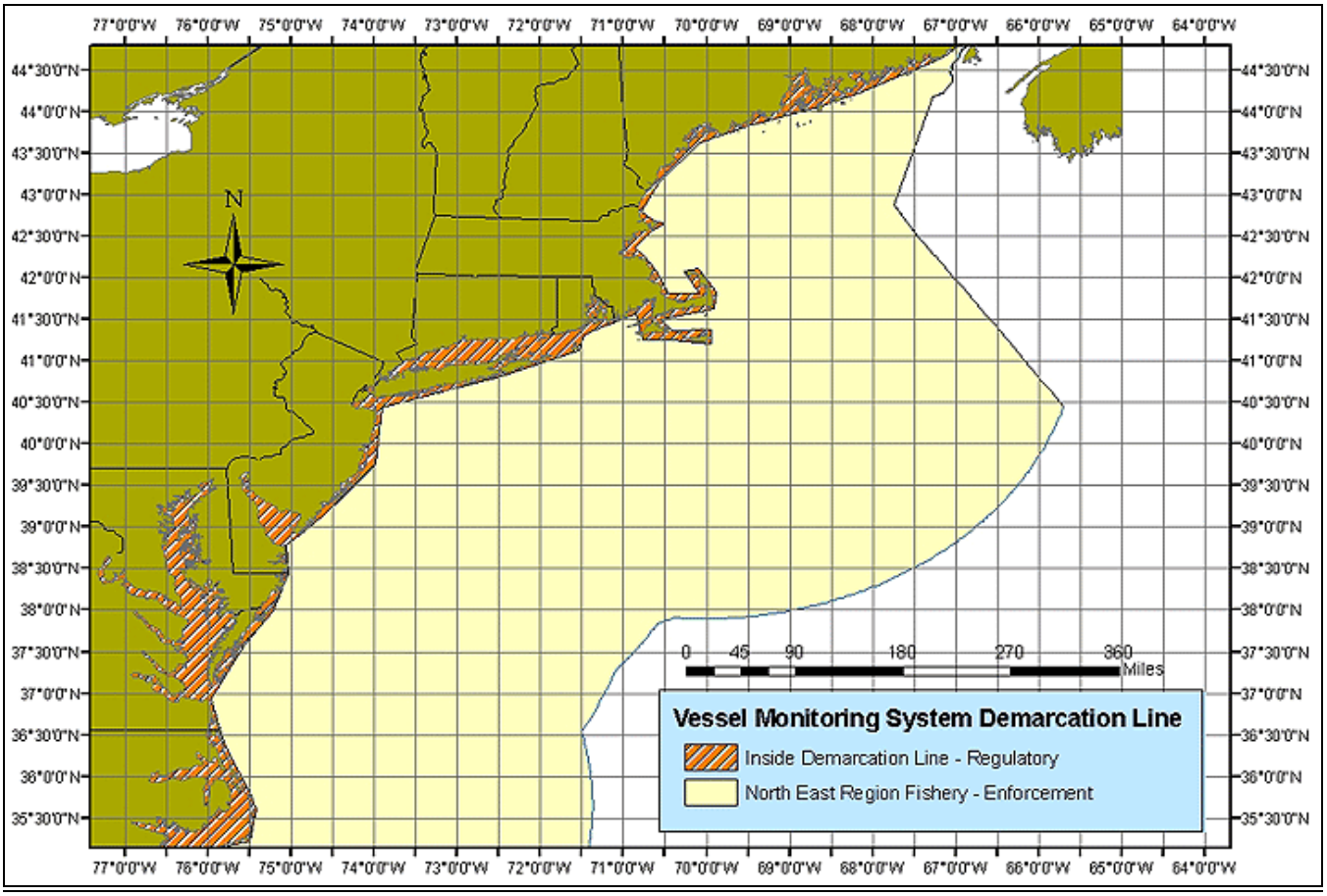
2.4.1 No Action VMS

Vessels have to declare in and out of the scallop fishery as currently required by VMS regulations (50 C.F.R. Sections 648.9 and 648.10). Once a vessel crosses the VMS demarcation line it is deemed to be fishing under the current DAS program (Figure 8). When a vessel declares into the fishery it must do so from a port, or from a "port identification" area, as defined in the Port Identification table on the NOAA Fisheries Northeast Regional Office website: https://www.nero.noaa.gov/nero/vms.

2.4.2 Limited access and limited access general category vessels can declare into the scallop fishery west of the demarcation line, not necessarily from a port area (VMS Alternative) (Preferred Alternative)

Some scallop vessels want the ability to declare into the fishery just inshore of the demarcation line, instead of from port; having to declare from port raises safety concerns. Prior to 2008, scallop vessels used to be able to declare from inshore of the demarcation line, and not necessarily from port, and this alternative would allow that once again.

Figure 8 – VMS demarcation line (defined by straight lines connecting coordinates provided in the VMS regulations at: 50 CFR 648.10)



3.0 CONSIDERED AND REJECTED ALTERNATIVES

3.1 TURTLE DEFLECTOR DREDGE REQUIRED IN SAME LOCATION AS THE TURTLE CHAIN REQUIREMENT – SOUTH OF 41º 09 N (TDD SPATIAL BOUNDARY OPTION)

If this alternative is selected vessels would be required to use the turtle deflector dredge in the same area as the current turtle chain requirement. All waters south of 41º 09N would be included in this alternative, the same area as the turtle chain requirement. This area was originally identified in the turtle chain process based on bycatch reports and fishing effort. Since fishing effort is more dynamic these boundaries may not still include the majority of fishing effort in the scallop fishery. See Figure 4.

Rationale for Rejection: The Scallop Committee discussed that there are a handful of reasons why this boundary does not make sense. This boundary is not a natural boundary for the resource or the fishery and is probably further north than is currently justified. It was based on scallop effort patterns around 2003, and those are now out of date. More updated analyses of

turtle takes in the scallop fishery were completed in Murray, 2010, and those analyses are based on 71W as a boundary separating the Mid-Atlantic where turtle takes are more likely to occur, and the rest of the scallop fishery to the north on Georges Bank and the Gulf of Maine. Just because the 41 09N boundary already exists as a line in the ocean used for management purposes, that should not be the driving factor for why it should continue to be used. Even if it would ease enforcement to have the two turtle boundaries be the same, the turtle chain and TDD boundary, this boundary is not as feasible as the other two options considered in this action, which are based on more updated information on the fishery and turtle location data. It should be clarified that this requirement was implemented by NMFS under authority of the Endangered Species Act, not MSA and the Council process.

3.2 ADDITIONAL YT AM ALTERNATIVES

The Scallop Committee met in May 2011 and discussed additional AM measures but it was discussed that they would require modification to the Groundfish plan. Therefore the Scallop Committee passed the motion below to forward these issues to the full Council for potential future work priorities for 2012 under the Groundfish FMP.

COMMITTEE MOTION 4: Tooley/Avila:
Forward two topics to the full Council for consideration during 2012 priority setting:

a. **Consideration of LAGC as "other subcomponent" for YT ACLs under the GF FMP**
b. **Section 2.4.5 in Draft FW23**

Vote: 7:0:1

Section 2.4.5 referenced in the above motion is no longer in the document, but it was related to an alternative that would allocate a hard-TAC of YT to the scallop fishery equivalent to 100% of the estimated catch, rather than 90%, or a certain percent or baseline of the total YT ACL, not based on projected catch. For the second option the allocation could vary in pounds, but the percent of the total YT ACL would remain the same.

The specific AM associated with this different way to allocate the sub-ACL would be a reduction in DAS the subsequent year. If the estimated catch of YT from the limited access and limited access general category fisheries exceeds the overall YT sub-ACL allocation, there would be a reduction in DAS the following year.

Rationale for Rejection: The Committee was in favor of developing this idea further, but did not think FW23 was the appropriate place. The Committee did not want to pursue a DAS cut AM as a strategy until the overall allocation discussion occurred under the GF plan first. Therefore, the Committee decided to forward this issue to the full Council for the 2012 priority setting meeting in November 2011 as a possible priority item for a future GF action. These ideas would require modification to the Groundfish plan; therefore cannot be developed in this framework to the Scallop FMP.

3.3 IMPLEMENT A SEPARATE YT AM FOR LAGC IFQ FISHERY

This action considered a YT AM for LAGC IFQ vessels for both SNE/MA and GB YT stocks. For SNE/MA the areas are the same as the current AM for LA vessels, but the seasonal closure schedule is different for each statistical area. For GB, the AM area and schedule is the same as the LA AM.

- ***Southern New England / Mid-Atlantic YT AM***

When the Council developed the final YT AM measures in Amendment 15, the seasonal closure in SNE/MA was described as too onerous for segments of the LAGC fishery that fish in that area. These vessels are typically not very mobile, so the AM alternatives in Amendment 15 were expected to have higher distributional impacts on certain components of the LAGC fishery that fish in statistical areas 537, 539 and 613. Therefore, this action is considering an alternative that would not close the entire area to the LAGC fishery; instead each statistical area within the YT AM will be on a different schedule. This alternative was designed to leave some areas closer to shore available for portions of the year. The PDT developed a possible YT AM for the LAGC fishery that would reduce YT bycatch by closing areas with the highest bycatch rates (stat area 539) but some nearshore areas would remain open during months when the LAGC fishery is more active.

This AM was developed primarily by evaluating VMS data for the LAGC fishery from 2009 and 2010. If a vessel was declared into the scallop fishery, travelling between 1.6 - 5 knots it was considered to be fishing. In order to exclude steaming time and shucking activity, all VMS pings at that speed within 10 nautical miles of the coast were excluded. All fishing effort was combined for the fleet and binned into 2 minute squares ranging from 1 hour to 300+ hours (Figure 9).

Table 8 below describes the alternative the PDT recommends for the SNE/MA YT AM for the LAGC fishery. The focus is on stat area 539 since that area has the highest discard/kept (d/k) ratio and lowest scallop landings for this fleet; therefore that area will be closed the longest shifting effort to areas with lower YT bycatch rates. In an attempt to leave some near shore areas available, the recommendation leaves stat areas 613 and 537 open longer, so smaller vessels still have nearshore areas to fish. Area 613 has the highest scallop catch and lowest d/k ratio so will remain open the longest. Finally, statistical area 537 is in the middle in terms of scallop catch and d/k ratio compared to areas 537 and 613, so that area will remain open the last 4 months of the year if overage more than 16%.

Table 8 – PDT recommendation for an accountability measure for the LAGC fleet for the SNE/MA YT stock area

	AM closure area and duration		
Overage	539	537	613
7% or less	Mar-May, Feb	Mar-May, Feb	Mar-May, Feb
7.1% - 16%	Mar-Jun, Nov-Feb	Mar-Jun, Nov-Feb	Mar-May, Feb
16.1% or greater	All year	Mar-Jun, Nov-Feb	Mar-May, Feb

- ***Georges Bank YT AM (when CAII open or closed)***

For GB, the PDT recommends that the LAGC fishery be under the same AM as the limited access fishery. The rationale is that currently no LAGC vessels are fishing in 562 so impacts of an AM in that area should be minimal since it is far offshore. In fact, in FW22 the LAGC fleet was not even allocated trips into Closed Area II. LAGC vessels would have other near shore areas in GB to fish their IFQ that would have lower YT bycatch rates. Even if LAGC vessels are allocated trips into CA2 in the future they are given the choice to fish under a fleetwide max of trips allocated to the area; they do not have to fish in that specific area like the limited access rotational area program is designed.

Rationale for Rejection: The Council decided to remove this issue from consideration in Framework 23 for two primary reasons. First, new information became available at the final Council meeting that impacted the type of alternatives developed in this action, as well as the analyses of the alternatives. Second, the Council also discussed work priorities for 2012 at this final meeting and had already discussed that there may be superior solutions to managing bycatch sub-ACLs and AMs that are not currently frameworkable. Therefore, it may be advantageous to consider specific YT AMs for the LAGC fishery in a future action that could potentially consider a wider range of options.

Specific to the first reason, the Council developed AM alternatives for the LAGC fishery in this action based on preliminary findings suggesting that the LAGC fishery was catching a relatively high percent of the total SNE/MA YT bycatch. While this is still the case but to a lesser degree than originally projected, the segment of the LAGC fishery responsible for the high bycatch levels is the trawl fishery, not the LAGC dredge fishery.

This issue did not come to light until the final Council meeting. NMFS prepared an updated estimate of YT bycatch based on comments at the final Scallop Committee meeting (September 13, 2011) that the relatively high bycatch rates must be from LAGC trawl vessels and not the overall LAGC fishery that is predominantly a dredge fishery. The new estimate stratified bycatch by gear type, and the results confirmed that the LAGC trawl fishery has a substantially higher YT bycatch rate than both the LA and LAGC dredge fisheries (Table 9). In addition, by stratifying by gear type, as well as using the final observer data for the full scallop fishing year, rather than calendar year, which is all that was previously available, the final estimate of SNE/MA YT catch for the scallop fishery went from 97.7% of the sub-ACL to 83.7%. This is a substantial reduction primarily driven by the fact that YT catch from the LAGC fishery is not stratified by gear type.

Upon learning this the Council decided that the alternatives developed and analyzed in Framework 23 were based on misleading information because most of the data was either from observed scallop dredge trips, or combined dredge and trawl trips. The Council decided that action should not be taken until more time can be spent designing and evaluating alternatives that take gear into consideration. Furthermore, other ideas were discussed such as further subdividing the YT sub-ACL that were not contemplated in this action to date. Rather than delay Framework 23 with this issue because there are other important measures in this action that should be implemented as soon as possible, the Council decided to delay action on this issue and work on it in a future action when more time could be dedicated to it.

The Council did recognize that the only AMs in place until this issue could be addressed in a future action would be on the limited access fishery. While it is not ideal to have only one segment of the fishery accountable for the catch of the entire scallop fishery, the LA fishery does catch the majority of YT and the AMs would still be effective at reducing YT bycatch if a sub-ACL was exceeded and AMs were triggered.

For these reasons the Council decided to reject these alternatives in Framework 23, and instead plans to revisit this issue in an action in the near future.

Table 9 – Final estimate of FY 2010 YT catch in the scallop fishery

VTR data (for trips with > 2000 lbs scallops)		
Total VTR kept_all	447,961,381	1.000
GOM/CC kept_all	17,366,141	0.039
GB VTR kept_all	33,843,802	0.076
SNE/MA VTR kept_all	393,809,843	0.879
Other VTR kept_all	2,941,595	0.007

Dealer data (for trips with > 2000 lbs scallops)	
Kept_all	463,346,907
YT kept	6,889

Estimate of YT catch in GOM/CC	
Prorate GOM/CC LA kept_all	17,962,593
GOM/CC LA discard rate	0.00013
Estimate of GOM/CC LA YT discards	2,297
Prorate GOM/CC LA YT kept	267
GOM/CC LA YT catch	2,564

n = 20 observed trips, all dredge

GOM/CC LAGC kept scallops	3,018,445
GOM/CC LAGC discard rate	0.00453
Estimate of GOM/CC LAGC YT discards	13,682

n = 18 observed trips, all dredge

GOM/CC LA + LAGC YT catch	16,246

Estimate of YT catch in GB	
Prorate GB LA kept_all	35,006,190
GB LA YT discard rate	0.00109
Estimate of GB LA YT discards	38,325
Prorate GB LA YT kept	520
GB LA YT catch	38,846

n = 8 observed trips, all drege

GB LAGC kept scallops	35,088
GB LA YT discard rate	0.00109
Estimate of GB LAGC YT discards	38

No observed LAGC trips, used LA discard rate

GB LA + LAGC YT catch	38,884

GB sub-component (146 mt)	321,875
Percentage of GB sub-component	12.1

Estimate of YT catch in SNE/MA	
Prorate SNE/MA LA kept_all	407,335,499
SNE/MA LA YT discard rate	0.00047
Estimate of SNE/MA LA YT discards	193,247
Prorate SNE/MA LA YT kept	6,056
SNE/MA LA YT catch	199,303

n = 215 observed trips, including 1 trawl trip

SNE/MA LAGC dredge kept scallops	12,936,936
SNE/MA LAGC dredge YT discard rate	0.00057
Estimate of SNE/MA LAGC dredge YT discards	7,342

n = 75 observed dredge trips

n = 31 observed trawl trips

SNE/MA LA + LAGC YT catch	249,196

SNE/MA sub-component (135 mt)	297,624
Percentage of SNE/MA sub-component	83.7

Report run on September 15, 2011

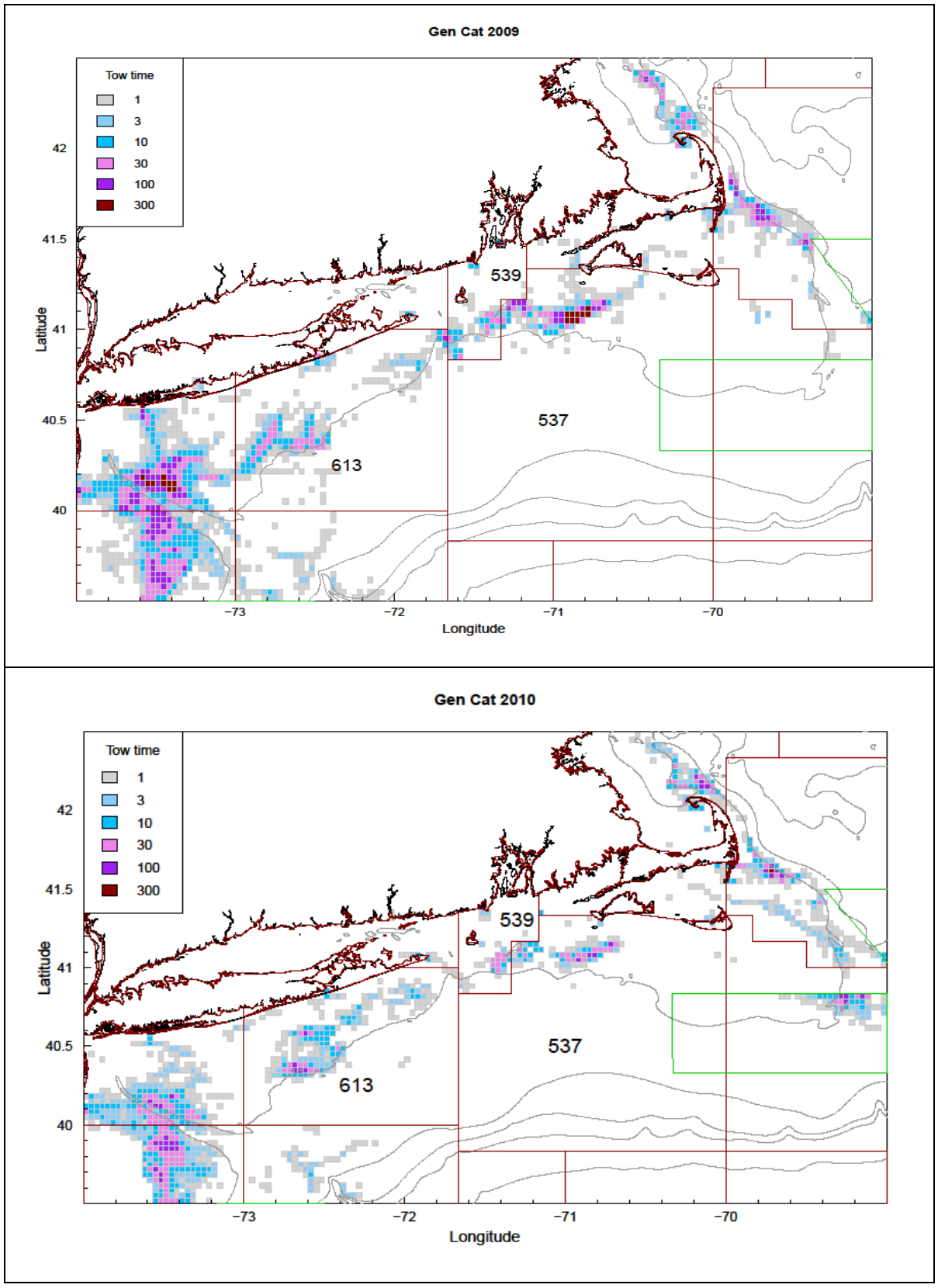
This estimate uses fishing year (March 2010 - February 2011) observer data and thus supersedes all previous estimates of yellowtail flounder catch in the scallop fishery for FY 2010.

These data are the best available to NOAA's National Marine Fisheries Service (NMFS) when this report was compiled. Data for this report are supplied to NMFS from vessels via the Vessel Monitoring System and Vessel Trip Reports, dealers via Dealer Electronic Reporting, and the Northeast Fisheries Observer Program. Data may be preliminary. Discrepancies with previous reports are due to corrections made to the database, use of the FY 2010 observer data, and alternate stratifications.

To minimize differences with the Northeast Fisheries Science Center estimate of yellowtail flounder catch in the scallop fishery the following protocols were used for calculating the discard rate:

1. Stratify by yellowtail stock area, i.e., Gulf of Maine/Cape Cod vs. Georges Bank vs. Southern New England/ Mid-Atlantic
2. Pool open and access area (Nantucket Lightship, Elephant Trunk, Delmarva) observer data for Southern New England/Mid-Atlantic.
3. Stratify by fleet, i.e., a separate discard rate for limited access vs. LAGC IFQ vessels
4. Stratify the LAGC IFQ fleet by gear type, i.e., dredge vs. trawl
5. The limited access fleet was not stratified by gear type because there was only 1 observed trawl trip

Figure 9 – VMS data for the LAGC fishery in FY2009 and FY2010 with YT AM area identified (statistical areas 537, 539, and 613)



3.4 ALLOW LAGC IFQ VESSELS TO FISH EXCLUSIVELY IN STATE WATERS AND CATCH WOULD NOT APPLY AGAINST THEIR FEDERAL IFQ ALLOCATION

A vessel with a LAGC IFQ permit would be allowed to fish exclusively in state waters and that catch would not be deducted from their annual IFQ allocation. Each vessel would have to declare before it leaves on a trip whether it will be fishing exclusively in state waters or not. If it decides to fish exclusively in state waters, on a trip by trip basis, the scallop catch from state water only trips will not be applied against the individual quota for that LAGC IFQ vessel. On a trip by trip basis, a LAGC IFQ vessel can decide if it is going to fish exclusively in state waters or not. A vessel can still fish in both state and federal waters on a single trip, but if it does, that vessel needs to declare a federal trip before leaving, and the entire catch from that trip would be applied to their annual quota, even if some of it was harvested in state waters.

Rationale for Rejection: When the PDT discussed this alternative in more detail it found that this alternative to allow vessels to fish in state waters without landings being applied to their IFQ would require a change to the state water exemption program, not just the IFQ program. Changes to the state water exemptions program are not frameworkable. Therefore, the PDT recommended that the Council move this alternative to the considered and rejected section for this framework action. The PDT did note several concerns about this alternative as well. It noted that most states have no or very limited scallop regulations in place, and this could increase fishing pressure in state waters as well as federal waters. Finally, vessels were able to use catch from state waters to qualify for a federal IFQ permit, and that could raise policy issues the Council will want to discuss in more detail. The Scallop Committee discussed that allowing LAGC IFQ vessels to declare on a trip basis that they would be fishing exclusively in state waters and that catch not apply against the federal NGOM TAC could be changed by framework action, but that measure was not added to this action because it came up late in the process.

4.0 AFFECTED ENVIRONMENT

The following is excerpted or summarized primarily from the FEIS for Amendment 15 to the Atlantic Sea Scallop Fishery Management Plan (NEFMC, 2010) and the EA for Framework 22 rule to that plan (NEFMC 2011). The reader is referred to these documents (Available at: http://www.nefmc.org/scallops/index.html) for more detailed information on the fisheries and other resources described below. Some updates have been included, in particular new information about the fishery from 2010 and 2011, as well as a summary of recent activities related to protected resources and EFH. This section also includes a summary of loggerhead sea turtle distribution and review of state water scallop catch and management since this action considered specific alternatives related to those aspects of the environment.

4.1 ATLANTIC SEA SCALLOP RESOURCE

The Atlantic sea scallop (*Placopetcen magellanicus*) is a bivalve mollusk that is distributed along the continental shelf, typically on sand and gravel bottoms from the Gulf of St. Lawrence to North Carolina (Hart and Chute, 2004). The species generally inhabit waters less than 20^{o} C and depths that range from 30-110 m on Georges Bank, 20-80 m in the Mid-Atlantic, and less than 40 m in the near-shore waters of the Gulf of Maine. Although all sea scallops in the US EEZ are managed as a single stock per Amendment 10, four regional components and six resource areas are recognized. Major aggregations occur in the Mid-Atlantic from Virginia to Long Island (Mid-Atlantic component), Georges Bank, the Great South Channel (South Channel component), and the Gulf of Maine (Hart and Rago, 2006; NEFSC, 2007). These four regional components are further divided into six resource areas: Delmarva (Mid-Atlantic), New York Bight (Mid-Atlantic), South Channel, southeast part of Georges Bank, northeast peak and northern part of Georges Bank, and the Gulf of Maine (NEFMC, 2007). Assessments focus on two main parts of the stock and fishery that contain the largest concentrations of sea scallops: Georges Bank and the Mid-Atlantic, which are combined to evaluate the status of the whole stock (NEFMC, 2007). In 2009, sea scallops were not overfished and overfishing was not occurring.

Biomass

The scallop abundance and biomass on Georges Bank increased from 1995-2000 after implementing closures and effort reduction measures. Biomass and abundance then declined from 2006-2008 because of poor recruitment and the reopening of portions of groundfish closed areas. Biomass has increased on Georges Bank in both 2009 and 2010, mainly due to increased growth rates and strong recruitment in the Great South Channel, along with continuing concentrations on the Northern Edge and in the central portion of Closed Area I, especially just south of the "sliver" access area. The highest concentrations of biomass on Georges Bank are currently on the Northern Edge, within Closed Area I, and within the Nantucket Lightship closed area (Figure 10).

In general, the 2010 Mid-Atlantic biomass is down from 2009, mainly from the depletion of Elephant Trunk. Figure 2 shows the biomass in the Mid-Atlantic based on the 2010 NMFS scallop survey, with largest densities in the Hudson Canyon and Delmarva closed areas, and notably high biomass in a few areas south of Long Island (Figure 11).

Figure 10 - Biomass chart for Georges Bank from the 2010 NMFS sea scallop survey

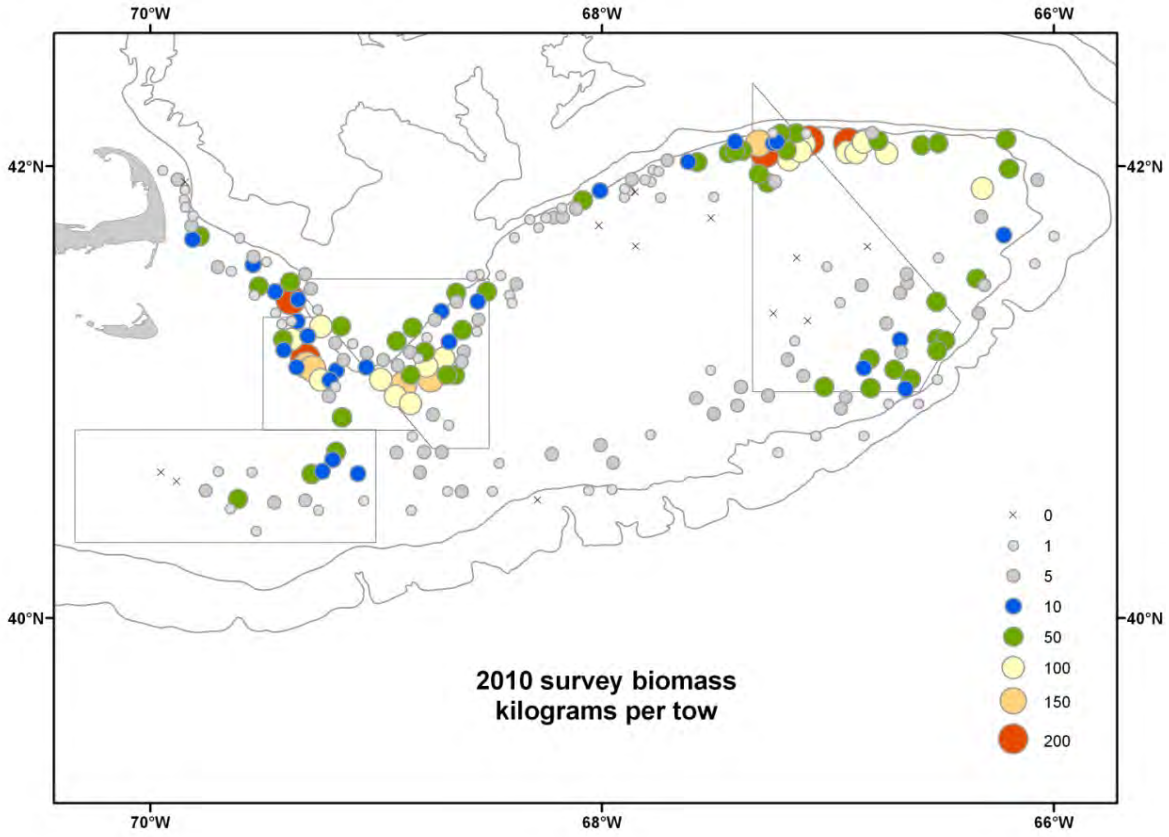
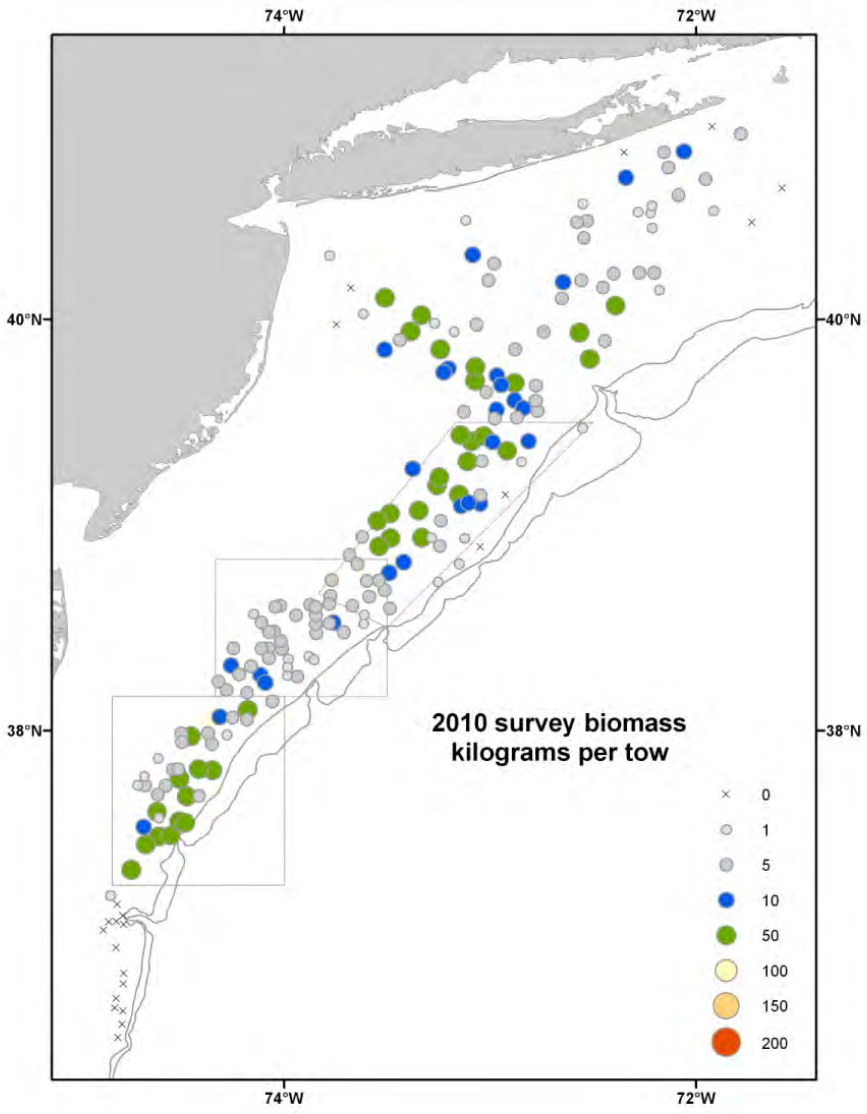


Figure 11. Biomass chart for the Mid-Atlantic from the 2010 NMFS sea scallop survey



Recruitment

Continued strong recruitment was observed on Georges Bank in 2010 (2009 year class), especially in the South Channel, on the Northern Edge, and in a small area of the Southeast part of CA II. Recruitment in the Mid-Atlantic was poor following a good year class in 2008, and extremely spatially limited. Most areas of recruitment were observed in the open area on the south rim of Hudson Canyon, with a few small pockets in the Hudson Canyon closed area and Elephant Trunk. Looking at trends for both portions of the scallop stock there is a strong recruitment pattern in place currently for Georges Bank, with three years in a row of great recruitment. The drop-off in the Mid-Atlantic is somewhat drastic, but it is not inconsistent with the variable pattern shown by the stock of several strong years followed by a drop-off and recovery.

Mortality

Four types of mortality are accounted for in the assessment of the sea scallop resource: natural, discard, incidental, and fishing mortality. The updated stock assessment established new values for natural mortality on both stocks. The new estimates are M = 0.12 for Georges Bank, and M = 0.15 for the Mid-Atlantic (NEFSC, 2010), compared to 0.10 used for the resource overall in previous assessments since natural mortality increases with larger shell heights. Discard mortality occurs when scallops are discarded on directed scallop trips because they are too small to be economically profitable to shuck or due to high-grading during access area trips to previously-closed areas. Total discard mortality is estimated at 20% (NEFSC, 2007). Incidental mortality is non-landed mortality associated with scallop dredges that likely kill and injure some scallops that are contacted but not caught by crushing their shells. The recent assessment in 2010 used 0.20 on Georges Bank and 0.10 in the Mid-Atlantic (NEFSC, 2010), compared to earlier values of 0.15 on Georges Bank and 0.04 for Mid-Atlantic. The increase in assumed values for both natural and incidental mortality is expected to reduce the productivity potential of the stock, which is likely to cause the model to produce less (over) optimistic projections moving forward.

Finally, fishing mortality, the mortality associated with scallop landings on directed scallop trips, was calculated separately for Georges Bank and the Mid-Atlantic because of differences in growth rates. Fishing mortality peaked for both stocks in the early 1990s, but has decreased substantially since then as tighter regulations were put into place including area closures, and biomass levels recovered. In general, *F* has remained stable on Georges Bank since 1995, and the Mid-Atlantic has shown larger fluctuations and an overall higher *F* (Figure 12). Figure 13 shows F and biomass estimates for the combined stock overall.

The formal stock status update was prepared through FY2009 as part of SARC 50 (NEFSC, 2010), and the F_{max} reference point was changed to F_{msy}. F_{msy} for the whole stock was estimated from the Stochastic Yield Model (SYM) to be 0.38. SARC 50 estimated that overall fishing mortality in 2009 was 0.38, consistent with recent years. Since the fishing mortality in 2009 was equal to F_{msy}, overfishing did not occur (*F* must be above the threshold).

Figure 12 - Fishing mortality (red line) and biomass estimates (y^{-1}, gray bars) from the CASA model for scallops on Georges Bank (right) and in the Mid-Atlantic (left), through 2009

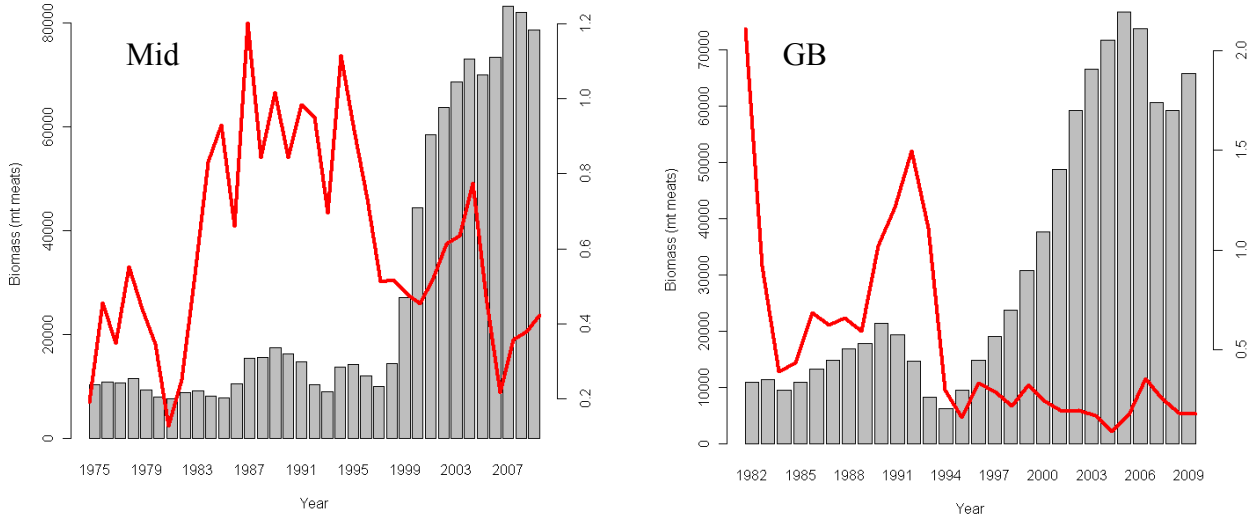
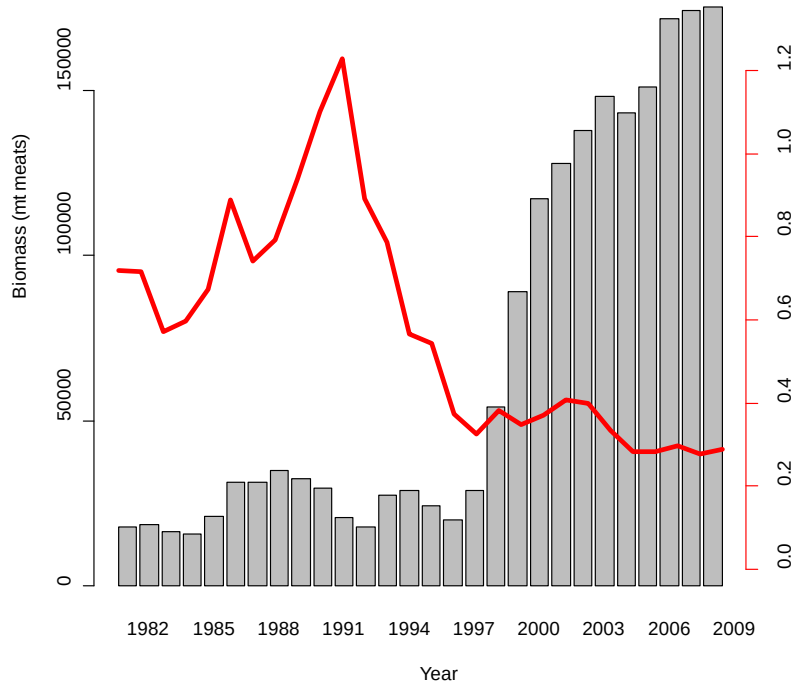


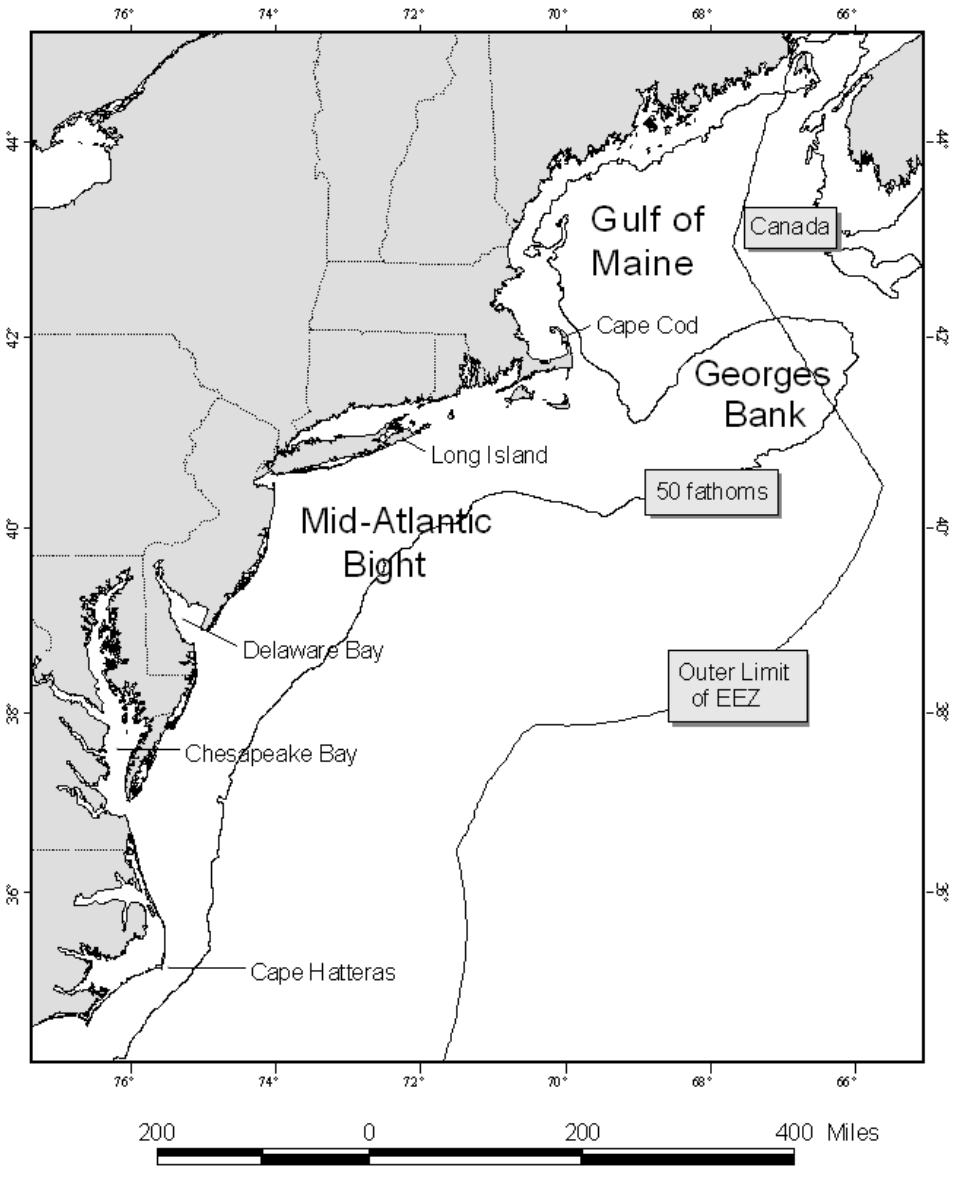
Figure 13 - Fishing mortality (red line) and biomass estimates (y^{-1}, gray bars) from the CASA model for sea scallop resource overall (Georges Bank and Mid-Atlantic combined) through 2009



4.2 PHYSICAL ENVIRONMENT AND ESSENTIAL FISH HABITAT

The Northeast U.S. Shelf Ecosystem includes 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 to a depth of 2,000 m (Figure 14**,** Sherman et al. 1996). Four distinct sub-regions are identified: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope. The physical oceanography and biota of these regions were described in the Scallop Amendment 11. Much of this information was extracted from Stevenson et al. (2004), and the reader is referred to this document and sources referenced therein for additional information. Primarily relevant to the scallop fishery are Georges Bank and the Mid-Atlantic Bight, although some fishing also occurs in the Gulf of Maine.

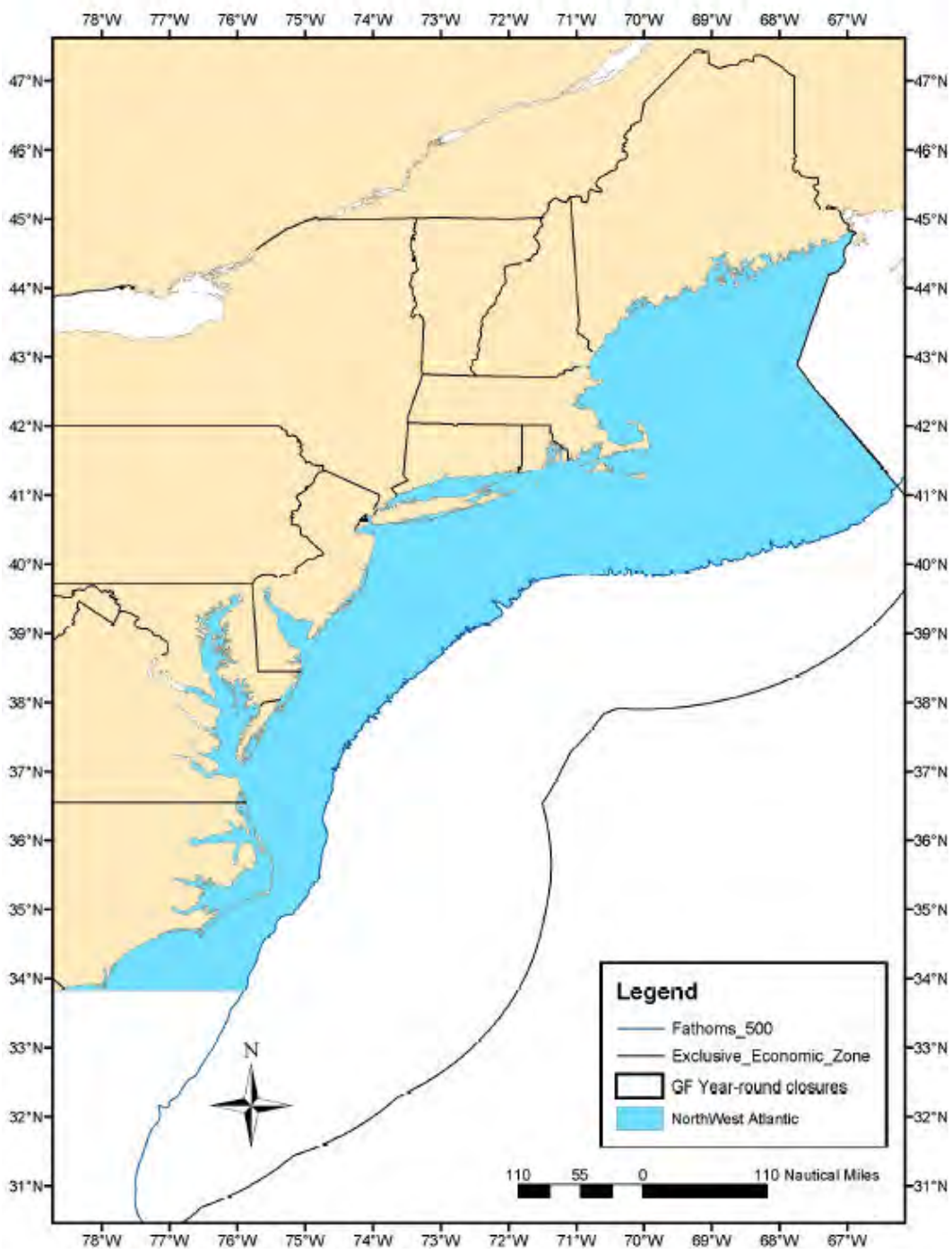
Figure 14 – Northeast U.S Shelf Ecosystem



The Atlantic sea scallop fishery is prosecuted in concentrated areas in and around Georges Bank and off the Mid-Atlantic coast, in waters extending from the near-coast out to the edge of the continental shelf (Figure 15). Atlantic sea scallops occur primarily in depths less than 110 meters on sand, gravel, shells, and cobble substrates (Hart et al. 2004). This area, which could potentially be affected by the preferred alternative, has been identified as EFH for various species. These species include American plaice, Atlantic cod, Atlantic halibut, Atlantic herring, Atlantic sea scallop, Atlantic surfclam, Atlantic wolfish, barndoor skate, black sea bass, clearnose skate, haddock, little skate, longfin squid, monkfish, ocean pout, ocean quahog, pollock, red hake, redfish, rosette skate, scup, silver hake, smooth skate, summer flounder, thorny skate, tilefish, white hake, windowpane flounder, winter flounder, witch flounder and yellowtail flounder. For more information on the geographic area, depth, and EFH description for each applicable life stage of these species, the reader is referred to Table 45 of the scallop Amendment 15 EIS.

Most of the current EFH designations were developed in NEFMC Essential Fish Habitat Omnibus Amendment 1 (1998). Most recently, Amendment 16 to the Northeast Multispecies FMP adds Atlantic wolfish to the management unit and includes an EFH designation for the species. For additional information, the reader is referred to the Omnibus Amendment and the other FMP documents listed in Table 28 of the scallop Amendment 15 EIS. In addition, summaries of EFH descriptions and maps for Northeast region species can be accessed at http://www.nero.noaa.gov/hcd/webintro.html. Designations for all species are being reviewed and updated in NEFMC Essential Fish Habitat Omnibus Amendment 2.

Figure 15 – Geographic extent of the Atlantic sea scallop fishery



4.3 PROTECTED RESOURCES

The following protected species are found in the environment in which the sea scallop fishery is prosecuted. A number of them are listed under the Endangered Species Act of 1973 (ESA) as endangered or threatened, while others are identified as protected under the Marine Mammal Protection Act of 1972 (MMPA). An update and summary is provided here to facilitate consideration of the species most likely to interact with the scallop fishery relative to the preferred alternative.

A more complete description of protected resources inhabiting the action area is provided in Amendment 15 to the Sea Scallop FMP (See Amendment 15 to the Atlantic Sea Scallop Fishery Management Plan, Section 4.3, Protected Species, for a complete list. An electronic version of the document is available at http://www.nefmc.org/scallops/index.html.).

Cetaceans	***Status***
North Atlantic right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*)	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Beaked whale (*Ziphius* and *Mesoplodon spp.*)	Protected
Pilot whale (*Globicephala* spp.)	Protected
Spotted and striped dolphin (*Stenella spp.*)	Protected
Risso's dolphin (*Grampus griseus*)	Protected
White-sided dolphin (*Lagenorhynchus acutus*)	Protected
Common dolphin (*Delphinus delphis*)	Protected
Bottlenose dolphin: coastal stocks (*Tursiops truncatus*)	Protected
Harbor porpoise (*Phocoena phocoena*)	Protected
Pinnipeds	
Harbor seal (*Phoca vitulina*)	Protected
Gray seal (*Halichoerus grypus*)	Protected
Harp seal (*Phoca groenlandica*)	Protected
Hooded seal (*Crystophora cristata*)	Protected
Sea Turtles	
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered[1]
Loggerhead sea turtle – NWA DPS(*Caretta caretta*)	Threatened[2]

[1] *Green sea 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 sea turtles are considered endangered wherever they occur in U.S. waters.*

Fish

Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Atlantic salmon (*Salmo salar*)	Endangered
Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*)	Endangered/Threatened[3]

Threatened and Endangered Species Not Likely to be Affected by the Alternatives under Consideration

According to the most recent Biological Opinion (Opinion) issued by NMFS on March 14, 2008 (and amended on February 5, 2009), the agency has previously determined that species not likely to be affected by the Atlantic Sea Scallop FMP or by the operation of the fishery include the shortnose sturgeon, the Gulf of Maine distinct population segment (DPS) of Atlantic salmon, hawksbill sea turtles, and the following whales: North Atlantic right, humpback, fin, sei, blue, and sperm whales, all of which are listed as endangered species under the ESA. NMFS also concluded that the continued authorization of the sea scallop fishery would not have any adverse impacts on cetacean prey, and that it would not affect the oceanographic conditions that are conducive for calving and nursing of large cetaceans. The reader is referred to Section 4.3.1.1 of the scallop Amendment 15 EIS for a complete description regarding species not likely to be affected by the alternatives under consideration. These species descriptions include the cetaceans and pinnipeds listed above. In addition, it is noted that according to the 2011 List of Fisheries, there have been no documented marine mammal species interactions with either the sea scallop dredge fishery or the Atlantic shellfish bottom trawl fishery; therefore, the scallop fishery is considered a Category III fishery under the MMPA (i.e., a remote likelihood or no known incidental mortality and serious injuries of marine mammals).

On October 6, 2010, NMFS published two proposed rules to list five DPSs of Atlantic sturgeon under the ESA. NMFS is proposing to list four DPSs of Atlantic sturgeon as endangered (New York Bight, Chesapeake Bay, Carolina and South Atlantic) and one DPS as threatened (Gulf of Maine). Based on the most recent status review, Atlantic sturgeon subadults and adults utilize ocean waters from Canada to the Saint Johns River, Florida. As a result, commercial fishing activities occurring in Atlantic Ocean waters have the potential to impact one or more of the Atlantic sturgeon DPSs. A final determination on the proposed listing of the five DPSs is expected in October 2011, and was not available when this action was submitted to NMFS.

Atlantic sturgeon are known to be captured in sink gillnet, drift gillnet, and otter trawl gear (Stein et al. 2004, ASMFC TC 2007). Of these gear types, sink gillnet gear poses the greatest known risk of mortality for bycatch sturgeon (ASMFC TC 2007). At present, the scallop fishery does not have a gillnet component. However, a recent analysis from the NMFS Northeast Fisheries Science Center indicates that there is some potential, albeit low, for Atlantic sturgeon bycatch in scallop trawl gear. Scallop dredge gear, on the other hand, is not known to pose a bycatch risk for Atlantic sturgeon despite many hours of observer coverage for this gear type. In fact, there are no reports of Atlantic sturgeon captures in scallop dredge gear in the NMFS Observer database (based on Stein et al. 2004a and ASMFC TC 2007). Because the scallop fishery

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[2] *NWA DPS = Northwest Atlantic distinct population segment which encompasses loggerheads found north of the equator, south of 60° N latitude, and west of 40° W longitude.*

[3] *Atlantic sturgeon is proposed for ESA listing. Currently, it is not listed under the ESA.*

predominantly uses dredge gear (there were 367 active dredge vessels in the fishery in 2010, compared to only 11 trawl vessels) (Table 7 and Table 8, Appendix I), it is likely that impacts to Atlantic sturgeon from the fishery will be minor and extremely unlikely that mortalities would result in the event of bycatch in the trawl fishery. Furthermore, the 11 trawl vessels, as characterized by their permit type, do not actually fish with trawl gear even though they are permitted to do so. Section 1.1.6 of Appendix I describes the scallop catch by permit type and gear type. The number of vessels with full-time trawl permits has decreased continuously and has been at 11 full-time trawl permitted vessels since 2008. But, according to the 2009-2010 VTR data, the majority of these vessels (10 out of 11 in 2010) landed scallops using dredge gear even though they had a trawl permit. Vessels with trawl permits are allowed to fish for scallops with dredge gear, but vessels with dredge permits are not allowed to fish with trawl gear. A vessel with a trawl permit but using dredge gear can always revert back to trawl gear, but that is not very likely since dredge gear is more effective in most areas. Therefore, at 11 trawl permits the impacts of this fishery on Atlantic sturgeon are likely to be minor, and even less than that since only one vessel with that permit still uses trawl gear.

Threatened and Endangered Species Potentially Affected Adversely by the Alternatives under Consideration

In the 2008 Opinion, NMFS determined that the action being considered may adversely affect, but is not likely to jeopardize the continued existence of the following ESA-listed sea turtle species: loggerhead, leatherback, Kemp's ridley, and green sea turtles. Loggerheads are the most commonly observed species of sea turtle taken in the scallop fishery. The distribution and behavior of other three sea turtle species makes interactions with this fishery less likely. To reduce the capture of sea turtles, NMFS has put measures in place for turtle conservation both under and outside of the Scallop FMP. The reader is referred to Sections 4.3.2.1 through 4.3.2.5 of the scallop Amendment 15 EIS for a complete description of turtle background information, impacts, and conservation measures.

On September 22, 2011, NMFS and USFWS issued a final rule (76 FR 58868), determining that the loggerhead sea turtle is composed of nine DPSs (as defined in Conant *et al*. 2009) that constitute species that may be listed as threatened or endangered under the ESA. Five DPSs were listed as endangered (North Pacific Ocean, South Pacific Ocean, North Indian Ocean, Northeast Atlantic Ocean, and Mediterranean Sea), and four DPSs were listed as threatened (Northwest Atlantic Ocean, South Atlantic Ocean, Southeast Indo-Pacific Ocean, and Southwest Indian Ocean). Of these nine DPSs, only the Northwest Atlantic (NWA) DPS is likely to be present in areas where the scallop fishery currently operates. Hereafter, all discussions regarding loggerhead sea turtles will be in reference to the NWA DPS.

Although originally proposed as endangered in March 2010, the NWA DPS was ultimately determined to be threatened based on review of nesting data available after the proposed rule was published, information provided in public comments on the proposed rule, and further discussions within the agencies. The two primary factors considered were population abundance and population trend. NMFS and USFWS found that an endangered status for the NWA DPS was not warranted given the large size of the nesting population, the overall nesting population

remains widespread, the trend for the nesting population appears to be stabilizing, and substantial conservation efforts are underway to address threats.

The September 2011 final rule also noted that critical habitat for the NWA DPS will be designated in a future rulemaking. Information from the public related to the identification of critical habitat, essential physical or biological features for this species, and other relevant impacts of a critical habitat designation was solicited.

In addition to the relisting of loggerheads as DPSs, there is new information on the effects of the scallop fishery on sea turtles which is causing NMFS to reassess the impacts of the scallop fishery on ESA-listed species in a new Opinion. In this future Opinion, NMFS will assess the impacts of the scallop fishery on only the NWA DPS of loggerhead sea turtles, rather than the species as a whole. Regardless of the new up-listing of the NWA DPS and any new information on sea turtles that has become available since the 2008 Opinion, the Council and NMFS must still adhere to the reasonable and prudent measures and terms and conditions of the 2008 Biological Opinion until a new Opinion is issued.

4.3.1 Loggerhead turtle distribution

A more detailed description of loggerhead turtle distribution is included in this action because Framework 23 is considering implementation of a turtle deflector dredge. Information about the general distribution of loggerhead turtles is useful when considering the various season and area alternatives (Section 2.1.2.1 and 2.1.2.2) in this action.

The PDT used various sources of information to develop the season options for the TDD requirement. Primarily, satellite data, strandings data, and turtle bycatch data were summarized to help identify which months would be the most effective for this dredge requirement. Overall, the data suggest that turtles are most likely to be present in areas that overlap with the scallop fishery in the Mid-Atlantic between May and October. There is more uncertainty in the data available relative to the month of November, but some sources suggest there would be some level of overlap during that month as well, in particular Morreale, 1999 and Braun-McNeill et al., 2008.

A summary of the information used is provided below.

- Satellite data

The following information describes a few pertinent papers regarding sea turtle satellite telemetry and/or seasonal inhabitance in the Mid-Atlantic. This review is not exhaustive, but the following provides some information that summarizes where and when sea turtles are likely present in the Mid-Atlantic from several key sources.

Braun-McNeill et al. (2008)

The distribution of sea turtles appears to be, in part, related to sea surface temperature (SST). Braun-McNeill et al. (2008) evaluated SST to predict sea turtle presence by latitude and month. Figure 16 (Figure 4 from Braun-McNeill et al.) plots the available sea turtle information (sea turtle strandings, sightings and incidental captures) with the SST analysis results from nearshore and offshore strata. Nearshore strata represent the coastline to 20 m depth, and offshore waters

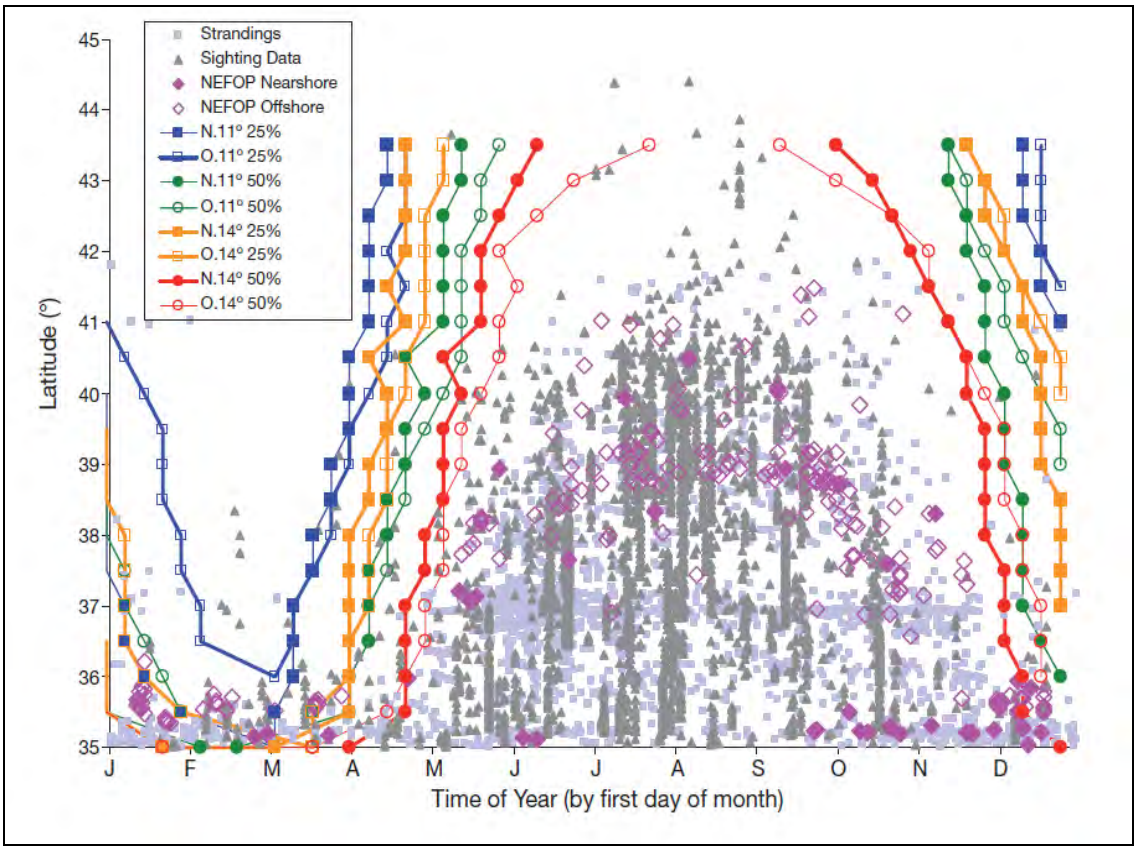
are from 20 to 200 m in depth. The range in temperatures was chosen based on historical precedent of using 11 C as a minimal temperature for seasonal regulations of sea turtle/fishery interactions (Epperly et al. 1995, 1996) and research that identified 14 C as another possible minimal temperature for turtles (Coles and Musick 2000, Witzell and Azarovitz 1996).

For this discussion, 37 N latitude was used as the most southern extent of the scallop fishery, but any other latitude could be analyzed. Figure 4 shows that sea turtle strandings, sightings, and nearshore and offshore observed fishery takes have been documented in May through November above 37 N latitude. Further, this figure shows that the least conservative value of the SST analysis (≥ 50% of the offshore area is predicted to be ≥ 14 $^{\circ}$C) occurs from May through November above 37 N latitude. In other words, greater than 50% of the area above 37 N latitude is 14 C or warmer at least from May through November. Thus, this analysis predicts that sea turtles may occur, and potentially interact with fisheries, in waters north of 37 N latitude from May through November.

As reported in Braun-McNeill et al. (2008), it has been suggested that while autumn/winter movements out of an area appear to be initiated by SST decreases, spring/summer movements may be related to food resources (Bentivegna 2002). If true, turtles may be present when a relatively small proportion of the area has reached a minimal temperature and food resources are present and, conversely, may not be present when food is absent and waters are relatively warm. In the northern zones, relatively few turtles occur in nearshore or offshore waters when <50% of the area is <14° C. Further, there are few documented sightings, strandings or incidental captures north of 42 N latitude. Even though SST data can indicate the possible presence of turtles in zones south of Cape Cod, their absence at northern latitudes at similar SSTs suggests the possible temporal unavailability of food resources or strong thermoclines restricting their bottom foraging abilities.

Note that the time periods of the large mesh gillnet seasonal closures in EEZ waters off NC and VA were based on an early version of this SST analysis using 11 C as a threshold (67 FR 71895, December 3, 2002). Further, the Atlantic sea turtle strategy initiative is considering the results from Braun-McNeill et al. (2008) in defining the temporal extent of the forthcoming trawl rulemaking. Also being considered are datasets of observer, sea turtle distribution, SST, trawl fishing effort, and stranding information.

Figure 16 – Loggerhead, Kemps ridley, green and hawksbill strandings -1998-2004 (Braun-McNeill et al 2008)



From Fig. 4 in Braun-McNeill *et al*.(2008): Loggerhead, Kemp's ridley, green, and hawksbill strandings from 1998-2004 (excluding severely decomposed, cold stuns, and incidental captures) (n=2487), all sea turtle sightings from aerial and shipboard surveys (n=4845), and loggerhead fishery bycatch (n=276) in the US Atlantic north of latitude 35° N (divided into Northeast Fisheries Observer Program (NEFOP) nearshore and offshore bycatch). Eight SST analyses are shown: ≥25% of the area predicted to be ≥11 °C nearshore (N.11°25%) and offshore (O.11°25%); ≥25% of the area predicted to be ≥ 14 °C nearshore (N.14°25%) and offshore (O.14°25%); ≥50% of the area predicted to be ≥11 °C nearshore (N.11°50%) and offshore (O.11°50%),); and ≥50% of the area predicted to be ≥ 14 °C nearshore (N.14°50%) and offshore (O.14°50%).

Mansfield et al. (2009)

Mansfield et al. (2009) presented data on 23 satellite tracked loggerheads from Virginia. Figure 17 (Figure 2 from Mansfield et al. (2009)) shows the habitat use and migrations of loggerheads by days recorded in hexagons. Most of the tracked turtles were out of the nearshore area by the end of October, with turtles moving farther offshore (while still on the continental shelf) or in route to Cape Hatteras in November. There may still be some turtles in the southern Virginia area in November but the majority of turtles should be south of Cape Hatteras by the end of October (K. Mansfield, pers. comm.). The non-residency period for Virginia coastal waters is defined as November through April (note: figure text in Mansfield et al is a typo). Fifteen of 17 tracked loggerheads began their fall migrations between September 18 and November 16.

Figure 17 – Habitat use and migration of loggerhead turtles by days (Mansfield et al, 2009)

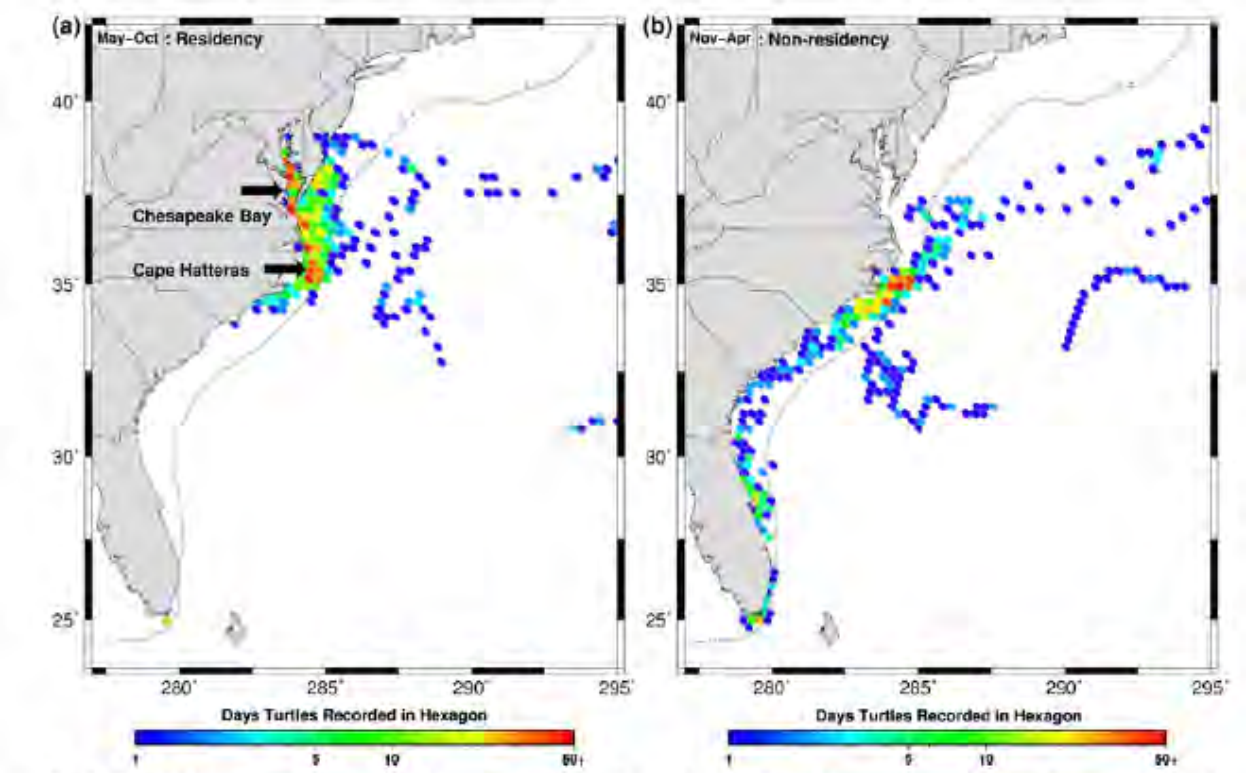


Fig. 2 Coastal habitat use and movements of immature loggerhead sea turtles during the months of seasonal northern *residency* (a), and *non-residency* (b) (n = 23 turtles; 3,535 track days), a *Residency* May through November (n = 23 turtles; 1,980 track days; maximum 58 days per hexagon), b *Non-Residency* December through April (n = 13 turtles; 1,515 track days; maximum 49 days per hexagon). The number of log-transformed track days spent per hexagon is represented by *color*. The 200 m isobath is represented by a *dashed line*. Each degree is represented by *four hexagons*; the area of each hexagon is approximately 669 km^2

Morreale (1999)

While more than 10 years old, one of the most comprehensive assessments of sea turtle presence and distribution from the northern Mid-Atlantic waters (e.g., New York) can be found in Morreale (1999). This dissertation focused on sea turtle migrations, including satellite tracked animals from New York and a model to predict spatial and temporal patterns of sea turtle migrations. Based on 15 tracked sea turtles from New York (Figure 18 - Figure 4.1 in Morreale 1999), juvenile turtles from northeastern US appear to migrate along a common pathway, estimated to be a band narrower than 60 km wide. This migratory pathway coincides with the area in which the scallop fishery operates.

Further, Morreale (1999) presents a predictive model from eight satellite tracked turtles between Oct 1 and December 1 in 1994-1995. Figure 19 (Figure 4.4 (from Morreale 1999)) shows the relationship between the fall months and latitude. Turtles are predicted to be in the more southern latitudes of the scallop fishery (south of ~38 5 N lat) after November 1, with some overlap in the southern extent in early November. In a Biological Assessment prepared for the Army Corps of Engineers (for a New York Harbor channel dredging project), Ruben and Morreale (1999) stated that it is reasonable to expect turtles to arrive in New York Harbor area as early as May, and that most turtles have left New York waters by the end of October.

Figure 18 – Satellite tracked sea turtles from New York (Morreale, 1999)

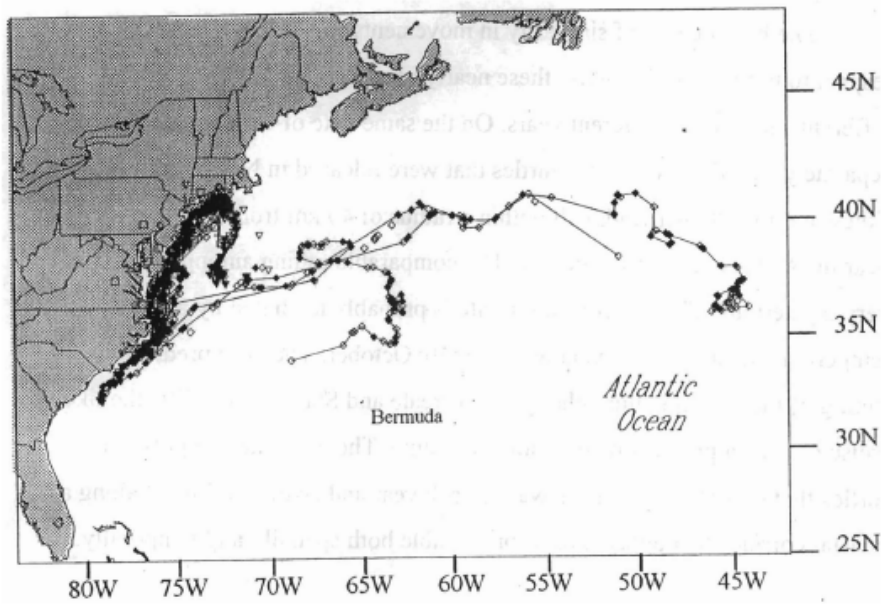


Figure 4.1. The similar migration paths of 15 juvenile sea turtles tracked by satellite transmitter from New York waters beginning in the summer or fall of five different years. Three Kemp's ridleys in 1990 and 1991, along with 4 loggerheads in 1992 were tracked in previous studies (Morreale and Standora 1994); eight more loggerheads were tracked in the present study in 1995 and 1996. Turtles remained in near shore waters, until fall, when they migrated out to sea and southward along coastal shelf waters by early winter. Some overwintered in the Carolinas and others moved into pelagic waters in late winter, traveling with the Gulf Stream to positions thousands of kilometers offshore.

Figure 19 – Relationship between day and latitude of turtles during migration (Morreale, 1999)

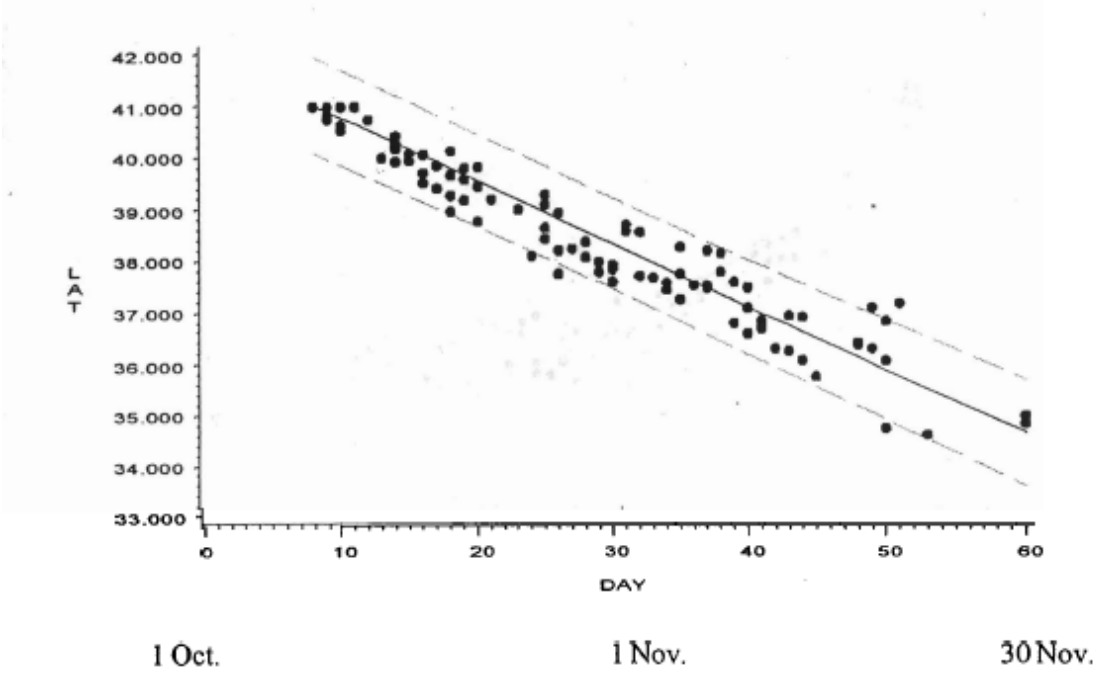
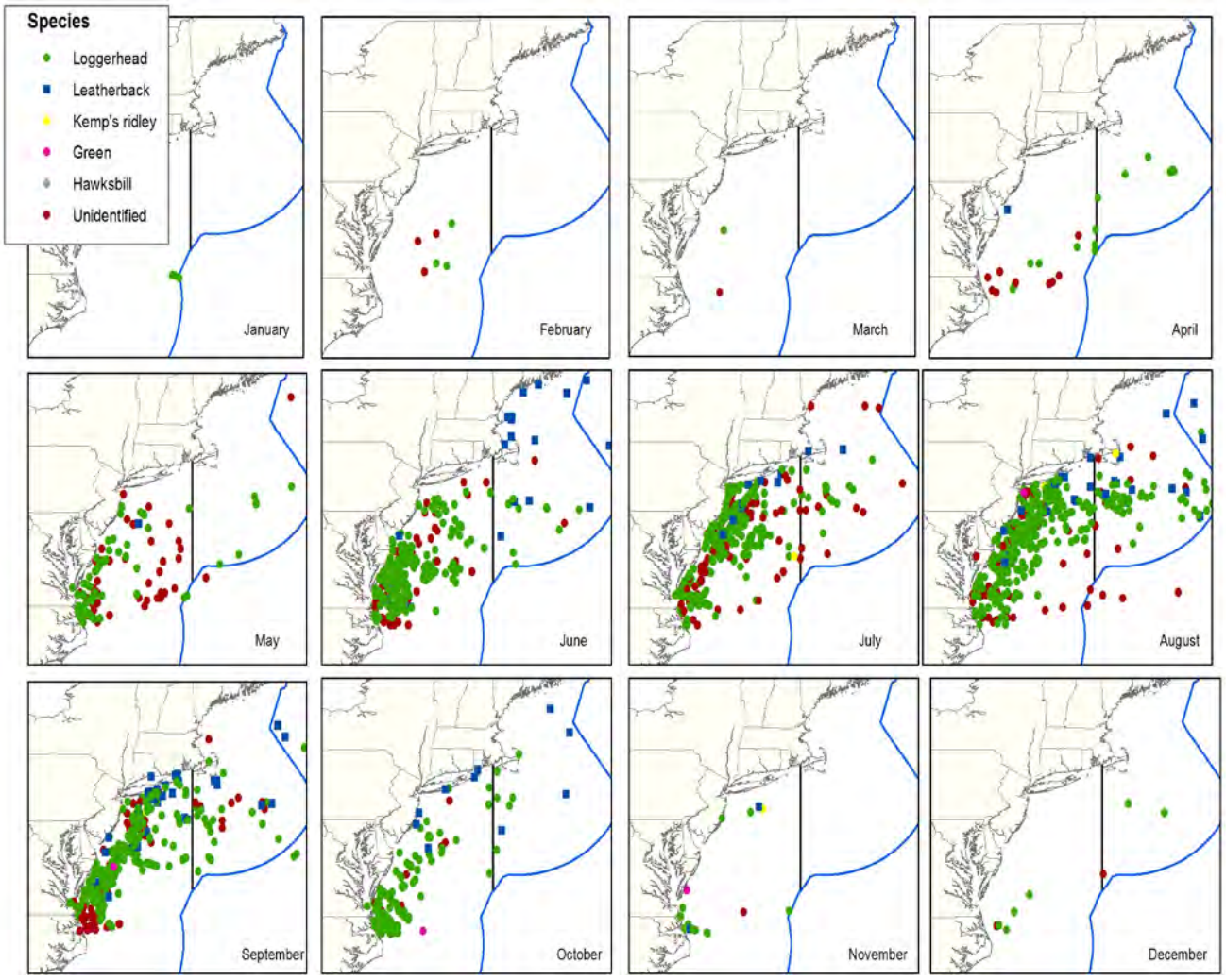


Figure 4.4. The relationship between day of the year and latitude of eight turtles during migrations from northeastern U.S. waters in October and December. A mixed model was used to compare migration patterns of eight turtles and to generate a predicted migratory pathway. There was no significant difference (P>.05) among the eight turtles; the predicted line (solid line) for the relationship between day of year and latitude of turtle is linear: Latitude = 41.9817 - 0.1221 * Day. A confidence interval of 1.05 degrees (depicted by dotted lines) encompassed >94% of the plotted locations.

Figure 20 includes sea turtle sightings by month, based on results obtained by the Cetacean and Turtle Assessment Program (CETAP) aerial and shipboard surveys. The CETAP was an extensive survey effort of the continental shelf from Cape Hatteras, NC, to Nova Scotia, Canada from 1978-1982. While dated, it represents the most comprehensive long term sightings dataset for this area. Note that sightings as depicted on the map are not corrected for effort. Overall, loggerheads were sighted in the Mid-Atlantic in May through October, with more limited observations in the other months as well. In June through September loggerheads were sighted at higher levels.

Figure 20 – Sea turtle sightings by month (CETAP aerial and shipboard surveys from 1978-1982)



- Strandings data

In the United States, sea turtle strandings are responded to by the Sea Turtle Stranding and Salvage Network (STSSN) and reported to NMFS. This information represents a minimum of potential turtle mortality, as it is likely that some animals are not reported or die offshore and never end up on coastal beaches. Further, these data do not necessarily indicate how the sea turtle mortality occurred, but instead may be used as an indicator of where sea turtles may be found. In order to provide a snapshot of temporal and seasonal distribution, albeit a cursory measure, Table 10presents strandings data by month and state from 1998-2010 combined. Data from 2008-2010 also include incidental captures.

Sea turtle strandings occurred in all months of the year in some states, but the majority of strandings occurred during the warmer months of May through October (if cold stunned turtles are excluded). For May, all NER states combined from 1998-2010, the total strandings were 431. Most of these strandings were found in Virginia. For November, all NER states combined

from 1998-2010, the total strandings were 1,041. A large number of the November strandings were found in Massachusetts and were likely cold stun animals. Note that cold stun turtles may also be found in November, December and January in New York, Connecticut, Rhode Island and even New Jersey as well. If strandings from Massachusetts are removed, there were 279 strandings in November from Rhode Island through Virginia during the same time period. During the warmer months, Virginia consistently reports the most strandings of any Northeast Region state, followed by New Jersey and New York.

Table 10 - Total strandings from 1998-2010 by month and state. Data collected by the STSSN.

State	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	**TOTAL**
VA	20	7	12	7	397	1553	431	320	352	323	187	45	**3654**
MD	1	0	0	0	24	115	46	45	78	30	6	2	**347**
DE	1	1	0	2	2	85	54	65	118	73	13	2	**416**
NJ	6	1	2	2	3	63	134	153	230	94	14	3	**705**
NY	14	2	1	0	3	16	140	122	77	35	51	105	**566**
CT/RI	0	1	0	1	0	3	27	43	33	10	8	2	**128**
MA	12	3	4	1	2	2	34	47	36	53	762	675	**1631**
TOTAL	**54**	**15**	**19**	**13**	**431**	**1837**	**866**	**795**	**924**	**618**	**1041**	**834**	**7447**

- Fishery bycatch data

Analyses of turtle interactions in bottom trawl, gillnet, and scallop dredge gear suggest that the risk of interactions in the Mid-Atlantic region where the scallop dredge fishery operates (~ west of 71°W to ~ 37°N) is higher from mid-May to late October than other times of the year, based on documented interactions and predicted interaction rates across the three gear types. Interactions between turtles and dredge gear could be possible on the edges of this time period (i.e. November) depending on the timing of turtles' seasonal migrations into and out of the Mid-Atlantic.

Turtle interactions in bottom trawl gear for fish and scallops have been observed almost year-round in the Mid-Atlantic with the exception of 16 Apr – 15 May (Figure 21). Interactions during winter (1 Dec – 15 Apr) occurred off NC, where the scallop fishery does not operate. Predicted interaction rates in the commercial fleet were relatively high between 41°N and 37°N during 16 May – 31 Oct, and lowest between 16 Apr – 15 May (Figure 22). Highest rates were in November, though mainly off NC where the dredge fishery does not operate.

Turtle interactions in sink gillnet gear occurred south of Cape Cod to North Carolina almost year-round with the exception of January (Figure 23). In the northern Mid-Atlantic, predicted interaction rates were relatively high in large mesh gear set in warm surface waters (>=15°C) (Figure 24). (From 37°N to 41°N, at least 25–50% of offshore (>20m) surface waters are predicted to be above 14°C by late April to late May, until late November to late December (Braun-McNeill et al. 2008)).

Turtle interactions in scallop dredge gear have been observed in the Mid-Atlantic from June through October (Figure 25). Predicted interaction rates were relatively high from July through October (Figure 26). The lack of documented interactions in a given month where turtles and

fishing effort are suspected to co-occur could be due to low observer coverage or to turtle behaviors which prevent them from interacting with the gear.

Bottom Trawls for Fish and Scallops (~3% average observer coverage per year)

Figure 21 - a) Observed bottom trawls for fish and scallops and observed sea turtle bycatch, June 1994–Dec 2008. The extent of the Mid-Atlantic (thick black line) is delineated along statistical areas (thin gray lines). b) Loggerhead bycatch in non-TED trawls by season: spring (16 Apr–15 May, none observed); summer (16 May–31 Oct, n=44); fall (1 Nov–30 Nov, n=13); winter (1 Dec–15 Apr, n=55). c) Non-loggerhead bycatch. The 50 m (dotted), 100 m (dashed) and 200 m (solid) depth contours are shown. From: Warden (in press).

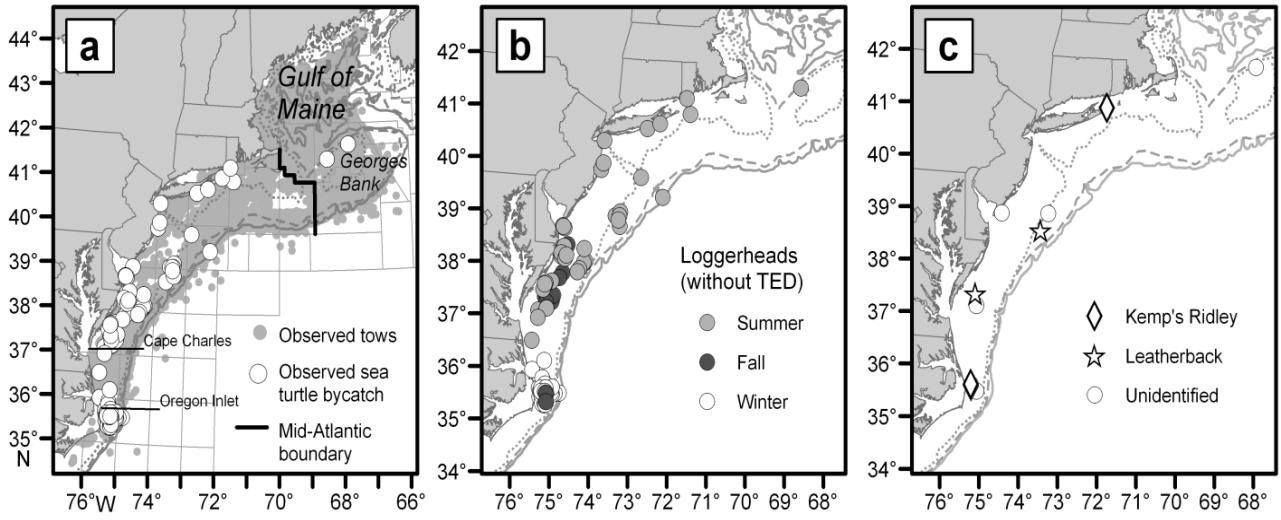
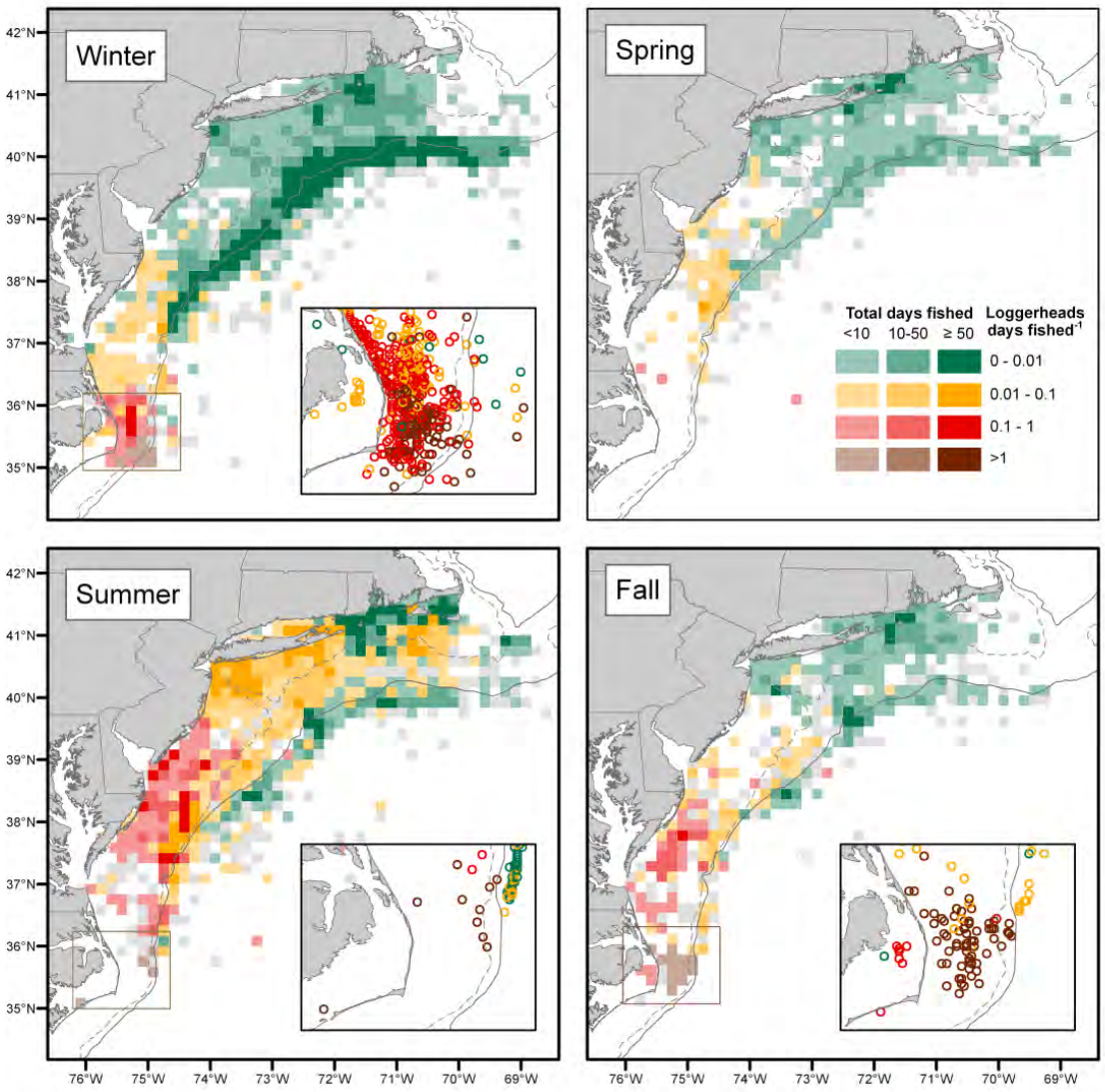
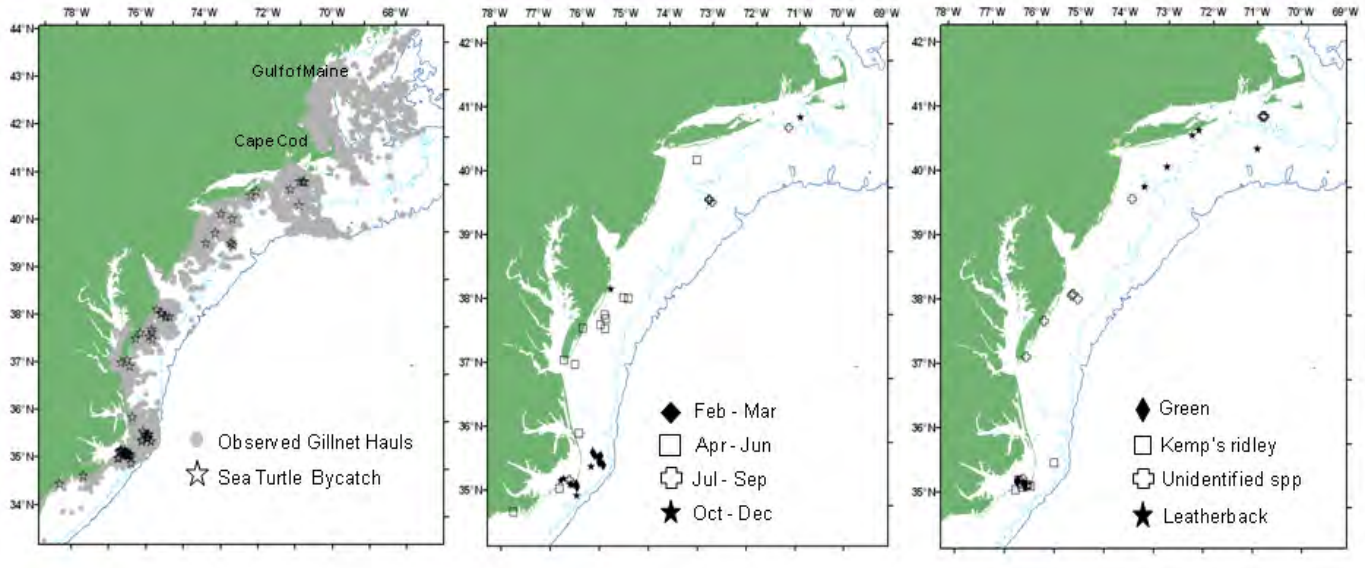


Figure 22 - Mid-Atlantic bottom trawl fisheries for fish and scallops, 2005–2008: predicted observable loggerhead interaction rates aggregated by 10′ squares. The highest interaction rates were predicted in the fall (1 Nov–30 Nov; maximum rate = 4.6 loggerheads day fished^{-1}), followed by summer (16 May–31 Oct; 3.3), winter (1 Dec–15 Apr; 1.5), and spring (16 Apr–15 May; 0.68). From: Warden (in press).



Sink Gillnets (~2% average observer coverage per year)

Figure 23 - Locations of observed sink gillnet hauls, 1995-2006. a) Observed hauls and turtle bycatch, b) Observed loggerhead bycatch, c) Observed green, Kemp's ridley, unidentified, and leatherback species bycatch. The 50m and 200m bathymetry lines are also shown. From Murray (2009).



Interactions in May and November are also shown individually:

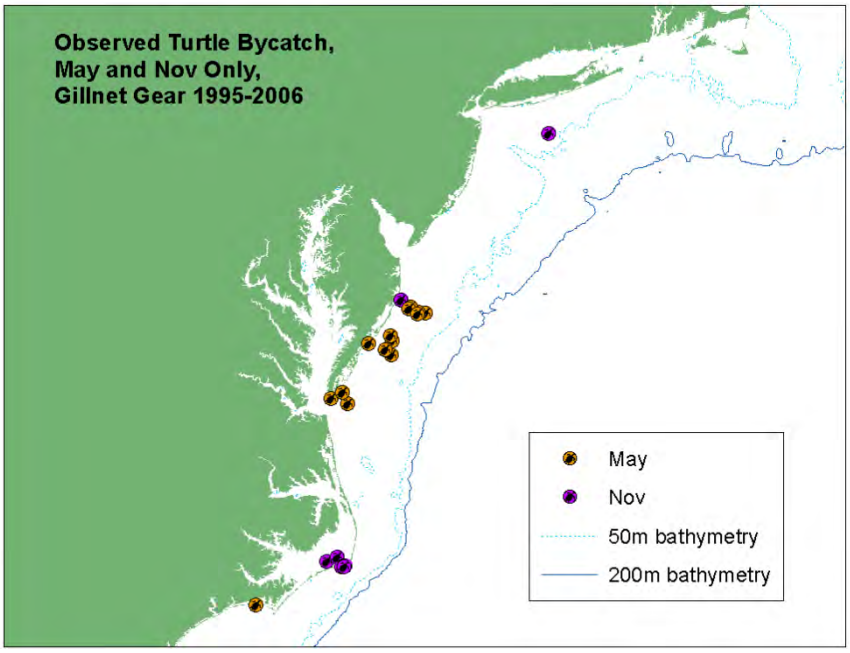
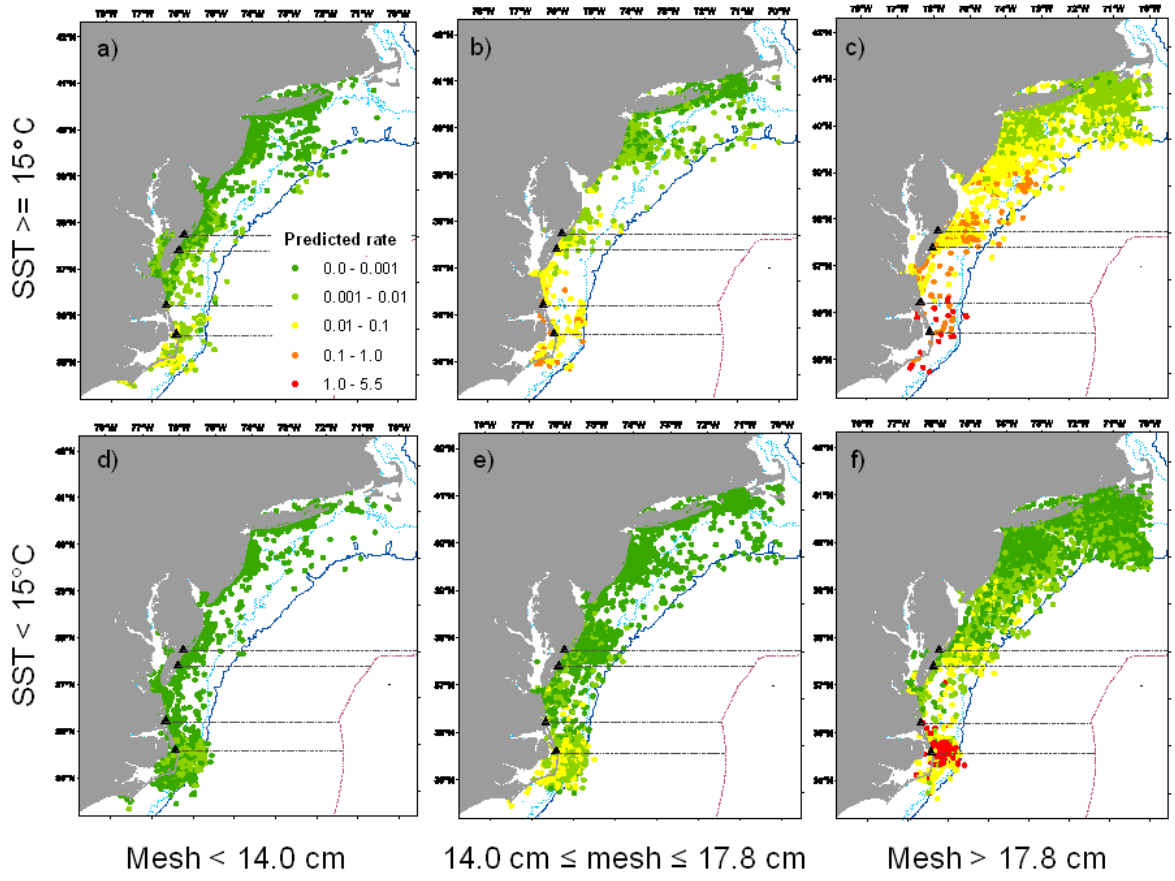
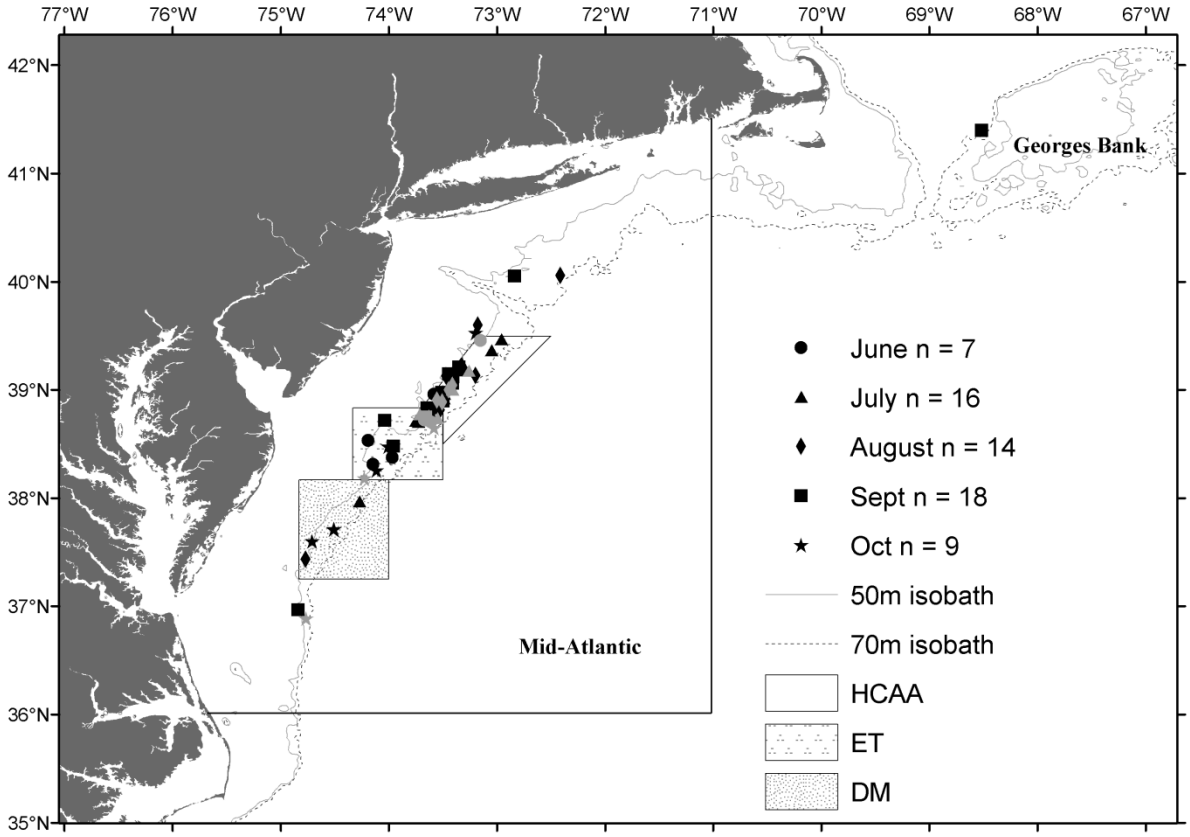


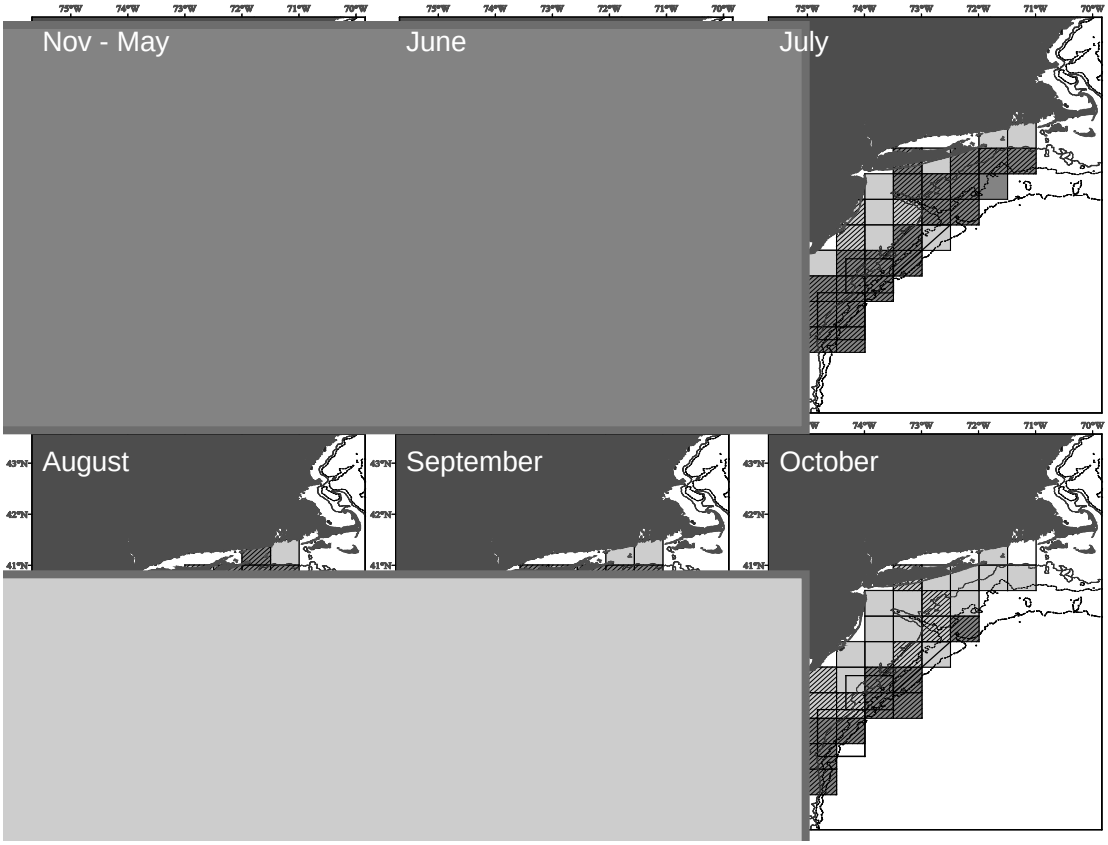
Figure 24 - Predicted bycatch rates on VTR gillnet trips 1995-2006. a) SST >= 15°C and mesh sizes < 14.0 cm, b) SST >= 15°C and mesh sizes >= 14.0 and < 17.8 cm, c) SST >= 15°C and mesh sizes >= 17.8 cm, d) SST<15°C and mesh sizes < 14.0 cm, e) SST<15°C and mesh sizes >= 14.0 cm and < 17.8 cm, f) SST<15°C and mesh sizes >= 17.8 cm. Boundaries of large mesh gillnet rotational closures are shown. Triangles from north to south: Chincoteague, VA, Wachapreague Inlet, VA, Currituck Beach Light, NC, and Oregon Inlet, NC. The 20m and 50m bathymetry and Exclusive Economic Zone (EEZ) are also shown. From Murray (2009).



Scallop Dredge (~3% average observer coverage per year)

Figure 25 - Distribution of observed sea turtles in scallop dredge gear during on-watch hauls 2001-2008, showing boundaries of Mid-Atlantic study area and Mid-Atlantic scallop fishery management areas. Unidentified turtle species are in gray, and the turtle outside of the study area is a Kemp's ridley. HCAA = Hudson Canyon Access Areas, ET = Elephant Trunk, DM = Delmarva. From Murray 2011.




Nov - May
June
July
August
September
October

4.4 HUMAN COMMUNITIES (ECONOMIC AND SOCIAL TRENDS)

4.4.1 Introduction

This section of the document summarizes the economic and social trends of the scallop fishery, including trends in landings, revenues, prices and foreign trade for the sea scallop fishery since 1994. In addition, it provides background information about the scallop fishery in various ports and coastal communities in the Northeast.

4.4.2 Trends in Landings, prices and revenues

In the fishing years 2009 and 2010, the landings from the northeast sea scallop fishery stayed above 56 million pounds, surpassing the levels observed historically (Figure 27). The recovery of the scallop resource and consequent increase in landings and revenues is striking given that average scallop landings per year were below 16 million pounds during the 1994-1998 fishing years, less than one-third of the present level of landings. The landings by the general category vessels declined, however, in 2010 as a result of the Amendment 11 implementation that restricts TAC for the limited access general category (LAGC) fishery to 5.5% of the total catch, which is now specified as the ACL under Amendment 15.

Figure 27. Scallop landings by permit category and fishing year (dealer data)

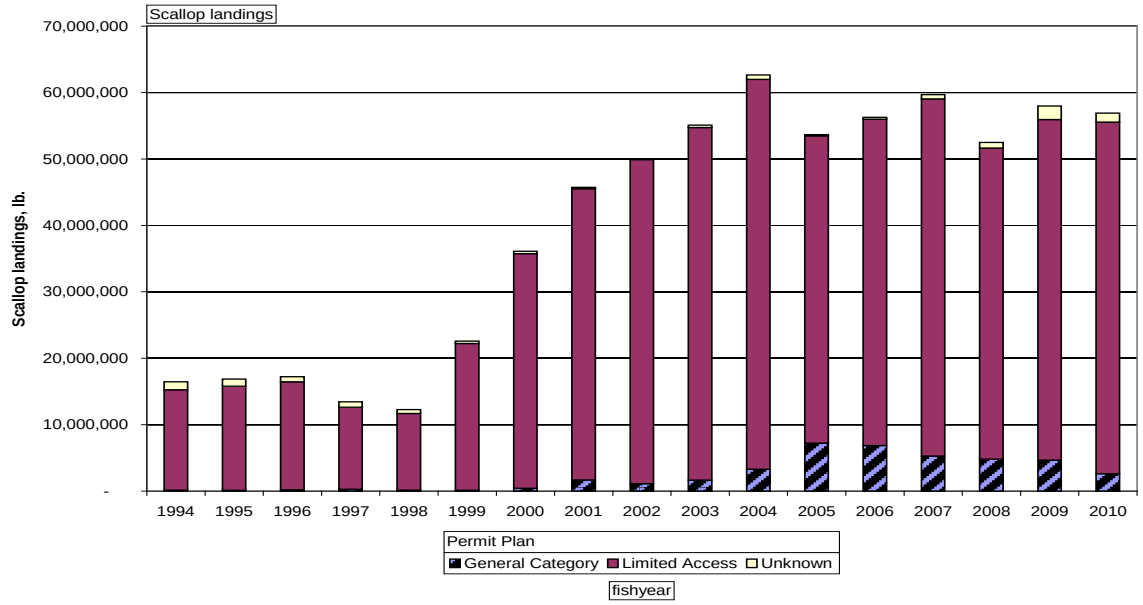
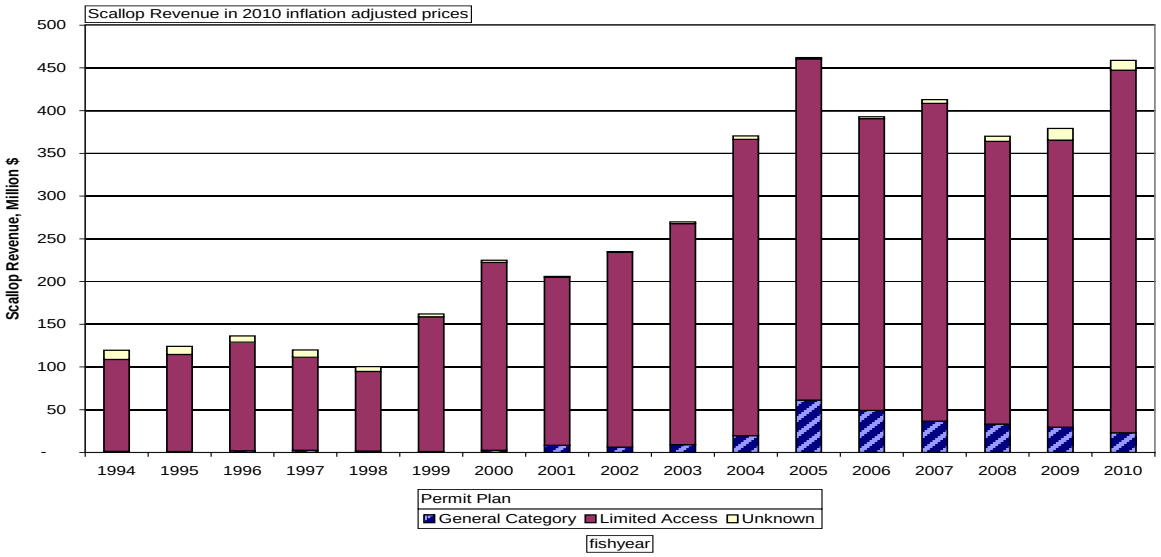


Figure 28 shows that total fleet revenues tripled from about $120 million in 1994 to over $450 million in 2010 (in inflation-adjusted 2010 dollars). The increase in total fleet revenue was mainly due to the increase in scallop landings and the increase in the number of active limited access vessels during the same period.

Figure 28. Scallop revenue by permit category and fishing year in 2010 inflation adjusted prices (dealer data)



The trends in revenue per full-time vessel were similar to the trends for the fleet as a whole. The average scallop revenue per limited access vessel tripled from about $400,000 in 1994 to over $1,200,000 in 2010 as a result of higher landings combined with an increase in ex-vessel price to about $8.00 per pound of scallops. Please see Figures 4 and 5 in Appendix I for average revenue per vessel by permit category. Although total landing and the number of general category vessels declined after the implementation of Amendment 11, average revenue for LAGC IFQ fishery increased to nearly $75,000 in 2010 from an average of $38,000 in 2008 (Figure 6 and Table 1, Appendix I).

4.4.3 Trends in effort and LPUE

There has been a steady decline in the total DAS used by the limited access scallop vessels from 1994 to 2010 fishing years as a result of the effort-reduction measures since Amendment 4 (1994) (Table 3, Appendix I). Total DAS-used declined further in 2008 to 24,121 days as the open area DAS allocations are reduced by 30% from 51 days to 35 days per full-time vessel, but increased to 26,300 in 2009 as the limited access vessels received access area trips (5 trips per vessel). Open area DAS allocations were slightly higher in 2010 (38 DAS versus 37 DAS in 2009). Total DAS-used by the limited access vessels were slightly higher in 2010 fishing year despite lower number of access area trips (4 trips per vessel) (Figure 7, Appendix I).

The impact of the decline in effort below 30,000 days-at-sea since 2005 (with the exception of 2007) on scallop revenue per vessel was small, however, due to the increase in LPUE from about 1600 pounds per day-at-sea in 2007 to over 2000 pounds per day-at-sea in 2010 (Figure 8, Appendix I). For trends in LPUE by permit plan and category please see Figure 7 and Figure 8 in Appendix I.

4.4.4 Trends in the meat count and size composition of scallops

Average scallop meat count has declined continuously since 1999 as a result of effort-reduction measures, area closures, and an increase in ring sizes implemented by the Sea Scallop FMP. The share of larger scallops increased with the share of U10 scallops rising to 15% in 2009 and 2010 compared to less than 10% in 2000-2004. The share of 11-20 count scallops increased from 12% in 1999 to 63% in 2010 and, the share of 30 or more count scallops declined from 30% in 1999 to less than 1% in 2010 on (Table 4, Appendix I). Larger scallops priced higher than the smaller scallops contributed to the increase in average scallop prices in recent years despite larger landings (Table 4 to Table 6, Appendix I).

4.4.5 The trends in participation by permit, vessel characteristics and gear type

The limited access scallop fishery consists of 347 vessels. It is primarily full-time, with 250 full-time (FT) dredge, 52 FT small dredge vessels and 11 FT net boats (Table 7 and Table 8, Appendix I). There no occasional permits left in the fishery since 2009 because they were converted to part-time small dredge (32 vessels in 2010). Similarly, there are only two part-time permits because most were converted into full-time dredge vessels after 2000.

Since 2001, 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 (Table 9 to Table 11, Appendix I). Amendment 11 implemented a limited entry program for the general category fishery reducing the number of general category permits after 2007. In 2010, there were 333 LAGC IFQ permits, 122 NGOM and 285 incidental catch permits in the fishery totaling 740 permits. Although not all vessels with general category permits were active in the years preceding 2008, there is no question that the number of vessels (and owners) that hold a limited access general category permit under the Amendment 11 regulations are less than the number of general category vessels that were active prior to 2008 (Table 11 and Table 12 in Appendix I).

4.4.6 Landings by gear type

Most limited access category effort is from vessels using scallop dredges, including small dredges. The number of vessels using scallop trawl gear has decreased continuously and has been at 11 full-time trawl vessels since 2006. In comparison, there has been an increase in the numbers of full-time and part-time small dredge vessels after 2002 (Table 13 through Table 15, Appendix I). About 80% of the scallop pounds are landed by full-time dredge and about 13% landed by full-time small dredge vessels since the 2007 fishing year.

Most general category effort is, and has been, from vessels using scallop dredge and other trawl gear. The percentages of scallop landings show that landings made with a scallop dredge in 2010 continue to be the highest compared to other general category gear types (Table 16 through Table 18, Appendix I).

4.4.7 Trends in ownership patterns in the scallop fishery

Sea Scallop Limited access fishery has a highly concentrated ownership structure (Table 19 to Table 26, Appendix 1). According to the ownership data for 2011, only 71 out of 343 vessels belonged to single boat owners (Table 21, Appendix I). The rest were owned by several individuals and/or different corporations with ownership interest in more than one vessel. This in contrast to the LAGC IFQ Fishery which is dominated mostly with single boat owners (155 out of 259 vessels belonged to the single boat owners, Table 27 to Table 30).

4.4.8 Trends in Foreign Trade

One of most significant change in the trend for foreign trade for scallops after 1999 was the striking increase in scallop exports. The increase in landings especially of larger scallops led to a tripling of U.S. exports of scallops from about 5 million pounds in 1999 to about 25 million pounds per year since 2005 (Figure 11 to Figure 12, Appendix I). In 2010, exports were about 25 million lb. and imports were 51.9 million lb. From January to May 2011, exports were 10.9 million lb. and imports were 35 million lb. Rebuilding of scallops as a result of the management of the scallop fishery benefited the nation by reducing the scallop trade deficit from over $230 million in 1994 to less than $80 million in 2009.

4.4.9 Dependence on the Scallop Fishery

Both full-time and part-time limited access vessels had a high dependence on scallops as a source of their income. Full-time limited access vessels had a high dependence on scallops as a source of their income and the majority of the full-time vessels (94%) derived more than 90% of their revenue from the scallop fishery in 2010 Comparatively, part-time limited access vessels were less dependent on the scallop fishery in 2010, with only 46% of part-time vessels earning more than 90% of their revenue from scallops (Appendix I, Table 31).

Table 32, Appendix I, shows that general category permit holders (IFQ and NGOM) are less dependent on scallops compared to vessels with limited access permits. In 2010, only about half (49%) of IFQ permitted vessels earned greater than 50% of their revenue from scallops. Among NGOM permitted vessels, only 31% earned more than 50% of their revenue from scallops in 2010. Scallops still comprise the largest proportion of the revenue for these general category vessels, accounting for 59% - 66% of the revenue for IFQ and NGOM vessels respectively (Appendix I, Table 32). The composition of revenue for the general category vessels are shown in Table 33, Appendix I.

The relative ease with which a vessel is able to switch between fisheries is an indicator of the dependence on any one fishery or species. Table 34 and Table 35 (Appendix I), show the number and percentage of scallop vessels with permits from other fishery management plans, while Table 34 to Table 39 (Appendix I) show the number scallop vessels that have actual landings of other species. Together, Table 34 through Table 37 describe a limited access fishery where a large percentage of vessels have permits in other fisheries but relatively few vessels actually landing species other than scallops. Alternatively, Table 38 and Table 39 (Appendix I) show a general category fishery where a large percentage of vessels have permits in other fisheries and landings of corresponding species.

4.4.10 Trends in scallop landings by port

The landed value of scallops by port landing fluctuated from 1994 through 2010 for many ports. During the past five years, five ports have consistently brought in the most landed value: New Bedford, MA; Cape May, NJ; Newport News, VA; Barnegat Light/Long Beach, NJ, and Seaford, VA (Appendix I, Table 40). In addition to bringing in the most landed value, in 1994 scallop landings represented more than 37% of the total landed value for New Bedford, MA and Cape May, NJ, and more than 65% of the total landed value for Newport News and Barnegat Light/Long Beach, NJ. This increased in 2010 to 84% and 87% for New Bedford, MA and Cape May, NJ, respectively, and 97% and 90% for Newport News and Barnegat Light/Long Beach, NJ, respectively. Collectively, 2010 has the highest landed value of scallops since 2005. 75% of ports saw an increase in the percentage of landed scallop value to total landed value in 2010 compared to 2009 (Appendix I, Table 41).

The largest numbers of permitted limited access scallop vessels are currently in the ports of New Bedford, MA and Cape May, NJ, which represent 38% and 19% of the total, respectively (Appendix I, Table 42). Of the 349 permitted limited access vessels in 2010, 199 originate from New Bedford, MA and Cape May, NJ. In addition to having the greatest number of permitted limited access scallop vessels, New Bedford, MA also has the greatest number of general category scallop vessels. Gloucester, MA, Boston, MA, and Point Judith, RI, also have high numbers of general category scallop vessels (Appendix I, Table 44). These major ports can also be described by the characteristics of the vessels that hail from each port. Table 45 (Appendix B) shows that on average limited access vessels are larger, by length and weight, than their general category counterparts.

4.5 NON-TARGET SPECIES AND OTHER FISHERIES

Non-target species (sometimes referred to as incidental catch or bycatch) include species caught by scallop gear that are both landed and not landed, including small scallops. The impacts of the scallop fishery on bycatch have been minimized to the extent practicable through management measures involving ring size, larger twine top, limits on effort, etc. In general, rotational area management is designed to improve and maintain high scallop yield, while minimizing impacts on groundfish mortality and other finfish catches. Access programs may even reduce fishing mortality for some finfish species, because the total amount of fishing time in access areas is low compared with fishing time in open areas due to differences in LPUE. Incidental catch is sometimes higher in access areas compared to open areas, but in general total scallop landings is also usually higher in access areas.

Potential non-target species caught incidentally in the scallop fishery were identified in Amendment 15 and Framework 22 based on discard information from the 2009 SBRM report (NEFSC 2009) and various assessments such as GARM III and the Skates Data-poor Workshop. Based on a report presented by NEFSC (2009), the Scallop Plan Development Team identified the following species as having more than 5% of total estimated catch from discards in the scallop fishery: monkfish, skate (overall), and windowpane flounder. The status of these species is listed in Table 6.

Data from GARM III show that the scallop fishery caught more than 5% of the bycatch (compared to overall catch) for some multispecies stocks by region. Georges Bank (GB) and Southern New England (SNE) yellowtail flounder were caught in amounts greater than 5%, but Cape Cod yellowtail only has occasional spikes over 5%. Although there is greater than 5% caught in both the GB/GOM and SNE/MA regions for windowpane flounder, the catch is generally greater in SNE/MA. The Skate Data-poor Working Group identified the greatest bycatch for the scallop fishery as little and winter skates. See Table 6 for the current status of these species, which has been updated based on assessment results from June 2011 and TRAC 2011.

Table 6. Status of non-target species known to be caught in scallop fishing gear, updated with assessment results from June 2011 and TRAC 2011.

Species	***Stock***	***Overfished?***	***Overfishing?***
Summer flounder (fluke)	Mid-Atlantic Coast	No	No
Monkfish	GOM/Northern GB	No	No
Monkfish	Southern GB/MA	No	No
Northeast Skate Complex	Barndoor skate	No	No
Northeast Skate Complex	Clearnose skate	No	No
Northeast Skate Complex	Little skate	No	No
Northeast Skate Complex	Rosette skate	No	No
Northeast Skate Complex	Smooth skate	No	Yes
Northeast Skate Complex	Thorny skate	No	Yes
Multispecies	Windowpane - GOM/GB	Yes	Yes
Multispecies	Windowpane - SNE/MA	Yes*	No*
Multispecies	Winter flounder - GB	No	No
Multispecies	Winter flounder - GOM	Unknown	No
Multispecies	Winter flounder - SNE/MA	Yes	No
Multispecies	Yellowtail flounder - CC/GOM	Yes	Yes
Multispecies	Yellowtail flounder - GB	Yes	No
Multispecies	Yellowtail flounder - SNE/MA	Yes	Yes
Atlantic Surfclam	Mid-Atlantic Coast	No	No
Ocean Quahog	Atlantic Coast	No	No

** This status based on GARM III but based on survey results from 2008-2010 the stock may be rebuilt. The Council is waiting for a final status determination from NMFS, expected in October 2011.*

Fishing year 2010 is the first year that the Multispecies Plan was under ACL management. Therefore, monitoring of multispecies catch (landings and discards) has been at the forefront of Council discussions. The tables below describe a summary of multispecies catch from the scallop fishery in fishing year 2010 under the Multispecies plan. GB and SNE/MA Yellowtail flounder are the only two stocks that currently allocate a sub-ACL to the scallop fishery, but the Multispecies FMP may be considering one for SNE/MA windowpane and SNE winter flounder stocks in the near future. Therefore these species have been added to the tables below. A complete summary of all catch in the multispecies fishery for 2010 can be found at: http://www.nero.noaa.gov/ro/fso/reports/Sector_Monitoring/Mults_YE10_Summary.pdf .

Table 11 is a summary of 2010 YT, SNE/MA winter, and SNE windowpane flounder catch, including landings and discards in the scallop fishery. Table 12 compares the GF catch in the scallop fishery to the sub-ACL for YT species, as well as the total ACL for all three species. In 2010, the YT catch in the scallop fishery was below the allocated sub-ACLs for both YT stocks, 12.1% for GB and 83.7% for SNE/MA. Compared to the total YT ACL, the scallop fishery caught about 1.5% for GB and about 24% for SNE/MA YT. The scallop fishery does not have a sub-ACL for SNE/MA winter or SNE/MA windowpane flounder, but the Council may consider one in the future based on recent GF Committee motions to consider that in GF FW47. In 2010, the scallop fishery was estimated to catch 72.6 mt of SNE winter flounder, about 12% of the total ACL. This amount of catch is similar to previous years. However, the scallop fishery was estimated to catch 178.3 mt of SNE/MA windowpane flounder, about 79% of the total ACL for that stock (225 mt.). This catch level of windowpane is higher than recent years. The GF PDT is examining whether a sub-ACL should be considered for these two stocks under the GF plan in Framework 47.

Table 11 – Summary of 2010 year end accounting of NE Multispecies catch (mt)

Stock	Total GF Catch	Scallop Catch	Total GF Landings	Scallop Landings	Total GF Discards	Scallop Discards
GB YT	781.6	17.6	681.6	0.2	100.1	17.4
SNE YT	318.8	113.0	174.3	2.7	144.5	110.3
SNE Winter	363.2	72.6	159.5	2.0	203.6	70.7
SNE Windowpane	N/A	178.3	N/A	N/A	N/A	177.8

N/A - To date, the GF catch values indicated with N/A are being recalculated and are not available.

Table 12 – Summary of 2010 ACLs, catch, and percent of ACLs caught by the scallop fishery

Stock	Total ACL	Sub-ACL to Scallop fishery	Catch of GF by scallop fishery	Percent of sub-ACL used	Percent of total ACL used by scallop fishery
GB YT	1170	146	17.6	12.1%	1.5%
SNE YT	470	135	113.0	83.7%	24.0%
SNE Winter	605	No sub-ACL	72.6	No sub-ACL	12%
SNE Windowpane	225	No sub-ACL	178.3	No sub-ACL	79.2%

4.5.1 State water scallop catch

A more detailed description of state water scallop catch is included in this action because Framework 23 is considering implementation of a measure that could impact state water scallop fishing activity. Therefore, a more detailed description of recent catch and revenue information about scallop fishing in state waters has been included in this section below.

Many states do not have sea scallops in state waters; therefore, there are no specific permits or management programs in place. However, some states do have some basic measures in place and a handful have many that are similar to federal regulations. Table 13 is a summary of sea scallop catch from state permitted vessels from state waters in 2008-2010. Most states do not have any reported landings, and some information is confidential because it is from a small number of vessels and/or dealers.

Table 13 – Calendar year scallop landings from state permitted vessel that do not have a federal permit (Source: ACCSP)

Year	2008	2009	2010
Massachusetts	28,986	167,865	121,416
Maine (Harvester reports)**	87,808	132,769	244,603
New York	*	12,839	*

- Confidential – data from less than three vessels and/or dealers
- ** Maine Department of Marine Resources did not have mandatory harvester reporting until December 2008, no not all harvester landings for 2008 are complete for that calendar year.

Several states have sporadic occurrences of scallops within state waters but they are generally fished out very quickly. The states of Virginia, Maryland, Delaware, New Jersey, New York, and Connecticut do not have any scallop specific regulations in place. The state of North Carolina has a minimum size of 3.5 inches (in-shell scallops) and a tolerance of not more than 10% by number for undersized scallops allowed. For more information on NC scallop regulations see: http://portal.ncdenr.org/web/mf/marine-fisheries-commission-members-and-rules

Moving up the coast, Rhode Island allows a vessel to land scallops in state waters if it has either a commercial multi-purpose license or commercial shellfish license. While there have not been state water scallop landings in RI for sometime there are some regulations in place. For both commercial and recreational vessels there is a 3.5 inch minimum size restriction, and dredge width max of 10.5 feet. For commercial vessels there is a 400 pound possession limit and it is 40 pounds for the recreational permit. Currently there are no landings or other specific restrictions in place for sea scallops. For commercial vessels there are several other gear requirements such as a 4-inch ring, and 10-inch mesh. For more information see: http://www.dem.ri.gov/pubs/regs/regs/fishwild/rimf7.pdf.

New Hampshire is another state that has a relatively restricted program that is fairly consistent with the federal plan despite the fact there has not been stable scallop fishing in NH state waters. New Hampshire has a fishing season that is only open from November 1- April 14. There is a size limit of 3.5 inch shell height and a possession limit of 200 pounds per day. There are several gear restrictions as well: max dredge width of 4 feet, ring size of 4 inches and minimum mesh size of 10-inches, and no obstructions, chafing gear or lines in the dredge. Possession of all other species is prohibited except for mahogany quahogs and surf clams. For more information see the 2011 New Hampshire Saltwater Fishing Digest at: http://www.wildlife.state.nh.us/pubs/digests/SW_2011.pdf.

The only states in the North Atlantic that seem to have sea scallops consistently in state waters are Massachusetts and Maine. No person can possess scallops in MA in excess of recreational limits (1 bushel) unless licensed as a commercial fisherman. An individual can harvest scallops commercially by hand if they have a commercial permit endorsed for sea scallop diving permit or with mobile gear if they have a limited access Coastal Access Permit (CAP). The state is proposing to amend mobile gear permitting by creating a species-specific sea scallop endorsement. Any current CAP permit holder would be eligible to receive the proposed commercial scallop endorsement, unless that vessel is dually permitted to catch scallops under a federal permit.

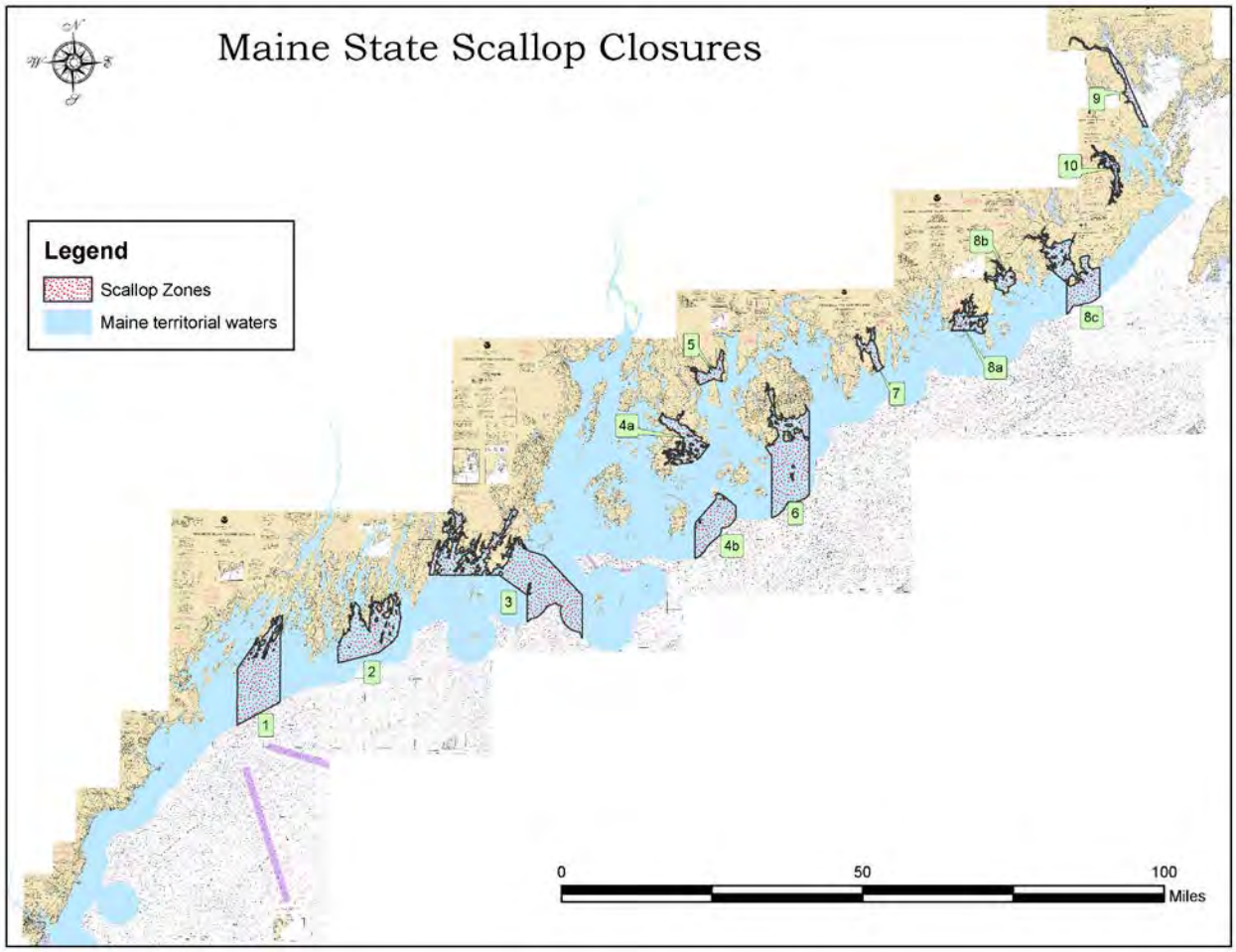
There are several dredge gear requirements in place: dredge width max of 10-feet and a minimum of 3.5-inch ring size restriction. The state is currently considering increasing the ring size to 4-inches and requiring a twine top no less than 10-inches square or diamond mesh. It is unlawful to catch scallops less than 3.5-inches with a 10% tolerance for undersized scallops. Currently there is no possession limit, but the state is considering implementing one in the near future (200 pounds of shucked scallops or 2,000 pounds in-shell per trip or 24-hour period, whichever is longer). No scallops can be landed in-shell unless the area fished is approved by the National Shellfish Sanitation Program.

The regulations for both commercial dive and CAP permits can be found at: http://www.mass.gov/dfwele/dmf/commercialfishing/cmr_index.htm. (The relevant regulations can be found at 322 CMR 4.06, 4.10, 6.05 and 7.05). The state is considering modifying some of these regulations to be more consistent with the federal plan. Public hearings will be scheduled for the fall with possible implementation in spring 2012.

Finally, the state of Maine has the most developed state water management program, but is also has the most abundant scallop resource within state waters. It has evolved over time and has changed dramatically in recent years following implementation of the federal NGOM program. Overall the current state plan is very consistent with the federal management program. The fishery became limited entry in 2008 and since that time there has been mandatory dealer and vessel reporting requirements. There is a fishing season from December 15 through March 27 with specific weekdays that are prohibited during those months and prohibition on fishing at night as well. There are a handful of gear requirements including but not limited to: ring size restriction of 4-inches, twine top minimum of 5.5 inches, limits on number of rows in the dredge based on dredge width, and no chafing gear or cookies allowed. In-shell scallops much be 4-inches, there is a possession limit of 200 pounds per day per vessel, and non-commercial licenses may not possess more than 1 bushel of shellstock scallops. Finally, license holder must be on board when vessel is scallop fishing. There are area specific limits and restrictions for Cobscook Bay and there are ten specific conservation closed areas where scallop fishing is currently prohibited (Figure 29). These areas are scheduled to reopen December 15, 2012, three years after they were closed in 2009. These areas encompass about 20% of state territorial waters.

For more information about the specific shellfish regulations in Maine state waters see: http://www.maine.gov/dmr/lawsandregs.htm.

Figure 29 – Scallop conservation areas in Maine state waters



5.0 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

5.1 IMPACTS ON SCALLOP RESOURCE

To assess the impacts of the turtle deflector dredge on the scallop resource, these analyses focused on the changes in scallop catch and size selectivity of the TDD compared to a standard commercial dredge. The Scallop PDT used a generalized linear mixed effects model (GLMM) to evaluate the performance of the turtle deflector dredge from over 3,000 paired tows of the turtle deflector dredge and a standard commercial scallop dredge. In addition to the quantified impacts of the TDD on scallop catch, Section 5.1.1 also includes more general statements about qualitative impacts of the various boundary, season, vessel, and timing alternatives on the scallop resource.

The impacts of the YT AM alternatives on the scallop resource were assessed using observer data, data from the vessel monitoring system (VMS), as well as vessel trip report data (VTR) to summarize where vessels are fishing and how the seasonal AM closures could impact the scallop resource from potential effort shifts. The impacts of the potential change related to state water catch and NGOM permits was analyzed by summarizing recent state water catch from the SAFIS system and assessing the potential effort shifts that could occur from these alternatives. Finally, the impact of the VMS alternative on the scallop resource was analyzed qualitatively based on potential changes in fishing behavior and steaming time versus fishing time.

See Section 4.1 for a description of the scallop resource related to this action.

5.1.1 Turtle deflector dredge

5.1.1.1 No Action related to turtle deflector dredge (No Action TDD)

Under the No Action TDD alternative, the turtle deflector dredge (TDD) would not be required for scallop vessels fishing in the Mid-Atlantic. Vessels would continue to use the standard commercial dredge or chose to use the TDD without a regulatory requirement. The No Action Alternative would not be expected to change fishing behavior (timing/location/total catch) or efficiency from what is currently occurring. Therefore, the TDD No Action would have no additional impacts on the scallop resource. There are reports that TDDs may slightly increase scallop catch compared to the standard commercial dredge. Therefore, No Action may be slightly less efficient at catching scallops compared to the TDD, but these reports found this difference to be statistically insignificant.

5.1.1.2 TDD Requirement Alternative

Under this alternative the Council is considering several different options for where this TDD dredge should be required, what time of year or season it should be required, which vessels should be required to use it, and how long the delay of effectiveness should be for this dredge requirement. The impacts on the scallop resource for each of those options are assessed separately in Section 5.1.1.2.2 through 5.1.1.2.5. This section will first summarize the impacts on the scallop resource overall of this TDD requirement compared to No Action TDD.

In an effort to reduce the capture of threatened and endangered sea turtles, a modified dredge frame was designed by personnel at Coonamessett Farm in Falmouth, MA. Modifications to the dredge were intended to reduce the injuries suffered by turtles by reducing the probability of being captured by the gear. A series of experiments were conducted to determine the efficacy of this dredge with respect to turtles. While the primary goal of these modifications were focused on sea turtles, the impact of the turtle deflector dredge (TDD) with respect to the target species (sea scallops) and finfish bycatch is also critically important if the modified dredge is to be considered for implementation into the fishery. Dr. Dave Rudders with VIMS and a member of the Scallop PDT prepared the analyses in this section, which evaluates the impacts of the TDD on scallop and finfish catch compared to the standard commercial dredge. The detailed methods and results are included in this action because these analyses have not been published yet to reference.

Overall, implementation of this dredge is not expected to impact fishing behavior significantly compared to No Action TDD alternative. It is possible that some vessels will choose to fish in areas and seasons outside of the TDD requirement, but some of the limited access fleet is already using this dredge, and more vessels are expected to switch to this dredge due to reports of increased scallop catch and reduced finfish bycatch compared to the standard commercial dredge.

5.1.1.2.1 Evaluation of the TDD on scallop catch

A series of paired tow, gear comparison experiments were conducted to assess the efficiency of the TDD relative to a standard New Bedford style commercial sea scallop dredge. The objective of these experiments was to determine whether the gear performance characteristics of the two dredges differed and how those differences might be reflected in differential catch rates and size selection of both scallops and the major finfish bycatch species. Ultimately, 21 experimental cruises were conducted from 2008 through 2011, performing roughly 2,250 paired tows. To examine the comparative data, the Scallop PDT used a Generalized Linear Mixed Model (GLMM) to analyze the paired catch data and test for differences in both the pooled over length catch data as well as test for differences in the length composition of the catch. Within this modeling framework, the random effects acknowledge the potential for differences that may have occurred at both the trip and individual tow levels.

Overall, the two dredges performed roughly equivalently with respect to sea scallops. The TDD was slightly more efficient (~4.3%), although this difference was not statistically significant. No differences in the size selectivity of the two dredges were detected for scallops. With respect to finfish bycatch, results were varied. The TDD generally reduced the capture of flatfish and some skates however, these differences were not statistically significant. Similar to scallops no differences in the size selectivity of the finfish bycatch was detected. A more detailed description of the impacts on finfish bycatch are summarized in Section 5.5.1.1.

5.1.1.2.1.1 Data collection and analysis

Experimental Design

The paired tow experiments were conducted within the context of either regular commercial fishing trips, gear comparison trips or a bycatch survey of the Georges Bank Closed Areas. As a result the experimental protocol varied, ranging from actual commercial conditions to more

defined protocols as determined by the gear comparison or survey experimental designs. As a result of this variability and large number of trips, the paired tows were conducted throughout the range of the scallop form the mid-Atlantic Bight (MAB) to Georges Bank. This approach has the advantage of being realistic relative to the actual biotic and abiotic conditions that the dredge will be operated in. In addition, varied species assemblages were sampled, to accurately represent the how the potential gear will be used. Multiple vessels and slight variation in gear handling and design were included in the experimental design and while this variability exists, the modeling approach detailed in the next section accounts for this variability and allows for a more broad inference (relative to vessels) to be made.

For each paired tow, the entire scallop catch was placed in baskets. A fraction of these baskets were measured to estimate length frequency for the entire catch. The shell height of each scallop in the sampled fraction was measured in 5 mm intervals. This protocol allowed for the determination of the size frequency of the entire catch by expanding the catch at each shell height by the fraction of total number of baskets sampled. Finfish and invertebrate bycatch was quantified, with finfish being sorted by species and measured to the nearest 1 cm.

Statistical Models

Scallop catch data from the paired tows provided the information to estimate differences in the fishing power of each vessel/gear combination tested and is based on the analytical approach in Cadigan *et. al.,* 2006. Assume that each vessel/gear combination tested in this experiment has a unique catchability. Let q_r equal the catchability of the CFTDD and q_f equal the catchability of the standard dredge used in the study. The efficiency of the CFTDD relative to the standard dredge will be equivalent to the ratio of the two catchabilities.

$$\rho_l = \frac{q_r}{q_f} \qquad (1)$$

The catchabilities of each the gear are not measured directly. However, within the context of the paired design, assuming that spatial heterogeneity in scallop and fish density is minimized, observed differences in scallop catch for each vessel will reflect differences in the catchabilities of the vessel/gear combinations tested. Our analysis of the efficiency of the TDD relative to the standard dredge consisted of two levels of examination. The first analysis consisted of an examination of potential differences in the total catch per tow. Subsequent analyses investigate whether size (i.e. length) was a significant factor affecting relative efficiency. Each analysis assumes a hierarchy of random variation and nests tow by tow variation within trip level variation.

Let C_{iv} represent the scallop catch at station i by dredge v, where $v=r$ denotes the TDD and $v=f$ denotes the standard New Bedford style dredge. Let λ_{ir} represent the scallop/fish density for the i^{th} station by the TDD and λ_{if} the scallop/fish density encountered by the standard dredge. We assume that due to random, small scale variability in animal density as well as the vagaries of gear performance at tow i, the densities encountered by the two gears may vary as a result of small-scale spatial heterogeneity as reflected by the relationship between scallop patch size and coverage by a paired tow. The probability that a scallop is captured during a standardized tow is given as q_r and q_f. These probabilities can be different for each vessel, but are expected to be constant across stations. Assuming that capture is a Poisson process with mean equal to variance, then the expected catch by the TDD is given by:

$$E(C_{if}) = q_f \lambda_{if} = \mu_i \quad (2)$$

The catch by the standard dredge is also a Poisson random variable with:

$$E(C_{ir}) = q_r \lambda_{ir} = \rho \mu_i \exp(\delta_i) \quad (3)$$

Where $\delta_i = \log(\lambda_{ir}/\lambda_{if})$. For each station, if the standardized density of scallops encountered by both vessels is the same, then $\delta_i = 0$.

If the dredges encounter the same scallop density for a given tow, (i.e. $\lambda_{ir} = \lambda_{if}$), then ρ can be estimated via a Poisson generalized linear model (GLM). This approach, however, can be complicated especially if there are large numbers of stations and scallop lengths (Cadigan *et. al*., 2006). The preferred approach is to use the conditional distribution of the catch by the TDD at station *i*, given the total non-zero catch of both vessels at that station. Let c_i represent the observed value of the total catch. The conditional distribution of C_{ir} given $C_i = c_i$ is binomial with:

$$\Pr(C_{ic} = x | C_i = c_i) = \binom{c_i}{x} p^x (1-p)^{r_i - x} \quad (4)$$

Where $p = \rho/(1+\rho)$ is the probability that a scallop taken in the survey is captured by the TDD. In this approach, the only unknown parameter is ρ and the requirement to estimate μ for each station is eliminated as would be required in the direct GLM approach (equations 2 & 3). For the Binomial distribution $E(C_{ir}) = c_i p$ and $Var(C_i r) = c_i p/(1-p)$. Therefore:

$$\log\left(\frac{p}{1-p}\right) = \log(\rho) = \beta \quad (5)$$

The model in equation 5, however does not account for spatial heterogeneity in the densities encountered by the two gears for a given tow. If such heterogeneity does exist then the model becomes:

$$\log\left(\frac{p}{1-p}\right) = \beta + \delta_i \quad (6)$$

where δ_i is assumed to be normally distributed with a mean=0 and variance=σ^2. This model is the formulation used to estimate the gear effect $exp(\beta_0)$ when scallop catch per tow is pooled over lengths.

Often, modifications can result in changes to the length based relative efficiency of the two gears. In those instances, the potential exists for the catchability of scallops at length, *l* to vary. Models to describe length effects are extensions of the models in the previous section to describe the total scallop catch per tow. Again, assuming that between-pair differences in standardized scallop density exist, a binomial logistic regression GLMM model for a range of length groups would be:

$$\log\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \delta_i + \beta_1 l, \delta_i \sim N(0,\sigma^2), i = 1,...,n. \quad (7)$$

In this model, the intercept (β_0) is allowed to vary randomly with respect to cruise(station).

The potential exists, however, that there will be variability in both the number as well as the length distributions of scallops encountered within a tow pair. In this situation, a random effects model that again allows the intercept to vary randomly between tows is appropriate (Cadigan and Dowden, 2009). This model is given below:

$$\log\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \delta_{i0} + \beta_1 * l, \delta_{ij} \sim N(0,\sigma_j^2), i = 1,...,n, j = 0,1. \quad (8)$$

Adjustments for sub-sampling of the catch and differences in area swept

Additional adjustments to the models were required to account for sub-sampling of the catch as well as differences in the observed area swept by the two gears. In some instances, due to high volume, catches for particular tows were sub-sampled. Often this is accomplished by randomly selecting a subset of the total catch (in baskets) for length frequency analysis. One approach to accounting for this practice is to use the expanded catches. For example, if half of the total catch was measured for length frequency, multiplying the observed catch by two would result in an estimate of the total catch at length for the tow. This approach would artificially overinflate the sample size resulting in an underestimate of the variance, increasing the chances of spurious statistical inference (Millar *et. al.*, 2004; Holst and Revill, 2009). In our experiment, the proportion sub-sampled was consistent throughout each tow and did not vary with respect to scallop length. This difference must be accounted for in the analysis to ensure that common units of effort are compared.

Let q_{ir} equal the sub-sampling fraction at station i for the vessel r. This adjustment results in a modification to the logistic regression model:

$$\log\left(\frac{p_i}{1+p_i}\right) = \beta_0 + \delta_{i0} + (\beta_1 + \delta_{i1})l_i + \log\left(\frac{q_{ir}}{q_{if}}\right), \delta_{ij} \sim N(0,\sigma_j^2), i = 1,...,n, j = 0,1. \quad (9)$$

The last term in the model represents an offset in the logistic regression (Littell, *et. al., 2006*). The Scallop PDT used SAS/STAT® PROC GLIMMIX to fit the generalized linear mixed effects models.

5.1.1.2.1.2 Results and Discussion

Overall, roughly 2,250 paired tows were completed over the course of the experiment. Only a subset was actually sampled for scallop/fish and not all species were present in each of the sampled tows. Total catch for the major species with the number of sampled tows are shown in Table 14. For the intercept only model (gear effect only) a scatterplot of the scallop catches from the paired tows are shown in Figure 30. Parameter estimates are shown in Table 15. The performance of the two dredges was variable and only in the case of summer flounder and monkfish was the estimated relative efficiency values statistically significant.

For the two parameter model (length effects) there were no significant differences in the length compositions of the catches of the two gears, although a trend for the TDD to be less efficient as length increased was observed (negative parameter estimates B_1). Graphs depicting the length based data as well as estimated proportions are shown in Figure 31. Parameter estimates for the 2 parameter length based model are shown in Table 16.

In both model formulations, area (MAB, CAI, CA2) were examined as a possible covariate to test for the potential for differential performance as a function of abiotic factors (i.e. tide, substrate). In all cases, area was found to be non-significant and was subsequently removed from the model.

In summary, the two dredges performed roughly equivalently with respect to sea scallops. The TDD was slightly more efficient (~4.3%), although this difference was not statistically significant. No differences in the size selectivity of the two dredges were detected for scallops; therefore, the TDD is not expected to have different impacts on the scallop resource compared to the standard commercial dredge.

Figure 30 - Total scaled pooled scallop catches for TDD vs. the standard New Bedford style scallop dredge (top panel) The black line has a slope of one. The dashed line has a slope equal to the estimated relative efficiency (from the one parameter gear effect only model).

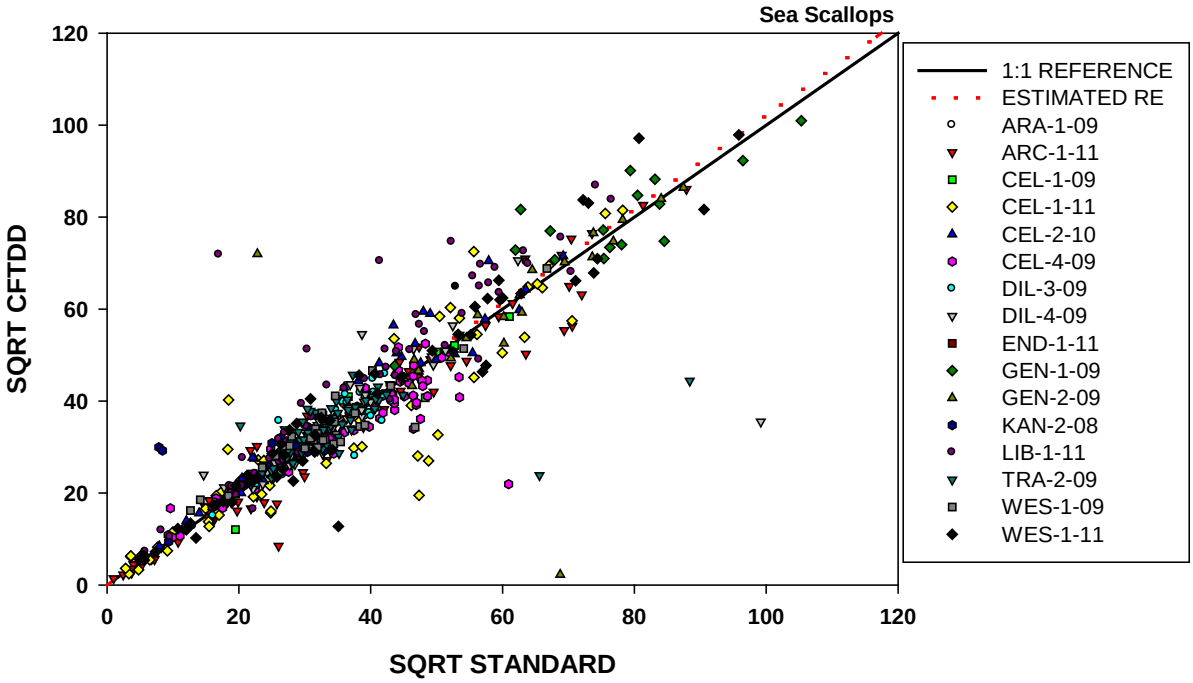


Figure 31 - Observed scaled length frequency distributions for the TDD and the New Bedford style scallop dredge. The green triangles represent the observed proportions ($Catch_{CFTDD}/(Catch_{STAND} + Catch_{CFTDD}$). The grey shaded area represents the 95% confidence band around the estimated relative efficiency values as estimated by the two parameter (gear and length effect model.

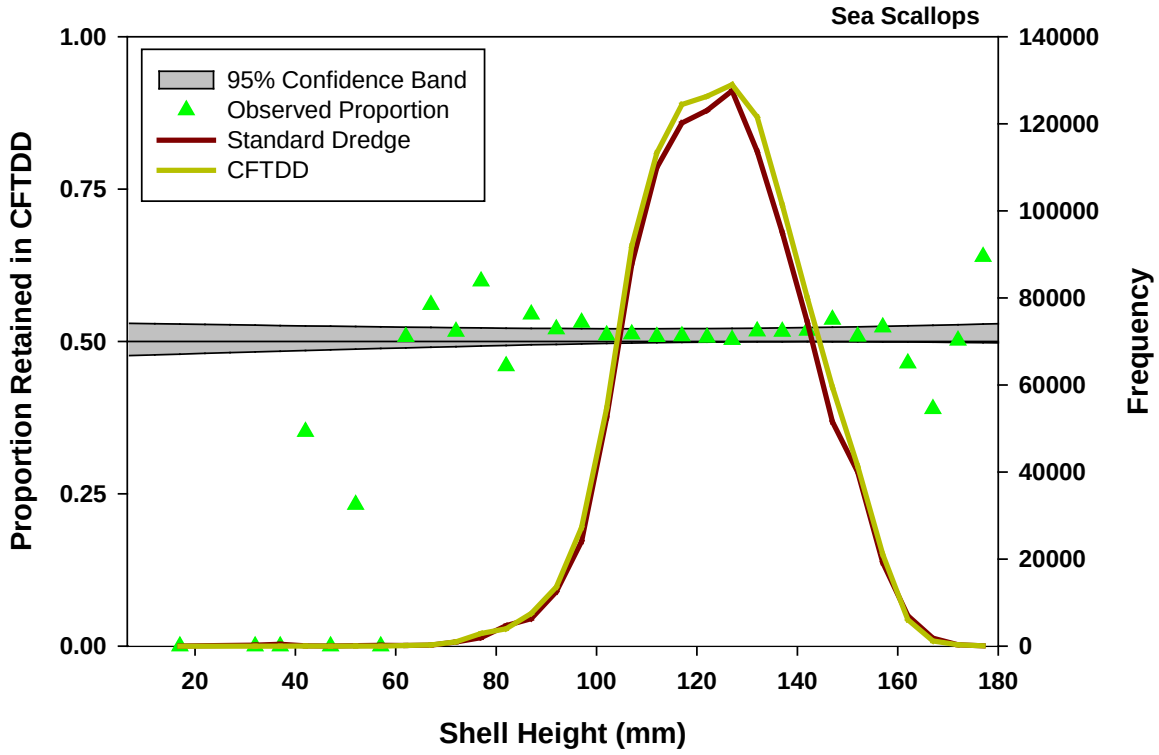


Table 14 - Summary data for the paired tow experiments.

Common Name	Scientific Name	Number of Hauls Sampled	Standard Dredge	CFTDD	% Difference
Sea Scallops	*Placopecten magellanicus*	*666*	1,075,579	1,128,660	-4.94
Unclassified Skates	*Raja Spp.*	*306*	11441	11606	-1.44
Clearnose skate	*Raja eglanteria*	*152*	750	784	-4.53
Little skate	*raja erinacea*	*548*	24685	23696	4.01
Barndoor skate	*Raja laevis*	*182*	268	251	6.34
American Plaice	*Hippoglossoides platessoides*	*122*	203	154	24.14
Summer Flounder	*Paralichtys dentatus*	*291*	709	578	18.48
Fourspot Flounder	*Paralichtys oblongotus*	*295*	467	535	-14.56
Yellowtail Flounder	*Limanda ferruginea*	*293*	1668	1432	14.15
Blackback Flounder	*Psuedopleuronectes americana*	*141*	328	267	18.60
Witch Flounder	*Glyptocephalus cynoglossus*	*84*	75	105	-40.00
Windowpane Flounder	*Scophthalmus aquasus*	*311*	2537	1871	26.25
Monkfish	*Lophius americanus*	*418*	849	970	-14.25

Table 15 - Mixed effects model (gear effect only) results. Parameter estimates are on the logit scale and significant estimates are shown in bold.

Common Name	Scientific Name	Tows Sampled	DF	Estimate (β_0)	Standard Error	Lower 95% CI	Upper 95% CI	t	p-value
Sea Scallops	*Placopecten magellanicus*	*666*	*15*	*0.0427*	*0.0226*	*-0.0055*	*0.0908*	*1.89*	*0.078*
Unclassified Skates	*Raja Spp.*	*306*	*9*	*0.051*	*0.067*	*-0.102*	*0.204*	*0.756*	*0.469*
Clearnose skate	*Raja eglanteria*	*152*	*1*	*0.037*	*0.058*	*-0.696*	*0.771*	*0.646*	*0.635*
Little skate	*Raja erinacea*	*548*	*12*	*-0.012*	*0.069*	*-0.162*	*0.138*	*-0.170*	*0.868*
Barndoor skate	*Raja laevis*	*182*	*5*	*-0.106*	*0.161*	*-2.446*	*1.893*	*-0.660*	*0.538*
American Plaice	*Hippoglossoides platessoides*	*122*	*5*	*-0.179*	*0.293*	*-0.932*	*0.573*	*-0.613*	*0.567*
Summer Flounder	*Paralichtys dentatus*	*291*	*10*	***-0.205***	*0.056*	*-0.330*	*-0.079*	*-3.624*	*0.005*
Fourspot Flounder	*Paralichtys oblongotus*	*295*	*15*	*0.109*	*0.098*	*-0.100*	*0.317*	*1.112*	*0.284*
Yellowtail Flounder	*Limanda ferruginea*	*293*	*6*	*-0.235*	*0.127*	*-0.547*	*0.076*	*-1.847*	*0.114*
Blackback Flounder	*Psuedopleuronectes americana*	*141*	*6*	*-0.488*	*0.259*	*-1.122*	*0.145*	*-1.886*	*0.108*
Witch Flounder	*Glyptocephalus cynoglossus*	*84*	*9*	*0.376*	*0.184*	*-0.040*	*0.792*	*2.044*	*0.071*
Windowpane Flounder	*Scophthalmus aquasus*	*311*	*11*	*-0.202*	*0.157*	*-0.547*	*0.144*	*-1.285*	*0.225*
Monkfish	*Lophius americanus*	*418*	*16*	***0.134***	*0.048*	*0.032*	*0.236*	*2.784*	*0.013*

Table 16 - Two parameter mixed effects model results. The comparison models the logit of the proportion of the catch at length from the CFTDD relative to the total catch from both dredges. Confidence limits are Wald type confidence intervals. Parameter estimates are on the logit scale and significant parameter estimates are shown in bold.

Common Name	Scientific Name		Estimate	Standard Error	Lower 95% CI	Upper 95% CI	t	p-value
Sea Scallop	*Placopecten magellanicus*	β_0	0.0109	0.0566	-0.1098	0.1318	0.19	0.849
		β_1	0.0002	0.0001	-0.0008	0.0010	0.57	0.570
Barndoor skate	*Raja laevis*	β_0	-0.1680	0.2822	-0.8934	0.5574	-0.60	0.578
		β_1	0.0009	0.0035	-0.0059	0.0078	0.27	0.789
American Plaice	*Hippoglossoides platessoides*	β_0	-0.8496	1.0081	-3.4409	1.7417	-0.84	0.438
		β_1	0.0179	0.0257	-0.0327	0.0684	0.70	0.487
Fourspot Flounder	*Paralichtys oblongotus*	β_0	-0.1180	0.3286	-0.8183	0.5823	-0.36	0.724
		β_1	0.0081	0.0112	-0.0138	0.0301	0.73	0.467
Yellowtail Flounder	*Limanda ferruginea*	β_0	0.0775	0.4199	-0.9499	1.1048	0.18	0.860
		β_1	-0.0085	0.0109	-0.0299	0.0128	-0.78	0.434
Blackback Flounder	*Psuedopleuronectes americana*	β_0	-0.6498	0.6795	-2.3125	1.0128	-0.96	0.376
		β_1	0.0040	0.0154	-0.0263	0.0342	0.26	0.797
Witch Flounder	*Glyptocephalus cynoglossus*	β_0	0.4468	1.1662	-2.1914	3.0849	0.38	0.711
		β_1	-0.0018	0.0292	-0.0594	0.0558	-0.06	0.951
Windowpane Flounder	*Scophthalmus aquasus*	β_0	0.2424	0.3192	-0.4602	0.9450	0.76	0.464
		β_1	-0.0164	0.0104	-0.0367	0.0039	-1.59	0.112
Monkfish	*Lophius americanus*	β_0	0.1976	0.1586	-0.1386	0.5338	1.25	0.231
		β_1	-0.0014	0.0034	-0.0081	0.0052	-0.42	0.673

5.1.1.2.2 Impacts of TDD spatial boundary options

This action considered two boundary options: Option 1 is east of 71º W and Option 2 is a boundary consistent with the one used in the biological opinion for the scallop fishery – the "RPM line" (Figure 4). These boundaries are similar and include most of the Mid-Atlantic, but Option 1 includes more area east of 72 W and north of 40 N, including Long Island Sound. In general, the additional area included in Option 1 that is not in Option 2 is not an area with high concentrations of scallops or scallop fishing. However, the scallop fishing that does occur in that area is primarily from vessels that land scallops in New York and Rhode Island, See Section 5.4.1.1.2.1 for more information on the fishing community impacts of this measure.

Overall, implementing this gear is not expected to cause great shifts in effort unless there are vessels that primarily fish in the Mid-Atlantic that would not want to invest in a new dredge gear to continue fishing in that area and season. For example, there are some general category vessels that have only qualified for a limited amount of quota; therefore, purchasing a new dredge at approximately $2,500 to $3,000 for smaller dredge widths, may not be justified. So those vessels may decide to lease out their quota, or fish in a different area. Therefore there may be some amount of effort that could shift from the Mid-Atlantic to a different area not included in the TDD boundary options, but that total amount of effort is limited overall and is not expected to have direct impacts on the scallop resource.

In addition, since the amount of scallop fishing is relatively limited in the area that is different between the two boundary options (area east of 72º W and north of 40º N), there is essentially no difference in terms of impacts on the scallop resource between the two boundary options.

5.1.1.2.3 Impacts of seasonal options for TDD requirement

Under the TDD Requirement alternative, this action considered three seasonal options: Option 1 is June1-October 31, Option 2 is May 1-October 31, and Option 3 is May 1-November 30. While these seasons do vary by a month or so in length, the actual impacts on the scallop resource are minimal since many vessels will simply decide to invest in the new gear or not, and if they do, they may end up using it all or most of the year if they are content with its performance or they will decide not to invest in the gear and will have to fish outside of the selected boundary option or wait until the turtle season is over. So there may be some level of effort shift as a result of the seasonal options, but it would be minimal overall. In general, scallop meat weights are greater in May than the rest of the year, so if Options 2 and 3 cause some effort to shift in other seasons for vessels that decide not to switch gears, that could have negative impacts on the scallop resource. However, scallop meat weights are lesser in November (Option 3), so if effort shifts from that time to another month with greater meat weights outside of the turtle window such as April, that could have positive impacts on the fishery. Overall, there may be potential impacts on the scallop resource from limited amounts of effort shifts caused by the three TDD seasonal options, but direct impacts on the scallop resource are minimal, and there is very little difference among the options considered in terms of impacts on the resource.

In the past the Council did not include the first two weeks of June in the effort limit RPMs (seasonal closures of access areas and maximum number of trips) implemented in Framework 21

and 22 because the first two weeks of June are very productive in terms of scallop meat yield. However, including early June for three seasonal options is different than including it as part of the effort limitation measures adopted in Framework 22 since that limitation was expected to shift effort through seasonal closures or effort limits, while this seasonal option is related to gear, so effort may still occur in those productive periods, compared to other months with lower meat weighs. Shifting effort to a season with lesser meat weights will increase fishing mortality and increase fishing costs resulting in negative impacts on the resource and fishery. The TDD Requirement alternative itself is not expected to cause effort shifts to the same degree as a direct limit on effort like the RPM because if a vessel switches to a TDD it would not have to change when and/or where it fishes.

Overall, since these three seasonal options are relatively long in length, 5-7 months, it seems unlikely that a limited access scallop vessel currently fishing in the Mid-Atlantic would not invest in the new gear, and only fish in the months not included in the range (December-April). Therefore, in reality if most or all limited access vessels that fish primarily in the Mid-Atlantic do invest in this gear so they can fish in the Mid-Atlantic during the time of year turtles are more likely to overlap with the fishery, they may end up fishing with that gear type all year long if they are content with the performance. Therefore, the relative difference among the seasonal options is minimal. It may be more likely that a general category vessel that only qualified for a limited amount of allocation would not want to invest in new gear if it is able to fish in other seasons outside of the TDD requirement, so there may be some amount of effort shift as a result of these seasonal options in terms of LAGC effort shift. However, the total amount of effort is minimal thus there are no overall impacts on the resource expected. See Section 5.4.1.1.2.2 for more information on the fishing community impacts of this measure.

5.1.1.2.4 Impacts of options related to which vessels required to use TDD

Under the TDD Requirement Alternative, there are three vessel options under consideration for this action: the TDD would be required for all limited access vessels (Option 1); the TDD would be required for all vessels (i.e. limited access and limited access general category IFQ vessels) (Option 2); or the TDD would be required only for limited access and limited access general category IFQ vessels that use dredge gear greater than 10.5 feet when fishing in the Mid-Atlatnic outside of an access area, but all vessels, regardless of dredge size, would be required to use the TDD within Mid-Atlantic access areas (Option 3). Impacts of these three options on the scallop resource depend on whether or not vessels will shift effort to different areas or seasons as a result of being required to use the TDD Requirement Alternative. For Option 1, it seems unlikely that a limited access vessel that primarily fishes in the Mid-Atlantic would not invest in new gear if the alternative to that is being restricted to either fish on Georges Bank or to be restricted to fish in the Mid-Atlantic during the months outside the range of the seasonal options. Therefore, there are no substantial impacts to the resource expected from Option 1 since minimal or no effort shifts are expected from larger vessels in the limited access fishery.

It is more difficult to predict changes in fishing behavior under Options 2 and 3 for smaller vessels and general category vessels that may have only qualified for limited amount of resource since the cost associated with new gear may not be outweighed by the flexibility to fish in areas and times that may be more desirable. In general, if Options 2 and 3 cause a vessel to fish in an area that is less efficient in order to avoid having to purchase new gear, that could have

potentially negative impacts on the resource if that effort shifts to a time or area with lower scallop catch rates. If the TDD is required for LAGC vessels, as under Options 2 and 3, this restriction could increase the amount of IFQ that is leased among the LAGC fishery.

5.1.1.2.5 Impacts of implementation options for TDD requirement

Overall the implementations options for the TDD Requirement Alternative, ranging between 90 days to 2-years, are not expected to have direct impacts on the scallop resource because there is no statistical difference between the standard commercial dredge and the TDD in terms of scallop catch and selectivity. Therefore, the implementation date of this gear requirement would not have an impact on the scallop resource. Fishery allocations are annual, so whether the effective date is 90 days or 2-years, vessels cannot increase catch above their annual allocation in anticipation of a gear change requirement.

5.1.2 Review and revise accountability measures for the yellowtail flounder sub-acl

This action is considering several specific modifications to improve the overall effectiveness of the Amendment 15 YT AMs in the GB and SNE/MA stock areas (seasonal area closures within each YT stock area if the sub-ACL is exceeded).

This section will summarize the impacts of the yellowtail flounder AM alternatives on the scallop resource. The primary sources of information used for these analyses are observer data and VMS data. General conclusions are drawn about potential effort shifts that may be caused by the AM alternatives under consideration for both the limited access and limited access general category IFQ fisheries.

5.1.2.1 Refine YT seasonal closure AM schedule

5.1.2.1.1 No Action related to YT seasonal closure AM schedule

If this alternative is selected, there will be no changes to the yellowtail flounder accountability measures adopted under Amendment 15. The length of closures for specific statistical areas within each stock area would close based on the previous year's overage, beginning with the month of March and continuing through February in consecutive order. As described in Amendment 15, some level of effort shift is expected if the YT AMs are triggered in either GB or SNE/MA. In general, effort shifts can have negative impacts on the scallop resource if effort is shifted into areas and/or seasons with lower scallop catch rates. The current YT AMs are only applicable to limited access scallop vessels.

5.1.2.1.2 Refine the YT seasonal closure AM schedule

If the AM schedule is refined to close areas when bycatch rates are highest, that means the area will be closed when YT catch is highest and scallop catch is lowest. If that effort stays in the same place but is shifted to a time with higher scallop catch rates the impacts on the scallop resource should be beneficial. The proposed AM schedule is similar to the No Action AM schedule in terms of overall length of a closure, but the order of months included in the closure vary.

Impacts on the scallop resource from SNE/MA YT AM

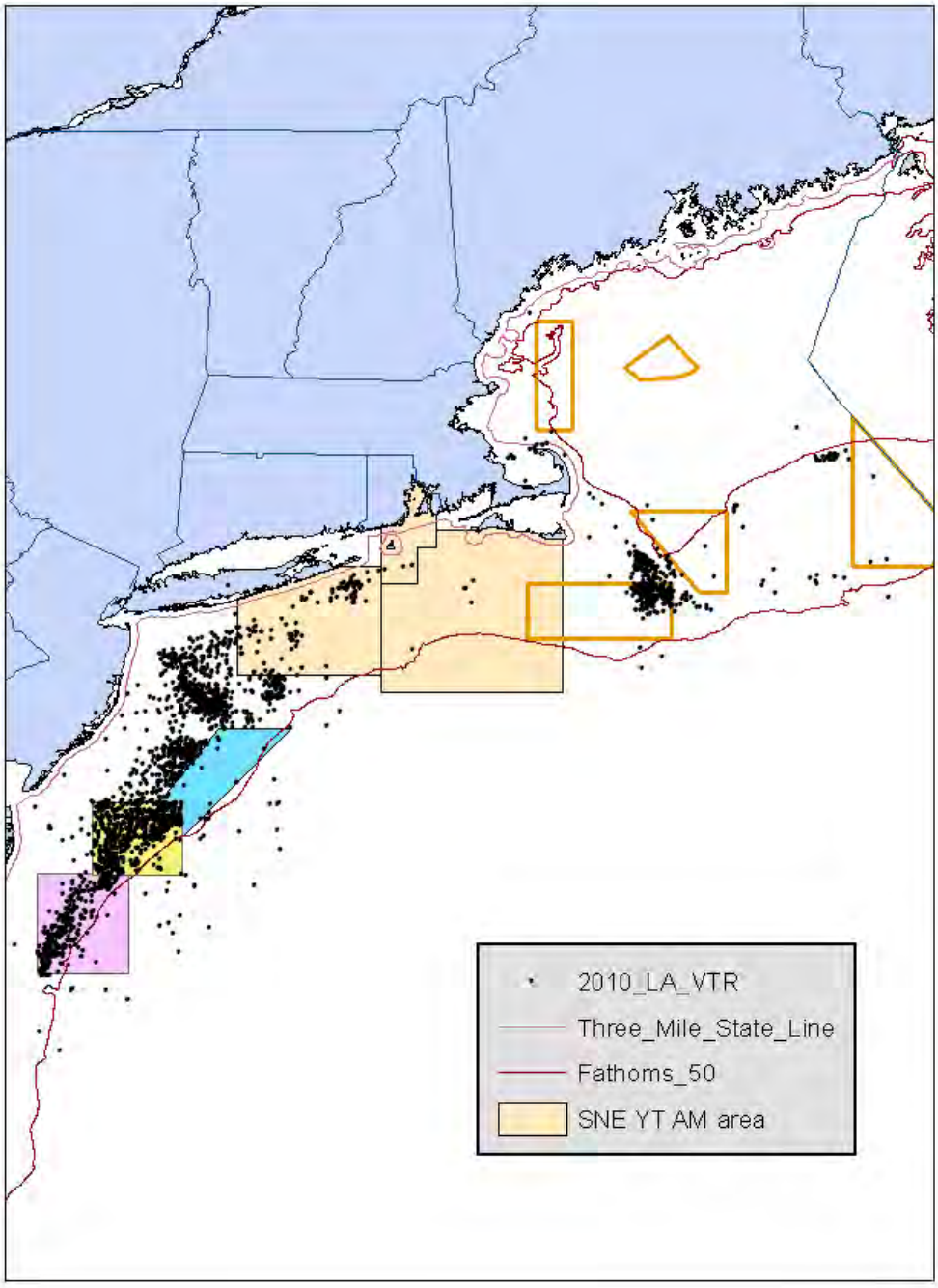
For the SNE/MA AM schedule, the major difference is that the proposed closure is primarily in the early spring and winter first, rather than starting with spring and summer under the current AM. Closing the area in the winter and early spring (proposed) compared to the spring and summer (No Action) will have beneficial impacts on the scallop resource because meat weights are generally highest in late spring and early summer. Therefore, if any effort shifts by season as a result of this AM, impacts on the resource should be beneficial. Some effort may shift to another area instead, and those impacts are less certain since effort could shift to an area with higher or lower scallop catch rates. Overall, the SNE/MA YT AM area is not a primary fishing area for the limited access scallop fishery. Therefore, the total amount of effort shift is minimal even if the area is closed for the entire year. For example, based on 2010 VTR data, less than 6% of total scallop catch from trips more than 400 pounds was harvested from statistical areas 537, 539, and 613 – the SNE/MA YT AM area (Figure 32).

Overall, the SNE/MA closures are not expected to have large impacts on the limited access fleet given that only 4.6% of the total landings of FT dredges and even a smaller proportion of the landings for full-time small dredges come from these areas. But for a subset of vessels that fish in those areas, when the yellowtail overage is relatively small (8% or less), the proposed closures will shift relatively more landings to the other areas and seasons compared to the Amendment 15 schedule (Table 3). These AMs would likely cause some level of effort shift; if it shifts to seasons with higher meat weights that will benefit the scallop resource, and vice versa. However, the impacts overall to the scallop resource are minimal since this area is not a primary fishing ground; the majority of landings are from areas outside the SNE/MA YT AM boundary.

Impacts on the scallop resource from GB YT AM

As for GB, the major difference compared to No Action for revising the YT AM schedule is that the proposed AM closure schedule would begin in the fall followed by the winter months, when YT bycatch rates are highest. This is also the time of year when scallop meat weights are least, so impacts on the scallop resource should be less compared to No Action, which closes the area beginning in March through the spring and summer when scallop meat weights are larger. Effort shifts to other areas as a result of this alternative are less likely because the majority of fishing in statistical area 562 is on Closed Area II access area trips, and those are area-specific trips that can only be taken in that area, unless it is closed because the YT bycatch TAC in that area has been exceeded. Therefore, if an AM is imposed in area 562 during a year when the Closed Area II access area is open, effort will shift to months outside of the AM closure. If the overage is 39% or less Closed Area II would be closed from August-January and effort would be shifted to the remaining months the area is open, June 15-July 31 when scallop meat weights are greater compared to the fall and winter. Shifting effort to times of the year with greater scallop meat weights is generally positive for the scallop resource.

Figure 32 – 2010 Scallop dredge trips over 400 pounds within the SNE/MA YT AM area (beige area) compared to the entire fishery. For reference Mid-Atlantic access areas (other shaded areas) and GF closed areas (hallow orange areas on GB and GOM) have been included. (VTR data)



5.1.2.2 Mechanism to adjust AMs for bycatch sub-ACLs allocated to the scallop fishery

No Action for this measure is that the estimate of YT catch in the scallop fishery made on or about January 15 determines whether AMs are triggered and how long the seasonal closure should be in effect, regardless of whether or not final estimates suggest the AM should be different. This action also considered a mechanism to adjust AMs if the final estimate of YT catch for Year 1 (Option 2), available several months after the start of the fishing year for Year 2, differs from the original estimate provided in January. Option 2 would give the Regional Administrator authority to revise decisions regarding implementation of an approved accountability measure for bycatch ACLs based on the final estimate of catch.

Therefore, if the final estimate is lower the length of time the YT AM area is closed can be reduced. In addition, if the final estimate is higher than the original projection, this alternative would also give the Regional Administrator the authority to close the AM area for longer than the original schedule based on a preliminary estimate of catch. This alternative does not give the Regional Administrator authority to impose accountability measures outside the scope of approved measures.

In general this measure is administrative and provides flexibility needed to manage a bycatch sub-ACL based on the best available information. If the final estimate varies from the preliminary estimate the program should be able to adjust so that ultimately the appropriate measures are in place to either reduce YT catch further if final estimates are higher, or relax AMs to prevent further impacts on the fishery is final estimates are lower. Overall the impacts on the scallop resource from No Action or Option 2 are expected to be neutral since the length of the closure will only have indirect impacts on the scallop resource. For SNE/MA the YT AM area is not located in a primary scallop fishing area, so while some effort may shift based on this mechanism, the overall level of effort in this area is limited. For GB, in years when CA2 is open modifying a seasonal closure would impact more effort and this seasonal closure begins in the fall rather than the start of the fishing year, so there is a greater chance that final estimates would be available before the area is scheduled to close.

5.1.3 Modification to the NGOM LAGC program

5.1.3.1 No Action NGOM

If this alternative is selected there will be no changes to the NGOM management program. The impacts of the NGOM program were assessed in Amendment 11, the action that adopted the program. This area is managed with a hard TAC so the impacts on the scallop resource are controlled. The area closes to all scallop fishing permits when the TAC is reached to ensure conservation of the resource in that area. Therefore, since the NGOM has a hard TAC the NO Action would have no additional impacts on the scallop resrouce.

5.1.3.2 Require that if a vessel with a Federal NGOM wants to fish in state waters and not have that catch apply to the Federal NGOM TAC, that vessel is restricted to fish in state waters only for that trip (NGOM Alternative)

Under the proposed alternative, a vessel with a Federal NGOM permit will have to declare before it leaves on a trip whether it will be fishing exclusively in state waters or not. This alternative includes various options on which NGOM vessels would be applicable and also on whether the TAC in Federal waters should be adjusted. If it decides to fish exclusively in state waters, on a trip-by-trip basis, the scallop catch from state water-only trips will not be applied against the Federal NGOM TAC. If it fishes in both state and Federal waters on a single trip, the scallop catch will be applied to both TACs.

Figure 33 shows 2010 VTR data for all scallop dredge trips with 400 pounds of scallops or less, summarized by port of landing per state. Note this figure is not for trips with just NGOM permitted vessels; all trips under 400 pounds have been shown to provide an illustration of where most scallop fishing is occurring in the NGOM area, in both state and Federal waters. In addition, all scallop landings within the NGOM management area, including LAGC IFQ vesels are applied against the NGOM TAC, not just catch from NGOM-permitted vessels.

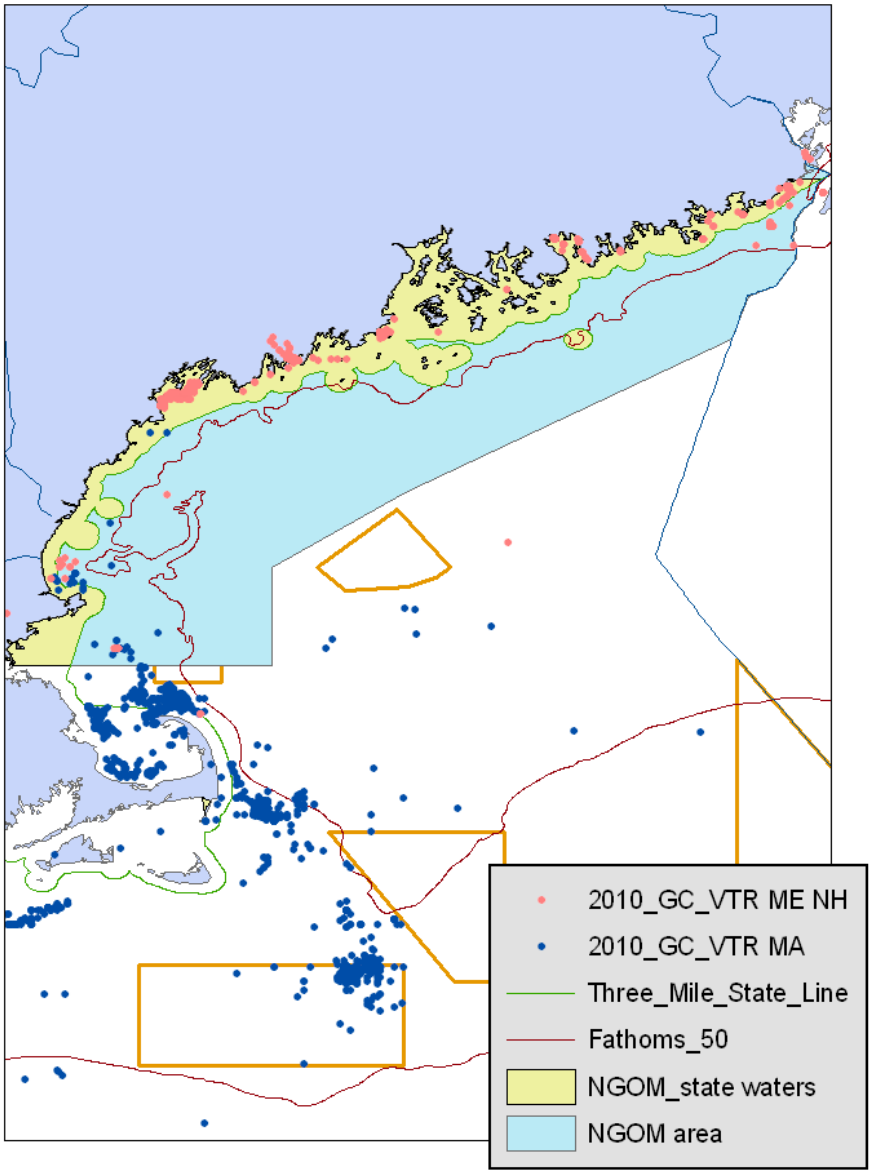
About 84% of all 400-pound trips within the NGOM management area were reported within state waters. It is possible that some of these trips spent some time in Federal waters and some time in state waters during a single trip, but the total catch from the trip is associated with the single location reported from the vessel trip report. If this action changes how state water catch is accounted for within the NGOM management area, it can be assumed that most or all future catch from state waters would *not* be applied toward the Federal NGOM TAC if vessels declare and fish in state waters only. See Table 38 for a summary of catch for only NGOM-permitted vessels only. Under this alternative, if the current trend continues (the majority of catch in the NGOM management area is from within state waters), the majority of catch from within the NGOM management area will not be applied against the TAC since it is caught in state waters. Therefore, there will be more TAC available for scallop catch in Federal waters in the NGOM if NGOM vessels fish exclusively in state waters by declaring a state waters-only trip. Limited access general category IFQ vessels, as well as limited access incidental catch will still be applied against the NGOM TAC, even if it was caught exclusively in state waters within the NGOM area. Limited access vessels fishing in the NGOM under a DAS do not have their landings applied to the NGOM TAC, but this practice does not occur often in recent years, if at all.

The potential for increased catch in Federal and/or state waters is possible under this alternative because it would allow a vessel with a Federal NGOM permit to fish in state waters within the NGOM area and not affect the Federal NGOM TAC. Once the NGOM TAC is reached, all Federal vessels are prohibited to fish in the entire NGOM area, so that will preserve the conservation of the scallop resource in that area overall. However, if vessels with Federal NGOM permits are not fishing in Federal waters, they may change behavior and initially fish more exclusively in state waters first so the Federal TAC is not reduced. Therefore, impacts on the scallop resource in state waters will rely more on regulations in place by each state. To date, the only states with similar management programs are Maine and New Hampshire. The state of

Massachusetts is currently developing a scallop endorsement program but it is not effective yet. See Section 4.5.1 for a more detailed summary of scallop management in each state.

At present, the potential increased risk of more scallop catch from state and/or Federal waters within the NGOM from this alternative is very limited and not likely since current effort levels in this area are minimal. Total catch in the NGOM area has been well below the current TAC of 70,000 pounds. In 2008 total catch from NGOM was under 10,000 pounds, in 2009 it was about 15,500 pounds and in 2010 total catch was under 12,000 pounds. These totals include catch in state waters on vessels with a federal NGOM permit. Therefore, at present this alternative is not expected to have impacts on the scallop resource, positive or negative compared to the No Action NGOM Alternative.

Figure 33 – Location of all scallop trips, all permit categories, with 400 pounds or less by port of landing by state in the NGOM area (blue shaded area). GF closed areas included for reference. (2010 VTR data)



5.1.3.2.1 Options of which vessels

The impacts of the State water catch not applying to the NGOM TAC Alternative could impact state fisheries differently so the Committee decided to develop several options in terms of which states this change would apply to. The first option is for vessels homeported in the state of Maine only, and the second option would apply to all vessels with a NGOM permit, regardless of homeport state.

As Table 6 describes, if Option 1 is selected, roughly 30 vessels from the state of Maine would potentially benefit from this exemption. There are over 800 commercial state licenses in Maine (683 dragger and 135 diver) and about 200 of them are active. In 2010, state landings were approximately 0.19 million pounds, ex-vessel value of $1.49 million dollars. If this option is selected the 30 or so vessels with a Federal NGOM permit could fish up to 70,000 pounds (or 31,000 pounds if adopted) in Federal waters as well as fish under state water restrictions in Maine if they have a permit.

Under the State water catch not applying to NGOM TAC Alternative, any vessel with a NGOM permit would be able to fish exclusively in the state waters portion of the NGOM and not have those landings applied to the Federal NGOM TAC. Since the state of Maine has similar, and in some cases more restrictive regulations in state waters compared to the Federal NGOM program, it is unlikely that fishing effort will increase in state waters as a result of this action. In Massachusetts there is currently no possession limit, so vessels with a state only permit can land scallops with no possession limit, but vessels with a Federal permit have to abide to the more restrictive rules, thus 200 pounds per trip if fishing under a Federal NGOM permit. Since these vessels would be restricted to 200 pounds even if fishing in state waters only, this alternative is not expected to increase fishing effort in state waters compared to No Action.

The state of Massachusetts is proposing to amend state mobile gear permitting by creating a species-specific sea scallop endorsement. Any current Coastal Access Permit holder would be eligible to receive the proposed commercial scallop endorsement, unless that vessel is dually permitted to catch scallops under a Federal scallop permit. Therefore, a vessel from Massachusetts would have to decide if they want to state scallop endorsement or keep their Federal scallop permit, it may not have both. This will eliminate the ability for a vessel to "double-dip" in both federal and state waters. None of these measures are effective yet and the public hearing process is expected to begin this fall. If Option 2 is approved, the potential for increased scallop fishing in state waters in Massachusetts as a result of this action is reduced; therefore no impacts on the scallop resource are expected.

5.1.3.2.2 Option to adjust the 2012 and default 2013 NGOM hard-TAC implemented under Framework 22

If the NGOM alternative is selected that would allow state water catch not to apply against the Federal NGOM TAC; therefore, the Council may want to adjust the 2012 (and default allocation for 2013) Federal NGOM hard-TAC set in Framework 22. FW22 set the TAC at 70,000 pounds for FY2012 (Option 1). That allocation will rollover for 2013 unless modified by a future scallop action scheduled to set fishery specifications for FY2013 and 2014 (Framework 24). As previously mentioned, the FW22 analysis showed that the TAC could be set at 31,000 pounds (Option 2), based on the scallop resource in federal waters, but the Council chose to go with a

higher TAC of 70,000 pounds to recognize that a substantial portion of catch in the NGOM comes from state waters. If the NGOM alternative above is selected in this action that would allow a vessel with a Federal NGOM permit to declare that it is fishing exclusively in state waters, and that catch will no longer be applied against the Federal TAC. Therefore, the Council considered whether the Federal NGOM TAC should be adjusted downward if in the future NGOM vessels could declare state only catch and that catch would not be applied against the Federal NGOM TAC.

Framework 22 included information available to set the NGOM TAC in that action for 2011 and 2012, and those data are summarized here. A cooperative survey of the sea scallop resource within federal waters of the Northern Gulf of Maine (NGOM) scallop management area was carried out by the Maine Department of Marine Resources (DMR) and the University of Maine (UM) in June-July 2009. These results were used to set the TAC in Framework 22. Using the bounds of the 90% confidence interval, an estimated range for the TAC was 26.0-80.4 thousand lbs. (Table 17). Under a 50% confidence interval, the range was 38.2 – 60.3 thousand lbs.

The PDT discussed using a TAC that would be the lower 25th percentile at a 0.25 exploitation rate and 0.5 dredge efficiency (31.1 thousand. lbs.), if only landings from Federal waters were applied to the TAC. Using the lower 25% percentile was supported because there is substantial variability in the Federal water biomass estimate in this region and it is a generally accepted principle that data poor/high uncertainty stocks require more precaution. If this action allows a federally-permitted NGOM vessel to fish in state waters in the NGOM and not have that catch be applied against the NGOM TAC, then Option 2 (31,000 pounds) is an appropriate value to use which is based on the best available science and would help reduce negative impacts on the scallop resource if the TAC were set too high in the federal portion of this management area.

SMAST has surveyed parts of the NGOM in 2009 and 2010, but most stations were in areas that are currently closed to all bottom-tending mobile fishing gear (Figure 34). Platt's Bank is the only area that was surveyed by SMAST with large concentrations of small scallops that is within an area that is open to fishing. However, the resource there is still not harvestable with 4-inch gear, see Appendix III for more information. SMAST is returning to the NGOM area this summer (2011), and the state of Maine is surveying all of the NGOM area in 2012 under a Scallop RSA project. Therefore, the PDT recommends that the most appropriate time to consider revising the TAC would be after those two surveys are completed.

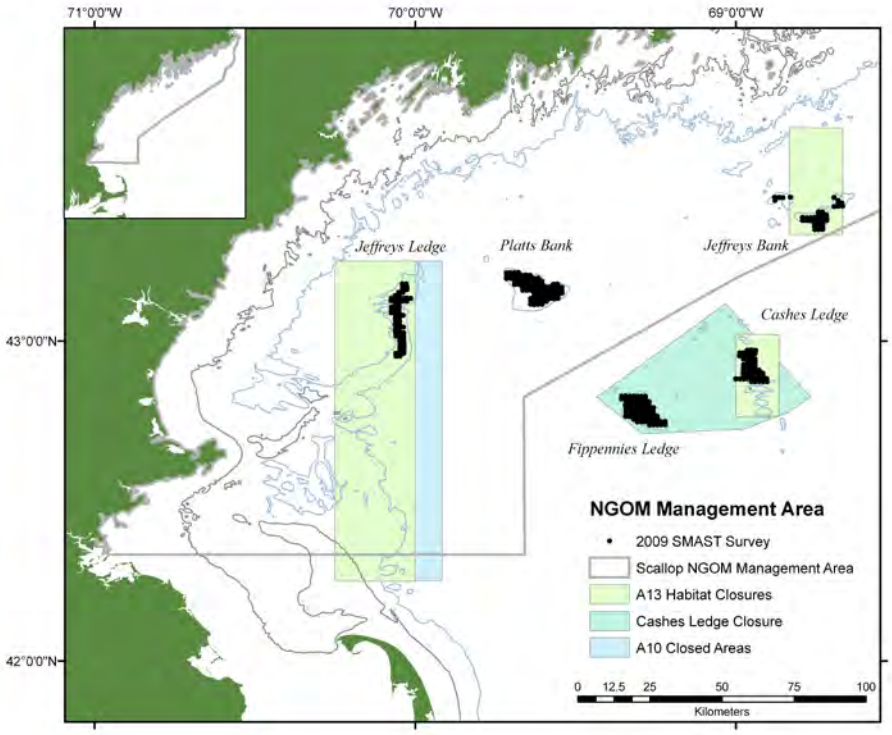
Therefore, the PDT still recommends a hard TAC of 31,000 pounds (Option 2) for 2012 if the NGOM Alternative is selected. There is no new information to support revising the TAC estimates at this time and adjusting the TAC to 31,000 pounds would reduce uncertainty of a higher TAC and help prevent negative impacts on the resource in that area. However, the Council discussed that since effort levels are limited in this area overall, the impacts of No Action (Option 1 – 70,000 pounds) are minimal on the scallop resource. Furthermore, the NGOM TAC will be reassessed in the next Framework Action to ensure the scallop catch remains at sustainable levels over the long-term, so this TAC is temporary and will likely only be in place for the next few years until more information is available on the resource in that area. If catch is constrained by the lower TAC (Option 2), there could be potentially positive impacts on the scallop resource, but there are likely negligible differences between the two TAC options

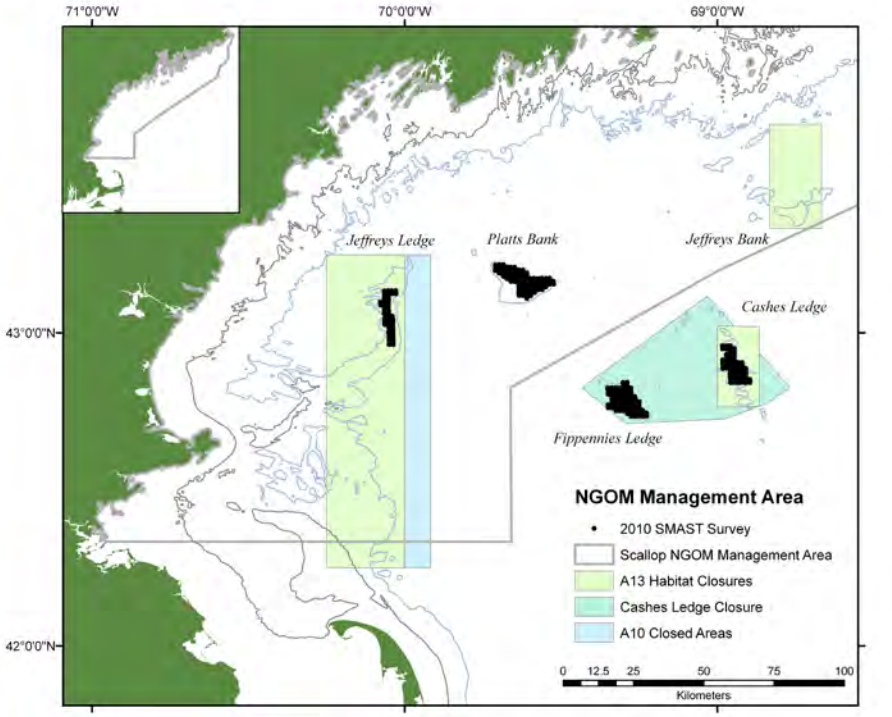
since this is a very small component of the total scallop resource and relatively little fishing effort in this area overall.

Table 17 - Estimated mean and median NGOM TAC (lbs., bottom row) with associated confidence intervals of 50%, 75% and 90%, based on 2009 DMR/UM survey.

0.25 exploitation rate									NGOM area	2721	
Dredge Efficiency	0.5										
Associated CI Interval	95%	90%	80%	75%	50%			50%	75%	80%	90%
CI percentile	2.5 (a=0.05)	5 (a=0.1)	10 (a=0.2)	12.5 (a = .25)	25 (a=0.5)	mean	median	75 (a=0.5)	87.5 (a=.25)	90 (a=0.2)	95 (a=0.1)
(per sq km)	7.992	8.68	9.797	10.38	12.73	15.33	14.72	20.12	23.29	24.127	26.82
unc_BIO	21746.232	23618.28	26657.637	28243.98	34638.33	41712.93	40053.12	54746.52	63372.09	65649.567	72977.22
BIO	43492.464	47236.56	53315.274	56487.96	69276.66	83425.86	80106.24	109493.04	126744.18	131299.134	145954.44
TAC(kg)	10873.116	11809.14	13328.8185	14121.99	17319.165	20856.465	20026.56	27373.26	31686.045	32824.7835	36488.61
TAC(lbs)	**23971.12069**	**26034.70065**	**29385.01860**	**31133.66276**	**38182.22802**	**45980.64066**	**44151.01308**	**60347.71625**	**69855.78088**	**72366.26987**	**80443.62573**

Figure 34 – Location of SMAST survey stations in the NGOM in 2009 and 2010





5.1.4 Modification to vessel monitoring system

5.1.4.1 No Action VMS Alternative

Vessels have to declare in and out of the scallop fishery (as with all other federally-managed fisheries requiring VMS) as currently required by VMS regulations (Sections 648.9 and 648.10). Once a vessel crosses the VMS demarcation line it is deemed to be fishing under the current DAS program, and that is when the DAS clock starts and stops in terms of DAS charged. However, a vessel must declare into the fishery from a port, or from a "port identification" area, even though its DAS clock does not begin until it crosses the VMS demarcation line. VMS measures are predominantly administrative in nature and do not have direct impacts on the scallop resource.

5.1.4.2 Limited access and limited access general category vessels can declare into the scallop fishery west of the demarcation line, not necessarily from a port area (VMS Alternative)

Some scallop vessels want the ability to declare into the fishery just inshore of the demarcation line, instead of from port. Having to declare from port raises safety concerns if a vessel decides to steam closer to the fishing grounds, but remain declared out of the fishery. A vessel would then have to go into a port in that area if to declare into the fishery if it does not want to be charged the steaming time outside of the demarcation line. Under this system (No Action), a vessel may need to enter a port that is unfamiliar to start that trip, which could pose safety risks. The proposed alternative would allow a vessel to declare into the scallop fishery west of the demarcation line and not necessarily from port.

Currently, total "DAS used" in the fishery is the value incorporated in the LPUE models by the PDT to calculate future DAS allocations. The value for DAS used comes from the field "DAS charged" from the DAS database. DAS charged is based on the time a vessel crossed the VMS demarcation line going out on a trip, and the time it crossed again coming back from a trip, so the majority of steam time is currently included in the calculation. If vessels could declare out of fishery earlier and the time spent steaming back to port was eliminated, the PDT would have to adjust how DAS are calculated for future allocations. For example, if the 89 vessels homeported from VA, NC, and, FL each took four open area trips in 2011, and each had an average steam time of 20 hours to return to port that equals 7,120 hours or 296.7 DAS (Table 18). These "additional" days would need to be factored in the current estimate of LPUE somehow and would likely result in a reduction across the fleet. For this example, about one DAS per LA vessel would potentially have to be removed to account for an increase in overall LPUE for the fishery.

The Advisory Panel discussed this issue and recommended that steam time back to port raises too many issues related to enforcement and impacting how DAS are determined since some of that steam time vessels are actually cutting scallops, which is still considered "fishing". Therefore, this action is only considering modifications to when a trip begins; the regulations related to when a trip ends will remain the same. This modification that will change when a vessel can declare into a fishery from "port" to "VMS demarcation line" is not expected to have direct impacts on the scallop resource since this is an administrative issue and DAS used are already calculated from the demarcation line. Therefore, the estimate of fishing time will not

increase as a result of this change so no impacts are expected on the scallop resource. If it is determined later that this adjustment has impacted hoe DAS are calculated it is possible that a future adjustment will need to be made to reduce allocated DAS to account for this flexibility added.

Table 18 – Permitted limited access scallop vessels with homeports in Virginia, North Carolina and Florida (1994-2009)

Homeport	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Newport News, VA	8	9	10	10	12	17	19	21	21	21	22	23	19	19	18	18
New Bern, NC	1	2	2	4	4	6	6	8	8	8	8	13	13	14	11	11
Norfolk, VA	65	67	63	58	51	42	35	27	27	27	22	13	12	11	11	11
Wanchese, NC	4	3	2	2	2	1	4	8	7	7	6	6	8	8	8	8
Lowland, NC	6	6	7	6	6	8	7	7	7	8	9	8	8	8	7	7
Hampton, VA	15	15	11	11	8	7	6	6	6	6	7	5	7	7	7	6
Seaford, VA	1	1	1	0	0	0	0	2	3	4	4	5	6	5	5	6
Beaufort, NC	6	6	3	2	1	1	1	1	1	0	0	0	0	1	2	5
Oriental, NC	2	2	3	2	4	5	4	5	5	7	9	9	14	11	7	4
Bayboro, NC	1	1	1	3	1	2	2	2	4	3	3	2	3	2	2	2
Cape Canaveral, FL	3	4	4	3	3	1	2	3	2	2	2	2	2	2	2	2
Carrollton, VA	2	3	2	1	2	2	3	2	2	2	2	2	2	2	2	2
Swan Quarter, NC	1	1	1	1	1	2	2	2	3	3	3	3	1	1	2	2
Jacksonville, FL	1	0	0	1	1	1	1	1	1	0	1	1	1	1	1	1
Key West, FL	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1
Newport, NC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Poquoson, VA	0	0	0	0	0	2	2	1	1	2	2	2	2	2	1	1
Suffolk, VA	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total Permits from VA, NC and FL	**117**	**121**	**112**	**106**	**97**	**98**	**95**	**97**	**100**	**102**	**102**	**96**	**100**	**97**	**89**	**89**

5.2 IMPACTS ON ESSENTIAL FISH HABITAT

This section is a qualitative review of the possible impacts to Essential Fish Habitat that could result from adoption of the alternatives included in this framework adjustment.

Implementing the various measures in this framework action may cause changes to both the magnitude and the direction of adverse effects to EFH. The magnitude of adverse effects is generally related to (1) the location of fishing effort, because habitat vulnerability is spatially heterogeneous, and (2) the amount of fishing effort, specifically the amount of seabed area swept or bottom time. To the extent that adoption of an alternative would shift fishing to more vulnerable habitats, and/or increase seabed area swept, adoption would be expected to cause an increase in habitat impacts as compared to no action. If adoption of an alternative is expected to reduce seabed area swept or cause fishing effort to shift away from more vulnerable into less vulnerable habitats, a decrease in habitat impacts would be expected. The magnitude of an increase or decrease in adverse effects relates to the proportion of total scallop fishing effort that is affected by a particular alternative.

Bearing in mind that both the direction and magnitude of changes are difficult to predict, because changes in fishing behavior in response to management actions can be difficult to predict, adverse effects could shifts as follows:

- Turtle deflector dredge requirements: direction of change cannot be predicted and will depend on shifts in fishing effort, but the magnitude of changes is likely small. Scallop catch efficiency is not significantly different between currently used and turtle deflector dredges dredges, and most vessels are expected to adopt the new dredge type such that fishing effort shifts are expected to be minimal.
- Yellowtail flounder accountability measures: possibly a decrease in adverse effects as proposed changes are likely to shift effort towards times when bycatch is lower and scallop yields are higher; the magnitude of changes is likely small.
- NGOM LAGC fishery provisions: possibly an increase in adverse effects to EFH if there is an overall increase in scallop fishing in the NGOM, but any change is likely minimal as recent landings have been well below the NGOM TAC.
- VMS declaration provisions: not likely to result in changes to either the direction or the magnitude of adverse effects, as the amount of time spent fishing is not likely to change in response to adoption of the alternative declaration provision.

5.2.1 Turtle deflector dredge

5.2.1.1 No Action related to the turtle deflector dredge (No Action TDD)

Under the No Action TDD alternative, the turtle deflector dredge (TDD) would not be required for scallop vessels fishing in the Mid-Atlantic. Vessels would continue to use the standard commercial dredge or chose to use the TDD without a regulatory requirement. Under the TDD Requirement alternative, the TDD would be required for certain areas, seasons, and scallop vessels. The No Action Alternative would not be expected to change fishing behavior (timing/location/total catch) or efficiency from what is currently occurring. Therefore, the TDD

No Action would have no additional impacts on EFH. There are reports that TDDs may slightly increase scallop catch compared to the standard commercial dredge. Therefore, the No Action may be slightly less efficient at catching scallops compared to TDDs. However, these reports found this difference in efficiency to be statistically insignificant and more studies are needed to verify these reports.

5.2.1.2 TDD Requirement Alternative

This action is considering an alternative that would require the use of a turtle deflector dredge on scallop vessels. The Council is considering several different options for where this TDD dredge should be required, what time of year or season it should be required, which vessels should be required to use it, and what the delay of effectiveness should be. In general, fishing with the turtle deflector dredge is expected to have similar impacts to EFH in comparison with fishing with the currently used dredge design. The quality of seabed impact resulting from use of the dredge, on a per-area basis, although not possible to quantify, is not expected to be substantially different. In addition, with the exception of summer flounder and monkfish, catch efficiency during paired tow experiments was not statistically different for most species, including sea scallops (see scallop resource impacts section for a discussion of this experiment).

Although many vessels already use this dredge, and for others the cost of conversion would only represent a small proportion of their annual revenues, the turtle deflector dredge requirement would be burdensome for some of the LAGC IFQ vessels with very small allocations (see economic impacts section). Thus, if they have the option not to convert, this could lead to leasing of some of their allocations to vessels fishing in alternate areas with differential catch rates, area swept, and impacts to EFH. However, LAGC IFQ vessels with very small allocations represents a small proportion of the fishery, so the overall shifts in fishing location that could result in changes to EFH impacts would likely be minimal. Possible changes to adverse effects associated with specific measures are summarized below.

5.2.1.2.1 Evaluation of the TDD on scallop catch

Paired tow experiments described elsewhere in this document demonstrated no significant difference in scallop catch or size selectivity, or in finfish bycatch, between the TDD and standard dredge. Assuming that these results are indicative of dredge performance when implemented fishery-wide, the expected lack of difference in catches of target species with the TDD dredge suggests that area swept, and thus impacts to EFH, will not be affected by the requirement to use a TDD.

5.2.1.2.2 Impacts of TDD spatial boundary options

Option 1 would require the dredge west of 72 degrees W. Option 2 would require the dredge in the RPM area only, which is south of 40 degrees north to the east of Block Island, and south of Long Island coastline west of Block Island. As noted in the biological impacts section, there is limited scallop fishing that occurs within the area that is different between the two options (roughly, the area east of 72 W and north of 40 N), and thus limited impacts on the scallop resource are expected to result from the choice of spatial boundary. It is assumed that the two boundary options would result in similar overall area swept and spatial patterns of fishing, and thus similar impacts to EFH. Option 2 does not include the areas in and around Long Island

Sound and offshore of Rhode Island, so this option would have less of an impact on current patterns of fishing in those locations.

5.2.1.2.3 Impacts of season options for TDD requirement

Framework 23 includes three seasons for the TDD requirement. Option 1 would require scallop vessels to use TDD from June 1 to October 31, Option 2 from May 1 to October 31, and Option 3 from May 1 to November 30. Because these seasons are all fairly long, it is likely that most vessels that do a significant amount of fishing in the Mid-Atlantic will switch to the new dredge type for all of their fishing. Thus, differences in season length are not expected to make much of a difference in the fishing patterns for most vessels. A shorter season could lead less of the LAGC IFQ vessels with small allocations to adopt the new gear type, but again, the percentage of vessels expected to not adopt the gear is small, and represents a small proportion of overall scallop catch. Thus, the difference between the various options in terms of impacts to EFH is expected to be minimal.

5.2.1.2.4 Impacts of options related to which vessels required to use TDD

There are three vessel options under consideration for this action: TDD required for all limited access vessels, or all limited access and limited access general category vessels that use dredge gear greater than 10.5 feet, or all limited access and limited access general category vessels. If general category vessels, particularly the small dredge vessels that have less allocation, are required to use the TDD, this could lead to increased leasing. Increased leasing would be likely if smaller vessels that fish solely or primarily in the TDD area determine that fishing their allocations is not economically viable due to the cost of the new dredge in comparison with the likely revenues from harvesting their ITQ. Leasing could redistribute effort in ways that lead to fishing in more vulnerable habitats, or in areas where catch efficiency is lower, which would lead to increased adverse effects. However, such shifts in effort are very difficult to predict, and the fraction of the fleet that would be likely to increase leasing in response to a TDD requirement is likely small.

5.2.1.2.5 Impacts of implementation options for TDD requirement

There are three implementation timing options under consideration for this action: TDD use required somewhere between 90-180 days from implementation of the framework action, one year after implementation, or two years after implementation. A deadline of 90 days is not feasible given the need to build so many dredges. With an implementation date around March 1, the 180 day window goes past the first turtle season after implementation of the framework, so from a turtle, scallop resource, and EFH perspective, there is not a substantial difference between 90-180 days and one year. Any effort shifts and changes in adverse effects to EFH that do occur will happen sooner under the one year deadline as compared to the two year deadline, but the magnitude of the change in adverse effects is likely to be small, and, furthermore, it is not possible to estimate the direction of the change.

5.2.2 Review and revise accountability measures for the yellowtail flounder sub-acl

The Council recently approved Amendment 15, which included an AM for the YT sub-ACLs (GB and SNE/MA stocks) for the scallop fishery. This framework is considering several modifications to those measures.

5.2.2.1 Refine YT seasonal closure AM schedule

5.2.2.1.1 No Action related to YT seasonal closure AM schedule

If this alternative is selected there will be no changes to the yellowtail flounder accountability measures adopted under Amendment 15. As described in Amendment 15, some level of effort shift is expected if the YT AM is triggered. In general, effort shifts can have both positive and negative impacts on EFH, as benthic habitats in various locations are differentially susceptible to scallop fishing. In addition, scallop density is spatially heterogeneous, which influences the amount of area swept for a given amount of scallop catch, and thus the magnitude of adverse effects to EFH associated with fishing in different areas. Specifically, to the extent that effort shifts affect area swept, or direct effort onto more vulnerable habitat types, an increase in adverse effects to EFH may result.

5.2.2.1.2 Refine the YT seasonal closure AM schedule

The proposed AM schedule is similar to the No Action AM schedule in terms of overall length of a closure, but the order of months included in the closure vary. This alternative would refine the AM schedule to close areas when bycatch rates are highest, which should benefit the scallop resource and reduce redistribution of fishing effort. This would likely produce benefits to EFH as compared to No Action.

5.2.2.2 Mechanism to adjust accountability measures for bycatch sub-ACLs in the scallop fishery

No Action for this measure is that the estimate of YT catch in the scallop fishery made on or about January 15 determines whether AMs are triggered and how long the seasonal closure should be in effect, regardless of whether or not final estimates suggest the AM should be different. This action also considered a mechanism to adjust AMs if the final estimate of YT catch for Year 1 (Option 2), available several months after the start of the fishing year for Year 2, differs from the original estimate provided in January. Option 2 would give the Regional Administrator authority to revise decisions regarding implementation of an approved accountability measure for bycatch ACLs based on the final estimate of catch.

In general this measure is administrative and provides flexibility needed to manage a bycatch sub-ACL based on the best available information. Overall the impacts on EFH are expected to be neutral from Option 2 and No Action since the length of the closure will only have indirect impacts on scallop fishing and the scallop resource. The SNE/MA YT AM area is not located in a primary scallop fishing area, so only minimal changes in fishing patterns are expected. Thus, changes in EFH impacts that result from changes to area swept or shifts to fishing in more vulnerable habitats would be minimal. On Georges Bank there is more fishing effort, especially during years when CA2 is open. However, because the seasonal closure begins in the fall, there is a greater chance that final estimates would be available before the area is scheduled to close. Thus, Option 2 is expected to have similar impacts as compared to No Action.

5.2.3 Modification to the NGOM LAGC program

5.2.3.1 No Action NGOM

If this alternative is selected there will be no changes to the NGOM management program. Therefore, the No Action Alternative would not be expected to change fishing behavior (timing/location) or efficiency from what is currently occurring. As such, the NGOM No Action would have not additional impacts on EFH.

5.2.3.2 Require that if a vessel with a federal NGOM wants to fish in state waters and does not have that catch apply to the federal NGOM TAC, that vessel is restricted to fish in state waters only for that trip (NGOM Alternative)

If this alternative is selected, a vessel with a federal NGOM permit will have to declare before it leaves on a trip whether it will be fishing exclusively in state waters or not. If it decides to fish exclusively in state waters, on a trip by trip basis, the scallop catch from state water only trips will not be applied against the federal NGOM TAC.

The scallop resource impacts section of this document indicates that approximately 84% of all 400 pound trips within the NGOM management area were reported within state waters. While it is not known what proportion of the catch from these trips comes from state vs. federal waters, if state waters catch were no longer applied to the federal NGOM TAC, there would be additional TAC available for scallop catch in federal waters. However, note that limited access and limited access general category IFQ vessels, as well as limited access incidental catch will still be applied against the NGOM TAC, even if it was caught exclusively in state waters within the NGOM area. Despite this potential for increased catch, and although it is not possible to provide precise estimates, it appears unlikely that adoption of this alternative would have a substantial influence on the magnitude of EFH impacts, as catches from this area have been well below the TAC in recent years.

5.2.3.2.1 Options of which vessels?

The impacts of this measure could impact state fisheries differently so the Committee decided to develop several alternatives in terms of which states this change would apply to. The first option is for vessels homeported in the state of Maine only, and the second option would apply to all vessels with a NGOM permit, regardless of homeport state. Massachusetts is currently developing measures related to scallop endorsements on state mobile gear permitting. In general, changes to adverse effects are likely to be greater if more vessels fall under this modification, but overall, impacts are likely to be minimal from both options.

5.2.3.2.2 Options to adjust the 2012 and default 2013 NGOM hard-TAC implemented under Framework 22

The No Action alternative for this would be 70,000 pounds (Option 1) and Option 2 is 31,000 pounds. Option 2 would adjust the federal TAC downward, which could mitigate any increase in adverse effects on EFH that could result from potential increases in effort from separating state and federal catch from NGOM vessels. However, catches from this area have been well below the TAC in recent years, so it is unlikely that adoption of a lower TAC (Option 2) would have a substantial influence on the magnitude of EFH impacts compared to the No Action TAC. Overall there are likely negligible differences between the two TAC options and their impacts on EFH

since this is a very small component of the total scallop resource and relatively little fishing effort in this area overall.

5.2.4 Modification to vessel monitoring system

5.2.4.1 No action VMS Alternative

Vessels have to declare in and out of the scallop fishery according to VMS regulations (Sections 648.9 and 648.10). Specifically, a vessel must declare into the fishery from a port, or from a "port identification" area. DAS counting, which measures time spent fishing, is somewhat different; once a vessel crosses the VMS demarcation line it is deemed to be fishing for the purpose of DAS counting. Thus, there is a difference at the beginning of a trip between when the vessel is declared in for VMS purpose and when they are being charged DAS. The No Action VMS Alternative would have negligible impacts on EFH because it is primarily administrative and would not be expected to change fishing behavior (timing/location/total catch) or efficiency from what is currently occurring.

5.2.4.2 Limited access and limited access general category vessels can declare into the scallop fishery west of the demarcation line, not necessarily from a port area (VMS Alternative)

This alternative would allow scallop vessels to declare into the fishery just inshore of the VMS demarcation line, instead of from an identified port or port identification area. This would eliminate the need for vessels that steam towards their fishing location inside the demarcation line to go into a port or port location to declare in before heading offshore. This issue has raised safety concerns in cases where the operator of the vessel is unfamiliar with the closest port or port location to the fishing grounds.

Adoption of this measure is not expected to influence total catch, landings, area swept, or impacts to EFH in comparison with the no action alternative because DAS counting begins at the demarcation line, not when the vessel declares into the fishery at port. Note that adjustments to when the vessel declares out of the fishery at the end of a trip could have scallop resource and habitat impacts as fishermen tend to cut scallops, and thus are considered to be fishing, during their return to port, but changes are only proposed to the requirements for the start of a trip.

5.2.5 Summary of EFH impacts

As compared to the no action alternative for all measures, the alternatives under consideration are not expected to result in increased impacts of the scallop fishery on EFH. Furthermore, there have been no major changes to the fishery that would substantively alter the conclusions about adverse effects reached during the baseline evaluation of scallop fishery effects on EFH prepared for Amendment 10. Finally, adverse impacts of the scallop fishery on EFH were minimized to the extent practicable via Amendment 10, and will continue to be minimized to the extent practicable once the proposed measures are implemented. Thus, no additional measures to minimize the impacts of the fishery on EFH are required by, or proposed by, this action.

5.3 IMPACTS ON PROTECTED RESOURCES

The focus of these analyses is the impact on loggerhead sea turtles, since that is the primary protected resource this fishery interacts with. Various data sources and methods are used in these analyses. In order to assess the overall conservation benefit of the turtle deflector dredge, the PDT identified a "turtle injury rate" for the TDD compared to a standard dredge. Other sources of information were used to help develop the area and season options for the TDD requirement: turtle satellite and distribution data, turtle strandings data, and turtle bycatch data. These data are summarized in 4.3.1: Description of loggerhead sea turtle distribution.

The impacts of other alternatives considered in this action (YT AMs, NGOM and IFQ modifications for state water fishing, and VMS adjustments) are analyzed more qualitatively in terms of the expected effort shifts from these alternatives. In general, if an alternative is expected to shift effort to areas and/or seasons with increased abundance of sea turtles, there could be negative impacts on sea turtles. See Section 4.3 for a description of all the protected resources that may interact with this fishery.

5.3.1 Requirement of turtle deflector dredge

5.3.1.1 Background about data and methods used to analyze the turtle deflector dredge

In order to assess the potential impacts of a turtle deflector dredge on turtle conservation these analyses compare a standard dredge (no turtle chain and no turtle deflector dredge) to a scallop dredge with both a turtle deflector dredge and a turtle chain, the latter which has been required since 25 September 2006.

The PDT developed a method for assessing the conservation benefits of the TDD dredge by identifying a "turtle injury rate" with the TDD and chain mats, compared to a standard dredge without chain mats. These analyses will attempt to "quantify the unobservable" so there is inherent uncertainty. However, previous results are used from relevant research to help quantify the potential impacts of this gear modification. These analyses were developed by several Scallop PDT members as well as additional staff from the NMFS NEFSC and NERO, as well as gear research experts in the region. Dr. Kimberly Murray from NEFSC and a member of the Scallop PDT took the lead on these analyses. The conservation benefit is evaluated by applying an estimated injury rate from the TDD to the estimated number of turtle interactions per year in the fishery from a standard (i.e. no chain mat) dredge (Murray 2011). The benefit of the TDD is the reduction in mortality resulting from the TDD compared to the standard dredge.

Injury Rate of TDD

The serious injury rate to turtles from interactions with a traditional scallop dredge is currently presumed to be 64% (36% survival rate) based on NMFS serious injury guidance for sea turtles captured in scallop dredge gear and the subsequent evaluation of loggerhead/scallop dredge gear observer records from 2003 (NMFS 2008). Observations of interactions between turtle carcasses and the TDD suggest that the injury rate of the TDD is much lower (Smolowitz et al. 2010). Smolowitz et al. 2010 observed 9 interactions between a loggerhead carcass and a TDD, and in all cases the carcasses hit the dredge at some point and passed over the dredge frame. Assuming

a binomial probability distribution, in 9 trials it could be concluded with 95% confidence that a minimum of 72% of turtles interacting with a TDD will go over the dredge, and a maximum of 28% will go under the dredge (Figure 35). If all turtles that went over the dredge did not sustain serious injuries (0% serious injury rate), and if all turtles that went under the dredge had serious injuries (100% serious injury rate), then the maximum injury rate for turtles interacting with a TDD would be 28%. The former assumption is consistent with that used in NMFS (2002), which assumes that all turtles that successfully pass through the TEDs survive. Based on this theoretical injury rate, these analyses assume that a maximum of 28% of the estimated turtles interacting with the TDD frame had a serious injury (mortality), and a minimum of 72% survived.

Conservation Benefit of TDD

The conservation benefit (CB) of the TDD is the reduction in mortality resulting from the TDD compared to the standard dredge. The percent conservation benefit is:

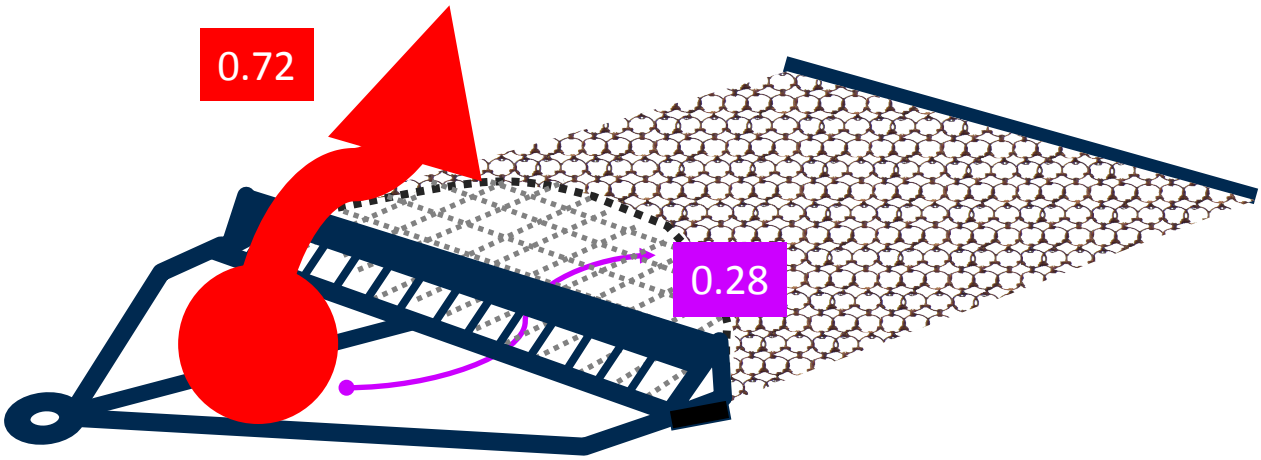
$$CB = ((I * M_s)-(I * M_{Tdd})/ (I*M_s)) * 100$$

Where I = 125, the estimated number of turtle interactions/year in the dredge fishery after 2006, based on rates from dredges without chain mats (Murray 2011),

M_s = Mortality rate in standard dredge gear (0.64)

M_{Tdd} = Mortality rate in the TDD (0.28)

Figure 35 – Probability of a turtle going over a scallop dredge (P=0.72) compared to going under (P=0.28) based on 95% confidence of results from observed interactions with loggerhead carcasses (Smolowitz et al 2010)



5.3.1.2 Summary of impacts of No Action TDD Alternative

Under the No Action TDD Alternative, the turtle deflector dredge would not be required. Most vessels would continue to use the standard commercial dredge or choose to use the TDD voluntarily. Therefore, the No Action TDD Alternative has similar impacts as current fishing practices. Compared to the TDD Alternative, the No Action TDD Alternative does not reduce impacts on turtles as much as the TDD Alternative assessed below.

5.3.1.3 Summary of impacts of alternative to require use of a turtle deflector dredge (TDD)

This action is considering an alternative that would require the use of a turtle deflector dredge on scallop vessels. The Council is considering several different options for where this TDD dredge should be required, what time of year or season it should be required, which vessels should be required to use it, and what the delay of effectiveness should be for this dredge requirement. This section will summarize the impacts overall of this dredge requirement compared to No Action, and the following sections will discuss the various impacts of the boundary, season, vessel and timing options under consideration.

The PDT estimated that the standard dredge without chains has a serious injury rate of 64%, based on analyses in the last biological opinion. The use of chain mats is not expected to reduce the number of turtles that come into contact with scallop dredge gear, but is anticipated to reduce the likelihood of serious injury or mortality from interactions occurring in the dredge bag or from dumping the dredge bag on deck. However, in the 2008 Biological Opinion, NMFS stated that it could not quantify the reduction in mortality rate from chain mats. The 64% mortality rate remained the best available information for defining the number of sea turtle takes in scallop dredge gear (with chain mats) that are likely to result in death.

Now that the Council is considering another gear modification (TDD) that is expected to further reduce the mortality rate of sea turtles, the PDT discussed that this document should evaluate the combined benefit of the turtle chain and turtle deflector dredge because if the TDD is adopted in this action both measures will be in effect, not just the TDD without chains. In addition, since the conservation benefit of the turtle chain was not previously quantified, it is appropriate to compare the combined benefits (TDD and turtle chain) to the standard dredge (no TDD and no turtle chain). Observations of interactions between turtle carcasses and the TDD suggest that the injury rate of the TDD is much lower than previously estimated (Smolowitz et al. 2010), and the PDT estimates that the TDD dredge with chains has a maximum estimated serious injury rate of 28%. The most recent estimate of turtle interactions per year in this fishery is 125 turtles (Murray, 2011). So the conservation benefit of the TDD with chains is estimated to bring the total turtle mortalities down to 35 (125*0.28) compared to 80 (125*0.64) for the standard dredge with no chains, or a 56% reduction in mortality. This can be viewed as a minimum benefit, because injury rates from a TDD could be lower.

Based on these findings, the TDD combined with the already required chain mat is expected to have substantial conservation benefit for sea turtles compared to the standard dredge. The TDD benefit is primarily focused on reducing injury of turtles that come into contact with the gear when it is on the ocean floor. In terms of interactions in the water column, the TDD is not

expected to have different impacts than the standard dredge. However, the chain mat, which is already required for all scallop dredges south of 41 09 N latitude from May through November, is expected to decrease injury and mortality associated with interactions in the water column. Figure 36 summarizes the expected, but unquantified conservation benefit of the chain mat and turtle deflector dredge. The combined effect is expected to have benefits in both the water column and ocean floor compared to the standard dredge.

Figure 36 - The expected conservation benefit of the chain mat and turtle deflector dredge. The dark shading represents high expectations that the gear reduces the severity of interactions with turtles.

	Chain Mat	Turtle Deflector Dredge	Both gear modifications combined
Water column	The chain mat decreases captures in dredge bag. Therefore, it decreases injuries fue to forced submergence and injuries from contact with vessel and contents of dredge bag	Turtle deflector dredge not expected to dramatically mitigate water column interactions, but benefits of open bale may decrease some injuries associated with water column interactions.	Benefits of chain mat for water column interactions.
Benthos	Chain mat decreases benthic captures in chain bag; however, benefits of avoided capture are likely much smaller because of interaction with dredge.	Turtle deflector dredge deflects large objects over dredge rather than under cutting bar. Therefore, it decreases injuries due to contact with the dredge frame (including being crushed under dredge frame).	Benefits of turtle deflector dredge for benthic interactions.

5.3.1.4 Impacts of TDD spatial boundary options

In general, the two boundary options under consideration for the TDD requirement are similar, but Option 1 includes more area east of 72 W and north of 40 N, including Long Island Sound. Almost all of the documented turtle takes in the scallop dredge fishery have occurred within the boundaries of both Option 1 and Option 2, except for two Kemp's ridley turtle takes that occurred on Georges Bank (Figure 4).

Figure 4 and Figure 5 show the overlap of these boundary options compared to recent scallop fishing activity and observed turtle takes. The additional area included in Option 1 that is not in Option 2 is not an area with high concentrations of scallops or scallop fishing. In addition, there have not been many observed takes of turtles in that area over the entire time series either (1989-2011). The handful of observed turtle takes in that area was with otter trawl and sink gillnet gear, not scallop dredge gear. Since turtles are known to be in the area east of 72W and north of 40 N, it can be inferred that there is potential for turtles to interact with scallop dredge gear in that area as well as areas farther south that do have documented takes with scallop dredge gear. Thus Option 1 is more precautionary in terms of potential benefits for turtles and may have more conservation benefit since that boundary option includes more area where turtles are distributed and some scallop fishing occurs. The degree of overlap is relatively minor compared to other areas in the Mid-Atlantic since this area does not have high scallop biomass.

There are documented takes of turtles in pelagic longline and pelagic drift net (no longer active) fisheries in waters outside of the boundaries for both Option 1 and Option 2. However, these takes were primarily in waters deeper than 100 fathoms, deeper than the scallop fishery works on Georges Bank. In addition, pelagic gear could have very different bycatch rate characteristics compared to bottom tending gear due to differences in the way the gear is fished and behavior of the animals. So while Option 2 includes more waters east of 71 W, with some documented turtle takes in the pelagic longline fishery, based on recent VTR effort data, there is no scallop fishing in the area east of 71 W and south of Option 2 boundary. As such, there are no additional benefits for including the waters south of Option 2 and east of 71W, compared to Option 1.

Overall, implementing this gear is not expected to cause great shifts in effort unless there are vessels that primarily fish in this area that would not want to invest in a new dredge gear in order to continue fishing in that area and season. For example, there are some general category vessels that have only qualified for a limited amount of quota; therefore, purchasing a new dredge at approximately $2,500 to $3,000 for smaller dredge widths, may not be justified. So these vessels may decide to lease out their quota, or fish in a different area. Therefore there may be some amount of effort that could shift from the Mid-Atlantic to a different area or season not included in the TDD alternative, but that total amount of effort is limited overall and is not expected to have direct impacts on protected resources.

In fact, any amount of potential effort shift from either TDD boundary alternative will either be shifted to another vessel fishing in the Mid-Atlantic that has a TDD, to Georges Bank north of the boundary options, or to a season when the TDD is not required. Under any of these scenarios the overall impact on turtles is expected to be positive since any effort that may be shifted as a result will be relocated to a vessel, area, or time period with reduced impacts on sea turtle mortality compared to No Action.

5.3.1.5 Impacts of seasonal options for TDD requirement

This action considered three season alternatives: Option 1 is June1-October 31, Option 2 is May1-October 31, and Option 3 is May1-November 30. Section 4.3.1 includes a summary of loggerhead sea turtle distribution information which the Scallop PDT used to help identify the seasonal options under consideration. Overall, the data suggest that turtles are most likely to be present in areas that overlap with the scallop fishery in the Mid-Atlantic between May and October. There is more uncertainty in the data available relative to the month of November, but some sources suggest there would be some level of overlap during that month as well, in particular Morreale, 1999 and Braun-McNeill et al., 2008.

Analyses of turtle interactions in bottom trawl, gillnet, and scallop dredge gear suggest that the risk of interactions in the Mid-Atlantic region where the scallop dredge fishery operates (~ west of 71°W to ~ 37°N) is higher from mid-May to late October than other times of the year, based on documented interactions and predicted interaction rates across the three gear types (Section 4.3.1). Interactions between turtles and dredge gear could be possible on the edges of this time period (i.e. November) depending on the timing of turtles' seasonal migrations into and out of the Mid-Atlantic. Turtle interactions in scallop dredge gear have been observed in the Mid-Atlantic from June through October (Figure 25). Predicted interaction rates were relatively high

from July through October (Figure 26). It should be noted that the lack of documented interactions in a given month where turtles and fishing effort are suspected to co-occur could be due to low observer coverage or to turtle behaviors which prevent them from interacting with the gear.

In addition to the analyses of projected turtle interactions in the scallop fishery described above, another source of information that can be used to evaluate the potential impacts of the seasonal options on protected resources is satellite tag data. Between 2009 and 2011 approximately 40 turtles have been tagged with satellites in the Northeast from two primary research projects; 1) Understanding Impacts of the Sea Scallop Fishery on Loggerheads Through Satellite Tagging funded through the Scallop RSA program (Coonamesset Farm Foundation (CFF)); and 2) the Atlantic Marine Assessment Program for Protected Species (AMAPPS). The AMAPPS project is part of a large, multi-agency initiative to provide a comprehensive assessment of marine mammal, marine turtle, and seabird abundance and spatial distribution in U.S. waters of the western North Atlantic Ocean. For several years satellite telemetry work has been conducted from scallop fishing vessels working with CFF or the NEFSC for the AMAPPS project. The data for these projects is housed at www.seaturtle.org; a website that organizes sea turtle information and makes it universally accessible to support research and conservation efforts in the sea turtle community.

These data were summarized by month to help evaluate the TDD seasonal options under consideration. For all of the figures below each dot on the map shows a good location from the master file for satellite data. A location is considered "good" if it was location class 3, 2, 1. (Class 3= accuracy better than 250 m radius; Class 2= better than 500 m radius. Class 1=better than 1500 m radius). The locations for June through October are lumped together, but the locations for the months of May and November have been plotted by the day of year (doy) to show more information about how these turtles are migrating into and out of the primary scallop fishing grounds. It should be noted that there are unequal number of points in each month (due to the sampling plan, turtle behavior, and environmental conditions). For example, in June, July, August, and September there are more than 3,000 locations per month, and in other months there are far less, about 500 locations per month for May, October, and November, and far less for winter months.

First, Option 1 (June-October) includes the season when all observed takes of turtles have occurred in the scallop fishery. The satellite location data for all turtles during that five month period have been summarized in Figure 37. It is clear from the figure that between June and October the location of all the tagged loggerheads is in waters less than 100 meters between the approaches to New York City and North Carolina.

Figure 38 shows the location of the same turtles in the month of May plotted by the day of year (doy). This figure is useful for assessing the added benefit for turtles if the seasonal options for the TDD includes May (Options 2 and 3). Some of the tagged turtles overlap with primary scallop fishing by the middle of May. Loggerhead turtle locations from the beginning of the month have red dots, and the locations toward the end of the month are depicted in blue. Some of the tagged turtles are distributed in latitudes north of 38N, where scallop fishing is more concentrated, but many of these turtle location hits are in waters farther offshore than the scallop

fishery typically operates. Other turtle location sites are distributed farther south at the beginning of May, off North Carolina, and more hits do not show up in the scallop fishing area until later in the month of May (blue dots in Delmarva and Elephant Trunk access areas).

Option 3 in this action is considering a seasonal TDD restriction of May-November. Figure 39 shows the location of all tagged loggerheads in the month of November by day of month. The color scheme for these locations are reverse of May; in this case days in early November are depicted in blue and red dots represent days at the end of the month. Based on this figure all tagged turtles are south of the Delmarva access area, just north of 37N, by November 1. The majority of turtles are south of Cape Hatteras, the southern extent of the scallop fishery by mid-November. While there is some scallop fishing off the northern coast of NC, this has never been a primary scallop fishing area and is at the margin of the fishery. See Figure 5 for the location of scallop fishing activity in 2009 and 2010.

Finally, Figure 40 shows the location of these turtles between December and April, the months outside of the seasonal options under consideration. During these months the vast majority of turtles are south of Cape Hatteras, NC, and the turtles that are farther north are in waters much farther offshore than the scallop fishery. It should be noted that there are hundreds of thousands of loggerhead turtles in the Northeast and these data only track a very small sample of about 40 turtles. Therefore, these data are not reflective of the entire population and there are annual variations as well based on environmental factors like sea surface temperature. That being said this is the most comprehensive dataset available for turtles tagged in the area that overlaps the scallop fishery and is very informative about the seasonal distribution patterns of loggerhead turtles in this region.

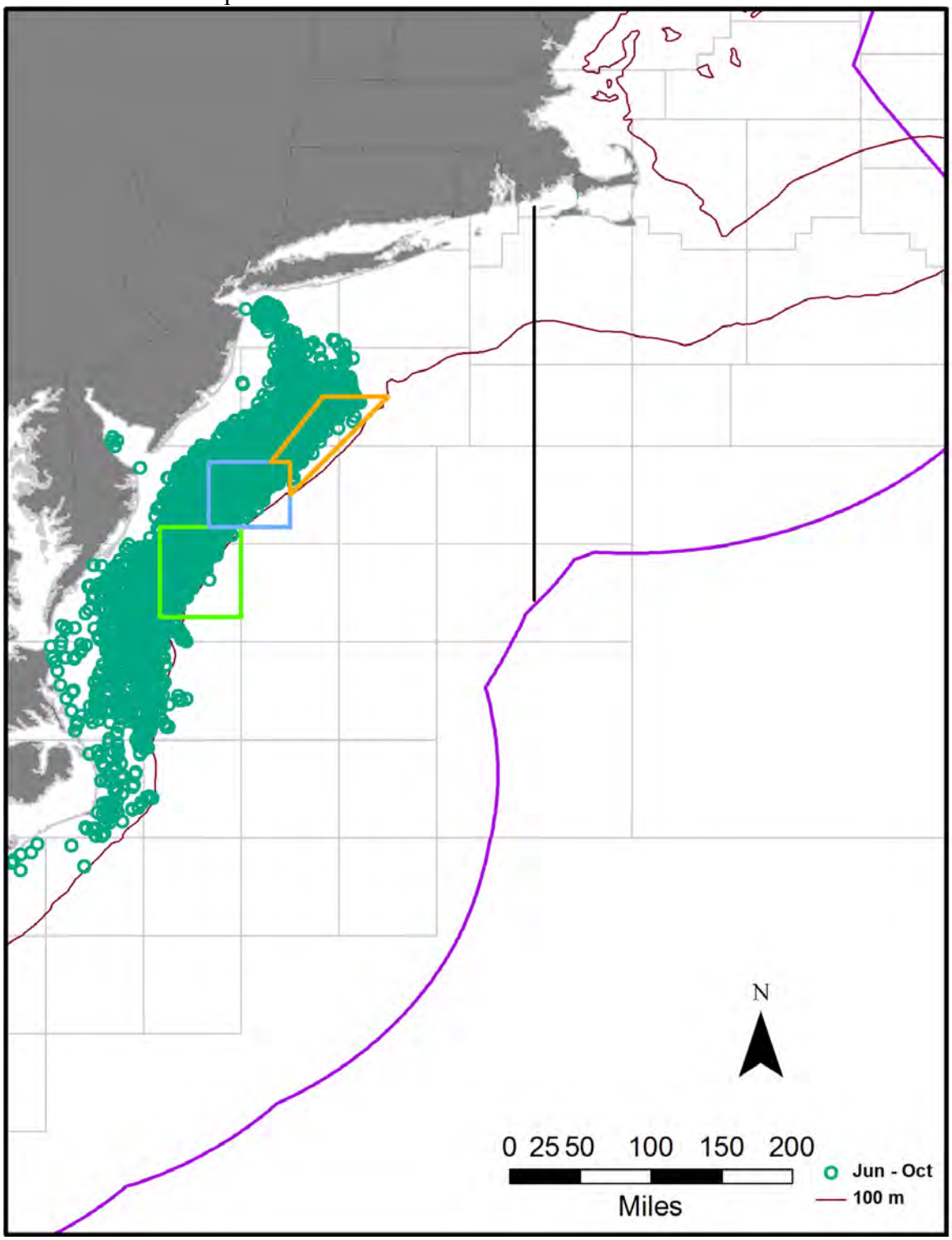
Based on these satellite data the location of the tagged turtles overlaps with the scallop fishery. During the month of May there are some turtles in the same area, but not all. During November there are some turtles located north of Cape Hatteras, NC at the beginning of the month, but most are farther south. The area south of Delmarva and north of Cape Hatteras, NC is the southern extent of the fishery and is not a primary scallop fishing area. Therefore, Option 1 would provide the most benefit for the shortest length of time since all tagged turtles were in the scallop fishing area during those months. Adding the month of May, Option 2, will likely provide additional benefit because some turtles are known to overlap primary scallop grounds in the month of May as well. Option 3, May-November, is expected to have the greatest potential benefit for turtles since it is the longest and most precautionary option, but based on these data a small fraction of tagged turtles are present at the southern margin of the fishery, so actual benefits may not be much greater than Option 2, May – October.

While a longer season may provide more conservation benefit, it should be noted that the final season selected may not make a substantial difference since vessels could end up fishing with this dredge all year long even if it is not required. If the TDD has similar scallop catch and less finfish bycatch than the standard commercial dredge, and Captains prefer to use the new dredge, the length of the TDD requirement may be somewhat irrelevant if vessels end up fishing with the new dredge regardless. Therefore, in reality the impacts on protected resources may not be very different between the season options if vessels end up using this gear for most or all of the year even if it is not required. This could also be the case for the boundary options; however, some

vessels may decide to switch back to standard commercial dredge gear when fishing on harder bottoms found north of the current boundary options.

Figure 37 – Location of tagged turtles in the Northeast between June 1 through October 31

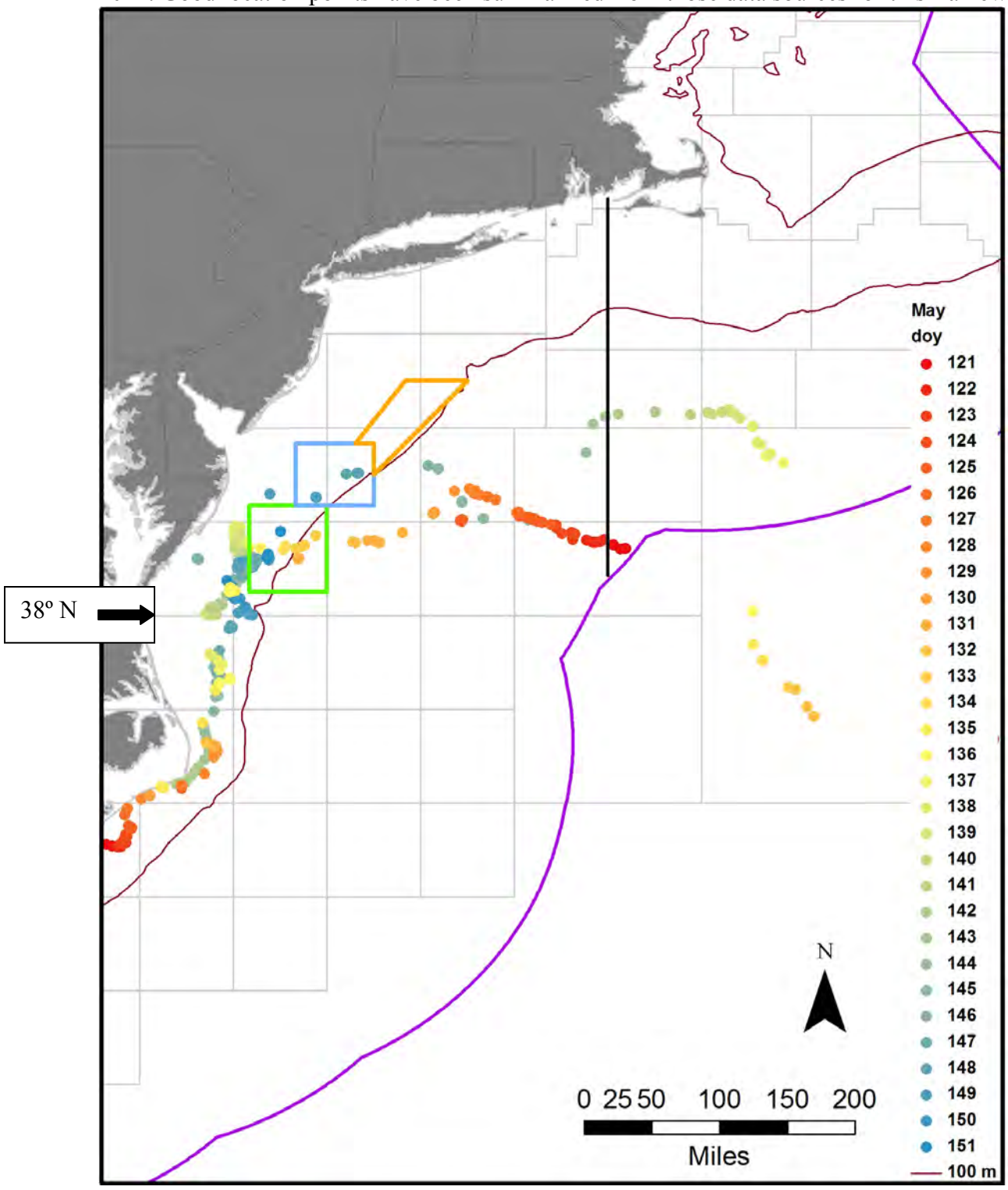
Source: About 40 turtles have been tagged by CFF and AMAPPS project in 2009, 2010, and 2011. Good location points have been summarized from those data sources for this framework.



For reference: The TDD boundary is shown (71W) and Mid-Atlantic scallop access areas, as well as the EEZ (purple line) and 100 m depth contour (brown line).

Figure 38 - Location of tagged turtles in the Northeast during the month of May (by day of year)

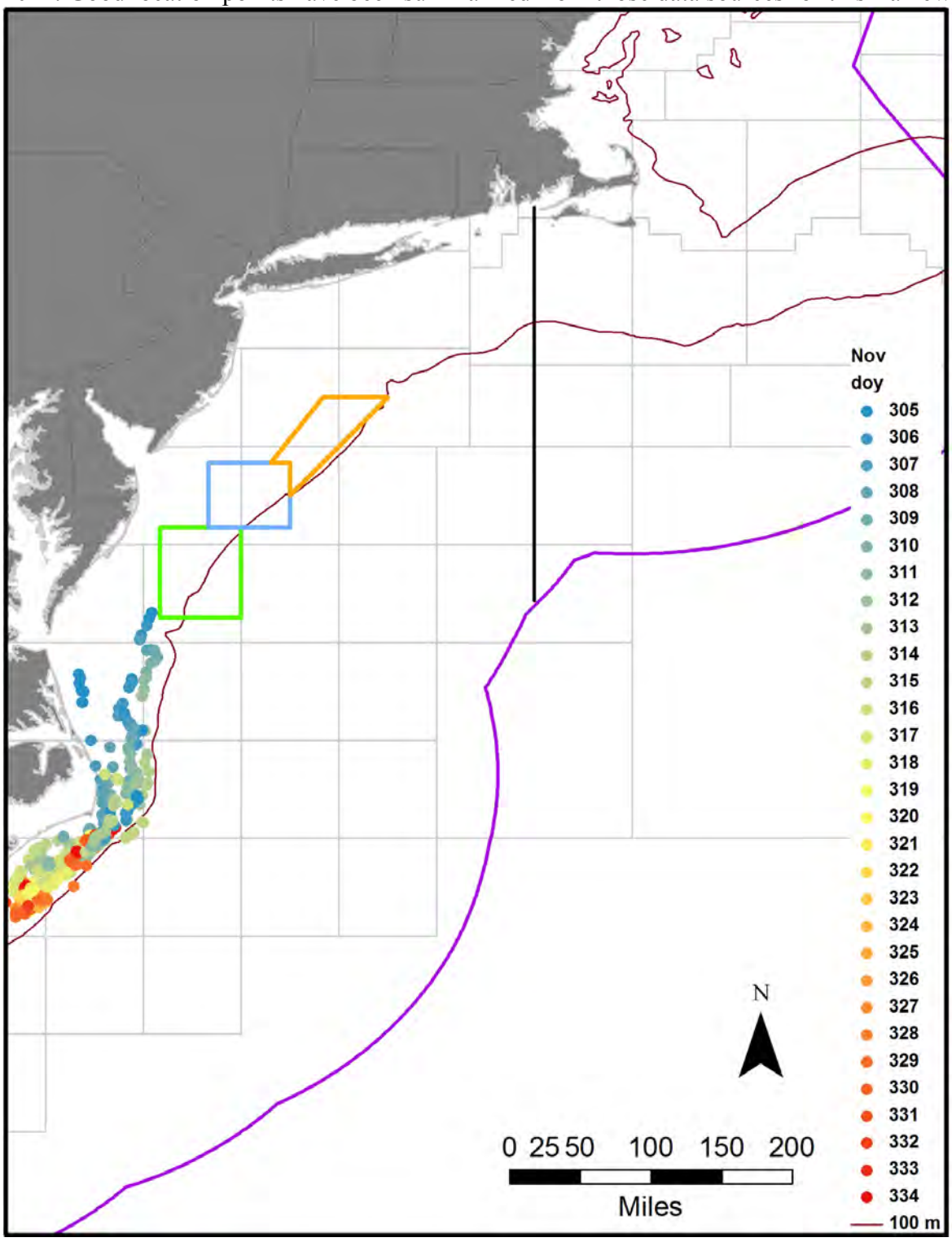
Source: About 40 turtles have been tagged by CFF and AMAPPS project in 2009, 2010, and 2011. Good location points have been summarized from those data sources for this framework.



For reference: The TDD boundary is shown (71W) and Mid-Atlantic scallop access areas, as well as the EEZ (purple line) and 100 m depth contour (brown line).

Figure 39 - Location of tagged turtles in the Northeast during the month of November (by day of year)

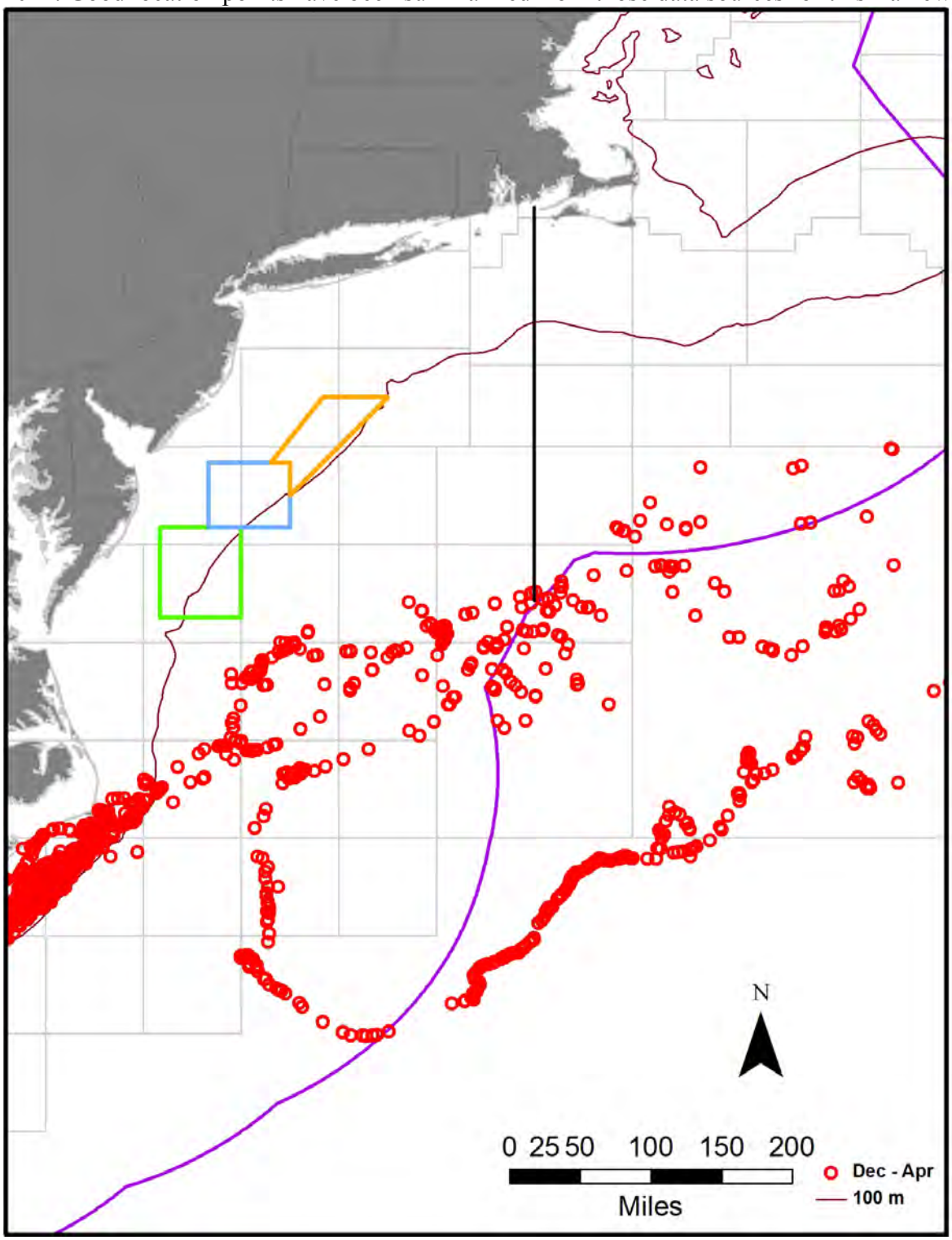
Source: About 40 turtles have been tagged by CFF and AMAPPS project in 2009, 2010, and 2011. Good location points have been summarized from those data sources for this framework.



For reference: The TDD boundary is shown (71W) and Mid-Atlantic scallop access areas, as well as the EEZ (purple line) and 100 m depth contour (brown line).

Figure 40 – Location of tagged turtles in the Northeast between December 1 through April 31

Source: About 40 turtles have been tagged by CFF and AMAPPS project in 2009, 2010, and 2011. Good location points have been summarized from those data sources for this framework.



For reference: The TDD boundary is shown (71W) and Mid-Atlantic scallop access areas, as well as the EEZ (purple line) and 100 m depth contour (brown line).

5.3.1.6 Impacts of options related to which vessels required to use TDD

These analyses are qualitative in nature. The more vessels required to use this dredge the greater the potential benefit for turtles since the severity of impacts from potential interactions will be minimized with a TDD compared to a standard dredge. Option 2 would require all vessels (LA and LAGC) to use a TDD, but Option 3 (all LA and LAGC vessels that use a dredge greater than 10.5 feet) is considered the most practical alternative because vessels with most LAGC vessels that fish with dredges less than 10.5 feet are smaller operations and the cost of new gear would not outweigh the additional benefit. It should be noted that there were three observed turtle takes documented in 10 foot dredge gear in 2004 before turtle chain mats were required. Therefore, Option 2 could provide the most benefit for turtles by requiring all vessels to use a TDD, but it was deemed not practicable at this time because the cost to these smaller vessels was not presently economically feasible, and a TDD for smaller dredge widths has not been extensively tested to date. It is possible at smaller dredge widths there could be different impacts on scallop catch etc. Current tests are being conducted on the impacts of a "low-profile" smaller scallop dredge, but those results are not available yet.

5.3.1.7 Impacts of implementation options for TDD requirement

Overall the impacts of the three timing alternatives for the TDD requirement are expected to have similar impacts on turtles. The sooner a TDD could be implemented the better, in terms of reducing the severity of impacts on sea turtles that interact with scallop gear. But the relative difference between these three timing alternatives is minimal overall.

5.3.2 Review and revise accountability measures for the yellowtail flounder sub-acl

The Council recently approved Amendment 15, which included an AM for the YT sub-ACLs (GB and SNE/MA stocks) for the scallop fishery. This action is considering several modifications to those measures. This section will summarize the impacts of the yellowtail flounder AM alternatives on protected resources.

5.3.2.1 Refine the YT seasonal closure AM schedule

5.3.2.1.1 No Action

If this alternative is selected there will be no changes to the yellowtail flounder accountability measures adopted under Amendment 15. As described in Amendment 15, some level of effort shift is expected if the YT AM is triggered. Effort shifts can have negative consequences on sea turtles if effort moves to the Mid-Atlantic during months when turtles are present.

5.3.2.1.2 Refine the YT seasonal closure AM schedule

If the AM schedule is refined to be more effective, AMs should be in effect starting with the months with highest YT bycatch rates. In SNE/MA the major difference is that the proposed YT AM closure is primarily in the early spring and winter first, rather than starting with the spring and summer under the current AM (Table 3). In GB, the major difference is that the AM closures begin in the fall followed by the winter months, when YT bycatch rates are highest. It is difficult to predict if and where effort would shift as a result of these AM closures, but in general, if effort shifts to the Mid-Atlantic when turtles are present there could be negative

impacts on sea turtles, but the proposed changes in schedule are not expected to have substantially different impacts on turtles compared to the current schedules under No Action.

5.3.2.2 Mechanism to adjust AMs for bycatch sub-ACLs allocated to the scallop fishery

No Action for this measure is that the estimate of YT catch in the scallop fishery made on or about January 15 determines whether AMs are triggered and how long the seasonal closure should be in effect, regardless of whether or not final estimates suggest the AM should be different. This action also considered a mechanism to adjust AMs if the final estimate of YT catch for Year 1 (Option 2), available several months after the start of the fishing year for Year 2, differs from the original estimate provided in January. Option 2 would give the Regional Administrator authority to revise decisions regarding implementation of an approved accountability measure for bycatch ACLs based on the final estimate of catch.

In general Option 2 is administrative and provides flexibility needed to manage a bycatch sub-ACL based on the best available information. If the final estimate varies from the preliminary estimate the program should be able to adjust so that ultimately the appropriate measures are in place to either reduce YT catch further if final estimates are higher, or relax AMs to prevent further impacts on the fishery is final estimates are lower. Overall the impacts on protected resources are expected to be neutral from both options since the length of the closure could be longer or shorter, and the amount of total effort shift expected is relatively minor.

5.3.3 Modification to the NGOM LAGC program

5.3.3.1 No Action related to NGOM management program

If this alternative is selected there will be no changes to the NGOM management program. There are no observations of turtle takes within the NGOM management area, so no impacts on protected resources from this program are anticipated.

5.3.3.2 Require that if a vessel with a federal NGOM wants to fish in state waters and not have that catch apply to the federal NGOM TAC, that vessel is restricted to fish in state waters only for that trip

A vessel with a federal NGOM permit will have to declare before it leaves on a trip whether it will be fishing exclusively in state waters or not. If it decides to fish exclusively in state waters, on a trip by trip basis, the scallop catch from state water only trips will not be applied against the federal NGOM TAC. On a trip by trip basis, each vessel can decide which area it is going to fish in. A vessel can still fish in both state and federal waters on a single trip, but if it does, that vessel needs to declare a federal trip before leaving, and the entire catch from that trip would be applied to the federal TAC, even if some of it was harvested in state waters. These vessels are generally smaller vessels that fish primarily in state waters and some pockets of federal waters within the NGOM, so any modification to this program is not expected to have direct impacts on protected resources, namely sea turtles in the Mid-Atlantic.

5.3.3.3 Options for which vessels

This action considered two options for which NGOM vessels would be permitted to declare a state-only trip and that catch not apply against the federal NGOM TAC. Option 1 would be for NGOM vessels homeported in Maine and Option 2 would be for any NGOM vessel regardless of

homeport state. Catch is not expected to increase substantially from either option because of strict limits in place or expected in the near future that will restrict state water scallop fishing. Therefore, there are no impacts on EFH from these vessel options, and there is no discernible difference between the two options.

5.3.3.4 Options to adjust the 2012 and default 2013 NGOM hard-TAC implemented under FW22

This action considered two different TACs for the NGOM management area. The No Action/Option 1 TAC equal to 70,000 pounds and a reduced TAC of 31,000 pounds (Option 2). Catch is not expected to increase substantially regardless of which TAC is selected because recent catch levels in this area have been a fraction of the current TAC. Overall there are likely negligible differences between the two TAC options and their impacts on protected resources since this is a very small component of the total scallop resource, there is relatively little fishing effort in this area overall, and this area is outside the area where turtles are distributed. Therefore, there are no impacts on protected resources from the TAC options, and there is no discernible difference between the two options in terms of impacts on protected species.

5.3.4 Modification to vessel monitoring system

Both the No Action and VMS Alternative in this section that would allow scallop vessels to declare into the scallop fishery west of the demarcation line, and not from port, would not have direct impacts on protected resources. This measure is primarily for safety and will not change when and where a vessel fishes; therefore, the there are no impacts on protected resources expected.

5.4 IMPACTS ON HUMAN COMMUNITIES

5.4.1 Economic and Social Impacts

The following analyses provide an analysis of economic impacts of the proposed requirement of turtle deflector dredge (Section 5.4.1.1), proposed modification for the yellowtail flounder accountability measures (section 5.4.1.2), modification to the NGOM LAGC program (section 5.4.1.3), and to the vessel monitoring system (section 5.4.1.4), and compare these impacts with no action. Those impacts were assessed from a quantitative perspective whenever relevant data for an option were available and from a qualitative perspective for the options for which the results could not be estimated quantitatively at this time.

5.4.1.1 Turtle deflector dredge

5.4.1.1.1 No Action

Under the No Action TDD alternative, the turtle deflector dredge (TDD) would not be required for scallop vessels fishing in the Mid-Atlantic. Because the vessels would continue to use the standard commercial dredge or chose to use the TDD without a regulatory requirement, there will be no change in costs and economic benefits under no action.

5.4.1.1.2 Requirement of turtle deflector dredge

This action is considering an alternative that would require the use of a turtle deflector dredge (TDD) on scallop vessels in various fishing areas and seasons either for all or a subset of the scallop fleet. This section will provide a summary of the overall impacts of this dredge requirement compared to no action, and the following sections will discuss the various impacts of the boundary, season, vessel and timing options under consideration.

Overall, implementation of this dredge is expected to have positive economic impacts on the fishery over the long-term although there will be costs associated with installing the TDD in the short-term.

The preliminary analyses indicate that this gear modification would reduce impacts on sea turtle mortality without any significant impacts on scallop catch. In fact, results to date actually suggest that the TDD may be slightly more efficient than the standard commercial dredge in catching scallops (See Section - The Impacts on scallop resource.). Therefore, using the TDD is not expected to change the scallop prices and revenues in any significant way. This requirement is not expected to impact fishing behavior significantly. It is possible that some vessels will choose to fish in areas and seasons outside of the TDD requirement, but some of the limited access fleet is already using this dredge, and more vessels are expected to switch to this dredge due to reports of increased scallop catch and reduced finfish bycatch compared to the standard commercial dredge.

There will be costs associated with switching the gear, however, for the majority of the vessels that use the standard dredge. According to the anecdotal information from the members of the scallop industry, the cost of new dredge plus the cost of freight is estimated to be about $5,000 for a standard dredge width and about $2,500 to $3,000 for smaller dredge widths. Given that the average annual scallop revenues for the majority of the FT dredge vessels (247 out of 250) and the FT small dredge vessels (47 out of 52) were more than $500,000 in the last five fishing years, the cost of this gear modification will be a very small proportion of the total revenues. Even for vessels with below average revenue the costs of TDD is not estimated to exceed 1% of their scallop revenues (Table 25). For part-time vessels, the costs would be higher as a percent of scallop revenues (2% for a PT dredge vessel with average income). On the other hand, the costs of TDD could be a large burden for a smaller LAGC IFQ vessel depending on their IFQ allocation if they were included in this requirement (Table 27).

The total costs of TDD requirement for the limited access fleet is estimated to range from $1.4 million to $2.6 million depending on how many vessels already use this dredge and how often they replace their dredges (Section 4.1.1.4, Table 13). The costs for the LAGC IFQ fleet that employ a dredge of 10.5ft or greater could be about $0.5 million if none of those vessels have a TDD dredge already. Over the long-term the potential benefits from switching to TDD are expected to outweigh these short-term costs, however. Paired tow analyses suggest that the TDD is about 4% more efficient at catching scallops than the standard commercial dredge (See Section 5.1.1.2.1). While the difference is not statistically significant, the TDD may have increased catch rates compared to the standard dredge, reducing overall fishing time and associated costs in the long term.

In addition to the potential longer term economic benefits of the TDD from increased catches of scallops compared to the standard dredge, the TDD is expected to have conservation benefits for turtles, which could have indirect economic benefits for scallop vessels as well. Implementation of the TDD may reduce mortality of turtles from the scallop dredge fishery to a level that would no longer require the current effort limits that are placed on this fishery under ESA. Specifically, NMFS, through the Council, is required to implement reasonable and prudent measures (RPMs) to minimize the incidental take of sea turtles. The current RPM requires a limit on scallop effort during the time of year when turtles overlap with the scallop fishery in the Mid-Atlantic. Scallop frameworks to date have included area closures and a maximum number of trips in the areas and seasons where the overlap of turtles and scallop fishing activity is most likely to occur. These measures very often have negative impacts on scallop prices and revenues and could result in higher fishing costs by removing effort from the more productive seasons when the meat weights are higher to seasons when the meat weight of scallops decline. If this action requires scallop vessels to use a TDD, conservation benefits for turtles are expected; therefore, updated estimates of sea turtle mortality from this fishery may be reduced to a level that no longer requires a specific effort limit RPM. NMFS is expected to prepare an updated biological opinion for the scallop fishery in the near future; if a TDD is implemented there could be indirect positive economic impacts on the scallop fishery if current RPMs are eliminated or modified as a result of requiring the use of a TDD.

In summary, since using TDD is not expected to have a significant impact on scallop catch, TDD requirement is unlikely to have a notable impact on the scallop price, revenues and consumer surplus. While, the costs associated with buying and installing TDD could have a slight negative impact on the producer surplus (revenues minus costs), over the long-term the potential indirect benefits from switching to TDD are expected to outweigh the increase in costs.

5.4.1.1.2.1 Impacts of TDD spatial boundary options

Option 1 would require turtle deflector dredge in all waters west of 71º W and covers the majority of areas the scallop fishery and expected turtle interactions in the Mid-Atlantic overlap and exclude Georges Bank where interactions with turtles are very rare. Although this option would minimize the economic impacts for scallop vessels that fish solely in Georges Bank east of 71º and those that fish in Gulf of Maine, it could have adverse impacts on some LAGC vessels since it includes 3-digit areas 539 and a third of 537 that are the main grounds for these vessels. As Table 19 shows, especially LAGC vessels that are home-ported in RI landed nearly all their annual quota in areas 537 and 539 in 2010. Given that average annual scallop revenue for those vessels were about $70,070 in 2010, a new dredge costing about $2500 to $3000 each could amount to about 4% to 10% of their revenues depending on the number of dredges employed and a vessel located away from the dredge producers had to pay for the shipping costs . Thus, including those two areas in TDD requirement would increase the cost burden on these vessels especially if they have a small IFQ (see Table 27 and Section 5.4.1.1.2.3 below for more discussion). Exempting LAGC IFQ vessels from TDD requirement with dredges less than 10.5 ft. would prevent some of these negative impacts on the smaller boats in those areas.

Table 28 - Average annual scallop revenue per vessel by dredge size (2010 Fishing year)

Average annual scallop revenue		Dredge Size				
Plan	Category	NA	Less than 8ft	8ft to 10.49ft	10.5ft or greater	All vessels
LGC	IFQ	102,471	54,793	139,262	127,281	119,932
Limited access	FT		1,584,928	1,123,788	1,384,368	1,383,645
	FTSD	1,072,131		858,171	1,018,095	994,573
	FTTRW				*1,226,876	1,226,876
	PTSD	NA*		324,581	441,186	404,468
All limited access		995,382	1,585,052	651,850	1,266,567	1,226,344

*Note: The average is for all 11 vessels in this category including one vessel with use trawl gear to protect data confidentiality. In addition, the info for PT vessels are not shown because there are only 2 vessels in that category.

Table 29 shows that 94 out of 179 active IFQ permitted vessels used a dredge less than 10.5ft. (Section 5.4.1.1.2.3). All of the LAGC vessels homeported in Rhode Island that fish in areas 537 and 539 have used a dredge less than 10.5ft in 2010, thus would be exempted from the TDD requirement. In addition, some of these vessels may fish during other seasons according to the season option selected for the TDD requirement. They also have the option of leasing their quota to vessels that fish in other areas. This could alleviate the negative impacts to some extent, but still there will be some reduction in revenue since leasing involves transaction costs.

Table 19. Scallop landings (lb.) by LAGC vessels (2010 fishing year)

Homeport	537	539	537+539	All areas	Landings from 537+539 as a % of all areas
MA	44,342	8,099	52441	584,601	9%
ME+NH	4,104	27,985	32089	58,483	55%
NJ+NY	2,908	11,070	13978	926,968	2%
Oth.Mid At.			0	376,426	0%
RI	2,945	23,467	26412	27,581	96%
Total	54,349	70,811	125160	1,985,743	6%

Table 20. Average annual scallop landings (lb.) and revenue by LAGC vessels by home state

Homeport	Scallop landings (group totals)	Scallop revenue (annual average)	Number of vessels
MA	672,301	151,574	42
ME+NH	56,759	72,085	7
RI+CT	69,108	70,070	8
NJ	1,019,553	137,703	66
NY	181,322	100,468	15
Oth.Mid.At	452,014	83,929	41
Grand Total	2,451,057	119,932	179

Option 2 would require Turtle deflector dredge in "RPM" area only, which is the greatest area of overlap in the distribution of scallop fishing gear and sea turtles, with the exception of waters due south of Rhode Island in statistical areas 539 and the western third of area 537. Thus, Option 2 would exclude those areas that LAGC vessels are active and would minimize the negative economic impacts of TDD requirement on those vessels. If, however, TDD is required only of the limited access (LA) vessels, the economic impacts of Option 1 would not be very different than of Option 2, with the exception that Option 2 would provide more flexibility to the scallop vessels fishing in the excluded areas.

Table 21 – Homeport by permit category and dredge size (2010 Fishing year)

Plan	Homeport	NA	<8ft	8 to 10.49ft	>=10.5	Grand Total
LGC IFQ	CT			1	2	3
	MA	9	2	13	22	35
	ME+NH	2	2	1	1	7
	NY+NJ	15	3	12	42	54
	OTH-Mid.At	19		8	12	20
	RI	3		2		5
	Unknown		1	1	6	8
	Total	48	8	38	85	179
Limited acces	CT		1		9	10
	MA	1		1	145	147
	ME+NH			2	1	3
	NY+NJ	2	1	8	78	89
	OTH-Mid.At	2	1	11	68	82
	RI				3	3
	Unknown				2	2
	Total	5	3	22	306	336
Grand Total		53	11	60	391	515

5.4.1.1.2.2 Impacts of season options for TDD requirement

Framework 23 includes three seasons for the TDD requirement. Option 1 would require scallop vessels to use TDD from June 1 to October 31, Option 2 from May 1 to October 31 and Option 3 from May 1 to November 30. In general, shorter seasons for the TDD requirement will provide more flexibility to the scallop vessels about the type of dredge to employ during fishing with some potentially positive economic impacts. Taking into account the research results that using TDD is not expected to have negative impacts on the scallop landings, the season options will probably have marginal economic impacts on the fishery overall. The TDD requirement for longer seasons will maximize the benefits of the TDD in terms of reducing turtle impacts, and if there are no impacts on scallop catch the economic impacts should be minimal.

Since these seasons are relatively long in length, 5-7 months, it seems unlikely that a limited access scallop vessel currently fishing in the Mid-Atlantic would not invest in the new gear, and only fish in the months not included in the range (December-April). Thus, is unlikely that once

vessels are required to have a TDD that they will change them during the fishing year. Therefore, the relative difference between the season options may have negligible impacts on these vessels.

The season options could impact LAGC IFQ vessels, however, in relatively greater degree than the LA vessels. For general category vessels that only qualified for limited amounts IFQ, cost of TDD could be too large to for them to want to invest in new gear. Instead, those vessels may want to fish in other areas or seasons outside of the TDD requirement, so there may be some amount of effort shift as a result of these season options. Option 1 could have the least impacts since 54.49% of the LAGC landings took place from June to October while Option 3 would have the largest impacts since 73% of their landings occurred May to November in 2010 (Table 22 to Table 24).

Table 22. Option 1: Distribution of landings by the LAGC IFQ vessels in 2010 in Southern New England Areas

3-digit area	June-Oct	Nov-May	Grand Total
526	7.77%	1.73%	9.50%
537	1.16%	2.27%	3.43%
539	2.46%	2.00%	4.47%
612	8.45%	5.12%	13.57%
613	3.55%	3.61%	7.16%
615	19.85%	20.73%	40.58%
621	3.68%	4.87%	8.55%
626	7.56%	5.17%	12.73%
Grand Total	54.49%	45.51%	100.00%

Note: Only those areas with 1% or more of total landings are included in the Table.

Table 23. Option 2: Distribution of landings by the LAGC IFQ vessels in 2010 in Southern New England Areas

3-digit area	May-Oct	Nov-April	Grand Total
526	7.81%	1.69%	9.50%
537	1.82%	1.60%	3.43%
539	2.84%	1.63%	4.47%
612	10.40%	3.17%	13.57%
613	4.44%	2.72%	7.16%
615	23.89%	16.69%	40.58%
621	5.35%	3.21%	8.55%
626	10.03%	2.70%	12.73%
Grand Total	66.59%	33.41%	100.00%

Note: Only those areas with 1% or more of total landings are included in the Table.

Table 24. Option 3: Distribution of landings by the LAGC IFQ vessels in 2010 in Southern New England Areas

3-digit area	Dec-Apr	May-Nov.	Grand Total
526	0.62%	8.89%	9.50%
537	1.49%	1.93%	3.43%
539	1.25%	3.22%	4.47%
612	2.39%	11.17%	13.57%
613	2.05%	5.11%	7.16%
615	14.57%	26.02%	40.58%
621	2.61%	5.94%	8.55%
626	2.02%	10.72%	12.73%
Grand Total	27.00%	73.00%	100.00%

Note: Only those areas with 1% or more of total landings are included in the Table.

Effort shifts would result in higher costs for vessels if the scallop abundance in other areas is not sufficiently high enough to cover the extra costs of steaming or fishing longer. As a result, longer seasons could cause some LAGC vessels to invest in TDD instead of shifting their effort to other seasons or areas. The increase in costs could be minimized to some degree by leasing of quota to vessels that fish in other areas. On the other hand, leasing will involve some costs, such as the transaction costs and the margins lessors will require to make fishing the leased quota profitable, thus there will be some negative impacts on the LAGC vessels if TDD requirement includes them during seasons/areas that are most active.

Finally, if there are effort shifts to other seasons when the meat count is lower, that could have negative impacts on the scallop resource and long-term economic benefits. For example, in May the meat weighs are high, thus both Option 2 and Option 3 could have an adverse impact on the resource and future yield and economic benefits from the fishery. Option 3 could have the largest effort shifts since TDD would be required also in November. However, scallop meat weights are lower in November, so if effort shifts from that time to another month with higher meats outside of the turtle window such as April, that could have positive impacts on the fishery. Thus, it is not possible to determine quantitatively the net impacts of effort shifts with TDD in comparison to the impacts of the RPM measures, for example, that are implemented with the current regulations. Although, there may be potential negative impacts on the scallop resource and yield from limited amounts of effort shifts caused by the various TDD season alternatives, these impacts are likely to be small. Again, over the long-run, TDD requirement could have indirect positive economic impacts on the scallop fishery if the TDD is found to reduce impacts on sea turtle mortality to a level that current effort limit RPMs are no longer necessary.

5.4.1.1.2.3 Impacts of options related to which vessels required to use TDD

Under the TDD Requirement Alternative, there are three vessel options considered for this action: the TDD would be required for all limited access vessels including full-time, part-time and occasional vessels. (Option 1); the TDD would be required for all vessels (i.e. limited access and limited access general category IFQ vessels) (Option 2); or the TDD would be required for all limited access vessels regardless of the dredge size and limited access general category IFQ vessels that use dredge gear greater than 10.5 feet (Option 3).

The gear modification is not expected to have any significant impacts on scallop catch, prices and revenues. However, there will be various costs associated with switching the gear.

According to the anecdotal information provided by the AP, the cost of this dredge is estimated to be about $4,200 to $4,400 each. It would cost a little more than a standard lighter dredge, but less than a heavy weight standard dredge used on some vessels that fish on harder bottom. If the cost of freight included as well, the overall dredge and freight would bring the total cost to about $5,000 a dredge. The cost could be less, about $2,500 to $3,000, for smaller dredge widths, but that could be a large burden for a smaller IFQ vessel depending on their IFQ allocation.

All of the three options would require all limited access vessels to have TDD while fishing in the areas and periods selected for this requirement. Thus all options would have the same impacts on the limited access fleet. The final costs on the individual vessels will depend on how long a typical dredge lasts and when the vessels need to purchase a new set of dredges. For example, if a vessel's dredges are already worn out and need to be replaced, the costs of buying TDD instead of a standard lighter dredge will be small. Again, according to the anecdotal information provided by the Scallop industry representatives, in the Mid-Atlantic on softer bottoms a dredge can last 3-5 years, while in the North on harder bottoms it could last 2-3 years maximum. For those vessels that already have a usable dredge at the time of implementation, switching to TDD will be more costly than others. In addition, some Scallop Industry advisors indicated that smaller dredge vessels sometimes never replace dredges, so the impacts on those vessels could even be greater.

Nevertheless, it is clear from Table 25 that, the cost of buying a dredge and freight cost would be a very small proportion of the average scallop revenues per limited access vessel even when the maximum estimate of costs was used. There are no occasional vessels remaining in the scallop fleet and there are only two part-time dredge vessels, so Table 25 does not include them. The average annual scallop revenues for the majority of the FT dredge vessels (247 out of 250) and the FT small dredge vessels (47 out of 52) were more than $500,000 a year in the last 5 fishing years, thus even for FT vessels with below average revenue the costs of TDD is not estimated to exceed 1% of their scallop revenues. Again, for vessels that already have a usable dredge at the beginning of the implementation, this would be a one-time cost from replacing their dredges earlier than planned. Some industry representatives stated that about 20% of the limited access vessels already use TDD. The number of vessels using TDD is lower according to the observer data, only 16 out of 265 vessels using it in 2009 and only 4 out of 224 using it in 2010. It is possible that not all the dredge information was recorded in the observer data yet. Although, the cost of TDD as a percentage of scallop revenue is slightly larger for the part-time vessels, it is still about 1.5% and would be even smaller if the revenue from other species were included.

The total costs of TDD requirement for the limited access fleet is estimated to be about $2.2 million if 20% of the vessels already have a TDD and about $2.7 million if the majority of the vessels don't have this dredge (Table 26, Row A) . However, the net costs would be less given that vessels need to replace their dredges periodically even without the new dredge requirement. For example, it is assumed that 20% of the fleet already has a TDD at the time of implementation and the dredges need to be replaced every 3 years, total costs to the fleet will be about $1.4 million (column A, Table 26). If dredges normally last for 5 years, total would be about $1.7

million (column B, Table 26). These costs are estimated by assuming that the difference between the cost of new TDD and a new standard dredge is small.[4]

Table 25. Average scallop revenue per limited access vessel (in 2010 inflation adjusted prices)

Fishyear	FT Dredge	FT Trawl	FT SD	PT SD
2006	923,775	424,507	440,474	142,722
2007	995,611	703,947	602,578	178,732
2008	1,016,359	880,600	566,551	172,229
2009	1,068,655	950,682	718,078	441,186
2010	1,383,645	1,226,876	994,573	351,670
Average revenues for 2006-2010 fishing years	1,077,609	837,322	664,451	257,308
Number of permits (2010)	250	*10	52	32
Cost of TDD	9000 ($4500*2 dredges)	9000 ($4500*2 dredges)	3,000	3,000
Cost as a % of Scallop revenues	0.9%	1%	0.5%	1.5%
Cost of TDD plus shipping ($500 for each dredge)	10000 ($4500*2 dredges)	10000 ($4500*2 dredges)	3,500	3,500
Cost of TDD plus shipping costs as a % of Scallop revenues	1%	1.2%	1%	2%

*In 2010, 10 out of 11 full-time trawl permits used dredges when fishing for scallops

[4] According to the anecdotal information provided by the Scallop advisors TDD is expected to cost a little more than a standard lighter dredge, but less than a heavy weight standard dredge used on some vessels that fish on harder bottom, so it is assumed on the average, the costs of the standard dredges and TDD will be similar.

Table 26. Total costs of TDD requirement for the scallop fishery

Permit category	Number of permits	Every vessel installs TDD plus shipping costs for Mid.At. vessels	80% of the vessels install TDD	Net cost of the TDD requirement (A: 3 years)	Net cost of the TDD requirement (B: 5years)
Full-time	250	2,382,225	1,905,780	1,270,520	1,524,624
Full-time small dredge	52	143,751	115,001	76,667	92,001
Full-time net boat*	10	95,289	76,231	50,821	60,985
Total full-time	313	2,621,266	2,097,013	1,398,008	1,677,610
Part-time	2	9,500	7,600	5,067	6,080
Part-time small dredge	32	96,008	76,807	51,205	61,445
Part-time trawl	0	-	-	-	-
Total part-time	34	105,508	84,407	56,271	67,525
Total LA (Row A)	347	2,726,774	2,181,419	1,454,280	1,745,136
LAGC-IFQ vessels (Row B)	56	338,855	271,084	180,723	216,867
Total LA and IFQ (Row C)	403	3,065,629	2,452,503	1,635,002	1,962,003

*10 out of 11 vessels with full-time trawl permits used dredges when fishing for scallops in 2010.

Some options would have different distributional impacts on the scallop vessels depending on which vessels are included in the requirement. Option 1 would exempt LAGC fleet from the TDD requirement, Option 2 would require all LAGC IFQ vessels and Option 3 would require all LAGC IFQ vessels that use a dredge 10ft. or greater to have a TDD in the areas and months included for this requirement. Thus Option 1 would have no impact and Option 2 would have the largest impacts on the LAGC IFQ vessels.

As Table 27 shows, average annual scallop revenue of the LAGC IFQ vessels was about $119,932 in 2010, much lower than the revenue limited access vessels derive from the scallop fishery. There is also a spectrum IFQ amounts ranging from as low as 1000 pounds. The annual income of these vessels also varies from state to state (Table 20). Just for an average revenue vessel in the IFQ fleet, the cost of a TDD could amount to 3% to 8% of the gross revenue and even more for vessels with lower IFQ allocations. The median scallop revenue for the LAGC IFQ fleet was about $57,944 (mostly vessels with a small dredge), so for those smaller vessels the costs as a percent of annual scallop revenue could amount to 5% to 12% depending on how many dredges the vessels employ and if they pay for shipping (assuming $3000 per dredge for smaller vessels). Thus Option 2 could have negative economic impacts on many LAGC vessels that derive a relatively modest income from scallops.

Table 27. Average scallop revenue per LAGC (IFQ) vessel (in 2010 inflation adjusted prices)

Data	Total
Number of permits	333
Number of active vessels	179
Total scallop landings	2,451,057
Average scallop revenue per vessel (all IFQ vessels)	119,932
TDD cost as a % of average scallop revenue (assuming TDD cost of $3000 to $10000)	3% to 8%
Median scallop revenue per vessel (all vessels)	57,944
TDD cost as a % of median revenue assuming (assuming TDD cost of $3000 to $7000)	5% to 12%
Average scallop revenue per vessel that use a dredge 10.5ft or greater	127,281
TDD cost as a % of average scallop revenue per vessel that use a dredge 10.5 ft or higher (assuming TDD cost of $3000 to $10000)	2% to 8%

The preferred alternative, Option 3, would require all limited access vessels and any LAGC IFQ scallop dredge 10.5 feet or greater fishing in the area and season identified above to use a turtle deflector dredge.[5] Given that the smaller the dredge size, smaller is the scallop revenue, this option will minimize the costs on the smaller LAGC vessels using a small dredge. The average scallop revenue for this group of LAGC vessels is $127,281, higher than the average revenue for all vessels ($119,932) and for vessels that use a dredge less than 8ft. ($54,793, Table 28).

[5] The dredge data field in the permit database is not filled in a consistent way. While for some vessels, it indicates the feet of the dredge size, for some other vessels it is written as a sum of two dredges and for other it is expressed in inches. Since there is no indication of which method was used, we had to make some assumptions such that for any value with 3 digits is converted to feet and any value in feet greater than 20 feet is assumed to correspond to the value for 2 dredges. Furthermore, for small dredge vessels, if the dredge size was recorded more than 10.5 feet, it is assumed that the correct value is 10.5 feet since by definition these vessels cannot use larger dredges.

Table 28 - Average annual scallop revenue per vessel by dredge size (2010 Fishing year)

Average annual scallop revenue		Dredge Size				
Plan	Category	NA	Less than 8ft	8ft to 10.49ft	10.5ft or greater	All vessels
LGC	IFQ	102,471	54,793	139,262	127,281	119,932
Limited access	FT		1,584,928	1,123,788	1,384,368	1,383,645
	FTSD	1,072,131		858,171	1,018,095	994,573
	FTTRW				*1,226,876	1,226,876
	PTSD	NA*		324,581	441,186	404,468
All limited access		995,382	1,585,052	651,850	1,266,567	1,226,344

*Note: The average is for all 11 vessels in this category including one vessel with use trawl gear to protect data confidentiality. In addition, the info for PT vessels are not shown because there are only 2 vessels in that category.

The cost of dredges for LAGC vessels that are required to have a TDD under the proposed option will vary according to the number of dredges each vessel use. For 41 vessels which use only one dredge and have LAGC permit only $150,483 (no LA permit), and for remaining 15 LAGC permit only vessels the average scallop revenue was 147,233. Assuming that the cost of a single dredge including the transportation cost will be about $3000, the cost of TDD requirement will be about 2% of the gross scallop revenue for an average vessel in the first group. For two dredges the cost could be about $10,000 and comprise about 7% of the scallop revenue of an average vessel in the second group of vessels that use 2 dredges. All of the vessels have the option of not installing a TDD, however, and either lease their quota to other vessels or fish in times and areas outside of the TDD requirement.

Table 29. Number of active vessels by permit category and dredge length (2010 Fishing year)

Plan	Category	NA	Less than 8ft	8ft to 10.49ft	10.5ft or greater	Grand Total
LGC	IFQ	48	8	38	85	179
	% of total	27%	3%	19%	51%	100%
Limited Access	FT		3	3	244	250
	FTSD	4		9	39	52
	PT				2	2
	PTSD	1		9	22	32
	All	5	3	22	306	336
	% of Total	1%	1%	7%	91%	100%
Grand total		53	11	60	391	515
% of grand total		10%	2%	12%	76%	100%

Overall, the proposed option (Option 3) would affect 85 active IFQ vessels and all LA vessels (336 dredge vessels) in all areas and seasons identified above for the requirement to use a turtle deflector dredge (Table 29). In reality, 29 of the LAGC IFQ vessels also have a limited access permit, thus would be required to have TDD anyway (Table 30). As a result, proposed option, in addition to the 336 limited access vessels, will affect 56 LAGC vessels with IFQ permits. Those vessels landed over 90% of scallops in 2010 (Table 31). For this group (IFQ vessels), the costs

for buying and installing TDD could be about $0.3 million if none of those vessels have a TDD dredge already (Table 26, Row B). Adding this cost to the total for the limited access vessels in Table 26, total cost of TDD requirement for the scallop fleet will range from $1.6 million to $3.0 million depending on how many vessels already have a TDD and need to replace their dredges (Table 26, Row C). Table 30 shows that for 41 single dredge vessels with IFQ only permit, the average costs of TDD ($3500 including cost of transportation) as percent of average scallop revenue for this group will be about 2% although the proportions will vary form vessel to vessel. The costs are expected to be higher for the 15 IFQ permitted vessels that use two dredges, about 7% of the average revenue per vessel for this group. This proportion will vary according to the IFQ allocation of each vessel.

Table 30 - Average annual scallop revenue per vessel by LGC IFQ vessels that use a dredge 10ft. or greater (2010 Fishing year)

Number of dredges	Data	Both LA and IFQ permit	IFQ permit only	Grand Total
1	Number of vessels	10	41	51
	Scallop revenue per vessel (average)	76,267	150,483	135,931
	TDD cost as a % of revenue	*4%	2%	2%
2	Number of vessels	19	15	34
	Scallop revenue per vessel (average)	88,313	147,233	114,307
	TDD cost as a % of revenue	*11%	7%	9%
Number of vessels		29	56	85
Scallop revenue per vessel (average)		84,159	149,612	127,281

*These proportions show only the cost of TDD as a percentage of the scallop revenue earned by fishing with the IFQ permit. Since these vessels also have LA permits and earn larger amounts of revenue fishing with LA permit, TDD cots as a percent of their total revenue will be small, 1% to 2% on the average.

Over the long-term the potential benefits from switching to TDD are expected to outweigh these short-term costs. TDD requirement if implemented is expected to reduce the impacts on turtles substantially compared to the standard dredge. The existing measures that minimize the incidental take of sea turtles very often have negative impacts on scallop prices and revenues and could result in higher fishing costs by removing effort from the more productive seasons when the meat weights are higher to seasons when the meat weight of scallops decline. If a TDD is implemented there could be indirect positive economic impacts on the scallop fishery if current RPMs are eliminated or modified as a result of requiring the use of a TDD.

Table 31. Scallop landings by permit category and dredge length (Group totals, 2010 Fishing year)

Plan	Category	NA	Less than 8ft	8ft to 10.49ft	10.5ft or greater	Grand Total
LGC	IFQ	604,023	50,685	587,033	1,209,316	2,451,057
	% of total	25%	2%	24%	49%	100%
Limited Access	FT		541,771	418,986	41,506,424	42,467,181
	FTSD	577,041		972,888	5,155,507	6,705,436
	PTSD	NA*		NA*	1,284,203	1,772,266
	All	631,352	541,771	1,825,626	48,118,117	51,116,866
	% of Total	1%	1%	4%	94%	100%
% of grand total		2%	1%	5%	92%	100%

*The numbers for PT vessels are not shown to protect the data confidentiality.

5.4.1.1.2.4 Impacts of timing options for TDD requirement

Timing options for the TDD requirement include 90-180 days and longer options from one year to 2 years. The sooner the TDD is implemented the sooner the conservation benefit of that gear can be accounted for in future estimates of sea turtle mortality. For example, if a TDD is required in this action it is possible that the next biological opinion of this fishery could include expected impacts of this gear modification in the next estimate of mortality. And since this gear modification is expected to have conservation benefits for turtles, there could be indirect positive economic impacts on the scallop fishery if current RPMs are eliminated or modified as a result of requiring the use of a TDD.

It should be noted however that a short period for implementation, such as 90 days may not be a feasible time period since so many dredges need to be built, and 180 days (September 1) does not benefit turtles much for that fishing year since the majority of the turtle season has already passed. The costs of this requirement could also be higher for some vessels that have already have a usable dredge but now have to switch to the TDD within a very short-time. In addition, implementation within a short-period could increase dredge prices if that require the producers to increase rate of production by resorting to over-time work and investment in more capacity. A one year option and implementation by March 1, 2013 could give enough time to build dredges and give vessels time to fish with the new dredge before the turtle season begins in May. A one or the two year implementation option could also lower the costs for some vessels by providing more flexibility and time to plan buying and installing a TDD. Implementation by March 1, 2013 could have relatively more benefits compared to a two year option, if any future biological opinions are not able to account for conservation benefit from measures approved but not effective yet.

5.4.1.2 Review and revise accountability measures for the yellowtail flounder sub-acl

This section provides an analysis of the modifications to improve the overall effectiveness of the YT AM measures.

5.4.1.2.1 No Action related to YT AM

If this alternative is selected there will be no changes to the yellowtail flounder accountability measures adopted under Amendment 15. As described in Amendment 15, some level of effort shift is expected if the YT AM is triggered. In general, effort shifts can have negative economic

impacts if effort is shifted to less optimal areas and into seasons with lower meat weights. Under no action, Southern New England LAGC fishery is exempted from the yellowtail closures, to prevent high distributional impacts for LAGC vessels. The impacts of the proposed measures are compared to no action in the following sections.

5.4.1.2.2 Refine the YT seasonal closure AM schedule

The proposed closures would reduce effort during months with the highest yellowtail bycatch rates first. Table 32 compares the current AM schedule for SNE/MA with the proposed AM schedule for the limited access fleet; the major difference is that the proposed closure is primarily in the early spring and winter first, rather than starting with the spring and summer under the current AM (No Action) with different impacts at each level of overage. When overage is 8% or less, the proposed closure will impact a higher percentage of landings compared to no action. For example, under the current schedule if the overage is 6% to 8%, the closures will affect 18% of landings from these areas, but with the new schedule it will impact at least 25% of landings. This is because, the Amendment 15 schedule would closure these areas from March to May while the proposed option would close the same areas from February to May if the overage is 3.1% to 7%, and from January to May if the overage is 7.1 to 9%. Closing the SNE areas longer could increase fishing costs and have negative impacts on the scallop revenues and profits if the effort is moved to less productive areas with lower LPUE and to areas with a higher percentage of smaller scallops that are usually sold at a lower price compared to larger scallops. On the other hand, if effort shifts to seasons when the scallop meat weights are larger, fishing costs could decrease, landings and revenues could increase benefiting both the scallop resource and the fishery.

At higher overage rates, however, the new schedule will impact a smaller proportion of landings compared to the no action. For example, at 17% overage, the new schedule would have impact on 49% of the LA landings while the old schedule will impact 88% of landings. This is because Amendment 15 would close these areas from March to October including the high fishing months of summer while the proposed schedule would close then from November to July allowing the vessels to fish in August and September (Table 32). As a result, the preferred alternative could lower the fishing costs associated with effort shifts and could lead to higher landings compared to current Amendment 15 schedule.

Table 32. Comparison of current SNE/MA AM schedule under Amendment 15 and proposed schedule under Framework 23 (All limited access vessels)

A15 - CURRENT AM SCHEDULE		Sum of landings for 2009 and 2010	% of total landings (2009 and 2010)	FW23 - PROPOSED		Sum of landings for 2009 and 2010	% of Total
Overage	LA Closure			Overage	LA Closure		
1-2%	March	183055	5%	2% or less	March-Apr	433756	11%
3-5%	Mar-Apr	433756	11%	2.1-3%	Feb-Apr	700201	18%
6-8%	Mar-May	696501	18%	3.1-7%	Feb-May	962946	25%
9-12%	Mar-June	1201025	31%	7.1-9%	Jan-May	1045463	27%
13-14%	Mar-July	1458425	37%	9.1-12%	Dec-May	1051454	27%
15%	Mar-Aug	1940873	49%	12.1-15%	Dec-June	1555978	40%
16%	Mar-Sept	2810089	72%	15.1-16%	Nov-June	1672259	43%
17%	Mar-Oct	3456011	88%	16.1-18%	Nov-July	1929659	49%
18%	Mar-Nov	3572292	91%	18.1-19%	Oct-Aug	3058029	78%
19%	Mar-Jan	3660800	93%	19.1% or more	All year	3927245	100%
20% and higher	All year	3927245	100%				

Overall, the SNE/MA closures are not expected to have large impacts on the limited access fleet given that only 4.6% of the total landings of FT dredges and even a smaller proportion of the landings for full-time small dredges come from these areas. But for a subset of vessels that fish in those areas, when the yellowtail overage is relatively small (8% or less), the proposed closures will shift relatively more landings to the other areas and seasons compared to the Amendment 15 schedule. This will reduce the flexibility for vessel owners to choose where and when to fish with a possible increase in fishing costs. On the other hand, shifting effort to other seasons when the meat weights are highest could benefit the scallop resource and increase landings and revenues to some extent offsetting the negative effects of the effort shifts. At overage rates 9% and higher, the closures will affect a smaller proportion of landing compared to the Amendment 15 schedule, however. This will have a favorable impact on vessel flexibility and fishing costs with positive impacts on profits.

Table 34 and Table 35 compare the impacts of the proposed closures with the Amendment 15 schedule separately for the full-time dredge and full-time small dredge vessels. The results show that the proposed closures will even be less restrictive for the small dredge vessels since they usually do not fish much in later fall and winter months, thus adding these months to the closure are not expected to affect their landings significantly. The similar conclusions are valid for the part-time small dredge and full-time trawls vessels as could be seen from the monthly distribution of landings in Table 33. Therefore, the proposed closures could increase the economic benefits for the scallop fishery.

Table 33. Percentage of landings from SNE/MA areas by month and permit category (2009-2010 averages)

Permit Category	Month	Stat areas			Monthly landings as a % of landings from 537+539+613	Landing from 5137+539+613as % of landings from all areas
		537	539	613		
FT	1	0.0%	0.0%	2.3%	2.3%	0.1%
	2	0.0%	0.0%	7.2%	7.2%	0.3%
	3	0.7%	0.0%	4.1%	4.8%	0.2%
	4	0.5%	0.0%	6.0%	6.5%	0.3%
	5	0.0%	0.0%	6.1%	6.2%	0.3%
	6	0.5%	0.0%	11.2%	11.7%	0.5%
	7	0.8%	0.0%	6.0%	6.8%	0.3%
	8	1.3%	0.0%	11.4%	12.7%	0.6%
	9	0.4%	0.0%	22.1%	22.5%	1.0%
	10	0.0%	1.9%	14.2%	16.1%	0.7%
	11	0.0%	0.0%	3.2%	3.2%	0.1%
	12	0.0%	0.0%	0.2%	0.2%	0.0%
FT Total		4.3%	1.9%	93.9%	100.0%	4.6%
FTSD	1	1.8%	0.0%	0.0%	1.8%	0.0%
	3	0.0%	0.0%	6.3%	6.3%	0.0%
	6	20.0%	0.0%	0.0%	20.0%	0.1%
	7	0.0%	0.0%	0.3%	0.3%	0.0%
	8	0.0%	0.2%	13.0%	13.1%	0.1%
	9	0.0%	26.6%	0.0%	26.6%	0.2%
	10	0.0%	12.4%	16.5%	28.9%	0.2%
	11	0.4%	0.0%	0.0%	0.4%	0.0%
	12	2.5%	0.0%	0.0%	2.5%	0.0%
FTSD Total		24.7%	39.2%	36.1%	100.0%	0.7%
PTSD	4	13%	0%	0%	13%	0.5%
	5	44%	0%	0%	44%	1.7%
	6	9%	0%	19%	28%	1.1%
	7	3%	0%	5%	8%	0.3%
	9	0%	0%	0%	0%	0.0%
	10	0%	0%	8%	8%	0.3%
PTSD Total		69%	0%	31%	100%	4.0%
FTTRW	6	0%	0%	52%	52%	1%
	9	0%	0%	22%	22%	0%
	10	0%	0%	26%	26%	1%
FTTRW Total		0%	0%	100%	100%	2%

Table 34. Comparison of current SNE/MA AM schedule under Amendment 15 and proposed schedule under Framework 23 (FT dredges)

A15 - CURRENT AM SCHEDULE		Sum of landings for 2009 and 2010	% of total landings (2009 and 2010)	FW23 - PROPOSED		Sum of landings for 2009 and 2010	% of Total
Overage	LA Closure			Overage	LA Closure		
1-2%	March	177455	5%	2% or less	March-Apr	417656	11%
3-5%	Mar-Apr	417656	11%	2.1-3%	Feb-Apr	684101	18%
6-8%	Mar-May	645158	17%	3.1-7%	Feb-May	911603	25%
9-12%	Mar-June	1079328	29%	7.1-9%	Jan-May	994120	27%
13-14%	Mar-July	1332928	36%	9.1-12%	Dec-May	1000111	27%
15%	Mar-Aug	1804126	49%	12.1-15%	Dec-June	1434281	39%
16%	Mar-Sept	2635138	71%	15.1-16%	Nov-June	1550562	42%
17%	Mar-Oct	3230623	87%	16.1-18%	Nov-July	1804162	49%
18%	Mar-Nov	3346904	90%	18.1-19%	Oct-Aug	2870845	78%
19%	Mar-Jan	3435412	93%	19.1% or more	All year	3701857	100%
20% and higher	Mar-Feb	3701857	100%				

Table 35. Comparison of current SNE/MA AM schedule under Amendment 15 and proposed schedule under Framework 23 (FT small dredges)

A15 - CURRENT AM SCHEDULE		Sum of landings for 2009 and 2010	% of total landings (2009 and 2010)	FW23 - PROPOSED		Sum of landings for 2009 and 2010	% of Total
Overage	LA Closure			Overage	LA Closure		
1-2%	March	5600	6%	2% or less	March-Apr	5600	6%
3-5%	Mar-Apr	5600	6%	2.1-3%	Feb-Apr	5600	6%
6-8%	Mar-May	5600	6%	3.1-7%	Feb-May	5600	6%
9-12%	Mar-June	23250	26%	7.1-9%	Jan-May	7200	8%
13-14%	Mar-July	23552	27%	9.1-12%	Dec-May	9420	11%
15%	Mar-Aug	35145	40%	12.1-15%	Dec-June	27070	31%
16%	Mar-Sept	58645	66%	15.1-16%	Nov-June	27439	31%
17%	Mar-Oct	84232	95%	16.1-18%	Nov-July	27741	31%
18%	Mar-Nov	84601	96%	18.1-19%	Oct-Aug	64921	73%
19%	Mar-Jan	88421	100%	19.1% or more	All year	88421	100%
20% and higher	Mar-Feb	88421	100%				

The AM Schedule for GB access areas will be modified as well to begin in the fall followed by the winter months, when YT bycatch rates are highest. Table 36 compares the current and proposed AM schedule for GB when Closed Area II is open, and Table 37 compares the AM

schedule for GB when Closed Area II is closed. The closures start at the time of year when scallop meat weights are lowest, so impacts on the scallop landings and fishery should be lower compared to closing the area beginning in March through the spring and summer when scallop meat weights are larger.

Using the data for 2009 when the Closed Area II was open, Table 36 shows that if the AM closures took place then, the proportion of landings that could be affected by the closures would be much lower for the proposed schedule compared to the current schedule. For example, if the overage is less than 56%, the proposed schedule will only affect 8% of the landings from area 562, while the Amendment 15 schedule would affect a 98% of the landings that took place in that area in 2009. In addition, effort shifts to other areas as a result of this alternative are less likely because the majority of fishing in statistical area 562 is on Closed Area II access area trips that can only be taken in that area. Therefore, if an AM is imposed in area 562 during a year when the Closed Area II access area is open, effort will shift to months outside of the AM closure. If the overage is 39% or less Closed Area II would be closed from August-January and effort would be shifted to the remaining months the area is open, June 15-July 31 when scallop meat weights are greater compared to the fall and winter. This will have a positive economic impact on scallop vessels by increasing flexibility and reducing the amount of effort that has to be shifted to other areas and seasons.

If the overage is greater than 56%, however, this area will be closed all year, while the current schedule will leave it open for a few months, from September to February, depending on the overage. Given that, only 2% of landings took place in September to March in 2009, the impacts of this difference between the current and the proposed schedule would probably be marginal. It must be cautioned that the above analysis is based on 2009 data and the results could change if seasonal fishing patterns are significantly different in the future from what is observed in 2009. In general, however, shifting effort to times of the year with higher scallop meat weights will have positive impacts on the scallop resource and overall landings and revenues from this area. Fishing during seasons with higher abundance could also lower the fishing costs if the same pounds could be landed within a shorter time period.

Table 36. Comparison of current GB AM schedule under Amendment 15 and proposed schedule under Framework 23 for years when Closed Area II is open (2009, All limited access vessels)

A15 - CURRENT AM SCHEDULE		Sum of landings for 2009 and 2010	% of total landings (2009)	FW23 - PROPOSED		Sum of landings for 2009	
Overage	LA Closure			Overage	LA Closure		% of Total
1%	Mar-May	0	0%	3% or less	Oct-Nov	0	0%
2-24%	Mar-June	2758897	92%	3.1-14%	Sept-Nov	63300	2%
25-38%	Mar-July	2921819	97%	14.1-16%	Sept-Jan	63300	2%
39-57%	Mar-Aug	2951819	98%	16.1-39%	Aug-Jan	93300	3%
58-63%	Mar-Sept	3015119	100%	39.1-56%	Jul-Jan	256222	8%
64-65%	Mar-Oct	3015119	100%	Greater than 56%	All year	3015119	100%
66-68%	Mar-Nov	3015119	100%			3015119	100%
69%	Mar-Dec	3015119	100%			3015119	100%
70% and higher	All year	3015119	100%			3015119	100%

Table 37 compares the proposed and the current schedule when Closed Area II was closed. Only a small amount of landings took place in 562 in that year and the majority of these landings (57%) seem to have taken place between Aug to March, so new schedule would have slightly larger impact compared to the current schedule if the overage is 3% or less. On the other hand, given that the percentage of landings from the part of 562 outside of CA II was a tiny fraction (less than 0.005%) of landings from all areas during August to January or all year, this difference between the current and the proposed schedule are expected to have negligible impacts on effort shifts to other areas or seasons. Again, this is assuming that the seasonal patterns observed in 2010 continue in the future. There is no question; however, that shifting effort to seasons when the meat weights are larger will benefit the scallop resource, increase landings and overall economic benefits form the fishery.

Table 37. Comparison of current GB AM schedule under Amendment 15 and proposed schedule under Framework 23 for years when Closed Area II is closed (2010, All limited access vessels)

A15 - CURRENT AM SCHEDULE		Sum of landings for 2009 and 2010	% of total landings (2009 and 2010)	FW23 - PROPOSED		Sum of landings for 2009 and 2010	
Overage	LA Closure			Overage	LA Closure		% of Total
1%	Mar-May	0	0%	1% or less	Sept-Nov	0	0%
2%	Mar-June	0	0%	2%	Aug-Jan	26000	57%
3%	Mar-July	19675	43%	3%	Aug-Mar	26000	57%
4-5%	Mar-Aug	45675	100%	4%	Jul-Mar	45675	100%
6% and higher	All year	45675	100%	5%	Jul-May	45675	100%
				6% or greater	All year	45675	100%

5.4.1.2.3 Mechanism to adjust AMs for bycatch sub-ACLs allocated to the scallop fishery

No Action for this measure is that the estimate of YT catch in the scallop fishery made on or about January 15 determines whether AMs are triggered and how long the seasonal closure should be in effect, regardless of whether or not final estimates suggest the AM should be different. This action also considered a mechanism to adjust AMs if the final estimate of YT catch for Year 1 (Option 2), available several months after the start of the fishing year for Year 2, differs from the original estimate provided in January. Option 2 would give the Regional Administrator authority to revise decisions regarding implementation of an approved accountability measure for bycatch ACLs based on the final estimate of catch.

If the final estimate of YT catch for Year 1, available several months after the start of the fishing year for Year 2, differs from the original estimate provided in January, Option 2 would give the Regional Administrator authority to revise decisions regarding implementation of an approved accountability measure for bycatch ACLs based on the final estimate of catch.

Option 2 would provide flexibility needed to manage a bycatch sub-ACL based on the best available information. If the final estimate of YT catch is lower than the preliminary estimate, this measure will relax AMs and/or shorten the closure periods according to the new bycatch estimate with positive economic impacts on the scallop fishery. On the other hand, if the final estimate of YT catch is higher, the area closures could be extended resulting in more effort shifts and negative economic impacts in the short-term. However, if the AM measures were not consistent with the final estimate of YT overage, this could affect future AMs for the scallop fishery and the adjustment in the short-term could prevent potentially negative impacts over the long-term. As discussed in Section 5.4.1.2.2 above, the SNE/MA closures are not expected to have large impacts on the limited access fleet given that only 4.6% of the total landings of FT dredges and even a smaller proportion of the landings for full-time small dredges come from these areas. For GB, in years when CA2 is open modifying a seasonal closure would impact more effort and this seasonal closure begins in the fall rather than the start of the fishing year, so there is a greater chance that final estimates would be available before the area is scheduled to close. Therefore, while the mechanism to adjust approved accountability measure for bycatch ACLs based on the final estimate of catch will have some economic benefits for the scallop fishery especially when the final estimate is lower than the preliminary estimate, these impacts are expected be small. Similarly, the impacts of No Action are expected to be minor.

5.4.1.3 Modification to the NGOM LAGC program

5.4.1.3.1 No Action related to NGOM management program

If this alternative is selected there will be no changes to the NGOM management program. The impacts of the NGOM program were analyzed in Section 5.4.14.4 of Amendment 11 (the action that adopted the program). NGOM management program will continue to provide access to vessels that are not qualified for limited access but qualify for an NGOM permit to fish in this area subject to a possession limit of 200 lb. per trip. Vessels will continue to generate revenues from the NGOM fishery based on the TAC that is established each year (currently 70,000 lb). Currently, the TAC has not constrained the fishery, but if catch increases in future years, the TAC is designed to constrain landings to avoid overfishing. However, under the no action

alternative, catch from state waters by vessels with a NGOM permit will continue to count against the NGOM TAC, which could result in faster harvest of the TAC in years when the TAC constrains the fishery. This could result in forgone revenues that would be generated by separating the state waters catch from federal waters catch on NGOM trips. Because this area is managed by a separate hard TAC, the risks from overfishing the scallop resource and the resulting risks to long-term scallop yield and revenues are minimized. Therefore, no action would have no additional economic benefits.

5.4.1.3.2 Require that if a vessel with a federal NGOM wants to fish in state waters and not have that catch apply to the federal NGOM TAC, that vessel is restricted to fish in state waters only for that trip

This alternative changes how state water catch is accounted for within the NGOM management area. Mainly, it will allow vessels to fish exclusively in state waters, on a trip by trip basis, without the scallop catch from state water only trips counted against the federal NGOM TAC.

According to the 2010 VTR data, about 84% of all general category trips within NGOM management area were reported within state waters (Figure 3, Impacts on scallop resource). These include all trips that landed 400lb. or less. With this option, the future catch from state waters by the NGOM vessels would *not* be applied toward the federal NGOM TAC if vessels declare and fish in state waters only. Therefore, there will be more TAC available for scallop catch in NGOM federal waters.

This change is not expected to have any significant impacts under the current resource conditions on landings and revenues from this area, however. Total catch in the NGOM area has been well below the current TAC of 70,000 pounds (Table 38) and amounted at the most to 15,534 pounds in 2009 fishing year. On the other hand, if the scallop resource abundance and landings within the Maine State waters increases in the future, the proposed alternative would prevent a reduction in landings from NGOM. This could potentially have positive economic impacts on the vessels that fish both in the state and federal waters. Landings by limited access general category IFQ vessels, as well as limited access incidental catch will still be applied against the NGOM TAC, even if it was caught exclusively in state waters within the NGOM area, however. In addition, once the TAC is reached, the NGOM area would be close to all vessels with scallop permits (LA and LAGC).

Table 38. NGOM landings by fishyear and home state including the landings of vessels with NGOM and IFQ permits (NMFS website)

Data	2008	2009	2010
Scallop landings (lb.)	9,936	15,534	11,539
% of quota	14.2%	22.2%	16.5%

At present, the potential increased risk of more scallop catch from state and/or federal waters within the NGOM from this alternative is very limited and not likely since current effort levels in this area are minimal. Even if effort levels are increased, the TAC limit for this area will prevent landings going over the sustainable levels. Thus, the preferred alternative is not expected to have negative impacts on the scallop resource, yield and economic benefits in the short- or the long-term.

The change in the regulations could potentially affect the scallop resource within the state waters, however. If vessels those vessels with federal NGOM permits that are not fishing in federal waters change behavior and fish more in state waters because that wouldn't be counted against the NGOM TAC, the fishing mortality could go up in state waters. Therefore, the impacts on the scallop resource in state waters will rely more on regulations in place by each state, as discussed in the following section (Section 5.4.1.3.2.1).

5.4.1.3.2.1 Option for which vessels?

The first option is for vessels homeported in the state of Maine only, and the second option would apply to all vessels with a NGOM permit, regardless of homeport state.

As Table 39 describes, if the first option is selected, roughly 30 vessels from the state of Maine would potentially benefit from this exemption. The second option could benefit over 120 vessels from different states. In reality, however, only a subset of these vessels actually fish in the NGOM area and some vessels with NGOM permit homeported in RI and Mid Atlantic states don't have a state water scallop fishery, so they are not expected to be affected by the proposed rule. Table 41 shows that there were 7 vessels that are homeported in Massachusetts that fished in the NGOM area, and 9 vessels from Maine and New Hampshire that fished in the NGOM area in 2010.

Table 39. Home port of vessels with NGOM permit

Home Port	2009	2010
MA	66	62
ME	32	31
NH	13	14
NJ+NY	3	4
RI	5	3
Mid.At	8	8
Grand Total	127	122

Table 40. Primary State of Landing for vessels with NGOM permit

Primary State of landing	2009	2010
MA	66	63
ME	33	32
NH	11	12
NJ+NY	6	6
RI	6	4
Mid.At	5	5
Grand Total	127	122

*Preliminary

Table 41. Home State for vessels that fished in the NGOM area in 2010 fishing year by permit category

Homeport	IFQ	NGOM	Grand Total
MA	4	3	7
ME	1	4	5
NH	2	2	4
Grand Total	**7**	**9**	**16**

Option 1 is unlikely to lead to an increase in effort in Maine or in the waters of the other states. The state of Maine has similar, and in some cases more restrictive regulations in state waters compared to the federal NGOM program to prevent the scallop fishing going over the sustainable levels. To date, the only states with similar management programs are Maine and New Hampshire. The state of Massachusetts is currently developing a scallop endorsement program but it is not effective yet. The amendment to the state mobile gear permitting will create a species-specific sea scallop endorsement. Any current Coastal Access Permit holder would be eligible to receive the proposed commercial scallop endorsement, unless that vessel is dually permitted to catch scallops under a federal permit. Therefore, a vessel from Massachusetts would have to decide if they want the state scallop endorsement or keep their federal scallop permit, it may not have both. This will eliminate the ability for a vessel to "double-dip" in both federal and state waters. In addition, regulations would require that every NGOM vessel to follow the same 200 possession limits regardless of which state they fish if the modifications are made to the current program action. This should minimize the impacts on the scallop resource and any negative impacts on yield and scallop revenues in the State waters of Massachusetts as well. See Section 4.5.1 for a more detailed summary of scallop management in each state.

5.4.1.3.2.2 Options to adjust the 2012 and default 2013 NGOM hard-TAC implemented under Framework 22

With the no action alternative, the federal NGOM hard TAC will remain at 70,000 pounds regardless of whether alternative defined in Section 2.3.2 is selected. Since fishing levels have been very low in this area, allowing vessels to fish exclusively in state waters, on a trip by trip basis, without the scallop catch from state water only trips counting against the federal NGOM TAC, is not expected to affect fishing levels in the NGOM. Thus, the potential increased risk of more scallop catch from state and/or Federal waters within the NGOM from this alternative is very limited given that total catch in the NGOM area has been already below 31,000 pounds. However, no action regarding the NGOM hard-TAC (keeping at 70,000 lb.) is expected to prevent closing of the NGOM fishery due to the state water catches by LAGC IFQ vessels, since catches by those boats would still be applied against the federal NGOM TAC. Therefore, this will have positive economic impacts on the participants of the scallop fishery.

If Option 2 is selected, the TAC for NGOM will be adjusted 31,000 pounds. FW22 set the TAC at 70,000 pounds for FY2012. The later amount included the landings from the state waters as well. That allocation will rollover for 2013 unless modified by a future scallop action scheduled to set fishery specifications for FY2013 and 2014, Framework 24.

Under FW22 it was estimated that the TAC for just the resource within federal waters in the NGOM area should be 31,000 pounds based on one survey of the federal waters in that area. However, the total TAC for the NGOM area was increased to 70,000 pounds to recognize that a

substantial portion of total catch from the NGOM area comes from state waters. If this action allows a vessel with a federal NGOM permit to declare that it is fishing exclusively in state waters, and that catch will no longer be applied against the federal TAC, the TAC could arguably be adjusted downward. On the other hand, the scallop catch by LAGC IFQ vessels in state waters will still be applied towards overall NGOM TAC. If inshore resources rebound due to strict state water management programs and LAGC IFQ vessels increase their catch in state waters, a lower TAC could result in closure of the entire NGOM area with potentially negative economic impacts on participants of NGOM scallop fishery. Thus, the proposed action keeps the federal TAC at 70,000 pounds to address the fact that any potential catch from LAGC IFQ vessels in state waters will still be applied against the federal NGOM TAC. The NGOM TAC will be reassessed in the next Framework Action to ensure the scallop catch remains at sustainable levels over the long-term, so this TAC value is temporary until more information is available.

5.4.1.4 Modification to vessel monitoring system

5.4.1.4.1 No action

Vessels have to declare in and out of the scallop fishery as currently required by VMS regulations (Sections 648.9 and 648.10). Once a vessel crosses the VMS demarcation line it is deemed to be fishing under the current DAS program. With no action, when a vessel declares into the fishery it must do so from a port, or from a "port identification" area.

Having to declare to the fishery from port raises safety concerns if a vessel decides to steam closer to the fishing grounds but remain declared out of the fishery. A vessel would then have to go into a port in that area if to declare into the fishery if it does not want to be charged the steaming time outside of the demarcation line. Under this system a vessel may need to enter a port it is not familiar with in order to start that trip, which could pose safety risks. but remain declared out of the fishery. A vessel would then have to go into a port in that area if to declare into the fishery if it does not want to be charged the steaming time outside of the demarcation line. Under this system a vessel may need to enter a port it is not familiar with in order to start that trip, which could pose safety risks. In addition, the extra steaming time to the port adds to the fishing costs including the costs of fuel and oil.

In general, vessel monitoring system has indirect economic benefits for the scallop resource and fishery by improving the effectiveness of the scallop management. These benefits outweigh the costs and are not expected to change with no action.

5.4.1.4.2 Limited access and limited access general category vessels can declare into the scallop fishery west of the demarcation line, not necessarily from a port area

The proposed alternative would allow a vessel to declare into the scallop fishery west of the VMS demarcation line and not necessarily from a port. Currently, total "DAS used" in the fishery is the value incorporated in the LPUE models by the PDT to calculate future DAS allocations. The value for DAS used comes from the field "DAS charged" from the DAS database. DAS charged is based on the time a vessel crossed the VMS demarcation line going out on a trip, and the time it crossed again coming back from a trip, so the majority of steam time is currently included in the calculation. Therefore, this modification is not expected to change the

total "DAS used" in calculation of LPUE and the future DAS allocations. As a result, there will be no direct impacts on the landings and revenues from the scallop fishery. This change could help some vessels to lower their fishing costs, however. For example, a vessel could steam closer to the fishing grounds and declare into the fishery from VMS demarcation line instead from a port, reducing the steam time and the fuel and oil costs. Therefore, the proposed modification could increase the economic benefits from the scallop fishery by reducing the costs. In addition, there will be fewer risks to safety from having to enter a port it is not familiar with in order to start that trip.

5.4.2 Enforcement and safety impacts

The Enforcement Committee for the NEFMC reviewed the measures under consideration in Framework 23 at a meeting in June 2011. Several recommendations were made with respect to the alternatives under consideration, and general input was provided in terms of whether the measures are enforceable.

5.4.2.1 Turtle deflector dredge

All of the options for area, season, and vessels are enforceable, but the Enforcement Committee noted that it would be most efficient to require this dredge in the area, season, and on vessels that are most likely to interact with turtles. Checking turtle deflectors in areas or seasons where there is no or very little predicted turtle-vessel interaction, or on gear for which the TDD is not feasible, is a waste of enforcement resources.

Therefore, the Enforcement Committee made a motion to recommend Option 3 related to which vessels should be required to use the TDD. Ultimately, the Enforcement Committee discussed that all the TDD options were primarily management decisions rather than enforcement decisions since overall they are all enforceable.

5.4.2.2 Yellowtail Flounder AMs

The large areas with straight lines for A15 YT AM (accountability measures) closures are enforceable. It was noted that LAGC vessels are responsible for 20% of the by-catch in this fishery. In addition, a comment was made that more categories are harder to identify.

5.4.2.3 NGOM alternatives

The discussion focused on whether state waters only landings would be enforceable. With VMS declaration into a state waters only fishery, and LA vessels not able to use their GC permits once this fishery was closed, the Committee did not believe there were enforcement problems with the measures under consideration.

5.4.2.4 Vessel Monitoring System

The committee and advisors approved a motion, 8-0-0, to allow limited access and limited access general category (LAGC) scallop vessels to declare trips inside the demarcation line.

This change replaces the requirement for VMS scallop vessels to declare into the fishery from port to west of the demarcation line, for the following reasons. First, although declaring from

port goes back to the original call-in program, it was enforced inconsistently, but, in 2008, enforcement required it because small day boats were jumping in and out of the fishery at the southern end of the resource. This situation is no longer possible. Second, the multispecies fishery is moving to catch shares, away from DAS, thus removing a large number of VMS vessels that otherwise would, with this motion in scallops, be inconsistently continuing to declare from port. Third and most importantly, the safety issue associated with vessels declaring from port, particularly with deep-draft northern vessels entering dangerous mid-Atlantic inlets, is substantially reduced. LAGC vessels were added to this motion, despite the fact that they now operate under IFQ's, to make the enforcement of VMS declarations consistent within the scallop fishery. If the scallop committee makes this change, the Council should consider making the VMS declaration requirement consistent across all its FMP's. Currently, all vessels that are required to use a VMS are required to declare from port (Monkfish, Red Crab, Herring, Surfclam/Ocean Quahog, Northeast Multispecies, and Scallop).

NMFS currently has a port list that includes most major Northeast ports and some breakwaters. Agents have the flexibility to allow vessels to declare inside the demarcation line in an emergency, now and in the past, and to make recommendations for other points where declarations may always be made. Delaware Bay is mentioned in the scallop discussions because it is the current declaration point that is furthest from an actual port. *The Council may consider, if the motion above is not accepted or the motion is not extended to other fisheries that require a VMS, to request NMFS to have the agents propose declaration points at Barnegat and Cape May, and other ports.*

5.5 IMPACTS ON BYCATCH AND OTHER FISHERIES

The Scallop PDT evaluated the impacts of the TDD compared to the standard commercial dredge on bycatch and other fisheries using the same GLM described in Section 5.1.1.2.1. This model was used to evaluate the performance of the TDD in terms of catch and size selectivity of flatfish. In addition to the quantified impacts of the TDD on scallop catch, this section also includes more general statements about qualitative impacts of the various boundary, season, vessel, and timing alternatives on bycatch and other fisheries.

The impacts of the YT AM alternatives on bycatch, in particular YT flounder, and other fisheries were assessed using a GLM model. The model predicted d/k ratios by month using 2009 bycatch rates. A prorated d/k ratio was calculated for each of the YT AM seasonal closures and applied to the weighted average of scallop catch to estimate the potential YT savings from the various YT AM closures under consideration for the LAGC fishery.

Overall, the NGOM and VMS alternatives are not expected to have impacts on bycatch and other fisheries and were assessed qualitatively based on potential changes in fishing behavior and steaming time versus fishing time.

See Section 4.5 for a description of bycatch and other fisheries potentially impacted by this action.

5.5.1 TDD Alternative

5.5.1.1 No Action TDD Alternative

Under the No Action TDD Alternative, the turtle deflector dredge would not be required for scallop vessels fishing in the Mid-Atlantic. Vessels would continue to use the standard commercial dredge or choose to use the TDD voluntarily. The continued use of dredges without a TDD is not expected to alter fishing behavior (timing/location/total catch) or efficiency from what is currently occurring. Therefore, the No Action TDD alternative would be expected to have no additional impacts on bycatch and other fisheries. There are reports that TDDs may slightly reduce catch of flatfish and some skates compared to the standard commercial dredge. However, these reports found this difference to be statistically insignificant in many cases and therefore this EA considers there to be a negligible difference in catch efficiency between the two dredges until more research on the direct impacts on bycatch are completed.

5.5.1.2 Require TDD Alternative

This action is considering an alternative that would require the use of a turtle deflector dredge on scallop vessels. The Council is considering several different options for where this TDD dredge should be required, what time of year or season it should be required, which vessels should be required to use it, and how long the delay of effectiveness should be for this dredge requirement. This section will summarize the impacts overall of this dredge requirement compared to No Action, and the following sections will discuss the various impacts of the boundary, season, vessel and timing options under consideration.

Modifications to the dredge were intended to reduce the injuries suffered by turtles by reducing the probability of being captured by the gear. It has been found that this gear modification also reduces catch of other bycatch species such as several flounder and skate species. Section 5.1.1.2.1.1 describes the experimental design and methods used to compare these gears. This section focuses on preliminary results of other bycatch species and associated fisheries.

Overall, implementation of this dredge is not expected to impact fishing behavior significantly. It is possible that some vessels will chose to fish in areas and seasons outside of the TDD requirement, thus have different impacts on bycatch depending on which areas effort shifts to. In addition, some vessels may fish for other species to make up for any lost revenue from changing fishing patterns or investing in the TDD.

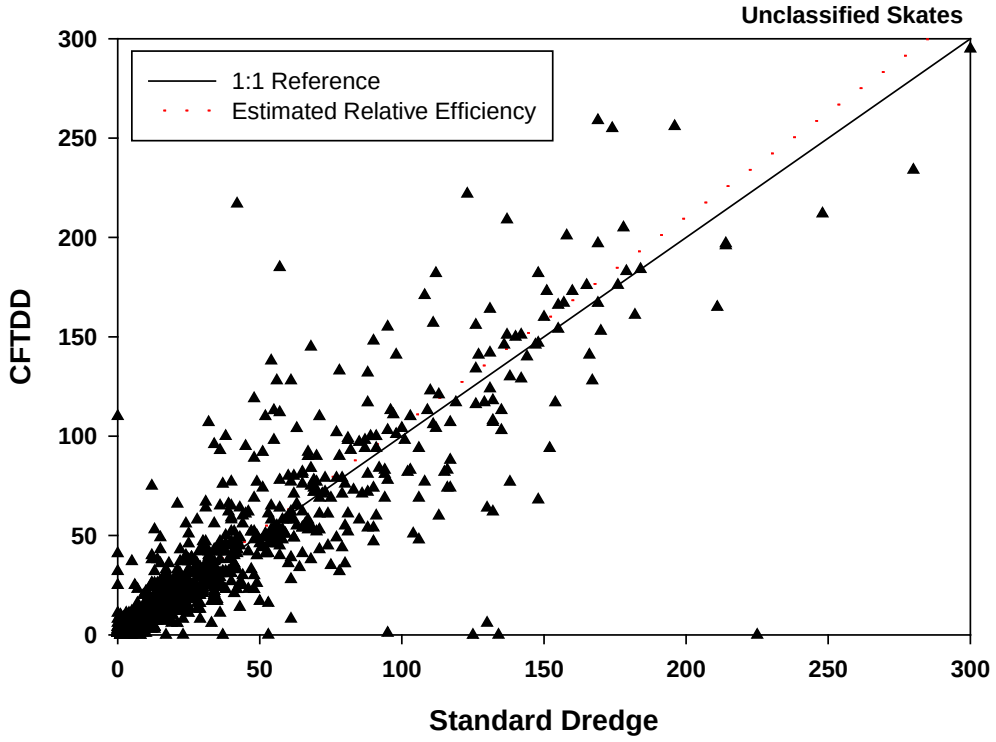
5.5.1.2.1 Evaluation of the TDD on bycatch

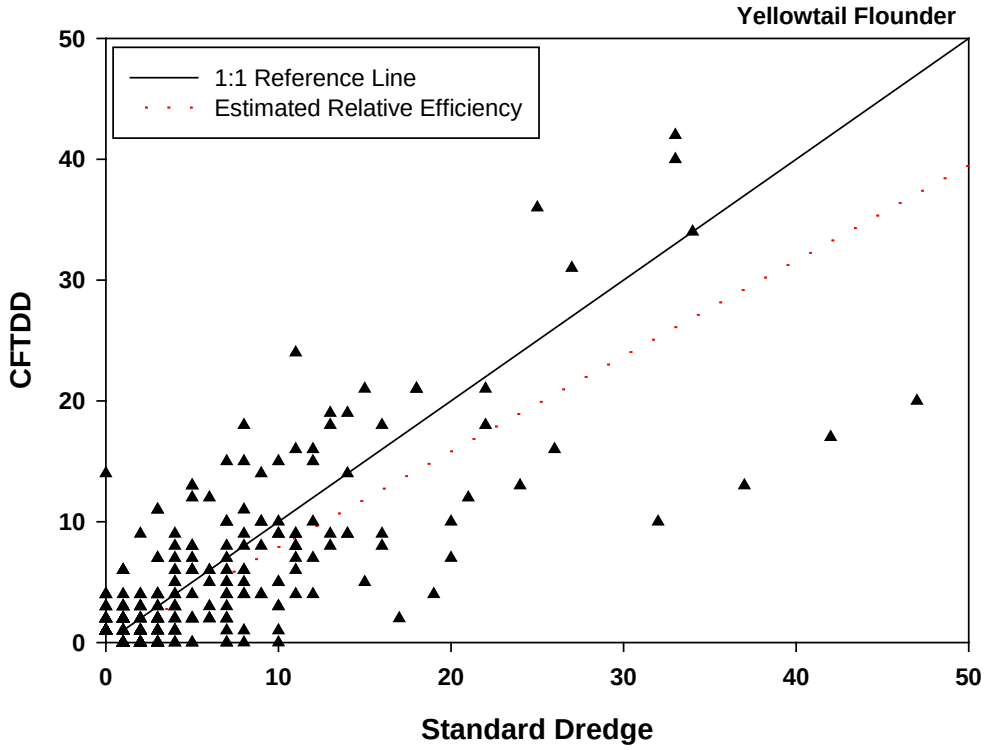
A series of paired tow, gear comparison experiments were conducted to the efficiency of the TDD relative to a standard New Bedford style commercial sea scallop dredge. The objective of these experiments was to determine whether the gear performance characteristics of the two dredges differed and how those differences might be reflected in differential catch rates and size selection of both scallops and the major finfish bycatch species. With respect to finfish bycatch, results were varied. The TDD generally reduced the capture of flatfish and some skates however, these differences were not statistically significant. Similar to scallops no differences in the size selectivity of the finfish bycatch was detected. A more detailed description of the impacts on finfish bycatch is summarized in Section 5.1.1.2.1.2. Table 14 and Table 15 show

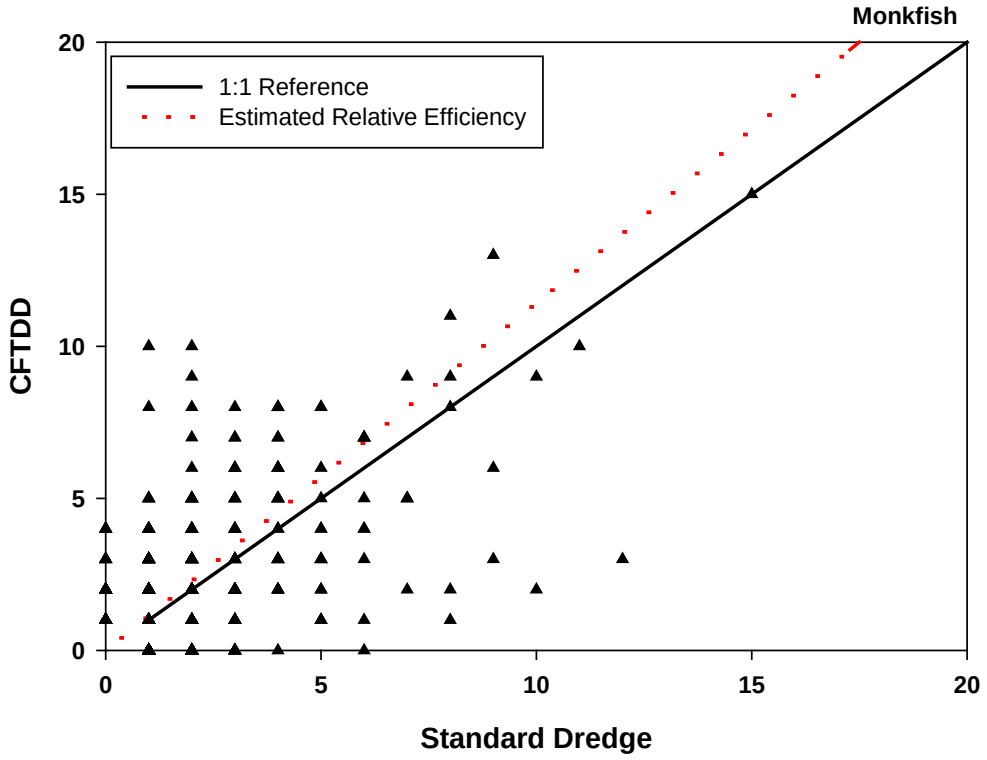
that preliminary results suggest that fewer yellowtail and windowpane flounder are caught with the TDD compared to the standard dredge, but the differences are not statistically significant.

Overall, roughly 2,250 paired tows were completed over the course of the experiment. Only a subset was actually sampled for scallop/fish and not all species were present in each of the sampled tows. Total catch for the major species with the number of sampled tows are shown in Table 14. For the intercept only model (gear effect only) a scatterplot of the catches from the paired tows are shown in Figure 41 for several fish species. Parameter estimates are shown in Table 16. The performance of the two dredges was variable and only in the case of summer flounder and monkfish was the estimated relative efficiency values statistically significant.

Figure 41 - Total scaled pooled finfish catches for CFTDD vs. the standard New Bedford style scallop dredge (top panel) The black line has a slope of one. The dashed line has a slope equal to the estimated relative efficiency (from the one parameter gear effect only model).




Yellowtail Flounder
1:1 Reference Line
Estimated Relative Efficiency
CFTDD
Standard Dredge
0
10
20
30
40
50


Monkfish
1:1 Reference
Estimated Relative Efficiency
CFTDD
Standard Dredge
0
5
10
15
20

5.5.2 Review and revise accountability measures for the yellowtail flounder sub-ACL

The Council recently approved Amendment 15, which included an AM for the YT sub-ACLs (GB and SNE/MA stocks) for the scallop fishery. This action is considering several modifications to those measures.

This section will summarize the impacts of the yellowtail flounder AM alternatives on bycatch and other fisheries. The primary sources of information used for these analyses are observer data and VMS data. General conclusions are drawn about potential effort shifts that may be caused by the AM alternatives under consideration for both the limited access and limited access general category IFQ fisheries. In addition, estimated benefits for YT flounder from these modifications are estimated by evaluating the "YT savings" associated with potential seasonal effort shifts caused by the YT AM alternatives.

5.5.2.1 YT AM No Action Alternative

If this alternative is selected there will be no changes to the YT AM adopted under A15. The length of closures for specific statistical areas within each stock area would close based on the previous year's overage, beginning with the month of March and continuing through February in consecutive order. As described in A15, some level of effort shift is expected if the YT AMs are triggered in either GB or SNE/MA. In general effort shifts cah have negative impacts on bycatch if effort is shifted into areas and/or seasons with high bycatch rates, or vice versa. Therefore, the No Action YT AM alternative could have positive or negative impacts on bycatch and other fisheries depending on whether effort shifts into areas with lower or higher bycatch rates.

5.5.2.2 Refine YT AM seasonal closure AM schedule

YT savings is estimated using a predicted D/K ratio from statistical area 613 (only area within SNE/MA YT AM area with LA scallop fishing) using catch data from 2009 and 2010. If that area is closed, the YT catch from within the area would not occur, and fishing would take place either during a different time with lower bycatch rates, or a different area with lower bycatch rates, since the proposed seasonal AM closure closes the areas and months with the highest bycatch rates first. For example, if the AM area is closed for the first 4 months of the closure schedule (March, April, May and Feb) the expected YT savings are 25% compared to if that area was open to the fishery (Table 42). Similarly, if the area was closed for the first 8 months of the proposed AM schedule, the savings are about 35% compared to the area remaining open. Since the preferred action modifies the seasonal schedule by closing months with the highest YT bycatch rates first, the benefits to YT are expected to be slightly better than the No Action schedule. A similar analyses was not prepared for GB YT schedule since that area is an area based allocation and effort cannot shift.

Table 42 – Estimated "YT savings" by month from the SNE/MA YT AM schedule

	YTRate	YTCatch - No Closure	YT 4Mon Closure	YT 8Mon Closure
Jan	0.037	1,064	1,407	0
Feb	0.052	6,864	0	0
Mar	0.062	4,309	0	0
Apr	0.059	6,537	0	0
May	0.045	5,073	0	0
Jun	0.031	7,182	9,497	0
Jul	0.022	2,526	3,341	4,421
Aug	0.019	3,526	4,663	6,171
Sep	0.019	7,982	10,554	13,967
Oct	0.022	6,321	8,358	11,060
Nov	0.027	1,583	2,093	0
Dec	0.031	94	125	0
Total		53,062	40,037	35,618
YTReduction			25%	33%

Overall these modifications to when YT AM seasonal closures will be implemented for the LA fishery are expected to be more beneficial for YT because they are timed during the months when YT bycatch rates are the highest. Because the areas with the highest YT bycatch rates are included and the Am schedule begins with the months with highest bycatch rates, both seasonally and spatially the proposed AM schedule should have beneficial impacts to YT bycatch compared to the No Action AM schedule.

5.5.2.3 Mechanism to adjust AMs for bycatch sub-ACLs allocated to the scallop fishery

No Action for this measure is that the estimate of YT catch in the scallop fishery made on or about January 15 determines whether AMs are triggered and how long the seasonal closure should be in effect, regardless of whether or not final estimates suggest the AM should be different. This action also considered a mechanism to adjust AMs if the final estimate of YT catch for Year 1 (Option 2), available several months after the start of the fishing year for Year 2, differs from the original estimate provided in January. Option 2 would give the Regional Administrator authority to revise decisions regarding implementation of an approved accountability measure for bycatch ACLs based on the final estimate of catch.

In general Option 2 is administrative and provides flexibility needed to manage a bycatch sub-ACL based on the best available information, therefore the direct impacts on bycatch and other fisheries are neutral. If the final estimate varies from the preliminary estimate the program should be able to adjust so that ultimately the appropriate measures are in place to either reduce YT catch further if final estimates are higher, or relax AMs to prevent further impacts on the fishery is final estimates are lower. Overall the impacts of this measure on bycatch are neutral

compared to No Action (AMs triggered and based on preliminary estimate of YT catch) because final catch amounts could be higher or lower than final estimates.

5.5.3 Modification to the NGOM LAGC program

5.5.3.1 No Action related to NGOM management program

If this alternative is selected there will be no changes to the NGOM management program. Amendment 11 assessed the impacts of the NGOM program on bycatch and other species. Overall, the program was expected to have minimal impacts on bycatch and other fisheries because this is a very limited fishery.

5.5.3.2 Require that if a vessel with a federal NGOM wants to fish in state waters and not have that catch apply to the federal NGOM TAC, that vessel is restricted to fish in state waters only for that trip

A vessel with a federal NGOM permit will have to declare before it leaves on a trip whether it will be fishing exclusively in state waters or not. If it decides to fish exclusively in state waters, on a trip by trip basis, the scallop catch from state water only trips will not be applied against the federal NGOM TAC. On a trip by trip basis, each vessel can decide which area it is going to fish in. A vessel can still fish in both state and federal waters on a single trip, but if it does, that vessel needs to declare a federal trip before leaving, and the entire catch from that trip would be applied to the federal TAC, even if some of it was harvested in state waters. These vessels are generally smaller vessels that fish primarily in state waters and some pockets of federal waters within the NGOM, so any modification to this program is not expected to have direct impacts on bycatch or other fisheries because this is a very limited fishery and this adjustment is not expected to change fishing behavior in a significant way.

Total catch in the NGOM area has been well below the current TAC of 70,000 pounds. In 2008 total catch from NGOM was under 10,000 pounds, in 2009 it was about 15,500 pounds and in 2010 total catch was under 12,000 pounds. These totals include catch in state waters on vessels with a federal NGOM permit. Therefore, at present this alternative is not expected to have impacts on bycatch or other fisheries.

5.5.3.3 Options for which vessels

This action considered two options for which NGOM vessels would be permitted to declare a state-only trip and that catch not apply against the federal NGOM TAC. Option 1 would be for NGOM vessels homeported in Maine and Option 2 would be for any NGOM vessel regardless of homeport state. Catch is not expected to increase substantially from either option because of strict limits in place or expected in the near future that will restrict state water scallop fishing. Therefore, there are no impacts on bycatch or other fisheries from these vessel options, and there is no discernible difference between the two options.

5.5.3.4 Options to adjust the 2012 and default 2013 NGOM hard-TAC implemented under FW22

This action considered two different TACs for the NGOM management area. The No Action TAC equal to 70,000 pounds and a reduced TAC of 31,000 pounds. Catch is not expected to increase substantially regardless of which TAC is selected because recent catch levels in this area

have been a fraction of the current TAC. Overall there are likely negligible differences between the two TAC options and their impacts on bycatch and other fisheries since this is a very small component of the total scallop resource and relatively little fishing effort in this area overall.

5.5.4 Modification to vessel monitoring system

Both the No Action VMS and alternative under consideration in this section that would allow scallop vessels to declare into the scallop fishery west of the demarcation line, and not from port, would not have direct impacts on bycatch or other fisheries. This measure is primarily for safety and will not change when and where a vessel fishes; therefore, the there are no impacts on bycatch or other fisheries expected. The VMS alternative only proposed to the requirements for the start of a trip, when a vessel is steaming closer to fishing areas, and vessels would not be fishing for or retaining other species during this time.

5.6 CUMULATIVE EFFECTS

5.6.1 Introduction

The term "cumulative effects" is defined in the Council of Environmental Quality's (CEQ) regulations in 40 CFR Part 1508.7 as:
"The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."

In 1997, the CEQ published a handbook titled, *Considering Cumulative Effects Under the National Environmental Policy Act*. The CEQ identified the following eight principles of cumulative effects analysis, which should be considered in the discussion of the cumulative effects of the Preferred Alternative:

1. Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions.
2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, non-federal, or private) has taken the actions.
3. Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected.
4. It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.
5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.
6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.
7. Cumulative effects may last for many years beyond the life of the action that caused the effects.
8. Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accumulate additional effects, based on its own time and space parameters.

The following analysis will identify and characterize the impact on the environment by the Preferred Alternative and alternatives considered in Framework 23 when analyzed in the context of other past, present, and reasonably foreseeable future actions. Summary tables can be found following each of the text sections describing impacts. These tables contain brief summaries intended to distill the more detailed descriptions found in this section, and in Section 4.0 (Affected Environment), and Section 5.0 (Environmental Impacts). To enhance clarity and maintain consistency, the terms in Table 43 are used to summarize impacts.

Table 43 - Terms used in cumulative effects tables to summarize cumulative impacts

Impacts Are Known	Impacts Are Somewhat Uncertain
High Negative/Positive	Potentially High Negative/Positive
Negative/Positive	Potentially Negative/Positive
Low Negative/Positive	Potentially Low Negative/Positive
Neutral	Potentially Neutral
No Impact	

**In some cases, terms like "more" and "most" are used for the purposes of comparing management alternatives to each other.*

5.6.2 Valued Ecosystem Components

This document was structured such that the cumulative effects can be readily identified by analyzing the impacts on valued ecosystem components (VECs). The affected environment is described in this document based on VECs that were identified specifically for Amendment 15. The VECs identified for consideration in Framework 23 include: **Atlantic sea scallop resource; physical environment and essential fish habitat (EFH); protected resources; fishery-related businesses and communities, and non-target species/other fisheries**.

VECs represent the resources, areas, and human communities that may be affected by a Preferred Alternative or alternatives and by other actions that have occurred or will occur outside the Preferred Alternative. VECs are the focus of an EA since they are the "place" where the impacts of management actions are exhibited. An analysis of impacts is performed on each VEC to assess whether the direct/indirect effects of an alternative adds to or subtracts from the effects that are already affecting the VEC from past, present and future actions outside the Preferred Alternative (i.e., cumulative effects).

Changes to the Scallop FMP have the potential to directly affect the sea scallop resource. Similarly, management actions that would alter the distribution and magnitude of fishing effort for scallops could directly or indirectly affect other species and their corresponding fisheries. The physical environment and EFH VEC focuses on habitat types vulnerable to activities related to general category scallop fishing. The protected resources VEC focuses on those protected species with a history of encounters with the scallop fishery, primarily sea turtles. The fishery-related businesses and communities VEC could be affected directly or indirectly through a variety of complex economic and social relationships associated with either the scallop fishery or any of the other VECs. Finally, the non-target species and other fisheries VEC includes impacts on bycatch species and fisheries, primarily flatfish species that are caught in the scallop fishery as bycatch.

The descriptive and analytic components of this document are constructed in a consistent manner. The Affected Environment (Section 4.0) traces the history of each VEC and consequently addresses the impacts of past actions. The Affected Environment section is designed to enhance the reader's understanding of the historical, current, and near-future conditions (baselines and trends) to fully understand the anticipated environmental impacts of the management action proposed in this amendment. The direct/indirect and cumulative impacts of the Preferred Alternative and other alternatives are then assessed in Section 5.0 of this document using a very similar structure to that found in the Affected Environment section. This EA, therefore, is intended to follow each VEC through each management alternative.

5.6.3 Spatial and temporal boundaries

The geographic area that encompasses the biological, physical, and human community impacts to be considered in the following cumulative effects analysis is described in detail in Section 4.0 of this document. The physical range of the Atlantic sea scallop resource in the northeast region of the US is from Maine to North Carolina. The physical environment, including habitat and EFH, is bounded by the range of the Atlantic sea scallop fishery in the northeast region from Maine to North Carolina and includes adjacent upland areas (from which non-fishing impacts may originate). For Protected Species and non-target species, the geographic range is the total range of the Atlantic sea scallop fishery. The geographic range for human communities is defined to be those fishing communities bordering the range of the scallop fishery.

Overall, the temporal scope of past and present actions for scallops, the physical environment and EFH, protected species, non-target species, fishery-related businesses and communities, and other fisheries is focused principally on actions that have occurred since 1996, when the Magnuson-Stevens Fishery Conservation and Management Act was enacted and implemented new fisheries management and EFH requirements. In 1996, the Magnuson-Stevens Act identified sustained participation of fishing communities as a new National Standard (#8), so consideration of fishery-related businesses and communities is consistent within this temporal scope. The temporal scope for marine mammals begins in the mid-1990s, when NMFS was required to generate stock assessments for marine mammals that inhabit waters of the U.S. EEZ creating the baseline against which current stock assessments are evaluated. For turtle species, the temporal scope begins in the 1970s, when populations were noticed to be in decline.

The temporal scope for scallops is focused more on the time since the Council first submitted the Scallop FMP in 1982, and particularly since 1994 when Amendment 4 to the FMP implemented the general category scallop permit. The Scallop FMP was developed with comprehensive analysis as part of a complete EIS, which this document serves to supplement and update. The FMP has been adjusted a number of times since 1982, and many elements of the management plan that are not specifically addressed in this amendment will continue to influence the status of the sea scallop resource.

The Atlantic sea scallop fishery has a long history dating back to the late 1800s. Section 1.3 summarizes the major changes in the scallop fishery and management program since the FMP was approved in 1982. Landings information for the scallop fishery date back to the early 1900s (Serchuck et al, 1979), but the temporal scope for fishery-related businesses and communities

extends back to 1994 to consider impacts from the date the general category permit was first issued.

The temporal scope of future actions for all VECs extends several years into the future, the next 2-3 years. This period was chosen because of the dynamic nature of resource management and lack of specific information on projects that may occur in the future, which make it difficult to predict impacts beyond this time frame with any certainty.

5.6.4 Past, present and reasonably foreseeable future actions

Section 4.0 and Appendix I of this document summarizes the current state of the scallop resource and the limited access and general category scallop fisheries, and it provides additional information about habitat and protected resources that may be affected by the Preferred Alternative.

5.6.5 Past and Present actions

A summary of the impacts of past and present actions have been considered relative to the VECs in this action and are described below and presented in Table 45.

Scallop Resource

The Council established the Scallop FMP in 1982 and later implemented several Amendments and Framework Adjustments to modify the original plan. See Section 5.6.4 for a detailed description of past and present actions. One major action in the past (1994) includes Amendment 4, which implemented limited access for the directed scallop fishery that is primarily managed by DAS and other controls such as crew limits and gear restrictions. During that same year, large areas on Georges Bank were closed to scallop fishing because of concerns over finfish bycatch and disruption of spawning aggregations.

In 1999 Framework Adjustment 11 to the Scallop FMP allowed the first scallop fishing within portions of the Georges Bank groundfish closed areas since 1994. Since then, several other framework actions have provided controlled access in these areas. In 2004 Amendment 10 to the Scallop FMP 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 access 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. The amendment also adopted several alternatives to minimize impacts on EFH, including designating EFH closed areas, which included portions of the groundfish mortality closed areas. The most recent action that provided controlled access in the access areas was Framework 18 for FY2006 and FY2007.

Several other actions have recently been implemented: Amendment 13, Framework 20, the SBRM Amendment (Amendment 12 to the Scallop FMP), and Framework 21. The Council approved Amendment 12 to the Scallop FMP in June 2007. This action is an omnibus amendment to all FMPs in the region and focuses on defining a standardized bycatch reporting methodology (SBRM). Section 303(a) (11) of the Magnuson-Stevens Fishery Conservation and Management Act requires that all FMPs include "a standardized reporting methodology to assess

the amount and type of bycatch occurring in the fishery." The SBRM Omnibus Amendment will ensure that all FMPs fully comply with the Act. 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.

Scallop Amendment 13 was also approved by both the Council and NMFS in 2007, which re-activated the industry-funded observer program. Since 1999, vessels required to carry an observer are authorized to land more than the possession limit from trips in access areas, and in open areas, vessels are charged a reduced amount to help compensate for the cost of an observer. Observers were deployed through a contractual arrangement between National Marine Fisheries Service (NMFS) and an observer provider until June 2004. This arrangement was not renewed because of unresolved legal issues concerning the use of a contract to administer the industry-funded observer program. For some time, NMFS funded observers while a solution to this issue was investigated. As funding became insufficient, an interim rule went into effect that approved a new mechanism to use the observer set-aside funds through a non-contracted vendor. Amendment 13 was necessary to make this temporary mechanism part of the regulations. The Council selected final measures for that action at the February 2007 Council meeting and it was implemented on June 12, 2007. Amendment 13 also includes a provision to make changes to the observer set-aside program by framework action and the Council decided to address some issues raised with the current program in Framework 19.

The Council approved Framework 20 to the Scallop FMP at the June 2007 Council meeting and NMFS implemented that action afterward. Framework 20 considered measures to reduce overfishing for FY2007 through measures that were implemented by interim action earlier in the year. At the November 2006 Council meeting, the Scallop PDT informed the Council that overfishing was likely to occur in 2007 under status quo measures implemented under Framework 18. The PDT presented several alternatives to reduce fishing mortality. The Council ultimately recommended that NMFS reduce the allocated number of trips for all scallop permit categories in the Elephant Trunk Access Area (ETA), delay the opening of the ETA, and prohibit vessels from possessing more than 50 bushels of in-shell scallops when leaving any controlled access area. NMFS agreed with the Council that the ETA has an unprecedented high abundance of scallops, which needs to be husbanded with precaution to effectively preserve the long term health of the scallop resource and fishery, and so implemented these measures by interim action.[6] This interim action became effective on December 22, 2006, and remained effective until June 20, 2007 (180 days). This interim action was then extended for an additional 180 days, and expired on December 26, 2007. Therefore, for the last two months of the 2007 fishing year (January-February 2008), management would have reverted back to status quo measures under FW18. Specifically, higher trip allocations would have been granted in the Elephant Trunk Area for both limited access and general category fisheries. Therefore, the Council approved Framework 20 to extend the reduced fishing effort measures implemented by interim action through the end of the 2007 fishing year. This action expired on March 1, 2008, when Framework 19 was scheduled to be in place.

[6] The interim rule published by NMFS on December 22, 2006 (**71 FR 76945**), included all measures recommended by the Council, except the prohibition on a vessel leaving an access area with more than 50 bu. of in-shell scallop was limited to the ETA only and not all access areas as recommended by the Council.

Framework 19 set specifications to adjust DAS allocations and set the area rotation schedule for 2008 and 2009. Maintaining the previous fishing mortality target of $F = 0.20$ is expected to have positive impacts on the scallop resource by reducing the risk of overfishing and establishing measures to achieve optimum yield on a continuing basis. In addition, the Hudson Canyon area was closed in this action which will help the FMP achieve optimum yield by reducing mortality on small scallops. Framework 19 also revised the overfishing definition, which was expected to have positive impacts on the scallop resource. The updated model is less biased, uses more sources of data, and is an improvement on the previous model.

It also addressed new requirements for the general category fishery including quarterly hard-TAC allocations for the transition period to an IFQ program. This action also included the details of a cost recovery program that was approved in Amendment 11 for general category IFQ permit owners. In addition, Amendment 11 approved a hard-TAC for a Northern Gulf of Maine (NGOM) limited entry program. FW19 included the specific hard-TAC for that program for the next two fishing years. General category vessels were allocated 5% of the total catch in access areas in both FY2008 and 2009 under this framework. The last alternative related to Amendment 11 was an estimate of incidental catch mortality that will be removed from the total projected catch before allocations are made.

Other measures in Framework 19 included alternatives to address specific issues with the observer set-aside program. In addition, the action included a provision for a vessel to power down their VMS unit for a minimum of 30 days. This action also included a clarification about when a vessel can leave for an access area trip. Lastly, this action approved research priorities to be incorporated in the RSA program for FY2008 and FY2009. The Council selected final measures for that action at the October 2007 Council meeting and it was implemented on June 1, 2008. The final rule for Framework 19 to the FMP was published on May 29, 2008 (73 FR 30790).

The Council approved Amendment 11 to the Scallop FMP (June 2007) and most of it was implemented in 2008. The full IFQ program was implemented in early 2010. The main objective of the action was 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. This additional effort is likely a contributing factor to why the FMP has been exceeding the fishing mortality targets. Without additional controls on the general category fishery, there is a great deal of uncertainty with respect to potential fishing mortality from this component of the scallop fishery; thus, the potential for overfishing is increased. The outcome of Amendment 11 is that mortality of the general category fleet will be controlled, thus reducing the potential for overfishing and having strong positive effects on the scallop resource.

Framework 21 was approved by the Council at the January 2010 Council meeting, and was implemented in summer 2010. It sets the fishery specifications for fishing year 2010, implements measures to comply with the RPM relating to sea turtles in the recent biological opinion (NMFS, 2008), and makes minor adjustments to the observer set-aside program. FW21 allocates 38 DAS to vessels and reduces access area trips from five to four. The selected alternative does not close the Channel so there will be higher LPUE and lower area swept in the near-term, which could

positively affect the resource. In general the measures for general category vessels related to Framework 21 are expected to have positive to neutral impacts on the scallop resource.

The alternatives to comply with RPM for turtles could have a wide range of impacts on the resource depending on how fishing behavior changes in accordance with the measures. The alternatives with seasonal closures in Delmarva for September and October are potentially beneficial for the resource if effort shifts to months in which meat weights are higher because reducing effort in the area during months of lower meat yields will reduce mortality. A reduction in possession limits in either Elephant Trunk or Delmarva would also be a positive impact on the resource because lower effort levels would presumably cause an increase in stock biomass.

The alternatives to improve the observer set-aside program will not have direct impacts on the scallop resource, but could potentially have indirect positive impacts from better monitoring coverage leading to better management.

The Council recently adopted Amendment 15 and Framework 22 to the Scallop FMP as well. Amendment 15 was voted on by the Council in September, 2010 and implemented in June 2011. Most alternatives proposed have neutral to positive indirect/direct impacts on the scallop resource when compared to No Action. Adoption of ACLs and AMs is required by the reauthorized Magnuson Act as a means of ending and preventing overfishing, so this action should inherently have positive impacts on the resource. Generally, the analysis of scientific uncertainty and incorporation of buffers and AMs should improve management and make the fishery less likely to exceed F_{target}.

A15 also adjusted the overfishing definition (OFD) to be more compatible with area rotation. Specifically, the new overfishing definition averages fishing mortality over time and not space; area-specific thresholds would be set based on past fishing mortality rates and area rotation policies and combined into one overall threshold. This more accurate model should increase the likelihood of successful management and be positive for the scallop resource by preventing growth overfishing.

Minor adjustments to the limited access general category management program that would affect the scallop resource were implemented including an allowance of IFQ rollover, modification to the general category possession limit up to 600 pounds, and adjusting the restriction on maximum quota per fishing platform from 2% to 2.5% of the total general category allocation. These adjustments should increase the efficiency of the fleet and have a positive effect on the resource.

Framework 22 was implemented on August 1, 2011. It set fishery specifications for 2011 and 2012. Overall catch is expected to be similar to 2010 levels, about 55 million pounds. Framework 22 included measure to comply with reasonable and prudent measures developed by NMFS related to a biological opinion for this fishery for loggerhead sea turtles. Vessels are restricted to a maximum number of access area trips in the Mid-Atlantic during the season when turtles are present. Several other minor measures were included in FW22 but none are expected to impact the resource or fishery substantially.

Several actions under the Multispecies FMP have had indirect impacts on the scallop resource. According to Amendment 16 to the Multispecies FMP, a specific portion of the total ABC for YT will be allocated to the scallop fishery as bycatch. Framework 44 allocated 100% of the yellowtail that was projected to be caught to harvest the projected scallop catch for 2010. That action had neutral impacts on the scallop resource for 2010 since the fishery caught less than the YT allocation for both GB and SNE YT, so AMs were not triggered and the scallop fishery was able to harvest all projected scallop catch in 2010 without triggering YT AMs. Framework 44 also set allocations for 2011 and 2012, but at 90% of the projected catch levels. It is not known yet if the YT allocations for 2011 and 2012 will have impacts on the scallop resource and fishery. In Framework 22, the action that set specifications for 2011 and 2012 scallop allocations were set within these YT limits, except the projected catch of GB YT in 2012 is greater than the sub-ACl allocated to the scallop fishery. If AMs are triggered as a result in 2013, there could be impacts on the resource and fishery from effort shifts out of the GB AM area or to different seasons.

Framework 45 to the Multispecies FMP changed the catch cap provisions for haddock so that they would only apply to midwater trawl vessels with a herring permit to maximize the chance for Georges Bank (Area 3) herring TAC to be caught. Overall, this action had no impacts on scallop resource. Amendment 16 modified the rebuilding mortality targets and status determinations criteria. That action also adopted ACL/AM requirements, modified effort controls, expanded sector policies, implemented 17 additional sectors, modified SAPs, and changed DAS and leasing and transferring polices. Overall this action reduced effort so indirect benefits on the scallop resource from reduced discard mortality.

The cumulative impacts of past and present management actions have resulted in substantial effort reductions in the scallop fishery. Sea scallop biomass has mostly increased since 1999, and the resource has not been overfished. It is estimated that area rotation management and allocating effort using ACL management will end overfishing permanently and provide a healthy resource for scallop fishermen to harvest for the long-term. Overall, the realized reductions in effort from past management actions have been positive for the scallop resource.

Physical Environment and EFH

The effects of mobile bottom-tending gear (trawls and dredges) on fish habitat have been recently reviewed by the National Research Council (NRC 2002). This study determined that repeated use of trawls/dredges reduce the bottom habitat complexity by the loss of erect and sessile epifauna and smoothing sedimentary bedforms and bottom roughness. This activity, when repeated over the long term also results in discernable changes in benthic communities, which involve a shift from larger bodied long-lived benthic organisms for smaller shorter-lived ones. This shift also can result in loss of benthic productivity and thus biomass available for fish. Therefore, such changes in bottom structure and loss of productivity can reduce the value of the bottom habitat for demersal fish, such as haddock and cod. These effects varied with sediment type, with lower level of impact to sandy communities, where there is higher natural disturbance to a high degree of impact to hard-bottom areas such as bedrock, cobble and coarse gravel, where the substrate and attached epifauna are more stable. Use of trawls and dredges are common in inshore and offshore areas. The primary gear used in the scallop fishery is dredge gear; however, there is some otter trawl gear used in the scallop fishery. It is assumed for this analysis that the

effects of bottom tending mobile gear, particularly dredge gear, are generally moderate to high, depending upon the type of bottom and the frequency of fishing activities to demersal species affected by this action. These activities, which cause impacts to essential fish habitat for a number of federally managed species in a manner that is more than minimal and less than temporary in nature, have been mitigated by the measures in Amendment 10 and by other actions described in Table 44.

Amendment 10 implemented a series of year-round closed areas to scallop gear to protect EFH in those areas. Furthermore, a gear modification (4-inch ring size) was implemented to reduce mortality on small scallops and reduce contact with the bottom. Total DAS allocated under Amendment 10 were reduced, which had indirect benefits to EFH by reducing overall scallop fishing effort and thus reducing area swept by dredge gear. It should be noted that sea scallop EFH is not considered adversely affected by dredge or otter trawl fishing effort.

Table 44 includes a description of measures implemented by the Council in last major FMP amendments to minimize, mitigate or avoid adverse impacts on EFH.

In Amendment 13 to the Multispecies FMP the New England Council implemented a range of measures to minimize the impacts of bottom trawling in the Gulf of Maine, Georges Bank and Southern New England. In addition to the significant reductions in days-at-sea and some gear modifications (implemented through Scallop Amendment 10), the Council closed 2,811 square nautical miles (Habitat Closed Areas) to all bottom-tending mobile fishing gear, including scallop dredges. Framework 16 to the Scallop FMP/Framework 39 to the Multispecies FMP updated the Habitat Closed Area boundaries established by Amendment 10 to be consistent with those established by Amendment 13. On August 2, 2005, the portions of Framework 16/39 that modified the habitat closures to be consistent with A13 habitat closed areas were vacated by a court order. As a result, both the Amendment 10 and the Amendment 13 closures remain in effect. Table 44 includes a description of measures implemented by the Council in last major FMP amendments to minimize, mitigate or avoid adverse impacts on EFH, including measures established under other FMPs.

Amendment 15 to the Scallop FMP did modify the EFH boundaries so that habitat closures to the scallop fishery are now consistent with A13 habitat closures. This alternative was chosen to create more consistency between management plans and allow greater access to areas with high concentration of the scallop resource as originally intended in Amendment 10 to the Scallop FMP and Framework 16/39 to the Scallop/NE Multispecies FMPs. The impacts of that change were evaluated in Amendment 15, as well as Framework 16, and overall making the habitat areas consistent is not expected to have impacts on EFH.

Framework 23 does not propose any changes to the current measures to minimize the adverse impacts of scallop fishing on EFH. No additional measures are needed at this time because most measures proposed in this action are expected to have neutral to positive impacts on EFH.

Table 44 - Description of measures implemented by Council in last major FMP amendments to minimize, mitigate or avoid adverse impacts on EFH.

Measure	Source FMP (implemented by)	Description	Description of Habitat Impacts	Overall Habitat Impact
CLOSED AREA MEASURES				
Mortality Closure	Multispecies	Retention of existing groundfish closed areas in the Gulf of Maine, George's Bank and Southern New England. Addition of Cashes as a year round closure	Year-round closures provide habitat benefits to the areas within the closures. The addition of Cashes Ledge as a year-round closure will benefit EFH. Rare kelp beds are found in that area.	+
Habitat Closed Areas (MPAs)	Multispecies and Scallop	2811 square nautical miles closed to bottom-tending mobile gear indefinitely in five separate closed areas in GOM, GB and SNE.	Significant benefits to EFH by minimizing adverse effects of bottom trawling, scallop dredging and hydraulic clam dredging by prohibiting use.	+
Rotational Area Management (RAM)	Scallop	Amendment 10 implemented a rotational area management strategy which introduced a systematic structure that determines where vessels can fish and for how long. Framework adjustments will consider closure and re-opening criteria.	Expected to have positive effects on habitat because effort on gravelly sand sediment types is expected to decline. In general, swept area is expected to decline in most of the projected alternatives (especially in the Mid-Atlantic region), which could have positive impacts on EFH.	+
Habitat Closed Areas (MPAs)	Monkfish	Amendment 2 closed Oceanographer and Lydonia Canyons to trawls and gillnets on a monkfish DAS.	Precautionary action taken to ensure that any expansion of the monkfish fishery as a result of the other measures in Amendment 2 will not affect sensitive deep-sea canyon habitats for which EFH is designated.	+
EFFORT REDUCTION MEASURES				
Monkfish DAS usage by limited access permit holders in scallops and multispecies fisheries	Monkfish	Retain current requirement for vessels to use both monkfish DAS and scallop or multispecies DAS simultaneously	This alternative relies on the scallop and multispecies management plans to set DAS levels (with the exception of when DAS fall below 40 DAS). As DAS have been reduced by management actions over the past two years, consequent impacts on habitat by the directed monkfish fishery have been reduced proportionally. Further reductions are possible depending on management actions in these two plans.	+
Capacity Control	Multispecies	DAS can be transferred with restrictions and new measures for "reserve days"	Any measure that is intended to reduce the amount of time fishing by mobile gear will likely have benefits to EFH. These measures reduce amount of latent effort as well.	+
DAS Reductions	Multispecies	Mix of adaptive and phased effort reduction strategies. A days (60% of effective effort) B days (40% of effective effort) C days (FY01 allocation).	Reducing DAS will likely benefit EFH by reducing the amount of time vessels can fish.	+

Measure	Source FMP (implemented by)	Description	Description of Habitat Impacts	Overall Habitat Impact
		Provides opportunity to fish on stocks that do not need rebuilding.		
DAS Limits	Scallops	Amendment 10 implemented a new program that allocates specific number of DAS for open areas and controlled access areas.	The total DAS allocation in open areas is significantly less than the Status quo DAS allocation. Less DAS translates into less fishing effort, so positive for EFH. Furthermore, CPUE in controlled access areas is expected to be greater, thus the gear is expected to spend less time on the bottom.	**+**
Possession Limits	Scallops	Reduced possession limit for limited access vessels fishing outside of scallop DAS	Vessels with limited access permits are currently allowed to possess and land up to 400 lbs per trip of shucked scallop meats when not required to use allocated DAS; this measure will reduce possession limit to 40 lbs/trip) and reduce fishing effort by vessels that have been targeting scallops under the higher general category possession limit. Scallops harvested under this provision cannot be sold.	**+**
GEAR MODIFICATION MEASURES				
Minimum mesh size on directed MF DAS	Monkfish	Mobile gear vessels are required to use either 10-inch square or 12-inch diamond mesh in the codend. Gillnets must be at least 10 inches	The mesh size regulations do not have a direct effect on habitat, but may indirectly minimize adverse effects of the fishery on complex bottom types by reducing the ability to catch groundfish, and therefore the incentive to target those fish in hard bottom areas.	**+**
Roller gear restriction	Monkfish	Establishes maximum roller gear diameter size for vessels fishing on a monkfish DAS.	Positive but not significant – sets maximum roller gear diameter equivalent to size currently in use in the area; prevents expansion of trawl effort into complex bottom areas and canyons.	**+**
Four inch rings	Scallop	Increase ring size on scallop dredge rig to 4" everywhere.	Four inch rings will slightly increase dredge efficiency for larger scallops, thus reducing bottom contact time in recently-opened areas where large scallops are abundant, but will reduce catch rates and increase bottom time in areas where medium-small sized scallops are prevalent.	**-/+**
OTHER MEASURES				
Observer Coverage	Multispecies	10% requested by 2006 for each gear type	If observers are able to collect data of interest to EFH management, increased coverage could indirectly benefit habitat.	**+**
TAC Set-Aside for research	Scallop	2% set-aside from TAC and/or DAS allocations to fund scallop and habitat research and surveys	Could indirectly benefit habitat when habitat research is funded and provides better information for future management decisions.	**+**

Protected Species

Before 2001, there were only three known interactions between sea turtles and scallop dredge gear (NMFS, 2007). By 2001, scallop fishing intensity in the Mid-Atlantic region increased following a general decline of scallop biomass in the Georges Bank region and closure of the groundfish Closed Areas in December 1994. Since turtle interactions in the high use areas and seasons are in part related to fishing effort, sea turtles may have benefited from reductions of fishing effort allocations in Amendments 4 and 7 to the Scallop FMP. During this time, DAS use declined from more than 40,000 DAS in 1993 to about 23,000 DAS in 1999, before increasing to about 31,000 DAS, in 2003 (NEFMC, 2005). The amendments and intervening framework adjustments also made other management changes, including new gear restrictions, although the effect of these changes on sea turtle interactions is unknown.

The extent of interactions between fishing with scallop dredges and sea turtles is still under investigation. Following the opening of the Hudson Canyon Access Area and increased observer coverage in the area, additional interactions between sea turtles and scallop dredge gear became known. New research is continuing to identify additional gear modifications and changes in fishing that could reduce interactions in the fishery.

The main goal of Amendment 10 to the Scallop FMP was to focus scallop fishing effort in areas where biomass is greatest with the rationale that actual fishing time is likely to be reduced as the overall catch per tow increases. Scallop management areas have been monitored through annual scallop surveys for scallop biomass and growth rates. When biomass in a closed area is high and the growth rates decline (i.e. the scallop resources are at maximum levels in the area) areas open to fishing at a controlled level. Conversely, closings occur when the reverse situation occurs (low biomass and high growth rate indicating a depleted scallop resource in the area). While Scallop Amendment 11 continued this management program, its purpose was to control capacity and mortality in the general category scallop fishery.

Certain general statements can be made regarding areas in the scallop management unit. Shifts in scallop effort from the Mid-Atlantic region to areas of Georges Bank may have had the effect of reducing potential risks to sea turtles. As the Georges Bank scallop resource is reduced and the Mid-Atlantic areas rebound a reverse shift in effort from an area of low use for turtles to high use areas in the Mid-Atlantic may potentially increase the risk of interactions from current levels. Accordingly, impacts to protected species could shift back and forth over the years under the management scheme implemented under Amendment 10. Since modifications to NEFMC management actions will occur through framework adjustments and plan amendments, they will undergo additional review to assess impacts to protected species.

The sea scallop FMP currently has one primary measure in place to protect sea turtles: a gear modification called a turtle chain designed to minimize impact of takes. Another major way takes have been reduced is due to general reductions in scallop fishing. In general, scallop effort has declined over the years and catch per-unit-of-effort has increased dramatically under area rotation. Comparing 2004 to 2009, the number of total DAS allocated has declined by 39%. The average DAS allocated from 2004-2007 was 19,182, which is about 29% more than the estimate of allocated DAS for 2009. More and more effort is concentrated in access areas with higher catch rates, so gear is in the water much less than in the past.

Fishing effort in the Mid-Atlantic has changed over time. In general, total catch from the MA was very low from 1994 until more recently. From 2004-2007, about 60% of total catch from MA access areas and open areas. There is typically a peak in the spring until more recent years (2007 and 2008). The peak used to be May/June, and more recently it has shifted to April or even March. When the Elephant Trunk area was open in 2007 and 2008 more catch occurred during the early spring and later in the year compared to spring and summer in earlier years. This shift of effort, likely caused by the high amount of effort allocated to ETA and the two month turtle closure from Sept1-Oct 31) seems to have reduced scallop fishing during most of the year when turtles are expected to be in the Mid-Atlantic. Overall catch in the Mid-Atlantic has steadily reduced during both turtle seasons under consideration in FW21 from 50-60% to closer to 30% for both time periods.

Five Biological Opinions for the sea scallop fishery have been issued since 2003. The latest Biological opinion was completed by NMFS on March 14, 2008 which summarized the overall impacts to threatened and endangered species. It concluded that the fishing operations being carried out under the Scallop FMP and as modified by Framework 19 were likely to adversely affect, but not jeopardize the continued existence of loggerhead, leatherback, Kemp's ridley and green sea turtles. ESA requires incidental take statement (ITS) and any reasonable and prudent measures (RPMs) necessary to minimize impacts along with implementing terms and conditions. One specific RPM in the most recent biological opinion included a requirement to limit scallop fishing.

Framework 21 and all future frameworks, unless the RPM is modified, will include alternatives to comply with the scallop fishery-specific RPM mentioned above. The selected alternatives to comply with RPM for turtles used in FW21 included a seasonal closure in Delmarva for September and October and a limit on the amount of trips that can be used in the Mid-Atlantic from June 15 through August 31. In Framework 22 the Council required a similar limit on the number of Mid-Atlantic access area trips during the turtle season for fsihgin years 2011 and 2012. These measures are expected to have positive impacts on protected species by reducing effort in the area where they are known to cause interactions during the expected timeframe of these interactions.

The alternatives under consideration in this action are expected to have positive impacts on protected resource by requiring vessels to use a turtle deflected dredge. There are other sources of human-induced mortality and/or harassment of turtles in the action area. These include incidental takes in state-regulated fishing activities, vessel collisions, ingestion of plastic debris, and pollution. While the combination of these activities may affect populations of endangered and threatened sea turtles, preventing or slowing a species' recovery, the magnitude of these effects is currently unknown.

State Water Fisheries - Fishing activities are considered one of the most significant causes of death and serious injury for sea turtles. A 1990 National Research Council report estimated that 550 to 5,500 sea turtles (juvenile and adult loggerheads and Kemp's ridleys) die each year from all other fishing activities besides shrimp fishing. Fishing gear in state waters, including bottom trawls, gillnets, trap/pot gear, and pound nets, take sea turtles each year. However, information on the takes is limited. Given that state managed commercial and recreational fisheries along the

Atlantic coast are expected to continue within the action area in the foreseeable future, additional takes of sea turtles in these fisheries is anticipated.

Vessel Interactions – NOAA Fisheries STSSN data indicate that interactions with small recreational vessels are responsible for a large number of sea turtles stranded each year within the action area. Collision with boats can stun or easily kill sea turtles, and many stranded turtles have obvious propeller or collision marks.

Pollution and Contaminants - Marine debris (*e.g.*, discarded fishing line or lines from boats) can entangle turtles in the water and drown them. Turtles commonly ingest plastic or mistake debris for food. Chemical contaminants may also have an effect on sea turtle reproduction and survival. While the effects of contaminants on turtles are relatively unclear, pollution may be linked to the fibropapilloma virus that kills many turtles each year (NOAA Fisheries 1997). If pollution is not the causal agent, it may make sea turtles more susceptible to disease by weakening their immune systems. Excessive turbidity due to coastal development and/or construction sites could influence sea turtle foraging ability. As mentioned previously, turtles are not very easily affected by changes in water quality or increased suspended sediments, but if these alterations make habitat less suitable for turtles and hinder their capability to forage, eventually they would tend to leave or avoid these less desirable areas (Ruben and Morreale 1999).

Low and Mid-frequency Sonar – See Section 5.6.7.
The factors discussed above, and other factors, potentially have had cumulative adverse effects on most protected species to varying degrees. Because of a lack of cause-effect data, little is known about the magnitude and scope of these factors and how they have contributed to the species' listing.

A number of activities are in progress that may ameliorate some of the negative impacts on marine resources, sea turtles in particular, posed by the activities summarized above. Education and outreach are considered one of the primary tools to reduce the risk of collision represented by the operation of federal, private, and commercial vessels.

NMFS' regulations require fishermen to handle sea turtles in such a manner as to prevent injury. Any sea turtle taken incidentally during fishing or scientific research activities must be handled with due care to prevent injury to live specimens, observed for activity, and returned to the water according to a series of procedures (50 CFR 223.206(d)(1)). NMFS has been active in public outreach efforts to educate fishermen regarding sea turtle handling and resuscitation techniques. NMFS has also developed a recreational fishing brochure that outlines what to do should a sea turtle be hooked and includes recommended sea turtle conservation measures. These outreach efforts will continue in an attempt to increase the survival of protected species through education on proper release guidelines.

There is an extensive network of STSSN participants along the Atlantic and Gulf of Mexico coasts. This network not only collects data on dead sea turtles but also rescues and rehabilitates live stranded turtles. Data collected are used to monitor stranding levels and identify areas where unusual or elevated mortality is occurring. The data are also used to monitor incidence of disease, study toxicology and contaminants, and conduct genetic studies to determine population

structure. All states that participate in the STSSN are collecting tissue for genetic studies to better understand the population dynamics of the northern subpopulation of nesting loggerheads. These states also tag live turtles when encountered through the stranding network or in-water studies. Tagging studies help provide an understanding of sea turtle movements, longevity, and reproductive patterns, all of which contribute to our ability to reach recovery goals for the species.

There is no organized formal program for at-sea disentanglement of sea turtles. However, recommendations for such programs are being considered by NMFS pursuant to conservation recommendations issued with several recent Section 7 consultations. Entangled sea turtles found at sea in recent years have been disentangled by STSSN members, the whale disentanglement team, the USCG, and fishermen. NMFS has developed a wheelhouse card to educate fishermen and recreational boaters on the sea turtle disentanglement network and disentanglement guidelines.

Actions taken to protect sea turtles include a Strategy for Sea Turtle Conservation and Recovery in Relation to Atlantic Ocean and Gulf of Mexico Fisheries (Sea Turtle Strategy), released by NMFS in June 2001, to address the incidental capture of sea turtle species in state and federal fisheries in the Atlantic and Gulf of Mexico. The major elements to the strategic plan include: continuing and improving stock assessments; improving and refining estimation techniques for the takes of sea turtles to ensure that ESA criteria for recovery are being met; continuing and improving the estimation or categorization of sea turtle bycatch by gear type and fishery; evaluating the significance of incidental takes by gear type; convening specialist groups to prepare take reduction plans for gear types with significant takes; and promulgating ESA and MSFCMA regulations implementing plans developed for take reduction by gear type. Actions taken under the Sea Turtle Strategy are expected to provide a net benefit to sea turtles.

In February 2003, NMFS issued a final rule to amend regulations protecting sea turtles to enhance their effectiveness in reducing sea turtle mortality resulting from shrimp trawling in the Atlantic and Gulf areas of the southeastern U.S. Turtle Excluder Devices (TEDs) have proven to be effective at excluding sea turtles from shrimp trawls; however, NMFS has determined that modifications to the design of TEDs needed to be made to exclude leatherbacks and large and mature loggerhead and green sea turtles. In addition, several approved TED designs did not function properly under normal fishing conditions. NMFS disallowed these TEDs. Finally, the rule requires modification to the try net and bait shrimp exemptions to the TED requirements to decrease mortality of sea turtles (68 FR 8456, 21 Feb 2003).

Significant measures have been taken to reduce sea turtle takes in summer flounder trawls and trawls that meet the definition of summer flounder trawls, which would include fisheries for species like scup and black sea bass, by requiring TEDs in trawl nets fished in the area of greatest turtle bycatch off the North Carolina and part of the Virginia coast from the North Carolina/South Carolina border to Cape Charles, VA. These measures are attributed to significantly reducing turtle deaths in the area (NMFS, 2007). In addition, NMFS issued a final rule (67 FR 56931), effective September 3, 2002, that closes the waters of Pamlico Sound, NC to fishing with gillnets with a mesh size larger than 4 1/4 inch (10.8 cm) stretched mesh ("large-mesh gillnet"), on a seasonal basis from September 1 through December 15 each year, to protect

migrating sea turtles. The closed area includes all inshore waters of Pamlico Sound south of 35º 46.3' N. lat., north of 35º 00' N. lat., and east of 76º 30' W. long.

In December 2003, NMFS issued new regulations for the use of gillnets with larger than 8 inch stretched mesh in federal waters off of North Carolina and Virginia (67 FR 71895, 3 Dec. 2002). Gillnets with larger than 8 inch stretched mesh are not allowed in federal waters (3-200 nautical miles) north of the North Carolina/South Carolina border at the coast to Oregon Inlet at all times; north of Oregon Inlet to Currituck Beach Light, NC from March 16 through January 14; north of Currituck Beach Light, NC to Wachapreague Inlet, VA from April 1 through January 14; and, north of Wachapreague Inlet, VA to Chincoteague, VA from April 16 through January 14. Federal waters north of Chincoteague, VA are not affected by these new restrictions although NMFS is looking at additional information to determine whether expansion of the restrictions are necessary to protect sea turtles as they move into northern mid-Atlantic and New England waters. These measures are in addition to Harbor Porpoise Take Reduction Plan measures that prohibit the use of large-mesh gillnets in southern mid-Atlantic waters (territorial and federal waters from Delaware through North Carolina out to 72° 30'W longitude) from February 15-March 15, annually.

In May 2004, the agency issued regulations prohibiting the use of all pound net leaders, set with the inland end of the leader greater than 10 horizontal ft (3 m) from the mean low water line, from May 6 to July 15 each year in the Virginia waters of the mainstem Chesapeake Bay, south of 37º 19.0' N. lat. and west of 76º 13.0' W. long., and all waters south of 37º 13.0' N. lat. to the Chesapeake Bay Bridge Tunnel at the mouth of the Chesapeake Bay, and the James and York Rivers downstream of the first bridge in each tributary. Outside this area, the prohibition of leaders with greater than or equal to 12 inches (30.5 cm) stretched mesh and leaders with stringers, as established by the June 17, 2002 interim final rule, will apply from May 6 to July 15 each year. The action, taken under the ESA, is necessary to conserve sea turtles listed as threatened or endangered. NMFS also provides an exception to the prohibition on incidental take of threatened sea turtles for those who comply with the rule (69 FR 24997, 5 May 2004).

In July 2004, NMFS issued sea turtle bycatch and bycatch mortality mitigation measures for all Atlantic vessels that have pelagic longline gear onboard and that have been issued, or are required to have, Federal HMS limited access permits, consistent with the requirements of the ESA, the MSFCMA, and other domestic laws. These measures include mandatory circle hook and bait requirements, and mandatory possession and use of sea turtle release equipment to reduce bycatch mortality. This final rule also allows vessels with pelagic longline gear onboard that have been issued or are required to have Federal HMS limited access permits to fish in the Northeast Distant Closed Area if they possess and/or use certain circle hooks and baits, sea turtle release equipment, and comply with specified sea turtle handling and release protocols (69 FR 40733, 6 Jul 2004).

NMFS has published a final rule (70 FR 42508, July 25, 2005) that allows any agent or employee of NMFS, the FWS, the U.S. Coast Guard, or any other Federal land or water management agency, or any agent or employee of a state agency responsible for fish and wildlife, when acting in the course of his or her official duties, to take endangered sea turtles encountered in the marine environment if such taking is necessary to aid a sick, injured, or

entangled endangered sea turtle, or dispose of a dead endangered sea turtle, or salvage a dead endangered sea turtle that may be useful for scientific or educational purposes. NMFS already affords the same protection to sea turtles listed as threatened under the ESA (50 CFR 223.206(b).

In 2006, NMFS finalized a rule (71 FR 50361, August 23, 2006) that requires modification of scallop dredge gear by use of a chain mat when the gear is fished in Mid-Atlantic waters south of 49 9.0'N from the shoreline to the outer boundary of the EEZ during the period May 1 through November 30 each year. The intent of the dredge gear modification is to reduce the severity of some turtle interactions that might occur by preventing turtles from entering the dredge bag.

On February 15, 2007 the agency also issued an advance notice of proposed rulemaking to announce it is considering amendments to the regulatory requirements for turtle excluder devices (TEDs). Among other issues, specific changes include increasing the size of the TED escape opening currently required for sea scallop trawl gear and moving the current northern boundary of the Summer Flounder Fishery-Sea Turtle Protection Area off Cape Charles, Virginia to a point farther north. The objective of the proposed measures is to effectively protect all life stages and species of sea turtle in Atlantic trawl fisheries where they are vulnerable to incidental capture and mortality.

In 2008 a Loggerhead Sea Turtle Recovery Plan was published (NMFS and USFWS 2008) which did not include the Atlantic sea scallop fishery as a main source of mortality of the species. This document estimated loggerhead bycatch in the scallop fishery and the impact of takes on the population.

On September 22, 2011, NMFS and USFWS issued a final rule (76 FR 58868), determining that the loggerhead sea turtle is composed of nine DPSs (as defined in Conant *et al*. 2009) that constitute species that may be listed as threatened or endangered under the ESA. Five DPSs were listed as endangered (North Pacific Ocean, South Pacific Ocean, North Indian Ocean, Northeast Atlantic Ocean, and Mediterranean Sea), and four DPSs were listed as threatened (Northwest Atlantic Ocean, South Atlantic Ocean, Southeast Indo-Pacific Ocean, and Southwest Indian Ocean). Of these nine DPSs, only the Northwest Atlantic (NWA) DPS is likely to be present in areas where the scallop fishery currently operates. Hereafter, all discussions regarding loggerhead sea turtles will be in reference to the NWA DPS.

Although originally proposed as endangered in March 2010, the NWA DPS was ultimately determined to be threatened based on review of nesting data available after the proposed rule was published, information provided in public comments on the proposed rule, and further discussions within the agencies. The two primary factors considered were population abundance and population trend. NMFS and USFWS found that an endangered status for the NWA DPS was not warranted given the large size of the nesting population, the overall nesting population remains widespread, the trend for the nesting population appears to be stabilizing, and substantial conservation efforts are underway to address threats.

The September 2011 final rule also noted that critical habitat for the NWA DPS will be designated in a future rulemaking. Information from the public related to the identification of

critical habitat, essential physical or biological features for this species, and other relevant impacts of a critical habitat designation was solicited.

In addition to the relisting of loggerheads as DPSs, there is new information on the effects of the scallop fishery on sea turtles which is causing NMFS to reassess the impacts of the scallop fishery on ESA-listed species in a new Opinion. In this future Opinion, NMFS will assess the impacts of the scallop fishery on only the NWA DPS of loggerhead sea turtles, rather than the species as a whole. Regardless of the new up-listing of the NWA DPS and any new information on sea turtles that has become available since the 2008 Opinion, the Council and NMFS must still adhere to the reasonable and prudent measures and terms and conditions of the 2008 Biological Opinion until a new Opinion is issued. However, Framework 23 is expected to have positive impacts on protected resource by requiring vessels to use a turtle deflected dredge.

Fishery-related Businesses and Communities

All actions taken under the Scallop FMP have had effects on fishery-related businesses and communities. None have specifically been developed to primarily address elements of fishing related businesses and communities. In general, actions that prevent overfishing have long-term economic benefits on businesses and communities that depend on those resources. Some actions that limit participation, such as the limited entry program that was adopted under Amendment 4 had distributional impacts on individuals and ports that participated in the scallop fishery at that time. While short-term negative impacts may follow an action that reduces effort, past and present actions had positive cumulative impacts on vessel owners, crew and their families in the scallop fishery by increasing their fishing revenues, incomes and standard of living. The impacts of these past and present actions were also positive for the related sectors including dealers, processors, primary suppliers to the vessels that sell them gear, engines, boats, etc. The increases in gross profits for scallop vessels and in crew incomes have had positive economic benefits on these sectors indirectly through the multiplier impacts. Total landings have increased, catch per unit of effort has increased, and price has steadily increased as well.

The Passamaquoddy Native American Tribe has been awarded licenses in the State of Maine to harvest scallops in state waters since 1998. Since this is a state fishery, the state of Maine monitors these landings. However, the impact of this fishery on the overall scallop resource is minimal because the size of the fleet is small relative to the scallop fleet managed under this FMP.

Non-target Species and Other Fisheries

The non-target species considered for this action are described in Section 4.5. Actions taken by the Council in the Scallop FMP in past, present, and reasonably foreseeable timeframe are mostly positive on non-target species. Specific gear and area restrictions are in place that have reduced bycatch of various non-target species. Effort controls to maintain sustainability in the scallop fishery have reduced effort and increased efficiency of the fleet, which reduces impact on non-target species.

There are also several gear modification in place that have reduced impacts on non-target species. Specifically, since 1999 vessels have been required to use 10" twine top mesh in access areas to reduce finfish bycatch. Under Amendment 10, that requirement was expanded to all

areas increasing the benefit of this gear. Amendment 10 also required all vessels to have rings throughout the chain bag that are no less than 4" in diameter. This requirement improves size selectivity and reduces incentive to target small scallops, but it also reduces bottom contact time on DAS because vessels become more shucking limited, so gear is fishing less. This has benefits for non-target species as well since gear is fishing less per DAS.

Amendment 16 to the Multispecies FMP was implemented in May 2010. This action identified a process for setting annual catch limits (ACLs) for all Groundfish species. A sub-ACL will apply to all scallop fishery catches of yellowtail flounder, and is expected to have a positive effect on this and other non-target species.

Framework 44 to the GF plan recognizes the importance of yellowtail flounder to the scallop fishery and provides an incentive for scallop fishermen to reduce their YT bycatch in order to maximize scallop yield. Framework 44 also requires that all limited access vessels be required to land all legal-sized yellowtail flounder, which will improve data quality and thus be beneficial to non-target species.

Multispecies FW45 will have potentially positive impacts on fishery-related businesses and communities in the short term if it allows the LAGC exemption and alters the Georges Bank yellowtail flounder rebuilding schedule.

Amendment 15 is expected to have positive impacts on non-target species, especially YT flounder by establishing AMs in the scallop fishery if the fishery exceeds the sub-ACL of YT. The scallop fishery will be limited to a specific poundage of YT each year, and if it is exceeded, specific areas will be closed the following year to account for the overage.

Framework 21 and Framework 22 to the scallop plan implemented specifications for FY2010-2012, which were similar to FY2009, and these are expected to have a neutral to potentially positive impact on non-target species.

Table 45 – Summary of effects from past and present actions. (The effects from this action are included in a later table).

Action	Description	Impacts on Scallops	Impacts on Physical Env. and EFH	Impacts on Protected Species and Non-target species	Impacts on Fishery and Communities	Impacts on Other Fisheries
SCALLOP ACTIONS						
Scallop FMP	Restore adult scallop stock and reduce fluctuation in stock abundance	Positive	Positive	Positive	Positive	Positive
Amendment 4	Changed the primary management mechanism from the meat-count standard to an effort control program for all resource areas	Positive	Positive	Positive	Positive	Positive
Amendment 10	Implement area rotation program and other measures to prevent overfishing and minimize impacts on EFH	Positive	Positive	Positive	Positive	Positive
Framework 18	Set management measures for FY2006 and FY2007	Positive	Neutral	Neutral	Positive	Neutral to potentially positive
Amendment 13	Implement the industry funded observer program	Positive	Neutral	Positive	Neutral	Neutral to potentially positive
Framework 20	Implement measure to reduce effort in January and February of 2007	Positive	Neutral	Neutral	Positive	Neutral to potentially positive
SBRM Amendment	Implement a bycatch reporting methodology	Potentially Neutral	No Impact	Potentially Positive	Potentially Neutral	Neutral to potentially positive
Framework 19	Set management measures for FY2008 and 2009, eliminated crew size restriction, LAGC IFQ program, obs and RSA program improvements, and VMS 30-day power down	Positive	Neutral	Neutral	Positive	Neutral to potentially positive
Amendment 11	Limited entry program for the general category fishery	Potentially Positive	Potentially positive	Potentially positive	Potentially positive for some and potentially negative for others	Neutral to potentially positive
Framework 21	Set management measures for FY2010, reduced effort in such a way to minimize sea turtle bycatch as per the BiOp, improvements to LAGC, observer, and RSA programs	Potentially positive	Potentially positive	Potentially positive	Potentially positive	Neutral to potentially positive
Amendment 15	Compliance with ACLs, other measures to make FMP more effective	Positive	Positive	Neutral to Positive	Neutral to Positive	Neutral
Framework 22	Specifications for FY2011 and FY2012	Potentially positive	Potentially positive	Potentially positive	Potentially positive	Neutral to potentially positive
SUMMARY OF IMPACTS FROM SCALLOP ACTIONS-		**Positive**	**Positive**	**Positive**	**Positive**	**Positive**
PHYSICAL ENVIRONMENT AND EFH ACTIONS						
EFH Omnibus Amendment (1998)	Comply with 1996 SFA to describe and identify EFH and minimize impacts of fishing on EFH	Positive	Positive	Neutral	Neutral	Positive

Action	Description	Impacts on Scallops	Impacts on Physical Env. and EFH	Impacts on Protected Species and Non-target species	Impacts on Fishery and Communities	Impacts on Other Fisheries
A13/A10	Gear effects evaluation, minimize adverse impacts	Positive	Positive	Neutral to Positive	Negative	Positive
A15	Modify EFH boundaries to be consistent	Potentially positive	Neutral	Positive	Positive	Potentially neutral
SUMMARY OF IMPACTS FROM PHYSICAL ENV/EFH ACTIONS –		**Positive**	**Positive**	**Neutral**	**Neutral/Negative**	**Positive**
PROTECTED RESOURCES and NON-TARGET ACTIONS						
Chain mat rule	Gear modification to address turtle bycatch in the Mid-Atlantic	Neutral	Neutral	Positive	Low Negative	Neutral
Gear modifications	Twine top and other gear modifications to reduce finfish bycatch	Neutral	Neutral	Positive	Positive	Potentially positive
SUMMARY OF IMPACTS OF PROTECTED SPECIES AND NON-TARGET ACTIONS		Neutral	Neutral	Positive	Neutral to positive	Neutral to potentially positive
FISHERY AND COMMUNITY ACTIONS						
None Specific	N/A	N/A	N/A	N/A	N/A	N/A
OTHER FISHERY ACTIONS						
FMPs and associated actions for Monkfish, Summer flounder, Multispecies, etc.		Neutral to Positive	Positive	Positive	Negative to Positive	Positive
SUMMARY OF IMPACTS OF ALL PAST AND PRESENT ACTIONS ON EACH VEC		**Positive**	**Positive**	**Positive/Neutral**	**Positive/Neutral**	**Positive/Neutral**

5.6.6 Reasonably Foreseeable Future Actions

The impacts of reasonably foreseeable future actions have been considered relative to the VECs in this amendment and are described below and presented in Table 46. Overall, the impacts associated with reasonably foreseeable future actions to the VECs considered in this assessment are neutral and/or considered to be insignificant, as most impacts cannot be predicted at this time.

Scallop Resource

Several reasonably foreseeable future federal fishery management actions may affect the scallop resource. In general, the actions in the foreseeable future are expected to have positive impacts on the scallop resource overall.

Framework 24 to the Scallop FMP will set specifications for fishing years 2013 and 2014, and default measures for 2015. The Council may consider adding other issues to this action, but that will not be finalized until the November 2011 Council meeting, after submission of this action. Impacts are uncertain on the resource at this time, but in general specifications are set to optimize yield and prevent overfishing with long term beneficial impacts on the resource.

Physical Environment and EFH

In the spring of 2003, the New England Council initiated a Habitat Omnibus Amendment that will be considered Amendment 14 to the Atlantic Scallop FMP. It will also amend the Northeast Multispecies (Amendment 14), Monkfish (Amendment 4), Herring (Amendment 3) Skate (Amendment 2), Red Crab (Amendment 3) and Atlantic Salmon (Amendment 3) FMPs. This omnibus amendment will fulfill the five year EFH review and revision requirement specified in 50 CFR Section 600.815(a)(10). Although it is not known at this time how the recommendations might change fisheries or fisheries management, the intention is to provide additional habitat and species protection where it is needed.

Phase 1 of the EFH Omnibus has been substantially completed by the Council and includes new EFH designations for all species and life stages under management by the NEFMC, designation (but no management restrictions) of several habitat areas of particular concern (HAPC), an evaluation of the major prey species for species in the NEFMC fishery management units (FMU) and an evaluation of the potential impacts of non-fishing activities on EFH. Although the Council has completed Phase 1, the document and corresponding actions will not be submitted for implementation (and, therefore, no Record of Decision will be filed) until the completion of Phase 2 sometime in 2011. The potential exists for changes to the current suite of management measures to minimize adverse impacts on EFH (see Table 44) and/or additional measures to be implemented. The Council recently added modification of GF mortality closures under Phase II of the EFH Omnibus action. The public will have the opportunity to comment on a combined Phase 1/Phase 2 document before final decisions are made by the Council.

Protected Species

NMFS recognizes that the specific nature of the interaction between sea turtles and scallop dredge gear remains unknown. The scallop dredge may strike sea turtles as it is fished, and this interaction would remain undocumented. Sea turtles could be taken when the dredge is being

fished on the bottom or during haulback. NMFS does not know how the modified gear interacts with sea turtles on the bottom and in the water column. In order to understand the interaction, research is currently being conducted and is expected to continue. This work may provide more information on the interaction between sea turtles and scallop dredge gear in the water.

Currently there is an EIS in development for an Atlantic Trawl Rule to require the use of TEDs in trawl fisheries off the Northeast coast including the scallop trawl fishery. This rule consists of a series of temporal and spatial requirements for TED use. The scoping period has ended for this EIS and it is not clear when decision on this action will be made at this time. It is difficult to determine if there will be cumulative impacts on each VEC because this action is still early in development.

On October 6, 2010, NMFS published two proposed rules to list five DPSs of Atlantic sturgeon under the ESA. NMFS is proposing to list four DPSs of Atlantic sturgeon as endangered (New York Bight, Chesapeake Bay, Carolina and South Atlantic) and one DPS as threatened (Gulf of Maine). Based on the most recent status review, Atlantic sturgeon subadults and adults utilize ocean waters from Canada to the Saint Johns River, Florida. As a result, commercial fishing activities occurring in Atlantic Ocean waters have the potential to impact one or more of the Atlantic sturgeon DPSs. A final determination on the proposed listing of the five DPSs is expected in October 2011, and was not available when this action was submitted to NMFS.

Atlantic sturgeon are known to be captured in sink gillnet, drift gillnet, and otter trawl gear (Stein et al. 2004, ASMFC TC 2007). Of these gear types, sink gillnet gear poses the greatest known risk of mortality for bycatch sturgeon (ASMFC TC 2007). At present, the scallop fishery does not have a gillnet component. However, a recent analysis from the NMFS Northeast Fisheries Science Center indicates that there is some potential, albeit low, for Atlantic sturgeon bycatch in scallop trawl gear. Scallop dredge gear, on the other hand, is not known to pose a bycatch risk for Atlantic sturgeon despite many hours of observer coverage for this gear type. In fact, there are no reports of Atlantic sturgeon captures in scallop dredge gear in the NMFS Observer database (based on Stein et al. 2004a and ASMFC TC 2007). Because the scallop fishery predominantly uses dredge gear (there were 367 active dredge vessels in the fishery in 2010, compared to only 11 trawl vessels) (Table 7 and Table 8, Appendix I), it is likely that impacts to Atlantic sturgeon from the fishery will be minor and extremely unlikely that mortalities would result in the event of bycatch in the trawl fishery.

Furthermore, the 11 trawl vessels, as characterized by their permit type, do not actually fish with trawl gear even though they are permitted to do so. Section 1.1.6 of Appendix I describes the scallop catch by permit type and gear type. The number of vessels with full-time trawl permits has decreased continuously and has been at 11 full-time trawl permitted vessels since 2008. But, according to the 2009-2010 VTR data, the majority of these vessels (10 out of 11 in 2010) landed scallops using dredge gear even though they had a trawl permit. Vessels with trawl permits are allowed to fish for scallops with dredge gear, but vessels with dredge permits are not allowed to fish with trawl gear. A vessel with a trawl permit but using dredge gear can always revert back to trawl gear, but that is not very likely since dredge gear is more effective in most areas. Therefore, at 11 trawl permits the impacts of this fishery on Atlantic sturgeon are likely to be minor, and even less than that since only one vessel with that permit still uses trawl gear. It is

difficult to determine if there will be cumulative impacts on each VEC because this action is still early in development.

Fishery-related Businesses and Communities

Framework 24 to the Scallop FMP will set specifications for fishing years 2013 and 2014, and default measures for 2015. The Council may consider adding other issues to this action, but that will not be finalized until the November 2011 Council meeting, after submission of this action. Impacts are uncertain on the fishery at this time, but in general specifications are set to optimize yield and prevent overfishing with long term beneficial impacts on the fishery.

Non-target Species/Other Fisheries

Framework 47 will modify specifications for the fishery and consider changes to accountability measures, as well as adjust other measures. Changes to the specifications could include the adoption of sub-annual catch limits that limit the catches of Southern New England/Mid-Atlantic Bight (SNE/MAB) windowpane and/or SNE winter flounder by the scallop fishery, and SNE/MAB windowpane by other fisheries. The action is also considering removal of the 10% YT bycatch cap for the scallop fishery in GB access areas. The Council is scheduled to take final action at the November 2011 Council meeting with implementation set for May 2012. A number of these action could have impacts on the scallop resource and fishery, but it is still uncertain what action will be taken.

Amendment 6 to the Monkfish Plan is considering implementing a catch share system. The Council has begun scoping for this action but it is not clear yet what specific alternative will ultimately be developed. Overall, the impacts under development for the scallop and multispecies plans are likely to have neutral to positive impacts on other fisheries. The impacts of Monkfish Amendment 6 are too uncertain since alternatives are still not developed.

Table 46 – Summary of effects from reasonably foreseeable future actions

Action	Description	Impacts on Scallops	Impacts on Physical Env. and EFH	Impacts on Protected Species	Impacts on Fishery and Communities	Impacts on Non-target species / Other Fisheries
Scallop Actions						
Framework 24	Specifications for 2013 and 2014	Uncertain but generally positive	Uncertain but generally positive	Uncertain but generally positive	Uncertain but generally positive	Uncertain but generally positive
SUMMARY OF IMPACTS FROM SCALLOP ACTIONS-		**Neutral to potentially positive**	**Neutral to potentially positive**	**Neutral to potentially positive**	**Neutral/ potentially positive**	**Neutral/ potentially positive**
Physical Environment and EFH Actions						
Phase I EFH Omnibus	Review EFH designations, consider HAPC alternatives, describe prey species, evaluate non-fishing impacts	Positive	Positive	Neutral	Neutral	Positive
Phase II EFH Omnibus	Review gear effects and minimize adverse impacts	Potentially neutral	Positive	Potentially Neutral	Potentially positive or negative	Neutral to potentially positive
SUMMARY OF IMPACTS FROM PHYSICAL ENV/EFH ACTIONS –		**Positive**	**Positive**	**Neutral**	**Neutral**	Neutral to potentially positive
Protected Resources Actions						
Sea turtle strategy	NMFS program to address incidental capture of turtles in state and federal fisheries	No Impact	No Impact	Positive	Low Negative	Neutral to positive
Atlantic take reduction team	Requirements to reduce interaction with marine mammals	No Impact	No Impact	Positive	Low Negative	No impact
Use of TEDS in trawl gear	Action under consideration that could require the use of TEDs in trawl fisheries off the Northeast coast including the scallop trawl fishery	No Impact	No Impact	Positive	Potentially negative to potentially positive	Neutral to positive
SUMMARY OF IMPACTS FROM PROTECTED RESOURCES ACTIONS		**No Impact**	**No Impact**	**Positive**	**Low Negative**	**Neutral**
Fishery Community Actions						
N/A						
Non-target species Actions						
Multispecies Framework 47	Modify specifications for the fishery and consider changes to accountability measures	Positive to Negative depending on final measures	Positive to Negative depending on final measures	Neutral	Positive to Negative depending on final measures	Positive
Summary of RFFA Impacts		**Neutral to Potentially Positive**	**Neutral to Potentially Positive**	**Neutral to Potentially Positive**	**Neutral to Potentially Positive**	**Neutral to Potentially Positive**

5.6.7 Non-fishing impacts

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 the 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 negatively impact human communities. This action is not expected to change the impacts on the VECs described above from non-fishing impacts.

The non-fishing impacts discussed in this section (Table 47) include:

- Dredge and fill activities;
- Pollution/water quality;
- Agricultural and silvicultural/timber harvest runoff;
- Pesticide application;
- Water intake structures/discharge plumes;
- Loss of coastal wetland;
- Road building and maintenance;
- Flood control/shoreline stabilization;
- Utility lines/cables/pipeline installation;
- Oil and gas exploration/development/production;
- Introduction of exotic species;
- Aquaculture operations;
- Marine mining; and
- Other potential sources.

Low and mid-frequency sonar may pose an additional threat to protected species. According to the June 2006 National Marine Fisheries Service's Biological Opinion (BO), issued under Section 7(a)(2) of the Endangered Species Act, regarding the effects of the U.S. Navy's proposed 2006 Rim of the Pacific Naval Exercise and the Permits, Education and Conservation Division's proposal to issue an incidental harassment authorization (IHA) for exercises associated with endangered and threatened species, acoustic systems are becoming increasingly implicated in marine mammal strandings. Citing the Joint Interim Report on the Bahamas Marine Mammal Stranding Event of 15–16 March 2000, DOC and the Department of the Navy (DON), 2001, the document discusses that mass strandings in particular have been linked to mid-frequency sonar.

Summarizing various theories associated with the impacts of low and mid-frequency sonar, the BO states that marine mammals become disoriented or that the sound forces them to surface too quickly, which may cause symptoms similar to decompression sickness, or that they are physically injured by the sound pressure. The biological mechanisms for effects that lead to strandings must be determined through scientific research, according to the NMFS document, which also provides an extensive overview of the issue. The Biological Opinion, the IHA permit issued on July 2006 and other related documents are available through NMFS at http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications.

More recent information on the impacts of low and mid-frequency sonar is provided in a request from the U.S. Navy for an authorization under the Marine Mammal Protection Act (MMPA) to take marine mammals by harassment, incidental to conducting operations of Surveillance Towed Array Sensor System (SURTASS) Low Frequency Active (LFA) sonar over a five-year period (72 FR 37404, July 9, 2007).

Federal legislation being debated in Congress could override a lawsuit settlement agreement and exempt the military from the "harassment" provisions of the MMPA, easing the restrictions that now limit the deployment of low frequency sonar by the U.S. Navy.
The **National Offshore Aquaculture Act** is proposed to provide the necessary authority to the Secretary of Commerce to establish and implement a regulatory system for aquaculture in Federal waters. The bill would: authorize the Secretary to issue offshore aquaculture permits and establish environmental requirements where existing requirements under current law are inadequate; exempt permitted offshore aquaculture from legal definitions of fishing that restrict size, season, and harvest methods; authorize the establishment of a research and development program in support of offshore aquaculture; require the Secretary to work with other Federal agencies to develop and implement a streamlined and coordinated permitting process for aquaculture in the EEZ; authorize to be appropriated "such sums as may be necessary" to carry out this Act; and provide enforcement for the Act.

In addition, one way the United States plans to meet its present and future energy demands is through the importation of **Liquefied Natural Gas (LNG).** Currently, the United States has four onshore LNG import terminals in coastal port areas: Everett, Massachusetts, Cove Point, Maryland, Elba Island, Georgia, and Lake Charles, Louisiana. These four existing import terminals have been around since the 1970s. There is an additional onshore import facility located in Penuelas, Puerto Rico. This facility began importing liquefied natural gas in August 2000.

Due to potential hazards associated with onshore LNG terminals, many state and local governments have opposed the construction of any new onshore LNG terminals. For example, there have been numerous proposals for onshore LNG terminals along the coast of Maine. Most of these proposals (Harpswell, Hope Island, Cousins Island, Sears Island, and Pleasant Point) have either been rejected by local voters or withdrawn. Most opponents to onshore LNG terminals maintain that LNG is unsafe, harms the environment, and disrupts commercial fishing. Companies, like ChevronTexaco and Shell, are now moving towards developing LNG terminals offshore on the outer continental shelf.

In April 2005, Gulf Gateway Energy Bridge (formerly known as El Paso Energy Bridge) became the world's first offshore LNG terminal to begin operation. Gulf Gateway is located 116 miles offshore of the Louisiana coastline. To date, including Gulf Gateway, there are three offshore LNG projects that have been approved. These three LNG terminals are all located in the Gulf of Mexico. Port Pelican's (ChevronTexaco) proposed site is located thirty-six miles off the Louisiana coastline, while Gulf Landing's (Shell) is located thirty-eight miles offshore of Louisiana.

Nationally, seven proposed offshore LNG terminals are currently under review, including a potential terminal to be built offshore of Gloucester, Massachusetts. The other projects under review include: Cabrillo Port (fourteen miles offshore of Ventura County, California), Clearwater Port (fourteen miles offshore of southern California), Main Pass Energy Hub (offshore of Alabama, Louisiana, and Mississippi), Compass Port (offshore of Alabama and Mississippi), Pearl Crossing (forty-one miles offshore of Louisiana), and Beacon Port (offshore of Louisiana). The application for the proposed offshore LNG terminal off the coast of Gloucester (Gateway and Neptune projects) has been approved.

The two primary effects on the commercial and recreational fishing industries from offshore LNG terminals are the indirect impacts of displaced fishing effort and the potential for adverse impacts on fish stocks resulting from adverse impacts on EFH due to the vaporization process, where LNG is converted from a liquid to gaseous state. The degree to which the scallop fishery in particular may be impacted cannot be fully understood until an LNG terminal has completed the sitting process. However, a recent EIS filed by the U.S. Coast Guard and the Maritime Administration on the Main Pass Energy Hub plan indicates that the "open-loop" vaporization process, which pushes seawater through a radiator-type structure that warms and vaporizes the super-cooled LNG and discharges that water back into the sea, would affect fish eggs and larvae as well as other zooplankton and phytoplankton. The resulting impacts are limited to the water discharge plumes, and while no firm data on the size of such plumes have been provided, the report states that the effects will not be serious or long lasting. The report concludes that none of the potential impacts on EFH would be expected to result in population-level impacts or a reduction in biomass for any stocks.

According to preliminary documents filed with the U.S. Coast Guard and the Federal Energy Regulatory Commission, displacement of fishing effort would be limited to a less than one nautical mile radius circle that would be closed to all fishing and recreational activities during the offloading of LNG. Additionally, a security zone of less than one quarter of a nautical mile would be maintained around the LNG tankers as they transit to and from the offload facility. While these closures may displace a limited amount of fishing effort, the total amount of fishable bottom impacted is expected to be minimal, and the effort displaced would not likely have an adverse impact on neighboring, or any other, fishing areas.

Onshore LNG facilities are currently being proposed or planned for construction in Pleasant Point, ME; Somerset, MA; Providence, RI; Long Island Sound, NY; Logan Township, NJ; Philadelphia, PA; and an expansion of an existing facility in Cove Point, MD.

Depending on the specific location and type of LNG facility, a range of impacts to fisheries and/or fisheries habitat may result from both construction and operation of terminals. Due to the large size of LNG tankers, dredging may need to occur to access onshore terminals. Dredging can result in direct loss of fish and/or shellfish habitat and can elevate levels of suspended sediment within the water column. As with other dredging, suspended sediments can impact various life stages of fish and shellfish. Further, the construction of pipelines and fill associated with site construction can have adverse impacts on inter-tidal habitats and salt marshes in the area.

Although only two offshore wind energy projects have formally been proposed in the northeast region, at least 20 other separate projects may be proposed in the near future. Cape Wind Associates (CWA) proposes to construct a wind farm on Horseshoe Shoal, located between Cape Cod and Nantucket in Nantucket Sound, Massachusetts. A second project is proposed by the Long Island Power Authority (LIPA) off of Long Island, New York. The CWA project would have 130 wind turbines located as close as 4.1 miles offshore of Cape Cod in an area of approximately 24 square miles, with the turbines being placed at a minimum of 1/3 mile apart. The turbines will be interconnected by cables, which will relay the energy to shore to the power grid. If approved, vessels from southern New England may experience an increase in costs associated with having to steam around the wind farms on their way to and from fishing grounds on Georges Bank.

The Army Corps of Engineers has developed a DEIS and has completed a scoping process for the proposed Cape Wind Associates (CWA) project on Horseshoe Shoal. If constructed, the turbines would preempt other bottom uses in an area similar to oil and natural gas leases. The potential impacts associated with the CWA offshore wind energy project include the construction, operation and removal of turbine platforms and transmission cables; thermal and vibration impacts; and changes to species assemblages within the area from the introduction of vertical structures. A thorough analysis of the effects of these impacts on fishing has not yet been conducted, but data indicate that there would not be a substantial impact on the scallop fishery as there is little scallop fishing activity in this area. While EFH may be adversely impacted in the vicinity of the wind turbines, the extent of this proposal is not sufficient to have any population-level impacts on resource biomass or health.

Non-fishing activities pose a risk to EFH for all species as well as to each scallop life stage's EFH. Many of the non-fishing impacts are unquantifiable, but are likely negative. In general, the greatest potential for adverse impacts to scallops and scallop EFH occurs in close proximity to the coast where human-induced disturbances, like pollution and dredging activities, are occurring. Because inshore and coastal areas support essential egg, larval and juvenile scallop habitats, it is likely that the potential threats to inshore and coastal habitats are of greater importance to the species than threats to offshore habitats. It is also likely that these inshore activities will continue to grow in importance in the future. Activities of concern include: chemical threats; sewage; changes in water temperature, salinity and dissolved oxygen; suspended sediment and activities that involve dredging and the disposal of dredged material. There is more and more evidence that changes in water quality resulting from increasing acidification and water temperature could have potentially negative cumulative impacts on the scallop resource and fishery. In addition, researchers have observed tunicate growing over larger portions of Georges Bank. These invasive species may have negative impacts on the resource and fishery if they spread in critical areas for the fishery.

Impacts of non-fishing activities on all the VECs that were considered in this EA were evaluated to be low to moderately negative. This action is not expected to change the impacts on the VECs described above from non-fishing impacts. Therefore, the combined impacts of non-fishing impacts in concert with the impacts of the Preferred Alternative in each VEC is still low to moderately negative.

Table 47 – Summary of effects from non-fishing activities

Action	Description	Impacts on Scallops	Impacts on Physical Env and EFH	Impacts on Protected Species and non-target species	Impacts on Fishery and Communities (including Other Fisheries)
P,Pr,RFFA Vessel operations, marine transportation	Expansion of port facilities, vessel operations and recreational marinas	**No Impact at Site**	**Potentially Negative Inshore** – may lead to destruction of habitat	**Negative at Site** – inshore species impacted by reduced water quality and haul out activity	**Potentially Negative** if loss of fishing opportunities occur
P, Pr, RFFA Beach nourishment, dredge and fill activities	Offshore mining of sand for beaches Placement of sand to nourish beach shorelines	**Negative at Site** – entrainment, sedimentation and turbidity impacts to fish in area in and around borrow site **Negative at Site** – may displace fish, remove benthic prey and increase mortality of early life stages	**Negative at Site** – may lead to destruction of habitat in and around borrow site **Negative at Site** – may result in burial of structures that serve as foraging or shelter sites	**Negative at Site** – mining activity increases noise and reduces water quality **Negative at Site** – turtles susceptible to impacts from beach nourishment	**Negative at Site** – potential loss of fishing opportunities **Positive at Site** – restoration of an eroding shore may protect or restore recreational beaches
P, Pr, RFFA Pollution/water quality	Land runoff, precipitation, atmospheric deposition, seepage, or hydrologic modification Point-source discharges	**Negative at Site** – impacts primarily inshore	**Negative at Site** – impacts primarily inshore, leads to destruction of habitat and EFH	**Negative at Site** – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading	**Negative at Site** – potential loss of fishing opportunities, human health issues
P, Pr, RFFA Agriculture and timber harvest runoff	Nutrients applied to agriculture land are introduced into aquatic systems	**Negative at Site** – impacts primarily inshore	**Negative at Site** – impacts primarily inshore, leads to destruction of habitat	**Negative at Site** – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading	**Negative at Site** – potential loss of fishing opportunities
P, Pr, RFFA Pesticide application	Substances that are designed to repel, kill, or regulate the growth of undesirable biological organisms	**Negative at Site** – impacts primarily inshore	**Negative at Site** – impacts primarily inshore, leads to destruction of habitat and EFH	**Negative at Site** – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading	**Negative at Site** – potential loss of fishing opportunities, human health issues
P, Pr, RFFA Water intake structures/ discharge plumes	Withdrawal of estuarine and marine waters by water intake structures	**No Impact**	**Potentially Low Negative at Site** - discharge plumes may affect local oceanographic conditions	**Negative at Site** – intake structures can entrap protected species	**No Impact**
P, Pr, RFFA Loss of coastal wetland	Urban growth and development Development activities within watersheds and in coastal marine areas	**Potentially Low Negative at Site** – may result in habitat degradation	**Potentially Low Negative at Site** – may result in habitat degradation	**Negative at Site** – results in habitat loss for fish species that represent prey items and may result on habitat degradation potentially affecting nesting sites	**Potentially Low Negative at Site** – may result in biomass declines if spawning, health, or mortality are affected

Action	Description	Impacts on Scallops	Impacts on Physical Env and EFH	Impacts on Protected Species	Impacts on Fishery and Communities (including Other Fisheries)
P, Pr, RFFA Loss of coastal wetland	Urban growth and development Development activities within watersheds and in coastal marine areas	**Potentially Low Negative at Site** – may result in habitat degradation	**Potentially Low Negative at Site** – may result in habitat degradation	**Negative at Site** – results in habitat loss for fish species that represent prey items and may result on habitat degradation potentially affecting nesting sites	**Potentially Low Negative at Site** – may result in biomass declines if spawning, health, or mortality are affected
P, Pr, RFFA Road building and maintenance	Paved and dirt roads Poorly surfaced roads can substantially increase surface erosion	**Potentially negative –** no data	**Potentially negative –** no data	**Potentially negative –** no data	**Potentially negative –** no data
P, Pr, RFFA Flood control/ shoreline stabilization	Protection of riverine and estuarine communities from flooding events Dikes, levees, ditches, or other water controls	**Potentially negative –** no data	**Potentially negative –** no data	**Potentially negative –** no data	**Potentially negative –** no data
P, Pr, RFFA Utility lines/cables/ pipeline installation	Dredging of wetlands, coastal, port and harbor areas for port maintenance	**Negative at Site** – impacts primarily inshore	**Negative at Site** – impacts primarily inshore, leads to destruction of habitat	**Negative at Site** – dredging activity increases noise and may lead to mortality or injury of protected species	**Negative** – potential loss of fishing opportunities
P, Pr, RFFA Oil and gas exploration/ development	General exploration and development, as well as hydrocarbon spills associated with the transportation, loading and offloading of oil and gas products	**Potentially negative –** no data	**Potentially negative –** no data	**Potentially negative –** no data	**Potentially negative –** no data
P, Pr, RFFA Exotic Species	Introduction of non-indigenous and reared species	**Potentially Negative**- while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species	**Potentially Negative**- exotic species (ex., tunicates) found to adversely impact EFH and displace marketable and forage species	**Potentially Negative**– ecosystem effects of non-native species	**Potentially Negative**- while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species
P, Pr, RFFA Marine Mining	Offshore mining as well the mining of gravel from beaches	**Potentially negative –** no data	**Potentially negative –** no data	**Potentially negative –** no data	**Potentially negative –** no data
P, Pr, RFFA Low and mid- Frequency Sonar	Used in military exercises; considered a potential source of serious injury and mortality	**Potentially negative** – may negatively impact species in immediate vicinity of exercises using sonar	**No impact**	**Potentially Negative**- literature documents cetacean mortalities in vicinity of exercises using sonar	**Potentially negative** – potential loss of fishing opportunities, but exercises related to national security
RFFA National Offshore	Legislation would grant DOC authority	**Potentially negative**- may	**Potentially negative**- may	**Potentially negative** - may be	**Potentially neutral** - may be positive for

Action	Description	Impacts on Scallops	Impacts on Physical Env and EFH	Impacts on Protected Species	Impacts on Fishery and Communities (including Other Fisheries)
Aquaculture Act of 2005 (currently proposed)	to issue permits for offshore aquaculture in federal waters	negatively impact species by reducing water quality near aquaculture sites	negatively impact habitat by reducing water quality near aquaculture sites	negative if activities result in interactions with protected species	communities near sites; negative if prices of commercially harvested fish are impacted
[RFFA] Liquefied Natural Gas (LNG) terminals - several LNG terminals are proposed, including RI, NY, NJ and DE (w/in 5 years)	Transportation of natural gas via tanker to terminals located offshore and onshore	**Potentially Negative**– short-term disruption of habitat during construction could negatively impact organisms	**Negative** - habitat negatively impacted during construction phase and when vessels anchor to offload gas	**Negative** – may disrupt protected species during construction through increased noise and poor water quality	**Negative** - security zones around LNG facilities restrict access to fishing areas Positive – location of LNG facilities offshore may protect or improve communities
[RFFA] Offshore Wind Energy Facilities - several facilities proposed from ME through NC, including off the coast of NY/NJ and VA (w/in 5 years)	Construction of wind turbines to harness electrical power	**Potentially Negative**– short-term disruption of habitat during construction could negatively impact organisms	**Negative** – habitat negatively impacted during construction phase	**Potentially Negative**– may disrupt protected species during construction through increased noise and poor water quality	**Negative** – if fishing activity is precluded in area where turbines are located Negative – aesthetic impacts **Positive** – renewable clean energy resource
SUMMARY OF IMPACTS OF NON-FISHING ACTIVITIES – Overall, impacts are variable but greatest on the physical environment and EFH, but found to be low to moderately adverse; lack of data precludes more in-depth analysis of impacts on other VECs		**Potentially Negative**	**Potentially Negative**	**Potentially negative**	**Potentially Negative**

5.6.8 Cumulative Effects Analysis

Below is a description of the expected cumulative effects of the measures under consideration for Framework 23.

First is a summary paragraph related to the direct and indirect impacts of Framework 23 measures on each VEC. This description is based on the information provided in Table 48, a summary of the direct and indirect impacts of the measures under consideration on each VEC. The VECs have been separated into two categories in Table 48: Ecological Impacts (scallop resource, EFH, protected resource, and non-target species/other fisheries) and Economic and Social Impacts (fishery related businesses and communities). **The Preferred Alternative is in boldface**.

For each VEC, there is also a summary paragraph describing the cumulative effects of the measures under consideration in terms of how the past, present and reasonably foreseeable future actions impact each VEC, as well as non-fishing activities and direct/indirect impacts of Framework 23. This discussion for each VEC is based on information summarized in previous sections and tables on the past, present, and reasonably foreseeable future actions, non-fishing impacts, and direct and indirect impacts of Framework 23.

Lastly, there is a summary of the cumulative effects of the Preferred Alternative only, in terms of the magnitude and extent of cumulative impacts on a VEC-by-VEC basis in combination with other actions (past, present, and reasonably foreseeable future actions) as well as the effects from non-fishing actions (5.6.8.1).

Scallop Resource

Summary of direct and indirect impacts on the scallop resource (Table 48)

Framework 23 was approved at the September 2011 Council meeting, and implementation is expected March 2012. This action requires a turtle deflector dredge, modifies the YT AM schedule, modifies the NGOM management program, and when a vessel declares into the scallop fishery through VMS. The majority of Framework 23 measures are expected to have positive or neutral impacts on the resource.

Summary of cumulative effects on the scallop resource

In terms of past and present actions such as the Scallop FMP, Amendment 4, and Amendments 10, 11 and 15, there have been positive effects on the scallop resource. Other past EFH actions and actions in other FMPs have had neutral or positive effects as well (Table 45). In terms of reasonably foreseeable future actions, Framework 24 is expected to have positive impacts on the scallop resource. There are also several EFH, protected resources and other fishery-related actions that are expected to have either no impact or potentially positive impacts. Therefore, the overall effects of reasonably foreseeable future actions on the scallop resource are potentially positive (Table 46). In addition, the effects of non-fishing activities on the scallop resource are mostly potentially negative (Table 47). Lastly, the direct and indirect effects of the measures under consideration in Framework 23 are expected to have positive to neutral impacts on the scallop resource (Table 48). Thus, when the direct and indirect effects of the alternatives are considered in combination with all other actions (*i.e.,* past, present, and reasonably foreseeable

future actions), the cumulative effects should yield non-significant positive impacts on the scallop resource.

Physical Environment / EFH

Summary of direct and indirect impacts on EFH (Table 48)

The potential impacts on EFH from each of the measures are described within Section 5.2. Although scallop dredges have been shown to be associated with adverse impacts to some types of bottom habitat (NEFMC 2003), no measure contained in this Framework is likely to increase adverse impacts to areas designated EFH relative to the No Action alternative. None of the measures considered in this action are expected to have direct impacts on EFH.

Summary of cumulative effects on EFH

In terms of past and present actions such as the Scallop FMP, Amendment 4, and Amendments 10, 11, and 15 there have been positive effects on EFH. Other past EFH actions and actions in other FMPs have had mostly positive effects as well (Table 45). In terms of reasonably foreseeable future actions, there are several EFH actions that may have potentially positive effects on EFH. In addition, there are several reasonably foreseeable future scallop and other fishery-related actions that are expected to have no impact on EFH. Therefore, the overall effects of reasonably foreseeable future actions on EFH are neutral to potentially positive (Table 46). In addition, the effects of non-fishing activities on EFH are negative (Table 47). Lastly, the direct and indirect effects of the measures under consideration in Framework 23 are expected to have neutral impacts on EFH. Thus, when the direct and indirect effects of the alternatives are considered in combination with all other actions (*i.e.,* past, present, and reasonably foreseeable future actions), the cumulative effects should yield non-significant neutral to positive impacts on EFH.

Protected Resources

Summary of direct and indirect impacts on protected resources (Table 48)

Requirement of the turtle deflector dredge is expected to have direct positive impacts on protected resources, namely sea turtles. The other measures under consideration in Framework 23 are expected to have neutral impacts on protected resources. The specific impacts on protected resources from each of the proposed measures are described within Section 5.3. Overall this action is expected to have neutral to positive impacts on protected resources.

Summary of cumulative effects on protected resources

Sea turtles, have been, are, and will continue to be, negatively impacted by a variety of past, present, and reasonably foreseeable future activities which may be affecting the recovery of the species. The extent to which this may be happening cannot be quantified at this time but is potentially negative. However, the requirement of the turtle deflector dredge is likely to have positive impacts on turtles compared to No Action.

In terms of past and present actions, there have been positive to neutral effects on protected resources (Table 45). In terms of reasonably foreseeable future actions, there are several protected resource related actions that may have positive effects on protected resources. In addition, there are several reasonably foreseeable future scallop and other fishery-related actions that are expected to have potentially positive impacts on protected resources. The activities that

are negatively impacting sea turtles will continue to be addressed through fishery management plans as well as by the agency to ensure sea turtles are protected. One of the goals of NMFS's Sea Turtle Strategy is to develop and implement plans to reduce takes of sea turtles in Atlantic Ocean and Gulf of Mexico fisheries. Implementation of these plans will have a net beneficial impact on sea turtle species. NMFS also intends to continue outreach efforts to educate fishermen regarding sea turtles. Future anticipated research will likely enhance knowledge concerning the nature of the interactions between sea turtles and sea scallop dredge gear, potentially leading to the implementation of alternative management measures that may confer benefits to animals in areas where overlap with the fishery occurs. Therefore, the overall effects of reasonably foreseeable future actions on protected resources are neutral to potentially positive (Table 46). In addition, the effects of non-fishing activities on protected resources are potentially negative (Table 51).

Lastly, the direct and indirect effects of the measures under consideration in Framework 23 are expected to have neutral to positive impacts on protected resources (Table 48). Thus, when the direct and indirect effects of the alternatives are considered in combination with other actions (*i.e.,* past, present, and reasonably foreseeable future actions), the cumulative effects should yield neutral to positive non-significant impacts.

Fishery-Related Businesses and Communities

Summary of direct and indirect impacts on fishery-related businesses and communities (Table 48).

The economic impacts of Framework 23 proposed measures and alternatives considered by the Council are analyzed in Section 4.1. The following summarizes the economic impacts of each proposed measure on the fishery-related businesses and communities.

The preferred alternative will require the use of a turtle deflector dredge (TDD) on scallop vessels in various fishing areas and seasons for all limited access vessels and a subset of limited access general category IFQ vessels that have a dredge of 10.5 ft. or greater. Overall, implementation of this dredge is expected to have positive economic impacts on the fishery over the long-term although there will be costs associated with installing the TDD in the short-term. The total costs of TDD requirement for the limited access fleet is estimated to range from $1.4 million to $2.6 million in the short-term depending on how many vessels already use this dredge and how often they replace their dredges (Section 4.1.1.4, Table 14). The costs for the LAGC IFQ fleet that employ a dredge of 10.5ft or greater could be about $0.3 million if none of those vessels have a TDD dredge already. TDD requirement if implemented is expected to reduce the impacts on turtles substantially compared to the standard dredge and could have indirect positive economic impacts on the scallop fishery if current RPMs are eliminated or modified as a result of requiring the use of a TDD. Over the long-term these benefits are expected to outweigh the increase in the costs in the short-term and have positive impacts on the fishery related businesses and communities. Because the preferred alternative will exempt LAGC vessels with dredges less than 10.5 ft. from TDD requirement, the cost burden on the smaller boats and on their communities will be minimized. Further discussion of this measure and its components is provided in Section 4.1.1.2.

Preferred alternative will revise the YT seasonal closure AM schedule such that effort would be reduced during months with the highest yellowtail bycatch rates first when an overage occurs. Over the long-term, shifting effort to seasons when the meat weights are larger will benefit the scallop resource, increase landings and overall economic benefits from the fishery. Similarly, preferred alternative will modify the AM Schedule for GB access areas so that the closures will start at the time of year when scallop meat weights are lowest with positive economic impacts on the on the fishery related businesses and communities (Section 4.1.2.2). Mechanism to adjust AMs for bycatch sub-ACLs allocated to the scallop fishery will provide flexibility needed to manage a bycatch sub-ACL based on the best available information with small potentially positive impacts on the scallop fishery (Section 4.1.2.3).

Proposed alternative changes will allow vessels to fish exclusively in state waters, on a trip by trip basis, without the scallop catch from state water only trips counted against the federal NGOM TAC (Section 4.1.3). This change is not expected to have any significant impacts under the current resource conditions on landings and revenues from this area given that total catch in the NGOM area has been well below the current TAC of 70,000 pounds. On the other hand, if the scallop resource abundance and landings within the Maine State waters increases in the future, the proposed alternative would prevent a reduction in landings from NGOM. This could potentially have positive economic impacts on the vessels that fish both in the state and federal waters, thus on the fishery related business and communities.

The proposed alternative would allow a vessel to declare into the scallop fishery west of the VMS demarcation line and not necessarily from a port (Section 4.1.4). As a result of this change, a vessel could steam closer to the fishing grounds and declare into the fishery from VMS demarcation line instead from a port, reducing the steam time and the fuel and oil costs. Therefore, the proposed modification will have positive economic impacts on the scallop fishery by reducing the costs and positive impacts on the fishery related business and communities.
In summary, in the short-term the aggregate impacts of the all measures proposed by Framework 23 could range from a low negative to low positive depending on the extent the positive impacts of the measures outweigh the costs of TDD requirement. Over the long-term, however, Framework 23 is expected to have positive impacts on the fishery related business and communities.

Summary of cumulative effects on fishery-related businesses and communities
The cumulative impacts of the past actions including Amendment 4, Amendment 10, Framework 18 and Amendment 11, Amendment 15, Framework 19, Framework 20 and Framework 21 and Framework 22 to the Scallop FMP, are estimated to be positive over the long-term. Other past EFH actions and actions in other FMPs have had neutral or low negative effects (Table 45). Adjustment of the open area DAS allocations, implementation of trip limits and allocations for the access areas and rotation area management implemented by the past management actions had positive impacts on the scallop industry by increasing the revenues, producer and consumer surpluses and net benefits in the past. The measures implemented by the recent Framework action (Framework 22) are estimated to have positive impacts on consumer, producer and total economic benefits in 2011-2012 exceeding the expected landings in 2011 and the estimated values of economic benefits in Framework 22 document.

In terms of reasonably foreseeable future actions, there are several scallop related actions that are expected to have positive impacts overall, Framework 24. There are also several EFH, protected resources and other fishery-related actions that are expected to have potentially positive or low negative impacts on fishery-related businesses and communities. Therefore, the overall effects of reasonably foreseeable future actions on the fishery-related businesses and communities are neutral, some positive and some negative (Table 46). In addition, the effects of non-fishing activities on the fishery-related businesses and communities are mostly potentially negative (Table 47).

Lastly, the direct and indirect effects of the measures under consideration in Framework 23 are expected to be either low negative or low positive in the short-term and positive over the long-term (Table 117). As a result, cumulative economic benefits, which measure the sum of benefits from previous and proposed actins, are expected to be positive both in the short-term and long-term and the potential impacts of the future actins are not expected to cancel out those positive impacts.

Thus, when the direct and indirect effects of the alternatives are considered in combination with other actions (*i.e.,* past, present, and reasonably foreseeable future actions), these actions yield potentially positive cumulative impacts on the fishery-related businesses and communities.

Non-Target Species and Other Fisheries

Summary of direct and indirect impacts on non-target species and other fisheries (Table 48)

None of the measures included in the preferred alternative are expected to have significant impacts on non-target species and other fisheries. The measures to adjust the YT AM schedule are expected to have some beneficial impacts on yellowtail flounder bycatch since the closures will be in effect in the areas and months with highest bycatch rates. This action has considered the potential impacts of the alternatives under consideration on non-target species (small scallops as well as finfish and other bycatch species) and in general, all the measures under consideration have positive or neutral impacts on non-target species. Since the Scallop FMP in general strives to allocate fishing effort in areas with high scallop catch per-unit-of-effort, impacts on bycatch are reduced compared to the past management scheme prior to area rotation. Overall, primarily neutral impacts expected from Framework 23 measures, and potentially positive impacts from the measures that adjust the YT AM seasonal closure schedules.

Summary of cumulative effects on non-target species and other fisheries

The combined effects of past actions in the Scallop FMP have decreased effort and improved habitat protection, which benefits non-target species. In addition, current regulations continue to manage for sustainable stocks, thus controlling effort on direct and discard/bycatch species. Finally, future actions are anticipated to continue rebuilding and thus limit the take of discards/bycatch in the scallop fishery, particularly through ACL management with AMs. Overall, continued management of directed stocks will also control catch of non-target species. In addition, the effects of non-fishing activities on bycatch are potentially negative (**Table 51**). Overall, the cumulative effects should yield non-significant neutral to low positive impacts on non-target species and other fisheries.

Table 48– Effects of alternatives under consideration on the five Framework 22 VECs; preferred alternative is in bold

SECTION	ALTERNATIVE	ECOLOGICAL IMPACTS (Scallop resource, EFH., Protected resources and bycatch)	ECONOMIC AND SOCIAL IMPACTS
2.1	**TURTLE DEFLECTOR DREDGE (TDD)**		
2.1.1	No Action TDD	No impacts	No impacts
2.1.2	**TDD Requirement Alternative – Figure 1**	Potentially positive for scallop resource since the TDD estimated to be slightly more efficient – 4% more scallop catch. Positive for protected resources – minimum of 56% reduction of mortality on turtles compared to standard dredge without chain mat. EFH – Overall shifts in fishing location that could result in changes to EFH impacts would likely be minimal. Bycatch - The TDD generally reduced the capture of flatfish and some skates however, these differences were not statistically significant.	The increase in costs in the short-term, but positive indirect economic impacts on the fishery over the long-term if implementation of the TDD result in fewer effort limits that are placed on this fishery under ESA.
2.1.2.1	*TDD Spatial boundary options*		*Section 4.1.1.1., Tables 7 and 8*
2.1.2.1.1	**Option 1 – 71W**	There may be some amount of effort that could shift from the Mid-Atlantic to a different area not included in the TDD boundary options, but that total amount of effort is limited overall and is not expected to have direct impacts on the scallop resource, EFH, protected resources or bycatch. In addition, since the amount of scallop fishing is relatively limited in the area that is different between the two boundary options (area east of 72º W and north of 40º N), there is essentially no difference in terms of impacts on the scallop resource between the two boundary options. Option 1 is more precautionary in terms of potential benefits for turtles and may have more conservation benefit since that boundary option includes more area where turtles are distributed and some scallop fishing occurs.	Although this option would minimize the economic impacts for scallop vessels that fish solely in Georges Bank east of 71º and those that fish in Gulf of Maine, it could have adverse impacts on some LAGC vessels since it includes 3-digit areas 539 and a third of 537 that are the main grounds for these vessels. However, exemption of vessels from TDD requirement that use a dredge less than 10.5ft would mitigate some of these impacts.
2.1.2.1.2	Option 2 – RPM line		Option 2 would exclude those areas that LAGC vessels are active and would minimize the negative economic impacts of TDD requirement on those vessels. If, however, TDD is required only of the limited access (LA) vessels, the economic impacts of Option 1 would not be very different than of Option 2, with the exception that Option 2 would provide more flexibility to the scallop vessels fishing in the excluded areas.
2.1.2.2	*TDD Seasonal options*		*Section 4.1.1.2, Tables 9 to 11*
2.1.2.2.1	Option 1 - June1-Oct. 31	Overall, since these three seasonal options are relatively long in length, 5-7 months, it seems unlikely that a limited access scallop vessel currently fishing in the Mid-Atlantic	In general, shorter seasons for the TDD requirement will provide more flexibility with some potentially positive economic impacts. The differences in impacts of the three
2.1.2.2.2	**Option 2 - May 1-Oct. 31**		
2.1.2.2.3	Option 3 - May 1-Nov 30		

		would not invest in the new gear, and only fish in the months not included in the range (December-April). And since the gear is not expected to impact efficiency of the gear, impacts on the resource and EFH should be neutral. The relative difference among the seasonal options is minimal. Longer season would benefit protected resources, but again vessels may leave this gear on all year regardless of season it is required so relative difference among seasonal options minimal. Seasonal options not expected to have impacts on EFH or bycatch.	options are expected to be small for the LA vessels since they are not likely to change the dredge during the year once they make the investment in TDD. These options could impact LAGC IFQ vessels in relatively greater degree than the LA vessels because the cost of TDD could be too large for some to want to invest in new gear. Option 1 could have the least impacts since 54.49% of the LAGC landings took place from June to October while Option 3 would have the largest impacts since 73% of their landings occurred May to November in 2010. But these impacts depend on what vessel option is selected – Section 2.1.2.3
2.1.2.3	*TDD Vessel options*		*Section 4.1.1.3--Tables 12 to 16.*
2.1.2.3.1	Option 1 – LA vessels only	Ecological impacts of these three options depend on whether or not vessels will shift effort to different areas or seasons as a result of being required to use the TDD. For Option 1, it seems unlikely that a limited access vessel that primarily fishes in the Mid-Atlantic would not invest in new gear if the alternative to that is being restricted to either fish on Georges Bank or to be restricted to fish in the Mid-Atlantic during the months outside the range of the seasonal options. Therefore, there are no substantial ecological impacts expected from Option 1. It is more difficult to predict changes in fishing behavior under Options 2 and 3 for smaller and general category vessels that may have only qualified for limited amount of resource since the cost associated with new gear may not be outweighed by the flexibility to fish in areas and times that may be more desirable. In general, if Options 2 and 3 cause a vessel to fish in an area that is less efficient in order to avoid having to purchase new gear, that could have potentially negative impacts on the environment if that effort shifts to a time or area with lower scallop catch rates, more vulnerable habitats, or higher bycatch rates.	Small increase in the costs for these vessels as a % of their revenue. The increase in costs is expected to be outweighed by the positive impacts of TDD over the long-term. (Table 12 to 13)
2.1.2.3.2	Option 2 – LA and LAGC vessels		This option could have negative impacts on the LAGC vessels and result in effort shifts. The cost TDD could amount to 5% to 12% of the median revenue for the LAGC fleet (Table 14)
2.1.2.3.3	**Option 3 – All LA vessels and all LAGC vessels that use a dredge greater than or equal to 10 feet six inches**		Since the scallop revenue for the vessels that use a dredge smaller than 10.5ft is lower compared to other vessels, exempting these vessels option would minimize the economic impacts on the small vessels. This option could have negative economic impacts on the LAGC vessels that use a dredge 10.5ft or larger, however, since the average scallop revenue for this fleet ($127,281 in 2010) is a small fraction of the average revenue for the LA FT vessels ($1.3 million in 2010) and is about 1/3 to 1/4th of the scallop revenues of the part-time LA vessels. (Table 15 to 17). If the TDD is required for LAGC vessels, as under Options 2 and 3, this restriction could increase the amount of IFQ that is leased among the LAGC fishery.
2.1.2.4	*TDD Implementation options*		Section 4.1.1.4
2.1.2.4.1	Option 1 – 90-180 days	Overall the implementation options for the TDD Requirement Alternative, ranging between 90 days to 2-years, are not expected to have direct impacts on the scallop resource, EFH, and bycatch because there is no statistical	This option may not be a feasible and may increase the production costs since so many dredges need to be built within a short time period, and 180 days (September 1) does not benefit turtles much for that fishing year since the

		difference between the standard commercial dredge and the TDD in terms of catch and selectivity. Fishery allocations are annual, so whether the effective date is 90 days or 2-years, vessels cannot increase catch above their annual allocation in anticipation of a gear change requirement. Overall the impacts of the three timing alternatives for the TDD requirement are expected to have similar impacts on turtles. The sooner a TDD could be implemented the better, in terms of reducing the severity of impacts on sea turtles that interact with scallop gear. But the relative difference between these three timing alternatives is minimal overall.	majority of the turtle season has already passed.
2.1.2.4.2	**Option 2 – one year after FW23 implemented**		A one year option and implementation by March 1, 2013 could give enough time to build dredges and give vessels time to fish with the new dredge before the turtle season begins in May. This could have relatively more benefits compared to a two year option, if any future biological opinions are not able to account for conservation benefit from measures approved but not effective yet.
2.1.2.4.3	Option 3 – two years after FW23 implemented		The two year implementation option could lower the costs for some vessels by providing more flexibility and time to plan buying and installing a TDD, but could delay the benefits from using the TDD.
2.2	**REVIEW AND REVISE AMs FOR YELLOWTAIL FLOUNDER SUB-ACL**		
2.2.1	***Refine YT AM seasonal closure schedule***		
2.2.1.1	No Action	Potentially negative for resource, EFH, PR and bycatch if effort shifts to areas with lower scallop catches, higher bycatch etc. But impacts could be reverse if effort shifts to areas with higher scallop catch and lower bycatch. Overall, the total amount of effort shift is limited, so potential impacts are minimal.	Negative or positive depending on how and where effort shifts as a result of an AM, but overall impacts are likely minimal.
2.2.1.2	**Refine YT AM seasonal closure schedule**		Section 4.1.2.2
	SNE/MA – Table 2 on page 21	For the SNE/MA AM schedule, the major difference is that the proposed closure is primarily in the early spring and winter first, rather than starting with spring and summer under the current AM. Closing the area in the winter and early spring (proposed) compared to the spring and summer (No Action) will have beneficial impacts on the scallop resource because meat weights are generally highest in late spring and early summer. Overall, the SNE/MA YT AM area is not a primary fishing area for the scallop fishery. Therefore, the total amount of effort shift is minimal for the resource even if the area is closed for the entire year. Beneficial impacts expected for YT since schedule better reflects months with highest bycatch rates. No impacts on protected resources or EFH.	Overall, the SNE/MA closures are not expected to have large impacts on the limited access fleet given that a small proportion of the landings for full-time come from these areas. But for a subset of vessels that fish in those areas, when the yellowtail overage is relatively small (8% or less), the proposed closures will shift relatively more landings to the other areas and seasons compared to the Amendment 15 schedule. This could reduce flexibility for vessels and increase fishing costs. On the other hand, shifting effort to other seasons when the meat weights are highest could benefit the scallop resource and increase landings and revenues to some extent offsetting the negative effects of the effort shifts. At overage rates 9% and higher, the proposed closures will affect a smaller proportion of landing compared to the Amendment 15 schedule, however. This will have a favorable impact on vessel flexibility and fishing costs with positive impacts on profits. (Table 18 to Table 21)

	GB – Tables 3 and 4 on page 22	As for GB, the major difference compared to No Action for revising the YT AM schedule is that the proposed AM closure schedule would begin in the fall followed by the winter months, when YT bycatch rates are highest. This is also the time of year when scallop meat weights are least, so impacts on the scallop resource should be less compared to No Action, which closes the area beginning in March through the spring and summer when scallop meat weights are larger. Beneficial impacts expected for YT since schedule better reflects months with highest bycatch rates. No impacts on protected resources or EFH.	Shifting effort to times of the year with higher scallop meat weights will have positive impacts on the scallop resource and overall landings and revenues from this area. Fishing during seasons with higher abundance could also lower the fishing costs if the same pounds could be landed within a shorter time period (Tables 22 and 23). If the overage is 39% or less Closed Area II would be closed from August-January and effort would be shifted to the remaining months the area is open, June 15-July 31 when scallop meat weights are greater compared to the fall and winter. This will have a positive economic impact on scallop vessels by increasing flexibility and reducing the amount of effort that has to be shifted to other areas and seasons. Changing the schedule when CAI is closed is expected to have negligible impacts.
2.2.2	***Mechanism to adjust AMs for bycatch ACLs in the scallop fishery***		
2.2.1.1	No Action	Neutral impacts on the resource, EFH, protected resources, and bycatch.	Positive or negative based on accuracy of initial estimate of bycatch that triggers AMs before final estimates are available. More onerous measures could be implemented than should have been, or the reverse.
2.2.1.2	**Implement a mechanism to adjust AMs for bycatch ACLs in the scallop fishery (Option 2)**	This mechanism will provide flexibility needed to manage a bycatch sub-ACL based on the best available information with neutral impacts on the resource, EFH, protected resources and bycatch.	This mechanism will provide flexibility needed to manage a bycatch sub-ACL based on the best available information with positive indirect impacts.
2.3	**MODIFICATION TO THE NGOM LAGC PROGRAM**		**Section 4.1.3.1 --No changes.**
2.3.1	No Action NGOM	Impacts are neutral compared to No Action because current effort levels are very low in this area. If effort increases in the future there is increased risk of fishing pressure in state and federal waters from this option, but current and proposed state programs are expected to address potential increased catch levels. Impacts on EFH, protected resources, and bycatch are minimal.	Section 4.1.3.2, Table 28 If the scallop resource abundance and landings within the Maine State waters increases in the future, the proposed alternative would prevent a reduction in landings from NGOM. This could potentially have positive economic impacts on the vessels that fish both in the state and federal waters. Impacts vary by state because of state water restrictions.
2.3.2	**NGOM Alternative**		
2.3.2.1	*Options for which vessels*		*Section 4.1.3.2.1 Tables 29 and 30*
2.3.2.1.1	Option 1 - ME vessels only	The state of Maine has similar, and in some cases more restrictive regulations in state waters compared to the Federal NGOM program, it is unlikely that fishing effort will increase in state waters (Option 1 or 2). In Massachusetts there is currently no possession limit, so	Option 1 is unlikely to lead to an increase in effort in Maine or in the waters of the other states.
2.3.2.1.2	**Option 2 - All NGOM vessels**		Option 2 could benefit more vessels but have the potential to increase effort in other state scallop fisheries. On the other hand, the regulations would require that every

		vessels with a state only permit can land scallops with no possession limit, but vessels with a Federal permit have to abide to the more restrictive rules (200 pounds). Therefore, this alternative is not expected to increase fishing effort in state waters compared to No Action (Option 2). Impacts on EFH, protected resources, and bycatch are minimal.	NGOM vessel follow the same 200 possession limits regardless of which state they fish if the modifications are made to the current program. This should minimize the impacts on the scallop resource and any negative impacts on yield and scallop revenues in the State waters of Massachusetts as well.
2.3.2.2	*Options to adjust 2012 and 2013 NGOM hard-TAC*		*Section 4.1.3.2.2*
2.3.2.2.1	**Option 1 - No Action – 70,000 pounds**	Increased risk of impacts on the scallop resource in federal waters if the TAC is higher than biomass, since the current TAC was elevated to recognize that about half of current catch from state waters. However, since effort levels are limited in this area overall, the impacts of No Action (Option 1 – 70,000 pounds) are minimal on the scallop resource. Impacts on EFH, protected resources, and bycatch are minimal.	No action regarding the NGOM hard-TAC (keeping at 70,000 lb.) is expected to prevent closing of the NGOM fishery due to the state water catches by LAGC IFQ vessels, since catches by those boats would still be applied against the federal NGOM TAC. Therefore, this will have positive economic impacts on the participants of the scallop fishery.
2.3.2.2.2	Option 2 - Adjust NGOM TAC – 31,000 pounds	If this action allows a federally-permitted NGOM vessel to fish in state waters in the NGOM and not have that catch be applied against the NGOM TAC, then Option 2 (31,000 pounds) is an appropriate value to use which is based on the best available science and would help reduce negative impacts on the scallop resource in the long term. There are minimal impacts on the resource in the short term because this TAC is temporary and current effort levels are well below 31,000 pounds. Overall there are likely negligible differences between the two TAC options and their impacts on the resource, EFH, protected resources and bycatch since this is a very small component of the total scallop resource and relatively little fishing effort in this area overall.	If inshore resources rebound due to strict state water management programs and LAGC IFQ vessels increase their catch in state waters, a lower TAC could result in closure of the entire NGOM area with potentially negative economic impacts on participants of NGOM scallop fishery.
2.4	**MODIFICATION TO VMS**		
2.4.1	No Action VMS	VMS measures are predominantly administrative in nature and do not have direct impacts on the scallop resource, EFH, protected resources or bycatch.	Section 4.1.4.1- No change in benefits. Under this system a vessel may need to enter a port it is not familiar with in order to start that trip, which could pose safety risks. In addition, the extra steaming time to the port adds to the fishing costs including the costs of fuel and oil.
2.4.2	**VMS Alternative**	Not expected to have direct impacts on the scallop resource, EFH, protected resources or bycatch since this is an administrative issue and DAS used are already calculated from the demarcation line. Therefore, the estimate of fishing time will not increase as a result of this change so no	Section 4.1.4.2 -- Vessel could steam closer to the fishing grounds and declare into the fishery from VMS demarcation line instead from a port. This would reduce the steam time and the fuel and oil costs increasing the economic benefits from the scallop fishery.

		impacts are expected on the scallop resource. If it is determined later that fishing time has increase adjustments will need to be made.	

5.6.8.1 Summary of Cumulative Effects of the preferred alternative

To determine the magnitude and extent of cumulative impacts of the preferred alternative, the incremental impacts of the direct and indirect impacts should be considered, on a VEC-by-VEC basis, in addition to the effects of all actions (those effects identified and discussed relative to the past, present, and reasonably foreseeable future actions of both fishing and non-fishing actions). In general, while the management measures proposed result in cumulative impacts in some cases, none of the impacts discussed indicate a potentially significant impact. Section 5.6.8 above summarizes the expected cumulative effects of the measures that were considered in this action; this section focuses on the preferred alternative only.

Overall, the cumulative effects of the preferred alternative should yield non-significant neutral to positive impacts. Table 49 summarizes the cumulative effects of the preferred alternative relative to the past, present, and reasonably foreseeable future fishing and non-fishing actions for each of the VECs considered. In general, the impacts of the past, present, and reasonably foreseeable future actions on all of the VECs identified in this action are positive to neutral, but non-significant impacts. There are several future actions that may have potential low negative or positive impacts, but overall the expected impacts are neutral and non-significant. Furthermore, there are potentially negative impacts of non-fishing activities in this region on the various VECs identified. As for the direct and indirect impacts of the preferred alternative on each VEC, the overall impacts are expected to be positive to neutral, and non-significant.

Table 49 – Summary of cumulative effects of the preferred alternative

	Scallop Resource	**Physical Habitat/EFH**	**Protected Resources and non-target species**	**Fishery-Related Businesses and Communities**	**Non-target species and Other Fisheries**
Direct/Indirect Impacts of Preferred alternative	Potentially Positive to Neutral	Neutral	Neutral to Positive	Potentially Positive	Neutral to Potentially Positive
Past and Present Fishing Actions Impacts	Positive	Positive	Positive/Neutral	Mostly Positive	Positive/Neutral
Reasonably Foreseeable Future Fishing Actions Impacts	Potentially Positive	Neutral to Potentially Positive	Neutral to Potentially Positive	Neutral, some positive some negative	Neutral to Potentially Positive
Non-Fishing Actions Impacts	Potentially negative	Potentially negative	Potentially negative	Potentially negative	Potentially negative
Cumulative Effects	Non-significant Positive	Non-significant Neutral to Positive	Non-significant Neutral to Positive	Non-significant Potentially Positive	Non-significant Neutral to low positive

6.0 COMPLIANCE WITH APPLICABLE LAW

6.1 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

6.1.1 National standards

Section 301 of the Magnuson-Stevens Fishery Conservation and Management Act requires that fishery management plans (FMPs) contain conservation and management measures that are consistent with the ten National Standards:

(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 assessment this resource is not overfished and overfishing is not occurring (SAW 50, NEFSC 2010). This action does not change annual allocations to the fishery and no impacts are expected that will increase fishing mortality or prevent optimum yield for this fishery.

(2) Conservation and management measures shall be based upon the best scientific information available.

This document 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 this document. These data sources include, but are not limited to: permit data, landings data from vessel trip reports, data from the dealer weighout purchase reports, scallop survey data, and data from at-sea observers. Several models were used in these analyses and all methods and results were reviewed at PDT meetings. Although there are some limitations to the data used in the analysis, these data are considered to be the best available.

(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.

Under the Atlantic Sea Scallop FMP, the target fishing mortality rate and stock biomass are applied to the scallop resource from NC to the US/Canada boundary. This encompasses the entire range of scallop stocks under Federal jurisdiction. See Section 4.1 for a description of the scallop resource.

(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 management measures proposed in this action do not discriminate between residents of different states. The TDD measure is required for all limited access vessels (all permit categories, regardless of dredge size) and all limited access general category vessels that use a

scallop dredge greater than or equal to 10.5 feet, regardless of homeport state. Similarly, the YT AM schedule applies to all limited access scallop vessels. The NGOM alternative is for all vessels with a NGOM permit, not just vessels from a particular state. Finally, the VMS alternative applies to all LA and LAGC vessels.

(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.

Specifications are not included in this framework and none of the measures in this action are related to economic allocation.

(6) Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

Specifications are not included in this framework and none of the measures in this action are directly related to fishery catches.

(7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The Council considered the costs and benefits associated with the Preferred Alternative when developing this action. The preferred alternative does not introduce any new measures that duplicate measures already in place. In fact, the VMS alternative is expected to directly minimize costs related to steaming time and entering a port in order to declare into the scallop fishery. The management measures proposed in this action are not duplicative and were developed in close coordination with NMFS and the Mid-Atlantic Fishery Management Council.

(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.

In the Amendment 10 FSEIS, the characteristics and participation of fishing communities involved in the scallop fishery were discussed in Section 7.1.1.3, and the impacts of rotation area management were discussed in Section 8.8. This document includes an update of fishery and community information in Section 4.4 and Appendix I. The economic and social impacts, which affect fishing communities, are analyzed and discussed in Sections 5.4. The preferred alternative will not change these impacts anticipated under Amendment 10 except for general positive impacts compared to No Action.

The preferred alternative, is not expected to jeopardize the sustained participation of fishing communities that have depended on the scallop resource. This action does not change fishery

allocations or access to the resource, so historical levels of participation by fishing communities are expected to be the same as a result of this action.

(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.

Bycatch in the scallop fishery has been greatly reduced and minimized by the success of the FMP to increase scallop biomass and reduce the amount of time fished on a DAS. The FMP has also implemented several gear restrictions that have successfully reduced bycatch. These effects are discussed in detail in Section 6.1.9 of the Amendment 10 FSEIS, and in related sections of that document. In particular, Section 2.2.3 of this document summarizes the proactive measures in place, as well as voluntary measures, that have reduced yellowtail flounder bycatch.

The preferred alternative related to YT AMs is expected to reduce YT bycatch compared to No Action. Adjusting the AM schedule to close during high bycatch months first will reduce bycatch compared to No Action (Section 5.5.2). In addition, the preferred alternative to require a turtle deflector dredge is expected to greatly reduce impacts related to bycatch of sea turtles in the scallop fishery (Section 5.3.1.2), and may also decrease finfish catch for some flatfish species; more research is needed.

(10) Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

Section 6.1.10 in the Amendment 10 FSEIS discusses the effect of current scallop management and of rotation area management on safety. This action does not propose any new measures that would change the findings in Amendment 10. This action does propose a measure that is expected to improve safety at sea related to how a vessel declares in to the scallop fishery. Currently a vessel is required to declare into the scallop fishery from a port, or designated area. The preferred alternative allows that vessel to declare into the fishery landward of the VMS demarcation line, rather than from port. This would allow a vessel to steam closer to the fishing grounds, improving safety because that vessel would not have to go into a port it is not familiar with just to begin its trip. This could help prevent accidents closer to shore in areas that captains are not familiar with.

6.1.2 Other Required Provisions of the M-S Act

Section 303 of the Magnuson-Stevens Fishery Conservation and Management Act contains 14 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;

Since the domestic scallop fishery is capable of catching and processing the allowable biological catch (ABC), there is no total allowable level of foreign fishing (TALFF) and foreign fishing on sea scallops is not permissible at this time.

(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 fishery participants are described in detail in Section 4.4 of Amendment 15 to the Scallop FMP. Section 4.4 and Appendix I in this document describe the scallop permits by category as well as the active scallop vessels by permit type that could be affected by this action. The number of trips and average scallops landed per category are also included in that section as well.

(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 present and probable future condition of the resource and estimates of MSY and OY are given in Section 8.2.2.2 of Amendment 10 to the Scallop FMP. This action is not changing the ABCs set under Framework 22 for fishing years 2011 and 2012. During FW22, the SSC reviewed the most recent work on assessing this resource and determined that acceptable biological catch be set at 31,288 mt in 2011 and 33,243 mt in 2012 (69.0 and 73.3 million pounds, respectively), including an approximate 4100 mt (9 million pounds) for non-yield fishing mortality (discards and incidental mortality). Therefore, the overall ABC for the fishery, excluding discards and incidental mortality is 27,276 mt in 2011 and 28,968 mt in 2012 (60.1 and 63.9 million pounds, respectively). Acceptable Biological Catch (ABC) is defined as the maximum catch that is recommended for harvest, consistent with meeting the biological objectives of the management plan. Section 4.4 of this action reviews the current fishing levels and specifications for this fishery.

Current domestic landings and processing capabilities are around 50-60 million lbs. Total landings have been above 50 million pounds in some years since 2004, and were about 57 million pounds in 2010. This action does not include fishery specifications, but catch in 2011 and 2012 are expected to be in a similar range, 55-60 million pounds.

(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;

The US fishery is expected to harvest 100% of OY and domestic processors are expected to be able to process 100% of OY.

(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 requirement and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors;

The FMP and existing regulations specify the type of reports and information that scallop vessel owners and scallop dealers must submit to NMFS. These data include, but are not limited to, the weight of target species and incidental catch which is landed, characteristics about the vessel and gear in use, the number of crew aboard the vessel, when and where the vessel fished, and other pertinent information about a scallop fishing trip. Dealers must report the weight of species landed by the vessel, the date of landing, and the ex-vessel price for each species and/or size grade. Important information about vessel characteristics, ownership, and location of operation is also required on scallop permit applications. Dealers are also surveyed for information about their processing capabilities.

All limited access scallop vessels and LAGC vessels are required to operate vessel monitoring system (VMS) equipment to record the location of the vessel for monitoring compliance with DAS regulations. An at-sea observer is also placed on scallop vessels at random to record more detailed information about the catch, including size frequency data, the quantity of discards by species, detailed gear data, and interactions with protected species.

(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 preferred alternatives in this action do not alter any adjustments made in the Scallop FMP that address opportunities for vessels that would otherwise be prevented from harvesting because of weather or other ocean conditions affecting the safe conduct of the fisheries. No consultation with the Coast Guard is required relative to this issue.

(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;

Essential fish habitat was defined in earlier scallop actions. This framework does not further address or modify those EFH definitions. There are no additional impacts to the physical environment or EFH expected from the preferred alternatives in this action.

(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;

Data and research needs relative to the Atlantic sea scallop and its associated fisheries are described in Section 5.1.8 of Amendment 10 and Section 4.1 of Amendment 15. Other data already collected include fishery dependent data described in Section 6.2.4 of Amendment 10 and Section 4.4 of Amendment 15, and fishery-independent resource surveys that provide an index of scallop abundance and biomass.

(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 describe the likely effects, if any, of the conservation and management measures on-- (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 weather and to what extend such measures may affect the safety of participants in the fishery;

The impacts of the scallop management program in general have been analyzed in previous scallop actions (Amendment 10, Amendment 11, Framework 16, Framework 18, Framework 19, Framework 21, Framework 22, and Amendment 15). Any additional impacts from measures proposed in this action on fishery participants are summarized in Section 5.4. Safety in the scallop fishery was described in Section 8.1.5.6 of Amendment 10 and nothing proposed in this action will affect safety of human life at sea. In fact, the VMS Alternative may actually improve vessel safety (Section 5.4.2.4).

(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;

Overfishing reference points describing targets and thresholds for biomass and fishing mortality were updated in 2010 and are presented and explained in Section 5.1. The overfishing threshold is a spatially averaged $F = 0.38$. This action does not set specifications, so the fishery allocations set by Framework 22 for 2011 and 2012 remain in place.

(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;

This action does not include changes to the current SBRM. This methodology is expected to assess the amount and type of bycatch in the scallop fishery and help identify ways the fishery can minimize bycatch and mortality of bycatch which cannot be avoided. The scallop fishery also has an industry-funded observer set-aside program that provides additional funding (portion of total scallop catch set-aside) to put observers on scallop vessels. A summary of the extent of observer coverage in this fishery can be found in Section 4.5.3 of Framework 22.

(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;

This Preferred alternative does not address recreational fishing regulations. There are no substantial recreational or charter fishing sections in the scallop fishery, and any that do exist are managed by individual states. Any recreational scallop fishing is likely conducted by diving, and harvest is by hand, maximizing the survival of released scallops.

(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;

A detailed description of the scallop fishery is included in Section 7.1 of Amendment 10, Section 4.4 in Amendment 11, Section 4.4 of Amendment 15, and Section 4.4 and Appendix I of this action. These sections provide information relative to scallop vessels, processors, and dealers.

(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; and

This action does not include specifications, and there are no expected changes to the overall harvest from the preferred alternatives. Section 5.4 is a detailed examination of the expected economic impacts of this action. Harvest from the Atlantic sea scallop fishery will continue to be reviewed, established, and analyzed through the biennial framework process. Recreational fishing for sea scallops is rare and does not affect the success of the FMP.

(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.

The preferred alternative does not include catch limits for the scallop fishery. Those were set in Framework 22 for FY2011 and 2012 and will be set again in 2012 under FW24 for FY 2013 and 2014. Amendment 15 was approved in 2011 and that action brought the Scallop FMP in compliance with new annual catch limits required under the reauthorized Magnuson-Stevens Act of 2007.

6.2 NEPA

NEPA provides a mechanism for identifying and evaluating the full spectrum of environmental issues associated with federal actions, and for considering a reasonable range of alternatives to avoid or minimize adverse environmental impacts. This document is designed to meet the requirements of both the M-S Act and NEPA. The Council on Environmental Quality (CEQ) has issued regulations specifying the requirements for NEPA documents (40 CFR 1500 – 1508). All of those requirements are addressed in this document, as referenced below.

6.2.1 Environmental Assessment

The required elements of an Environmental Assessment (EA) are specified in 40 CFR 1508.9(b). They are included in this document as follows:

- The need for this action is described in Section 1.2;
- The alternatives that were considered are described in Section 2.0 (alternatives including the preferred alternative);
- The environmental impacts of the preferred alternative are described in Section 5.0;
- A determination of significance is in Section 6.2.2; and,
- The agencies and persons consulted on this action are listed in Section 6.2.3 and 6.2.4.

While not required for the preparation of an EA, this document includes the following additional sections that are based on requirements for an Environmental Impact Statement (EIS).

- An executive summary can be found on page iii;
- A table of contents can be found on page vii;
- Background and purpose are described in Section 1.0;
- A summary of the document can be found in the executive summary, page iii;
- A brief description of the affected environment is in Section 4.0;
- Cumulative impacts of the preferred alternative are described in Section 5.6;
- A list of preparers is in Section 6.2.3.

6.2.2 Finding of No Significant Impact

National Oceanic and Atmospheric Administration (NOAA) Administrative Order 216-6 (NAO 216-6) (May 20, 1999) contains criteria for determining the significance of the impacts of a preferred alternative. On July 22, 2005, NOAA published a Policy Directive with guidelines for the preparation of a Finding of No Significant Impact (FONSI). In addition, the Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant in making a finding of significant impact and has been considered individually, as

well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria, the recent Policy Directive from NOAA, and CEQ's context and intensity criteria. These include:

(1) Can the preferred alternative reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?
Response: No, the preferred alternative is not reasonably expected to jeopardize the sustainability of the sea scallop resource. This does not change fishery allocations so overall fishing levels are not expected to change as a result of this action.

(2) Can the preferred alternative reasonably be expected to jeopardize the sustainability of any non-target species?
Response: No, the preferred alternative is not reasonably expected to jeopardize the sustainability of any non-target species. A general description of the non-target species is summarized in Section 4.5, and a complete bycatch analysis of the scallop fishery was completed in Amendment 15. Section 5.5 summarizes the overall impacts of this action on non-target species. In general, this action is not expected to have direct impacts on non-target species.

(3) Can the preferred alternative reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat (EFH) as defined under the Magnuson-Stevens Act and identified in FMPs?
Response: No, the preferred alternative is not reasonably expected to cause substantial damage to the ocean and coastal habitats and/or EFH. Relative to the baseline habitat protections established under Amendment 10 to the Atlantic Sea Scallop FMP, those impacts are negligible, and relative to the No Action alternative, those impacts are marginally positive. Specifically, this action does not allow access into the Habitat Closed Areas, and it maintains the requirement for scallop vessels to use 4-inch rings, which are believed to reduce impacts on benthic environments. Therefore, measures to further mitigate or minimize adverse effects on EFH are not necessary.

(4) Can the preferred alternative be reasonably expected to have a substantial adverse impact on public health or safety?
Response: No, the preferred alternative is not reasonably expected to have substantial adverse impacts on public health or safety. This action does not modify the primary measures used to manage the fishery and is not expected to change fishing behavior in any substantial way to adversely impact safety. In fact, the VMS Alternative may actually improve vessel safety (Section 5.4.2.4)

(5) Can the preferred alternative reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?
Response: No, the preferred alternative is not reasonably expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species. Section 4.3 describes the endangered or threatened species that are found in the affected area. Section 5.3 summarizes the impacts of the preferred alternative on endangered and threatened species. This action does include requirement of a turtle deflector dredge, which is expected to have

conservation benefits for sea turtles by reducing the mortality from interactions with scallop fishing gear (Section 5.3.1.2).

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

Response: The preferred alternative is not expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area. Section 4.2 describes the physical environment of the affected area including the benthic environment and biological parameters of the scallop resource. Since this action does not include fishery specifications, no additional impacts on biodiversity and ecosystem function are expected as a result of this action.

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

Response: No, this action does not propose any significant social or economic impacts interrelated with significant natural or physical environmental effects. Because the preferred alternative primarily modifies measures already in place that have not had significant social or economic impacts interrelated with significant natural or physical environmental effects in the past, none are expected to result from the preferred alternative.

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

Response: No, the effects on the quality of the human environment are not likely to be highly controversial. Section 5.0 assesses the expected impacts of the preferred alternative on the human environment, and Section 5.6 describes the potential cumulative effects of this action on the human environment. Overall, the impacts on landings, revenues, and economic benefits are expected to exceed the economic benefits for the No Action.

(9) Can the preferred alternative 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?

Response: No, unique areas, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas are not located within the affected area; therefore, there are no impacts on these components of the environment from the preferred alternative.

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

Response: No, the effects on the human environment are not likely to be highly uncertain or involve unique or unknown risks. The risks and impacts of this action and fishery on the human environment have been discussed and analyzed in previous actions. Scallop vessels have managed under this FMP since 1982; therefore, the likely effects on the human environment are well understood.

(11) Is the preferred alternative related to other actions with individually insignificant, but cumulatively significant impacts?

Response: No, the preferred alternative is not related to other actions with individually insignificant but cumulatively significant impacts. Section 5.7 describes fishing and non-fishing

past, present and reasonably foreseeable future actions that occurred or are expected to occur in the affected area. Some measures within the preferred alternative do result in cumulative impacts in some cases, but none of the impacts discussed exceed the threshold that would indicate a significant impact. In summary, the sea scallop resource, EFH, protected species, non-target species and the human environment have been impacted by past and present actions in the area and are likely to continue to be impacted by these actions in the future. In general, the preferred alternative is expected to have positive impacts on the biological and human environments.

(12) Is the preferred alternative likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?
Response: No districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places are located in the affected area; therefore, there are no impacts on these resources from the preferred alternative.

(13) Can the preferred alternative reasonably be expected to result in the introduction or spread of a nonindigenous species?
Response: No, the preferred alternative is not reasonably expected to result in the introduction or spread of a nonindigenous species. The only nonindigenous species known to occur in any significant amount within the fishery areas is the colonial sea squirt (*Didemnum sp*.). The tunicate occurs on pebble gravel habitat, and does not occur on moving sand. NMFS and the WHOI HabCam have surveyed the area and studies are underway to monitor *Didemnum*'s growth and effect on scallops and their habitat. At this time, there is no evidence that fishing spreads this species more than it would spread naturally. Furthermore, the preferred alternative is not expected to spread the species more than regular fishing activity would; however, the spread of invasive tunicates and fishing gear needs to be monitored closely.

(14) Is the preferred alternative likely to establish a precedent for future actions with significant effects or represents a decision in principle about future consideration?
Response: No, the preferred alternative 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. All of these measures are specific to four needs identified when this action was initiated.

(15) Can the preferred alternative reasonably be expected to threaten a violation of Federal, State or local law or requirements imposed for the protection of the environment?
Response: No, the preferred alternative is not reasonably expected to threaten a violation of Federal, State or local law or requirements imposed for the protection of the environment. This action does not propose any changes that would provide incentive for environmental laws to be broken.

(16) Can the preferred alternative reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?
Response: No, the preferred alternative is not reasonably expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species.

Both target and non-target species have been identified and assessed in this document (Section 5.1, 5.3, and 5.5). In general, this action is expected to have positive impacts on both target and non-target species.

FONSI DETERMINATION:
In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for Framework 23 to the Sea Scallop Fishery Management Plan, it is hereby determined that Framework 23 will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. In addition, all beneficial and adverse impacts of the preferred alternative have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

_____ _____
Regional Administrator, Northeast Region, NMFS Date

6.2.3 List of Preparers; Point of Contact

Questions concerning this document may be addressed to:
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Framework Adjustment 23 was prepared and evaluated in consultation with the National Marine Fisheries Service and the Mid-Atlantic Fishery Management Council. Members of the Scallop PDT prepared and reviewed portions of analyses and provided technical advice during the development of the Environmental Assessment. The list of Scallop PDT members includes:

Table 50 – List of Scallop PDT members

Scallop Plan Development Team
Deirdre Boelke, PDT Chair, NEFMC
Charles Adams, NMFS APS
Peter Christopher, NMFS SF
William DuPaul, VIMS
Emily Gilbert, NMFS SF
Demet Haksever, NEFMC
Dvora Hart, NEFSC
Kevin Kelly, ME DMR
Lyle Kessler, USCG
Erin Kupcha, NMFS Observer Program
Kimberly Murray, NEFSC
Cate O'Keefe, SMAST
Julia Olsen, NEFSC
David Rudders, VIMS
Sarah Thompson, NMFS NEPA
Carrie Upite, NMFS PR

In addition, other individuals contributed data and technical analyses for the document; Michelle Bachman (NEFMC staff – impacts on essential fish habitat); Evan Bing-Sawyer (NEFSC – social science support); Heather Haas (NEFSC – input on impacts on protected resources including summary of turtle satellite data); and Woneta Cloutier (NEFMC staff – administrative assistant for Scallop FMP).

6.2.4 Agencies Consulted

The following agencies were consulted in the preparation of this document:

New England Fishery Management Council
Mid-Atlantic Fishery Management Council
National Marine Fisheries Service, NOAA, Department of Commerce
United States Coast Guard, Department of Homeland Security

6.2.5 Opportunity for Public Comment

The preferred alternative was developed during the period January 2011 through October 2011 and was discussed at the meetings listed in Table 51, below. Opportunities for public comment were provided at each of these meetings.

Table 51 – Summary of meetings with opportunity for public comment for Framework 23

Meeting	Location	Date
Council Meeting	Sheraton Harborside Hotel, Portsmouth, NH	January 27, 2011
Scallop PDT Meeting	Parker River, Newburyport, MA	February 9, 2011
Scallop Committee Meeting	Hilton Garden Inn, Warwick, RI	March 1, 2011
Scallop PDT Meeting	Radisson Hotel, Plymouth, MA	May 4, 2011
Scallop Advisory Panel Meeting	Radisson Hotel, Plymouth, MA	May 5, 2011
Scallop Committee Meeting	Fairfield Inn and Suites, New Bedford, MA	May 25, 2011
VMS/Enforcement Committee	Fairfield Inn & Suites, New Bedford, MA	June 15, 2011
Council Meeting	Holiday Inn by the Bay, Portland, ME	June 22, 2011
Scallop PDT Meeting	NMFS, Gloucester, MA	July 26 – 27, 2011
Scallop Advisory Panel Meeting	Courtyard by Marriott, East Boston, MA	September 12, 2011
Scallop Committee Meeting	Courtyard by Marriott, East Boston, MA	September 13, 2011
Council Meeting	CoCo Key Resort and Hotel, Danvers, MA	September 22, 2011

6.3 MARINE MAMMAL PROTECTION ACT (MMPA)

Section 4.3 of this action contains a description of marine mammals potentially affected by the Scallop Fishery and Section 5.3 provides a summary of the impacts of the preferred alternative as

analyzed in Framework 23. A final determination of consistency with the MMPA will be made by the agency when Framework 23 is implemented.

6.4 ENDANGERED SPECIES ACT (ESA)

Section 4.3 of this action contains a description of marine mammals potentially affected by the Scallop Fishery and Section 5.3 provides a summary of the impacts of the preferred alternative as analyzed in Framework 23. A final determination of consistency with the ESA will be made by the agency when Framework 23 is implemented.

6.5 ADMINISTRATIVE PROCEDURE ACT (APA)

Sections 551-553 of the Administrative Procedure Act established procedural requirements applicable to informal rulemaking by federal agencies. The purpose is to ensure public access to the federal rulemaking process, and to give public notice and opportunity for comment. The Council did not request relief from notice and comment rule making for this action, and the Council expects that NOAA Fisheries will publish proposed and final rule making for this action.

The Council has held twelve meetings open to the public on Framework 23 (Table 51). The Council initiated this action at the January 2011 Council meeting and approved final measures at the September 2011 meeting. After submission to NMFS, a proposed rule for Framework 23 under the M-S Act will be published to provide opportunity for public comment.

6.6 PAPERWORK REDUCTION ACT (PRA)

The purpose of the Paperwork Reduction Act is to minimize paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the collection of information by or for the Federal Government. It also ensures that the Government is not overly burdening the public with requests for information. Framework 23 does not have any new collection of information requirements subject to the PRA.

6.7 COASTAL ZONE MANAGEMENT ACT (CZMA)

Section 307 of the Coastal Zone Management Act (CZMA) is known as the federal consistency provision. Federal Consistency review requires that "federal actions, occurring inside or outside of a state's coastal zone, that have a reasonable potential to affect the coastal resources or uses of that state's coastal zone, to be consistent with that state's enforceable coastal policies, to the maximum extent practicable." The Council previously made determinations that the FMP was consistent with each state's coastal zone management plan and policies, and each coastal state concurred in these consistency determinations (in Scallop FMP). Since the preferred alternative does not propose any substantive changes from the FMP, the Council has determined that this action is consistent with the coastal zone management plan and policies of the coastal states in this region. Once the Council has adopted final measures and submitted Framework 23 to NMFS, NMFS will request consistency reviews by CZM state agencies directly.

6.8 DATA QUALITY ACT

Utility of Information Product

The proposed document includes: A description of the management issues, a description of the alternatives considered, and the reasons for selecting the preferred management measures, to the extent that this has been done. These actions propose modifications to the existing FMP. These

proposed modifications implement the FMP's conservation and management goals consistent with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as well as all other existing applicable laws.

This proposed framework is being developed as part of a multi-stage process that involves review of the document by affected members of the public. The public has had the opportunity to review and comment on management measures during several meetings.

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

Integrity of Information Product

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

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

Objectivity of Information Product

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

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

This framework is being developed to comply with all applicable National Standards, including National Standard 2. National Standard 2 states that the FMP's conservation and management measures shall be based upon the best scientific information available. Despite current data limitations, the conservation and management measures proposed to be implemented under this framework are based upon the best scientific information available. This information includes complete NMFS dealer weighout data through 2010, and includes incomplete dealer weighout data for 2011. Dealer data is used to characterize the economic impacts of the management proposals. The specialists who worked with these data are familiar with the most recent analytical techniques and with the available data and information relevant to the scallop fishery.

The policy choices (i.e., management measures) proposed to be implemented by this document are supported by the available information. The management measures contained in the framework document are designed to meet the conservation goals and objectives of the FMP.

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

The review process for this framework involves the New England Fishery Management Council, the Northeast Fisheries Science Center, the Northeast Regional Office, and NOAA Fisheries headquarters. The document was prepared by staff of the Council and Center with expertise in scallop resource issues, habitat issues, economics, and social sciences. The Council review process involves public meetings at which affected stakeholders have opportunity to provide comments on the specifications document. Review by staff at the Regional Office is conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with the applicable law. Final approval of the specifications document and clearance of the rule is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

6.9 E.O. 13132 (FEDERALISM)

The E.O. on federalism establishes nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. Previous scallop actions have already described how the management plan is in compliance with this order. Furthermore, this action does not contain policies with Federalism implications, thus preparation of an assessment under E.O. 13132 is not warranted.

6.10 E.O. 12898 (ENVIRONMENTAL JUSTICE)

The alternatives in this framework are not expected to cause disproportionately high and adverse human health, environmental or economic effects on minority populations, low-income populations, or Native American peoples.

6.11 EXECUTIVE ORDER 12866 (REGULATORY IMPACT REVIEW)

6.11.1 Introduction

The Regulatory Impact Review (RIR) provides an assessment of the costs and benefits of preferred alternatives and other alternatives in accordance with the guidelines established by Executive Order 12866. The regulatory philosophy of Executive Order 12866 stresses that in deciding whether and how to regulate, agencies should assess all costs and benefits of all regulatory alternatives and choose those approaches that maximize the net benefits to the society.

The RIR also serves as a basis for determining whether any proposed regulations are a "significant regulatory action" under the criteria provided in Executive Order 12866 and whether the proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act of 2180 (RFA).

This RIR summarizes the effects of the proposed observer program and other alternatives considered in this Framework 23. The Framework 23 document contains all the elements of the RIR/RFA, and the relevant sections are identified by reference to the document.

The purpose of and the need for action are described in Section 1.2. The description of the each selected alternative including the no action alternative is provided in Section 2.0.

6.11.2 Summary of Regulatory Impacts of the Preferred alternative

Section 4.1 evaluated economic impacts of Framework 23 proposed measures and alternatives considered by the Council. The numerical results are presented in the tables included in those sections. The following summarizes the economic impacts of each proposed measure.

6.11.2.1 Turtle Deflector Dredge (Section 4.1.1)

The preferred alternative will require the use of a turtle deflector dredge (TDD) on scallop vessels in various fishing areas and seasons for all limited access vessels and a subset of limited access general category IFQ vessels that have a dredge of 10.5 ft. or greater. The economic impacts of this measure is analyzed in Section 4.1.1.2.

Overall, implementation of this dredge is expected to have positive economic impacts on the fishery over the long-term although there will be costs associated with installing the TDD in the short-term. The total costs of TDD requirement for the limited access fleet is estimated to range from $1.4 million to $2.6 million in the short-term depending on how many vessels already use this dredge and how often they replace their dredges (Section 4.1.1.4, Table 14). The costs for the LAGC IFQ fleet that employ a dredge of 10.5ft or greater could be about $0.3 million if none of those vessels have a TDD dredge already. Using TDD is not expected to have a significant impact on scallop catch, thus TDD requirement is unlikely to have a notable impact on the scallop price, revenues and consumer surplus. TDD requirement if implemented is expected to reduce the impacts on turtles substantially compared to the standard dredge. As a result, there could be indirect positive economic impacts on the scallop fishery if current RPMs are eliminated or modified as a result of requiring the use of a TDD. While, the costs associated with buying and installing TDD could have a slight negative impact on the producer surplus in the short-term (revenues minus costs), over the long-term the potential indirect benefits from switching to TDD are expected to outweigh the increase in costs and have positive impacts on net national benefits.

- Proposed option would require turtle deflector dredge in all waters west of 71º W and covers the majority of areas the scallop fishery and expected turtle interactions in the Mid-Atlantic overlap and exclude Georges Bank where interactions with turtles are very rare (Option 1). Although this option would minimize the economic impacts for scallop vessels that fish solely in Georges Bank east of 71º and those that fish in Gulf of Maine, it could have adverse impacts on some LAGC vessels since it includes 3-digit areas 539 and a third of 537 that are the main grounds for these vessels. The preferred alternative will, however, exempt LAGC vessels with dredges less than 10.5 ft. from TDD requirement, thus is expected to prevent some of these negative impacts on the smaller boats fishing in those areas In addition, some of these vessels may fish during seasons when TDD is not required. Further discussion of this measure is provided in Section 4.1.1.2.1.
- The vessels are required to have a TDD from May 1 to October 31 (Option 2, Section 4.1.1.3). Taking into account the research results that using TDD is not expected to have negative impacts on the scallop landings, the season options will probably have marginal economic impacts on the fishery overall. Limited access vessels are unlikely to change

dredges during the year once they are required to operate with a TDD. Therefore, the relative difference between the season options may have negligible impacts on these vessels. The season options could impact LAGC IFQ vessels in relatively greater degree than the LA vessels. The exemption of vessels that use less than 10.5ft. will prevent the proposed measure negatively affecting smaller vessels. If some vessels shift their effort to seasons and areas outside of the TDD requirement when the meat count is lower, there may be potential negative impacts on the scallop resource and yield. The impacts of limited amounts of effort shifts caused by the various TDD season alternatives are likely to be small, however.

- The turtle gear restriction will apply to both limited access vessels (full-time, part-time and occasional vessels) as well as limited access general category IFQ vessels that use a dredge 10.5ft or larger (Section 4.1.1.4). While the cost of buying a dredge and freight cost would be a very small proportion (1% to 2%) of the average scallop revenues per limited access vessel, but for the IFQ permit only vessels that use a dredge 10.5ft or larger, the average cost of a TDD could amount to 2% to 7% of the average gross revenue per vessel (Table 13 and Table 18). Further discussion of these impacts and of mitigating factors are provided in Section 4.1.1.4 and IRFA analysis below. Again, if the impacts on turtles are reduced substantially using a TDD compared to the standard dredge and if that leads to the elimination or modification of the current RPMs, there could be indirect positive economic impacts on the scallop fishery. Thus over the long-term the potential benefits from switching to TDD could outweigh these short-term costs of buying and installing a TDD.
- The proposed implementation by March 1, 2013 will allow producers enough time to build dredges and give vessels time to fish with the new dredge before the turtle season begins in May (Section 4.1.1.5). It could also have relatively more benefits compared to a two year option, if any future biological opinions are not able to account for conservation benefit from measures approved but not effective yet.

6.11.2.2 Review and revise accountability measures for the yellowtail flounder sub-ACL (Section 4.1.2)

- Preferred alternative will revise the YT seasonal closure AM schedule such that effort would be reduced during months with the highest yellowtail bycatch rates first when an overage occurs. When overage is 8% or less the proposed closure could impact a higher percentage of landings compared to the no action. This would increase the fishing costs and could have a small negative impact on the scallop revenues and profits for a subset of vessels that fish in those areas if the effort is moved to less productive areas with lower LPUE. The SNE/MA closures are not expected to have large impacts on the limited access fleet given that only 4.6% of the total landings of FT dredges and even a smaller proportion of the landings for full-time small dredges come from these areas. The preferred alternative will have positive economic impacts on the scallop vessels at higher overage rates, because the new schedule will impact a smaller proportion of landings compared to the no action leaving the summer months open to fishing as long as yellowtail overage does not exceed 19% (Table 20 to Table 23 in Section 4.1.2.2).
- Similarly, preferred alternative will modify the AM Schedule for GB access areas so that the closures will start at the time of year when scallop meat weights are lowest with

positive economic impacts on the scallop fishery. If the overage is greater than 56%, however, preferred alternative will close area 562 all year when Closed Area II is open, while the current schedule will leave it open for a few months, from September to February, depending on the overage. Given that, only 2% of landings took place in September to March in 2009, the impacts of this difference between the current and the proposed schedule would probably be marginal. Similarly, modification of the schedule when the Closed Area II is closed is expected to have negligible impacts on effort shifts to other areas or seasons because the percentage of landings from the part of 562 outside of CA II was a tiny fraction (less than 0.005%) of landings from all areas. Over the long-term, shifting effort to seasons when the meat weights are larger will benefit the scallop resource, increase landings and overall economic benefits from the fishery (Table 24 and Table 25 in Section 4.1.2.2).

- Mechanism to adjust AMs for bycatch sub-ACLs allocated to the scallop fishery will provide flexibility needed to manage a bycatch sub-ACL based on the best available information. If the final estimate of YT catch is lower than the preliminary estimate, this measure will relax AMs and/or shorten the closure periods according to the new bycatch estimate with positive economic impacts on the scallop fishery. Because the SNE/MA closures are not expected to have large impacts on the limited access fleet given that only 4.6% of the total landings of full-time vessels come from these areas, these impacts are expected be small (Section 4.1.2.3).

6.11.2.3 Modification to the NGOM LAGC program (Section 4.1.3)

The proposed alternative will keep the NGOM TAC at the no action level, at 70,000 lb. but will allow vessels to fish exclusively in state waters, on a trip by trip basis, without the scallop catch from state water only trips counted against the federal NGOM TAC. This change is not expected to have any significant impacts under the current resource conditions on scallop landings and revenues from this area. At present, the potential increased risk of more scallop catch from state and/or Federal waters within the NGOM from this alternative is very limited given that total catch in the NGOM area has been well below the current TAC of 70,000 pounds and amounted to 15,534 pounds in 2009 and 11,539 pounds in 2010 fishing year (Table 26). On the other hand, if the scallop resource abundance and landings within the Maine State waters increases in the future, the proposed alternative would prevent a reduction in landings from NGOM area. This could potentially have positive economic impacts on the vessels that fish both in the state and federal waters. (Section 4.1.3.2.3). No action regarding the NGOM hard-TAC (keeping at 70,000 lb.) is expected to prevent closing of the NGOM fishery due to the state water catches by LAGC IFQ vessels, since catches by those boats would still be applied against the federal NGOM TAC. The NGOM TAC will be reassessed in the next Framework Action to ensure the scallop catch remains at sustainable levels over the long-term.

6.11.2.4 VMS Monitoring System (Section 4.1.4)

The proposed alternative would allow a vessel to declare into the scallop fishery west of the VMS demarcation line and not necessarily from a port. As a result of this change, a vessel could steam closer to the fishing grounds and declare into the fishery from VMS demarcation line instead from a port, reducing the steam time and the fuel and oil costs. Therefore, the

proposed modification will have positive economic impacts on the scallop fishery by reducing the costs.

6.11.3 Enforcement Costs

Enforcement and safety impacts of the proposed measures are described in Section 4.2 of this document. The proposed measures by Framework 23 are very similar to the existing measures in terms of the enforcement requirements, since they include the continuation of the area specific trip allocations, area closures, open area DAS allocations, measures for reducing bycatch, and the continuation of observer coverage program except for checking turtle deflectors on vessels that are required to have a TDD. Enforcement Committee discussed that all the TDD options were primarily management decisions rather than enforcement decisions since overall they are all enforceable. Similarly, no significant enforcement problems are identified with the proposed Yellowtail AM, NGOM and VMS measures. The costs of implementing and enforcing the preferred alternative are not expected to compromise the effectiveness of implementation and enforcement of this action. Furthermore, there are several mechanisms and systems, such as VMS monitoring and data processing, already in place that will aid in monitoring and enforcement of this action. Therefore, the overall enforcement costs are not expected to change significantly from the levels necessary to enforce measures under the no action regulations.

6.11.4 Determination of Significant Regulatory Action

Executive order 12866 defines a "significant regulatory action" as one that is likely to result in: a) an annual effect on the economy of $100 million or more, or one which adversely affects in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; b) a serious inconsistency or interference with an action taken or planned by another agency; c) a budgetary impact on entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients thereof; d) novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order.

The preceding analysis shows that Framework 23 would not constitute a "significant regulatory action" since it will not raise novel legal and policy issues, other than those that were already addressed and analyzed in Amendment 10, Amendment 11 and Amendment 15. The overall cumulative impacts of the preferred alternative on scallop revenues are expected to be positive for the long-term compared to the no action.

The preferred alternative will not have either a short-term or a long-term negative annual impact on the economy by $100 million or more compared to no action and/or compared to the levels in 2011. The proposed alternatives will not adversely affect in a material way the economy, productivity, competition, public health or safety, jobs or state, local, or tribal governments or communities in the long run. The preferred alternative also does not interfere with an action planned by another agency, since no other agency regulates the level of scallop harvest. It does not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients.

6.12 INITIAL REGULATORY FLEXIBILITY ANALYSIS

The purpose of the Regulatory Flexibility Analysis (RFA) is to reduce the impacts of burdensome regulations and record-keeping requirements on small businesses. To achieve this goal, the RFA requires government agencies to describe and analyze the effects of regulations and possible alternatives on small business entities. Based on this information, the Regulatory Flexibility Analysis determines whether the preferred alternative would have a "significant economic impact on a substantial number of small entities."

6.12.1 Problem Statement and Objectives

The purpose of the action and need for management is described in Section 1.2.

6.12.2 Management Alternatives and Rationale

The preferred alternative is described in several sections in Section 2.0 of the framework document.

6.12.3 Determination of Significant Economic Impact on a Substantial Number of Small Entities

6.12.3.1 Description of the small business entities

The proposed regulations of Framework 23 would affect vessels with limited access scallop and general category permits. Section 4.4 (Fishery-related businesses and communities) of Amendment 15 document and Appendix I of Framework 23 (Economic and Social Trends) provide extensive information on the number, the port, the state, and the size of vessels and small businesses that will be affected by the proposed regulations. The current information on the number of scallop permits for the years 2008 to 2010 are provided in Section 4.4. According to the recent permit data, there were 313 vessels that obtained full-time limited access permits in 2010, including 250 dredge, 52 small-dredge and 11 scallop trawl permits. In the same year, there were also 34 part-time limited access permits in the sea scallop fishery. The number of general category LAGC permits is shown in Table 6. There were 333 vessels with IFQ permits and over 122 vessels with NGOM permits and over 285 vessels with incidental catch permits in 2010. The proposed alternatives of Framework 23 are expected to have impacts on a substantial number of small entities including on all scallop vessels with limited access and LAGC IFQ and NGOM permits.

The RFA recognizes three kinds of small entities: small businesses, small organizations, and small governmental jurisdictions. It defines a small business in any fish-harvesting or hatchery business as a firm that is independently owned and operated and not dominant in its field of operation, with receipts of up to $4 million annually. The vessels in the Atlantic sea scallop fishery could be considered small business entities because all of them grossed less than $3 million according to the dealer's data (Figure 4 in Appendix I, Table 13 in Section 4.1.1.4). Revenue per vessel in 2010 fishing year per permit category is shown in Table 54. According to this information, total revenues per vessel were equivalent to $1,226,344 per full-time vessel and $119,932 per general category vessel in 2010 fishing year. Full-time limited access vessels had a high dependence on scallops as a source of their income and the majority of the full-time vessels

(94%) derived more than 90% of their revenue from the scallop fishery in 2010. Comparatively, part-time limited access vessels were less dependent on the scallop fishery in 2010, with only 46% of part-time vessels earning more than 90% of their revenue from scallops (Appendix I, Table 31).

Table 55 shows that general category permit holders (IFQ and NGOM) are less dependent on scallops compared to vessels with limited access permits. In 2010, only about half (49%) of IFQ permitted vessels earned greater than 50% of their revenue from scallops. Among NGOM permitted vessels, only 31% earned more than 50% of their revenue from scallops in 2010. Scallops still comprise the largest proportion of the revenue for these general category vessels, accounting for 59% - 66% of the revenue for IFQ and NGOM vessels respectively. Therefore, scallop fishing is an important source of income for the majority of vessels in the scallop fishery. Section 1.1.9 of Appendix I (Economic and Social trends) and provide detailed information on the composition of revenue and revenues from other species for both LA vessels and for the limited access general category vessels.

Table 52. Scallop Permits by unique right-id and category by application year

Permit category	2008	2009	2010
Full-time	250	250	250
Full-time small dredge	52	52	52
Full-time net boat	11	11	11
Total full-time	**313**	**313**	**313**
Part-time	2	2	2
Part-time small dredge	31	32	32
Part-time trawl	0	0	0
Total part-time	**33**	**34**	**34**
Occasional	1	0	0
Total Limited access	347	347	347

Table 53. General category permit before and after Amendment 11 implementation

Application Year	Limited access general category IFQ permit (A)	Limited access NGOM permit (B)	Incidental catch permit (C)	Grand total
2008	342	99	277	718
2009	404	136	331	871
2010	333	122	285	740

Table 54- Number of active vessels and average annual scallop revenue per vessel by permit category (FY2010)

Plan	Category	Number of vessels	Average scallop revenue per vessel in 2010
Limited access general category	A	179	119,932
	B	17	6,480
	C	82	16,815
LGC Total		278	82,578
Limited access	FT Dredge	249	1,383,645
	FT trawl	11	1,226,876
	FT small dredge	52	994,573
	PT small dredge	33	404,468
All limited access		345	1,226,344

Note: Information for 2 part-time vessels are not included to protect data confidentiality

Table 55. Dependence of scallop revenue by limited access vessels

Permit Category	Scallop Revenue as % of total	2008		2009		2010	
		number of vessels	%	number of vessels	%	number of vessels	%
FT Vessels	<75%	9	3%	5	2%	7	2%
	75% - 89%	13	4%	19	6%	13	4%
	>=90%	289	93%	286	92%	294	94%
	Total	311	100%	310	100%	314	100%
PT vessels	<75%	8	24%	13	38%	10	29%
	75% - 89%	9	27%	5	15%	9	26%
	>=90%	16	48%	16	47%	16	46%
	Total	33	100%	34	100%	35	100%

Table 56. Dependence of scallop revenue by limited access general category vessels (Dealer data)

Permit Category	Scallop revenue as % of total	2008		2009		2010	
		number of vessels	%	number of vessels	%	number of vessels	%
IFQ	<10%	93	34%	83	28%	104	40%
	10%-49%	29	11%	35	12%	28	11%
	50%-74%	30	11%	37	13%	21	8%
	75%-89%	20	7%	20	7%	17	7%
	>=90%	101	37%	117	40%	87	34%
	total	273	100%	292	100%	257	100%
NGOM	<10%	62	75%	81	73%	69	69%
	10%-49%	1	1%	3	3%	0	0%
	50%-74%	1	1%	2	2%	2	2%
	75%-89%	0	0%	2	2%	3	3%
	>=90%	19	23%	23	21%	26	26%
	total	83	100%	111	100%	100	100%

6.12.3.2 Determination of significant effects

The Office of Advocacy at the SBA suggests two criteria to consider in determining the significance of regulatory impacts, namely, disproportional and profitability.

The disproportionality criterion compares the effects of the regulatory action on small versus large entities (using the SBA-approved size definition of "small entity"), not the difference between segments of small entities. Although these measures could affect some vessels within the scallop fleet differently than others as discussed in Section 5.4 (economic impacts section), these differential impacts are not relevant for disproportionality criterion. No individual vessel was estimated to gross more than $3 million in any one fishing year from 1994 to 2010; therefore, the majority of the vessels in the sea scallop fishery are considered small business entities.

The profitability criterion will apply if the regulation significantly reduces profit for a substantial number of small entities compared to no action scenario. The preferred alternative is not expected to have considerable impacts on the small businesses in the short-term and will have positive impacts on the revenues and profits of the majority of small business entities in scallop fishing industry over the long-term compared to the no action alternative. The following section provides a summary of the economic impacts from the preferred alternative, alternatives and the mitigating factors. The relevant sections of Framework 23, which discusses the rationale and impacts of these measures, are also identified. Therefore, the disproportionality and profitability criteria for significant regulatory impacts does not apply for this action.

Summary of the economic impacts in the short- and medium term

The economic impacts under E.O. 12866 need not be identified at the vessel or firm level in the RIR, whereas, these levels remains the focus of the RFAA. The primary goal of RFAA analysis is to consider the effect of regulations on small businesses and other small entities in the short- and medium-term, recognizing that regulations frequently do not provide for short-term cash reserves to finance operations through several months or years until the positive effects of the regulation start paying off. The economic impacts of the proposed measures and other alternatives including Turtle Deflector Device (TDD) requirement and modification of the accountability measures for the yellowtail flounder sub-acl, NGOM LAGC program and VMS monitoring system are analyzed in Section 4.1 relative to no action and summarized below.

The economic impacts of the TDD requirement on scallop vessels are analyzed in Section 4.1.1.2. The proposed option (Option 3) would affect all LA vessels (336 dredge vessels) and 85 active vessels with LAGC IFQ permits that have a dredge of 10.5 ft. or greater in all areas and seasons identified for the requirement to use a turtle deflector dredge (Table 29, Section 4.1.1.3). In reality, 29 of these 85 LAGC IFQ vessels also have a limited access permit, thus would be required to have TDD anyway (Table 30, Section 4.1.1.3). As a result, proposed option, in addition to the 336 limited access vessels, will affect 56 LAGC vessels that have IFQ permits only. Overall, implementation of this dredge is expected to have positive economic impacts on the fishery over the long-term although there will be costs associated with installing the TDD in the short-term. The cost of buying a dredge and freight cost would be a very small proportion (1% to 2%) of the average scallop revenues per limited access vessel.

For the limited access general category vessels with IFQ permits only, the average cost burden of the TDD could be either similar or larger than the cost burden for the limited access vessels as a percentage of their scallop revenue, ranging from 2% for a vessels that use a single dredge to 7% of the average annual scallop revenue for vessels that use two dredges. These proportions will vary according to the vessel's allocation (Table 18). The exemption of the LAGC IFQ vessels that use a dredge less than 10.5 ft. from the TDD requirement are expected to minimize the impacts on smaller vessels. Majority of the IFQ only vessels (41 vessels) that will be impacted from this measure use single dredges and only 15 use two dredges. Thus, for the majority of the LAGC vessels the average cost burden could be around 2%. There are also options available to the IFQ vessels, such as fishing in other seasons and areas outside the TDD requirement or leasing quota to other vessels if the cost burden of TDD is considered too much to warrant buying a TDD. In addition, the TDD requirement if implemented is expected to reduce the impacts on turtles substantially compared to the standard dredge. This could have indirect positive economic impacts on the scallop fishery if current RPMs are eliminated or modified as a result of requiring the use of a TDD. Consequently, over the medium to long-term, the indirect benefits from switching to TDD could outweigh the increase in costs and have indirect positive economic impacts on the small business entities in the scallop fishery.

Overall, modification of the AM schedule for the YT SNE/MA and GB areas are not expected to have large impacts on the limited access fleet given that only 4.6% of the total landings of FT dredges and even a smaller proportion of the landings for full-time small dredges. In general, however, shifting effort to seasons when the meat weights are larger will benefit the scallop resource, increase landings and have positive impacts on the participants of the fishery and the small businesses. Mechanism to adjust AMs for bycatch sub-ACLs allocated to the scallop fishery will provide flexibility needed to manage a bycatch sub-ACL based on the best available information with positive indirect economic impacts on the small business entities in the scallop fishery. Modification to the NGOM LAGC program is not expected to have any significant impacts under the current resource conditions on scallop vessels and small businesses in this area but could have positive economic impacts in the future if the scallop resource abundance and landings within the Maine State waters increases over the long-term. The proposed modification of the VMS monitoring system will have positive economic impacts on the scallop fishery by reducing the costs for the participants of this fishery.

In summary, in the short-term the aggregate economic impacts of the proposed measures on the small businesses could range from a low negative to low positive depending on to the extent the positive impacts of the measures outweigh the costs of TDD requirement. These measures are not expected to have significant impacts on the viability of the vessels especially in a highly profitable industry like the scallop fishery. Over the long-term, Framework 23 is expected to have positive economic impacts on the participants of the scallop fishery and related businesses. In conclusion, the preferred alternative will not have a considerable adverse impact on the net revenues and profits of the majority of the scallop vessels in the short- and the medium-term.

6.12.3.3 Economic impacts of the individual measures

6.12.3.3.1 Turtle deflector dredge (TDD) requirement

- Economic impacts are analyzed in Section 4.1.2

- Rationale is provided in Section 2.1.2 and in Executive Summary.
- **Summary of the impacts of the proposed option and mitigating factors**: The preferred alternative will require the use of a turtle deflector dredge (TDD) on scallop vessels in various fishing areas and seasons for all limited access vessels and a subset of limited access general category IFQ vessels that have a dredge of 10.5 ft. or greater. There will be some short-term costs associated with buying and installing TDD although these costs are not large and will not have adverse impacts on the financial viability of the small business entities. Indirect positive economic benefits over the medium to long-term are expected to outweigh these costs.
- **Comparison of the impacts with the alternative options:** There are no alternatives that would generate higher economic benefits for the participants of the scallop fishery.

6.12.3.3.1.1 TDD spatial boundary options

- Economic impacts are analyzed in Section 4.1.1.2.1
- Rationale is provided in Section 2.1.2.1 and in Executive Summary.
- **Summary of the impacts of the proposed option and mitigating factors**: Proposed option would require turtle deflector dredge in all waters west of 71º W and covers the majority of areas the scallop fishery and expected turtle interactions in the Mid-Atlantic overlap and exclude Georges Bank where interactions with turtles are very rare (Option 1). This option would minimize the economic impacts for scallop vessels that fish solely in Georges Bank east of 71º and those that fish in Gulf of Maine. Because this boundary includes 3-digit areas 539 and a third of 537 that are the main grounds for smaller LAGC vessels, that could have some adverse impacts on these vessels. The preferred alternative will exempt LAGC vessels with dredges less than 10.5 ft. from TDD requirement, mitigating some of these negative impacts on the smaller boats fishing in those areas (Section 4.1.1.2.1). In addition, some of these vessels may fish during seasons when TDD is not required or lease their quotas to other vessels.
- **Comparison of the impacts with the alternative options:** Option 2 would require Turtle deflector dredge in "RPM" area only, which is the greatest area of overlap in the distribution of scallop fishing gear and sea turtles, with the exception of waters due south of Rhode Island in statistical areas 539 and the western third of area 537. Thus, Option 2 would exclude those areas that LAGC vessels are active and would minimize the negative economic impacts of TDD requirement on those vessels. Again, exemption of LAGC vessels that use a dredge less than 10.5 ft. will mitigate the impacts of the proposed boundary option and minimize the differences between the impacts of Option 1 and Option 2.

6.12.3.3.1.2 TDD season options

- Economic impacts are analyzed in Section 4.1.1.2.2
- Rationale is provided in Section 2.1.2.2 and in Executive Summary.
- **Summary of the impacts of the proposed option and mitigating factors**: The vessels are required to have a TDD from May 1 to October 31 (Option 2, Section 4.1.1.3). Taking into account the research results that using TDD is not expected to have negative impacts on the scallop landings, the season options will probably have marginal

economic impacts on the fishery overall. Limited access vessels are unlikely to change dredges during the year once they are required to operate with a TDD. Therefore, the relative difference between the season options may have negligible impacts on these vessels. The season options could impact LAGC IFQ vessels in relatively greater degree than the LA vessels. The exemption of vessels that use less than 10.5ft. will prevent the proposed measure negatively affecting smaller vessels. The increase in costs could also be minimized to some degree by leasing of quota to vessels that fish in other areas.

- **Comparison of the impacts with the alternative options:** Option 1 would have the least impacts because it includes June to October while Option 3 would have the largest impacts on vessels since it includes May to November impacting a larger proportion of landings. On the other hand, using TDD for longer seasons will maximize the benefits in terms of reducing the impacts on turtles.

6.12.3.3.1.3 Vessels required to use TDD

- Economic impacts are analyzed in Section 4.1.1.2.3
- Rationale is provided in Section 2.1.2.3 and in Executive Summary.
- **Summary of the impacts of the proposed option and mitigating factors:** The TDD would be required for all limited access vessels regardless of the dredge size and limited access general category IFQ vessels that use dredge gear greater than 10.5 feet (Option 3). The impacts of this option are discussed above in the summary section. The cost of buying a dredge and freight cost would be a very small proportion (1% to 2%) of the average scallop revenues per limited access vessel even when the maximum estimate of costs was used. For an average LAGC vessel that uses only one dredge, the cost could be small as well amounting to about 2% of scallop revenue. On the other hand, for some vessels that use two dredges the cost of buying and installing a dredge could be higher. Some of these vessels could choose during times and areas that a TDD is not required for fishing. Leasing quota to other vessels could also mitigate some of the adverse impacts on those vessels.
- **Comparison of the impacts with the alternative options:** Option 1 would require use of TDD for all limited access vessels including full-time, part-time and occasional vessels and thus would not have any adverse impacts on the LAGC IFQ vessels. On the other hand, Option 2 would require the use of TDD for all vessels including all limited access and limited access general category IFQ vessels and would have negative impacts on the small LAGC IFQ vessels.

6.12.3.3.1.4 Timing options for TDD requirement

- Economic impacts are analyzed in Section 4.1.1.2.4
- Rationale is provided in Section 2.1.2.4 and in Executive Summary.
- **Summary of the impacts of the proposed option and mitigating factors:** The proposed implementation by March 1, 2013 will allow producers enough time to build dredges and give vessels time to fish with the new dredge before the turtle season begins in May (Section 4.1.1.5).
- **Comparison of the impacts with the alternative options:** A short period for implementation, such as 90 days options may not be a feasible time period since so many

dredges need to be built, and 180 days (September 1) does not benefit turtles much for that fishing year since the majority of the turtle season has already passed. Proposed option would have relatively more benefits compared to a two year option, if any future biological opinions are not able to account for conservation benefit from measures approved but not effective yet.

6.12.3.3.2 Modification of yellowtail flounder accountability measures

- Economic impacts are analyzed in Section 4.1.2
- Rationale is provided in Executive Summary and in Section 2.2
- **Summary of the impacts of the proposed option and mitigating factors**: Preferred alternative will revise the YT seasonal closure AM schedule such that effort would be reduced during months with the highest yellowtail bycatch rates first when an overage occurs. Similarly, the AM Schedule for GB access areas will be modified as well to begin in the fall followed by the winter months, when YT bycatch rates are highest. Overall, these modifications are not expected to have large impacts on scallop vessels given that only a small percentage of the limited access vessel landings took place in those areas. There is no question, however, that shifting effort to seasons when the meat weights are larger will benefit the scallop resource, increase landings and overall economic benefits for the scallop vessels in the medium to long-term.
- **Comparison of the impacts with the alternative options:** There are no alternatives that would generate higher economic benefits for the participants of the scallop fishery.

6.12.3.3.3 Modification to the NGOM LAGC program

- Economic impacts are analyzed in Section 4.1.3.
- Rationale is provided in Section 2.3 and in executive Summary
- **Summary of the impacts of the proposed option and mitigating factors**: Preferred alternative will allow all vessels with a federal NGOM permit to fish exclusively in state waters, on a trip by trip basis, without the scallop catch from state water only trips counted against the federal NGOM TAC (Option 2, Section 4.1.3.2.1). This change is not expected to have any significant impacts under the current resource conditions on landings and revenues from this area. On the other hand, if the scallop resource abundance and landings within the Maine State waters increases in the future, the proposed alternative would prevent a reduction in landings from NGOM. This could potentially have positive economic impacts on the vessels that fish both in the state and federal waters. No action regarding the NGOM hard-TAC (keeping at 70,000 lb.) is expected to prevent the risk of closing of the NGOM fishery due to the state water catches by LAGC IFQ vessels, since catches by those boats would still be applied against the federal NGOM TAC.
- **Comparison of the impacts with the alternative options:** Option 1 for which vessels would be impacted, would provide the exemption only for vessels homeported in Maine, thus would benefit a smaller subset of vessels. Option 2 for the TAC value, will reduce the federal NGOM hard-TAC to 31,000 pounds, raising the risk of the NGOM area closing due to catches by LAGC vessels in state waters, which has potentially negative impacts on the scallop vessels fishing in this area. At present, the potential increased risk

of more scallop catch from state and/or Federal waters within the NGOM from this alternative is very limited given that total catch in the NGOM area has been well below 31,000 pounds. Thus, Option 2 is not expected to have impacts on the scallop resource and economic benefits, positive or negative compared to the No Action NGOM TAC Alternative (Option 1). The NGOM TAC will be reassessed in the next Framework Action to ensure the scallop catch remains at sustainable levels over the long-term. Therefore, there are no alternatives that would generate higher economic benefits for the participants of the scallop fishery.

6.12.3.3.4 VMS Monitoring System

- Economic impacts are analyzed in Section 4.1.4.
- Rationale is provided in Section 2.4 and in executive Summary
- **Summary of the impacts of the proposed option and mitigating factors:** The proposed alternative would allow a vessel to declare into the scallop fishery west of the VMS demarcation line. As a result of this change, a vessel could steam closer to the fishing grounds and declare into the fishery from VMS demarcation line instead from a port, reducing the steam time and the fuel and oil costs. Therefore, the proposed modification will have positive economic impacts on the scallop vessels and small business entities by reducing the costs.
- **Comparison of the impacts with the alternative options:** There are no alternatives that would generate higher economic benefits for the participants of the scallop fishery.

6.12.3.4 Indirectly affected industries

Indirect impacts include the impacts on the sales, income, employment and value-added of industries that supply commercial harvesters, such as the impacts on marine service stations that sell gasoline and oil to scallop vessels. The induced impacts represent the sales, income and employment resulting from expenditures by crew and employees of the indirect sectors. Given that the overall economic impacts of the combined measures proposed by this Amendment on the fleet revenues and profits will be small in the short-term, their indirect and induced impacts are not expected to be significant in the short-term as well. Over the medium to long-term, however, the preferred alternative is expected to have positive economic impacts on the scallop fishery, and thus will have positive indirect impacts on the indirectly affected industries.

6.12.3.5 Identification on Overlapping Regulations

The proposed regulations do not create overlapping regulations with any state regulations or other federal laws.

7.0 GLOSSARY

Annual fishing mortality target – a rate of removals that when applied over a fishing year is consistent with the objectives of the FMP.

Annual potential increase – the percent increase in total or relative biomass that would occur during a one-year interval if no fishing occurs (i.e. zero fishing mortality). Projection models

take into account the size frequency distribution of the population, the expected growth of individuals at each size class, and natural mortality.

Area based management – in contrast to resource wide allocations of TAC or days, vessels would receive authorization to fish in specific areas, consistent with that area's status, productivity, and environmental characteristics. Area based management does not have to rotate closures to be effective.

Area rotation – a management system that selectively closes areas to fishing for short to medium durations to protect small scallops from capture by commercial fishing until the scallops reach a more optimum size. Closed areas would later re-open under special management rules until the resource in that area is similar to other open fishing areas. Area rotation is a special subset of area based management that relies on an area closure strategy to achieve the desired results when there are sufficient differences in the status of the management areas.

B_{max} – a theoretical value when the scallop stock with median recruitment is fished at Fmax. For a stock without a stock-recruitment relationship, like sea scallops, this stock biomass produces MSY when fished at Fmax.

Biological Opinion – an ESA document prepared by either the NMFS or USFWS describing the impacts of a specific Federal action, including an FMP, on endangered or threatened species. The Biological Opinion concludes whether or not the NMFS/USFWS believe that the actions are likely to jeopardize the continued existence of any of the protected species, and provides recommendations for avoiding those adverse impacts.

Closed rotation area – an area that is temporarily closed to postpone mortality on abundant, small scallops.

Consumer surplus - The net benefit consumers gain from consuming fish based on the price they would be willing to pay for them. Consumer surplus will increase when fish prices decline and/or landings go up.

Contagious recruitment – similar amounts of scallop settlement in related areas. When scallop settlement is above average in one area, it tends to be above average in neighboring areas.

Controlled access – a program that allows fishing in a specified area under rules that differ from the normal fishery management rules that apply to normal, open fishing areas. Often controlled access areas have a scallop TAC, a scallop possession limit, and area-specific trip and DAS allocations. Other regulations may apply to achieve certain conservation objectives.

Critical habitat – an area that has been specifically designated under the ESA as an area within the overall geographical region occupied by an endangered or threatened species on which are found the physical or biological features essential to conservation of the species.

Day-at-sea (DAS) – is each 24-hour period that a vessel is on a scallop trip (i.e. not declared out of the day-at-sea program) while seaward of the Colregs line.

Day-at-sea tradeoff – the number of days automatically charged for fishing for scallops in designated areas, regardless of the time actually fished.

Day-at-sea use – the amount of time that a vessel spends seaward of the Colregs line on a scallop trip.

Days-at-sea accumulated – days charged against a vessel's annual day-at-sea allocations, including day-at-sea tradeoffs. Trips in controlled access areas are often charged a pre-established amount of DAS, regardless of the actual duration of the trip.

Endangered species – a species that is in danger of extinction throughout all or a significant portion of its range.

ESA - Endangered Species Act of 1973 as amended.

Exploitable biomass - the total meat weight of scallops that are selected by fishing, accounting for gear and cull size, at the beginning of the fishing year[7].

$\mathbf{F_{max}}$ – a fishing mortality rate that under equilibrium conditions produces maximum yield-per-recruit. This parameter serves as a proxy for Fmsy for stocks that do not exhibit a stock-recruitment relationship, i.e. recruitment levels are driven mostly by environmental conditions.

Fixed costs - These costs include expenses that are generally independent of the level of fishing activity, i.e., DAS-used, such as insurance, license, half of repairs, office expenses, professional fees, dues, utility, interest, dock expenses, bank, rent, store, auto, travel, and employee benefits.

Fixed duration closure – a rotational closure that would be closed for a pre-determined length of time.

Fixed rotational management area boundaries – pre-defined specifications of areas to be used to manage area rotation.

FMP – Fishery Management Plan.

Heterogeneity – spatial differences in the scallop resource, life history, or the marine environment.

Incidental Take Statement – a section of a Biological Opinion that allows the take of a specific number of endangered species without threat of prosecution under the ESA. For the Scallop FMP, an incidental take statement has been issued for a limited number of sea turtles to be taken by permitted scallop vessels.

[7] The **average exploitable biomass** is different and is defined as the total meat weight of scallops that are selected by fishing averaged over the fishing year, accounting growth, natural mortality, fishing mortality, and gear and cull size.

IWC – International Whaling Commission; an international group that sets international quotas and/or establishes moratoria on harvesting of whales.

Localized overfishing – a pattern of fishing that locally exceeds the optimum rate, considering the age structure of the population, recruitment, growth, and natural mortality. This effect may cause mortality that is higher than appropriate on small scallops while under-fishing other areas with large scallops (assuming that the overall amount of effort achieves the mortality target for the entire stock). The combined effect is to reduce the yield from the fishery through the loss of fast-growing small scallops and the loss of biomass from natural mortality on very large scallops.

Long-term closure area – an area closed to scallop fishing for reasons other than achieving area rotation objectives. These areas may be closed to minimize habitat impacts, avoid bycatch, or for other reasons.

LPUE – Similar to catch per unit effort (CPUE), commonly used terminology in fisheries, LPUE in the Scallop FMP refers to the amount of landings per DAS a vessel achieves. This value is dependent on the scallop abundance and catch rate, but also depends on the shucking capacity of the crew and vessel, since most of the scallop catch must be shucked at sea. Since discard mortality for sea scallops is low, discards are not included as a measure of catch in the calculation of LPUE.

Magnuson Act – Magnuson Stevens Act of 1976 as amended.

Meat yield – the weight of a scallop meat in proportion to the total weight or size of a scallop. Scallops of similar size often have different meat yields due to energy going into spawning activity or due to the availability of food.

MMPA - Marine Mammal Protection Act of 1972 as amended.

NAAA - The Northwest Atlantic Analysis Area was a geographic area used in the habitat metric analysis. It's boundary to the North is the Hague line, the NC/SC border to the South, the coastline to the West, and the 500 fathom depth contour to the East.

NEPA – National Environmental Policy Act of 1972 as amended.

Net economic benefits - Total economic benefits measure the benefits both to the consumers and producers and are estimated by summing consumer and producer surpluses. Net economic benefits show, however, the change in total economic benefits net of no action.

NMFS – National Marine Fisheries Service.

Nominal versus real economic values - The nominal value of fishing revenues, prices, costs and economic benefits are simply their current monetary values unadjusted for inflation. Real values are obtained, however, by correcting the current values for the inflation.

Open area – a scallop fishing area that is open to regular scallop fishing rules. The target fishing mortality rate is the resource-wide target.

Operating expenses or variable costs - The operating costs measures the expenses that vary with the level of the fishing activity including food, ice, water, fuel, gear, supplies and half of the annual repairs.

Opportunity cost - The cost of forgoing the next best opportunity. For example, if a fisher's next best income alternative is to work in construction, the wage he would receive from construction work is his opportunity cost.

PDT – Scallop plan Development Team; a committee of experts that contributed to and developed the technical analysis and evaluation of alternatives.

Potential biomass increase - the annual change in the total biomass of scallop meats if no fishing occurs.

Producer surplus -Producer surplus for a particular fishery shows the net benefits to harvesters, including vessel owners and the crew, and is measured by the difference between total revenue and operating costs.

Recently re-opened area – an area that has recently re-opened to scallop fishing following a period of closure that postponed mortality on small scallops. The annual TAC and target fishing mortality rate is defined by time-averaged fishing mortality that allows the area-specific target to deviate from the norm. Special rules (i.e. day-at-sea allocations or trips with possession limits and day-at-sea tradeoffs may apply.

Recruitment – a new year class of scallops measured by the resource survey. Scallop larvae are pelagic and settle to the bottom after 30-45 days after spawning. The resource survey, using a lined dredge, is able to capture scallops between 20 – 40 mm, but more reliably at between 40 and 60 mm. Recruitment in this document refers to a new year class that is observable in the survey, at around two years after the eggs had been fertilized and spawned.

Recruitment overfishing – a high level of fishing mortality that causes spawning stock biomass to decline to levels that significantly depresses recruitment. Because sea scallops are very productive, this mortality rate is substantially higher than F_{max} and the biomass where recruitment is threatened is much lower than the present biomass target.

SAFE Report – A Stock Assessment and Fishery Evaluation Report, required by the Sustainable Fisheries Act. This report describes the present condition of the resource and managed fisheries, and in New England it is prepared by the Council through its Plan Development Teams (PDT) or Monitoring Committees (MC). The Scallop PDT is the MC for the Atlantic Sea Scallop FMP and prepares this report.

SMAST – School for Marine Science and Technology, University of Massachusetts Dartmouth

Scallop productivity – the maximum average amount of biomass that can be taken from a defined area.

Shucking – a manual process of cutting scallop meats from the shell and viscera.

Size selection – in the scallop fishery, size selection occurs at two points: when the fishing gear captures the scallop and when the crew culls the catch before shucking. At the first point, size selection depends on escapement through the dredge rings, twine top, or trawl meshes. At the second point, size selection depends on the size of the catch and marketability. Small scallops are less valuable and more time consuming to shuck a pound of meats. These factors influence whether the crew retains scallops at a smaller or larger size. Size selection by the fishery is the combined effect of mortality from landed scallops, from discard mortality, and from non-catch mortality from the fishing gear. Except under certain rare conditions, most of the mortality has been associated with the landed portion of the catch.

TAC – Total allowable catch is an estimate of the weight of scallops that may be captured by fishing at a target fishing mortality rate. The TAC could apply to specific areas under area based management rules.

Take – a term under the MMPA and ESA that means to harass, harm , pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct with respect to either a marine mammal or endangered species.

Ten-minute square – an approximate rectangle with the dimensions of 10-minutes of longitude and 10-minutes of latitude.

Threatened species – any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

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9.0 INDEX