Final

Framework 26 to the Scallop FMP

Including a Final Environmental Assessment (EA), an Initial Regulatory Flexibility Analysis and Stock Assessment and Fishery Evaluation (SAFE Report)

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

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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).

The primary purpose of this action is to set scallop fishery specifications for the 2015 fishing year, as well as default measures for FY2016. This action is needed to achieve the objectives of the Atlantic Sea Scallop Fishery Management Plan (FMP), which is to prevent overfishing and improve yield-per-recruit from the fishery. In addition to the No Action alternative, the Council considered various other alternatives to address the purpose and need of this action. A summary of the alternatives considered, and the rationale for the Council preferred alternatives are summarized in Table 1; the preferred alternatives are in bold.

The preferred alternative includes a specific Acceptable Biological Catch (ABC) and was calculated using the same method as in Framework 25, with updated data. The Scientific and Statistical Committee (SSC) recommended an acceptable biological catch of 31,459mt in 2015 and 37,903 mt for 2016 (default), which includes discards and incidental mortality as well as landings.

Fishery specifications for 2015 and default measures for 2016 are included in this action for both limited access and limited access general category vessels. Under the preferred alternative, full-time limited access vessels will be allocated 31 open area days-at-sea and 13 for part-time vessels. Full-time vessels will be allocated 51,000 pounds in access area catch and part-time vessels will be allocated 20,400 pounds. The proposed action includes a “flexible allocation” for Mid-Atlantic access areas. This means that each vessel can fish allocated catch in any of the Mid-Atlantic access areas, except for the inshore portion of the Elephant Trunk that will be closed to protect small scallops in that area. The proposed action also includes a closure within the Nantucket Lightship area as well as an extension to the east to protect small scallops. All other access areas will be closed to the scallop fishery in 2015.

The preferred alternatives for the specifications also include four other measures: crew limit in Mid-Atlantic access areas; provisions to adjust how access areas are allocated and monitored; and specifications for LAGC vessels. The total IFQ allocation for limited access general category (LAGC) vessels will be 5.5% of the total ACL available to the fishery for 2015, which is approximately 1,348 mt or 2.97 million pounds. Individual vessels will be allocated a poundage they may harvest based on their individual contribution factor. LAGC vessels are also allocated 6.5% of the TAC in access areas, equivalent to about 600 fleetwide trips. This action

also maintains the LAGC Northern Gulf of Maine (NGOM) hard TAC at 70,000 pounds and the target TAC for LAGC vessels with incidental catch permits at 50,000 pounds.

This action also includes default measures for FY2016. Default measures only include DAS allocations for limited access (LA) vessels, 26 DAS for full-time vessels, which is equivalent to 75% of projected DAS. For 2016, default measures also include one access area trip for LA vessels (17,000 pounds for full-time vessels and 10,200 for part-time vessels) that can be fished in any of the Mid-Atlantic access areas, starting April 1, 2016. The default LAGC IFQ allocation is 1,699 mt for 2016, 100% of the projected sub-ACL for 2016, including some access in the Mid-Atlantic access areas, equivalent to about 600 trips starting on April 1, 2016. These default measures were developed to be in place until a subsequent action would implement final allocations for FY2016. Finally, the same TACs for NGOM and incidental catch permits are included in the proposed action for both 2015 and 2016 (default).

This framework adjustment also addresses other issues. First, the regulations related to a state water exemption program would be modified to allow a vessel to potentially fish in state waters within the NGOM after the federal NGOM TAC is reached. Second, the spatial area and season for turtle gear requirements would be made consistent (requirement of turtle chain mat and turtle deflector dredge in all waters east of 71W between May and November). Third, proactive accountability measures would be implemented for all areas which would require that the apron of all scallop dredges could not exceed seven rows. Forth, a limited access vessel could declare out of the fishery on open area trips south of Cape May, NJ. And last, a minor adjustment would be made to the turtle deflector dredge requirements to improve safe handling of the gear.

The environmental impacts of all of the alternatives considered are described in Section 5.0 and summaries of the most substantial impacts are provided here. The preferred alternative for fishery specifications is expected to have positive impacts on the scallop resource and fishery. The allocations are expected to prevent overfishing and maintain high total biomass as well as higher landings, revenues, and net economic benefits compared to No Action since it has lower access levels. Impacts on EFH, non-target species and protected resources are expected to be low negative compared to No Action, but low positive compared to recent fishing levels since total area swept estimates are lower than recent years. Some additional measures are preferred to reduce impacts on small scallops including crew limits and area closures. Under the preferred alternative access area trips will be flexible in terms of where vessels can fish access area allocation, and these potential impacts are low negative to low positive depending on fleet behavior and resource conditions.

This action includes several other measures not directly related to fishery specifications. First the measure to allow changes to the state water exemption program to potentially allow fishing in state waters if the NGOM hard TAC is reached is expected to have neutral impacts on the resource and low positive impacts on the fishery. Second, the measure to make the turtle deflector dredge and turtle chain mat restrictions consistent in terms of boundary and season are expected to have neutral impacts on the resource, fishery and protected resources. Third, the measure to modify the proactive AMs in place to reduce flatfish bycatch are expected to have low positive impacts on the resource and non-target species and potentially low negative short term and low positive long terms impacts on the fishery. Forth, the proposed measure to allow

limited access vessels to declare out of the fishery on open area trips south of Cape May, NJ is expected to have neutral impacts on the resource and environment if the DAS adjustment factor applied is adequate. Overall neutral impacts expected on the fishery, but some distributional impacts with benefits for vessels that land in southern ports and slightly reduced allocations for vessels from other ports. Finally, the minor adjustment to the regulation related to the flaring bar on the turtle deflector dredge is expected to have neutral impacts on the resource, environment, and fishery.

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

Table 1 – Summary of Framework 26 preferred alternatives, other measures, and Council rationale for preferred alternatives

Section #	Description of Alternatives	Council Rationale
DECISIONS RELATED TO FISHERY SPECIFICATIONS – SECTION 2.1 AND 2.2		
SECTION 2.1 **OFL and ABC** Alt.1 - No Action Alt.2 – Updated OFL/ABC	No Action – Table 6 2015 OFL = 34,247 mt ABC = 29,693 mt **Updated OFL/ABC–Table 8** **2015** **OFL = 38,061mt** **ABC = 31,459 mt**	The Council recommends the updated OFL/ABC values as preferred because they are based on the most updated estimates of scallop biomass. Setting OFL and ABC on the best available data should prevent overfishing compared to using outdated information. The estimate of scallop biomass is based on annual surveys, and in some cases multiple surveys are conducted in more critical areas. This alternative was also recommended as preferred by both the Council's Scallop Oversight Committee and Advisory Panel.
SECTION 2.2.1 **Fishery Specifications (Alternatives 1-4)**	FW26 considered 4 overall allocation alternatives. All have the same LAGC IFQ and set-asides. But LA specifications vary for each including the number of DAS and access area allocations For a comparison of alternatives: <u>Table 14</u> Alt 1 – No Action – 75% of projected DAS from FW25 Alt 2 – Base Run **Alt 3 – New closed areas** Option 1 – CA2 extension **Option 2 – NL extension** **Option 3 – Inshore ETA** Alt 4 – Reduced F **The preferred alternative includes 31 DAS and 51,000 pounds in access areas for FT LA vessels (and 13 DAS and 20,400 pounds for PT vessels). Total LAGC IFQ - 1,348 mt or 2.97 million pounds; NGOM hard TAC of 70,000 pounds and incidental TAC of 50,000 pounds.**	The Council recommends Alternative 3 with 2 closures as preferred. This alternative protects high concentrations of small scallops east of Nantucket Lightship and in inshore waters within the Elephant Trunk Access Area and sets overall catch well below annual catch limits. The Council does not recommend closing the extension around Closed Area II because this area is farther offshore and the incentive to fish in that area is much lower than the proposed closures. Overall the biological and economic impacts of the alternatives considered are similar. The preferred alternative would result in 46.4 million pounds of landings, $570 million in revenues, and $555 million total economic benefits in 2015. The preferred alternative has slightly higher short-term total economic benefits in 2015, and lower long term benefits compared to other alternatives. This alternative was also recommended as preferred by both the Council's Scallop Oversight Committee and Advisory Panel. The Council clarified the 2016 default measures to include limited access in the Mid-Atlantic access areas. Access is set much lower (one 17,000 pound trip for full-time vessels) than projected amounts and would not be available until April 1 to maximize yield. Allowing some access in the spring before a subsequent action would set allocations (May or June) is expected to maximize yield by allowing access when meat weights are higher and water temperatures are lower compared to later in the summer. In addition, allowing some access earlier in the year may have reduced impacts on sea turtles as well by spreading effort into seasons with less overlap with sea turtles, typically May-November.

SECTION 2.2.2 **Allocation of LAGC IFQ trips in access areas**	FW26 considered 4 options – Table 15 Option 1 – No Action - no trips (0%) Option 2 – 1,758 trips (5.5%) Option 3 – 3,333 trips (10.4%) **Option 4 – 2,065 trips (6.5%)**	The Council recommends Option 4 as preferred. The rationale for this alternative is that it would provide about the same level of access for LA and LAGC vessels in access areas in 2015 in terms of the total proportion of catch (about 42% of total catch from access areas). When 42% is applied to the total LAGC sub-ACL (2.97M), about 1.24 million pounds would be available from access areas, or 6.5% of the total TAC in access areas equivalent to about 2,000 trips. This alternative increases access to higher catch rate areas for LAGC vessels. Positive impacts are expected from spreading effort out and providing access to higher density areas. This alternative was also recommended as preferred by both the Council's Scallop Oversight Committee and Advisory Panel.
SECTION 2.2.3 **Additional measures to reduce impacts on small scallops (crew limit in access areas)**	FW26 considered 2 options Option 1 – No Action - no crew limit in access areas **Option 2 –crew limit in access areas**	The Council recommends Option 2 as preferred, implementing a crew limit in access areas that is one additional crew member above open area limits. This measure was selected to help prevent highgrading in access areas, which can have negative impacts on the resource from incidental mortality, especially on smaller scallops. In access areas vessels are not on DAS so there is no time limit to harvest their possession limit. A vessel could only target larger scallops because they have a higher price. Highgrading can increase area swept with negative impacts on the scallop resource, fishery and the environment. This alternative was also recommended as preferred by both the Council's Scallop Oversight Committee and Advisory Panel.
SECTION 2.3 **Allocation method for Mid-Atlantic access area trips in 2015 only**	FW26 considered 2 options – 2.3.1 No Action – 2 trips for all vessels in ETA and 3rd trip by lottery (56% HC and 44% Delmarva) **2.3.2 Flexible Allocation – All 3 MA AA considered one area – a vessel could fish freely within all three access areas**	The Council recommends Alternative 2.3.2 as preferred. This alternative was developed by the PDT because several potential closures within Mid-Atlantic access areas were explored to protect small scallops (i.e. inshore ETA). The rationale for this allocation method is that if subareas are closed within access areas it could make fishing in remaining areas crowded and less feasible. Temporarily eliminating the boundaries could help spread effort out and enable vessels to fish on higher concentrations of scallops and not be limited to a particular area. This flexibility could reduce negative impacts if an area is ultimately less productive than projections. Some of the 2014 biomass estimates varied per area, and this approach could alleviate some of that uncertainty. This alternative was also recommended as preferred by both the Council's Scallop Oversight Committee and Advisory Panel.

SECTION 2.4 **Adjustments to provisions related to allocating and monitoring AA trips** **Requirement for vessels to cross demarcation line within last 60 days for carryover provision**	FW26 considered 2 alternatives and 2 sub-options 2.4.1 – No Action **2.4.2 – Replace broken trip process with prelanding report** 2.4.2.1 Option 1 – Require vessels cross demark and submit preland in last 60 days of FY **2.4.2.2 Option 2 – Carryover would be automatic, vessel would not need to break a trip and cross demark**	The Council recommends Alternative 2.4.2 and 2.4.2.2 as preferred. These alternatives were developed by the PDT to make the administrative process mirror how the fishery actually works related to allocation and monitoring access area effort. Vessels would be given a poundage with a possession limit eliminating some of the burdens related to broken trips and carryover provisions. The rationale for these measures is to simplify the administration of access area allocations; these measures do not change or increase any flexibility that is already allowed under the management plan. This alternative was also recommended as preferred by both the Council's Scallop Oversight Committee and Advisory Panel.
OTHER MEASURES – SECTION 2.5 – 2.9		
SECTION 2.5 **Measures to allow fishing in state waters after federal NGOM TAC is reached**	FW26 considered 3 alternatives 2.5.1 – No Action 2.5.2 – Vessel with both federal NGOM and state permit can fish for scallops in state waters after federal NGOM TAC reached **2.5.3 – Revise state water exemption program provisions to allow a state to request specific exemption related to fishing for scallops in state waters after federal NGOM TAC reached**	The Council recommends Alternative 2.5.3 as preferred. The rationale for this alternative is to provide as much flexibility as possible for each state within the NGOM related to whether vessels with federal scallop permits should be able to fish in state waters after the federal NGOM hard TAC is reached. This alternative would enable a state to request a specific exemption to the rule prohibiting vessels with federal scallop permits from fishing in state waters after the federal NGOM hard TAC is reached. One state may want to approach this issue differently than another, and this alternative would provide that flexibility. NMFS may approve or disapprove a request. This alternative was also recommended as preferred by both the Council's Scallop Oversight Committee and Advisory Panel.
SECTION 2.6 **Measures to make turtle regulations consistent**	FW26 considered 2 alternatives 2.6.1 – No Action – turtle chain mat and TDD requirements do not overlap (Figure 11) **2.6.2 – Revise season and boundaries to be consistent - May-November and west of 71W for both measures**	The Council recommends Alternative 2.6.2 as preferred. The rationale for this alternative is to reduce regulatory complexity and make the turtle regulations consistent in terms of spatial boundary and season. Overall, neutral benefits expected for sea turtles. Any reduction in the size of the area that chain mats would be required (east of 71W) is balanced by an extension of the season that TDD would be required (month of November). This alternative was also recommended as preferred by both the Council's Scallop Oversight Committee and Advisory Panel.

SECTION 2.7 **Measures to modify or eliminate proactive AMs in place to reduce flatfish bycatch**	FW26 considered 3 alternatives 2.7.1 – No Action **2.7.2 - Proactive AM (*modify* to max of 7 rows in apron in all areas)** 2.7.3 - Proactive AM (*eliminate* prohibition on the number of rows allowed in apron of dredge in all areas)	The Council recommends Alternative 2.7.2 as preferred. The rationale for this alternative is to reduce flatfish bycatch and prevent sub-ACLs from being exceeded and triggering reactive accountability measures. Shorter aprons have been shown to reduce flatfish bycatch. The current regulations prevent a vessel from fishing with less than seven rows, and most fish with even more rows. Implementing a maximum of seven in all areas is expected to reduce flatfish bycatch and not impact the catchability of the dredge for scallop substantially. This alternative was also recommended as preferred by both the Council's Scallop Oversight Committee and Advisory Panel.
SECTION 2.8 **Allow LA vessel to declare out of fishery on return to homeport**	FW26 considered 3 alternatives 2.8.1 – No Action 2.8.2 – DOF from everywhere with additional provisions **2.8.3 – DOF from Cape May only with additional provisions**	The Council recommends Alternative 2.8.3 as preferred. The rationale for this alternative is to address the fact that LA vessels from southern ports are unable to get off the DAS clock for a substantial portion of their steam back to port. The VMS demarcation line is drawn in such a way that vessels from ports farther north can stay inside the demarcation line off the clock while steaming back to port, but that is not possible south of Cape May, NJ. More vessels are landing scallops in ports farther north, especially in recent years as DAS have been reduced and the resource has been more concentrated in open areas on GB compared to the Mid-Atlantic. There are many factors involved in where a vessel lands it's product, but the intent of this measure is to address one of them – reducing the overall DAS charge for vessels steaming back to port south of Cape May. There are several provisions included with this measure to ensure that vessels do not fish when declared out of the fishery south of Cape May. This measure is expected to alleviate some of the negative economic impacts that have occurred for vessels and shoreside businesses in the southern range of the fishery. Allowing vessels to declare out of the fishery south of Cape May is expected to provide more incentive for vessels to land scallops in these ports with beneficial impacts on these fishing communities. If approved, a DAS adjustment will be applied across the fishery (0.14 DAS per FT LA vessel). This alternative was also recommended as preferred by both the Council's Scallop Oversight Committee and Advisory Panel.
SECTION 2.9 **Modify flaring bar regulations for turtle deflector dredge requirement**	FW26 considered 2 alternatives 2.9.1 – No Action **2.9.2 – Modify flaring bar provision to allow it to be attached in more than one place**	The Council recommends Alternative 2.9.2 as preferred. The rationale for this measure is administrative in nature to potentially improve safe handling of fishing gear. This alternative was also recommended as preferred by both the Council's Scallop Oversight Committee and Advisory Panel.

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LIST OF ACRONYMS

A10 – Amendment 10 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
CAI – Closed Area I
CAII – Closed Area II
CASA – Catch-At-Age Size-At-Age (model)
CFF – Coonamessett Farm Foundation
DAS – Day-at-sea
DEL – Delmarva
CPUE – Catch Per Unit Effort
EA – Environnemental Assessment
EEZ – Exclusive Economic Zone
ESA – Endangered Species Act
EFH – Essential Fish Habitat
ET, ETA – Elephant Trunk Area
F_{MSY} – Fishing Mortality at Maximum Sustainable Yield
FMP – Fishery Management Plan
FR – Federal Register
FW24 - Framework Adjustment 24 to the Atlantic Sea Scallop Fishery Management Plan
FW25 - Framework Adjustment 25 to the Atlantic Sea Scallop Fishery Management Plan
FY – Fishing Year
GARFO – Greater Atlantic Regional Fishery Office
GB – Georges Bank
GF – Groundfish
GC – General Category
GOM – Gulf of Maine
HC – Hudson Canyon
IFQ – Individual Fishing Quota
IRFA – Initial Regulatory Flexibility Analysis
LA – Limited Access
LAGC – Limited Access General Category
LPUE – Landings Per Unit Effort
LT – Long-term
MA – Mid-Atlantic
MAFMC – Mid-Atlantic Fishery Management Council
M-S Act – Magnuson Stevens Act
MSY – Maximum Sustainable Yield
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
RSA – Research Set-Aside
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
ST – Short-term
TAC – Total Allowable Catch
TDD – Turtle deflector dredge
U10 – A classification for large scallops, less than 10 meats per pound.
VEC – Valued Ecosystem Component
VIMS – Virginia Institute of Marine Science
VMS – Vessel Monitoring System
VTR – Vessel Trip Reports
WGOM – Western Gulf of Maine
WP – Windowpane flounder
YTF/YT – Yellowtail flounder

1.0 BACKGROUND AND PURPOSE

1.1 BACKGROUND

This framework to the Scallop Fishery Management Plan (FMP) sets fishery specifications for fishing year (FY) 2015 and default measures for FY 2016. The New England Fishery Management (Council) decided to develop a one-year action only, including default measures for Year 2 only (FY2016). This decision was made to set specifications for one year since another action, the EFH Omnibus Amendment, is considering changes to closed areas that may or may not have impacts on scallop fishery specifications in the future.

A benchmark assessment for the scallop resource was conducted in July 2014. The status of the stock was reviewed and new models and reference points were considered and approved. The final report from that assessment is available (http://www.nefsc.noaa.gov/publications/crd/crd1409/) and relevant updates were included in this action.

The list of measures required to be in a framework has increased over the years to include overall annual catch limits, specific allocations for both limited access (LA) and limited access general category (LAGC) vessels. Below is a list of the measures required as part of the scallop fishery specifications:

- Overfishing Limit (OFL) and Acceptable Biological Catch (ABC), which is approved by the SSC;
- Annual Catch Limits (ACL) (for both the limited access and limited access general category fisheries, and Annual Catch Target (ACT) for the LA fishery;
- Allocations for limited access vessels include DAS allocations, access area allocations with associated possession limits;
- Allocations for limited access general category vessels include an overall IFQ for both permit types, as well as a fleetwide, area-specific maximum number of access area trips available for the general category fishery;
- NGOM hard-TAC;
- Incidental catch target-TAC; and
- Set-aside of scallop catch for the industry funded observer program and research set-aside program.

In addition to specifications, the Council included five additional issues to consider in this action. First, measures to allow some scallop permitted vessels to fish for scallops in state waters after the federal NGOM hard TAC is reached. Second, measures to make the turtle chain mat and turtle deflector dredge requirements consistent in terms of season and area. Third, measures to develop accountability measures for northern windowpane flounder, as well as measures to modify the existing seasonal area closures accountability measures for GB and SNE/MA YT flounder sub-ACLs. Forth, measures to allow a limited access vessel to steam back to port and not be charged DAS. Finally, related to turtle deflector dredge requirements, a clarification specific to the “flaring bar”.

A benchmark assessment was recently completed for this resource (SARC59) and results are summarized in this document. There are no regulatory changes required based on the results of the assessment, but the reference points for this fishery have been updated based on the assessment (Section 4.1.1). There are large sets of small scallops that were observed in the 2014 scallop surveys and measures were specifically developed in this action to protect those areas under area rotation provisions (i.e. modify access areas to include new recruitment and reduce impacts on smaller scallops within existing access areas).

During the development of this action, Framework 53 to the Multispecies FMP (Groundfish Framework 53) considered a sub-ACL of northern windowpane flounder for the scallop fishery. Since all sub-ACLs require accountability measures (AMs) if exceeded, this action considered AMs for northern windowpane flounder. A range of options were considered for a sub-ACL in Groundfish Framework 53, but ultimately the Council recommended No Action. Therefore there will not be a sub-ACL of N. windowpane flounder allocated to the scallop fishery in 2015 and no AMs are required to be developed in this action. Instead catch from the scallop fishery will be included as part of the other sub-component catches (29% of the total ACL for N. Windowpane flounder).

At the September 2014 Council meeting the alternatives were prioritized due to the additional work needed to develop specific measures to protect small scallop observed in the 2014 scallop surveys. The PDT, Advisory Panel, and Scallop Committee continued working on all these items, but priority was given to items farther up on the list, and there was not time to fully develop and analyze the item at the bottom of the list, reactive AMs.

> *By consensus the committee prioritized work items in Framework 26 if the PDT is not able to complete all the analyses for November. The Council made a slight modification and split out proactive and reactive accountability measures, and agrees with the overall prioritization of items.*
>
> *1. Specifications including modifications to scallop access areas*
> *2. Revise TDD regulations related to flaring bar*
> *3. NGOM and state water fishery issue*
> *4. Making turtle regulations consistent*
> *5. Develop proactive AMs for bycatch sub-ACLs*
> *6. Measures to allow Limited Access FT DAS off the clock on return to port*
> *7. Develop reactive AMs for Northern Window Pane flounder and revise reactive AMs for Georges Bank and SNE/MA Yellowtail flounder sub-ACLs*
>
> *The motion **carried** unanimously on a show of hands (17/0/0).*

1.2 PURPOSE AND NEED

The primary need of this action is to achieve the objectives of the Atlantic Sea Scallop FMP to prevent overfishing and improve yield-per-recruit from the fishery. The primary purpose for this action is to set specifications including: OFL, ABC, scallop fishery ACLs and ACTs including associated set-asides, day-at-sea (DAS) allocations, general category fishery allocations, and area

rotation schedule and allocations for the 2015 fishing year, as well as default measures for FY2016 that are expected to be replaced by a subsequent action.

The second need identified for this action is to reduce bycatch of flatfish and help prevent the fishery stay within allocated bycatch limits. The purpose is to implement proactive accountability measures to reduce bycatch of flatfish in the scallop fishery.

The final need identified for this action is to adjust several aspects of the overall program to make the scallop management plan more effective for participants in the fishery. This action includes four distinct purposes related to the third overall management need. First, one purpose is to allow vessels with both a federal NGOM and a state water scallop permit to fish in state waters after the federal NGOM TAC is reached. Second, it may be more effective for the two turtle related regulations to have consistent boundaries to reduce regulatory confusion for the industry in a way that is conservation neutral for sea turtles. Third, this action is considering measures to allow limited access vessels off the clock for open area trips on their return to port to potentially reduce negative impacts on vessels from ports farther away from primary open area fishing grounds. Finally, another purpose related to effectiveness for participants in the fishery is a small adjustment to a gear restriction that prohibits safe operation of dredges on some vessels (i.e. flaring bar regulations on turtle deflector dredges).

Table 2 – Summary of the purpose and need for measures developed in Framework 26 including section number with specific alternatives

Need	Purpose	Section
1. To achieve the objectives of the Scallop FMP to prevent overfishing and improve yield-per-recruit from the fishery	To set specifications for FY2015 and FY2016 (default): OFL, ABC, ACLs, LA ACT, DAS, general category allocations, and area rotation schedule and related allocations.	2.2
2. To reduce flatfish bycatch	Develop proactive AMs to help the scallop fishery stay within bycatch catch limits	2.5.1
3. To adjust several aspects of the overall program to make the scallop management plan more effective for participants in the fishery	1. Allow vessels with federal scallop permits to potentially fish in state waters after the federal NGOM hard TAC is reached to minimize potentially negative impacts on vessels that participate in both fisheries.	2.3
	2. Make the turtle chain mat and turtle deflector dredge requirements consistent in terms of season and area to reduce regulatory complexity and maintain conservation benefits for sea turtles.	2.4
	3. Provide some incentive (through reduced DAS charged) for a limited access vessel to bring scallop landings back to ports located farther from primary open area fishing locations to minimize negative impacts on vessels and fishing communities in the southern range of the fishery.	2.6
	4. Clarify regulations related to flaring bar restriction for turtle deflector dredges to improve safe handling of fishing gear.	2.7

1.3 SUMMARY OF SCALLOP FISHERY MANAGEMENT PLAN

1.3.1 Summary of past actions

The Atlantic Sea Scallop FMP management unit consists of the sea scallop *Placopecten magellanicus* (Gmelin) resource throughout its range in waters under the jurisdiction of the United States. This includes all populations of sea scallops from the shoreline to the outer boundary of the Exclusive Economic Zone (EEZ). While fishing for sea scallops within state waters is not subject to regulation under the FMP except for vessels that hold a federal permit when fishing in state waters, the scallops in state waters are included in the overall management unit. The principal resource areas are the Northeast Peak of Georges Bank, westward to the Great South Channel, and southward along the continental shelf of the Mid-Atlantic.

The Council established the Scallop FMP in 1982. A number of Amendments and Framework Adjustments have been implemented since that time to adjust the original plan, and some Amendments and Framework Adjustments in other plans have impacted the fishery. This section will briefly summarize the major actions that have been taken to shape the current scallop resource and fishery, but a complete list of the measures as well as the actions themselves are available on the NEFMC website (http://www.nefmc.org/scallops/index.html).

Amendment 4 was implemented in 1994 and introduced major changes in scallop management, including a limited access program to stop the influx of new vessels. Qualifying vessels were assigned different day-at-sea (DAS) limits according to which permit category they qualified for: full-time, part-time or occasional. Some of the more notable measures included new gear regulations to improve size selection and reduce bycatch, a vessel monitoring system to track a vessel's fishing effort, and an open access general category scallop permit was created for vessels that did not qualify for a limited access permit. Also in 1994, Amendment 5 to the Northeast Multispecies FMP closed large areas on Georges Bank to scallop fishing over concerns of finfish bycatch and disruption of spawning aggregations (Closed Area I, Closed Area II, and the Nantucket Lightship Area - See Figure 1).

In 1998, the Council developed Amendment 7 to the Scallop FMP, which was needed to change the overfishing definition, the day-at-sea schedule, and measures to meet new lower mortality targets to comply with new requirement under the Magnuson-Stevens Act. In addition, Amendment 7 established two new scallop closed areas (Hudson Canyon and VA/NC Areas) in the Mid-Atlantic to protect concentrations of small scallops until they reached a larger size.

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 after resource surveys and experimental fishing activities had identified areas where scallop biomass was very high due to no fishing in the intervening years. This successful "experiment" with closing an area and reopening it for controlled scallop fishing further motivated the Council to shift overall scallop management to an area rotational system that would close areas and reopen them several years later to prevent overfishing and optimize yield.

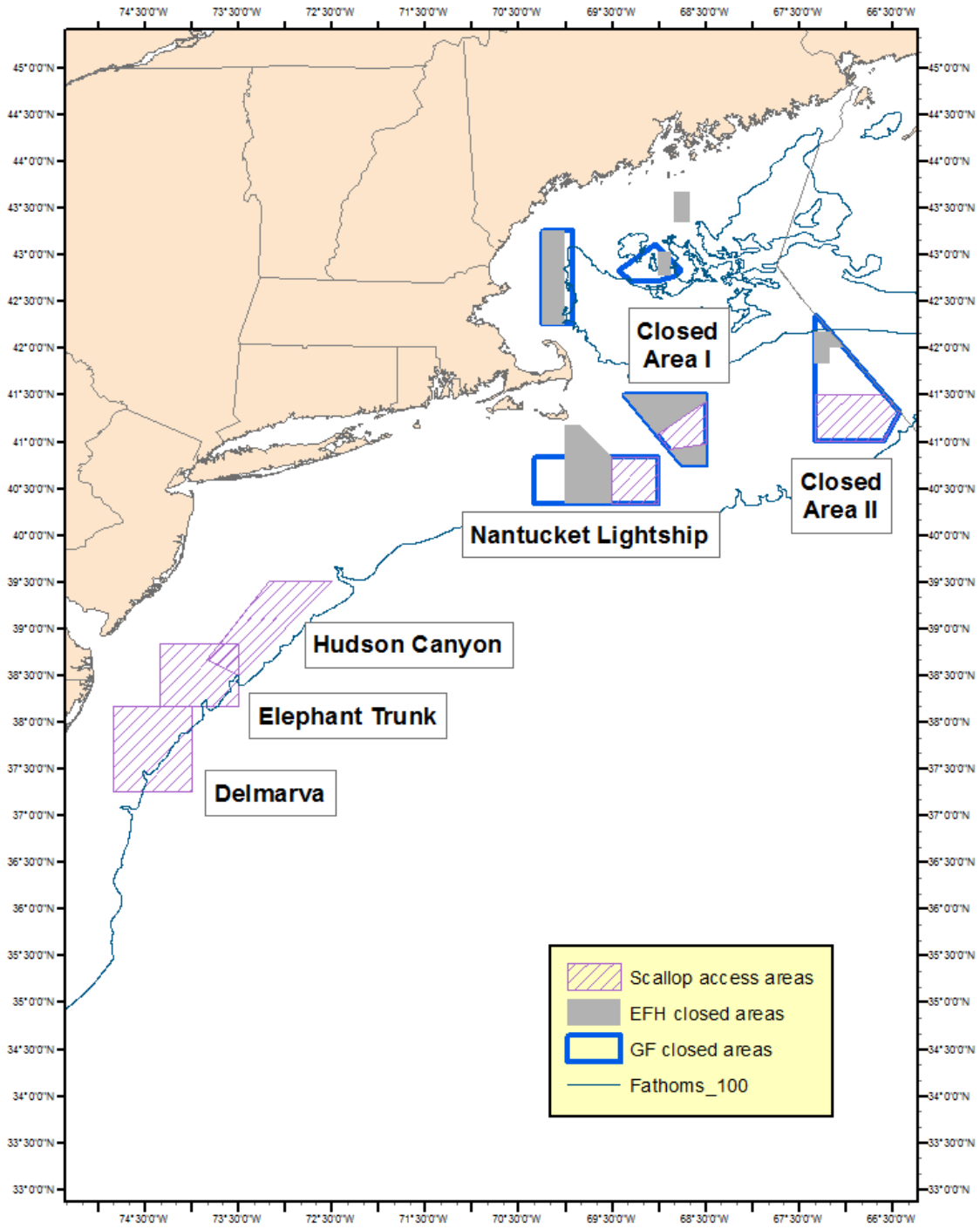
In 2004, Amendment 10 to the Scallop FMP formally introduced rotational area management and changed the way that the FMP allocates fishing effort for limited access scallop vessels.

Instead of allocating an annual pool of DAS for limited vessels to fish in any area, vessels had to use a portion of their total DAS allocation in the controlled access areas defined by the plan, or exchange them with another vessel to fish in a different controlled access area. 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. See Section 1.3.2 below for a more detailed description of the rotational area management program implemented by Amendment 10.

As the scallop resource rebuilt under area rotation biomass increased inshore and fishing pressure increased by open access general category vessels starting in 2001. Landings went from an average of about 200,000 pounds from 1994-2000 to over one million pounds consistently from 2001-2003 and 3-7 million pounds each year from 2004-2006 (NEFMC, 2007). In June 2007 the Council approved Amendment 11 to the Scallop FMP and it was effective on June 1, 2008. The main objective of the action was to control capacity and mortality in the general category scallop fishery. Amendment 11 implemented a limited entry program for the general category fishery where each qualifying vessel received an individual allocation in pounds of scallop meat with a possession limit of 400 pounds. The fleet of qualifying vessels receives a total allocation of 5% of the total projected scallop catch each fishing year. This action also established separate limited entry programs for general category fishing in the Northern Gulf of Maine and an incidental catch permit category (up to 40 pounds of scallop meat per trip while fishing for other species).

More recently Amendment 15 to the Scallop FMP was implemented in 2011. This action brought the FMP in compliance with new requirements of the re-authorized MSA (namely ACLs and AMs) as well as a handful of other measures to improve the overall effectiveness of the FMP. A more detailed summary of the various annual catch limits and how fishery specifications are set in this fishery are described in Section 1.4.

Figure 1 – Past and present scallop management areas (purple hatched areas) with other reference areas



1.3.2 Summary of the scallop area rotation program

Rotational area management is the cornerstone of scallop fisheries management. There are four types of areas in this system: 1) "open areas" where scallop fishing can occur using DAS or IFQ; 2) areas completely closed to scallop fishing year-round to reduce impacts on EFH and/or groundfish mortality; 3) areas temporarily closed to scallop vessels to protect small scallops until a future date; and 4) areas open to very restricted levels of scallop fishing called "access areas". When scallop vessels are fishing in these areas they are limited in terms of total removal and sometimes season.

Amendment 10 introduced area rotation: areas that contain beds of small scallops are closed before the scallops experience fishing mortality, then the areas re-open when scallops are larger, producing more yield-per-recruit. The details of which areas should close, for how long and at what level they should be fished were described and analyzed in Amendment 10. Except for the access areas within the groundfish closed areas on Georges Bank, all other scallop rotational areas should have flexible boundaries. Amendment 10 included a detailed set of criteria or guidelines that would be applied for closing and re-opening areas. Framework adjustments would then be used to actually implement the closures and allocate access in re-opened areas.

The general management structure for area rotation management is described in Table 3. An area would close when the expected increase in exploitable biomass in the absence of fishing mortality exceeds 30% per year, and re-open to fishing when the annual increase in the absence of fishing mortality is less than 15% per year. Area rotation allows for differences in fishing mortality targets to catch scallops at higher than normal rates by using a time averaged fishing mortality so the average for an area since the beginning of the last closure is equal to the resource-wide fishing mortality target.

Figure 1 shows the boundaries of current and past scallop access areas (purple hatched areas) on Georges Bank and in the Mid-Atlantic. Areas that are closed to the scallop fishery are indicated as well: groundfish mortality closed areas (hollow) and EFH closed areas (hatched). For the most part some of these areas are closed to the fishery if small scallops are present, some areas are open as access areas with a controlled level of fishing, and some may be "open areas" that may be fished using DAS, not access area trips. Each year limited access vessels are allocated a set number of trips with possession limits to fish in specific access areas. And general category vessels are awarded a fleetwide maximum of trips that can be taken per area.

The NEFMC is currently reviewing the EFH and groundfish mortality closed areas in this region in the EFH Omnibus Amendment. Based on the outcome of that action the current boundaries of these closed areas may change. Therefore, future scallop access areas may also be different, and current restrictions to fish in EFH closed areas may be different as well. Since this action is primarily limited to FY2015, and any of these potential changes from the EFH action will only be effective during the latter part of FY2015 or the 2016 fishing year (under the current schedule), Framework 26 will only address specifications based on the current areas available to the scallop fishery – areas outside of EFH closed areas and areas within CA1, CA2, and NL that have been available to the scallop fishery in the past.

Table 3- General management structure for area rotation management as implemented by Amendment 10

Area type	Criteria for rotation area management consideration	General management rules	Who may fish
Closed rotation	Rate of biomass growth exceeds 30% per year if closed.	No scallop fishing allowed Scallop limited access and general category vessels may transit closed rotation areas provided fishing gear is properly stowed. Scallop bycatch must be returned intact to the water in the general location of capture.	Any vessel may fish with gear other than a scallop dredge or scallop trawl Zero scallop possession limit
Re-opened controlled access	A previously closed rotation area where the rate of biomass growth is less than 15% per year if closure continues. Status expires when time averaged mortality increases to average the resource-wide target, i.e. as defined by the Council by setting the annual mortality targets for a re-opened area.	Fishing mortality target set by framework adjustment subject to guidelines determined by time averaging since the beginning of the most recent closure. Maximum number of limited access trips will be determined from permit activity, scallop possession limits, and TACs associated with the time-average annual fishing mortality target. Transfers of scallops at sea would be prohibited	Limited access vessels may fish for scallops only on authorized trips. Vessels with general category permits will be allowed to target scallops or retain scallop incidental catch, with a 400 pounds scallop possession limit in accordance with general category rules.
Open	Scallop resource does not meet criteria to be classified as a closed rotation or re-opened controlled access area	Limited access vessels may target scallops on an open area day-at-sea General category vessels may target sea scallops with dredges or trawls under existing rules. Transfers of scallops at sea would be prohibited	All vessels may fish for scallops and other species under applicable rules.

1.3.2.1 Guidelines for fully adaptive area rotation scheme

The Council considered various approaches to area rotation in Amendment 10 and ultimately adopted an approach that provides flexibility to define future rotational areas. The final rule implemented a ‘‘fully adaptive area rotation scheme,’’ which allows more specific area definitions and management controls compared to the fixed-boundary alternatives considered. While the fully adaptive approach is more complicated and probably more costly to administer, it expected to produce higher benefits by protecting small scallops during their highest growth rates. Adaptive boundaries and frequent surveys will be able to earlier and better identify concentrations of small scallops.

The fully adaptive area rotation scheme in Amendment 10 established no pre-defined conditions for area closures and reopenings, except that areas should close when the expected annual increase in exploitable biomass in an area exceeds 30 percent, and areas should re-open when the expected annual increase in exploitable biomass in an area is less than 15 percent. <u>There are no standard closure area boundaries, dimensions, or durations. The fully adaptive area rotation scheme includes guidelines as part of the biennial framework process that should be used to establish the rotational areas, but they are not requirements for the program. The guidelines are described below for reference, but they are not binding in any way. The Council and NMFS may deviate from these guidelines to achieve optimum yield or achieve other plan objectives.</u>

- ***Boundaries and distribution of rotational closures***

Amendment 10 set up the area rotation program to be as flexible as possible, and allow boundaries to be established in future frameworks, rather than prescribed fixed boundaries and schedules. Amendment 10 guidelines describe that the size of areas should be large enough in shape to be effective, while allowing flexibility. Amendment 10 considered five scallop management regions, each approximately 75 square nautical miles in area. The five "regions" are: Gulf of Maine, Georges Bank, South Channel, Hudson Canyon, and Southern. The boundaries are described below.

- Gulf of Maine – [all blocks north of 42°20'N].
- Georges Bank – [all blocks south of 42°20'N and east of 68°30'W].
- South Channel – [all blocks south of 42°20'N, west of 68°30'W and east of 72°30'W].
- Hudson Canyon – [all blocks west of 72°30'W and north of 38°30'N].
- Southern – [all blocks south of 38°30'N]

Overall the guidance recommends no more than one scallop rotational closure in each region at any time, except the Gulf of Maine. In that region there may be zero or one at any time. Areas indefinitely closed to scalloping are not considered rotational closures, but areas temporarily closed to scalloping by measures outside of the scallop rotational system may be considered for this purpose. Specific size minimums were described in Amendment 10 as well, suggesting that new areas should be at least six or nine contiguous ten-minute squares depending on the region.

Amendment 10 guidance also suggests maximum closure guidance. First, all closures combined should not close more than 25% of the total exploitable biomass for the entire resource when a new closure is considered. Second, new closures should not result in total area closed to scalloping (including all closed areas, not just scallop rotational areas) to exceed more that 50% of the productive blocks in a particular region, or 75% of more of the scallop biomass in a sub-region. Guidelines are included for incorporating seasonally closed areas as well.

Amendment 10 guidelines suggests that straight lines form all boundaries, and the internal angles between lines should not exceed 180 degrees. And when possible, the boundaries should follow edges of ten minute square blocks.

- ***Guidance for closures***

Rotational area closures will be implemented by ad hoc or standard framework adjustments. Identification of appropriate areas should be based on either a combination of NMFS survey and industry based surveys, or industry based surveys alone. When possible closures should be selected to include as many blocks with annual potential growth increase has been estimated to be above 30% in the absence of fishing, plus as many as possible of blocks closed in the previous year with annual potential growth of 15% or more, while incorporating as few other blocks as possible. When it is not possible to include all of the blocks with high annual potential growth, preference should be given to closing those with higher values.

Blocks abutting a block in either the Georges Bank or South Channel regions that itself meets the annual potential increase requirements of the basic rule may be included in a closure if the directions of water movement are such that dispersal of scallops into the additional block from a

closure is probable. Other blocks will only be added to closures when essential to meet the requirements of the invariable rules.

- ***Monitoring and Re-opening***

1. All closed blocks will be surveyed annually by a commercial scallop vessel with a NMFS survey dredge to determine current biomass, size composition and growth rates. These surveys will also extend over all blocks immediately adjacent to a closed one. They will also cover all blocks currently subject to re-opening TACs.
2. NMFS receives the data and calculates the "annual potential increase" of the scallops in each closed rotation area.
3. Block closures re-open on when appropriate and defined by framework adjustment or whenever the Council sets as a default opening date when the area closes, unless:

   a: The discovery of additional seed of younger year-classes, during the period of a closure, requires extension of that closure,
   b: The shaping of new closures requires re-opening in advance of the expected year, or
   c: An early re-opening is made under an Emergency Action (e.g. if mass mortality of scallops in closure is suspected).

   No other alterations to the timing of re-opening may be made without a Plan Amendment.
4. For each re-opening, a TAC will be set, based on survey estimates (corrected for catchability) of harvestable biomass and, for most blocks, a target fishing mortality rate calculated by applying time averaged mortality calculations. The biomass estimates will include scallops in all blocks immediately adjacent to the re-opening, provided that they will be open in the coming year. Such blocks will then be subject to the same TAC control as those in the re-opened area.
5. Based on the annual fishing mortality target for a re-opened area, a TAC will be calculated and the number of trips to allocate will be determined using a scallop possession limit which the Council will determine. Controlled access day-at-sea allocations will be calculated using a DAS/possession limit tradeoff that the Council establishes.

- ***Setting Fishing mortality in access areas***

Amendment 15 to the Scallop FMP implemented the hybrid overfishing definition, which includes a method for setting fishing mortality targets for the fishery. Specification packages consider what fishing mortality rates should be set at under the principles approved in Amendment 10 and Amendment 15. For access areas, the F_{target} can fluctuate over time to allow more fishing pressure when they are open due to the increased biomass accumulated while they are closed. While the PDT does not suggest a very high *F* for access areas, it is suggesting that the access areas can sustain a higher *F* than open areas that receive constant fishing pressure. For example, the Elephant Trunk Access Area was closed for 2004-2006, receiving an *F* of 0.0 for those years. In 2007 when the area opened it could sustain an average *F* of (2*FMSY) for about three years, and then potentially close again to allow growth of recruited scallops if high recruitment levels reoccur. It is preferred that the actual target be below the threshold set by time averaging (e.g., be below 2*FMSY).

The time-averaging within specific areas can result in various strategies that yield similar results. Below, each row will have similar yields and biomasses for a given (unspecified) area, but the rotational strategies will have slightly higher yields (between 2% and 8% higher than constant *F*):

1) F, F, F …
2) 0, 2F, 0, 2F …
3) 0, 0, 3F, 0, 0, 3F …
4) 0, 0, 0, F, 2F, 3F, 0, 0, 0, F, 2F, 3F …
5) $^1/_2$ F, $^3/_2$ F, $^1/_2$ F, $^3/_2$F …

For the most part, the strategy the PDT has used since Amendment 10 is to "ramp-up" fishing mortality targets in reopened access areas. For example, after an opening an area could be fished at 0.4 for three years, or the fishing mortality target could be set below 0.4 in year 1, at 0.4 in year 2, and higher than 0.4 in year three. Over the three years the fishing mortality targets come out the same, but the latter, "ramped up" approach is considered more risk averse and reduces variability in landings, as shown in the 4th line of the example above. The first year might be fished at a rate of 80% of the time averaged target, the second year at 100%, and the third year at 120%. This approach is consistent with the adaptive area rotation strategy considered in Amendment 10. The following table shows how this would work; the "ramped rotation" example is described on the bottom row (**Table 4**).

Table 4 - Example of ramped fishing mortality targets for re-opened areas, compared to mortality targets with no rotation and simple rotation with constant fishing mortality targets when re-opened.

Year	Year N	1	2	3	4	5	6	7 - N	1	All
Status	**Open**	**CL**	**CL**	**CL**	**Re-open**	**Re-open**	**Re-open**	**Open**	**CL**	**AVG**
No rotation	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Simple rotation	0.20	0.00	0.00	0.00	0.40	0.40	0.40	0.20	0.00	0.20
Ramped rotation	0.20	0.00	0.00	0.00	0.32	0.40	0.48	0.20	0.00	0.20

1.4 SUMMARY OF SCALLOP FISHERY SPECIFICATIONS AND VARIOUS ANNUAL CATCH LIMITS

Amendment 15 established a method for accounting for all catch in the scallop fishery and included designations of Overfishing Limit (OFL), ABC, ACLs, and Annual Catch Targets (ACT) for the scallop fishery, as well as scallop catch for the Northern Gulf of Maine (NGOM), incidental, and state waters catch components of the scallop fishery. The scallop fishery assessment will determine the exploitable biomass, including an assessment of discard and incidental mortality (mortality of scallops resulting from interaction, but not capture, in the scallop fishery).

Based on the assessment, OFL is specified as the level of landings, and associated F that, above which, overfishing is occurring. OFL will account for landings of scallops in state waters by

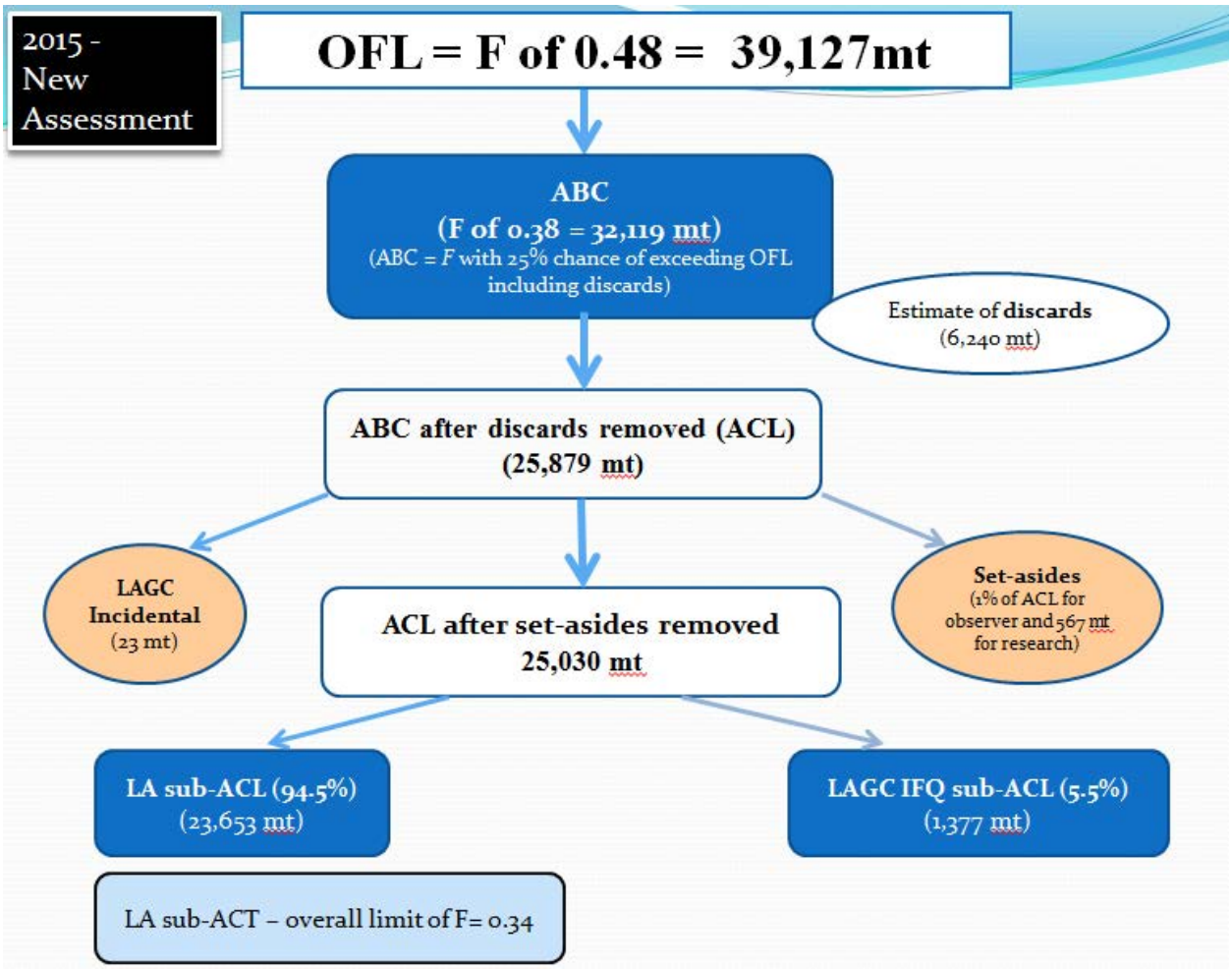
vessels without Federal scallop permits. The previous assessment of the scallop fishery (SAW 50, 2010) determined that the F associated with the OFL is 0.38. The updated assessment, SARC59, approved a higher OFL equivalent to 0.48 (See Section 4.1.1 for a summary of the results from the updated assessment completed in 2014). To account for scientific uncertainty, ABC is set at a level with an associated F that has a 25-percent probability of exceeding F associated with OFL (i.e., a 75-percent probability of being below the F associated with OFL).

In the Scallop FMP ACL is equal to ABC. SAW 50 determined that the F associated with the ABC/ACL is 0.32. The updated assessment, SARC 59, approved a higher OFL; therefore, the F associated with ABC/ACL is higher as well, F = 0.38. Set-asides for observer and RSA are removed from the ABC (1 percent of the ABC/ACL and 1.25 M lb (567 mt) respectively). After those set-asides are removed, the remaining available catch is divided between the LA and LAGC fisheries into two sub-ACLs; 94.5% for the LA fishery sub-ACL, and 5.5% for the LAGC fishery sub-ACL. Figure 2 summarizes how the various ACL terms are related in the Scallop FMP.

To account for management uncertainty, Amendment 15 established ACTs for each fleet. For the LA fleet, the ACT will have an associated F that has a 25-percent chance of exceeding ABC. The major sources of management uncertainty in the LA fishery are carryover provisions including the 10 DAS carryover provision, and the ability to fish unused access area allocation within the first 60 days of the following fishing year. The F associated with this ACT for the LA fishery is currently estimated to be 0.28. The fishery specifications allocated to the fishery may be set at an F rate lower than this level based on available resource, but fishery specifications may not exceed this level. For example, in FY2014 several specification alternatives were considered that had various estimated of overall F ranging from 0.10 to 0.21. Again, because the updated assessment, SARC59 approved a higher OFL, the F associated with ACT is higher as well. The new ACT will based on applying an overall fishing mortality of 0.34. For the LAGC fleet, the ACT will be set equal to the LAGC fleet's sub-ACL, since that fishery is quota managed and has less management uncertainty.

Finally, catch from the NGOM is established at the ABC/ACL level, but is not subtracted from ABC/ACL. Since the NGOM portion of the scallop fishery is not part of the scallop assessment, the catch will be added and specified as a separate Total Allowable Catch (TAC), in addition to ABC/ACL.

Figure 2 – Example of how catch limits are set in the Scallop FMP using FY2015, with updated reference points from the recent benchmark assessment (SARC59)



1.4.1 Default measures for FY2015 approved in previous scallop action (Framework 25)

The Council routinely sets default measures for the fishing year following the intended length of an action in the event that subsequent actions are not in place at the start of the following fishing year. For example, the scallop fishing year starts on March 1, but complete management measures are not usually in place until May. This lag is primarily due to the fact that scallop specifications are set using the most up to date survey data collected the summer before the start of the fishing year. The results are typically available in August, a new ABC is reviewed by the SSC in September, and the PDT develops and analyzes specification alternatives in early fall before final Council action at the November meeting. Staff generally completes the submission package by the end of the year and the action is reviewed and implemented by NMFS typically in May.

In the past, measures have been in place on March 1 that are inferior to measures proposed for implementation in a subsequent action using more updated information. For example, ultimate

catch levels may be higher or lower depending on updated survey results, some areas with access area trips assigned may not be able to support that level of effort, or small scallops may show up in a new survey suggesting the area should be closed to protect new recruitment. In order to minimize the potentially negative impacts of having measures in place on March 1 that ultimately need to be changed, the Council only allocated DAS to the limited access fishery as default measures for FY2015; no access area trips were assigned to limited access vessels or general category vessels.

Therefore, if Framework 26 is delayed past March 1, 2015, scallop vessels would be restricted to fishing their FY2015 default allocations in open areas until final FY 2015 specifications are implemented. However, vessels would be able to fish FY 2014 compensation trips in the access areas that were open in FY 2014 (e.g., DMV, NLS, and CA2) for the first 60 days of FY2015 (i.e., March 1 through April 29, 2015). In addition, the default DAS allocations were set at 75% of the projection to be precautionary. Therefore, vessels will receive a set number of DAS on March 1, 2015, and that may be different than the ultimate number of DAS awarded under FW26.

The default measures for 2015 also included the required ABC and ACL values, but they will likely be replaced by this action. The table below summarizes the default values that will be effective on March 1, 2015 until FW26 is implemented to replace them. Vessels with a LAGC IFQ permit will receive an allocation based on the contribution factor assuming the total LAGC IFQ is 2.5 million pounds. Their allocations for FY2015 may ultimately change based on the final sub-ACL approved in FW26. LAGC IFQ vessels are responsible to payback any overage the following year if the ultimate IFQ for FY2015 is lower than the allocation under the default sub-ACL.

If FW26 is not adopted these allocations would remain in place for all of FY2015 and beyond until replaced by a subsequent action.

Table 5 - ACL related values and allocations for 2015 (default measures approved in FW25)

	2015*
OFL	34,247 mt (75,501,724 lb)
ABC	23,982 mt (52,871,269 lb)
incidental	22.7 mt (50,000 lb)
RSA	567 mt (1,250,000 lb)
OBS	240 mt (529,110 lb)
ACL after set-asides/incidental removed *(= ABC-(incidental + RSA +OBS))*	23,152 mt (51,042,084 lb)
LA sub-ACL (94.5% of ACL)	21,879 mt (48,234,778 lb)
IFQ-only (5% of ACL)= sub-ACL = ACT	1,158 mt (2,552,105 lb)
IFQ + LA (0.5% of ACL)=sub-ACL=ACT	116 mt (255,210 lb)

** 2015 measures are default and expected to be adjusted based on FW26*

Table 6 – Summary of FY2015 default allocations for LA vessels (approved in FW25)

	LA FT	LA PT	LA Occasional
2015	17	7	1

** Default DAS is 75% of the total DAS projected for FY2015 (23DAS)*

2.0 MANAGEMENT ALTERNATIVES UNDER CONSIDERATION

2.1 OVERFISHING LIMIT AND ANNUAL BIOLOGICAL CATCH

The MSA was reauthorized in 2007. Section 104(a) (10) of the Act established new requirements to end and prevent overfishing, including annual catch limits (ACLs) and accountability measures (AMs). Section 303(a)(15) was added to the MSA to read as follows: ‘‘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 Council adopted Scallop Amendment 15 to comply with these new ACL requirements, and that action was implemented in 2011.

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. The determination of ABC will consider scientific uncertainty and the Council may not exceed the fishing level recommendations of its Science and Statistical Committee (SSC) in setting ACLs (Section 302(h)(6)). The MSA enhanced the role of the SSCs, mandating that they shall provide ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catch (MSA 302(g(1)(B)). This requirement for an SSC recommendation for ABC was effective in January 2007.

2.1.1 Alternative 1 - No Action for OFL and ABC

Under “No Action”, the overall OFL and ABC would be equivalent to default 2015 values adopted in Framework 25 (Table 7). These would remain in place until a subsequent action replaced them. These values were selected based on the same control rules: 1) OFL is equivalent to the catch associated with an overall fishing mortality rate equivalent to Fmsy; and 2) ABC is set at the fishing mortality rate with a 25% chance of exceeding OFL where risk is evaluated in terms of the probability of overfishing compared to the fraction loss to yield. These values include estimated discard mortality. Therefore, when the fishery specifications are set based on these limits, the estimate of discard mortality is removed first and allocations are based on the remaining ABC available (Table 7, column to the far right).

Table 7 – Summary of OFL and ABC FY2015 (default) values approved by the SSC in Framework 24 (in metric tons)

	OFL (including discards at OFL)	ABC (including discards)	Discards (at ABC)	ABC available to fishery (after discards removed)
2015 (default)	34,247	29,683	5,701	23,982

2.1.2 Alternative 2 - Updated OFL and ABC for FY2015 and FY2016 (default) (*Preferred Alternative*)

The SSC reviewed updated estimates of OFL and ABC for Framework 26 (Table 8).

Table 8 – Final OFL and ABC for FY2015 and 2016 (default) for Framework 26 (in mt)

Year	OFL (including discards)	ABC (including discards)	Discards at ABC	ABC available to fishery = ACL (after discards removed)
2015	38,061	31,459	6,107	25,352
2016	45,456	37,903	6,096	31,807

Once OFL and ABC are established, associated ACLs for the fishery can be defined. The table below summarizes the various ACL allocations for the fishery based on decisions made in Amendment 15 when ACLs were implemented (Table 9).

Table 9 – Summary of ACL related values for the scallop fishery based on updated OFL and ABC values

	2015		2016 (default)	
	MT	lbs	MT	lbs
OFL	38,061	83,910,156	45,456	100,213,343
ABC/ACL (discards removed)	25,352	55,891,602	31,807	70,122,444
incidental	23	50,045	23	50,045
RSA	567	1,250,021	567	1,250,021
OBS	254	558,916	318	701,224
ACL for fishery	24,509	54,032,620	30,899	68,121,153
LA ACL	23,161	51,060,826	29,200	64,374,490
LAGC ACL	1,348	2,971,794	1,699	3,746,663
LAGC IFQ	1,225	2,701,631	1,545	3,406,058
LA with LAGC IFQ	123	270,163	154	340,606
LA ACT	*Varies based on specification alternative selected*			

2.2 FISHERY SPECIFICATIONS

Specifications for the limited access fishery include DAS and access area trips as limited by the ACT for the limited access fishery and what areas are open to the fishery.

Specifications for the LAGC fishery include an overall IFQ allocation for vessels with LAGC IFQ permits, a hard TAC for vessels with a LAGC NGOM permit, and a target TAC for vessels with a LAGC incidental catch permit (40 pound permit).

2.2.1 Overall fishery allocations

2.2.1.1 Alternative 1 (No Action – Default measures from Framework 25)

Under No Action, the sub-ACL for the LA fishery would be 21,879 mt (48,234,778 lb). The specifications would include default measures approved in Framework 25 for FY2015 which are 75% of the projected DAS for that year. For full-time vessels that is equivalent to 17 DAS (75%

of 23 DAS) and 7 DAS for part-time vessels. There are no access area allocations under No Action. These measures would remain in place until replaced by another action.

Under FY2015 default measures the LAGC IFQ allocation is 1,274 mt for vessels with a LAGC IFQ permit as well as LA vessels with a LAGC IFQ permit. This allocation is equivalent to 5.5% of the ACL projected for FY2015 from FW25. This alternative does not include any access area trips for LAGC IFQ vessels. On March 1, 2014 LAGC vessels will be allocated an individual quota based on default measures that will likely be different than the allocation LAGC IFQ vessels will ultimately be allocated under FW26. Similar to FY2013 and 2014, LAGC vessels will need to be aware that final allocations for FY2015 are likely to be different than allocations received on March 1, 2015 before FW26 is implemented.

No action for the NGOM hard TAC is 70,000 pounds and the target TAC for vessels with a LAGC Incidental permit is 50,000 pounds.

2.2.1.2 Alternative 2 (Specifications based on basic run using fishing mortality target principles in the FMP with no modifications to scallop access area boundaries)

This is the basic alternative the PDT generally begins with when identifying possible specification alternatives. Target catches in this fishery are driven by three principles developed as part of the "hybrid" overfishing definition approved in Amendment 15. The three main principles that are used in this FMP to set target catches for the fishery are:

1) fishing mortality in open areas cannot exceed Fmsy;
2) a spatially averaged fishing mortality target is limited to the value considered to the ACT for the fishery for all areas combined (open and closed areas); and
3) fishing mortality targets for access areas are based on a time-averaged principle, higher F in some years followed by closures or limited fishing levels in other years.

When these principles are applied for FY2015 the allocations for full-time LA vessels are:

- 31 DAS for FT vessels in open areas (when open area F is set at 0.48); and
- Some level of access would be allocated in all three of the MA scallop access areas (Delmarva, Elephant Trunk and Hudson Canyon). A target F of 0.35 was applied in all areas with sufficient exploitable biomass and lower growth potential. When F is set at 0.35 in all three areas the total landings from access areas is 8,700 mt (19.2 million pounds), corresponding to three trips per FT LA vessels at 17,000 pounds per trip.
- The remaining scallop access areas would be closed to the scallop fishery in 2015: Closed Area I, Closed Area II, and Nantucket Lightship.
- Total projected catch for Alternative 2 from all sources of catch (including set-asides and LAGC catch) is about 45 million pounds.
- Under 2016 default measures, LA vessels would be allocated a reduced level of open area DAS and one access area trip. In addition, LA compensation trips from FY2015 could occur in the first 60 days of FY2016 in any area a vessel has compensation pounds left in. Default DAS would be set at 75% of the projected DAS allocation for 2016 (**27 DAS**, 75% of 36 DAS projected for 2016 under this alternative. Default 2016 measures would also include one access area trip that could be used in the MA access areas (i.e. 17,000 pounds for FT vessel). The MA access areas would be open to LAGC vessels as well

(6.5 % of the projected catch from AA in 2016 would be allocated in fleetwide LAGC trips). Default 2016 allocations could not be used in those areas until April 1, 2016. Lastly, FY2016 RSA compensation fishing could not take place in those areas unless allowed under a subsequent framework action.

The LA-sub ACL for this alternative is 23,161 mt (51,060,826 lb), and the LAGC IFQ sub-ACL under this alternative is 1,348mt. The PDT reviewed recent catches of NGOM and incidental permits and recommends those allocations remain at status quo levels; NGOM hard TAC of 70,000 pounds and the target TAC for vessels with a LAGC Incidental permit at 50,000 pounds.

The maximum that the annual catch target can be set at is the catch associated with applying a fishing mortality rate of 0.34 overall, 0.04 below ABC/ACL, currently estimated at 0.38, to account for management uncertainty. But in reality some areas are closed and not available to the scallop fishery. Therefore, in practice, the projected catch associated with ACT cannot exceed 0.34 overall, but target catches are actually driven by the three overall principles developed as part of the "hybrid" overfishing definition approved in Amendment 15 (F in open areas cannot exceed Fmsy; F in access areas set annually at a level that results in F no higher than Fmsy when averaged over time; and the combined target F in open, access, and closed areas cannot exceed F associated with ACT, currently 0.34). In a given year, one of these three principles will be the constraining element that dictates what the ultimate target F is for a particular alternative, in many cases below ACT (0.34). For example, for FY2015 under this alternative, the constraining factor for setting projected catches is the open area max of 0.48. The overall estimate of F combined from all areas open and closed under this alternative is 0.29.

2.2.1.3 Alternative 3 (Specifications based on basic run using fishing mortality target principles in the FMP with modifications to scallop access area boundaries) (*Preferred Alternative*)

The overall intent of this alternative is to include new closed areas to protect small scallops within the specifications. Several different modifications to existing access areas were considered (Options 1, 2 and 3), and these options can be combined under the final alternative. Overall these options were designed to protect the two and three year old scallops observed during the 2014 survey season (50-70mm). These year classes may be susceptible to scallop fishing gear in FY2015 (expected to be around 100mm next year).

Under this alternative:

- 30 DAS for FT vessels in open areas (when open area F is set at 0.48); <u>but if CA2 extension is not closed the annual DAS allocation would increase by one DAS</u> (31 DAS for full-time vessels).
- Some level of access would be allocated in all three of the MA scallop access areas (Delmarva, Elephant Trunk and Hudson Canyon). For this alternative the target F rates for each MA AA varied: 0.35 for Hudson Canyon; 0.50 for Elephant Trunk; and 0.30 for Delmarva. These F rates were set by the PDT to reflect where vessels are expected to fish because this alternative may be combined with the alternative to allocate trips in a flexible fashion (Section 2.3), rather than a lottery where vessels are assigned specific areas. When these various F rates are applied the total landings from access areas is

8,700 mt (about 19.2 million pounds), corresponding to three trips per FT LA vessels at 17,000 pounds per trip.

- The remaining scallop access areas would be closed to the scallop fishery in 2015: Closed Area I, Closed Area II, and Nantucket Lightship.
- Total projected catch for Alternative 3 varies slightly depending on the sub-options selected; overall it is about 46 million pounds (including set-asides and LAGC catch).
- The overall projected LPUE for FY2015 under this alternative is 2,594 pounds per DAS for all areas combined, and 2,715 for FY2016.

Under this alternative the 2016 default measures would be:

- LA vessels would be allocated a reduced level of open area DAS and one access area trip. Default DAS would be set at 75% of the projected DAS allocation for 2016 (**26 DAS**, 75% of 34DAS projected for 2016 under this alternative. Default 2016 measures would also include one access area trip that could be used in the MA access areas (i.e. 17,000 pounds for FT vessel). In addition, LA compensation trips from FY2015 could occur in the first 60 days of FY2016 in any area a vessel has compensation pounds left in.
- Under 2016 default measures the LAGC fishery would be allocated the entire projected catch for that segment of the fishery (3.7 million pounds). Under 2016 default measures, the MA access areas would also be open to LAGC vessels. The LAGC fishery would be allocated the same percentage of catch in MA access areas as the preferred alternative (6.5%, See Section 2.2.2). Since the total default catch in MA access areas for LA vessels is 5.6 million pounds (17,000 pounds* 327 full-time equivalent LA vessels), 6.5% of that default catch is 361,335 pounds. Therefore, the default MA access area allocation for LAGC vessels in 2016 is 602 trips (361,335 pounds/600 pound trips).
- Default 2016 allocations in MA access areas could not be used until April 1, 2016 for both LA and LAGC vessels. Lastly, FY2016 RSA compensation fishing could not take place in those areas unless allowed under a subsequent framework action. If any new areas are closed in this action; for example, the extension of NL and inshore part of ETA under the preferred alternative, those areas would remain closed under default measures.

It is not relevant for this action, but during discussions of default measures the PDT recommends that if 75% of the projected DAS is less than 20 DAS for FT LA vessels, the Council should consider allocating a minimum of 20 DAS. Open area trips are generally about 10DAS each on average, so a 20 DAS allocation would allow a FT LA vessel to take about two trips prior to a subsequent action taking effect, usually in May, two months after the fishing year has begun. If the final DAS allocation for the default year is ultimately less than 20 DAS, and a vessel fishes 20 DAS, that vessel would automatically lose any overage of DAS in a subsequent fishing year. Again, this is not the case for this action since default DAS for 2016 are higher than 20 DAS.

Candidate Modifications are provided in Figure 3, Figure 4 and Figure 6.
Figure 5 and Figure 7 overlay the scallop access area modifications with scallop distribution data from 2014 surveys.

The LA-sub ACL for this alternative is 23,161 mt (51,060,826 lb), and the LAGC IFQ sub-ACL under this alternative is 1,348mt. Both sub-ACLs are about 25% higher than the ACLs from 2014, and 8% higher than the default 2015 values.

The preferred alternative includes Option 2 and Option 3 for access area modifications (extension of NL and closure of inshore ETA). The total projected catch for the proposed specification alternatives is 21,502 mt (47.4 million pounds). After LAGC IFQ catch and set-asides are removed (estimate of incidental catch, RSA, and observer set-aside), the remaining projected catch is the LA ACT. In 2015 the LA ACT is equivalent to 19,311 mt (42.6 million pounds), after 2,191 mt are removed for LAGC IFQ catch, incidental catch, RSA and set-aside for observers (4.8 million pounds).

The PDT reviewed recent catches of NGOM and incidental permits and recommends those allocations remain at status quo levels; NGOM hard TAC of 70,000 pounds and the target TAC for vessels with a LAGC Incidental permit at 50,000 pounds.

2.2.1.3.1 Option 1 – Modification to access area in Closed Area II

Option 1 is an extension of the scallop access area in Closed Area II to include concentrations of small scallops that are near existing boundaries of current access area. This option is limited in that it only extend into "open areas" to the scallop fishery; the option does not extend into any closed areas, and does not reduce the size of any current scallop access areas. The PDT may consider modifying these areas again in a future action; for example, if closed areas for EFH or groundfish are modified in another action. But this action is only considering extensions of current scallop access areas into adjacent open areas. See Figure 3 and Figure 5.

The size of this option is 4,203 square nautical miles. The status quo scallop access area within CA2 is 1,025 square nautical miles, and the extension is 3,178 square nautical miles. The boundaries for this option are in Table 10.

Vessels are currently prohibited from transiting through the scallop access area within Closed Area II. This is the only scallop access area where transiting is prohibited, primarily because it is far offshore and abuts the US-Canada maritime border. Therefore, the need to transit through the area to get to port from primary scallop fishing grounds is minimal. The Enforcement Committee developed a consensus statement related to this provision, "allowing transiting through a closed area is difficult to enforce." Therefore, it was clarified that if this area is closed, the current prohibition for transiting should apply in the expanded area as well since it is a relatively low transit area and is not located between active fishing grounds and fishing ports.

Table 10 – Boundaries of Closed Area II scallop access area extension (Figure 3)

	Latitude	**Longitude**
Point 1	41 30' N	67 20' W
Point 2	41 30' N	Intersection of 41 30' N and the US-Canada Maritime Boundary, approx. 66 34.73'W
Point 3	40 30' N	Intersection of 40 30' N and the US-Canada Maritime Boundary, approx. 66 34.73'W
Point 4	40 30' N	67 20" W

2.2.1.3.2 Option 2 – Modification to Nantucket Lightship Access Area (*Preferred Alternative*)

Option 2 is an extension of the scallop access area in Nantucket Lightship to include concentrations of small scallops that are near existing boundaries of current access areas. This option is limited in that it only extends into "open areas" to the scallop fishery; the option does not extend into any closed areas, and does not reduce the size of any current scallop access areas. The Council may consider modifying these areas again in a future action; for example, if closed areas for EFH or groundfish are modified in another action. But this action is only considering extensions of current scallop access areas into adjacent open areas. See Figure 4 and Figure 5.

The size of this option is 1,046 square nautical miles. The status quo scallop access area within Nantucket Lightship is 888 square nautical miles, and the extension is 158 square nautical miles. The boundaries for this option are in Table 11.

Vessels are currently allowed to transit through the scallop access area within Nantucket Lightship, as well as Closed Area I when the areas are open or closed to the scallop fishery. If the NL scallop access area is extended in this action to include the relatively small area to the east of the access area, the Council clarified that transiting also be permitted in that extended area, since it is a relatively active transit area and the incentive to fish in that extended area is currently minimal."

Table 11 –Boundaries of Nantucket Lightship scallop access area extension (Figure 4**)**

	Latitude	**Longitude**
Point 1	40 33' N	69 00' W
Point 2	40 33' N	68 48' W
Point 3	40 20' N	68 48' W
Point 4	40 20' N	69 00' W

2.2.1.3.3 Option 3 – Modification to Elephant Trunk (prohibit access in northwest corner) (*Preferred Alternative*)

This option included two sub-options to close areas *within* current scallop access areas, or a temporary prohibition to fish in a subset of the Elephant Trunk access area. The final option selected is seven ten minute squares in the northwest corner of the access area, but the action also considered an additional sub option only including six ten minute squares (Figure 6).

The size of the larger option (7 ten minute square area) within ETA is 549 square nautical miles. The smaller, 6 ten minute square area is about 471 square nautical miles. The Elephant Trunk access area is 1,571 square nautical miles, so the larger area is about 35% of the access area, and the smaller area is about 30% of the access area. The boundaries for these options are in Table 12 and **Table 13**. The preferred sub-option recommended for closure is the larger 7 ten minute square area.

Vessels are currently allowed to transit through all Mid-Atlantic scallop access areas. If a subarea within ETA is closed in this action the Council should clarify whether scallop vessels should be allowed to transit through the closed area within the access area to and from port. If an inshore area of ETA is closed in this action the Council clarified that transiting through the area be prohibited. The proposed subarea is a relatively small area and the incentive to fish in the area is relatively high since abundance is high and the area is closer to shore and between primary fishing grounds and fishing ports. During development of this action the Enforcement Committee developed a consensus statement related to this provision, "allowing transiting through a closed area is difficult to enforce."

Table 12 –Boundaries of 7 ten minute square closure within Elephant Trunk scallop access area (preferred alternative)

	Latitude	Longitude
Point 1	38 50' N	74 20' W
Point 2	38 50' N	73 40' W
Point 3	38 40' N	73 40' W
Point 4	38 40' N	73 50' W
Point 5	38 30' N	73 50' W
Point 6	38 30' N	74 20' W

Table 13 –Boundaries of 6 ten minute square closure within Elephant Trunk scallop access area

	Latitude	Longitude
Point 1	38 50' N	74 20' W
Point 2	38 50' N	73 50' W
Point 3	38 30' N	73 50' W
Point 4	38 30' N	74 20' W

Option 3 is expected to reduce incidental mortality on small scallops within the access area and increase overall yield production from the access area by concentrating effort in deeper waters first (Figure 7). Scallops grow faster in shallow waters and the overall growth potential is lower for scallops in deeper waters. Therefore, concentrating effort in deeper waters first will take advantage of the differential growth patterns for scallops by depth and is expected to increase overall yield from the area compared to opening the entire area at once. Previous openings have shown that vessels tend to fish in areas with highest concentrations first, but shallow areas are generally targeted first since they are closer to shore and scallops grow faster in more shallow waters. And in some areas, relatively large scallops are in some shallow areas, but they are younger than scallops farther offshore, and have more potential yield left compared to older scallops farther offshore.

It should be clarified that under Option 3, the overall F rate applied to the remaining portion of ETA was increased to attain the same overall removal as Alternative 2 (no closure in ETA) (Table 95 in Impacts section with F by area).

Figure 3 – Alternative 3 Option 1 – potential extension of access area in Closed Area II

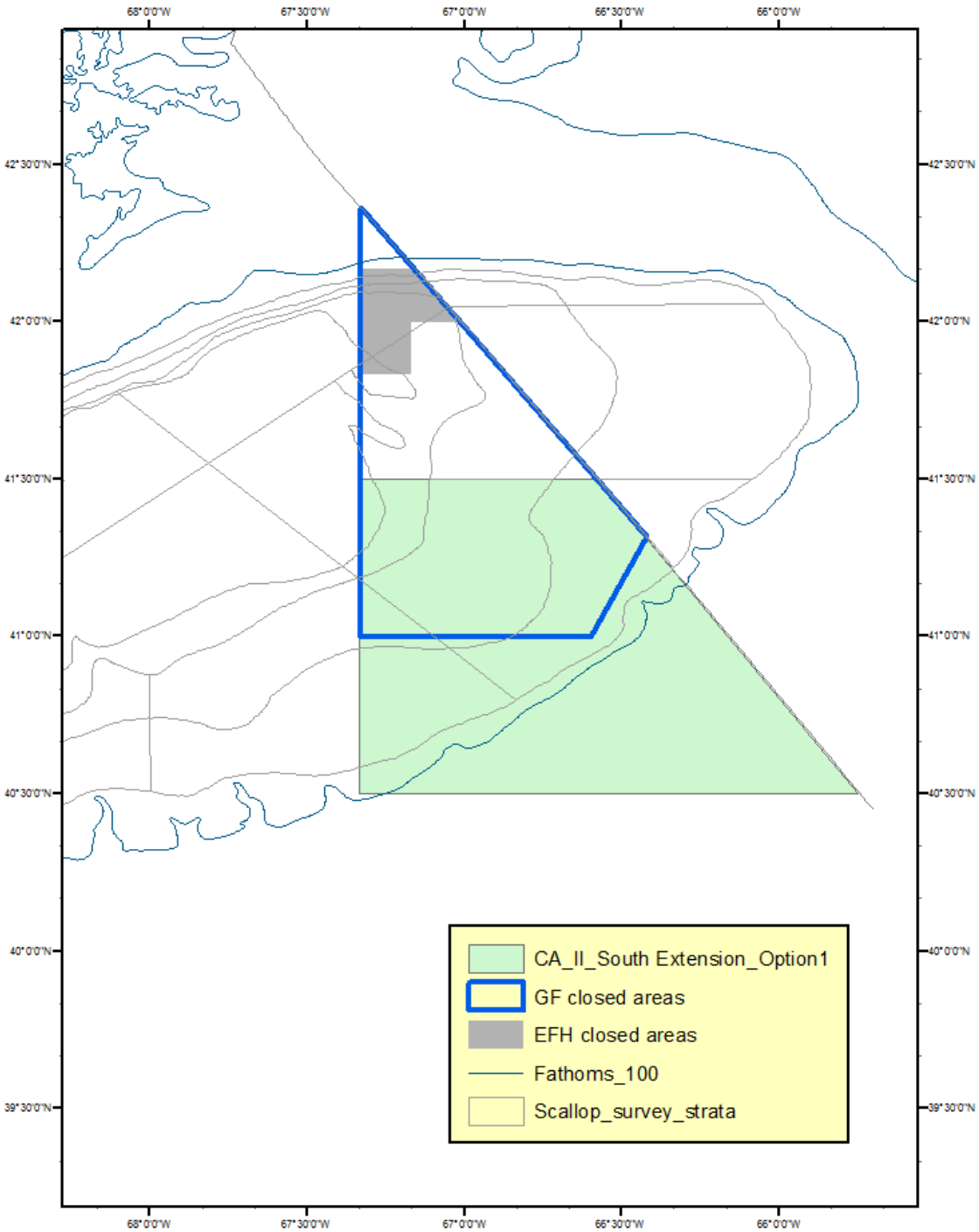


Figure 4 - Alternative 3 Option 2 – potential extension of Nantucket Lightship access area

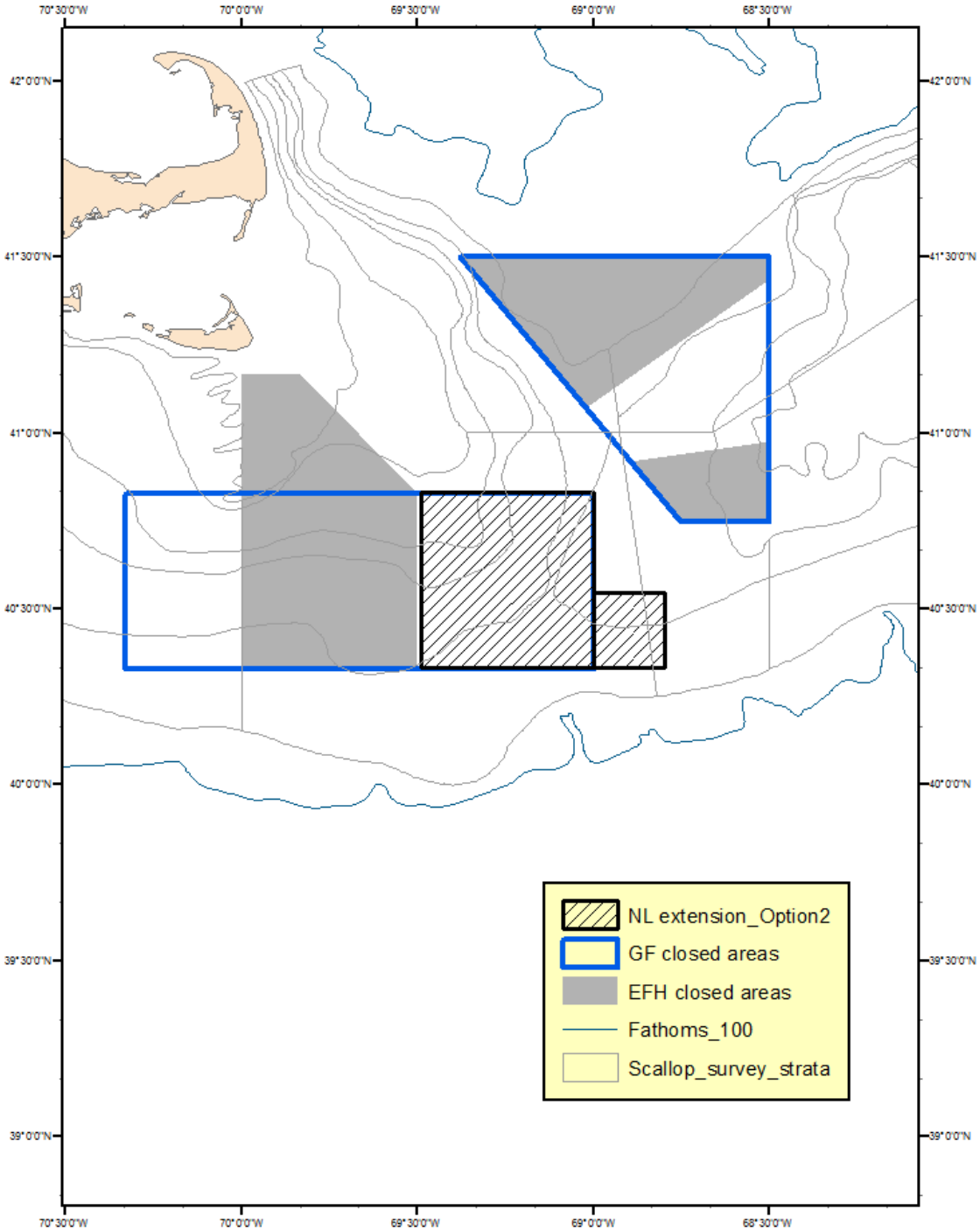
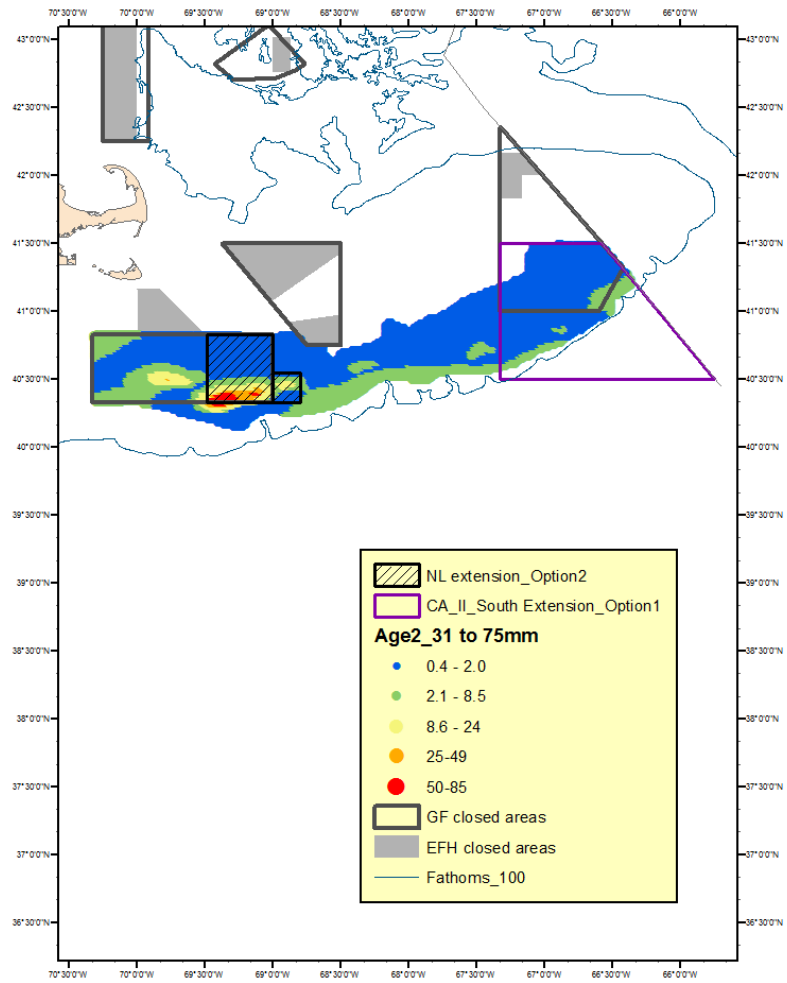


Figure 5 - Potential closed area options on GB with 2014 survey data (Habcam on left and SMAST on right)



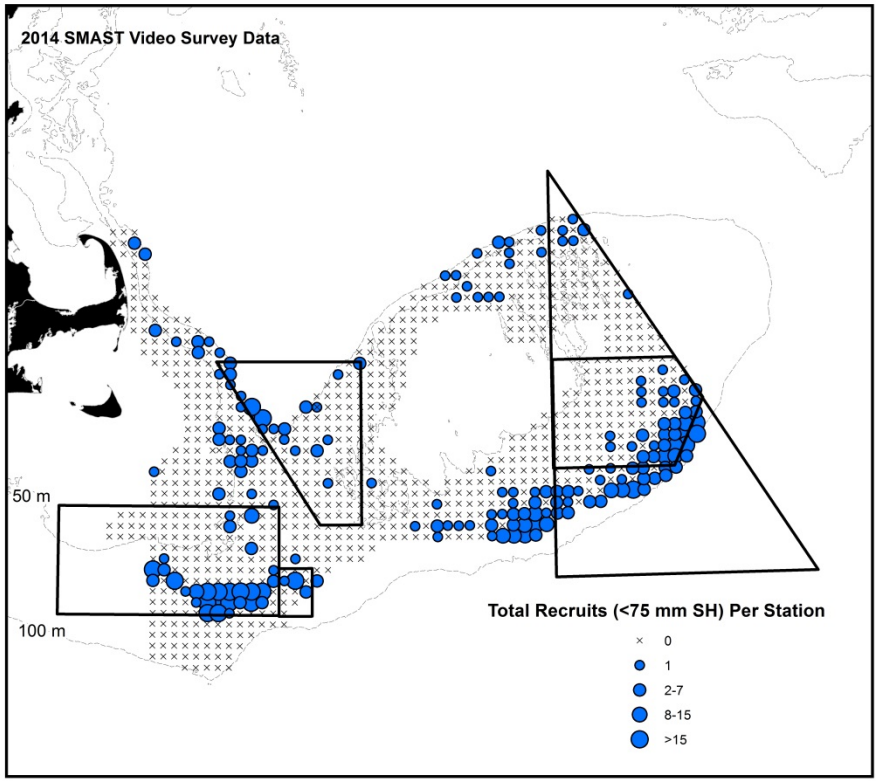


Figure 6 - Alternative 3 Option 3 with 7 ten minute square and 6 ten minute square sub-options within ETA

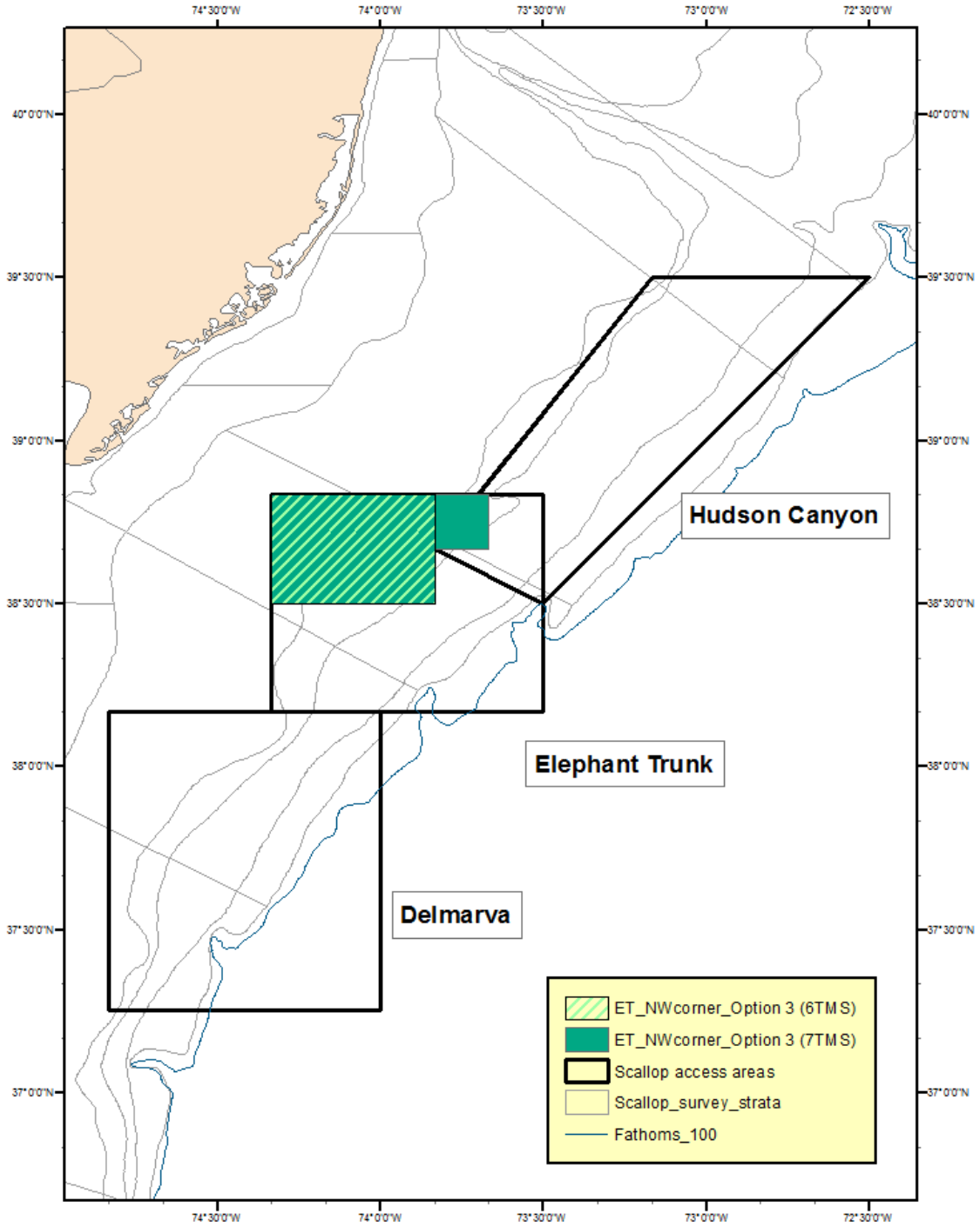
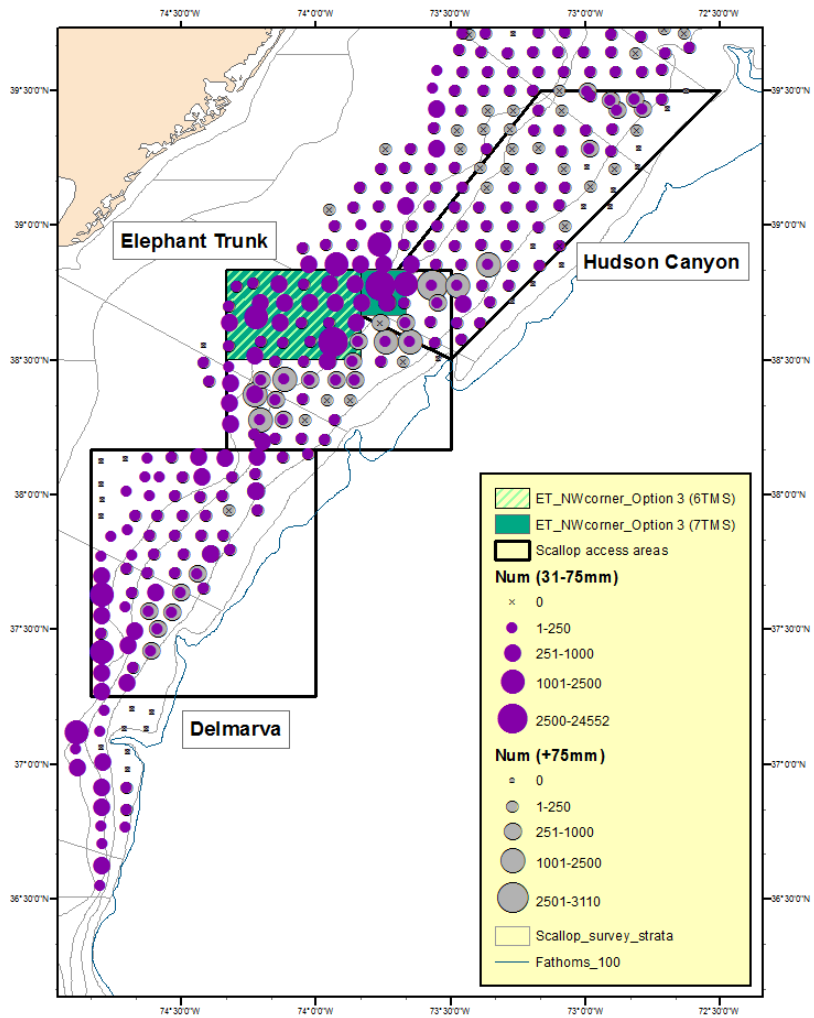
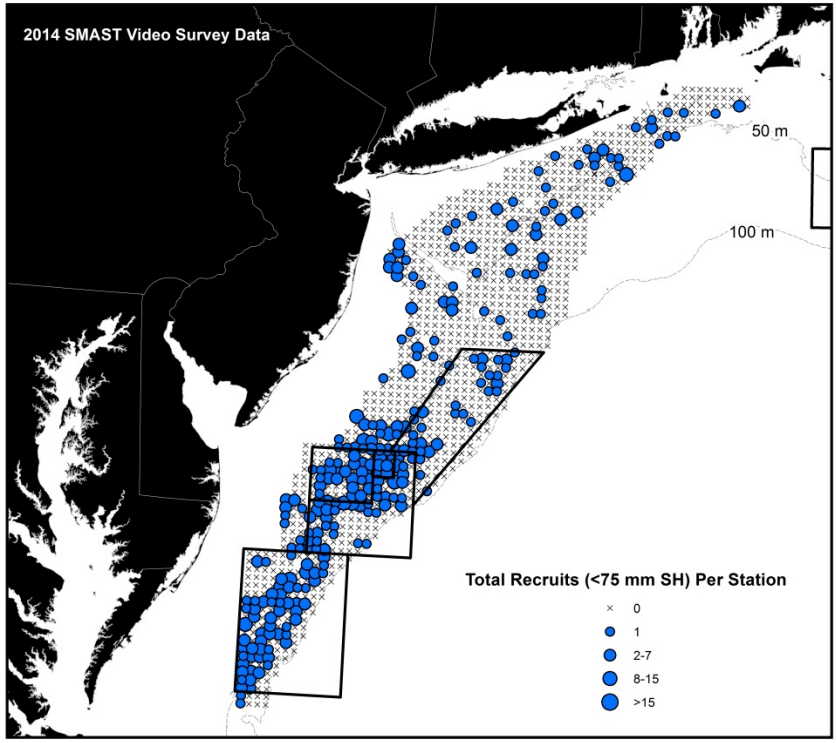


Figure 7 – Alternative 3 Option 3 with 2014 survey data (VIMS on left and SMAST on right)





2.2.1.4 Alternative 4 (Specifications based on basic run using fishing mortality target principles in the FMP, but reduce fishing mortality target for MA access areas lower than allowable limits to reduce incidental mortality on small scallops in those areas)

For this specification alternative, the same overall principles would be used to set fishing targets for the fishery; however, the allowable fishing mortality limit used to set allocations for MA access areas would be reduced by some amount to reduce impacts on small scallops observed in those areas. For example, in the base run the fishing mortality was set at 0.35 for all three MA access areas; for this alternative it was reduced to 0.30, but there is no closure in Elephant Trunk. This reduction in fishing mortality target would translate into fewer trips and lower catch allowed to be removed from the access areas. A separate run was completed for this alternative called "combo run" because it includes a lower F for MA access areas (0.30), as well as closing the extension around CA 2 and NL (Options 1 and 2 under Alternative 3).

Under this alternative:

- 31 DAS for FT vessels in open areas (when open area F is set at 0.48); and
- Some level of access would be allocated in all three of the MA scallop access areas (Delmarva, Elephant Trunk and Hudson Canyon). A target F of 0.30 was applied in all areas with sufficient exploitable biomass and lower growth potential. When F is set at 0.30 in all three areas the total landings from access areas is 7,650 mt (about 16.9 million pounds), corresponding to three trips per FT LA vessels at 16,000 pounds per trip.
- The remaining scallop access areas would be closed to the scallop fishery in 2015: Closed Area I, Closed Area II, and Nantucket Lightship.
- Total projected catch for Alternative 4 is about 45 million pounds (including set-asides and LAGC catch).
- Under 2016 default measures, LA vessels would be allocated a reduced level of open area DAS and one access area trip. In addition, LA compensation trips from FY2015 could occur in the first 60 days of FY2016 in any area a vessel has compensation pounds left in. Default DAS would be set at 75% of the projected DAS allocation for 2016 (**27 DAS**, 75% of 36DAS projected for 2016 under this alternative. Default 2016 measures would also include one access area trip that could be used in the MA access areas (i.e. 17,000 pounds for FT vessel). The MA access areas would be open to LAGC vessels as well (6.5% of the projected catch from AA in 2016 would be allocated in fleetwide LAGC trips). Default 2016 allocations could not be used in those areas until April 1, 2016. Lastly, FY2016 RSA compensation fishing could not take place in those areas unless allowed under a subsequent framework action.

The LA-sub ACL for this alternative is 23,161 mt (51,060,826 lb), and the LAGC IFQ sub-ACL under this alternative is 1,348mt (2,971,832 lbs). Both sub-ACLs are about 25% higher than the ACLs from 2014, and 8% higher than the default 2015 values. The PDT reviewed recent catches of NGOM and incidental permits and recommends those allocations remain at status quo levels; NGOM hard TAC of 70,000 pounds and the target TAC for vessels with a LAGC Incidental permit at 50,000 pounds.

Table 14 – Summary of overall specification alternatives

	Alt 1	Alt 2	Alt 3 (*Preferred Alternative*)	Alt 4
Description of Alternative	**No Action** Default measures set in FW25	**Basic run** OFD principles for setting target F rates	**New Closure Run** (diff combinations of CA2, NL, and ETA closures)	**Basic run + reduced F in MA AA**
FT LA DAS	17 DAS	31 DAS	30 or 31 DAS	31 DAS
PT LA DAS	7 DAS	13 DAS	12 or 13 DAS	13 DAS
# of FT AA trips (poss limit)	0	3 (17,000)	3 (17,000)	3 (16,000)
# of PT AA trips (poss limit)	0	2 (10,200)	2 (10,200)	2 (9,600)
HC	closed	open	open	open
ET	closed	open	open	open
DEL	closed	open	open	open
CA1, CA2, NL	closed	closed	closed	closed
Total AA (mt)	0	19.2 mil 8,700 mt	19.2 mil 8,700 mt	16.9 mil 7,650 mt
Gen Cat	2.81 mil 1,274 mt	2.97 mil 1,348 mt	2.97 mil 1,348 mt	2.97 mil 1,348 mt
Total catch (2016) (Total F)	19 mil 0.08	45 mil 0.29	46 or 47 mil 0.19 or 0.22	45 mil 0.29

** PT vessels are awarded 40% of a FT allocation in terms of the combination of DAS and access area allocation.*
PT vessels can decide which access area to take their one allocated trip from any area open that fishing year.

2.2.2 Allocation of LAGC IFQ trips in access areas

The LAGC IFQ fishery is allocated a fleetwide total number of access area trips. Individual vessels are not required to take trips in specific areas like access area trips allocated to the limited access fishery. Instead, a maximum number of trips is identified for each area and once that limit is reached, the area closes to all LAGC IFQ vessels for the remainder of the fishing year. The level of allocation can vary and is specified in each framework action. These options can be combined with either the lottery allocation or the flexible allocation (2.3). If the lottery allocation is selected, a set number of LAGC trips would be set for each access area. If the flexible allocation option is selected, the LAGC fishery would have an overall allocation of MA AA trips that could be harvested from any or all MA areas. This framework action is considering four options for allocating fleetwide LAGC IFQ trips in access areas in FY2015.

2.2.2.1 Option 1 – No Action – No access area trips allocated for LAGC IFQ vessels

Access area trips are set by framework action, and if this action does not specify the number of trips per area for LAGC IFQ vessels, those vessels would not be able to fish in scallop access areas in FY2015. They would need to harvest all IFQ from open areas.

2.2.2.2 Option 2 - Allocate fleetwide trips equivalent to 5.5% of catch per access area open to the fishery

This alternative would allocate 5.5% of the access area TAC per area to the LAGC fishery in the form of fleetwide trips. Vessels would still be restricted to the possession limit of 600 pounds. Once the fleetwide max is projected to be fished, NMFS would close that access area to LAGC IFQ vessels for the remainder of the 2015 fishing year. Total removals from MA access areas is expected to be 19.19 million pounds in FY2015. An allocation of 5.5% of that amount is equivalent to 1.05 million pounds, or 1,758 trips with a 600 pound possession limit. See Table 15 for a summary of the trips that would be available to the LAGC fishery under this option.

2.2.2.3 Option 3 – Allocate fleetwide trips equivalent to 2 million pounds from access areas open to the fishery

This option would increase the overall access LAGC vessels would have to areas that are projected to have more productive fishing areas in 2015. Two million pounds is about 67% of the total LAGC IFQ allocation for 2015 (2.97 million pounds). To be clear, this option is not intended to directly affect the catch allocated to limited access (LA) vessels from access areas in 2015, rather it would be available catch on top of the LA allocation from access areas in 2015. Two million pounds for the LAGC fishery is about 10.4% of the total access area catch available in 2015. See Table 15 for a summary of the trips that would be available to the LAGC fishery under this option.

2.2.2.4 Option 4 – Allocate fleetwide trips to LAGC vessels in access areas equivalent to the overall proportion of total catch from access areas compared to total catch (*Preferred Alternative*)

This option considers about the same level of access for LA and LAGC vessels in terms of the total proportion of 2015 catch overall. For example, the total projected catch for the scallop fishery in 2015 is about 46 million pounds, and about 19 million pounds are projected to come from access areas, about 41.7%. If the same proportion is applied to total LAGC catch, the total

allocation to LAGC vessels from access areas would be about 1.2 million pounds, 41.7% of the total LAGC IFQ for 2015 (2.97 million pounds). To be clear, this option is not intended to directly affect the allocation of access for LA vessels from access areas in 2015, rather it would be available catch on top of the LA allocation from access areas in 2015. An allocation of about 1.2 million pounds to the LAGC fishery is about 6.5% of the total access area catch available in 2015. See Table 15 for a summary of the trips that would be available to the LAGC fishery under this option.

Table 15 – Summary of alternative under consideration for LAGC IFQ trip allocations in access areas in FY2015

	Name	**% of AA catch**	**Max LAGC catch in AA**	**Total number of Trips**
Option1	No access area allocation	0%	0	0
Option2	Same allocation as overall LAGC IFQ allocation	5.50%	1.05	1,758
Option3	2 million pound allocation	10.4%	2.00	3,333
Option4 (*Preferred*)	Same proportion of access area catch as overall fishery	6.50%	1.24	2,065

Values subject to change if overall catch values change – these are based on total access area catch of 8,700 mt or 19,180,220 pounds and total catch of 46 million pounds.

2.2.3 Additional measures to reduce impacts on small scallops

In addition to closed areas there are other measures that reduce incidental mortality on small scallops (i.e.. crew limits, prohibition on RSA compensation fishing, seasonal restrictions, and gear modifications). These potential measures were discussed and the only alternative included for consideration in this action is implementing a crew limit in all MA access areas.

2.2.3.1 Option 1 – No Action – No crew limits in scallop access areas

No crew size limits when fishing in scallop access areas.

2.2.3.2 Option 2 - Restrict crew limits in Mid-Atlantic access areas as an additional measure to reduce incidental and discard mortality on small scallops open in 2015 (*Preferred Alternative*)

This option would allow one additional crew member above open area limits. Current limits for open areas are seven individuals per LA vessel, and if a vessel is participating in the small dredge program it may not have more than five people on board. Therefore, this option would increase that to eight and six respectively. The Council clarified that this change in crew limit for access areas should remain in place for all future access areas, unless changed in a future action.

Because there are concentrations of small scallops in all three of the MA access areas, especially in shallow portions of ETA, if the areas open under this action, a crew limit could help reduce the potential for highgrading and mortality on smaller scallops from incidental mortality.

2.3 ALLOCATION METHOD FOR MID-ATLANTIC ACCESS AREA TRIPS IN 2015 ONLY

2.3.1 No Action (lottery allocation)

Under this alternative 2015 Mid-Atlantic access area trips would be allocated to LA vessels using the same method as how trips have been allocated in the past. If there is enough biomass in a particular access area to provide one trip per vessel, each FT LA vessel would receive a trip in that area. However, if there is less catch available per area than the amount needed to allocate one trip per area to all FT LA vessels, a total number of trips would be calculated per area, and individual trips would be allocated by lottery.

For 2015, each full-time limited access vessel is expected to receive 3 trips; two allocated to ETA, and the third from either HC or Delmarva. The third trip would be allocated by lottery. For specification alternatives 2 and 3 the possession limit for FT vessels would be 17,000 pounds. Three trips at 17,000 pounds equal a total allocation of 51,000 pounds per full-time vessel. For specification alternative 4 the possession limit is reduced to 16,000 pounds, for a total allocation of 48,000 pounds per full-time vessel. The lottery for the third trip would not be split 50/50 between the two areas. The projected biomass is higher for HC compared to Delmarva, so more trips would be allocated to HC. The third trip lottery split for all three specification alternatives would be 56% of trips to HC, and 44% to Delmarva. Thus, for the 313 fulltime LA vessels, a total of 175 trips would be allocated into HC, and 138 trips in Delmarva. The results of the lottery will be included in Appendix II of this document if this is the preferred alternative.

Part-time vessels receive 40% of a full-time permit allocation, combining access area and DAS allocations. For Alternatives 2 and 3 that would be 20,400 pounds per part-time vessel (40% of 51,000 pounds); and a total access area allocation of 19,200 pounds for Alternative 4 (40% of 48,000 pounds). Therefore, for Alternatives 2 and 3 the possession limit for PT vessels would be 10,200 and 19,200 pounds under Alternative 4 (Table 16).

Table 16 – Summary of trip allocations for full-time and part-time limited access vessels

	FT trips	FT poss limit	FT Total	PT trips	PT poss limit	PT Total
Alt 2 and 3	3	17,000	51,000	2	10,200	20,400
Alt 4	3	16,000	48,000	2	9,600	19,200

2.3.2 Flexible allocation for Mid-Atlantic access area trips (*Preferred Alternative*)

The three MA AA areas would be considered one area using their existing boundaries for FY2015. Vessels would declare a MA AA trip and could freely fish inside all three areas on the same trip. Under this alternative, limited access vessels would receive their total access area allocation in pounds, and that allocation could be fished in any of the MA AAs (and across multiple AAs on a single trip) up to a certain possession limit. For full time vessels the

possession limit is 17,000 pounds for specification alternatives 2 and 3 and 16,000 pounds for specification alternative 4. For part-time permits the possession limit is 10,200 pounds for Alternatives 2 and 3 and 9,600 pounds for Alternative 4 (Table 16).

This alternative would be the most flexible option for a vessel to land its scallops on its own terms. A vessel would not be limited to a particular area and could fish in multiple MA AAs on the same trip. Under this option there is potentially increased risk of fishing harder in one access area.

2.3.3 Background on calculation of possession limit for 2015 access areas (not an alternative)

This section is not an alternative, but was included to provide more detailed information about how the possession limit was calculated for 2015 access area trips. The PDT uses a model to estimate fishery specifications which incorporates updated survey, fishing, as well as assumptions about other sources of mortality. An overall estimate of landings is calculated based on assumed spatially explicit fishing mortality rates that are set by the PDT for individual areas. From the total landings the PDT first removes catch for various set-asides before fishery catches are set for the LAGC and LA fisheries. Some of these are area based, and others are fishery wide such as observer set-aside. This section will summarize the process for access area catch and clarify how the ultimate estimates for possession limits were calculated for 2015.

For Alternatives 2 and 3 the total landings from access areas is estimated to be about 19.2 million pounds. The model assumes that 3% of that will be used for set-asides (2% for research and 1% for observer set-aside). Another 5.5% was removed for LAGC catch in access areas, leaving about 17.5 million pounds for LA effort. There are 327 full time equivalent LA vessels (combining all permit types together). Using 327 FL LA vessels leaves about 53,669 pounds per vessel, or 17,890 pounds per trip for three access area trips. This is the estimate that comes directly out of the model applying the assumptions described.

Final possession limits are generally rounded to the nearest 1,000 pounds. The PDT discussed these outputs and recommended that the possession limit be 17,000 pounds for 2015, and not 18,000 pounds. The primary reason for this recommendation is that the model only assumed about 380,000 pounds would be harvested from RSA compensation in access areas in 2015 (2% of 19.2 million pounds) (Table 17). The PDT believes this is an underestimate based on previous fishing patterns for RSA compensation and the relatively high projected catch rates in MA access areas, which are relatively close to shore and near many fishing ports. The PDT believes that closer to 1 million pounds of the 1.25 million pounds could come from MA access areas in 2015, an additional 600,000 pounds. If 1.0 million pounds is used instead for RSA landings from access areas the possession limit comes out to 17,261 pounds per trip.

Overall the PDT also discussed other reasons to be somewhat precautionary with 2015 access area allocations. First, some of the fishing mortality targets set for these areas are relatively high for first year openings (i.e. 0.50 in open part of ETA), and the program needs to think about keeping these areas viable for several years, not just one or two years. Furthermore, the alternative to allow vessels to fish access areas flexibly, and not in one area only, could have increased fishing pressure in some areas if effort is more concentrated in one access area. For

these reasons, the PDT did not think it was responsible to increase the possession limit above the model output, and instead recommended 17,000 pounds. If these estimates are high and fewer scallops are harvested by RSA and LA vessels in 2015 they will be available for harvest in 2016.

Table 17 – Summary of various model assumptions and associated catches for 2015 catch estimates

	Model Assumptions	PDT Estimates
Total AA Landings	19,180,220	19,180,220
Set Asides for RSA +OBS (3%)	575,407	1,191,802
LAGC (5.5%)	1,054,912	1,054,912
LA Landings	17,549,901	16,933,506
Per FT vessel	53,669	51,784
Per trip allocation	17,890	17,261

In addition, there are several alternatives in this document that may allocate more LAGC effort in access areas, above the 5.5% assumed in the model (2.2.2). The Council was clear that these alternatives should not reduce the access LA vessels have in access areas in 2015, and instead should be additional catch added on. When a higher catch of 2 million pounds is assumed for LAGC catch in access areas, instead of a 5.5% allocation of 1.05 million pounds, as assumed in the model output, the possession limit per FT LA trip comes out to 16,298 pounds (Table 18). That is the possession limit that would allow for that additional catch from LAGC vessels without increasing fishing mortality in access areas. However, the PDT was instructed not to reduce LA possession limits to accommodate more LAGC catch in 2015. Therefore, the PDT did not recommend a lower possession limit of 16,000 pounds for Alternative 2 and 3.

Table 18 – Summary of various model assumptions and associated catches for 2015 catch estimates assuming 2 million pound catch from access areas for LAGC

	With LAGC Increase (2mil)
Total AA Landings	19,180,220
Set Asides (RSA +OBS)	1,191,802
LAGC (5.5%)	2,000,000
LA Landings	15,988,418
Per FT vessel	48,894
Per trip allocation	16,298

2.4 ADJUSTMENTS TO PROVISIONS RELATED TO ALLOCATING AND MONITORING ACCESS AREA TRIPS

Although the plan currently allocates access area trips with specific possession limits, vessels can take as many trips as they need to in order to fully harvest those possession limits. Ultimately, although the plan discusses allocations in terms of “trips”, what is actually allocated to vessels in access areas is a poundage. This has been the case since Framework 17 (which allowed for all trips to be broken without penalty, and which went into effect on October 2005). Furthermore, in Framework 25, any vessel with unharvested Closed Area 1 pounds are allowed to land those pounds from the area in a future fishing year. Although the method of allocating these trips has

changed over time, the "trip-level" terminology and monitoring has not, which results in some level of burden on the industry and NMFS.

The measures below were developed to make the administrative process mirror how the fishery actually works, as well as improve monitoring of access areas and reduce burdens on the Agency and vessel owners by replacing the broken trip provisions with prelanding reports. If adopted, these changes would remain in effect after 2015.

2.4.1 No Action (trip allocations continue and broken trip procedures)

Under this alternative, vessels would continue to be allocated access area trips with associated possession limits, which could actually be taken across multiple trips. If a vessel wants to terminate a trip it is required to submit a broken trip adjustment form to the Regional Office through VMS. The Regional Office needs to process that request and a vessel needs to wait to be issued a compensation trip. In addition, if a vessel wants to break a trip at the end of the year and be able to complete that trip in the first 60 days of the following fishing year, a vessel needs to physically break that trip (cross the VMS demarcation line, even if it has no intention of landings any scallops on that trip) and apply for a compensation trip in the last 60 days of a given fishing year.

For example, if vessels receive 3 trips at 17,000 lb into the Mid-Atlantic access areas, although they would be allowed to land the entire 51,000 lb during the fishing year under multiple trips, they would still need to follow current broken trip procedures described above.

2.4.2 Remove broken trip process and replace with prelanding reports (*Preferred Alternative*)

Under this alternative, vessels would be given a simple poundage allocation in an access area, instead of referring to it as a trip allocation with associated pounds that can actually be fully harvested under multiple trips. Allocations can be harvested using any number of trips, but a vessel would still be restricted to a possession limit. Before landing on an access area trip, a vessel would be required to submit a prelanding notice through VMS indicating the pounds caught. A vessel could continue to make trips until the total allocation for an access area is caught. Under this alternative a vessel would no longer be required to request "compensation trips". Two options were considered below related to what a vessel is required to do with unused allocation at the end of the year.

Some examples are provided below to clarify how this alternative would work if adopted. In a given fishing year if a vessel receives a17,000 lb allocation in Delmarva and a 34,000 lb allocation in Elephant Trunk, which can be harvested on multiple trips, each trip would have a possession limit of 17,000 lb. Let's take another example – if the preferred alternative is adopted that would consider all three access areas in the Mid-Atlantic to be one area for 2015 (Section 2.3.2) – vessels would be allocated 51,000 lb, which could be fished on multiple trips at 17,000 lb/trip. Trip exchanges would still occur, but a vessel would only exchange a full-possession limit between areas. Notice that none of this changes in any way how the fishery currently operates, but it is using terminology that is more in line with how the fishery actually functions.

What would change under this alternative would be how broken trips are handled.– If this alternative is adopted, for each trip, vessels would submit a preland through their VMS unit to indicate pounds caught. If a vessel is unable to land a full possession limit on a single trip, the vessel could go out and fish it on multiple trips without having to request a compensation trip. NMFS would match dealer records with access area trips and pounds and deduct pounds from a vessel's total allocation. NMFS's accounting of access area pounds could be available as part of the information available on Fish-on-Line.

This alternative maintains a possession limit for FT LA vessels (17,000 pounds for Alternatives 2 and 3, and 16,000 pounds for Alternative 4). The possession limits for part-time vessels would also remain the same (10,200 pounds for Alternatives 2 and 3 and 9,600 for Alternative 4).

If this option is selected, vessels would not have to take any action to carryover trips (i.e., no need to go out and break a trip in the last 60 days of a fishing year), all unlanded pounds from access areas could be allowed to be carried over. Two options were considered related to what vessels should be required to do related to carryover of unused access area allocation at the end of a fishing year.

2.4.2.1 Option 1: No Action - Require vessels cross the VMS demarcation line and submit a preland within last 60 days of the fishing year in order to fish those pounds in the first 60 days of the following fishing year

This option is what vessels are currently required to do to carryover anyunused access area pounds into the next year. Vessels would still be required to take action (i.e., cross demarcation line and submit a preland or a broken trip form) in the last 60 days that an access area in open in a given fishing year in order to receive the carryover pounds for that area. *Pounds would still be required to be landed within the first 60 days of the next fishing year*.

2.4.2.2 Option 2: Allow for all unlanded access area pounds to be carried over without any action from vessels (*Preferred Alternative*)

This would be similar to status quo in terms of allowing vessels the flexibility they already have to potentially carryover all unused access area pounds into the next year, but vessels would no longer be required to break a trip in the last 60 days of a fishing year. Pounds would still be required to be landed within the first 60 days of the next fishing year. But this option would no longer require a vessel to actually go out in their vessel to physically break a trip by crossing the VMS demarcation line, instead any unused access area catch would automatically carryover and be available to a vessel during the first 60 days of the next fishing year.

2.5 MEASURES TO ALLOW FISHING IN STATE WATERS AFTER FEDERAL NGOM TAC IS REACHED

Currently, once the federal NGOM hard TAC is reached all vessels with a federal permit are prohibited to fish within the NGOM area, including state waters.

> *Section 648.62 (b)(2) Unless a vessel has fished for scallops outside of the NGOM scallop management area and is transiting the NGOM scallop management area with all fishing gear*

stowed in accordance with §648.23(b), no vessel issued a scallop permit pursuant to §648.4(a)(2) may possess, retain, or land scallops in the NGOM scallop management area once the Regional Administrator has provided notification in the FEDERAL REGISTER that the NGOM scallop total allowable catch in accordance with this paragraph (b) has been reached. Once the NGOM hard TAC is reached, a vessel issued a NGOM permit may no longer declare a state-only NGOM scallop trip and fish for scallops exclusively in state waters within the NGOM. A vessel that has not been issued a Federal scallop permit that fishes exclusively in state waters is not subject to the closure of the NGOM scallop management area.

To date this has not been an issue since the federal NGOM catch has been well below the TAC. However, total catch increased in 2013, and catches in 2014 have been higher as well. Therefore, the potential for the TAC to be reached is higher having the potential impact of preventing vessels with federal scallop permits from participating in state water fisheries within the NGOM management area.

2.5.1 No Action (Alternative 1)

Once the federal NGOM hard TAC is reached, all vessels with a federal scallop permit are prohibited from fishing for scallops in the NGOM, including state waters.

2.5.2 Alternative 2 - All vessels with both a state scallop permit and federal NGOM permit allowed to fish in state waters after the federal TAC is reached

If the federal NGOM hard TAC is reached and the area is closed, but a vessel has both a federal NGOM permit and a state water scallop permit, that vessel would be permitted to fish exclusively in state waters for scallops under state water rules. All other vessels with federal scallop permits would be prohibited to fish for scallops in state waters in the NGOM management area after the TAC is reached (LA, LAGC IFQ, and LAGC Incidental).

2.5.3 Alternative 3 - Revise the state water exemption program provisions to allow a state to request a specific exemption related to fishing in state waters after the NGOM TAC is reached (*Preferred Alternative*)

If adopted, this alternative would allow a state to apply for an exemption from the prohibition to fish in state waters if the federal NGOM hard TAC is reached.

No changes would be made to the regulations prohibiting all vessels with a federal scallop permit to fish for scallops in state waters after the NGOM hard TAC is reached (§648.62). Instead, the regulations related to state water exemptions would be revised to allow an individual state to request a specific exemption related to fishing in state waters after the NGOM TAC is reached. Section 648.54 of the regulations specify the eligibility, requirements and exemptions vessels are subject to. This alternative is not specific to permit type; a state could specify which federal scallop permit types could potentially be exempt from this prohibition.

2.6 MEASURES TO MAKE TURTLE REGULATIONS CONSISTENT

Since the turtle deflector dredge requirement was approved by the Council, the Council has requested that NMFS consider modifying the boundary of the turtle chain mat restriction to be consistent. NMFS responded to these requests with a letter in February 2014 suggesting a

specific option that could be considered to align the boundaries and seasons to maintain conservation benefit for turtles and reduce regulatory complexity.

2.6.1 No Action (Alternative 1)

Under No Action, the two turtle specific gear modification measures in place for the scallop fishery would remain in place as described below (**Figure 8**).

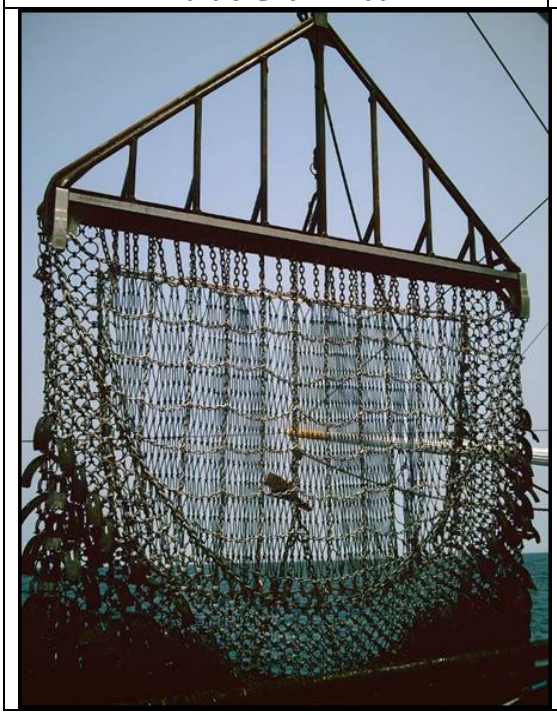
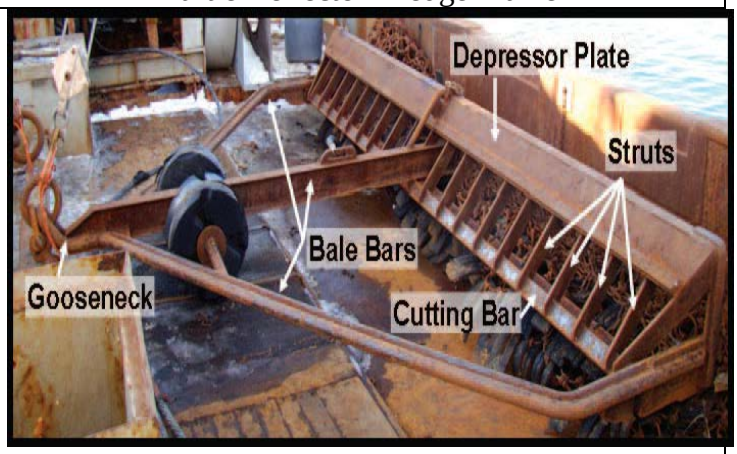
- *Turtle chain mat requirement:*

During the time period of May 1 through November 30, any vessel with a sea scallop dredge and required to have a Federal Atlantic sea scallop fishery permit, regardless of dredge size or vessel permit category, that enters waters south of 41°9.0′ N. latitude, from the shoreline to the outer boundary of the Exclusive Economic Zone must have on each dredge a chain mat as described in 50 CFR 223.206(d)(11).

- *Turtle deflector dredge:*

From May 1 through October 31, any limited access scallop vessel using a dredge, regardless of dredge size or vessel permit category, or any LAGC IFQ scallop vessel fishing with a dredge with a width of 10.5 ft (3.2 m) or greater, that is fishing for scallops in waters west of 71° W long., from the shoreline to the outer boundary of the EEZ, must use a turtle deflector dredge (as described in 50 CFR 648.51 (b)(5)(ii). A limited access scallop vessel that uses a dredge with a width less than 10.5 ft (3.2 m) is required to use a TDD, except that such a vessel is exempt from the "bump out" requirement. LAGC vessels with dredges less than 10.5 ft are exempted from the requirement all together.

Figure 8 – Images of turtle chain mat (left) and turtle deflector dredge (right)

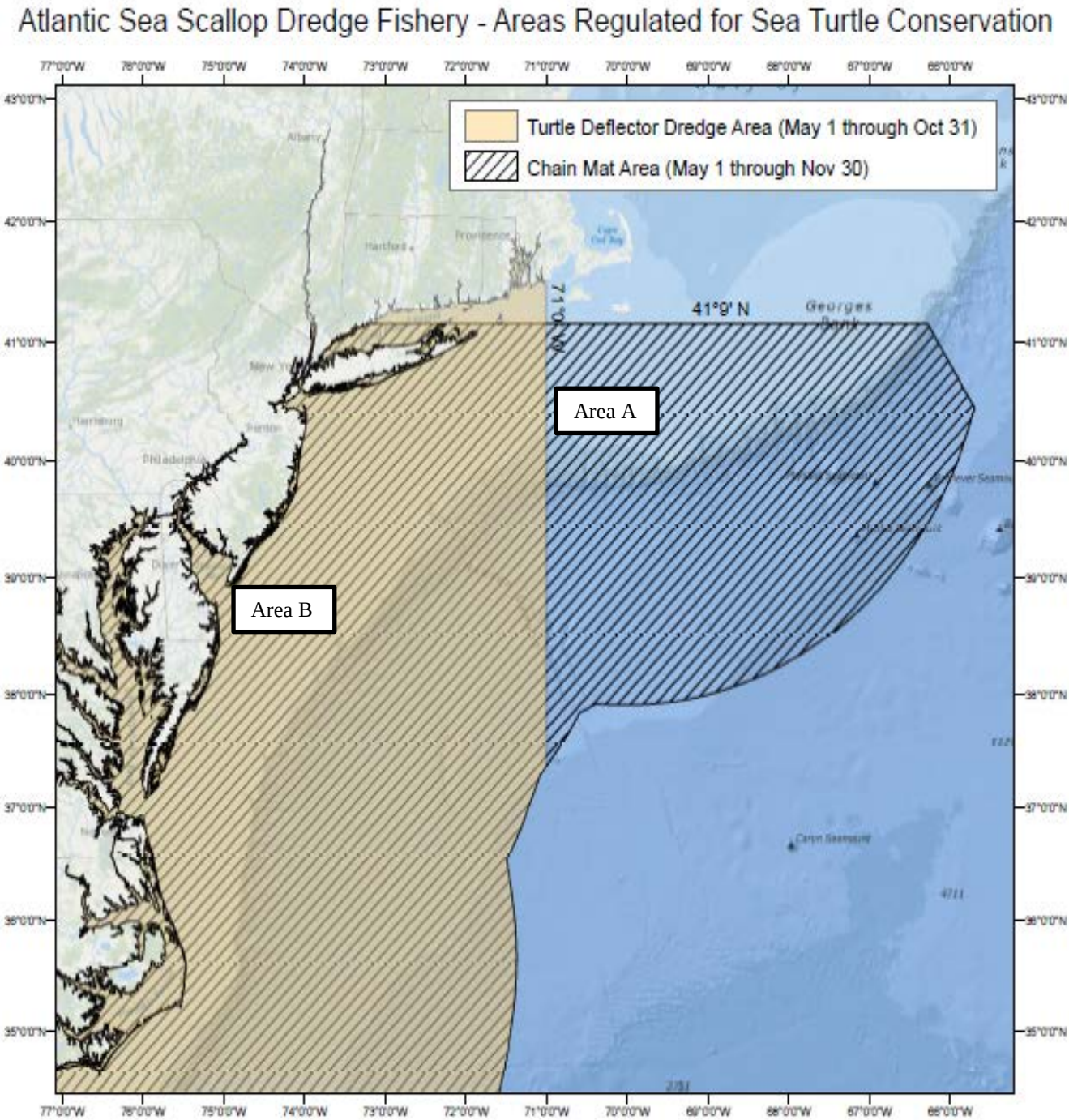
Turtle Chain Mat	Turtle Deflector Dredge Frame
	

2.6.2 Alternative 2 - Revise season and area for turtle chain mat and turtle deflector dredge to be consistent (waters west of 71W and during the months of May through November) (*Preferred Alternative*)

This alternative would revise the turtle chain mat regulations to have a consistent boundary with the TDD requirement, and revise the TDD regulations to have a consistent season with the chin mat regulations. If approved, both gear elements would be required for the same area (waters west of 71W) and during the same season (May-November).

It should be noted that the current chain mat requirement applies to all scallop dredges, regardless of size of vessel or permit category. However, the turtle deflector dredge requirement is limited to all LA vessels and only LAGC IFQ vessels that fish with a dredge greater than 10.5 ft. LAGC IFQ vessels that fish with smaller dredges are exempt from the turtle deflector dredge requirement. If this alternative is adopted, the Council recommends those distinctions still apply. Specifically, if approved this alternative would require all scallop dredge vessels to fish with a chain mat, regardless of dredge size or permit category. All LA vessels and all LAGC IFQ vessels greater than 10.5 feet would need to fish with a TDD, and LAGC vessels with dredges less than 10.5 feet would still be exempt from TDD requirement.

Figure 9 – Management areas for TDD (beige) and chain mat (hatched) regulations in the scallop fishery
"Area A" and "Area B" have been superimposed. They delineate subsections of the chain mat area but east and west of the TDD boundary. These areas are reference areas used in the analyses for FW26.



2.7 MEASURES TO MODIFY OR ELIMINATE PROACTIVE AMS IN PLACE TO REDUCE FLATFISH BYCATCH

2.7.1 No Action (Alternative 1)

Under No Action, there would be no new proactive AMs in the scallop fishery. The scallop fishery does not have a sub-ACL for northern windowpane flounder. Therefore, under No Action, if there is an overage of the northern windowpane ACL caused by high catches from the scallop fishery, AMs would trigger for the groundfish fishery even if that fishery was below their sub-ACL. Under No Action, the scallop fishery would be subject to the proactive and reactive AMs in place for the other sub-ACLs allocated to the scallop fishery (GB YT, SNE/MA YT, and southern WP). The reactive AMs include seasonal area closures for GB and SNE/MA YT and a seasonal gear restricted area for southern WP.

There are other measures in place that were listed as proactive AMs in Scallop Framework 23 (See Section 2.2.3 of FW23). These measures were implemented well before AMs were required, but they likely help reduce bycatch and potentially help keep the scallop fishery below sub-ACLs during the fishing year. The list of measures include: area rotation overall, seasonal restrictions in scallop access areas on GB, gear modifications such as larger rings and larger twine tops, voluntary bycatch avoidance programs, and other voluntary gear modifications used by some vessels in the fleet (number of rows in the apron and reduced handing ratio of twine top). A proactive AM for SNE/MA WP was implemented in 2014 under Scallop FW25, a maximum of seven rows in the apron of a scallop dredge in all open areas in the Mid-Atlantic west of 71 W. This proactive AM put in place specifically for SNE/MA WP has also potentially had beneficial impacts for SNE/MA YT as well (Section 5.6.5).

2.7.2 Alternative 2 - Proactive AM for northern WP, SNE/MA WP, GB YT and SNE/MA YT – <u>Modify</u> the restriction on the number of rings in apron of dredge (*Preferred Alternative*)

Currently there is a requirement that all scallop dredges have a MINIMUM of seven rows of rings in the apron of the dredge in all areas east of 71 W. Framework 25 modified this outdated regulation for all waters west of 71W, excluding Mid-Atlantic access areas, already as a proactive AM for southern windowpane flounder, but the requirement to have a minimum 7-ring apron still exists for all other areas.

This alternative would modify the current requirement to have at least a seven row apron, and instead require all vessels to have a *maximum* of seven rows. This would apply to all open areas and access areas, all year long. As noted, this requirement is already in place as a proactive AM for southern WP in open areas west of 71W. If this alternative is adopted that would apply to all other areas as well, Mid-Atlantic access areas, scallop access areas on GB, and open areas east of 71 W as well. This restriction would ally to all vessels, LA and LAGC regardless of permit type or dredge size. Since this measure would apply to all areas it is considered a proactive AM for both stocks of WP and YT.

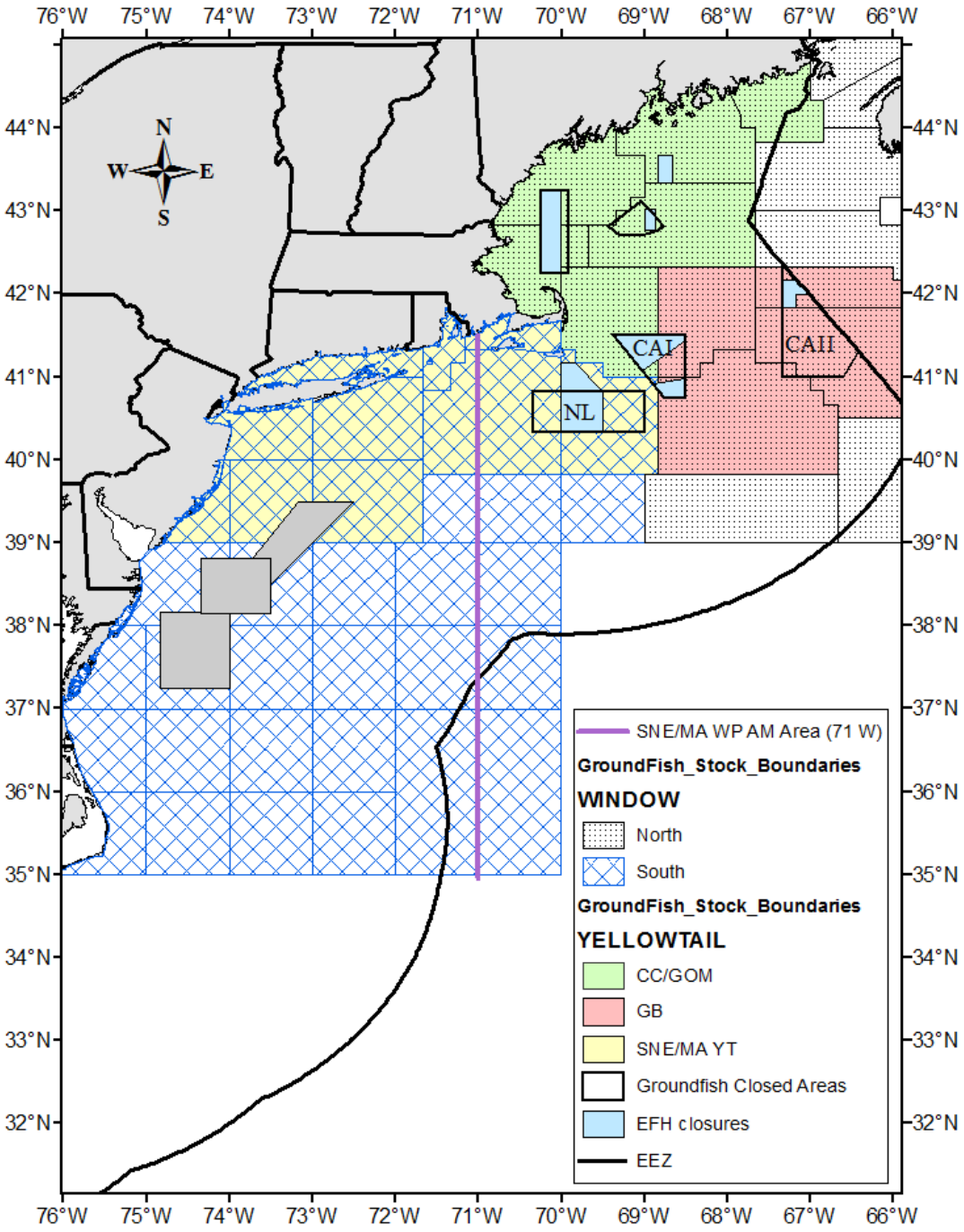
The current gear restriction is outdated and is no longer necessary with larger mesh size restrictions. In addition, it is counter to innovations that could help reduce flatfish bycatch. Therefore, modifying this dated regulation is a proactive AM, not only for SNE/MA WP but all

flatfish bycatch that overlap with this AM area. The combination of a shorter apron and lower hanging ratio has been shown to be more selective for larger scallops.

2.7.3 Alternative 3 - Proactive AM for northern WP, SNE/MA WP, GB YT and SNE/MA YT - Eliminate the restriction on the number of rings in apron of dredge

This alternative would eliminate the regulation on number of rings in the apron altogether. A vessel could fish with any number of rings in the apron of the dredge. Eliminating the restriction may have more conservation benefit for flatfish compared to No Action, which requires vessels to fish with a minimum of seven, if vessels choose to fish with seven or less rows of rings. However, simply eliminating the restriction could enable a vessel to fish with as many rows as they want (i.e. more than seven). So compared to No Action this may have some benefit for flatfish for vessels that choose to fish with less than currently allowed (minimum of seven rows), but not as much potential benefit as the option that would implement a maximum of seven rows (Alternative 2.7.2).

Figure 10 Stock boundaries for windowpane and yellowtail flounder stocks



2.8 MEASURES TO ALLOW A LIMITED ACCESS VESSEL TO DECLARE OUT OF FISHERY ON RETURN TO HOMEPORT

The Scallop Committee recommended that the Council include consideration of an inshore transit corridor for scallop vessels to declare out of the fishery on DAS fishing when transiting back to port. For some ports on the periphery of the fishery, i.e. Virginia and North Carolina, steaming times can be very long, up to 2 days. Overall scallop landings were relatively stable between 2009-2012, but landings for some states have declined (i.e. Virginia and New Jersey). As DAS are reduced there is more incentive to land closer to fishing grounds to avoid being charged DAS for steaming time. In addition, over the years many of the primary fishing grounds in the Mid-Atlantic have been converted to scallop access areas (HC, ETA, and Delmarva). Therefore, there are fewer options for open area fishing locations for vessels homeported farther south closer to their homeports. The Council agreed to consider these potentially negative impacts on some ports and included this issue in Framework 26 at the June 2014 Council meeting when the action was initiated.

2.8.1 No Action (Alternative 1)

Limited access scallop vessels on an open area DAS trip are charged DAS from the time a vessel positions seaward of the VMS demarcation line until it once again positions shoreward of the demarcation line. There is some flexibility built into the program already. First, a trip no longer has to be declared from a port, but it must be declared from inside of the demarcation line. Meaning, a vessel can steam inside or outside of the demarcation line under a DOF-TST code, which stands for declared out of fishery and transiting. Under that code a vessel can steam closer to shore it wants to fish, pull in shoreward of the demarcation line, and declare into the scallop fishery from there. The scallop portion of the trip/DAS charge will still begin on the vessels first VMS position report seaward of the demarcation under the code for open area fishing (SES-SCA-OPSxxx).

In addition, there are provisions that allow a vessel to come inside demarcation for safety reasons. The trip/DAS charge begins with the first VMS position report seaward of the demarcation line and ends with the first VMS position report shoreward of the line. But if a vessel stays inside the VMS line for fewer than four hours, those separate trips codes are "stitched" together, and the vessel is charged DAS for the time spent inside demarcation, up to four hours. However, if a vessel is inside demarcation for more than four hours those trips are not automatically stitched together, and a vessel is not charged DAS for that time inside the line. While it was not the intent of this safety VMS provision that allows a vessel to come inside the line during a trip for safety, there are vessels that seem to be using this provision to move from one fishing ground to another and not be charged for that transit time, if it exceeds four hours.

On the way back to port at the end of a trip, the DAS clock ends when a vessel positions a report inside the VMS demarcation line and stays inside for more than four hours. At that point a vessel could steam back to port and not be changed DAS if it stays within the VMS demarcation line. If a vessel positions outside the line after the four hour period inside, the vessel will be charged DAS for the time spent seaward of the line and VMS would once again record it as a separate trip.

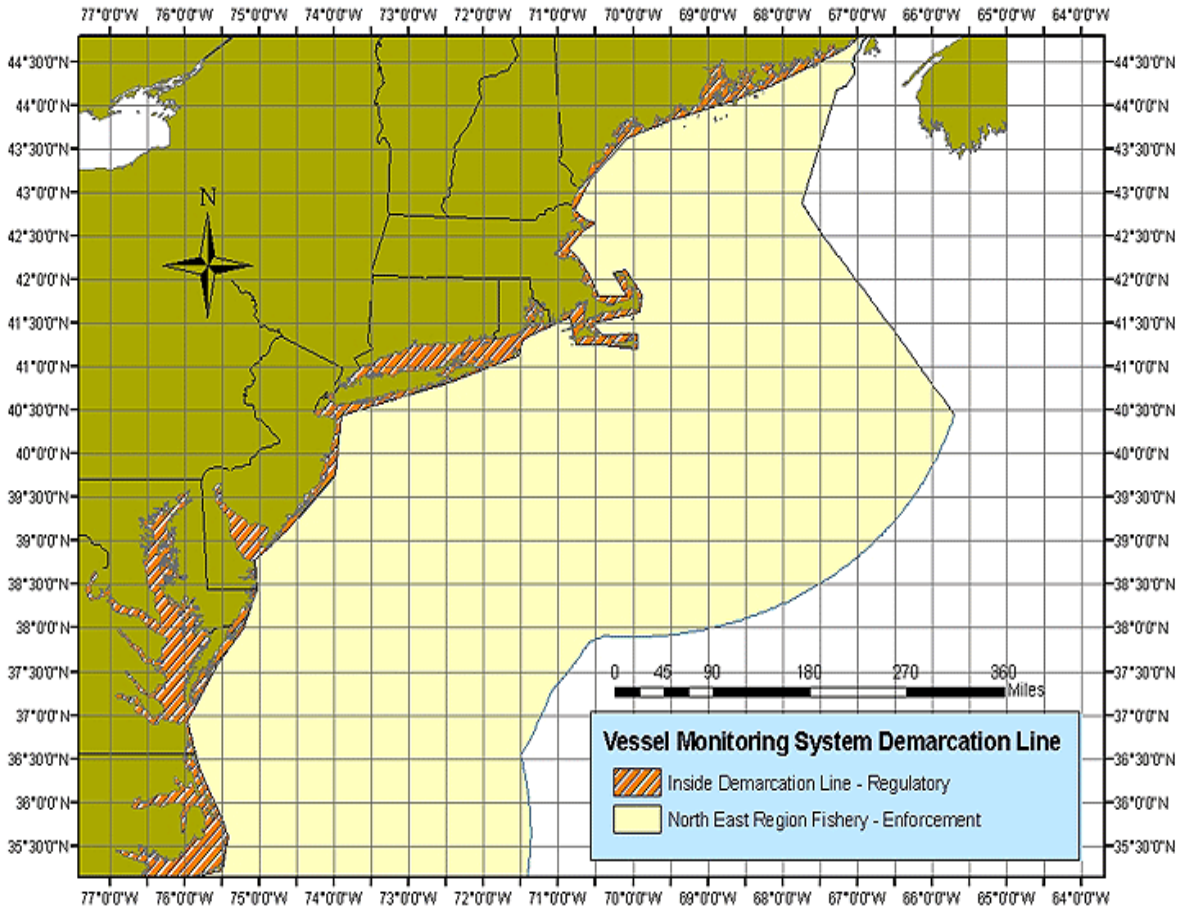
2.8.2 Alternative 2 - Implement a separate VMS declaration code for steaming back to port

Under this alternative limited access vessels could finish their open area scallop trip by going inside the demarcation line, ending their scallop DAS trip, and declare out of the fishery (this would require a new DOF code to identify transiting with product on board). The Council considered requiring industry funded increased polling (every five minutes), but it is currently not feasible with the current system to change polling frequency on the same trip. If this becomes feasible in the future the Council may consider increased polling again. Once this DOF trip has been declared, vessels could go outside of the demarcation line to travel back to port with the following requirements:

a. Vessel must return directly to port and offload scallops immediately
b. Pre-landings notification required
c. No in-shell product on board
d. Gear must be stowed

If this alternative is adopted it will have some impact on DAS allocations. Section 5.1.8 and Appendix II describe the analyses used to estimate the DAS adjustment that would need to be applied if this alternative was selected and Table 19 includes the relevant DAS adjustments for this alternative, (0.7 DAS for FT vessels and 0.28 for PT vessels).

Figure 11 – VMS demarcation line



2.8.3 Alternative 3 - Implement a separate VMS declaration code for steaming back to port <u>south of Cape May only</u> (*Preferred Alternative*)

Limited access vessels fishing an open area trip could finish their scallop trip by going inside the VMS demarcation line at any point south of Cape May NJ in Delaware Bay (Figure 12). This alternative is similar to the previous one, except it would only apply to vessels that intend to land scallops south of Cape May. A vessel would be prohibited from declaring out of the fishery south of Cape May, and then transiting to a port north of that area; this measure is intended to help increase incentive for vessels to land scallops in the southern part of the fishery by reducing some of the steaming time to return to those more distant ports. This alternative was included to recognize that much of the primary or traditional open area scallop fishing grounds have been converted into scallop access areas (Delmarva and Elephant Trunk); therefore, vessels in the southern part of the region need to steam farther to fish open areas. Vessels are currently allowed to "clock in" near Cape May to start a trip, but the VMS demarcation line does not feasible enable a vessel to "clock out" of the fishery near fishing grounds and transit back to port south of Cape May. For many other ports farther north vessels can clock out and transit back to port off the clock for the majority of their steam home.

In order to take advantage of this measure a vessel wanting to end their open area scallop DAS trip, would need to make a new DOF declaration anywhere inside the VMS demarcation line and south of Cape May. The Council considered requiring industry funded increased polling (every five minutes), but it is currently not feasible with the current system to change polling frequency on the same trip. If this becomes feasible in the future the Council may consider increased polling again. Once this DOF trip has been declared, vessels could go outside of the demarcation line to travel back to port with the following requirements:

a. Vessel must return directly to port and offload scallops immediately
b. Pre-landings notification required
c. No in-shell product on board
d. Gear must be stowed

If this alternative is adopted it will have some impact on DAS allocations. Section 5.1.8 and Appendix II describe the analyses used to estimate the DAS adjustment that would need to be applied if this alternative was selected and Table 19 includes the relevant DAS adjustments for this alternative, (0.14 DAS for FT vessels and 0.06 for PT vessels). This adjustment can be modified in the future.

As a result of this measure the Council clarified that DAS should be allocated to the nearest tenth of a DAS, rather than rounding DAS to the nearest day. For the proposed specification alternative, the DAS for full-time vessels is 31 DAS. If this alternative is selected a 0.14 DAS adjustment would then be applied, so the final DAS allocation for full-time vessels in 2015 would be 30.86 DAS (Table 19). The Council recommends that all DAS allocations in the future be allocated to the nearest tenth; that is how DAS charged is currently monitored anyway.

Figure 12 – DOF area near Cape May, NJ for vessels steaming south only

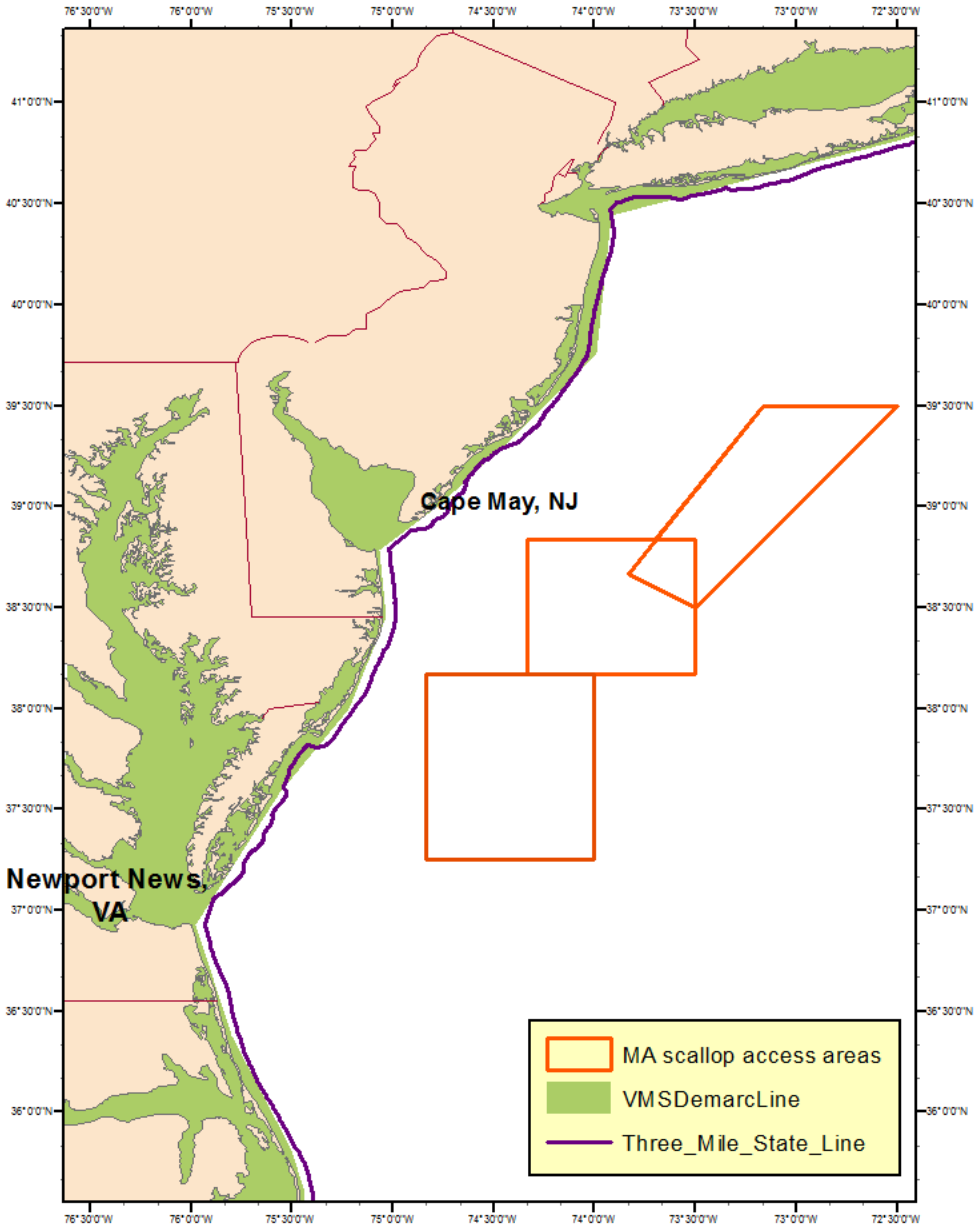


Table 19 – Summary of DAS adjustments that would be applied to annual DAS allocations for DOF alternatives under consideration (31 DAS used for 2015 DAS allocation for FT vessels)

		DAS Adjustment	Allocations	2015
Alternative 2 DOF Anywhere	FT	0.7	DAS under Pref Alt	31.00
			Final DAS	30.30
	PT	0.28	DAS under Pref Alt	13.00
			Final DAS	12.72
Alternative 3 DOF Cape May ***(Preferred Alternative)***	FT	0.14	DAS under Pref Alt	31.00
			Final DAS	30.86
	PT	0.06	DAS under Pref Alt	13.00
			Final DAS	12.94

2.9 MODIFY REGULATIONS RELATED TO FLARING BAR PROVISION FOR TURTLE DEFLECTOR DREDGE

The current regulations for turtle deflector dredges prohibit the flaring bar from being attached in more than one place on the dredge frame. This prevents a vessel from using a u-shaped flaring mechanism. This provision is completely related to safe handling and operation of the dredge and does not have impacts on the efficiency of the dredge or potential impacts on turtles.

2.9.1 No Action

Under this alternative no change would be made to the current provisions related to the flaring bar on a turtle deflector dredge. The regulations state that:

> "*for the purpose of flaring and safe handling of the dredge, a minor appendage not to exceed 12 inches (30.5 cm) in length may be attached to each of the outer bale bars. Only one side of the flaring bar may be attached to the dredge frame. The appendage should at no point be closer than 12 inches (30.5 cm) to the cutting bar.*

2.9.2 Modify the flaring bar provision for TDD (*Preferred Alternative*)

This alternative would slightly revise the description of the "flaring bar" within the turtle deflector dredge regulations to allow for the flaring bar to be attached to the dredge frame in more than one place.

The agency has received one call about the "flaring bar", and has expressed interest in constructing a "flaring U", rather than a single bar, and it would be attached closer to the gooseneck; not near the bump out down by the cutting bar. This type of modification would not comply with the current regulations because it would be attached to the dredge frame in more than one place.

The restriction to only allow the flaring bar to be attached in one place was intended to help prevent the creation of more spaces that could trap a turtle or reduce the effectiveness of the

“bump out”. A flaring U would be prohibited because it would be attached to the dredge frame in more than one place. There would not necessarily be concerns in terms of impacts on turtles as long as the flaring U did not create more space for a turtle to get caught, but to change the regulations for this measure, it would need to be added to a framework action.

When the Council reviewed the proposed regulations and deemed them consistent, the Council recommended that some language be added to the regulations to allow flaring of the dredge, an aspect of the gear that was overlooked during development of the action. A flaring bar does not impact the fishing capability or the potential impact on turtles; instead it is attached to the outside of the bale bar to help prevent a dredge from flipping or twisting as the dredge is deployed. To be precautionary the Council recommended that a flaring bar be allowed, but suggested the bar not be allowed near the “bump out”. The agency revised the final regulations to clarify that a flaring bar would be allowed, but in order to help prevent obstructions in the bump out it would have to be at least 12 inches from the cutting bar and only be attached in one place. The latter part prevents a vessel from using a u shaped flaring bar. So long as the flaring bar is away from the bump out and not between any of the bale bars, there should be no different impact on turtles.

An example of a flaring u is in Figure 13. The flaring U could be on the inside or the outside of the bale bar. A flaring bar like the one in the figure below is currently prohibited, but would be allowed if this alternative is adopted.

Figure 13 – Example of a “flaring u” bar

3.0 CONSIDERED AND REJECTED ALTERNATIVES

3.1 CLOSURES TO PROTECT SMALL SCALLOPS

This action considered a handful of areas to temporarily close to protect small scallops. Several different options were considered in the GB region as well as the Mid-Atlantic. The PDT developed over a handful of potential alternatives, and ultimately the Council only considered four (Options 2.2.1.3.1, 2.2.1.3.2, and 0 with two sub-options). The other areas not fully analyzed are shown in Figure 14; the description of the areas and the rational for rejection are described below.

- Extension of Closed Area II – Option 2

This alternative was developed to capture the majority of small scallops observed in the 2014 surveys but restricted to have boundaries that are north/south. For the most part, guidance from enforcement about closed areas is that are regular in shape and have boundaries that are north to south and east to west are easier to enforce than areas with irregular boundaries. Therefore, the PDT developed this option for consideration.

Rational for rejection – The Scallop Advisory Panel and Committee met in September 2014 to review the range of alternatives developed up to that date. Both groups passed a motion to only consider Option 1 for an extension of the Closed Area II South access area. The primary rationale provided for rejecting this alternative is related to enforceability. It was discussed that it would likely be easier to enforce a closed area that extends all the way to the Hague Line compared to leaving a relatively small area open to scallop fishing east of the new closed area. While it is not very likely that many vessels would chose to steam around a closed area to fish for scallops in a relatively small area east of the extension and along the Hague Line, it would be possible, and would be more difficult to enforce with 30 minute VMS polling. The full Council agreed with the rationale provided and passed a motion at the September Council meeting to only consider Option 1 (Section 2.2.1.3.1).

- Large Extension of Nantucket Lightship

This alternative was developed to capture observations of small scallops from both video surveys (Habcam and SMAST stations) as well as a very large dredge tow observed on the federal survey farther east of Nantucket Lightship. The PDT developed an option that would be a larger extension to include these observations of small scallops, but at the same time minimize overlap with traditional fishing areas, especially since all the access areas on GB will be closed in 2015 (**Figure 15** and **Figure 16**).

Rational for rejection – The Scallop Advisory Panel and Committee met in September 2014 to review the range of alternatives developed up to that date. Both groups passed a motion to only consider the small NL extension, and to reject this large extension option. Several points were made to support rejecting this alternative. First, the level of survey data in the expanded area is minimal. While there is evidence from a few large dredge tows of the area, the overall coverage is relatively minimal for the area to delineate boundaries. Second, the level of fishing pressure in this area is expected to be relatively low; it is not a traditional hot spot for scallop fishing, and even if some effort did occur in that area the scallops are predominantly small and should escape through 4-inch rings. Finally, the industry is not very supportive of closing much more area on

GB until more areas open up. The EFH Omnibus Amendment is expected to be coming to a decision in the near future so if area closures change it may be necessary to revisit all the scallop access areas on GB so this could be reconsidered at that time. The full Council agreed with the rationale provided and passed a motion at the September Council meeting to only consider the small extension of NL (Section 2.2.1.3.2).

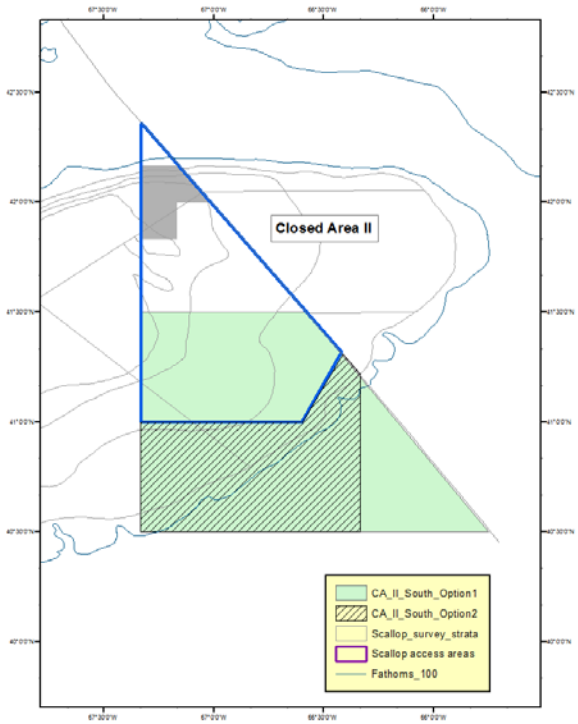
- Closures within Hudson Canyon

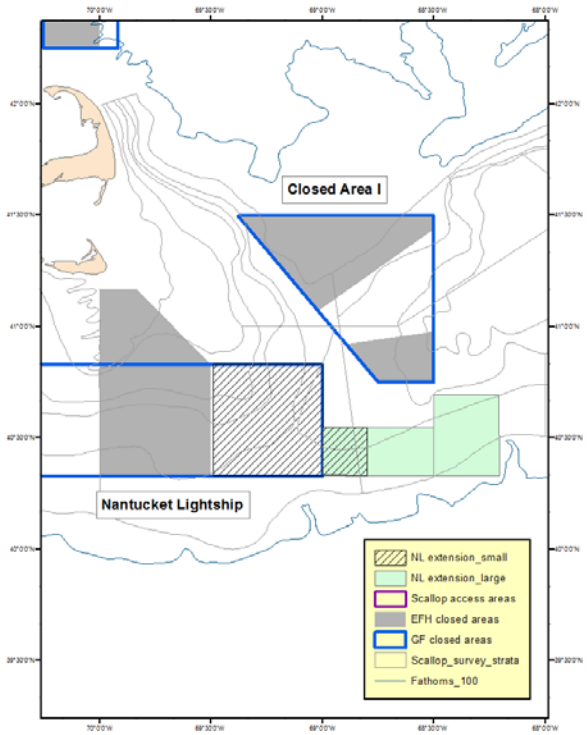
The PDT developed two closure options within HC. Option 6 was a small subarea in the southwest corner of the HC access area that would be closed for FY2015 only. The primary intent of that option was to increase the yield potential of smaller scallops in that area that grow faster in shallow waters. If effort is delayed until 2016 the yield per recruit could be much greater overall for the area. Option 6 was the northern part of the HC access area. The purpose of this option was to reduce incidental mortality on small scallops within the access area. However, based on 2014 survey results the highest concentrations of small scallops in HC were not particularly concentrated in the northern part of the access area. There are definitely some small scallops in that area, but they are found in higher concentrations in other parts of the access area. Therefore, the main driver of considering a closure in the northern part of HC was to potentially provide higher levels of future recruitment, rather than to protect current recruitment in that area. The PDT discussed that every time HC has been closed in the past, there have been record levels of recruitment in ETA the year after. Preliminary analyses suggest that there could be a strong stock/recruitment relationship for this area; when biomass is high in the northern part of HC and the area is closed, recruitment levels downstream the year after are above average (i.e. ETA).

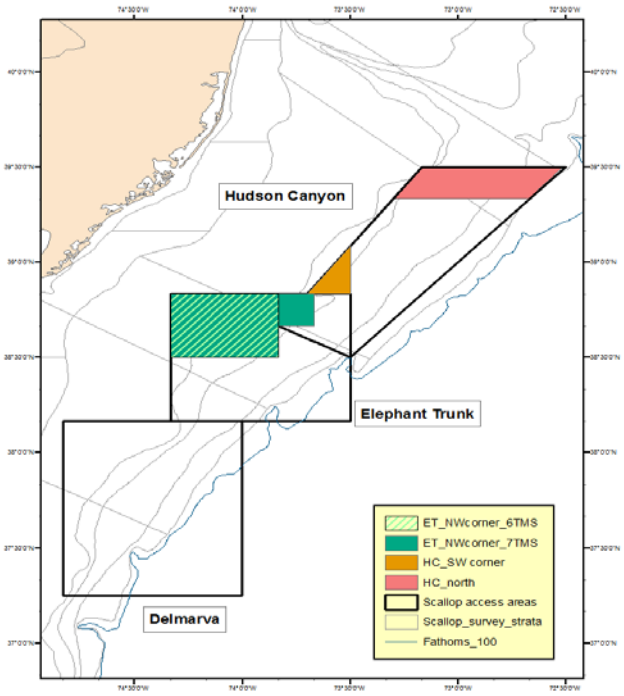
Rational for rejection –
The Scallop Advisory Panel and Committee met in September 2014 to review the range of alternatives developed up to that date. Both groups passed a motion to reject further consideration of the closure options within Hudson Canyon. The primary rationale provided for rejecting Option 5, the small closure in the southwest corner of HC was that the area was very small and may be difficult to enforce. In addition, based on recent survey results there are larger scallops in that area as well, and the degree of overlap is higher in that area compared to other portions of the MA access areas that have higher densities of mostly small scallops. If this area is not included in the specifications, the overall allocation of catch from HC will be lower.

As for Option 6, the northern part of Hudson Canyon, the industry was uncomfortable supporting this idea before more research is done solidifying the hypothesis that closing areas in the northern part of the Mid-Atlantic significantly increases recruitment in areas farther south. It was argued that more work is needed to statistically prove the potential stock-recruit relationships for this area. The PDT argued that a one year closure is worth the investment to evaluate this potential relationship, especially since there are currently relatively low levels of large scallops in the northern part of HC and the potential gains for future recruitment in ETA could be great. But the Council ultimately agreed with the Advisory Panel and Committee recommendation to not close this area in 2015. A motion passed in at the September Council meeting to reject further consideration of both closure options within HC.

Figure 14 – Potential areas considered and rejected during Framework 26







Considered and Rejected Areas

- Hatched Area for CA2
- Green area for NL
- Small orange triangle in HC
- Northern part of HC

Figure 15 – Potential modifications to scallop access areas around NL with age 2 cohorts (31-75mm)(LEFT) and age 3 cohorts (+75mm) (RIGHT) using data from 2014 Habcam surveys

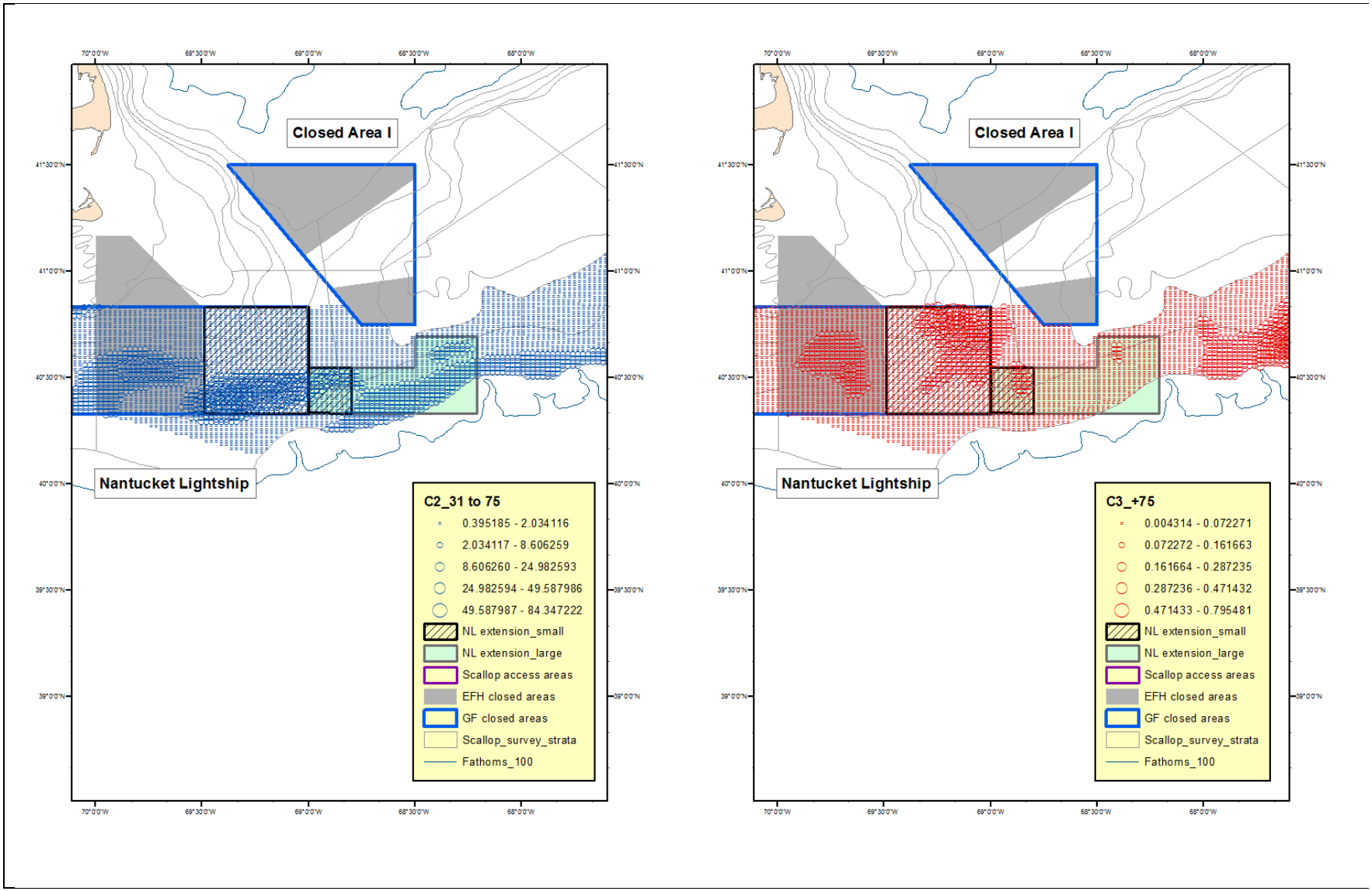
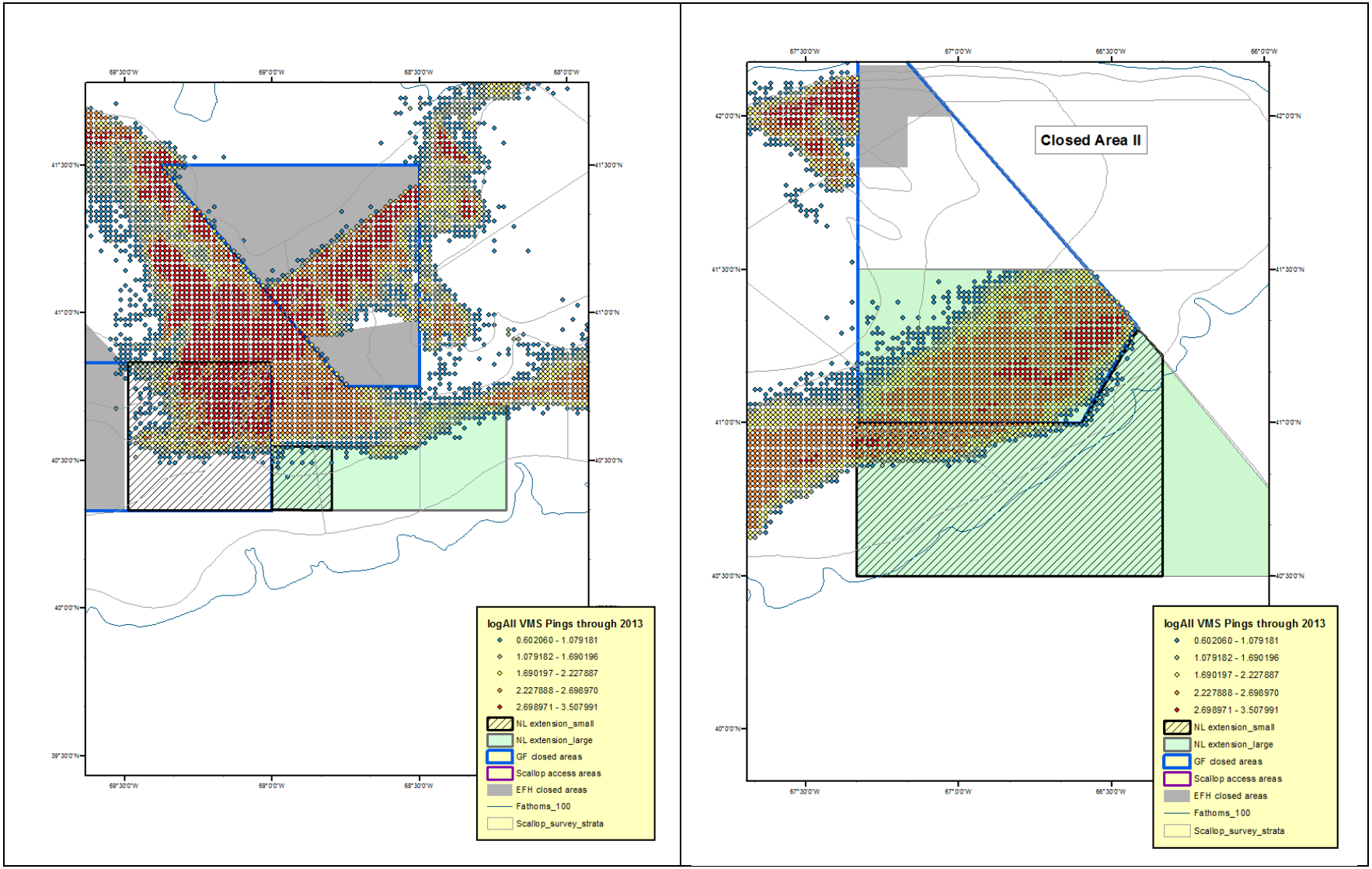


Figure 16 – Potential modifications to scallop access areas around NL and CA2 with VMS pings summarized from all years through 2013



3.2 ADDITIONAL MEASURES TO REDUCE IMPACTS ON SMALL SCALLOPS

In addition to area closure the PDT developed a list of other measures that could be considered to reduce impacts on small scallops. The original list of measures included prohibition of RSA compensation fishing in any Mid-Atlantic access area, seasonal restriction for access area trips, and implementing a crew limit on access area trips. This action ultimately only considered the last option to implement a crew limit, and the first two were rejected for further consideration.

Rational for rejection –
The Scallop Advisory Panel and Committee met in September 2014 to review the range of alternatives developed up to that date. Both groups passed a motion to only consider the crew limit as an alternative to reduce impacts on small scallops and reject further consideration of the other two measures: seasonal closures and prohibition of RSA compensation fishing. The primary rationale for rejecting the seasonal closure has to do with flexibility for the industry. Typically framework actions are implemented several months into the fishing year (May or June), and if three access area trips are allocated for each vessel and there is a seasonal closure (i.e. August 15 – November 30) effort will be concentrated in the summer when air temperatures are high, potentially increasing discard mortality. Until specifications can be implemented closer to the start of the fishing year, the industry is not supportive of too many restrictions on when trips can be fished to optimize yield.

Overall, the rationale for not considering limits on RSA compensation fishing is that level of effort overall is not major. While it equals 1.25 million pounds, that is only a fraction of the overall catch for the year. Many vessels from the north that will likely be allocated RSA compensation will potentially chose to fish that allocation closer to home and not travel in the MA access areas anyway. It was noted that if the inshore part of ETA is closed there is not as much concern about prohibiting RSA compensation fishing in MA access areas.

3.3 REACTIVE ACCOUNTABILITY MEASURES

The original scope for this action included consideration of reactive AMs for northern windowpane flounder and potential modification of the existing reactive AMs for both YT flounder stocks. The reactive AMs were expected to be seasonal gear restricted areas building off the recent reactive AM developed for southern WP flounder (reduced hanging ratio of twine top and reduced number of rings in the apron of a scallop dredge).

Rationale for rejection –
As issues got added to this action there was a need to prioritize the workload so that the action was not delayed. At the September Council meeting the Council prioritized the items in the action to clarify what the PDT should focus on first so that the specifications were not delayed and final action did not extend beyond the November Council meeting. A total of seven items were on the list and reactive AMs were at the very bottom. Therefore, the PDT did not have time to fully develop and analyze a range of reactive AMs in this action. At the same time, the Groundfish Committee was developing potential sub-ACLs of northern WP for the scallop fishery, and preferred alternatives were not selected during the process. When the Scallop Committee met in November to identify preferred alternatives it was still unclear if Groundfish FW53 was going to include a sub-ACL or not for the scallop fishery. Since this issue was not

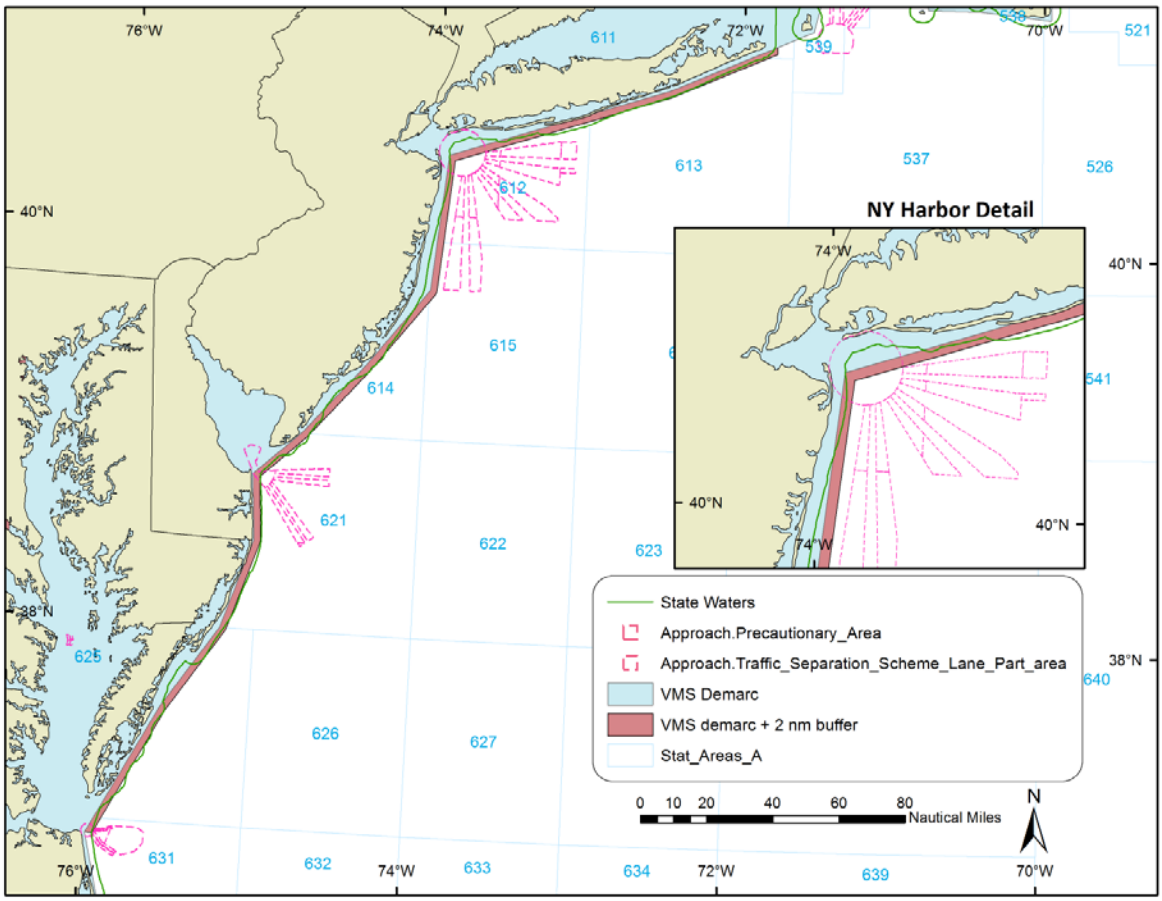
fully developed due to resources and being a lower priority for the action, the Scallop Committee passes a motion to remove it from further consideration.

Ultimately, the Council did not allocate a sub-ACL for that stock to the scallop fishery, so AMs are not currently required. The reactive AMs in place for GB and SNE/MA YT remain in effect. The Council discussed that this issue should be included in the specification framework the Council develops next year, and it was listed as one of the work priorities for 2015. If a sub-ACL is allocated to the scallop fishery and it is exceeded before reactive AMs are in place, the AMs can be developed to be retroactive. Finally, this action did include proactive AMs (maximum of seven rows in the dredge apron), and that is expected to reduce flatfish bycatch compared to dredges with higher aprons.

3.4 NEW VMS CORRIDOR FOR STEAMING BACK TO PORT

This alternative was originally developed by the Scallop Committee in May and included for consideration by the full Council in June. The intent is to allow limited access vessels the ability to declare out of the fishery on DAS when transiting back to port. The idea of a corridor was designed to reduce or eliminate abuse of this provision to help ensure vessels did not fish on their return to port. The corridor area considered is in Figure 17.

Figure 17 – Potential VMS corridor boundary (2 nautical miles east of VMS demarcation line from Montauk, NY to Cape Henry, VA)



Rationale for rejection –
The Scallop PDT began developing this measure in the summer with input from NMFS Enforcement. Early on concerns were raised about the feasibility of a corridor that extends from Montauk to Virginia. Other potential solutions were offered that ultimately replaced this alternative with more feasible alternatives (Sections 2.8.2 and 2.8.3). The Council Enforcement Committee reviewed all the alternatives in FW26 and agreed that this alternative was problematic. The Enforcement Committee passed a motion clarifying that they did not support the VMS corridor alternative. Furthermore, the Scallop Committee recommended it be rejected for further consideration at their October Committee Meeting to help facilitate analysis of the other options in the document since this alternative did not seem as fruitful based on input to date.

4.0 AFFECTED 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° 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, 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.

The scallop assessment is a very data rich assessment. The overall biomass and recruitment information are based on results from several surveys including: the NEFSC federal survey; SMAST video survey; VIMS paired tow dredge survey; and towed camera survey conducted by Arnie's Fishery. These data sources are combined in the assessment of the resource and in models used by the Scallop PDT to set fishery allocations.

4.1.1 Benchmark Assessment

The sea scallop resource just had a benchmark assessment in 2014 (SARC59, 2014). Therefore, all of the data and models used to assess the stock were reviewed. The final results from that assessment have been incorporated into this action, including updated reference points for status determination (See Section 4.1.1.1). Overall, a handful of issues were updated as a result of the assessment and are summarized below. The full benchmark assessment and summary report can be found at: http://www.nefsc.noaa.gov/publications/crd/crd1409/ .

The major highlights from the benchmark assessment include:

1. several changes to the dredge index;
2. use of a separate Habcam index;
3. splitting out GB open and GB closed subareas;
4. several model parameter adjustments (a. increased estimates for natural mortality; b. increased natural mortality for larger scallops; and c. new growth estimates for three different time periods); and
5. new reference points based on these modifications.

Several changes were reviewed and approved related to the dredge survey index: 1) VIMS survey data was integrated for all areas from 2005-2013; 2) tows were standardized to one nautical mile in length instead of using a vessel correlation factor that was used in the last assessment; and 3) marginal areas on GB were dropped from the survey index. Adding the VIMS survey data had modest effects on the index, but improved the overall CV.

Habcam data used as a separate survey index for the first time in this assessment (GB 2011-2013 and MA 2012 and 2013). Previously simple kriging was completed with Habcam data to estimate access area biomass in scallop actions. But this assessment used a more complex a three step model (GAM plus ordinary kriging) to obtain biomass and abundance estimates. A

stratified mean was also used as a backup estimate or "sanity check". Paired habcam/dredge tows were used to obtain survey dredge efficiency estimates.

The GB model results were unstable; therefore the region was divided into two sub-regions: GB open and GB closed. Model for GB open performed very well, no retrospective patterns. For GB closed, the model does not believe the large survey years, so underestimates biomass for those years. The assessment panel discussed that density dependence juvenile mortality could be causing this, but that issue was not fully tested in this assessment.

Three model parameters were adjusted: 1) natural mortality increased in all areas, and was increased from 0.12 to 0.16 on GB and from 0.15 to 0.2 in the MA; 2) natural mortality for the plus group was assumed to be 1.5 times that of other size classes (i.e., 0.24 for GB and 0.3 for MA); and 3) different growth estimates used for different time periods. Analyses were completed to support all of these adjustments.

Based on all these changes the assessment approved new reference points for status determination. See a summary of that below (Section 4.1.1.1).

4.1.1.1 Stock status

The scallop stock is considered overfished if F is above Fsmy, and overfishing is occurring if biomass is less than ½ Bmsy. The previous estimate of Fmsy was 0.38 and Bmsy was 125K mt (1/2 Bmsy = 62K mt). SARC59 revised these reference points and increased Fmsy to 0.48 and reduced Bmsy to 96,480 mt (½ Bmsy = 48,240 mt). A comparison of the reference points are described in Table 20.

Table 20 – Summary of old and new reference points

	SARC 50 (2010)	SARC 59 (2014)
OFL	F = 0.38	F = 0.48
ABC/ACL (25% chance of exceeding OFL)	F = 0.32	F = 0.38
ACT for LA fishery (25% chance of exceeding ABC)	F = 0.28	F = 0.34
Bmsy (1/2 Bmsy)	125,358 (62,679)	96,480 (48,240)

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; it was increased from 0.12 to 0.16 on GB and from 0.15 to

0.2 in the MA. In addition, natural mortality for the plus group was assumed to be 1.5 times that of other size classes (i.e., 0.24 for GB and 0.3 for MA).

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 (including mortality on deck) is uncertain, but was estimated at 20% in this assessment, as well as the previous two assessments.

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, and this source of mortality is highly uncertain. The last benchmark 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. There is no new information to modify the values used in 2010, but several studies are in process, and SARC59 did run some sensitivity analyses of this source of mortality. In general, incidental mortality does not have a very large impact on the overall assessment of the stock.

Finally, fishing mortality, the mortality associated with scallop landings on directed scallop trips, is 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. shows F and biomass estimates for the combined stock overall through 2013.

SARC 59 included a formal stock status update through FY2013, and the reference points were updated in this benchmark assessment. **The updated estimates for 2013 are: F=0.32 and B=132K, so the stock is not overfished and overfishing is not occurring, under both the old and new reference points** (Figure 19 and Table 21). The main driver for the increase in Fmsy is due to increases in natural mortality and weakening of MA stock recruit relationships. In general Fsmy is uncertain because the Fmsy curve for MA is very flat, uncertain where Fmax is for that region.

Figure 18 - Whole stock estimate of fishing mortality through 2013 (SARC59) Fishing mortality (red line) and biomass estimates (y^{-1}, gray bars) from the CASA model

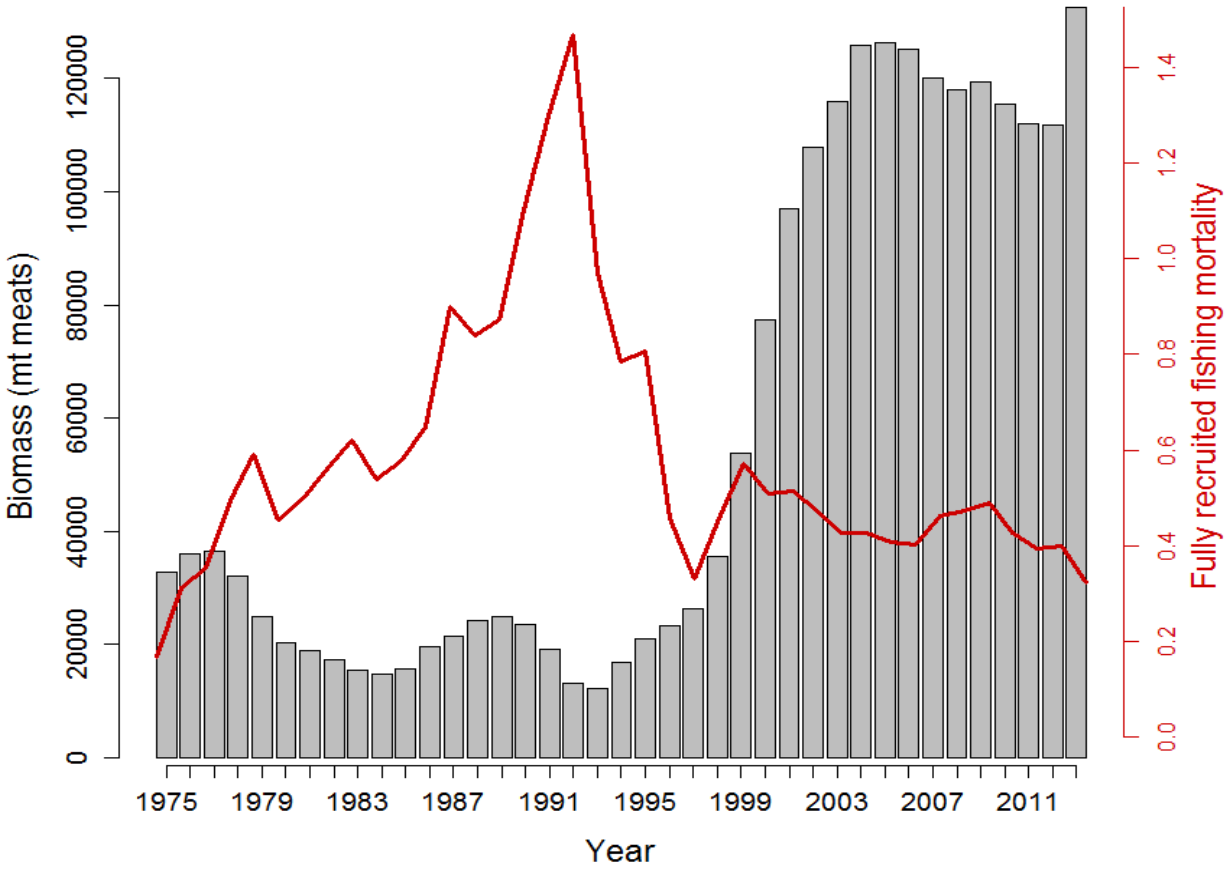


Figure 19 – Fully recruited annual fishing mortality rate for scallops from 1975-2013
Note that trends are different for partially recruited scallops because of changes in commercial size selectivity. SARC59 Fmsy is shown with green dashed line for the most recent period; Fmsy would have been smaller in past years when selectivity was different.

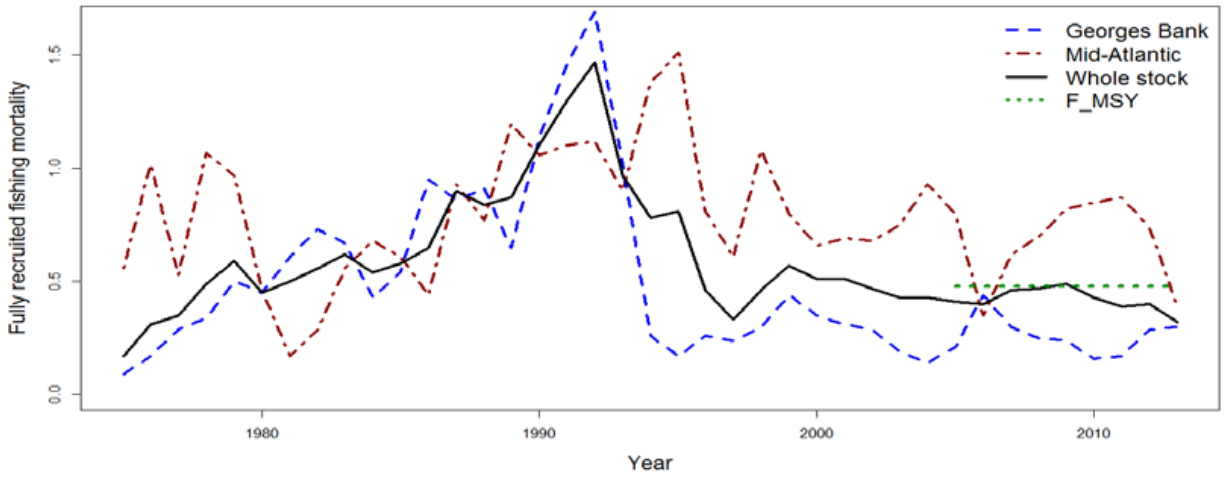


Table 21 – 2013 sea scallop stock status – overfishing is not occurring and the resource is not overfished

	Total 2013 Estimate	Stock Status Reference Points
Biomass (in 1000 mt)	133	½ Bmsy = 48,240
F	0.32	OFL = 0.48

4.1.2 Summary of 2014 surveys

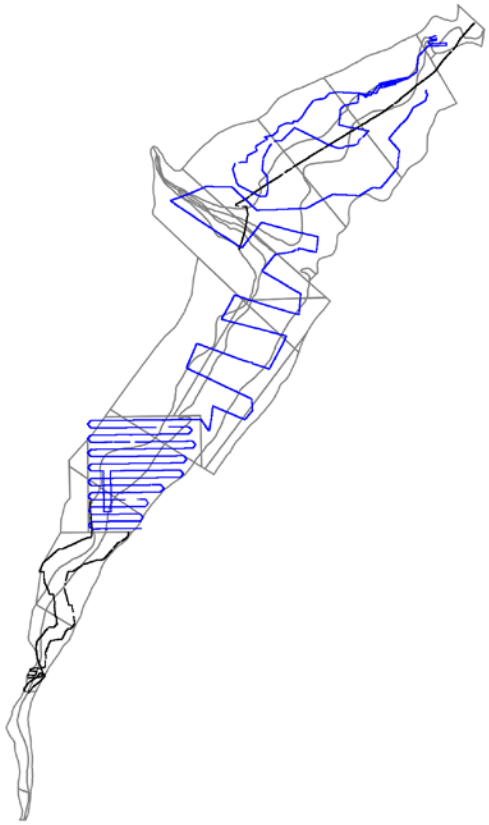
The Scallop FMP is fortunate to have access to several different survey methods. First, the NEFSC has had a dedicated dredge survey since 1977 that has sampled the resource using a stratified random design. More recently, the NEFSC scallop survey has evolved into a combined dredge and optical survey (Habcam Version 4), and is conducted on the R/V Sharp. Ideally, both dredge tows and habcam are used in each stratum, and there are three separate legs of the combined federal scallop survey. In 2014, the federal survey faced some logistical issues, which caused the overall survey to be about ten days shorter than planned and it was completed about two weeks later than scheduled. In the end, a full habcam survey was conducted in both regions (GB and MA), but essentially no federal dredge tows were completed in the MA region and about 120 federal dredge tows were completed in GB (Figure 20).

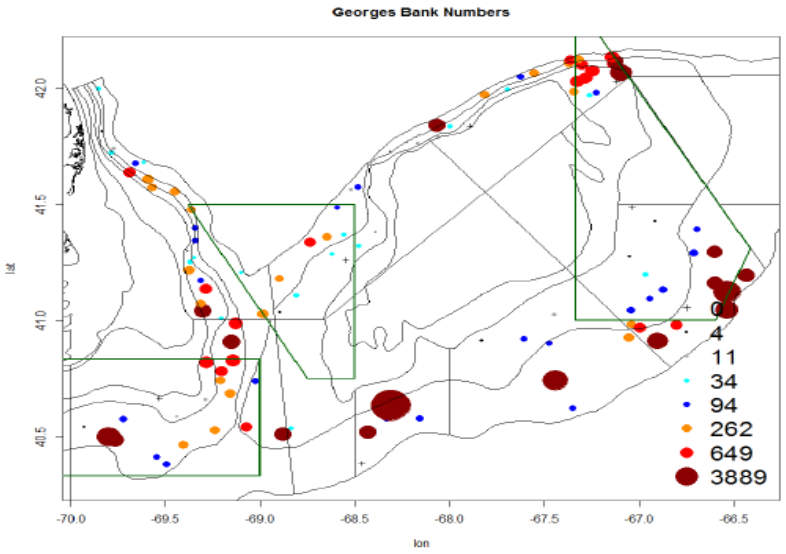
In addition, SMAST has conducted video surveys of various parts of the resource area. In most years since 2003, including 2014, SMAST completed a broadscale video survey of most of the resource area. In addition to a broadscale survey of most of the resource area, SMAST also completed a more intensive survey of the sliver north of the scallop access area within CA1. The 2014 SMAST season included about 2,000 stations on seven separate cruises (Figure 21).

Third, VIMS conducts a grid design survey towing two dredges, one commercial dredge and one survey dredge, in various areas that tend to vary from year to year. In 2014 VIMS completed 565 stations on three separate research cruises (Figure 21).

Finally, Arnie's Fisheries has completed very intensive optical surveys of discrete areas using Habcam Version 2. The areas vary from year to year, and in 2014 the areas covered were Elephant Trunk, areas with high concentrations of small scallops in and around NL and south of Long Island, as well as areas on the southern flank of GB and from Hudson Canyon proper to Elephant Trunk (Figure 20).

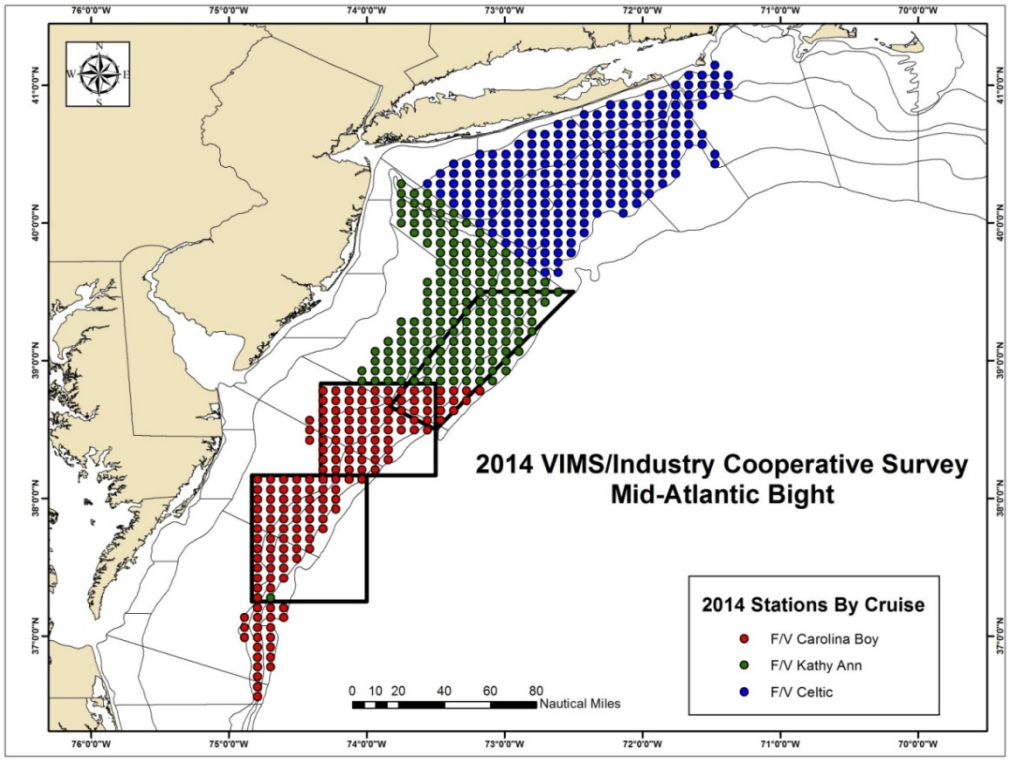
Figure 20 – 2014 NEFSC survey coverage

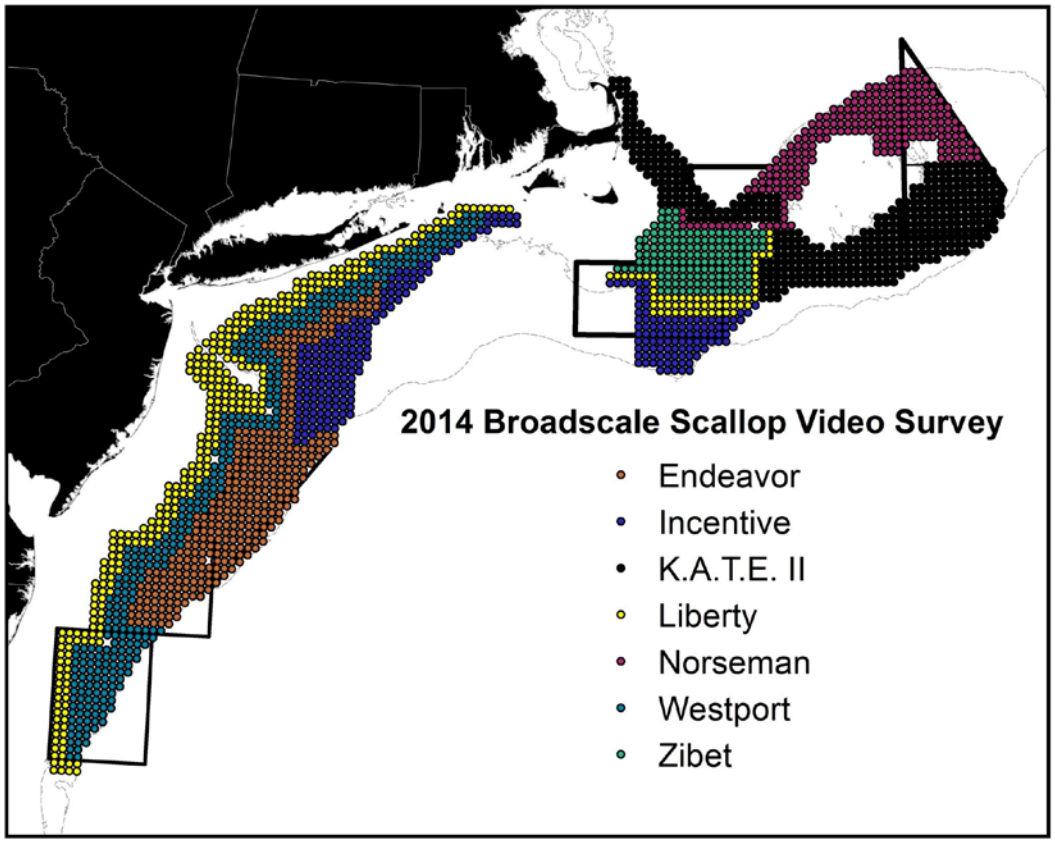




Federal Habcam V4 (black tracklines)
Arnie's Habcam V2 (blue tracklines)
Federal dredge stations on GB (bottom right)

Figure 21 – 2014 survey stations for VIMS (top) and SMAST (bottom)





The Scallop PDT combines the results from all available surveys to estimate sea scallop biomass and recruitment on an annual basis. The PDT met on August 26, 2014 and reviewed results from all the surveys described above.

4.1.3 Updated estimates of scallop biomass and recruitment

4.1.3.1 Georges Bank

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 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.

In 2012, GB biomass was primarily concentrated in NL, the Channel, and cod HAPC within CA2. In 2013, GB biomass declined in all areas, especially the Channel. In 2014 abundance was very high on GB, but mostly from small scallops observed throughout most of the resource area. In particular, large settlement areas were observed along the southern flank of GB, and in some cases in areas that do not typically have high densities of scallops. Figure 22 - Figure 27 show the survey results for scallop biomass and abundance for GB from various surveys of the area. Note in Figure 22 that 2014 is displaying scallop numbers and 2013 results are in terms of biomass, so they are not comparable. Overall, GB biomass has been increasing since 2010 (Figure 27 and Figure 32). However, exploitable biomass has been declining on GB since 2005. It is expected to increase over the next few years if smaller scallops grow and survive on GB.

Table 22 summarizes the biomass estimates per area based on 2014 surveys.

Figure 22 - Total scallop biomass (g/tow) on GB from the 2014 NEFSC dredge tows (TOP) compared to 2013 biomass from both VIMS and NEFSC dredge tows combined (BOTTOM)

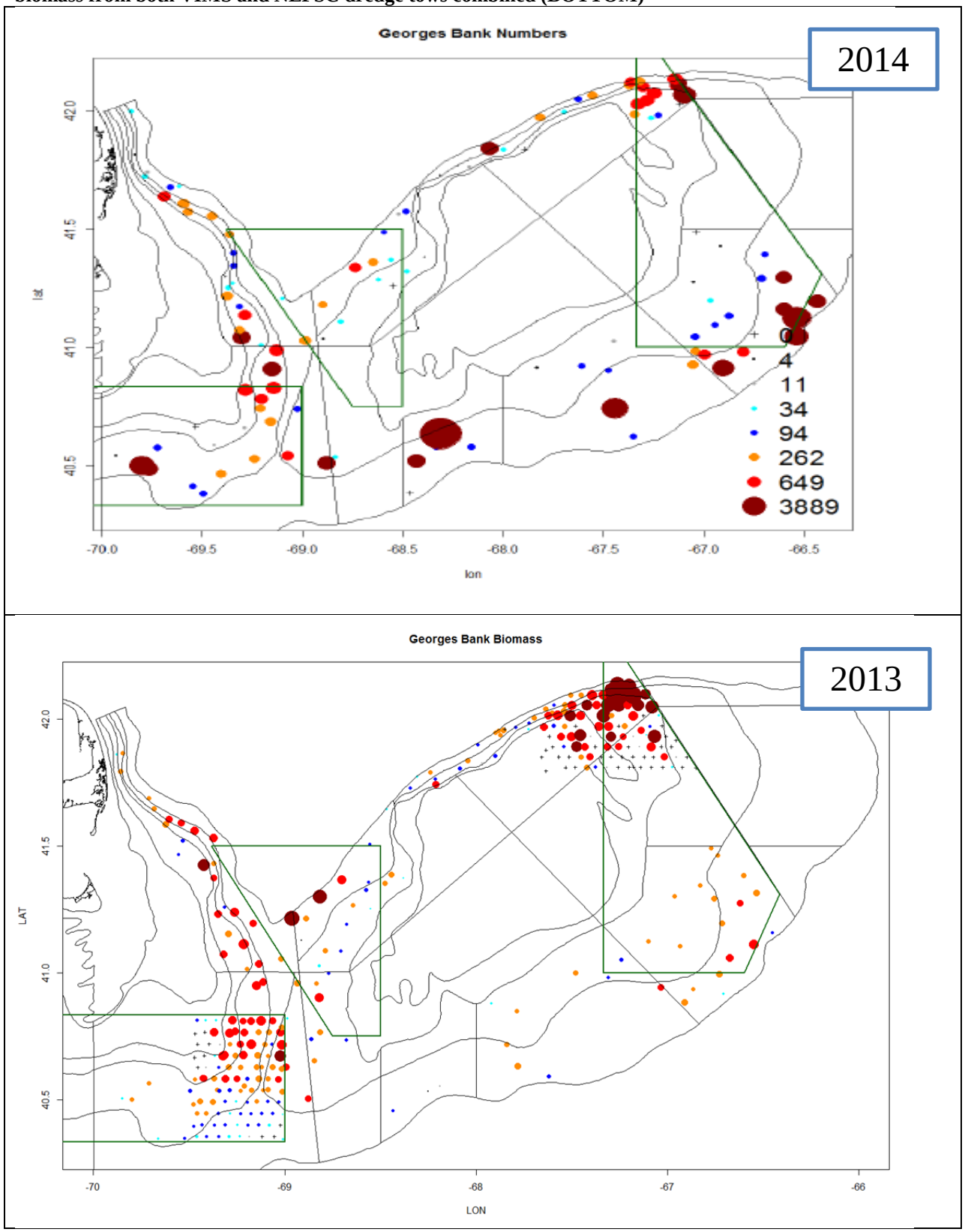


Figure 23 - Total scallop abundance (numbers per station) on GB (2014 SMAST video survey)

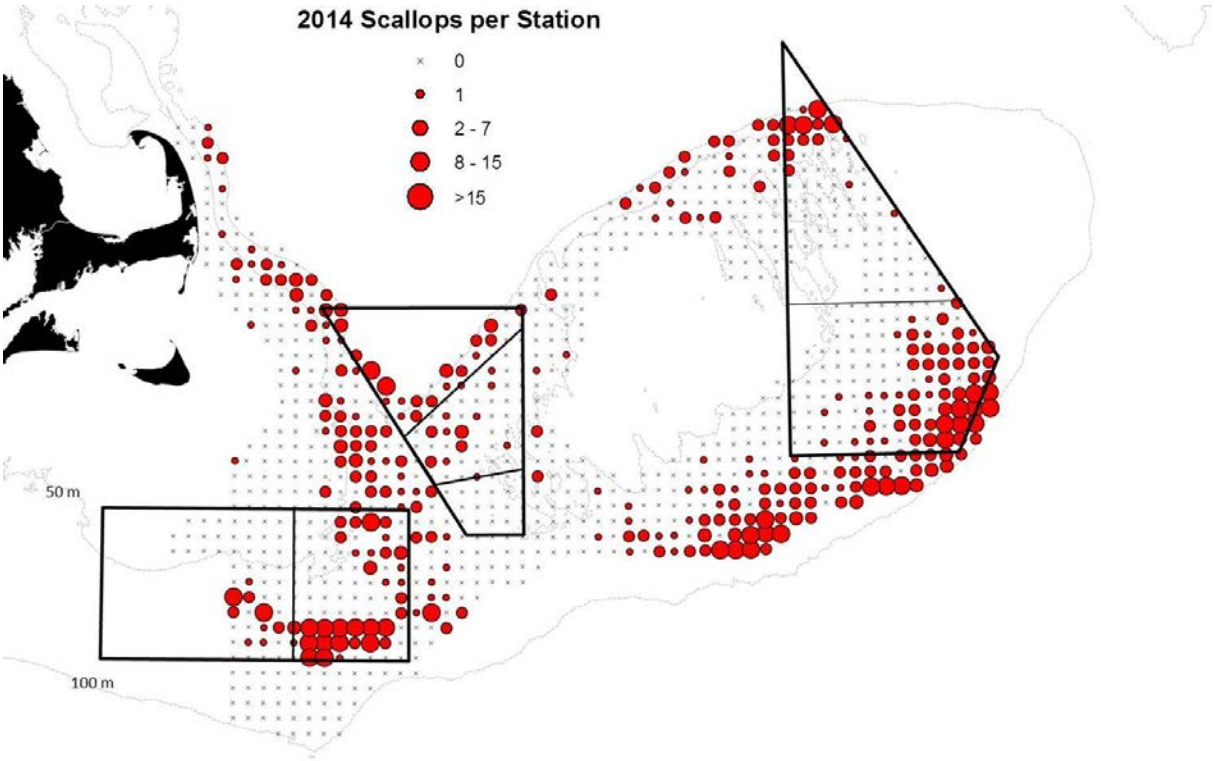


Figure 24 - Total scallop abundance (numbers per station) for recruits (less than 75mm) in the GB region from the 2014 SMAST video survey

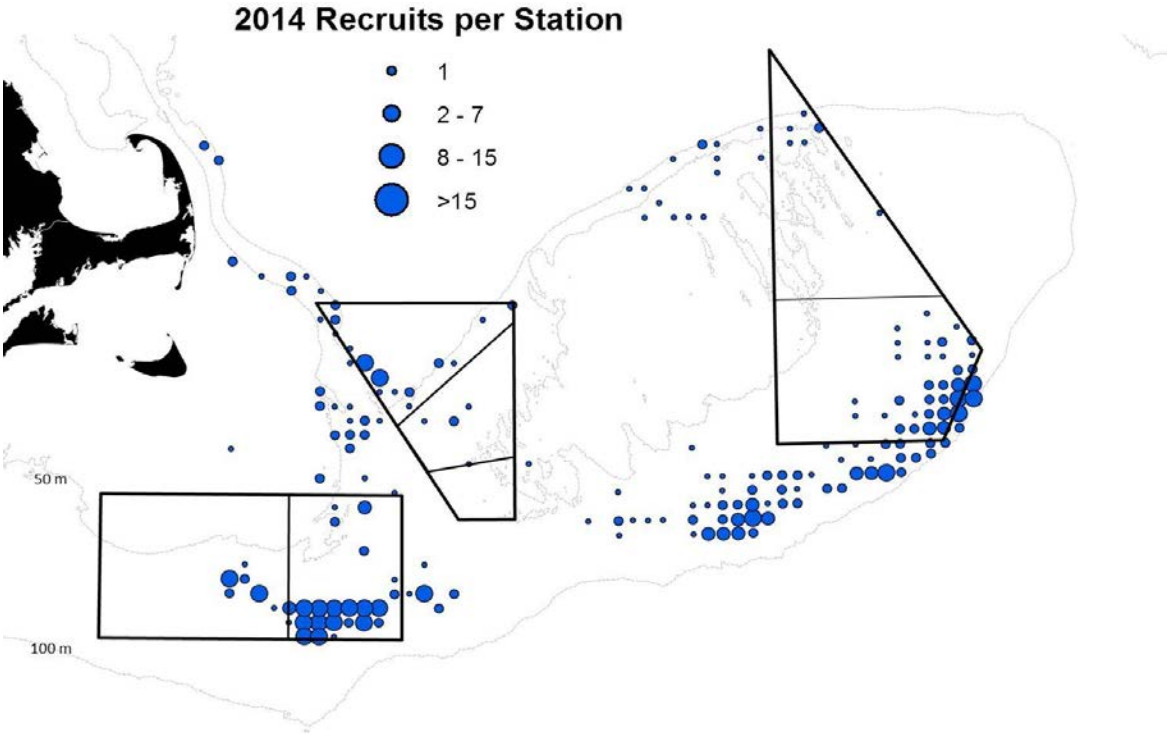


Figure 25 - Total scallop biomass in areas on GB combining optical survey results from 2014 NEFSC Habcam Version 4 and Arnie's Fishery Habcam Version 2

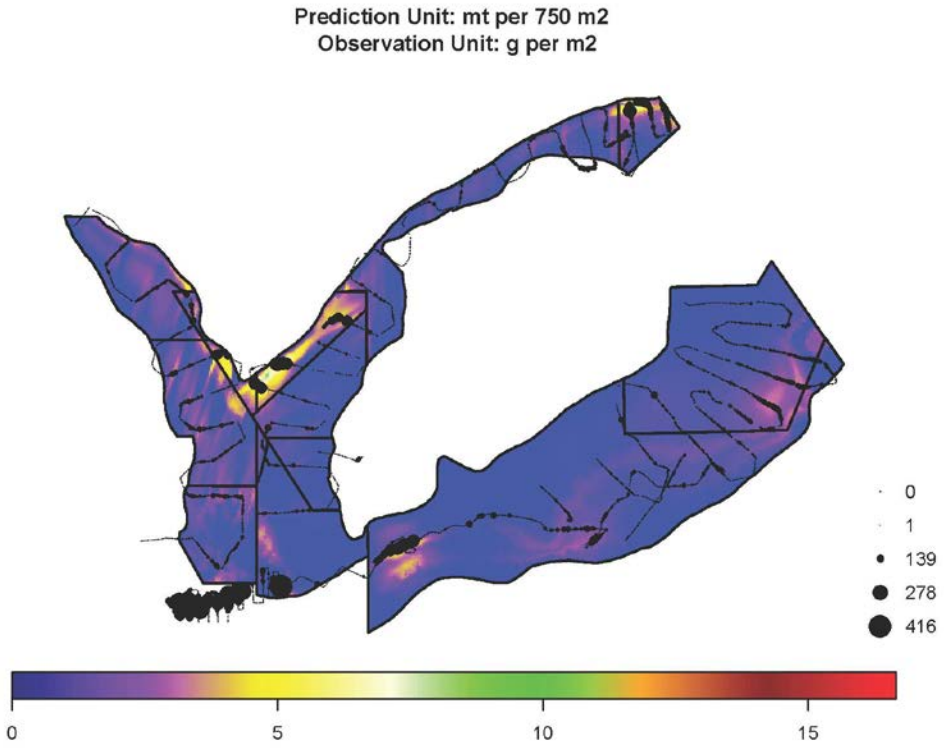


Figure 26 – Distribution of scallops by shell height from 2014 Arnie's Fishery Habcam Version 2

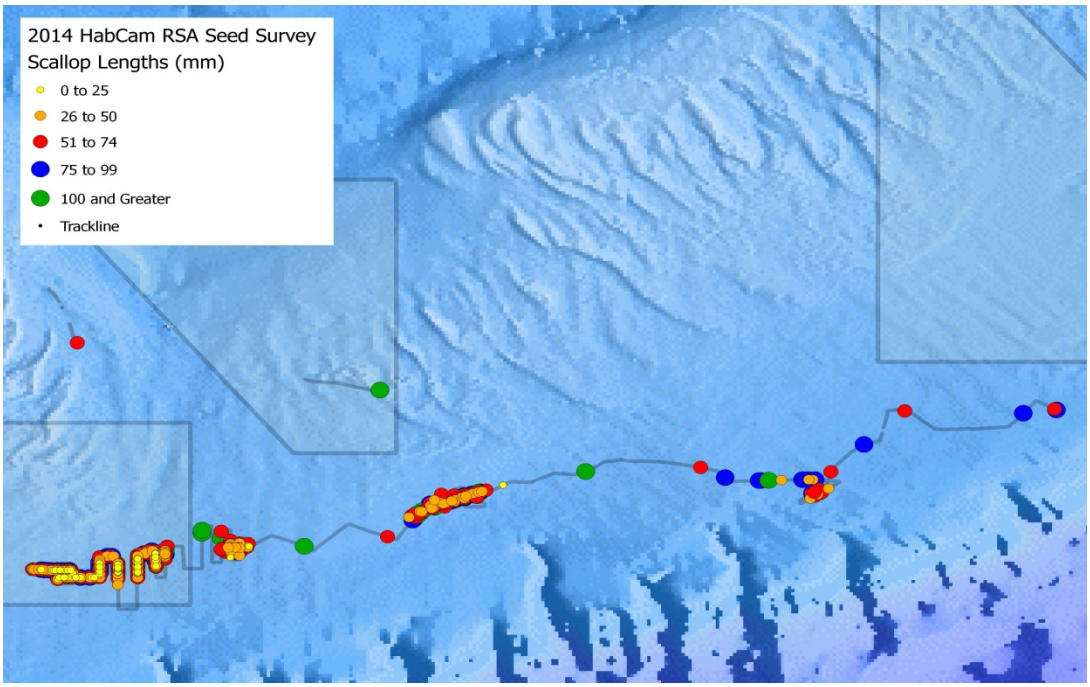
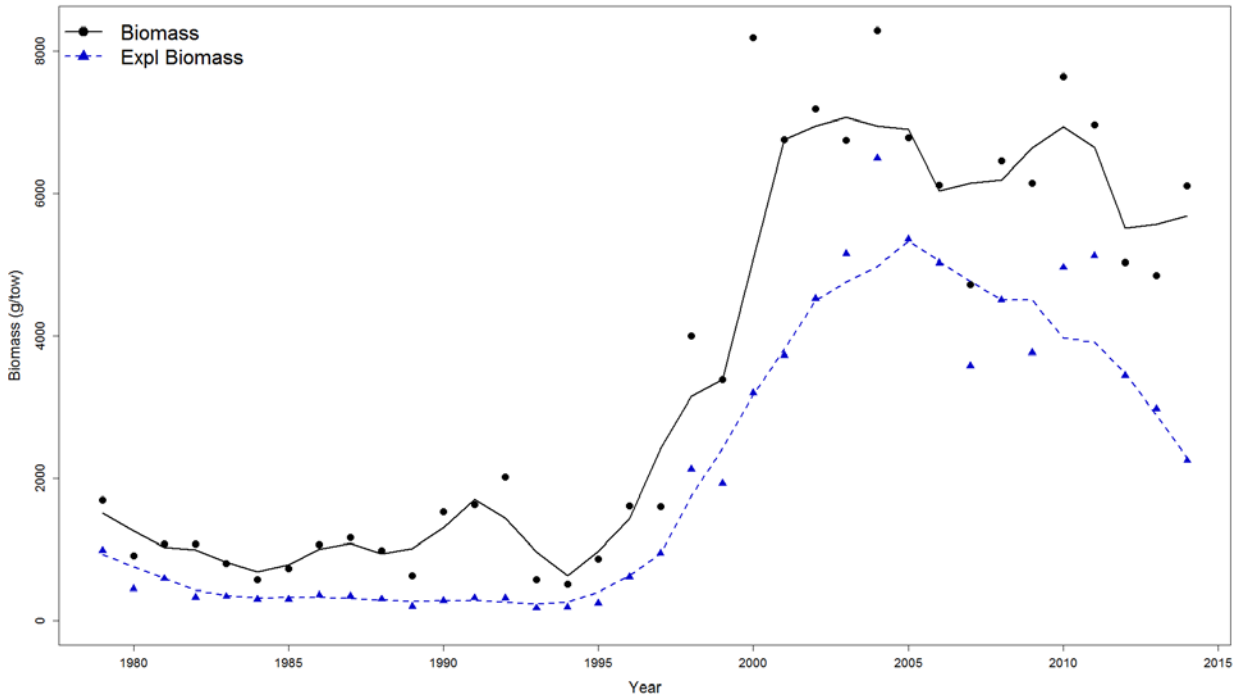


Figure 27 – GB dredge survey biomass and exploitable biomass time series (1979-2014)

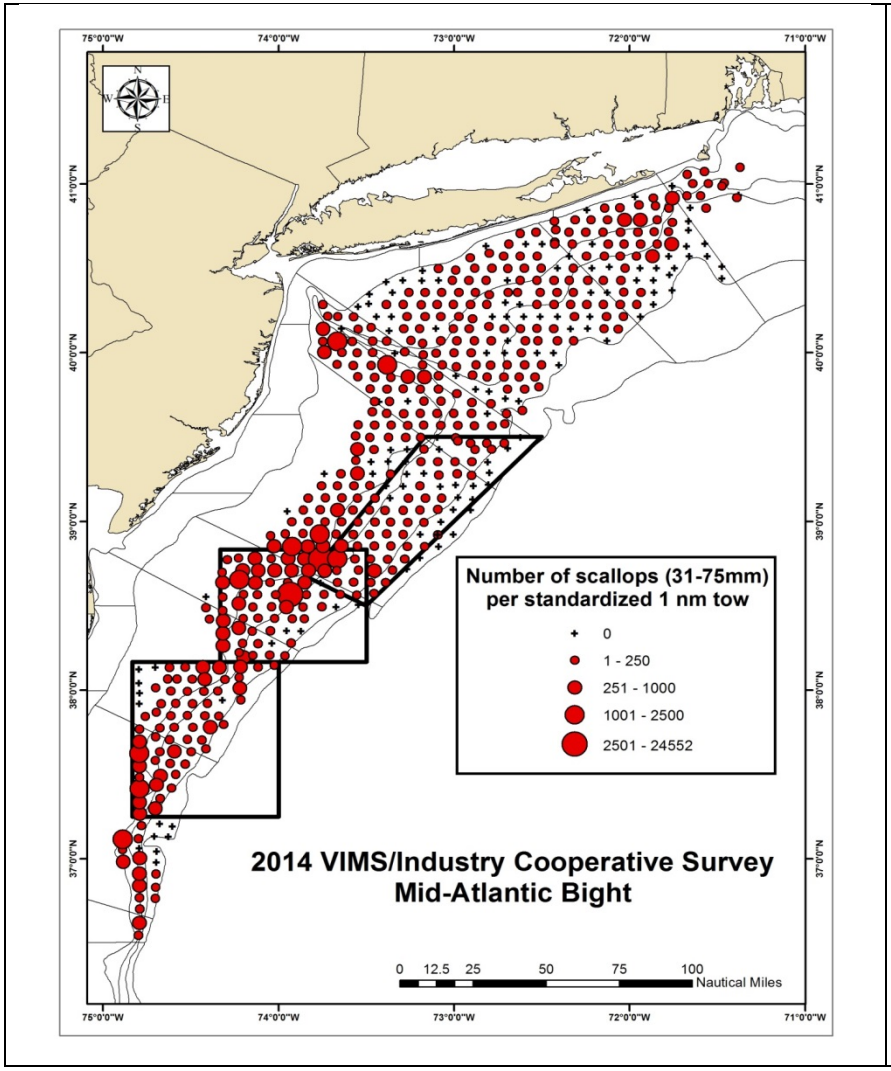


4.1.3.2 Mid-Atlantic

In general, Mid-Atlantic biomass was declining since 2009, and has been steadily increasing as smaller scallops grow (Figure 31). The decline in exploitable biomass from 2006-2014 was primarily from depletion of the large biomass in Elephant Trunk and several years of poor recruitment in that area (2009-2011). However, stronger recruitment has been observed in 2012 and 2013. Once these scallops grow larger biomass in the Mid-Atlantic is expected to increase. Figure 28 through Figure 30 show 2014 survey results from various surveys of the area. The large number of small scallops observed in 2012 in all three MA access areas seems to have survived, and some of these animals will be ready for harvest in FY2015. Note that another set of smaller scallops was observed in several surveys in more shallow areas within the MA access areas. Overall MA scallop biomass is increasing as smaller scallops continue to grow in this area (Figure 32).

Table 22 summarizes the biomass estimates per area based on 2014 surveys.

Figure 28 - Total scallop abundance for the Mid-Atlantic from the 2014 VIMS dredge tows for smaller scallops (LEFT) and larger scallops (RIGHT)



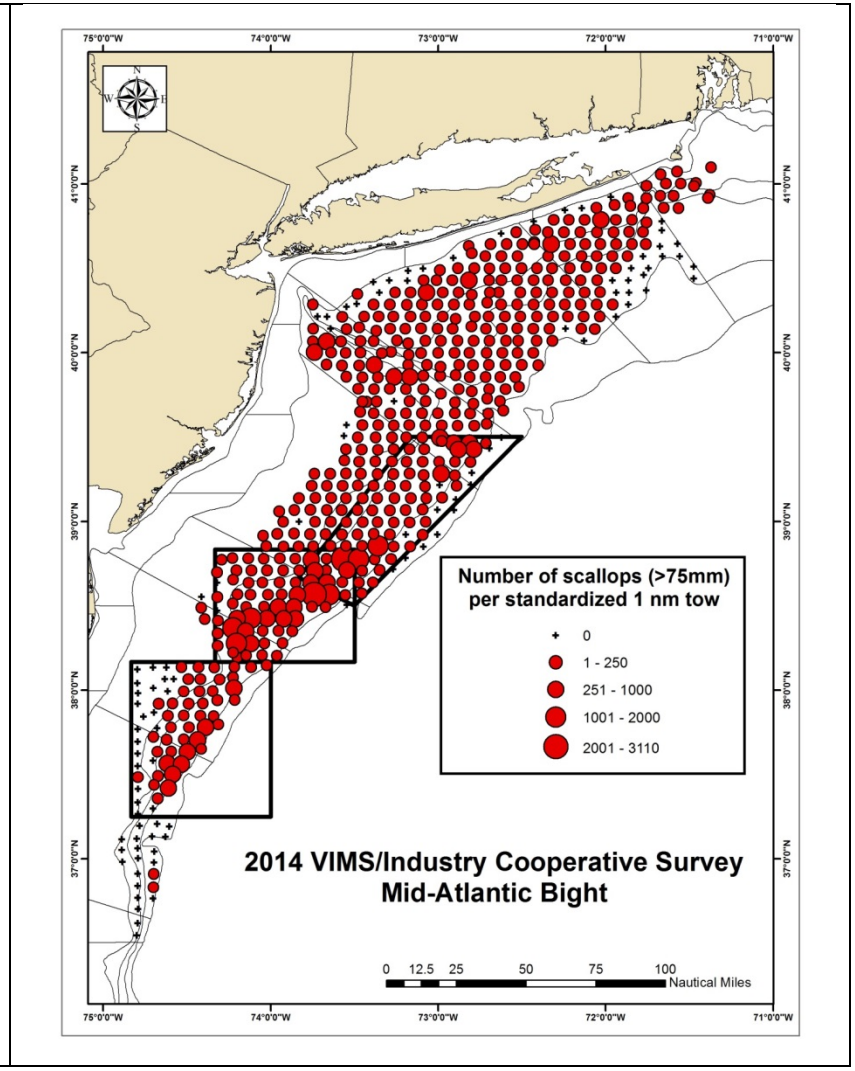


Figure 29 - Total scallop abundance (numbers per station) for MA region from the 2014 SMAST video survey (LEFT) and abundance of small scallops less than 75mm (RIGHT)

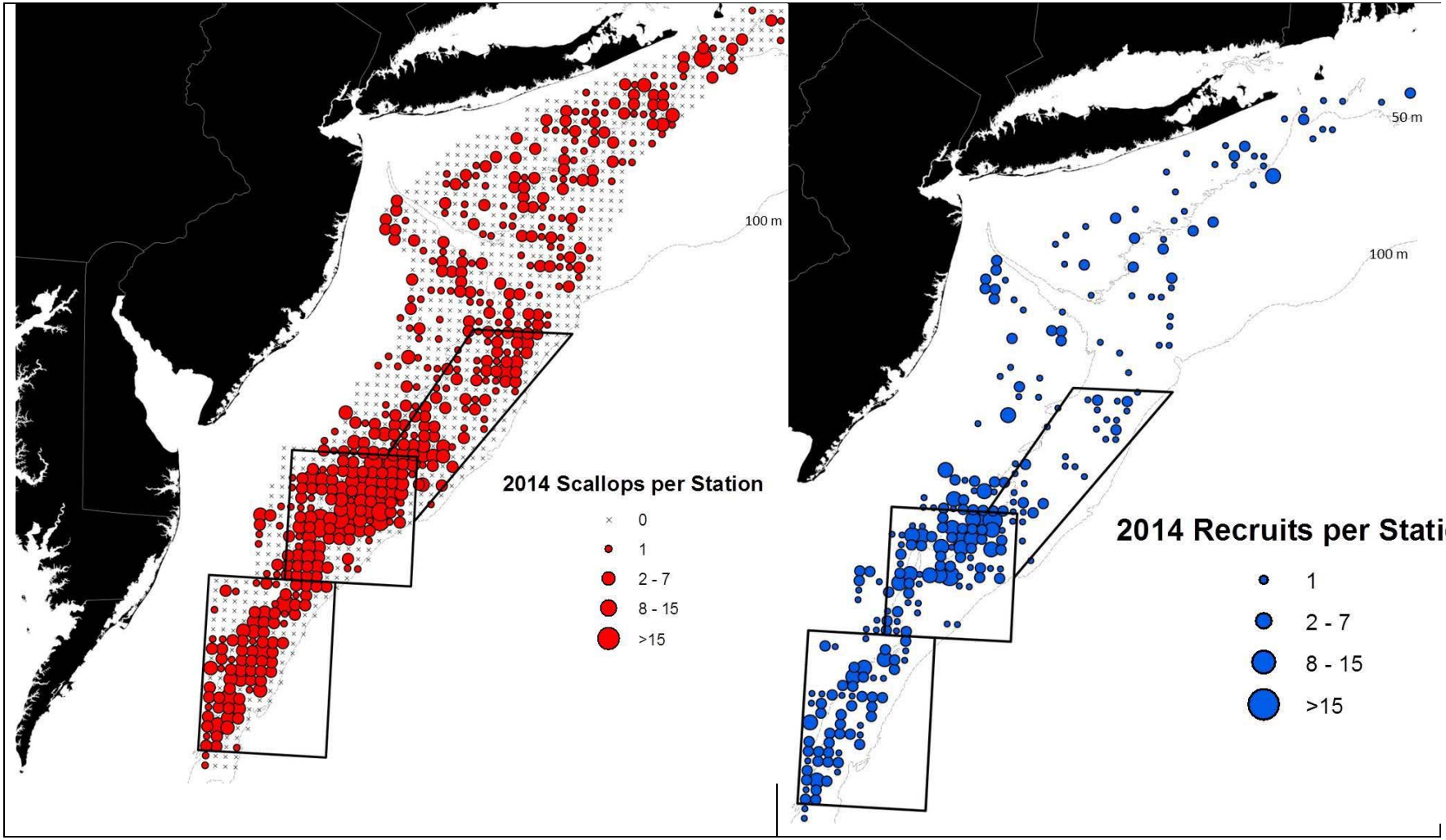


Figure 30 - Total scallop biomass for the Mid-Atlantic from the 2013 NEFSC optical survey (Seahorse)

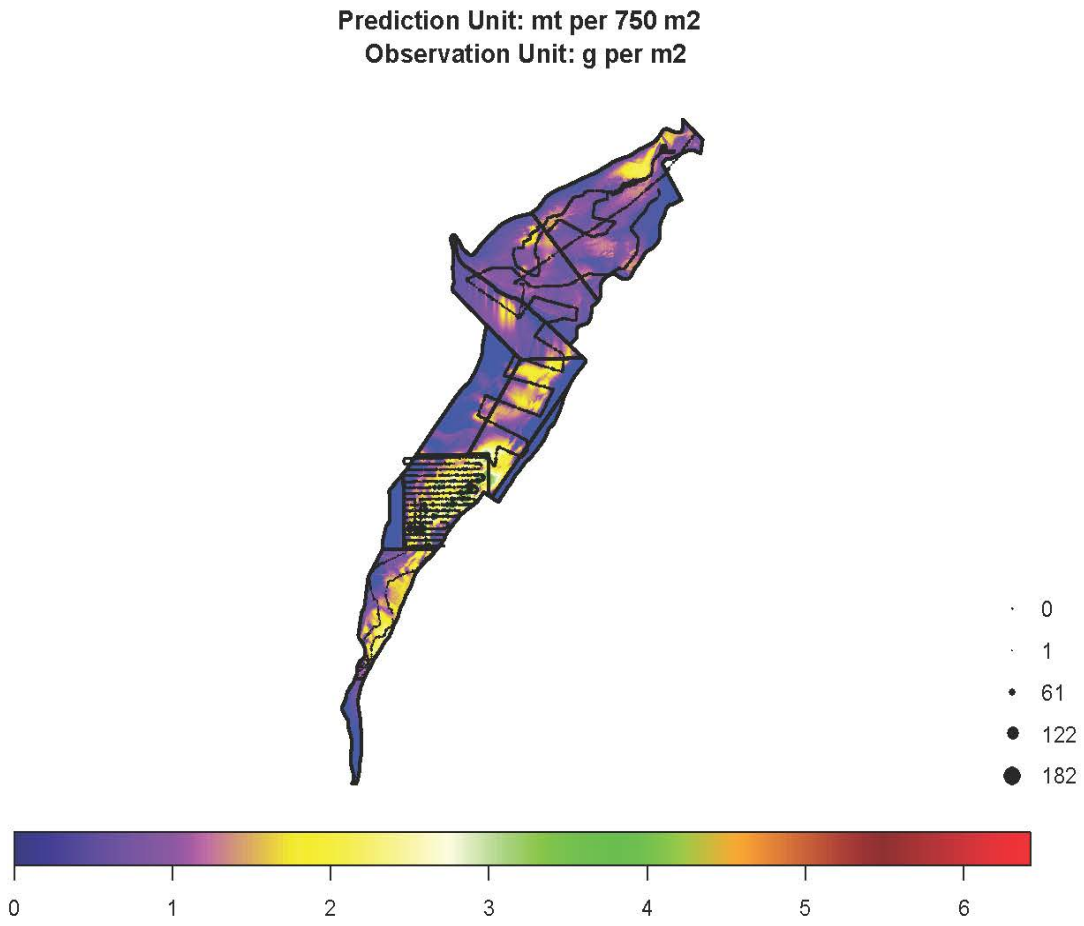


Figure 31 – MA dredge survey biomass and exploitable biomass time series (1979-2014)

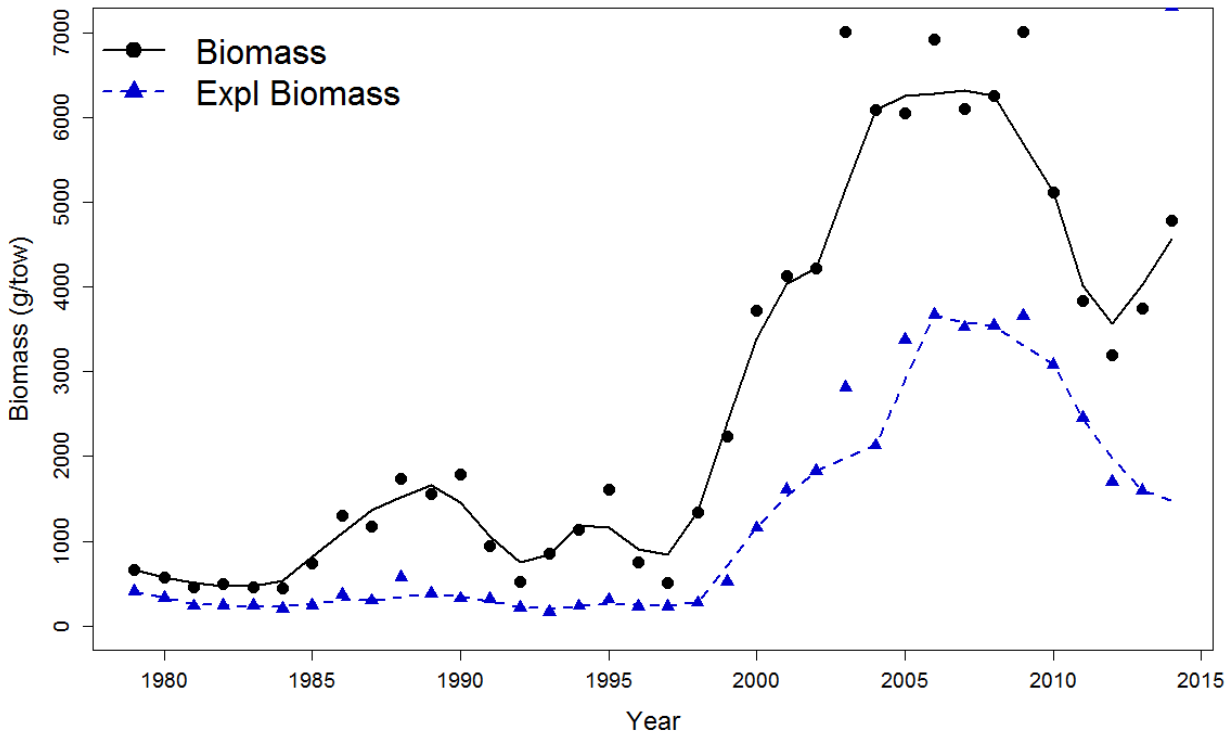


Figure 32 – NEFSC biomass survey indices (through 2014)

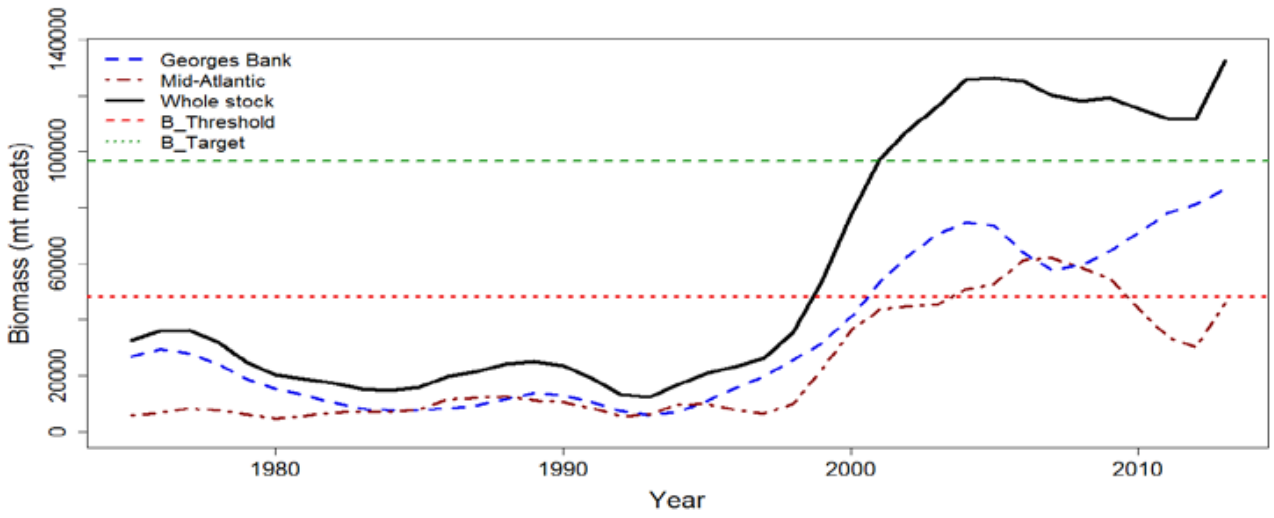


Table 22 – Summary of biomass estimates by SAMS area (2014 surveys)

	DREDGE			SMAST			Habcam			Totals		
Area	Bms	SE	Ebms	Bms	SE	Ebms	Bms	SE	Ebms	Bms	SE	Ebms
Delmarva	4,707	778	2,080	9,626	1,093	3,935	10,598	2,526	2,815	8,310	1,651	2,943
Elephant Trunk	16,392	3,426	8,067	24,799	2,909	12,938	36,154	14,729	12,648	25,782	8,891	11,218
HCS	5,805	1,206	3,044	7,381	1,021	3,143	18,041	6,752	9,401	10,409	4,004	5,196
Virginia	279	79	3	NS	NS	NS				279	79	3
NYB	6,822	1,656	4,140	3,609	495	2,119	12,756	6,082	6,261	10,618	3,651	4,173
Long Island	11,966	816	8,438	10,269	950	6,402	14,305	11,131	6,520	12,950	6,467	7,120
NYB Ext	1,766	332	757	6,900	867	4,013	*			*		1,590
Block Island	939	206	535	1,372	671	521	*			*		352
Mid-Atlantic Total	48,676	4,167	27,064	63,956	3,612	33,071	91,854	20,577	37,645	68,348	12,368	32,595
CL-I NA	2,163	649	1,854	5,115	3,004	3,091	21,378	4,510	14,020	9,984	3,151	6,322
CL-1 Acc	333	59	246	962	375	190	*			*	219	218
CL-2 NA	8,989	3,190	7,061	5,550	2,054	4,191	7,087	1,486	4,077	7,209	2,353	5,110
CL-2 Acc	7,848	2,462	3,642	8,197	2,570	929	9,835	3,681	2,155	8,627	2,956	2,242
NLS-NA	2,240	1,142	675	5,211	4,650	677				3,726	2,765	676
NLS-Acc	1,637	327	854	30,052	6,534	3,091	3,231	626	1,109	11,640	3,794	1,685
GSch	17,689	1,875	9,485	11,134	7,849	4,949	15,994	3,825	4,917	14,939	5,156	6,450
SEP	15,434	9,833	2,862	7,026	1,359	2,476	16,038	4,019	1,459	12,833	6,183	2,266
NEP	7,752	9,302	3,837	5,863	1,483	2,259	4,330	861	2,031	5,982	5,461	2,709
Georges Bank Total	64,085	14,311	30,516	79,110	12,246	21,853	77,893	19,008	29,768	74,938	11,446	27,677
TOTALS	**112,761**	**14,906**	**57,580**	**143,066**	**12,767**	**54,924**	**159,149**	**28,013**	**67,413**	**143,286**	**16,851**	**60,272**

* Included in other areas

still confirming

Table 23 – Summary of biomass estimates by SAMS area (2013 surveys)

Mid-Atlantic Bight	Dredge	SE	Habcam	SE	SMAST	SE	Mean	SE
Hudson Canyon South	7839	1126	7528	1097			7684	786
Delmarva	4559	605	6067	655	6249	803	5625	400
Elephant Trunk	14317	1758	19063	1993			16690	1329
Inshore of ET	109	421	868	825			489	463
Virginia Beach	1208	605	395	388			802	359
NYB/LI (includes str 21)	20662	2468	29816	2485			25239	1751
Block Island	N/S	N/S	1655	364			1655	364
TotalMA Rotational	26715	2173	32658	2367			29687	1607
TotalMA Open	21979	2575	31079	2647			26529	1847
Total MidAtlantic	**48694**	**3370**	**63737**	**3551**			**56216**	**2338**
Georges Bank								
Closed Area I Acc	494	108	3340	401			1917	208
Closed Area I NA	16940	5750	4553	747			10747	2899
Closed Area II Acc	5552	1042	9845	1221	5148	1049	6848	639
Closed Area II NA	9041	1220	8497	765			8769	720
NLS Acc	3271	342	4098	584			3685	338
NLS NA	90	28	N/S	N/S			90	28
S Channel	11711	2842	13496	1130			12603	1529
Southern Flank	5704	1197	11445	1946			8575	1142
Northern Edge	4425	580	3160	537			3793	395
Total GB Clsd/Acc	35389	5980	30333	1771			32861	3119
Total GB Open	21840	3138	28101	2313			24970	1949
Total Georges Bank	**57229**	**6754**	**58434**	**2913**			**57027**	**7899**
TOTAL	**105923**	**7548**	**122171**	**4593**			**113242**	**8238**

4.1.4 Performance of ACL management

In the first under ACL management, fishery allocations essentially kept landings right below ACL (landings 98% of ACL). In 2012 and 2013 landings were closer to 90% of the ACL. This is not surprising since fishery allocations are actually set at ACT, a substantially lower level to account for management uncertainty. For example, in 2014 the ACT for the LA fishery was 15,567mt and the LA ACL was 18,885, about a 3,000mt buffer. FY2014 is not over yet, but preliminary estimates suggest that landings will be below ACL, and potentially closer to 80% of ACL. This is probably driven by a handful of reasons: LPUE may be lower in open areas than projected, in the past projections of catch per day were underestimated by the model used by the PDT and it may be possible that the model is getting closer to realized catch levels, carryover measures may have been utilized more than average trends, etc.

Table 24 – Summary of landings compared to ACL/ABC

	OFL	ABC (including discards)	Discards	ABC available to fishery = ACL (after discards removed)	Actual Landings	% of ACL (landings/ACL)	Total Catch (landings plus assumed discards)	% of ABC (including discards)
	A	B	C	A-C = D	E	E/D	E+C=F	F/B
2011	32,387	31,279	4,009	27,269	26,795	98.30%	30,804	98.50%
2012	34,382	33,234	4,266	28,961	26,160	90.30%	30,426	91.60%
2013	31,555	27,370	6,366	21,004	18,303	87.14%	24,669	90.13%
2014	30,419	26,240	5,458	20,782	16,500 (17,447)	79.4% (84.0%)	21,958 (22,905)	83.7% (87.3%)
2015 (default)	34,247	29,683	5,701	23,982				
2015 proposed	39127	32119	6240	25879				
2016 proposed	48489	39836	5964	33872				

- 2014 Actual landings is a projection only – the fishing year is only half over.
- PDT estimated catch using trends from NMFS Monitoring website (and second estimate in parentheses is the projected catch from FW25).

4.1.5 Northern Gulf of Maine

The PDT has included an updated section for this region with state water landings and biomass information since Framework 26 is considering changes to the NGOM management program and state water fisheries.

The scallop resource in the GOM varies widely with sporadic booms and busts. The qualification period adopted under Amendment 11 for the general category IFQ fishery did not overlap with a period of high scallop abundance in the GOM (FY2000-2004). Therefore, a separate limited entry program was adopted in Amendment 11 with a longer qualification period and no landings history requirement, but more conservative fishing measures including lower possession limits and more restrictive gear requirements. The LAGC Northern Gulf of Maine (NGOM) permit was established and about 125 permits were issued in 2010.

Only a fraction of these permits are active, under 15 vessels, and until more recently total NGOM catches were below 10,000 pounds most years, or 10-15% of the total TAC of 70,000 pounds (Table 79). In FY2013 catch increased in both federal and state waters within the NGOM. In terms of federal waters, total catch has increased primarily from increased fishing on Platt's Bank (Figure 67).

4.1.5.1 Federal waters in NGOM management area

As part of the recent scallop benchmark assessment the biomass within the federal portion of the Gulf of Maine was assessed. Appendix 7 includes the details of the assessment of the resource in this area. In general, the NGOM region has limited fishery-independent data available. There was an offshore survey administered by the Maine Department of Marine Resources in 1974 (Spencer 1974), and in 1983 and 1984 NMFS sampled some areas in this region on their annual survey (Serchuk 1983; Serchuk and Wigley 1984), but no broad-scale surveys were completed between the early 1980s and 2008 when the region was first managed under a TAC. Given the lack of recent fishery independent data, the initial allowable catch was determined using historical federal Gulf of Maine landings (NEFMC 2008). More recently, Maine Department of Marine Resources/University of Maine scallop surveys in 2009 and 2012, along with UMass Dartmouth video scallop surveys that occasionally sample in this area (e.g., Stokesbury et al. 2010) have offered fishery-independent sources of information to aid in generating the TAC.

SARC59 reviewed these surveys and estimated biomass based on the cooperative survey that was conducted by Maine DMR and the University of Maine in 2012. The results suggest that biomass is about 164.19 MT, and increase from 115.40 MT in 2009. Based on these biomass estimates the exploitation rate in weight (landings/stock biomass, assuming harvested scallops greater than 102 mm shell height and a dredge efficiency of 43.6%) during 2012 was 2.1% with a 90% confidence interval from 1.3% to 4.7%.

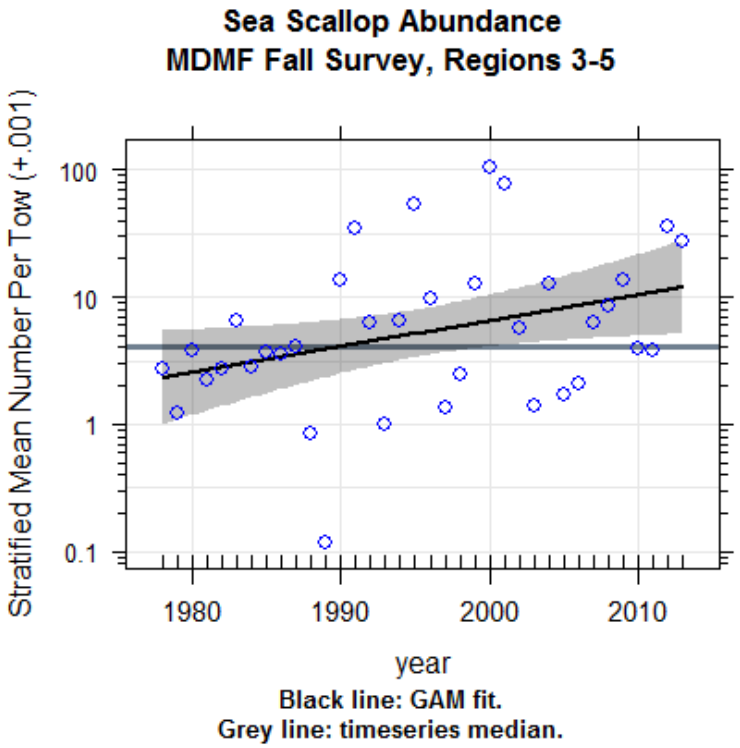
4.1.5.2 State water biomass

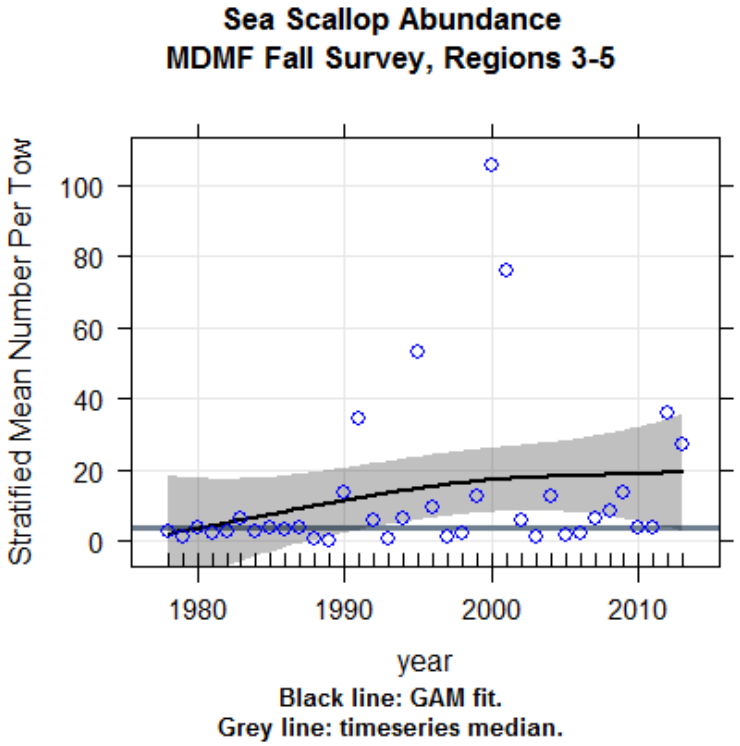
Many states do not have sea scallops in state waters; therefore, there are no specific permits or management programs in place. However, some states do have some basic measures in place and a handful have many that are similar to federal regulations. The only states in the North

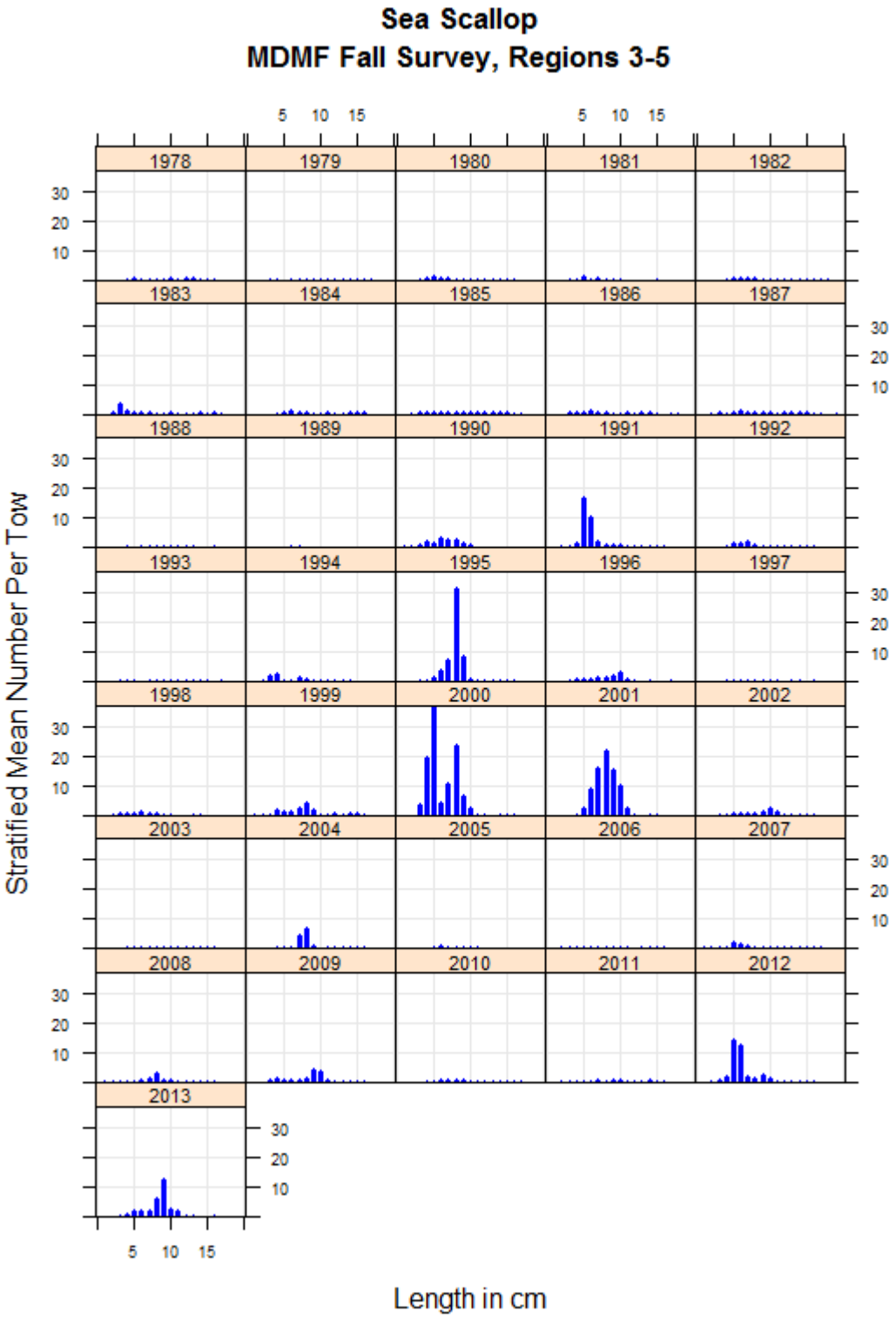
Atlantic that seem to have sea scallops consistently in state waters are Massachusetts (MA) and Maine (ME). A summary of what is known about the status of the resource in state waters is described below.

Massachusetts

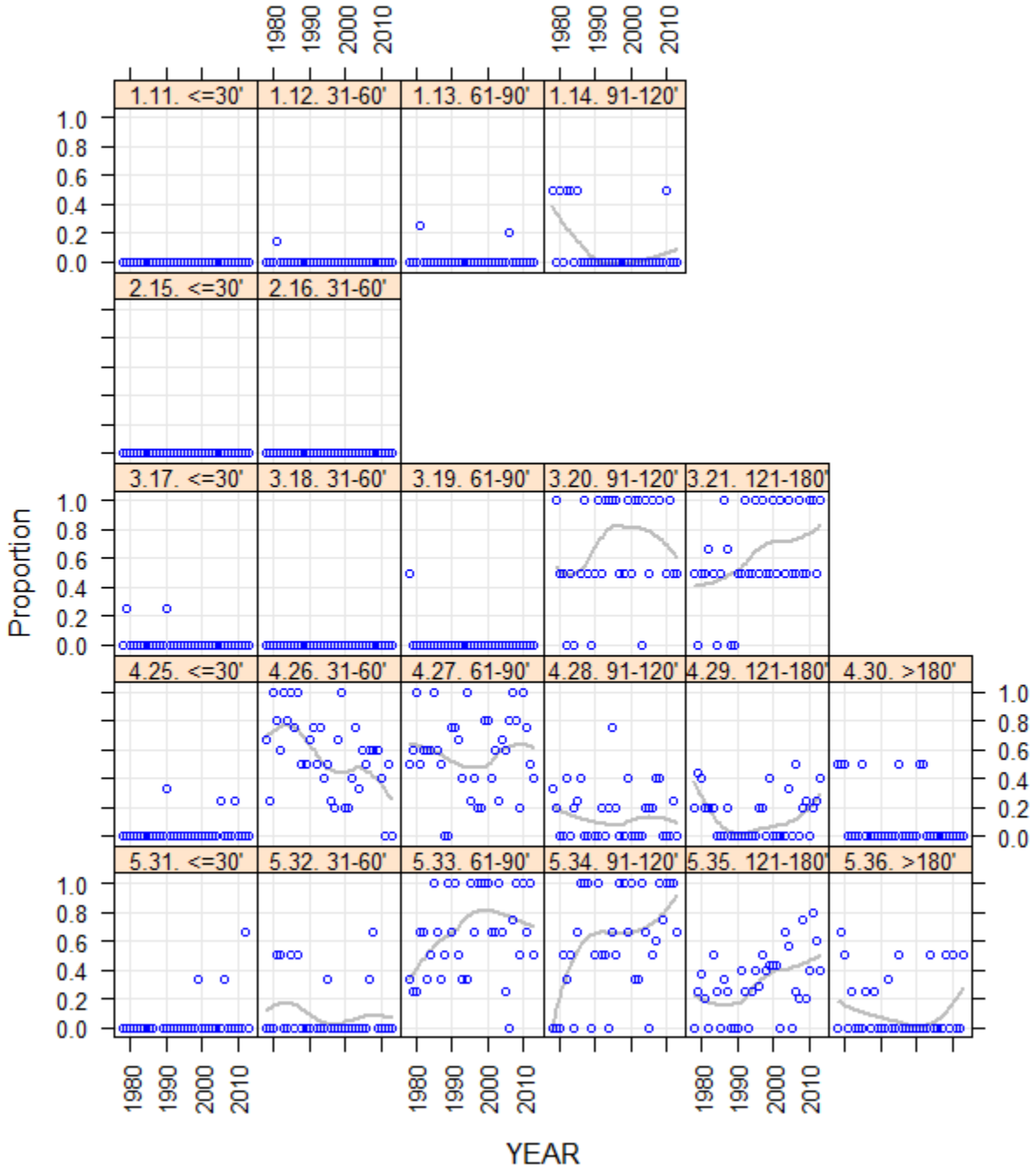
The state of MA does not have a scallop survey, but the spring and fall state bottom trawl survey does catch scallops from time to time in certain places. It is not sufficient to estimate biomass in state waters, but does provide some spatial abundance information. Larger catches observed in 2000 and 2008 in the spring survey north of Cape Anne, in Cape Cod Bay, and a few places east of Cape Cod. The fall survey picked up scallops in 1991, 1995, 2000, 2001, and 2012. These data will be included in the SAFE Report for FW26.


Sea Scallop Abundance
MDMF Fall Survey, Regions 3-5
Stratified Mean Number Per Tow (+.001)
100
10
1
0.1
1980
1990
2000
2010
year
Black line: GAM fit.
Grey line: timeseries median.


Sea Scallop Abundance
MDMF Fall Survey, Regions 3-5
Stratified Mean Number Per Tow
100
80
60
40
20
0
1980
1990
2000
2010
year
Black line: GAM fit.
Grey line: timeseries median.


Sea Scallop
MDMF Fall Survey, Regions 3-5
Stratified Mean Number Per Tow
Length in cm
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
5 10 15
10 20 30

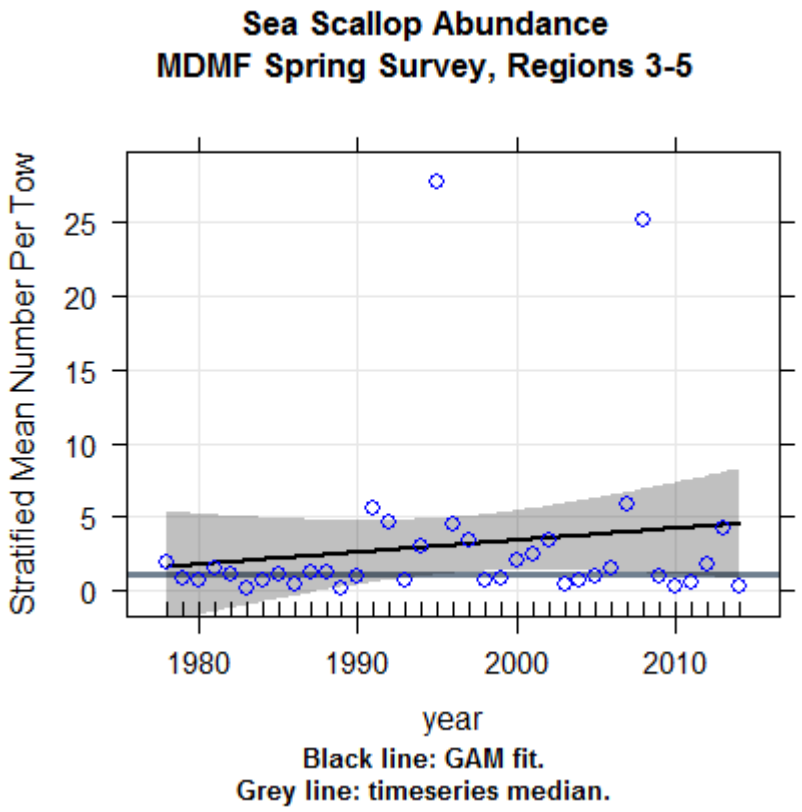
Sea Scallop Proportion of Positive Tows by Stratum
MDMF Fall Survey 1978 - 2013, All Regions

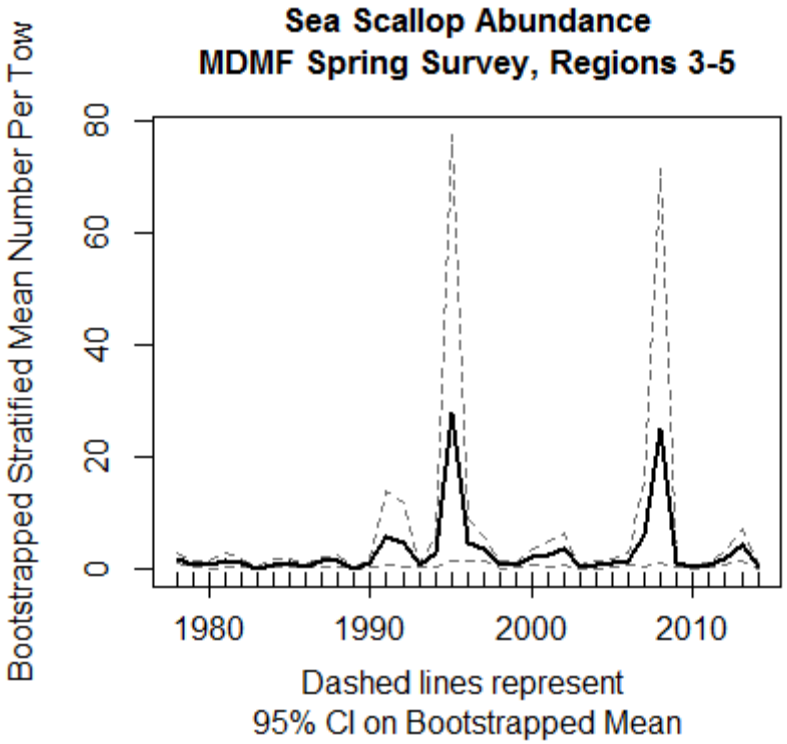


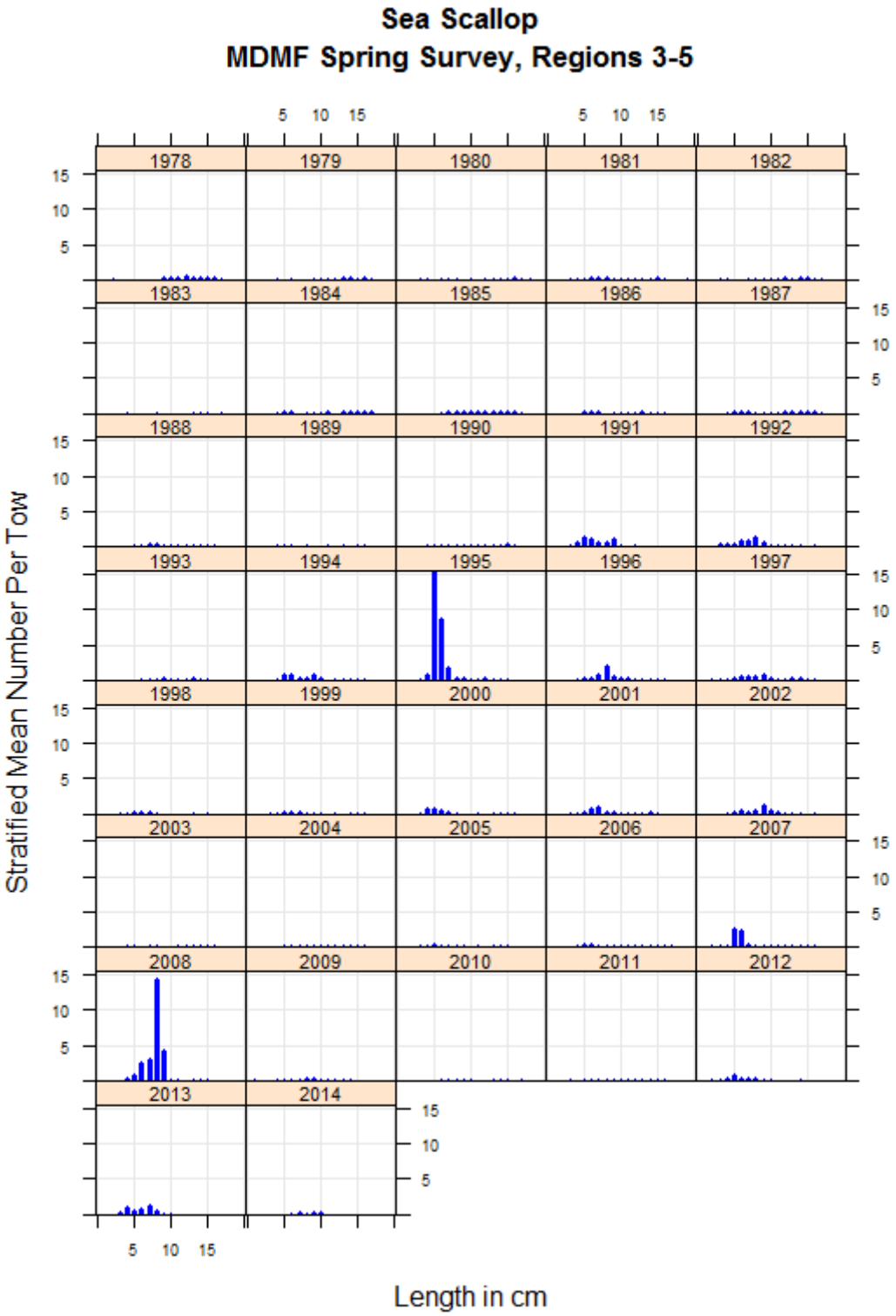
Solid line: Loess fit. Span=0.8, degree=2.
Panel label indicates region.stratum.depth

Sea Scallop
MDMF Fall Survey, Regions 3-5

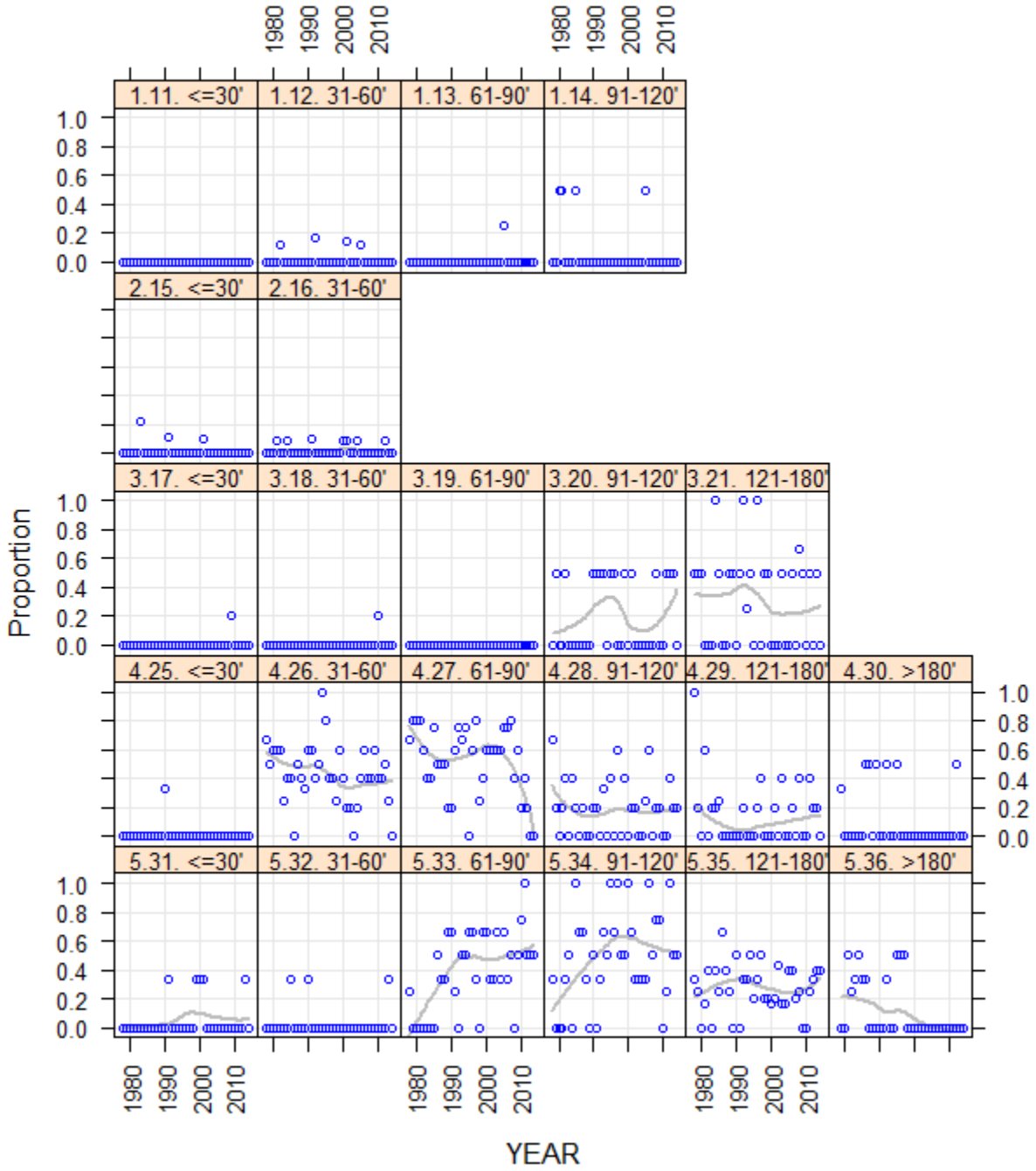
Year	Wt. per tow (kg)	Std.Err.Wt.	Number per tow	Std.Err.N
1978	0.54	0.37	2.70	1.10
1979	0.30	0.15	1.23	0.55
1980	0.33	0.06	3.75	1.69
1981	0.07	0.03	2.26	1.27
1982	0.29	0.08	2.72	1.02
1983	0.36	0.07	6.54	4.48
1984	0.39	0.17	2.78	1.08
1985	0.61	0.11	3.69	0.72
1986	0.31	0.08	3.56	1.12
1987	0.52	0.22	4.05	1.59
1988	0.14	0.08	0.85	0.42
1989	0.00	0.00	0.12	0.05
1990	0.48	0.27	13.73	6.72
1991	1.13	0.47	34.60	22.11
1992	0.39	0.13	6.18	1.78
1993	0.16	0.07	0.99	0.52
1994	0.21	0.16	6.53	5.91
1995	3.40	2.75	53.37	42.05
1996	0.78	0.51	9.60	4.97
1997	0.19	0.05	1.34	0.33
1998	0.09	0.03	2.49	1.14
1999	0.79	0.35	12.59	8.60
2000	3.51	2.59	105.79	78.74
2001	4.83	4.64	75.88	72.75
2002	0.64	0.26	5.67	2.57
2003	0.29	0.11	1.38	0.45
2004	0.74	0.46	12.88	9.95
2005	0.09	0.07	1.70	0.83
2006	0.21	0.06	2.06	0.58
2007	0.30	0.10	6.27	2.20
2008	0.71	0.23	8.56	3.88
2009	1.10	0.86	13.59	11.80
2010	0.54	0.12	3.99	1.15
2011	0.62	0.19	3.85	1.59
2012	1.15	0.60	35.91	26.43
2013	1.95	1.82	27.02	22.85


Sea Scallop Abundance
MDMF Spring Survey, Regions 3-5
Stratified Mean Number Per Tow
0
5
10
15
20
25
1980
1990
2000
2010
year
Black line: GAM fit.
Grey line: timeseries median.


Sea Scallop Abundance
MDMF Spring Survey, Regions 3-5
Bootstrapped Stratified Mean Number Per Tow
0
20
40
60
80
1980
1990
2000
2010
Dashed lines represent
95% CI on Bootstrapped Mean


Sea Scallop
MDMF Spring Survey, Regions 3-5
Stratified Mean Number Per Tow
Length in cm
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
5
10
15

Sea Scallop Proportion of Positive Tows by Stratum
MDMF Spring Survey 1978 - 2014, All Regions



Solid line: Loess fit. Span=0.8, degree=2.
Panel label indicates region.stratum.depth

Sea Scallop
MDMF Spring Survey, Regions 3-5

Year	Wt. per tow (kg)	Std.Err.Wt.	Number per tow	Std.Err.N
1978	0.59	0.18	1.95	0.60
1979	0.27	0.12	0.81	0.35
1980	0.31	0.18	0.72	0.34
1981	0.33	0.10	1.59	0.70
1982	0.36	0.19	1.08	0.46
1983	0.05	0.03	0.15	0.06
1984	0.24	0.11	0.79	0.45
1985	0.35	0.12	1.15	0.48
1986	0.10	0.05	0.50	0.18
1987	0.41	0.19	1.30	0.51
1988	0.19	0.11	1.29	0.64
1989	0.05	0.03	0.16	0.07
1990	0.31	0.20	1.02	0.53
1991	0.24	0.21	5.59	4.16
1992	0.30	0.19	4.70	3.66
1993	0.17	0.06	0.75	0.26
1994	0.22	0.12	3.01	1.63
1995	0.70	0.44	27.75	25.03
1996	0.42	0.15	4.50	2.35
1997	0.43	0.13	3.43	1.25
1998	0.03	0.02	0.69	0.43
1999	0.07	0.03	0.81	0.32
2000	0.09	0.02	2.14	0.92
2001	0.20	0.06	2.50	1.36
2002	0.27	0.16	3.49	1.91
2003	0.05	0.02	0.49	0.19
2004	0.18	0.10	0.69	0.36
2005	0.10	0.04	1.01	0.45
2006	0.22	0.08	1.58	0.66
2007	0.24	0.15	5.81	4.76
2008	1.41	1.27	25.17	22.89
2009	0.08	0.03	0.97	0.40
2010	0.06	0.04	0.30	0.13
2011	0.15	0.06	0.60	0.20
2012	0.04	0.02	1.84	0.80
2013	0.11	0.05	4.24	1.67
2014	0.02	0.01	0.33	0.14

Maine

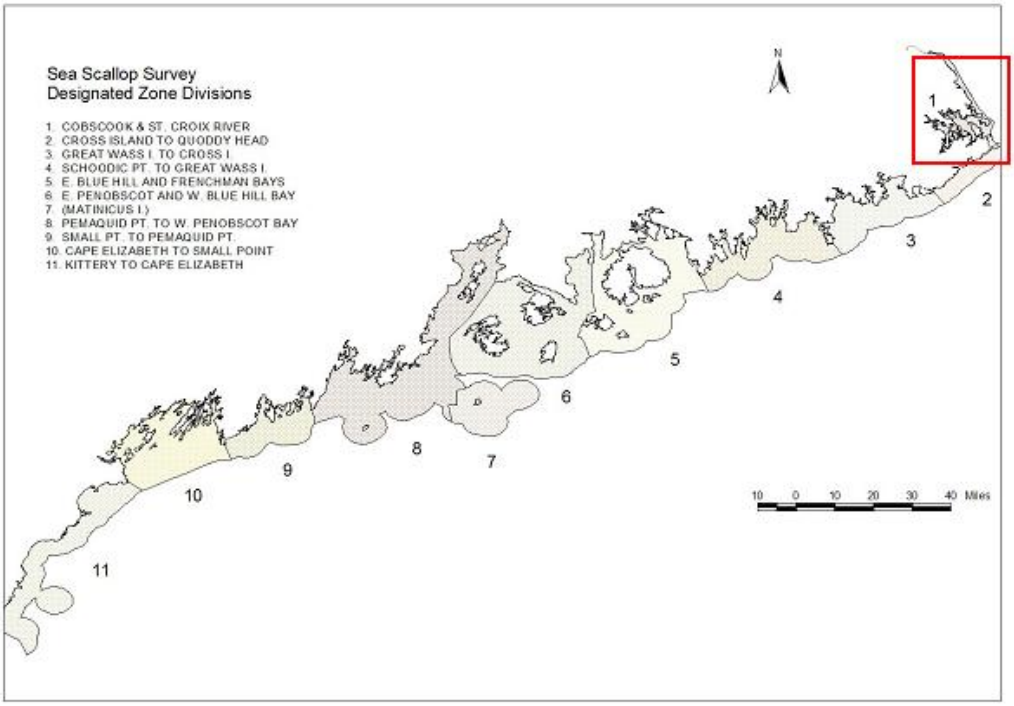
An annual dredge-based fishery-independent survey by the Maine Department of Marine Resources (DMR) of the scallop resource within Maine state waters has been conducted since 2002 (with the exception of 2004). This survey provides information on size distribution, the shell height-meat weight relationship, abundance, spatial distribution and harvestable biomass of scallops from nearshore waters. For the first two years (2002, 2003) the entire coast was surveyed. Subsequent to this one of three (1.) New Hampshire border to western Penobscot Bay, 2.) eastern Penobscot Bay to Quoddy Head, and 3.) Cobscook Bay/St. Croix River) major sections of the coast has been surveyed each year on a rotating basis with a more intensive survey in each area than in 2002-03. A spring survey of management zone 2 (eastern Maine) was begun in 2013. The change to the spring allowed for time to enact management actions for the upcoming season based on survey results. The following is a chronology of survey coverage by year:

Year	Area surveyed
2002	Coastwide, including Cobscook Bay
2003	Coastwide, including Cobscook Bay
2004	no survey
2005	New Hampshire border to western Penobscot Bay
2006	eastern Penobscot Bay to St. Croix River, including Cobscook Bay
2007	Cobscook Bay
2008	Matinicus Is. to W. Quoddy Head
2009	New Hampshire border to western Penobscot Bay, and Cobscook Bay and St. Croix River, Mt. Desert Is. and Machias Seal Is.
2010	Cobscook Bay and St. Croix River
2011	Matinicus Is. to W. Quoddy Head, and closed portions of western Maine coast
2012	Cobscook Bay and St. Croix River, Mt. Desert Is. and Machias Seal Is.
2013	eastern Penobscot Bay to Cutler shore – open portions and limited access areas (spring); Cobscook Bay/St. Croix River (fall)
2014	upper Penobscot Bay to W. Quoddy Head – open portions (spring)

- **Cobscook Bay**

Cobscook Bay (Fig. 1) has the most productive scallop fishery within Maine waters and is thus sampled with the most frequency and with the highest intensity of the survey zones. A direct assessment of scallop abundance for Cobscook Bay is made using a systematic grid design. There are six (6) survey subareas within Cobscook Bay (South Bay, Johnson Bay, Whiting Bay/Dennys Bay, Pennamaquan River, East Bay, Moose Is.).

Figure 33 - Survey strata - ME DMR scallop survey (with Cobscook Bay area highlighted)



In 2013 Cobscook Bay had the second highest amount of harvestable (≥ 4 in. shell height) meat biomass (452,200 ± 27,200 lbs.) observed since the survey began in 2002 (Fig. 2). Meat weight in relation to shell height was slightly greater than the previous survey (2012) of Cobscook Bay and the highest since 2002-03.

Harvestable biomass in the Whiting Bay/Dennys Bay limited access area (LAA) decreased 13% between 2012 and 2013 but was still the second highest of the time series (Fig. 3). Whiting Bay/Dennys Bay had the highest density (0.331 per m²) of harvestable scallops in Cobscook Bay in 2013.

South Bay had the largest proportion (53%) of harvestable biomass in Cobscook Bay in 2013. Harvestable density decreased in South Bay in 2013 but was still the second highest of the time series. Highest densities of both seed (0.101 per m²) and sublegals (0.333 per m²) were in Johnson Bay.

Figure 34 - Biomass (meat weight, with standard error) of harvestable (legal-size) scallops in Cobscook Bay, 2003-13

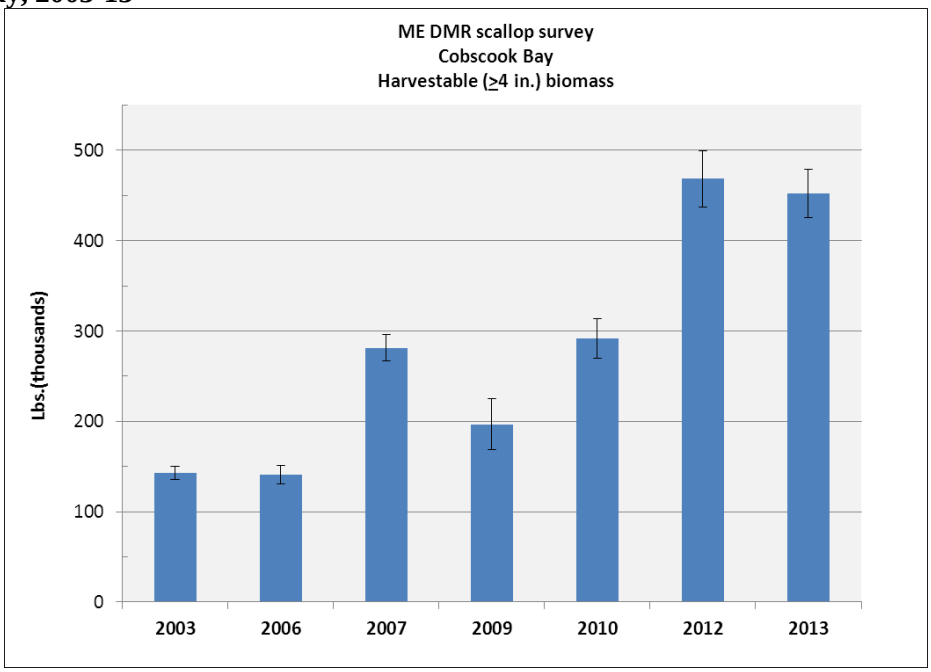
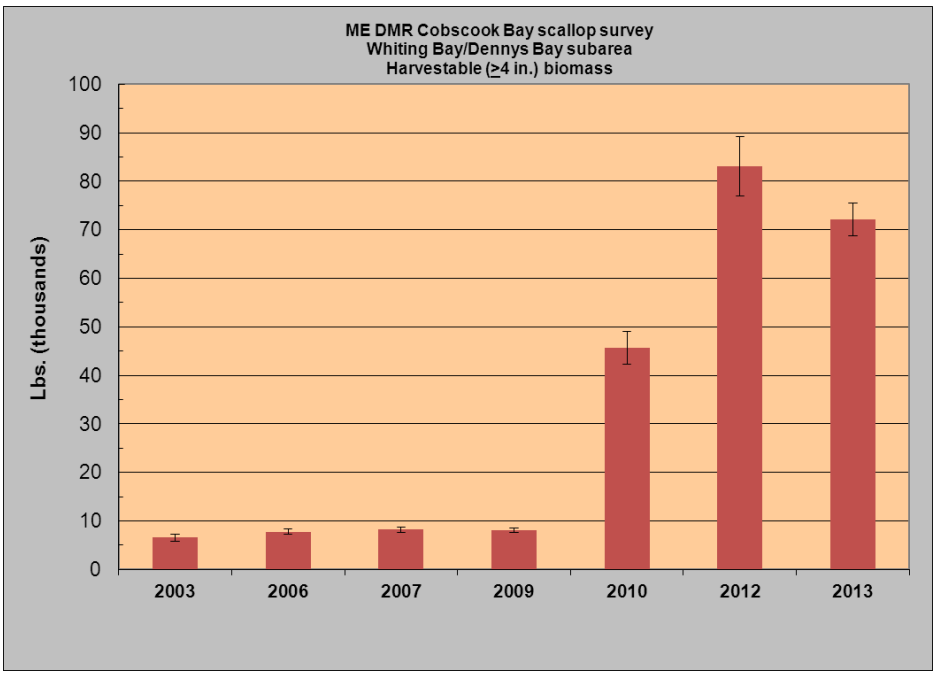


Figure 35 - Biomass (meat weight, with standard error) of harvestable (legal-size) scallops in Whiting Bay/Dennys Bay, 2003-13



- **Eastern Maine**

Seven (7) areas along the Maine coast were closed by DMR to scallop fishing in 2009 (Fig. 4). These closures were re-opened in 2012-13 as LAAs and were the focus of the spring 2013 survey. The policy of DMR since 2012 has been to ensure that not more than 30-40% of the harvestable biomass will be removed from the LAAs during the fishing season.

Machias Bay LAA realized an increase in harvestable scallop biomass of 33% between fall 2011 and fall 2013 (projected) (Fig. 5). Density of harvestable scallops within the Machias Bay LAA was over 2X higher than the adjacent open area.

Chandler Bay LAA harvestable scallop abundance declined 58% since 2011. Moosabec Reach LAA realized an over 2X increase in harvestable abundance since 2011. Seed were also observed in this area in 2013.

Harvestable biomass within Gouldsboro Bay declined over 40% from the 2011 estimate and over 60% from the 2012 estimate.

Only 37 scallops were caught in 20 tows in Mt. Desert LAA. E. Penobscot Bay LAA harvestable scallop abundance declined 76% since 2011.

Blue Hill LAA had a 96% decline in harvestable density between fall 2011 and fall 2013 (projected) and appeared to suffer a significant loss in biomass prior to opening to fishing in December 2012.

Figure 36 - Maine scallop limited access areas (LAAs) surveyed in spring 2013

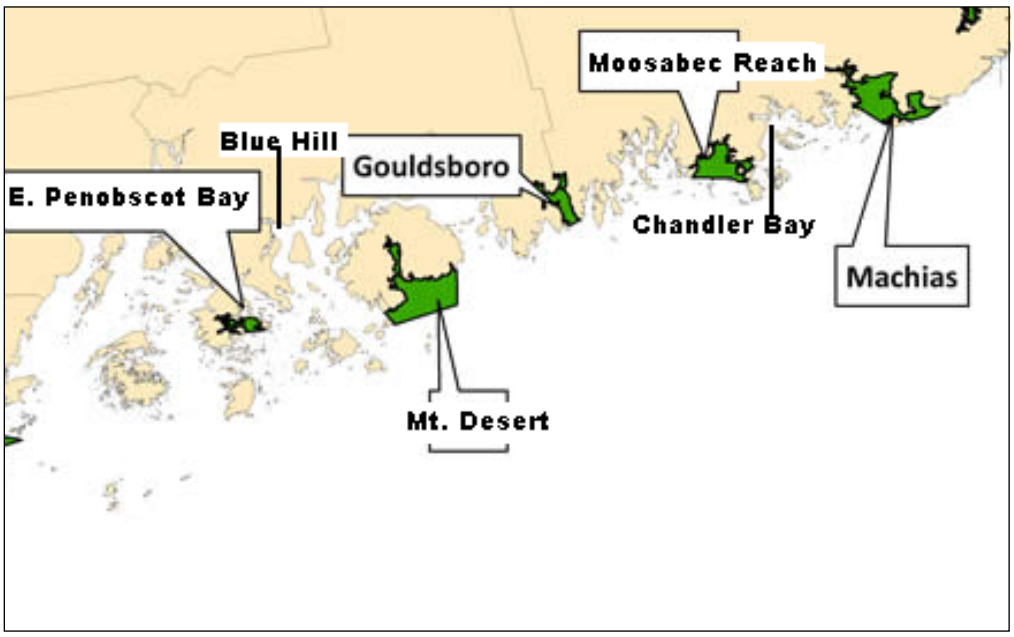


Figure 37 - Estimated mean harvestable scallop biomass (meat lbs.), Machias Bay LAA, 2011-13

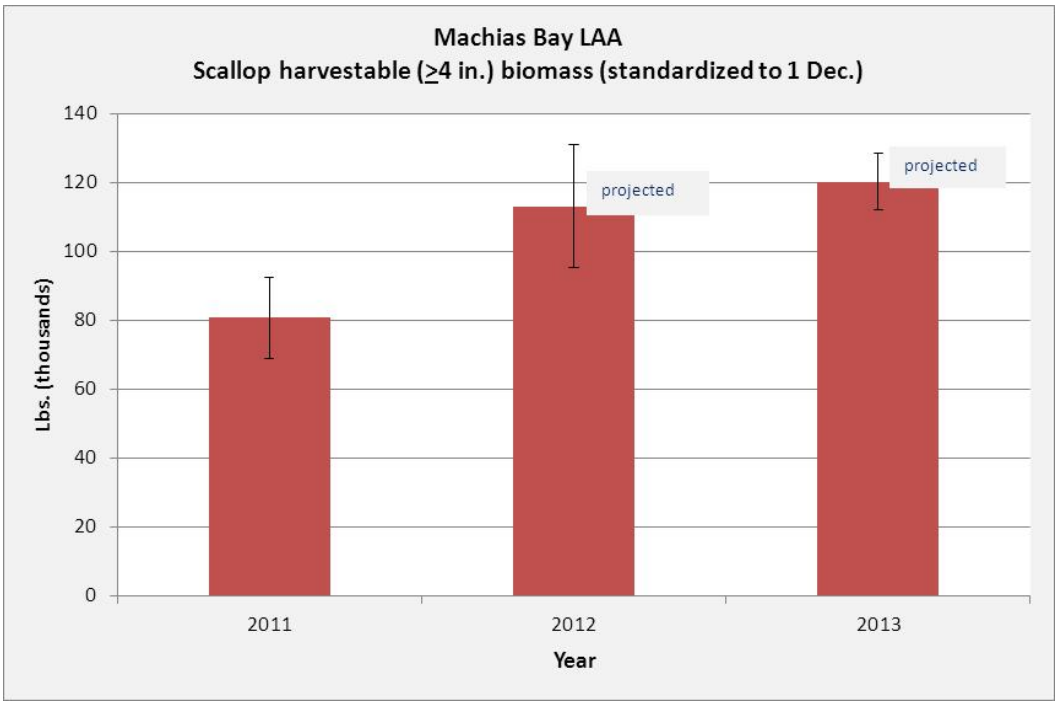
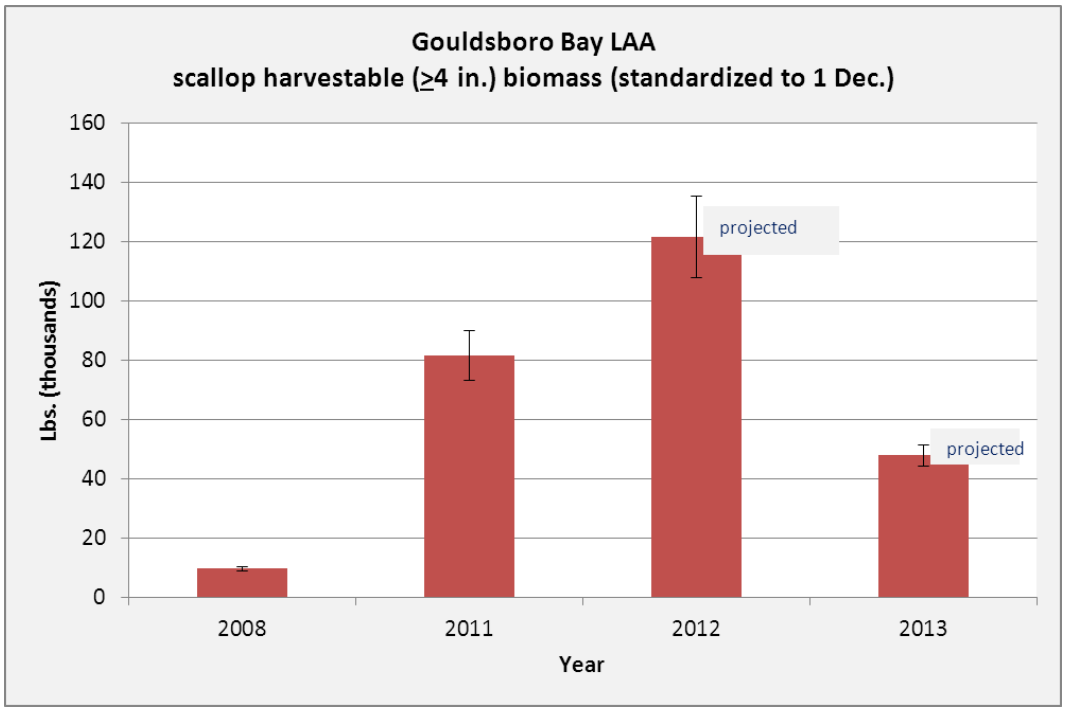


Figure 38 - Estimated mean harvestable scallop biomass (meat lbs.), Gouldsboro Bay LAA, 2008-13



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 39, 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. The link with more information about the EFH description for Atlantic sea scallop can be found at: http://www.nero.noaa.gov/hcd/scallops.pdf.

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. 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.

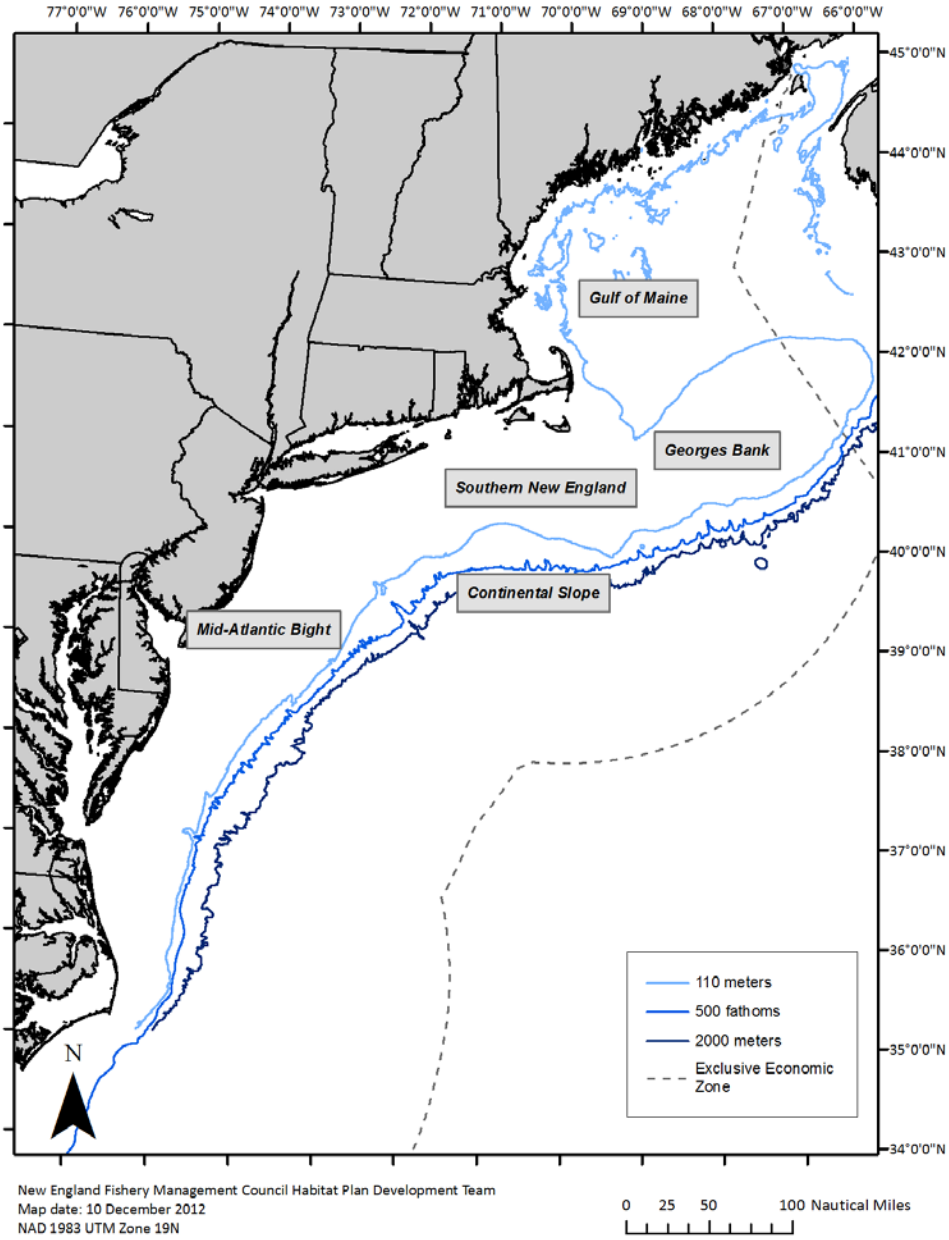
Most of the current EFH designations were developed in NEFMC Essential Fish Habitat Omnibus Amendment 1 (1998). Most recently, Amendment 16 to the Northeast Multispecies FMP adds Atlantic wolffish to the management unit and includes an EFH designation for the species. For additional information, the 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/list.htm.

Designations for all species are being reviewed and updated in NEFMC Omnibus Essential Fish Habitat Amendment 2 (OA2). Another purpose of OA2 is to evaluate existing habitat management areas and develop new habitat management areas. To assist with this effort, the Habitat PDT developed an analytical approach to characterize and map habitats and to assess the extent to which different habitat types are vulnerable to different types of fishing activities. This body of work, termed the Swept Area Seabed Impact approach, includes a quantitative, spatially-referenced model that overlays fishing activities on habitat through time to estimate both potential and realized adverse effects to EFH. The approach is detailed in this document, available on the Council webpage:

http://www.nefmc.org/habitat/planamen/efh_amend_2/appendices%20-%20dec2013/Appendix%20D%20-%20Swept%20Srea%20Seabed%20Impact%20approach.pdf.

During 2014, the Council plans to finalize OA2, including development of updated management areas to address habitat and groundfish related objectives. The current timeline for this action is for the Council to take final action at the April 2015 meeting, with implementation sometime after that (potentially during the first half of 2016).

Figure 39 – Northeast U.S Shelf Ecosystem and geographic extent of the US 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 in Table 25 to facilitate consideration of the species most likely to interact with the scallop fishery relative to the preferred alternative.

Table 25 – Protected species that may occur in the affected environment of the sea scallop fishery

Species	Status	Potentially affected by this action?
Cetaceans		
North Atlantic right whale (*Eubalaena glacialis*)	Endangered	No
Humpback whale (*Megaptera novaeangliae*)	Endangered	No
Fin whale (*Balaenoptera physalus*)	Endangered	No
Sei whale (*Balaenoptera borealis*)	Endangered	No
Blue whale (*Balaenoptera musculus*)	Endangered	No
Sperm whale (*Physeter macrocephalus*	Endangered	No
Minke whale (*Balaenoptera acutorostrata*)	Protected	No
Pilot whale (*Globicephala spp.*)[1]	Protected	No
Risso's dolphin (*Grampus griseus*)	Protected	No
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected	No
Short Beaked Common dolphin (*Delphinus delphis*)[2]	Protected	No
Spotted dolphin (*Stenella frontalis*)	Protected	No
Striped dolphin (*Stenella coeruleoalba*)	Protected	No
Beaked whales (*Ziphius and Mesoplodon spp*)[3]	Protected	No
Bottlenose dolphin (*Tursiops truncatus*)[4]	Protected	No
Harbor porpoise (*Phocoena phocoena*)	Protected	No
Sea Turtles		
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered	Yes
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered	Yes

Green sea turtle (*Chelonia mydas*)	Endangered[5]	Yes
Loggerhead sea turtle (*Caretta caretta*), Northwest Atlantic DPS	Threatened	Yes
Hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered	No
Fish		
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered	No
Atlantic salmon (*Salmo salar*)	Endangered	No
Atlantic sturgeon *(Acipenser oxyrinchus)*		
Gulf of Maine DPS	Threatened	Yes
New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS	Endangered	Yes
Cusk (Brosme brosme)	Candidate	Yes
Pinnipeds		
Harbor seal (*Phoca vitulina*)	Protected	No
Gray seal (*Halichoerus grypus*)	Protected	No
Harp seal (*Phoca groenlandicus*)	Protected	No
Hooded seal (Cystophora cristata)	Protected	No
Critical Habitat		
North Atlantic Right Whale	ESA-listed	No
Northwest Atlantic DPS of Loggerhead Sea Turtle	ESA-listed	No
Atlantic Salmon	ESA-listed	No

Notes:

[1] There are 2 species of pilot whales: short finned (*G. melas melas*) and long finned (*G. macrorhynchus*). Due to the difficulties in identifying the species at sea, they are often just referred to as *Globicephala spp*.

[2] Prior to 2008, this species was called "common dolphin."

[3] There are multiple species of beaked whales in the Northwest Atlantic. They include the cuvier's (*Ziphius cavirostris*), blainville's (*Mesoplodon densirostris*), gervais' (*Mesoplodon europaeus*), sowerbys' (*Mesoplodon bidens*), and trues' (*Mesoplodon mirus*) beaked whales. Species of *Mesoplodon*; however, are difficult to identify at sea, and therefore, much of the available characterization for beaked whales is to the genus level only.

[4] This includes the Western North Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal Stocks of Bottlenose Dolphins.

[5] Green turtles in U.S. waters are listed as threatened except for the Florida breeding population which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green turtles are considered endangered wherever they occur in U.S. waters.

In Table 25, please note that cusk, a NMFS "species of concern," as well as a "candidate species" under the ESA, occurs in the affected environment of the multispecies fishery. Candidate species are those petitioned species that NMFS is actively considering for listing as endangered or threatened under the ESA and also include those species for which NMFS has initiated an ESA status review through an announcement in the Federal Register. Candidate species also receive no substantive or procedural protection under the ESA; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed project. NMFS has initiated review of recent stock assessments, bycatch information, and other information for these candidate/proposed species. The results of those efforts are needed to accurately characterize recent interactions between fisheries and the candidate/proposed species in the context of stock sizes. Any conservation measures deemed appropriate for these species will follow the information reviews. Please note that once a species is proposed for listing the conference provisions of the ESA apply (see 50 CFR 402.10).

In regards to cusk, NMFS initiated a status review due to concerns over the status of and threats to cusk, particularly bycatch. NMFS is involved in various proactive conservation initiatives to obtain more information on this data poor species to assess its status and further conservation efforts. These initiatives involve cooperative efforts with industry, scientists, and other partners to learn more about cusk. NMFS is especially interested in the investigation and identification of methods to reduce bycatch or discard mortality of cusk, and, in particular, studies of how to alleviate barotrauma effects in released cusk are of high interest. In the Northeastern U.S., cusk are predominantly caught in the Gulf of Maine in commercial bottom trawl, bottom longline, gillnet, lobster trap, and handline/rod and reel gears, as well recreational handline gear (O'Brien, 2010; GMRI, 2012). Additional information on cusk and some conservation efforts can be found at http://www.nero.noaa.gov/prot_res/CandidateSpeciesProgram/CuskSOC.html; please note, however, as cusk receive no substantive or procedural protection under the ESA (due to its candidate species status), this species will not be discussed further in this document.

4.3.1 Species and Critical Habitat Not Likely to be Affected by the Alternatives Under Consideration

Based on available information, it has been determined that this action is not likely to affect shortnose sturgeon, hawksbill sea turtles, and marine mammal species. Further, this action is not likely to adversely affect Atlantic salmon, the Northwest Atlantic DPS of loggerhead or North Atlantic right whale critical habitats. The following discusses the rationale for these determinations.

4.3.1.1 ESA Listed Species

- ***Shortnose Sturgeon***

Given the range of the species (remaining mostly in the river systems, with some coastal migrations between rivers), and the sea scallop fishery occurring in more offshore ocean areas, shortnose sturgeon are not expected to be present in areas where the scallop fishery operates (NMFS, 2010a). In addition, interactions with shortnose sturgeon have never been

documented from the scallop fishery (NEFOP database). All available observer records have been reviewed and there have been no observed captures of shortnose sturgeon in scallop dredge gear or any other gear when the primary trip or haul target was scallops (NEFOP database). Based on this information, we do not expect any direct (e.g., interaction with gear) or indirect (e.g., prey removal, habitat modification) impacts to shortnose sturgeon from this fishery or any of the proposed Alternatives.

- ***Large Whales***

Right, Humpback, Fin, and Sei Whales

The scallop fishery may overlap with the distribution of these four large whale species during part of each year; however, interactions with fishing gear are not expected. According to information provided in the NMFS July 12, 2012, Biological Opinion (Opinion) for the scallop fishery, one interaction between a large whale and scallop fishing gear (i.e., cables) is known to have occurred. The NMFS 2012 Opinion determined that this was a unique and very rare event that is extremely unlikely to reoccur given that these large whales have the speed and maneuverability to get out of the way of oncoming scallop fishing gear. In addition, observer coverage of many fishing trips using mobile gear (e.g., dredge, trawl gear) has shown that these gear types do not pose a reasonable risk of entanglement or capture for large whales (NMFS 2012b). Scallop fishing gear also does not pose an indirect risk to large whales via the removal of prey resources. Based on this information, we do not expect any direct (e.g. interaction with gear) or indirect (e.g. prey removal, habitat modification) impacts to right, fin, humpback, or sei whales from this fishery or any of the proposed alternatives.

Blue Whale

Blue whales do not regularly occur in waters of the U.S. EEZ, and all calving for the species occurs in low latitude waters (Waring et al. 2010; Cetacean and Turtle Assessment Program 1982). There has also been no observed fishery-related mortalities or serious injuries to blue whales to date (Waring et al. 2010). Based on this information, and the fact that the sea scallop fishery will not overlap with blue whale occurrence or habitat, direct (e.g., interaction with gear) or indirect (e.g., prey removal, habitat modification) effects to blue whales from this fishery or any of the proposed Alternatives are not expected.

Sperm Whale

Sperm whales regularly occur in waters of the U.S. EEZ; however, the average depth over which sperm whale sightings occurred during the Cetacean and Turtle Assessment Program surveys was 1,792 meters (Cetacean and Turtle Assessment Program 1982). In contrast, the sea scallop fishery will operate in shallower continental shelf waters (i.e., 110 meters of less), and thus, sperm whales are unlikely to occur in water depths where the sea scallop fishery will operate. Based on this information, and the fact that there have been no observed fishery-related mortalities or serious injuries to sperm whales (Waring et al. 2014), we do not expect any direct (e.g., interaction with gear) or indirect (e.g., prey removal, habitat modification) effects to sperm whales from the this fishery or any of the proposed Alternatives.

- ***Atlantic Salmon***

The scallop fishery may overlap with Atlantic salmon when this species is found in the marine environment; however, to date, there have been no observed Atlantic salmon interactions with gear associated with the sea scallop fishery. All available observer records from the NEFOP have shown no observed captures of Atlantic salmon in scallop dredge gear or any other gear when the primary trip or haul target was scallop. Based on this information, we do not expect any direct (e.g., interaction with gear) or indirect (e.g., prey removal, habitat modification) impacts to Atlantic salmon from this fishery or any of the proposed Alternatives.

- ***Hawksbill Sea Turtle***

The hawksbill turtle is uncommon in the waters of the continental U.S. Although there are accounts of hawksbills in south Florida and individuals have been sighted along the east coast as far north as Massachusetts, east coast sightings north of Florida are rare (NMFS and USFWS 1993). As the sea scallop fishery will not occur in waters that are typically used by hawksbill sea turtles, direct (e.g., interaction with gear) and indirect (e.g., prey removal, habitat modification) impacts to hawksbills are not expected. In addition, we have reviewed all available observer records and there have been no observed captures of hawksbill sea turtle in scallop dredge gear or any other gear when the primary trip or haul target was scallops (NEFOP database). Based on this information, we do not expect any effects to hawksbill sea turtles from this fishery or any of the proposed Alternatives.

- ***North Atlantic Right Whale Critical Habitat***

Critical habitat for right whales has been designated in the Atlantic Ocean in Cape Cod Bay, Great South Channel, and in nearshore waters off Georgia and Florida (50 CFR 226.13). Cape Cod Bay and Great South Channel, which are located within the operational area of the scallop fishery, were designated as critical habitat for right whales due to their importance as spring/summer foraging grounds for the species. What makes these two areas so critical is the presence of dense concentrations of copepods. The scallop fishery will not affect the availability of copepods for foraging right whales because copepods are very small organisms that will pass through scallop fishing gear rather than being captured in it. The scallop fishery will also not affect critical habitat designated off of Georgia or Florida as it is located outside of the area where the scallop fishery operates. Since the scallop fishery and the Alternatives being considered are not likely to affect the availability of copepods, and these are the biological feature that characterized Cape Cod Bay and the Great South Channel as critical (feeding) habitat, this action is not likely to adversely affect designated critical habitat for right whales and, therefore, will not be considered further in this document.

- ***Northwest Atlantic Distinct Population Segment (DPS) of Loggerhead Sea Turtle DPS Critical Habitat***

NMFS issued a final rule to designate critical habitat for the Northwest Atlantic Ocean DPS of the loggerhead sea turtle within the Atlantic Ocean and the Gulf of Mexico on July 10, 2014 (79 FR 39856). Specific areas for designation include 38 occupied marine areas within the range of the Northwest Atlantic Ocean DPS. These areas contain one or a combination of habitat types: Nearshore reproductive habitat, winter area, breeding areas, constricted migratory corridors, and/or *Sargassum* habitat. Within the affected environment, constricted

migratory corridors and/or winter critical habitat has been designated in continental shelf waters from approximately 33'30° N to 36° N, and Sargassum critical habitat has been designated along the northern/western boundary of the Gulf Stream and east to the outer edge of the U.S. EEZ up to approximately 38° N. lat. As most effort in the sea scallop fishery is occurs north of 36° N, a small portion of the designated constricted migratory corridor and winter critical habitat will occur in the operational area of the fishery. A very small portion of *Sargassum* critical habitat will also occur in the operational area of the fishery, but commercial fishing operations are not anticipated to affect *Sargassum* physical and biological features (79 FR 39856, July 10, 2014).

The constricted migratory corridor off North Carolina serves as a concentrated migratory pathway for loggerheads transiting to neritic foraging areas in the north, and back to winter, foraging, and/ or nesting areas in the south. The majority of loggerheads pass through this migratory corridor in the spring (April to June) and fall (September to November), but loggerheads are also present in this area from April through November and, given variations in water temperatures and individual turtle migration patterns, these time periods are variable. The primary constituent elements of migratory critical habitat are: (1) Constricted continental shelf area relative to nearby continental shelf waters that concentrate migratory pathways; and (2) Passage conditions to allow for migration to and from nesting, breeding, and/or foraging areas. The area between Cape Hatteras and Cape Fear, North Carolina, is an important winter concentration area, especially for turtles from the Northern Recovery Unit and other Recovery Units that may forage in northern waters. The greatest loggerhead concentration in the winter area south of Cape Hatteras occurs from November through April.

The primary constituent elements of winter critical habitat are: (1) Water temperatures above 10° C from November through April; (2) Continental shelf waters in proximity to the western boundary of the Gulf Stream; and (3) Water depths between 20 and 100 m. As the sea scallop fishery and the Alternatives being considered will not modify the physical characteristics of either designated critical habitat or interfere with sea turtles continued use of these essential areas, the sea scallop fishery and the Alternatives being considered are not expected to result in any significant impacts to sea turtle constricted migratory corridor or winter critical habitats. Additionally, no effects to any other critical habitat will be experienced by the fishery and the Alternatives under consideration. For these reasons, the Northwest Atlantic DPS of loggerhead sea turtle critical habitat will not be considered further in this document.

- ***Atlantic Salmon Critical Habitat***

NMFS issued a final rule designating critical habitat for the Atlantic salmon (*Salmo salar*) Gulf of Maine Distinct Population Segment (GOM DPS) on June 19, 2009 (74 FR 29300). NMFS designated as critical habitat 45 specific areas occupied by Atlantic salmon at the time of listing that comprise approximately 19,571 km of perennial river, stream, and estuary habitat and 799 square km of lake habitat within the range of the GOM DPS and in which are found those physical and biological features essential to the conservation of the species. The entire occupied range of the GOM DPS in which critical habitat is designated is within the State of Maine. Specific areas within the marine environment where Atlantic salmon occur were not designated

as critical habitat because the specific physical and biological features that are essential to the conservation of the species could not be identified at the time salmon were listed. Subsequently it is unlikely that the sea scallop fishery and the Alternatives under consideration will have an adverse effect on Atlantic salmon designated Critical Habitat, and therefore, will not be considered further in this document.

4.3.1.2 Non-ESA Listed Species

As provided in Table 25, there are multiple non-ESA listed species of marine mammals (i.e., cetaceans and pinnipeds) that are unlikely to be affected by the sea scallop fishery and the Alternatives under consideration (for a complete description of these species, please see Waring et al. 2014). According to the List of Fisheries issued on March 14, 2014 (79 FR14414), 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; 50 CFR 229.2). Based on this information, we do not expect any direct (e.g., interaction with gear) or indirect (e.g., prey removal, habitat modification) impacts to any non-ESA listed species of marine mammals from this fishery or any of the proposed Alternatives.

4.3.2 Species Potentially Affected by the Alternatives Under Consideration

As noted in Table 25, ESA listed species of sea turtles and Atlantic sturgeon have the potential to be affected by the Alternatives under consideration. Sea turtles are known to be incidentally caught in various types of fishing gear, including scallop dredge and trawl gear (NEFMC 2011a,b; Murray 2011; Haas et al. 2008; Warden 2011a,b; NEFSC FSB 2011; NMFS 2012b). Based on previous interactions with trawl gear in other fisheries, there is also the potential for Atlantic sturgeon to be caught in scallop trawls (Stein et al. 2004a,b; ASMFC 2007; Miller and Shepard 2011; NMFS 2012b).

In the sections to follow, available information on sea scallop dredge or trawl interactions with sea turtles and Atlantic sturgeon will be provided. Additional background information on the range-wide status of affected sea turtles species, as well as a description and life history of each of these species, can be found in a number of published documents, including sea turtle status reviews and biological reports (NMFS and USFWS 1995; Hirth 1997; Turtle Expert Working Group [TEWG] 1998, 2000, 2007, 2009; NMFS and USFWS 2007a, 2007b; Conant et al. 2009; NMFS and USFWS 2013), and recovery plans for the loggerhead sea turtle (Northwest Atlantic DPS; NMFS and USFWS 2008), leatherback sea turtle (NMFS and USFWS 1992, 1998a), Kemp's ridley sea turtle (NMFS et al. 2011), and green sea turtle (NMFS and USFWS 1991, 1998b). For additional information on the biology, status, and range wide distribution of each distinct population segment of Atlantic sturgeon please refer to 77 FR 5880 and 77 FR 5914 (finalized February 6, 2012), as well as the Atlantic Sturgeon Status Review Team's (ASSRT) 2007 status review of Atlantic sturgeon (ASSRT 2007).

4.3.2.1 Sea Turtles

4.3.2.1.1 Gear Interactions

Sea turtles are widely distributed in the waters of the Northwest Atlantic, although their presence varies with the seasons due to changes in water temperature (Shoop and Kenney 1992; Epperly *et al.* 1995a, 1995b; Braun and Epperly 1996; Mitchell *et al.* 2003; Braun-McNeill *et al.* 2008; TEWG 2009; Braun-McNeill and Epperly 2004; Morreale and Standora 2005; Griffin *et al.* 2013; NMFS and USFWS 1992; James *et al.* 2005, 2006; Dodge *et al.* 2014). As a result, sea turtles often occupy many of the same ocean areas utilized for commercial fishing and therefore, interactions with fishing gear are possible. Sea turtles have been incidentally injured or killed in various gear types (e.g., gillnets, trawls, hook and line, dredge). In the sea scallop fishery, dredge and trawl gear are used to target scallops and are known to pose a risk to sea turtle serious injury and mortality. Injury and mortality to sea turtles caught in fishing gear can result from forced submergence and/or contact injuries (Henwood and Stuntz 1987; Lutcavage and Lutz 1997; Epperly *et al*. 2002; Sasso and Epperly 2006; Haas *et al*. 2008; Murray 2011; Warden 2011a,b; NMFS 2012b).

Two regulations have been implemented to reduce serious injury and mortalities to sea turtles resulting from interactions with sea scallop dredges:

- **Chain mat modified dredge**: Requires federally permitted scallop vessels fishing with dredge gear to modify their gear by adding an arrangement of horizontal and vertical chains (referred to as a "chain mat") between the sweep and the cutting bar when fishing south of 41° 9.0' N from the shoreline to the outer boundary of the EEZ from May 1 through November 30 each year (71 FR 50361, August 25, 2006; 71 FR 66466, November 15, 2006; 73 FR18984, April 8, 2008; 74 FR 20667, May 5, 2009). The purpose of the chain mat is to prevent captures in the dredge bag and injury and mortality that results from such capture.

- **Turtle Deflector Dredge:** All limited access scallop vessels, as well as Limited Access General Category vessels with a dredge width of 10.5 feet or greater, must use a Turtle Deflector Dredge (TDD) in the Mid-Atlantic (west of 71°W) from May 1 through October 31 each year (77 FR 20728, April 6, 2012). The purpose of the TDD requirement is to deflect sea turtles over the dredge frame and bag rather than under the cutting bar, so as to reduce sea turtle injuries due to contact with the dredge frame on the ocean bottom (including being crushed under the dredge frame).

Although sea turtle interactions with scallop trawl and dredge gear have been observed in the Gulf of Maine, Georges Bank, and the Mid-Atlantic, most of the observed interactions have occurred in the Mid-Atlantic. There is insufficient data available to conduct a robust model-based analysis to estimate sea turtle interactions with scallop trawl or dredge gear outside the

Mid-Atlantic.[1] As a result, the bycatch estimates and most of the discussion below are based on observed sea turtle interactions in scallop trawl and dredge gear in the Mid-Atlantic.

Sea Scallop Dredge Gear

Sea turtle species documented interacting with sea scallop dredge gear include green, Kemp's ridley, loggerhead, and unknown sea turtles. Loggerhead sea turtles are the most commonly taken species. Two Kemp's ridley sea turtles have been documented taken on Georges Bank. All other observed interactions were in the Mid-Atlantic. Based on Northeast Fisheries Observer Program data, Murray (2011) assessed loggerhead and hard-shell turtle interactions in the Mid-Atlantic sea scallop fishery from 2001-2008 (Figure 40). After the implementation of the chain-mat requirements, an estimated average of 125 hard-shelled sea turtles (95% CI: 88-163; 22 adult equivalents[2]) interacted with scallop dredge gear annually (Table 26). Based on the results of this analysis, Murray (2011) suggested that the decline in observable turtle interactions after 2006 is likely a result of the implementation of the chain mat rule (see above), as well as fishing effort reductions in the Mid-Atlantic since 2006. However, it should be noted, although the chain mat is expected to reduce the impact of sea turtle takes in dredge gear, it does not eliminate the take of sea turtles. NMFS continues to monitor the sea scallop fishery and its effects on sea turtles.

[1] To date, there has been one loggerhead observed in trawl gear (top landed species was sea scallop), and two Kemp's ridleys observed in dredge gear. All observed interactions occurred on Georges Bank.

[2] Adult equivalence considers the reproductive value of the animal (Warden 2011; Murray 2013), providing a "common currency" of expected reproductive output from the affected animals (Wallace *et al*. 2008), and is an important metric for understanding population level impacts (Haas 2010).

Figure 40 - Distribution of observed sea turtle interactions with scallop dredge gear in the Mid-Atlantic during on-watch hauls from 2001-2008.

Unidentified sea turtles are in gray, the sea turtle outside of the study area is a Kemp's ridley, and all other points indicate loggerhead interactions (Source: Murray 2011). Note the second take outside of the Mid-Atlantic is not shown because it is north of 41 9 N, which is off this chart.

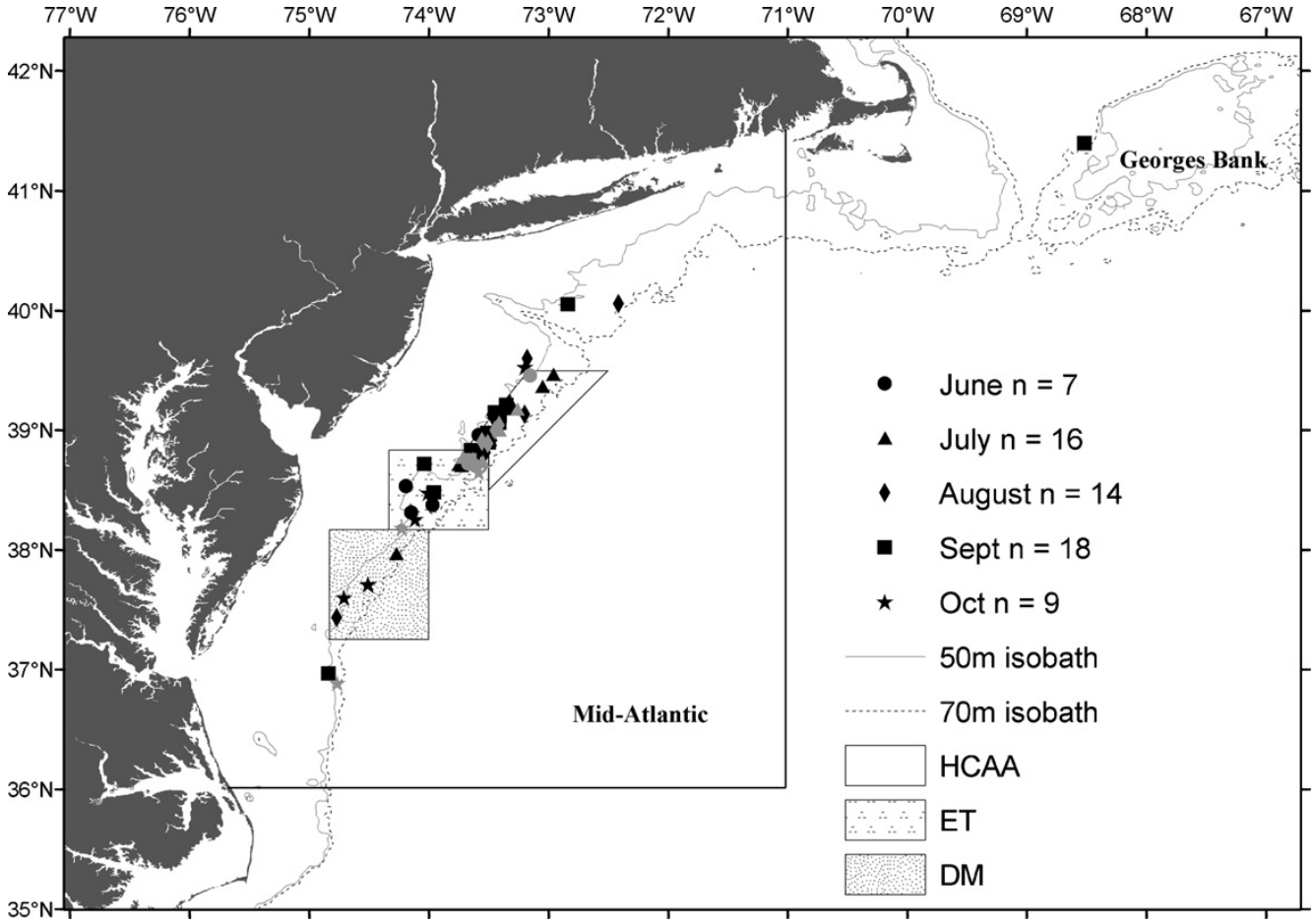


Table 26 - Average annual estimated interactions of hard-shelled (unidentified and loggerhead species pooled) and loggerhead turtles in the Mid-Atlantic scallop dredge fishery before and after chain mats were required on dredges (CV and 95% Confidence Interval).
AE = adult equivalent estimated interactions. **A**= estimated interactions from dredges without chain mats; B = estimated observed interactions from dredges with or without chain mats; **C** = estimated observed and unobserved, quantifiable interactions from dredges without chain mats, to estimate the mat's maximum conservation value (*Source*: Murray 2011).

	Interactions		**Interactions**	
Time Period	Hard-shelled	AE	Loggerhead	AE
(A) 2001-25 Sept 2006	288 (0.14, 209-363)	49	218 (0.16, 149-282)	37
(B) 26 Sept 2006-2008	20 (0.48, 3-42)	3	19 (0.52, 2-41)	3
(C) 26 Sept 2006-2008	125 (0.15, 88-163)	22	95 (0.18, 63-130)	16

Sea Scallop Trawl Gear

Warden (2011a) estimated that from 2005-2008, the average annual loggerhead interactions in bottom trawl gear in the Mid-Atlantic (i.e., south of Cape Cod, Massachusetts, to approximately the North Carolina/South Carolina border) was 292 (CV=0.13, 95% CI=221-369), with an additional 61 loggerheads (CV=0.17, 95% CI=41-83) interacting with trawls, but being released through a Turtle Excluder Device.[3] Of the 292 average annual observable loggerhead interactions, approximately 44 of those were adult equivalents (Warden 2011a). This estimate is a decrease from the average annual loggerhead bycatch in bottom otter trawls during 1996-2004, which Murray (2008) estimated to be 616 sea turtles (CV=0.23, 95% CI over the nine-year period: 367-890). This decrease is likely due to decreased fishing effort in high-interaction areas (Warden 2011a). Based on data collected by observers for reported sea turtle captures in bottom otter trawl gear from 2005-2008, Warden (2011b), using species landed, also estimated total loggerhead interactions attributable to managed species. The estimated average annual bycatch of loggerhead sea turtles in bottom otter trawl gear for trips primarily landing scallops during 2005-2008 was 95 loggerheads (95% CI =60-140; Warden 2011b).

Gear Interaction Factors

Although sea turtles have the potential to interact with multiple gear types, such as dredge or trawl gear, the risk of an interaction is affected by multiple factors, including where and when fishing effort is focused, the type of gear being used, environmental conditions, and sea turtle occurrence and distribution. Murray and Orphanides (2013) recently evaluated fishery-independent and dependent data to identify environmental conditions associated with turtle

[3] Warden (2011) and Murray (2013) define the mid-Atlantic slightly differently, but both include waters north to Massachusetts. See the respective papers for a more complete description of these areas.

presence and the subsequent risk of a bycatch encounter if fishing effort is present; It was concluded that fishery independent encounter rates were a function of latitude, sea surface temperature (SST), depth, and salinity. When the model was fit to fishery dependent data (gillnet, bottom trawl, and scallop dredge), Murray and Orphanides (2013) found a decreasing trend in encounter rates as latitude increases; an increasing trend as SST increases; a bimodal relationship between encounter rates and salinity; and higher encounter rates in depths between 25 and 50 m. Similarly, Murray (2013) concluded, based on 2007-2011 data obtained on loggerhead interactions in gillnet gear, that bycatch rates were associated with latitude, SST, and mesh size, with highest interaction rates in the southern mid-Atlantic in warm surface waters and in large (>7 inch mesh). Based on the above 2005-2008 data obtained on loggerhead interactions in bottom trawl gear, Warden (2011a) also found that latitude, depth and SST were associated with the interaction rate, with the rates being highest south of 37° N in waters < 50 meters deep and SST > 15°C (Table 27).

Table 27 - Mid-Atlantic trawl bycatch rates

Latitude Zone	Depth, SST	Loggerheads/Day Fished
<37 °N	<=50 m, <=15° C	0.4
	<=50 m, >=15° C	2.06
	>50 m, <= 15° C	0.07
	>50 m, >15° C	0.09
37 - 39 °N	<=50 m, <=15° C	0.04
	<=50 m, >=15° C	0.18
	>50 m, <= 15° C	0.01
	>50 m, >15° C	0.07
>39 °N	<=50 m, <=15° C	<0.01
	<=50 m, >=15° C	0.03
	>50 m, <= 15° C	<0.01
	>50 m, >15° C	0.01

Source: Warden 2011a

4.3.2.1.2 Updated information on sea turtle distribution

During development of Framework 23 the PDT used various sources of information to develop the season options for the turtle deflector dredge. 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 and to a lesser extent, November (see Section 4.3.1 of Framework 23 for complete summary of information). This coincides with previous studies done on sea turtle occurrence and distribution in these and other waters of the Northeastern United States (Shoop and Kenney 1992; Epperly *et al.* 1995a, 1995b, 1995c; Braun-McNeill and Epperly 2004; Morreale and

Standora 2005; Hawkes *et al.* 2011; Griffin *et al.* 2013). Since Framework 23, new satellite telemetry, stranding, and sea turtle bycatch data have been obtained; this new information is summarized below.

Observed turtle takes

Observed data from 1989-2013 was plotted in several maps for all years (Figure 41 through Figure 46). The maps do not include all gear types. The focus is on bottom tending gears including: scallop dredge, drift sink gillnet, fixed sink gillnet, bottom otter trawl (fish, scallop and twin). Gear excluded from the maps are: drift float, drift large pelagic gillnet, haul seines, pound nets, purse seine, longline, and midwater trawl. These maps also exclude moderately and severely decomposed animals.

There have been about two additional observed takes of loggerheads in scallop gear since data used in Framework 23. Overall the majority of sea turtle takes from all years have been west of 71 W, but a handful of takes have occurred in waters east of that boundary (Table 28 and Figure 41). There has been only one take (in gillnet gear) east of 71 W in the month of November (Figure 42).

Table 28 – Summary of observed hard shelled turtle takes (2004-2013)
Note: Area A: east of 71^{0}W and south of 41.09^{0}N and Area B: west of 71^{0}W (See **Figure 9**)

Month Trip Landed	Area	No. of Interactions in Dredge Gear	No. of Interactions in Bottom Fishing Gear (Trawl, Dredge, Sink Gillnet)	No. of Interactions, all Gear Types
January				
	A	0	0	0
	B	0	20	20
February				
	A	0	0	0
	B	0	21	21
March				
	A	0	0	0
	B	0	1	1
April				
	A	0	0	0
	B	0	2	2
May				
	A	0	1	1
	B	0	3	3
June				
	A	0	1	1
	B	4	26	27
July				
	A	0	6	6
	B	2	18	19
August				
	A	1	3	3
	B	6	19	19
September				
	A	0	1	1
	B	5	34	34
October				
	A	0	0	0
	B	5	42	42
November				
	A	0	0	0
	B	0	20	20
December				
	A	0	0	0
	B	1	28	29
TOTAL		24	246	249
	A			12
	B			237

Figure 41 – Observed location of turtle interactions in bottom tending gears in the Northeast Region in the months of May – October (1989-2013)

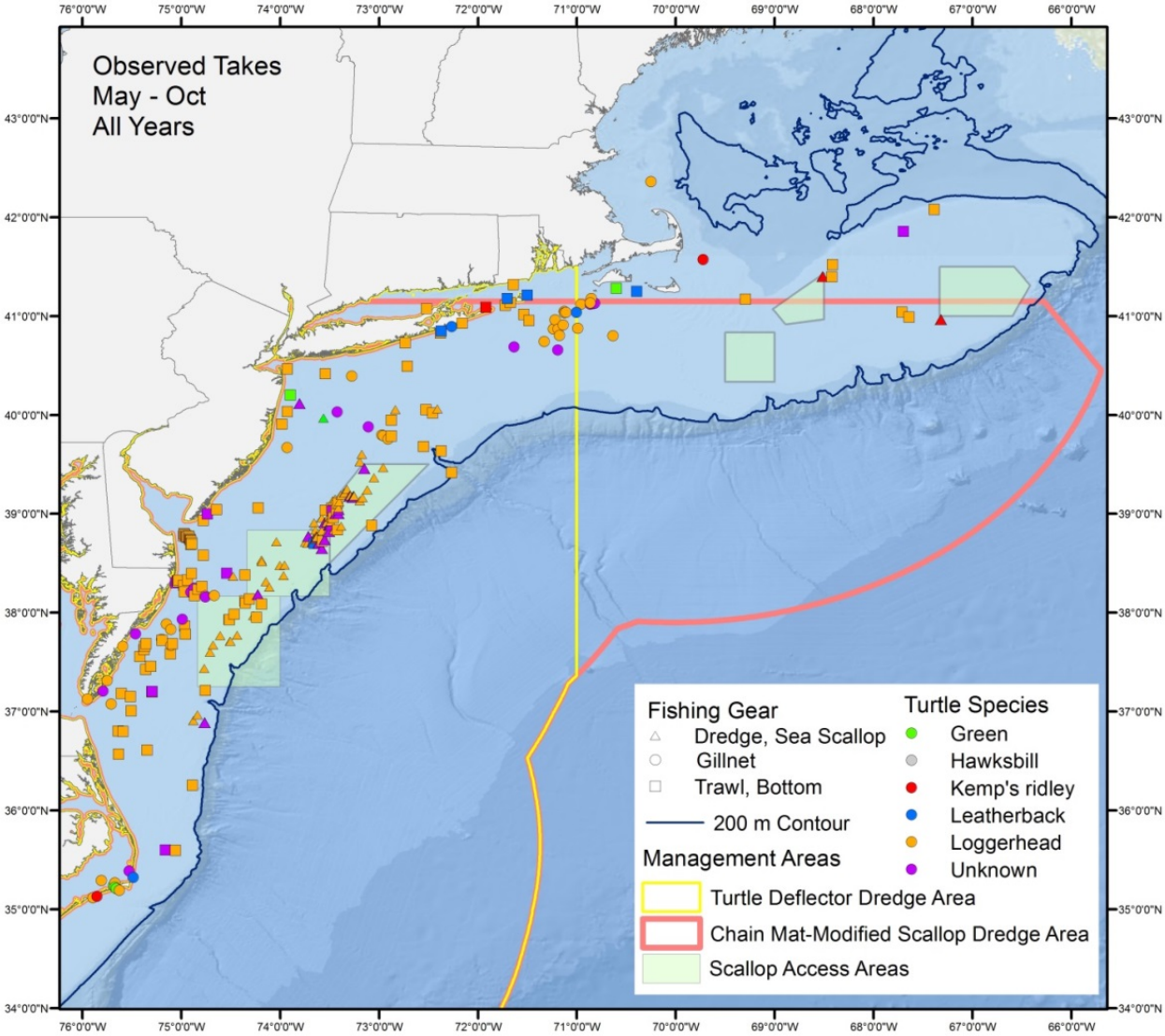


Figure 42 – Observed location of turtle interactions in bottom tending gears in the Northeast Region in the month of November (1989-2013)

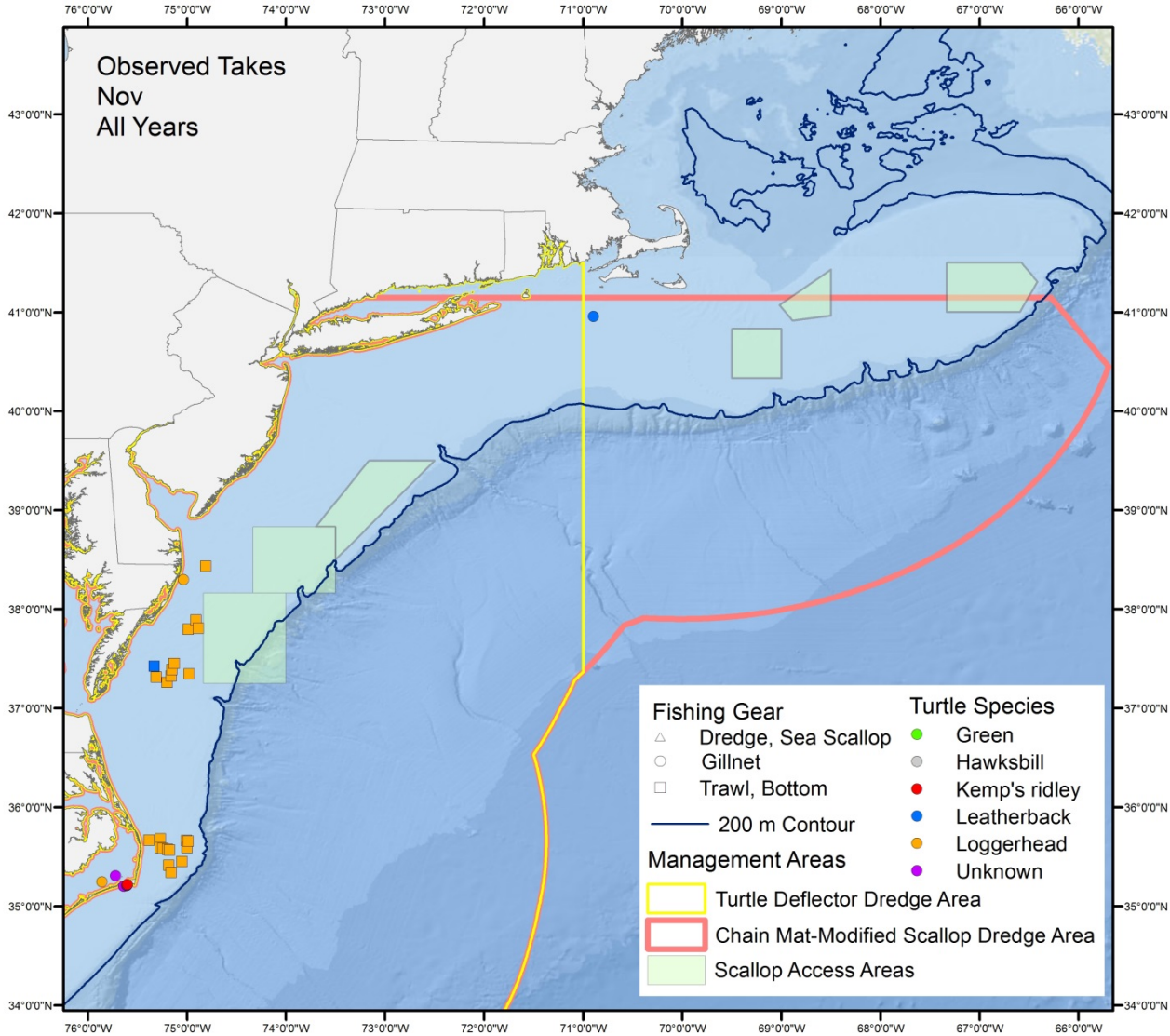


Figure 43 – Observed location of turtle interactions in bottom tending gears in the Northeast Region in the months of December – April (1989-2013)

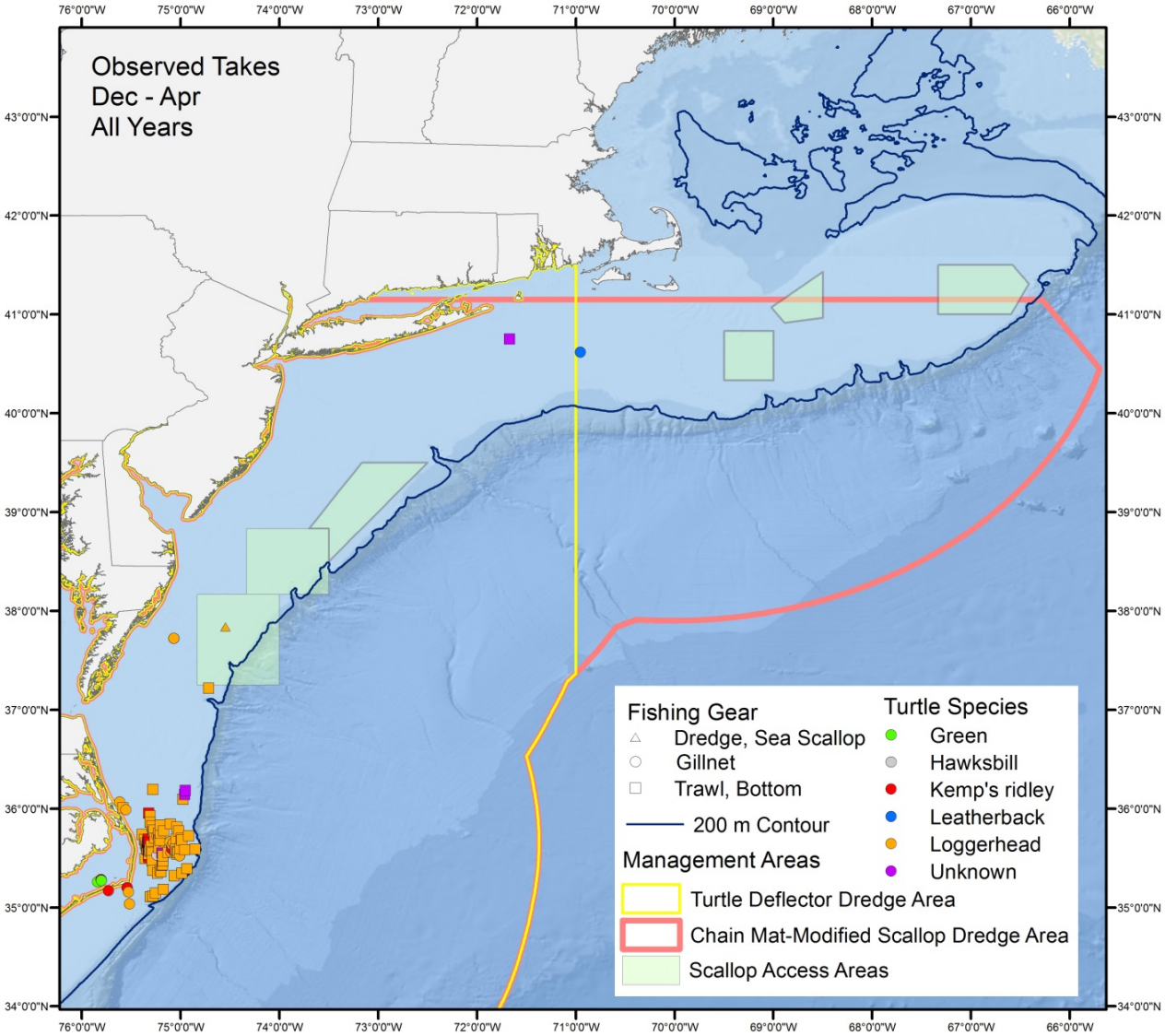


Figure 44 – Observed location of turtle interactions in bottom tending gears in the Northeast Region in the months of May – October (2004-2013 only)

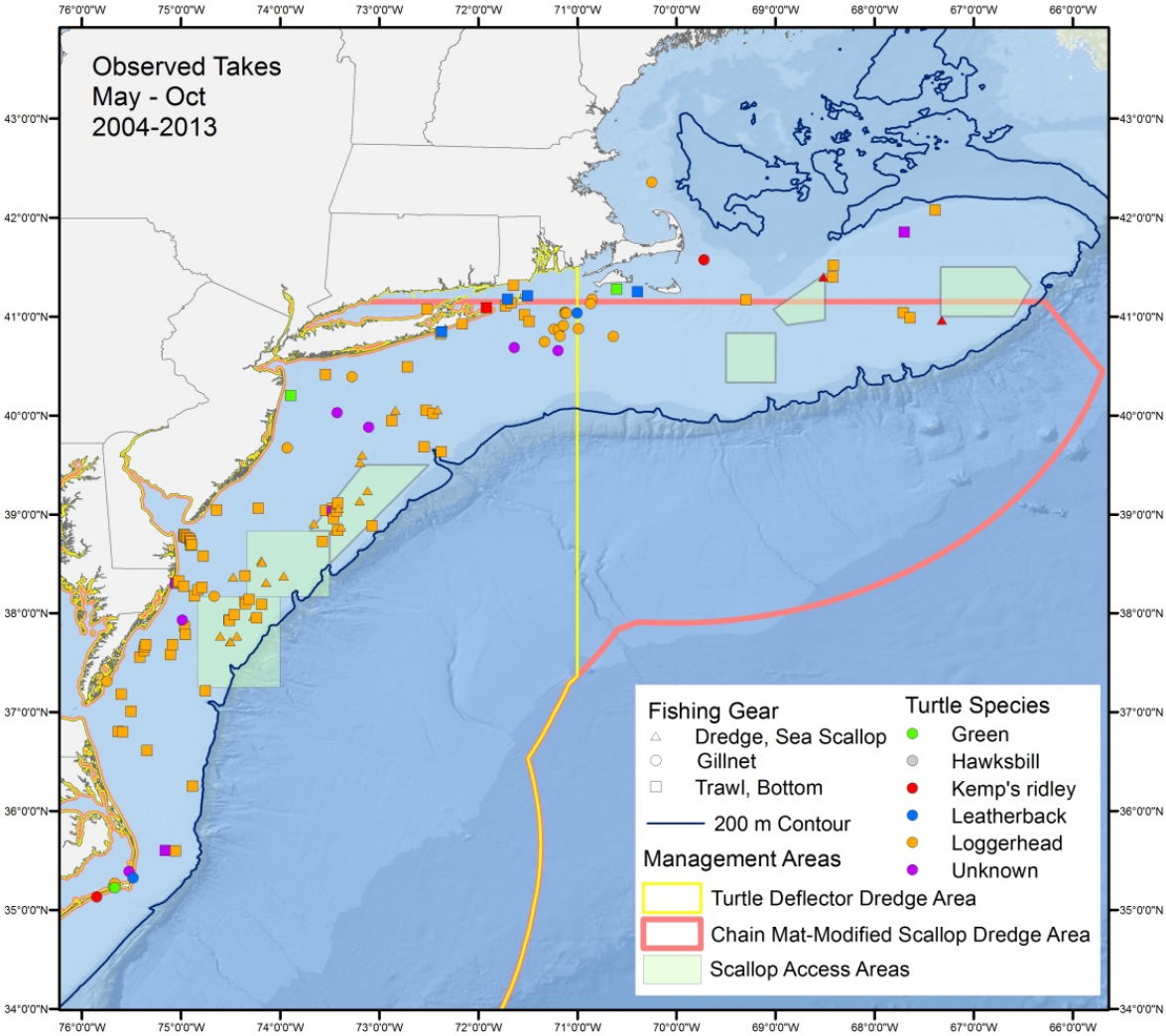


Figure 45 – Observed location of turtle interactions in bottom tending gears in the Northeast Region in the month of November (2004-2013 only)

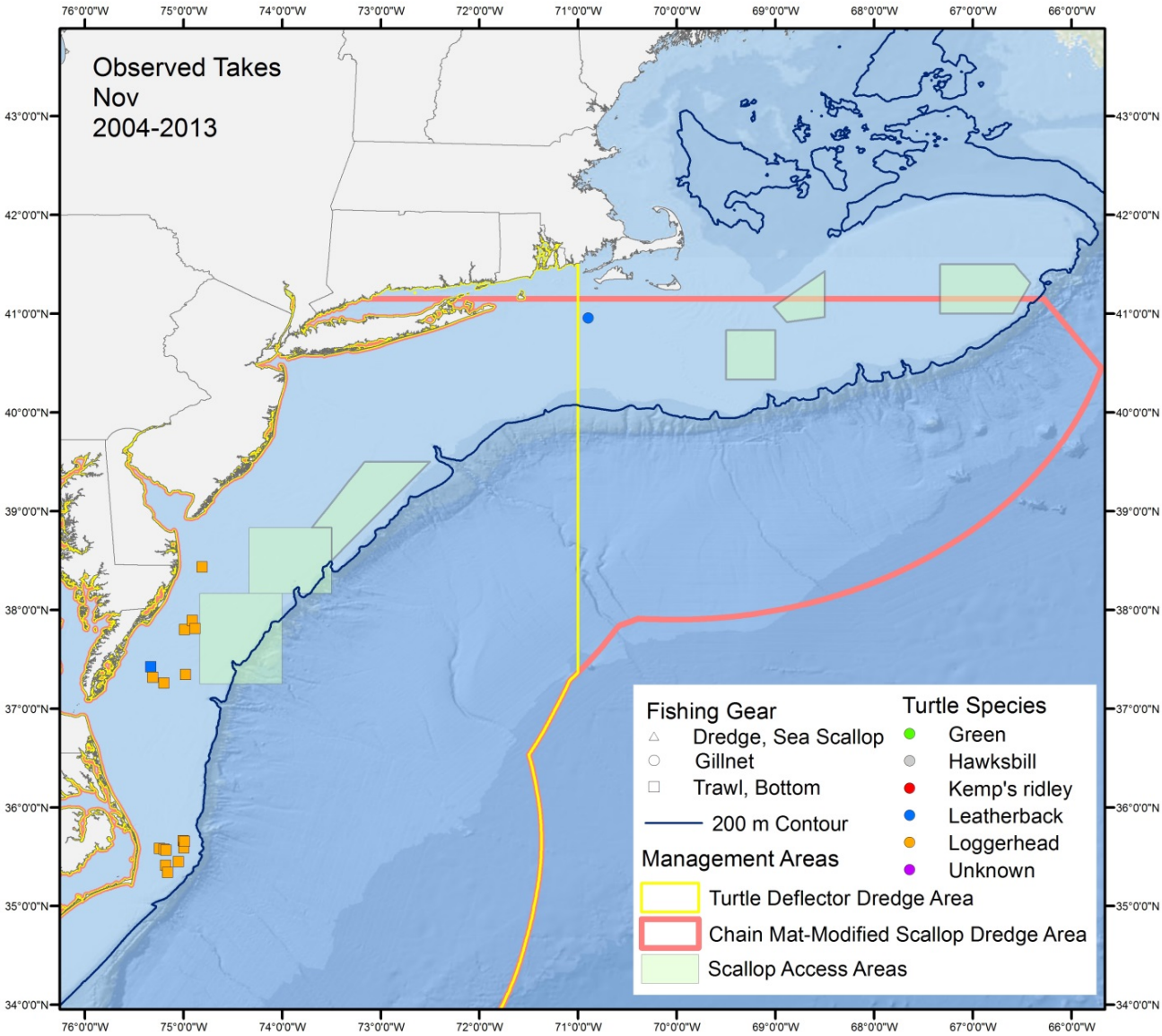
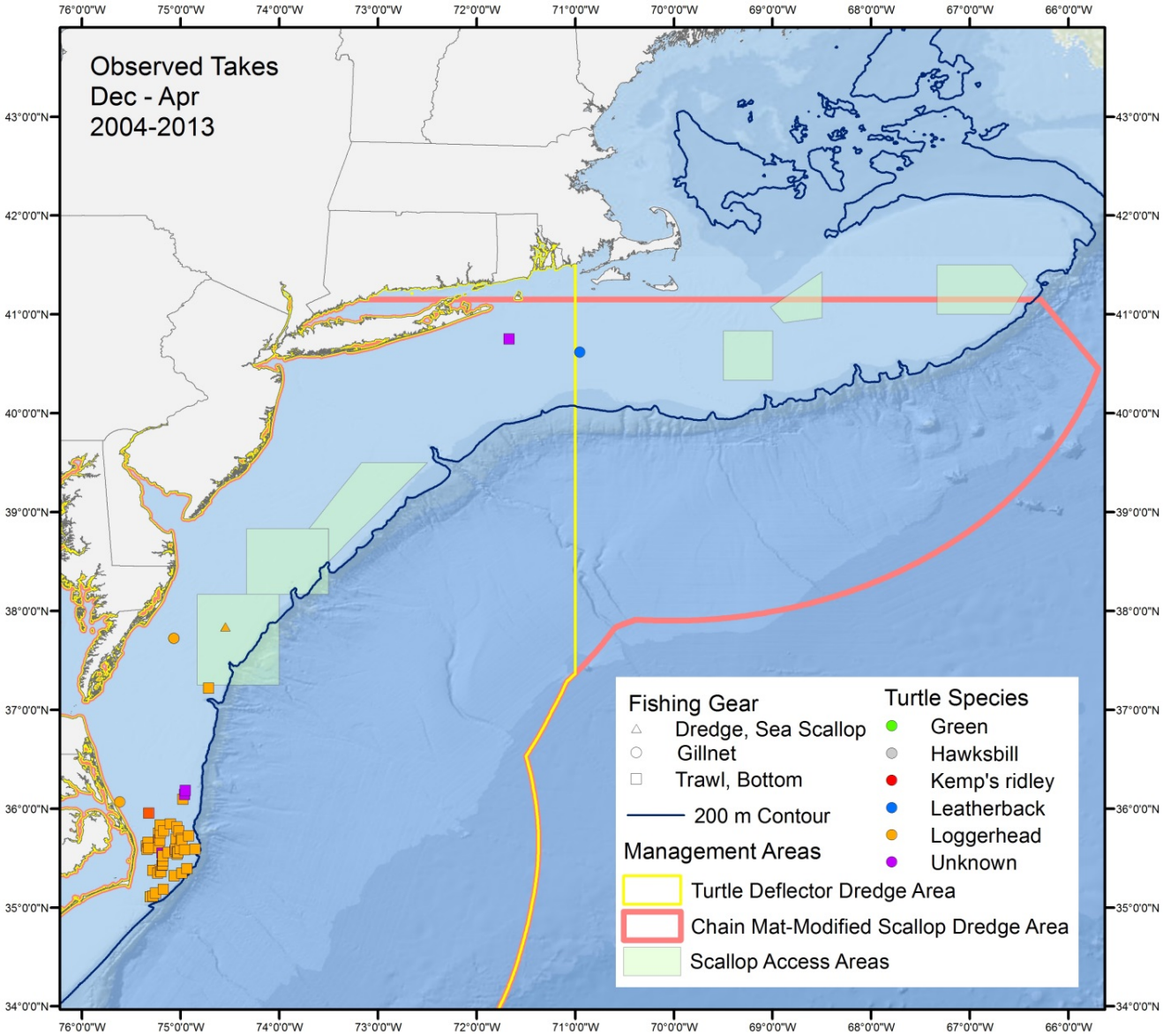


Figure 46 – Observed location of turtle interactions in bottom tending gears in the Northeast Region in the months of December – April (2004-2013 only)



Updated satellite telemetry information

There is a relatively large turtle satellite study that has been conducted in the Northeastern US for several years. This study was funded in part by the U.S. Department of the Interior, Bureau of Ocean Energy Management, Environmental Studies Program, Washington, DC, through Inter-Agency Agreement; the Atlantic Sea Scallop Research Set Aside Program, Virginia Maryland Section 6 Program, and funds from Coonamessett Farm Foundation, National Marine Fisheries Service, and the Virginia Aquarium & Marine Science Center. The investigators are also grateful to all the vessel crew and captains who made tag deployments possible.

The locations summarized in the maps below represent good quality ARGOS locations and filtered GPS locations (using a filter modified Douglas filter by provided by David Douglas). 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 ARGOS locations were not filtered beyond location quality, and they likely contain some errant points. It should also be noted that there are unequal number of points in each month (due to the sampling plan, turtle behavior, and environmental conditions).

Between 2009-2013, about 100 loggerheads turtles (including males, females, juveniles, and adults) have been tagged, resulting in more than 177,000 locations points. Those locations have been plotted by month. Based on updated data there is evidence that some turtles are in waters that overlap the scallop fishery in November. Most are off the coast of North Carolina and farther south, but a fraction of the tagged turtles were found in the southern part of the fishery (Figure 47 through Figure 49).

Figure 47 – Location of over 100 tagged loggerhead turtles in the months of May – October (tagged between 2009-2013)

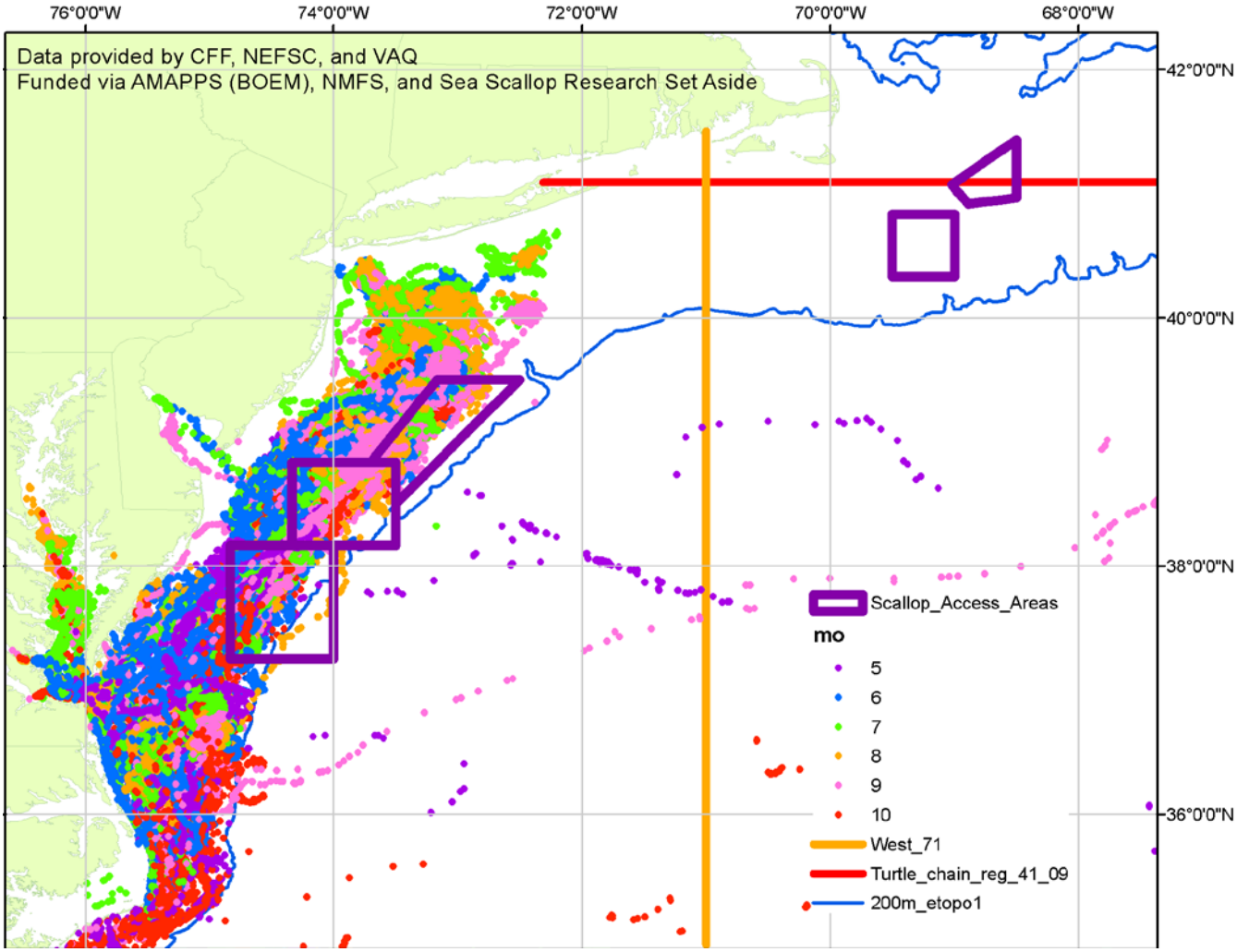


Figure 48 – Location of over 100 tagged loggerhead turtles in the month of November (tagged between 2009-2013)

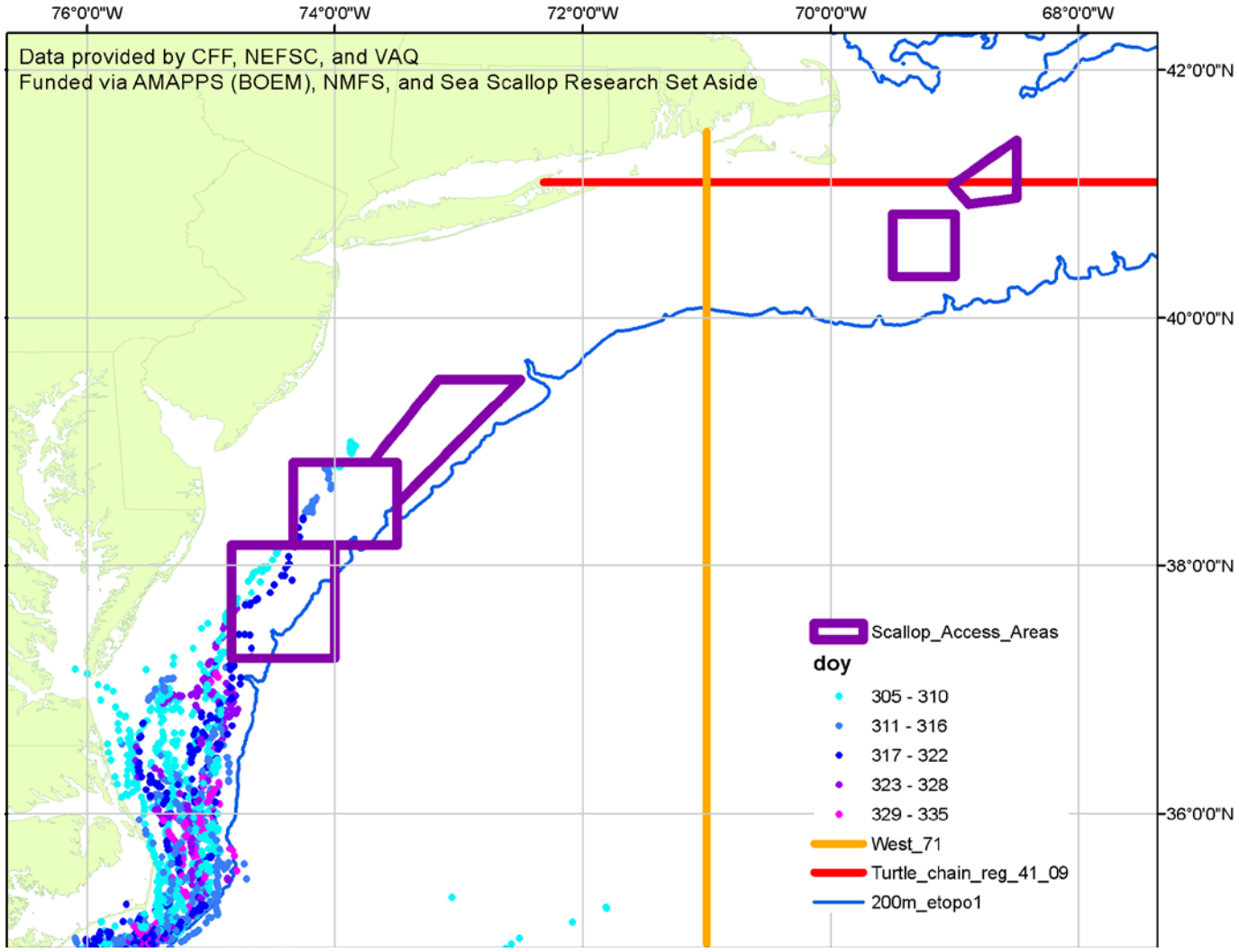
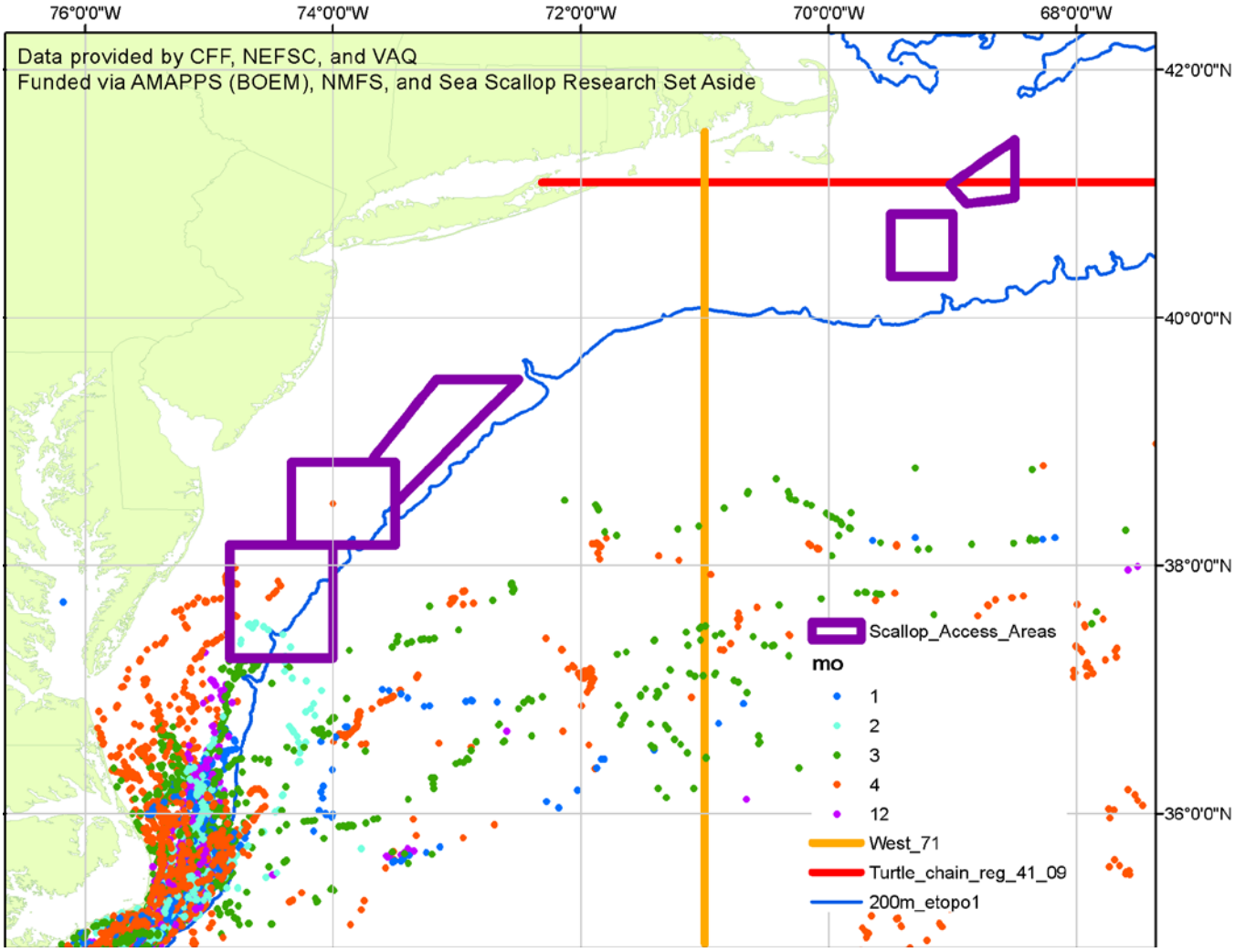


Figure 49 – Location of over 100 tagged loggerhead turtles in the months of December - April (tagged between 2009-2013)



Updated 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 29 presents strandings data (all species) by month and state from 1998-2012 combined. Data from 2008-2012 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). In all Northeast Region states combined from 1998-2012, the total strandings were 9,269. During the warmer months, Virginia consistently reported the most strandings of any Northeast Region state, followed by New Jersey and New York. In November, December, and January, many of the strandings were likely cold stun animals. Cold stunning occurs when turtles are exposed to prolonged cold water temperatures, and is particularly common in Massachusetts and New York. Most of the November and December strandings were found in Massachusetts, but were likely cold stun animals. If strandings from Massachusetts are removed, there were 334 strandings in November and 213 strandings in December from Rhode Island through Virginia during the same time period.

Table 29 - Total strandings from 1998-2012 by month and state. Data collected by the STSSN.

1998-2012													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**TOTAL**
VA	23	9	12	13	506	1694	495	369	385	369	217	70	4162
MD	1	0	0	0	42	144	62	62	81	41	7	4	444
DE	1	1	0	2	5	96	63	76	134	87	16	2	483
NJ	6	1	2	2	3	86	173	198	252	107	16	4	850
NY	15	2	1	1	3	23	163	133	92	50	70	130	683
CT/RI	0	1	0	1	0	8	49	64	40	13	8	2	186
MA/NH	28	4	7	2	3	11	89	157	89	68	958	1005	2421
ME	0	0	0	0	0	4	18	12	5	0	0	1	40
AVG	9.3	2.3	2.8	2.6	70.3	258.3	139	133.9	134.8	91.9	161.5	152.3	
TOTAL	83.3	20.3	24.8	23.6	632.3	2324.3	1251	1204.9	1212.8	826.9	1453.5	1370.3	10428

4.3.2.2 Atlantic Sturgeon

4.3.2.2.1 Gear Interactions

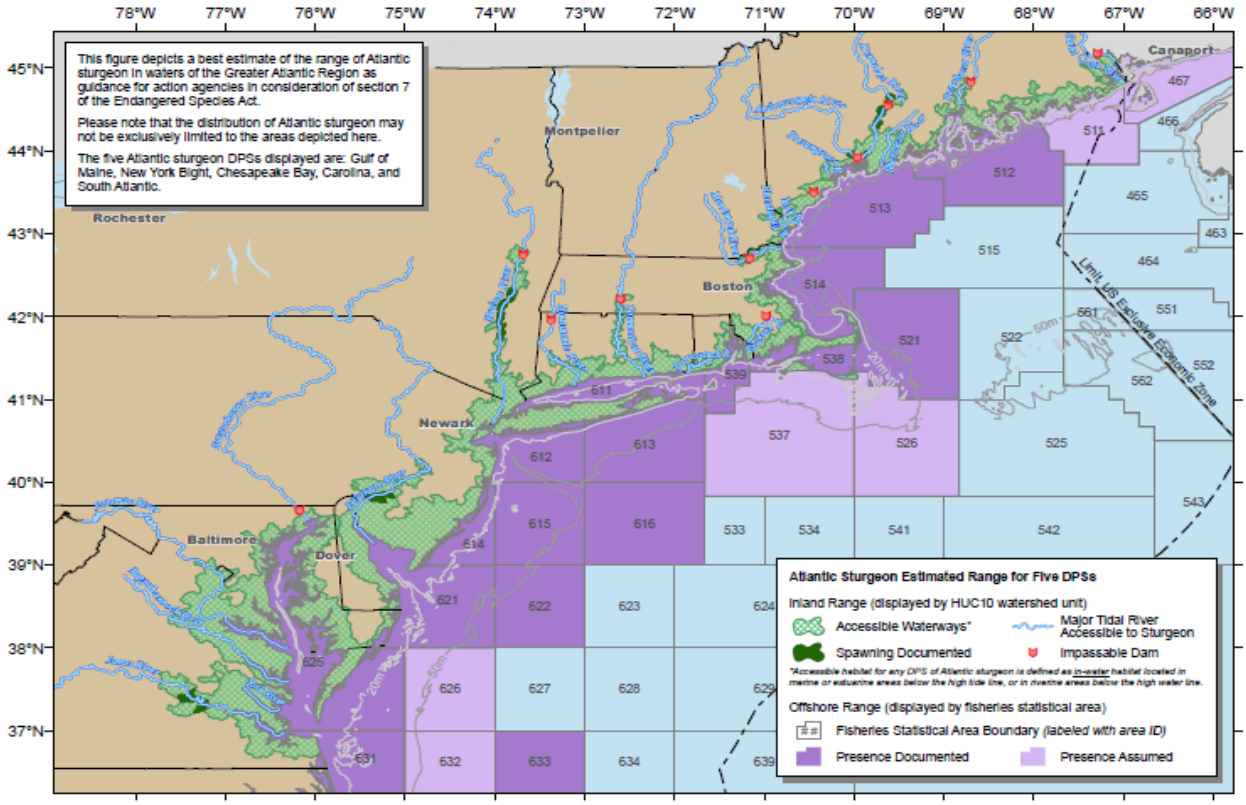
Atlantic sturgeon captures in Northeast fisheries have been documented and recorded by the NEFOP. Review of available observer data indicates that no Atlantic sturgeon have been reported as caught in scallop dredge or trawl gear where the haul target or trip target is scallop. However, according to the NMFS Opinion on the sea scallop fishery issued on July 12, 2012, given the known capture of Atlantic sturgeon in trawl fisheries operating in the affected area of the scallop fishery (Stein *et al*. 2004b; ASMFC 2007; Miller and Shepard 2011), it is reasonable to anticipate that some small level of bycatch may occur in the scallop trawl fishery; however, the incidence rate is likely to be very low. The 2012 Opinion also concluded that, given the way that scallop dredges operate, the lack of documented interactions is likely reflective of a true lack of captures of Atlantic sturgeon in scallop dredge gear.

4.3.2.2.2 Updated information on Atlantic Sturgeon Distribution

The marine range of U.S. Atlantic sturgeon extends from Labrador, Canada, to Cape Canaveral, Florida. All five DPSs of Atlantic sturgeon have the potential to be located anywhere in this

marine range (See; ASSRT 2007; Dovel and Berggren 1983; Dadswell *et al*. 1984; Kynard *et al*. 2000; Stein *et al*. 2004a; Dadswell 2006; Laney *et al*. 2007; Dunton *et al*. 2010; Erickson *et al*. 2011; Wirgin *et al*. 2012; Waldman *et al.* 2013; O'Leary *et al*. 2014).

Figure 50 – Estimated range of Atlantic Sturgeon Distinct Population Segments (DPSs)



Source: http://www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/maps/atlanticsturgeon.pdf.pdf

Based on fishery- independent and dependent data, as well as data collected from tracking and tagging studies, in the marine environment, Atlantic sturgeon appear to primarily occur inshore of the 50 meter depth contour (Stein et al. 2004 a,b; Erickson et al. 2011; Dunton et al. 2010); however, Atlantic sturgeon are not restricted to these depths, as excursions into deeper continental shelf waters have been documented (Timoshkin 1968; Collins and Smith 1997; Stein et al. 2004a,b; Dunton et al. 2010; Erickson et al. 2011)). Data from fishery-independent surveys and tagging and tracking studies also indicate that Atlantic sturgeon undertake seasonal movements along the coast. Tagging and tracking studies found that satellite-tagged adult sturgeon from the Hudson River concentrated in the southern part of the Mid-Atlantic Bight, at depths greater than 20 meters, during winter and spring, while in the summer and fall, Atlantic sturgeon concentrations shifted to the northern portion of the Mid-Atlantic Bight at depths less than 20 meters (Erickson et al. 2011).

A similar seasonal trend was found by Dunton et al. 2010; analysis of fishery-independent survey data indicated a coastwide distribution of Atlantic sturgeon during the spring and fall; a southerly (e.g., North Carolina, Virginia) distribution during the winters; and a centrally located (e.g., Long Island to Delaware) distribution during the summer. Although studies such as Erickson et al. (2011) and Dunton et al. (2010) provide some indication that Atlantic sturgeon are undertaking seasonal movements horizontally and vertically along the U.S. eastern coastline, there is no evidence to date that all Atlantic sturgeon make these seasonal movements. For instance, during inshore surveys conducted by the Northeast Fisheries Science Center in the region of the GOM, Atlantic sturgeon have been caught in the fall, winter, and spring between the Saco and Kennebec Rivers (Dunton et al. 2010).

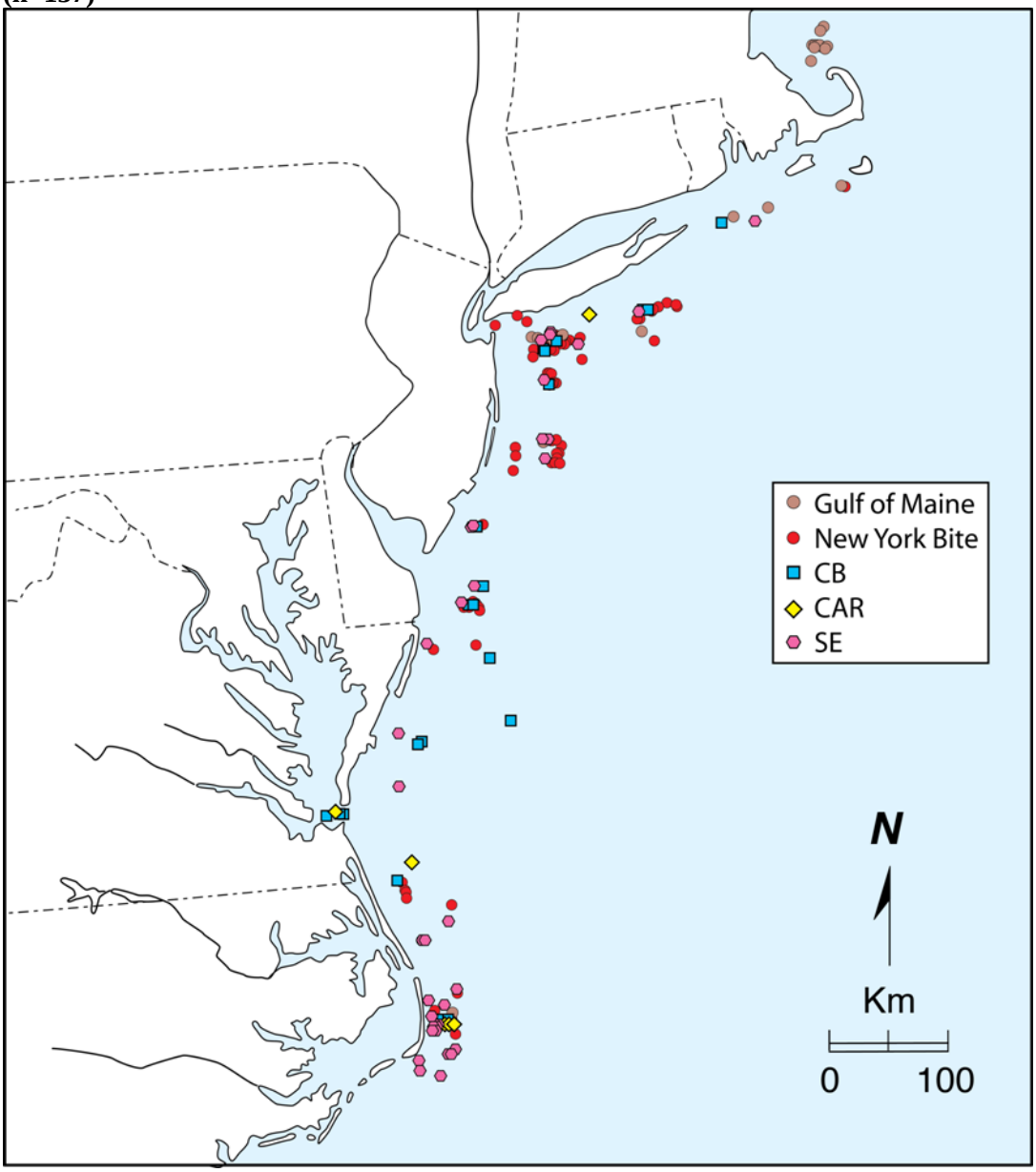
Within the marine range of Atlantic sturgeon, several marine aggregation areas have been identified adjacent to estuaries and/or coastal features formed by bay mouths and inlets along the U.S. eastern seaboard; depths in these areas are generally no greater than 25 meters (Stein et al. 2004a; Laney et al. 2007; Dunton et al. 2010; Erickson et al. 2011). Although additional studies are still needed to clarify why these particular sites are chosen by Atlantic sturgeon, there is some indication that they may serve as thermal refuge, wintering sites, or marine foraging areas (Stein et al. 2004a; Dunton et al. 2010; Erickson et al. 2011). The following are the currently known marine aggregation sites located within the range of the sea scallop fishery:

- Waters off North Carolina, including Virginia/North Carolina border (Laney *et al*. 2007);
- Waters off the Chesapeake and Delaware Bays (Stein *et al*. 2004a; Dunton *et al*. 2010; Erickson *et al*. 2011; Oliver *et al*. 2013);
- New York Bight (e.g., waters off Sandy Hook, New Jersey, and Rockaway Peninsula, New York; Stein *et al*. 2004a; Dunton *et al.* 2010; Erickson *et al*. 2011; O'Leary *et al*. 2014;);
- Massachusetts Bay (Stein *et al.* 2004a);
- Long Island Sound (Bain *et al.* 2000; Savoy and Pacileo 2003; Waldman *et al.* 2013);
- Connecticut River Estuary (Waldman *et al.* 2013);
- Kennebec River Estuary (termed a "hot spot" for Atlantic sturgeon by Dunton *et al*. 2010).

In addition, since listing of the five Atlantic sturgeon DPSs, several genetic studies have occurred to address DPS distribution and composition in marine waters. Genetic analysis has been conducted on Atlantic sturgeon captured (fishery-independent) from aggregations in Long Island Sound and the Connecticut River (summer aggregations; Waldman et al. 2013), as well as the New York Bight, specifically the coastal waters off the Rockaway Peninsula (spring and fall aggregations; O'Leary et al. 2014). Results from these studies showed that these aggregations, regardless of location, were comprised of all 5 DPSs, with the NYB DPS consistently identified as the main contributor of the mixed aggregations, followed by the GOM, CB, SA, and Carolina DPSs.

In a similar assessment, genetic analysis was conducted on Atlantic sturgeon captured (fishery-dependent) during the Northeast Fisheries Observer Program and At Sea Monitoring Program, which ranges from Maine to North Carolina. Results from this assessment affirmed that in waters of the Mid-Atlantic, all 5 DPSs co-occur (Figure 51), with the percentage of each DPS estimated to be as follows: 51% NYB DPS; 22% SA DPS; 13 % CB DPS; 11% GOM DPS; 2 % Carolina DPS; and 1 % Canadian stock (Damon-Randall et al. 2013); however, these results have not been examined relative to the amount of observed fishing effort throughout the area. In a study by Wirgin et al. 2012, genetic analysis revealed that the summer assemblage of Atlantic sturgeon in Minas Basin, Inner Bay of Fundy, Canada, was comprised not only of Canadian origin Atlantic sturgeon, but also Atlantic sturgeon from the GOM DPS (34-64% contribution to the mixed assemblage) and NYB DPS (1-2% contribution to the mixed assemblage). Although additional studies are needed to further clarify the DPS distribution and composition in non-natal estuaries and coastal locations, these studies provide some initial insight on DPS distribution and co-occurrence in particular areas along the U.S. eastern sea board.

Figure 51 – Capture location and DPS of origin assignments for Observer Program specimens (n=137)



Based on the above studies and available information, as the affected area of the sea scallop fishery occurs primarily in waters north of 36°N, and Atlantic sturgeon from any of the 5 DPSs may be present in these waters throughout the year, the sea scallop fishery and Atlantic sturgeon from any of the 5 DPSs are likely to co-occur in the affected area.

4.4 ECONOMIC AND SOCIAL TRENDS IN THE SEA SCALLOP FISHERY

4.4.1 Introduction

This section of the document describes 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

For the first time since 2001, the landings from the northeast sea scallop fishery fell to 40 million pounds in 2013 fishing year (**Figure 52** and **Table 49**). In the previous 9 years, the scallop landings exceeded 50 million pounds each year peaking over 60 million lb. in 2004 fishing year. The recovery of the scallop resource and consequent increase in landings and revenues was 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 average landings during 2004-2012 and only about 40% of the landings in the 2013 fishing year.

The increase in the abundance of scallops coupled with higher scallop prices increased the profitability of fishing for scallops by the general category vessels. As a result, general category landings increased from less than 0.4 million pounds during the 1994-1998 fishing years to more than 4 million pounds during the fishing years 2005-2009, peaking at 7 million pounds in 2005 or 13.5% of the total scallop landings (Table 50). The landings by the general category vessels declined after 2009 as a result of the Amendment 11 implementation that restricts TAC for the limited access general category fishery to 5.5% of the total ACL. The landings by limited access general category fishery including by IFQ, NGOM and incidental permits, declined to about 2.7 million lb. in 2013 from about 3.3 million lb. in the 2012 fishing year (**Figure 52**).

Figure 52. Scallop landings by permit category and fishing year (in lb., dealer data)

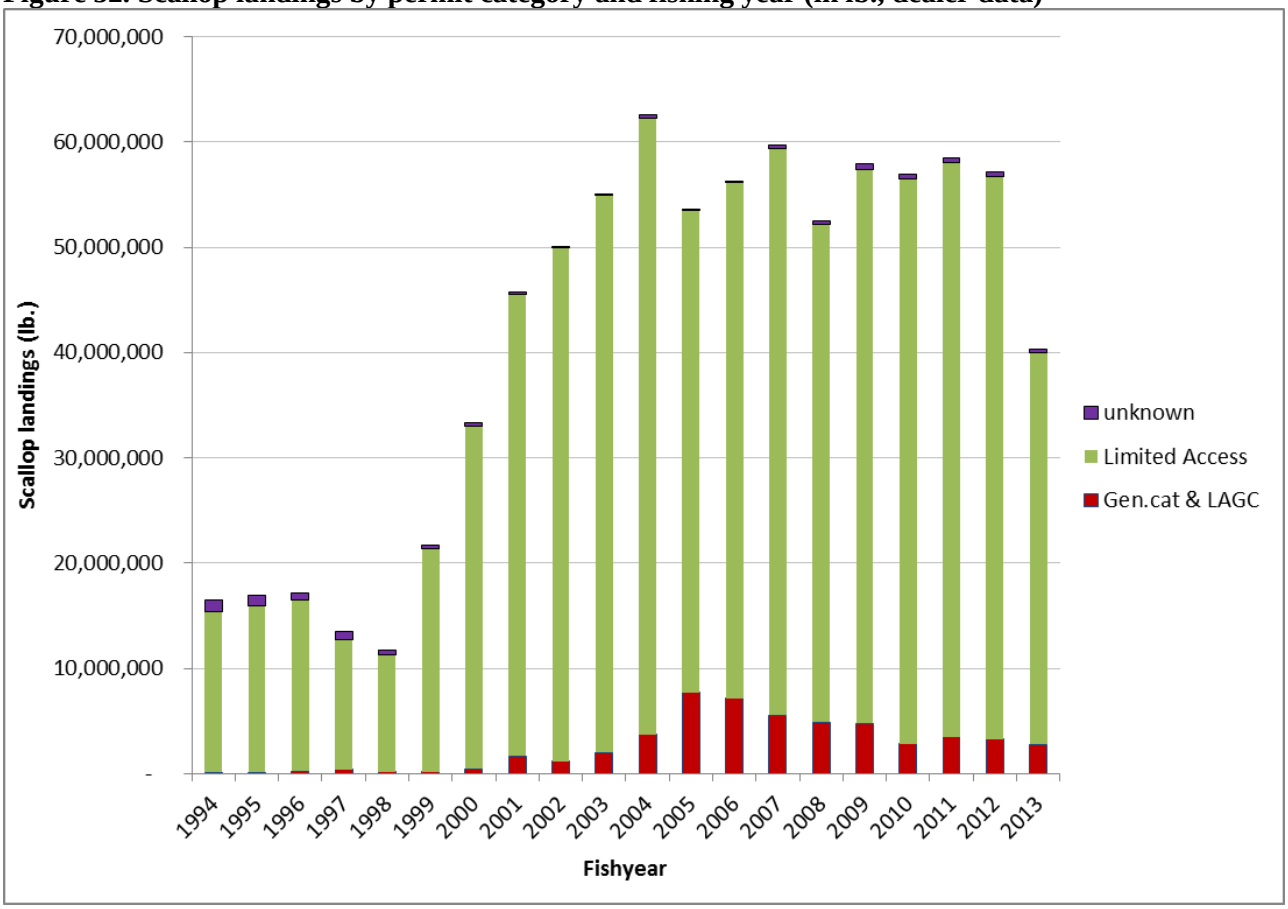
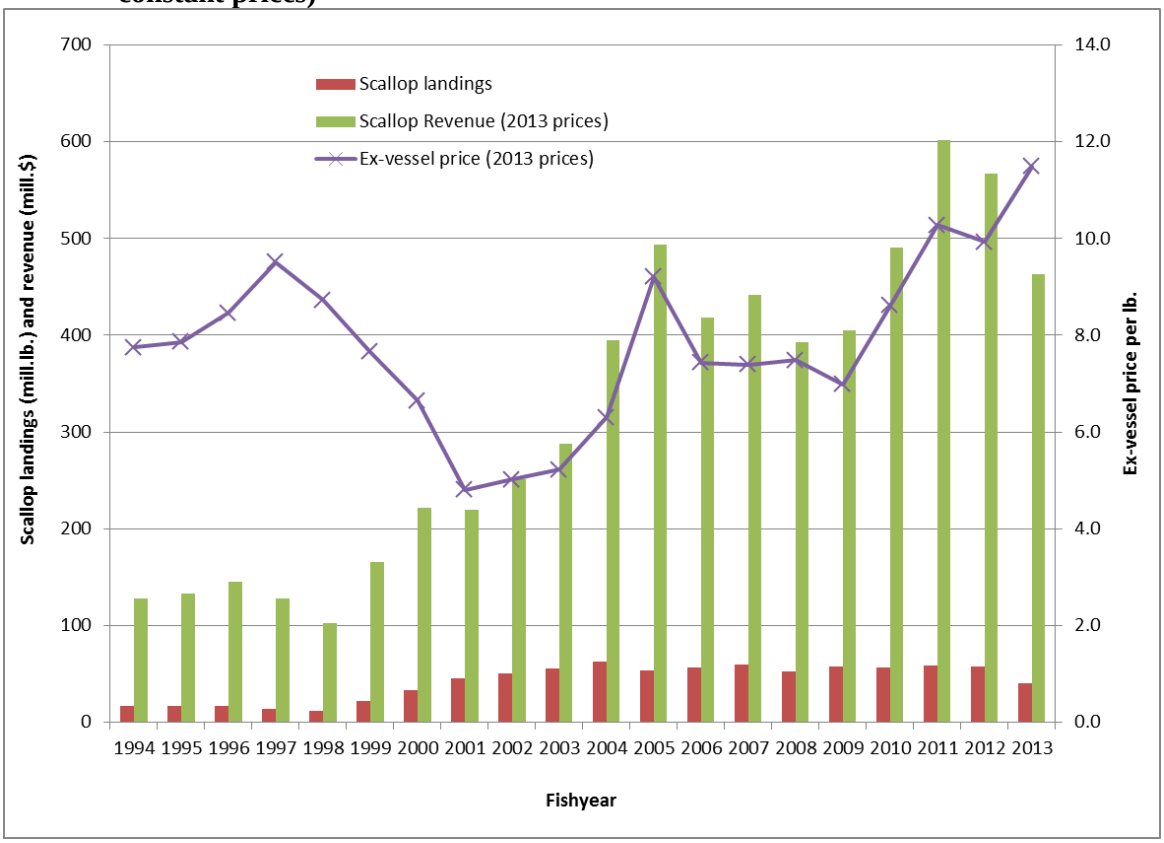


Figure 53 shows that total fleet revenue more than quadrupled in 2011 ($601 million, in inflation adjusted 2011 dollars) fishing year from its level in 1994 ($127 million, in inflation adjusted 2011 dollars). Scallop ex-vessel prices increased after 2001 as the composition of landings changed to larger scallops that in general command a higher price than smaller scallops. However, the rise in prices was not the only factor that led to the increase in revenue in the recent years compared to 1994-1998. In fact, inflation adjusted ex-vessel prices in 2008-2009 were lower than prices in 1994 (Figure 53). 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.

The ex-vessel prices increased significantly to over $10 per pound of scallops in 2011 fishing year as the decline in the value of the dollar led to an increase in exports of large scallops to the European countries resulting in record revenues from scallops reaching to $601 million for the first time in scallop fishing industry history (**Figure 53**). The scallop ex-vessel prices peaked to $11.5 per lb. in 2013 due to the decline in landings by almost 30% in the same year. As a result, scallop revenue declined by a smaller percentage (18%) relative to the decline in decline in landings, from about $568 million in 2012 to $464 million in 2013, a level which still could be considered high by historical standards (**Figure 53**).

Figure 53. Trends in total scallop landings, revenue and ex-vessel price by fishing year (including limited access and general category fisheries, revenues and prices are expressed in 2013 constant prices)



The trends in landings and revenue per full-time vessel were similar to the trends for the fleet as a whole. **Figure 54** shows that average scallop revenue per full-time dredge vessel tripled from about $536,000 in 1994 to over $1,612,000 in 2012 as a result of higher landings combined with an increase in ex-vessel prices. For full-time small dredge vessels, average revenue per vessel increased from $123,910 in 1994 to over $1,200,000 in 2012 (**Figure 54**). However, average scallop revenue per full-time vessel declined in 2013 to $1,300,000 for full-time and to $788,000 per the full-time small dredge vessel due to the decline in landings in this fishing year.

Figure 54. Trends in average scallop landings per full time vessel by category (Dealer data)

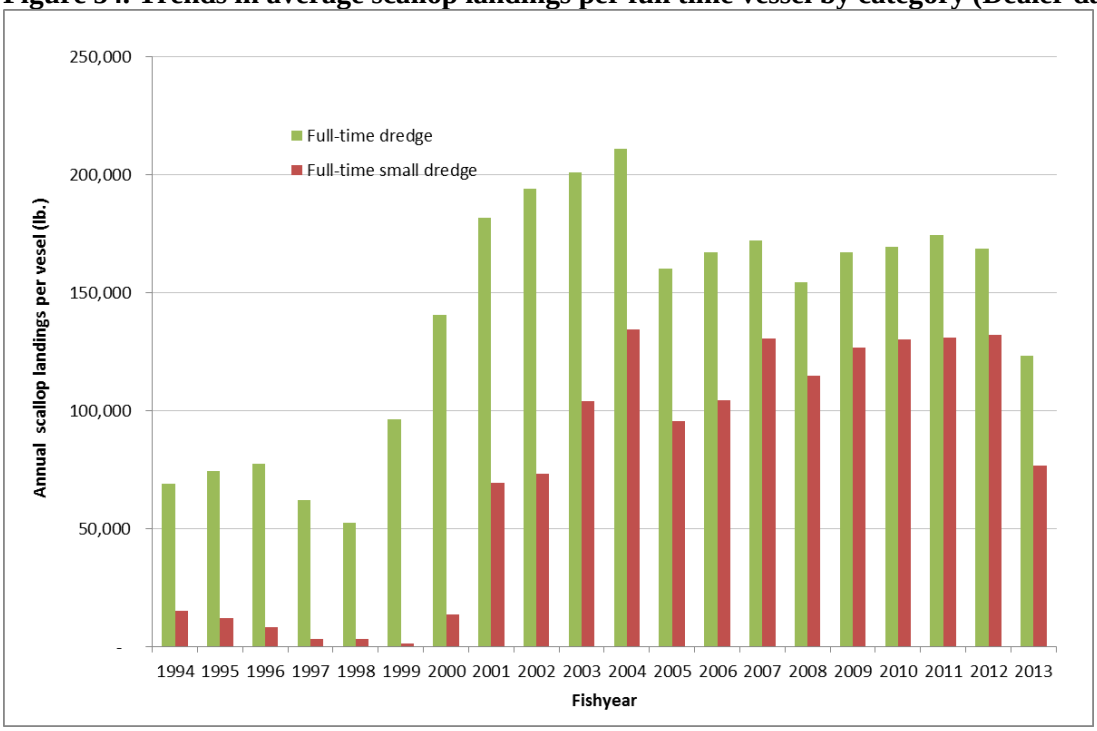
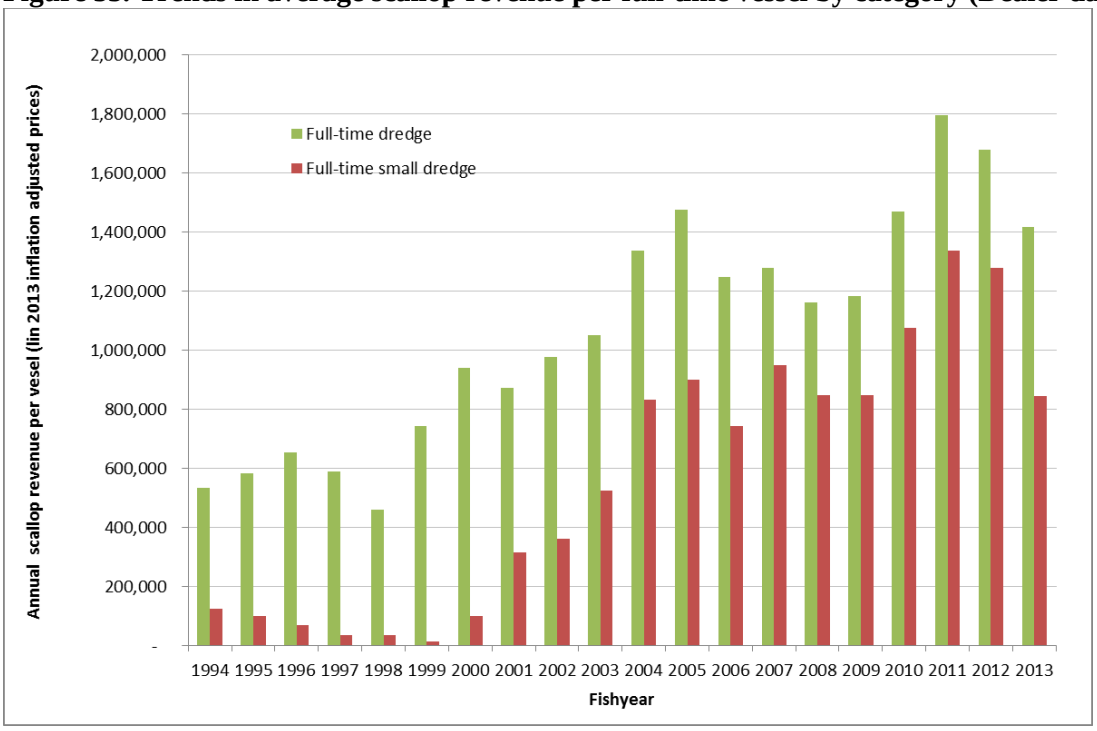


Figure 55. Trends in average scallop revenue per full-time vessel by category (Dealer data)



Although general category landings declined after 2009, scallop landings and revenue per active limited access general category vessel exceeded the levels in 2009 as the quota was consolidated on or fished by using fewer vessels (Figure 56 and Figure 57). It should be noted that these are estimated numbers from dealer data based on some assumptions in separating the LAGC landings from LA landings. It was assumed that if an LA vessel also had an LAGC permit, those trip landings which are less than 600 lb. in 2011 and less than 400 lb. in 2010 and 2009 were LAGC landings and any among above these were LA landings.

Figure 56. Trends in average scallop landings per vessel for the LAGC fishery by permit category

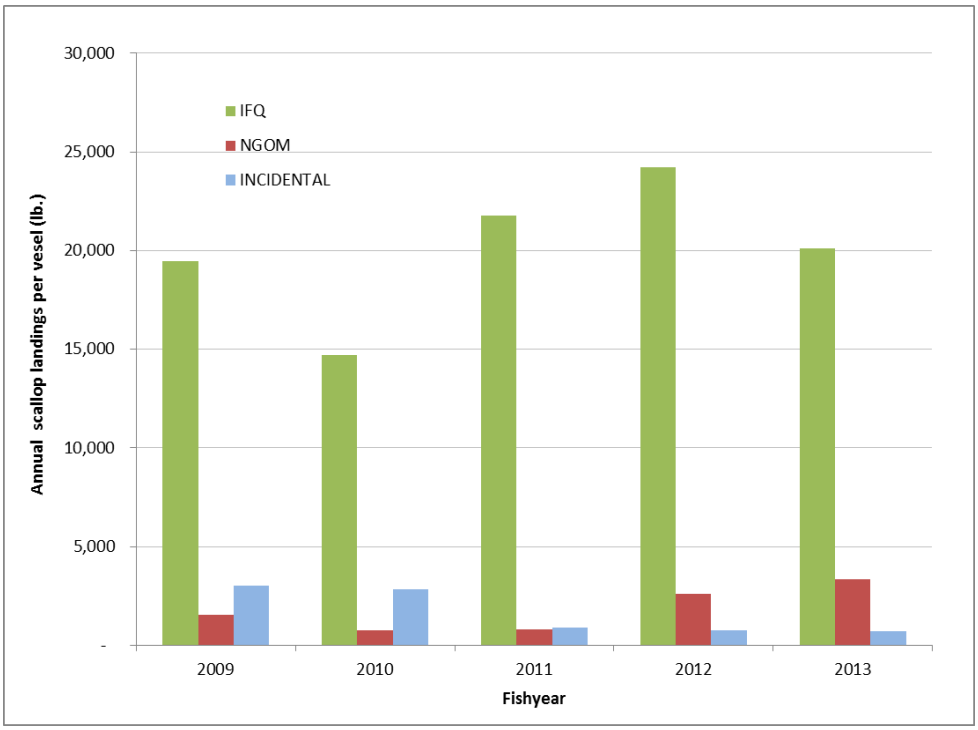
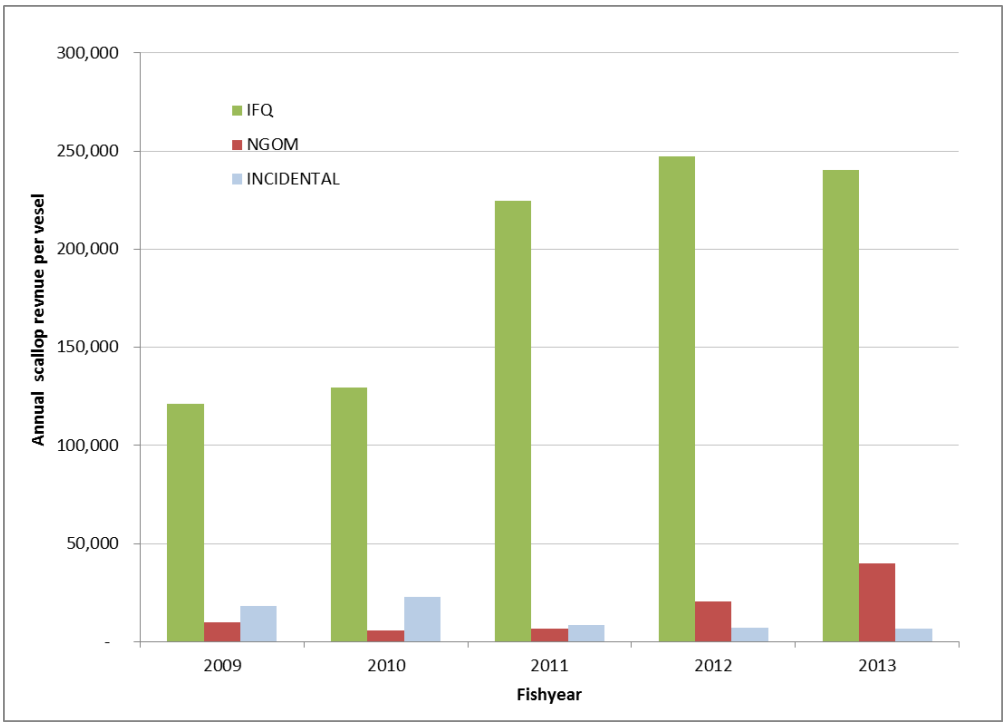


Figure 57. Trends in average scallop revenue per vessel for the LAGC fishery (dealer data, in 2013 inflation adjusted prices)



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 2011 fishing years as a result of the effort-reduction measures of Amendment 4 (1994). DAS allocations during this period were reduced almost by half from 204 DAS in 1994 to 120 DAS in 2003 fishing year for the full-time vessels and in the same proportions for the part-time and occasional vessels from their base levels in 1994 (**Table 30**). As a result, estimated DAS-used (VTR data) reached the lowest levels of about 24,000 days in the 1999 from over 30,000 days in 1995-1996 (**Figure 58**). These numbers were estimated using the VTR database for purposes of analyzing the trends in efforts consistently since 1994 (as the difference between the date sailed and date landed from the VTR data). As it is discussed below, this is different from the value for DAS-used (or charged) based on the VMS database. Limited access effort and LPUEs by area for 2009-2014 fishing years using the DAS from the VMS data are shown in Section 4.4.3.1 below.

Table 30. DAS and trip allocations per full-time vessel

Year	Allocations based on the Management Action	Total DAS Allocation (1)	Open area DAS allocations (2)	Access area trip allocations (3)	Estimated DAS-used per full-time vessel (VTR Data: Date landed-Date sailed)
1994	Amendment 4	204	None	None	123
1995	Amendment 4	182	None	None	144
1996	Amendment 4	182	None	None	153
1997	Amendment 4	164	None	None	148
1998	Amendment 4	142	None	None	134
1999	Amendment 7 Framework 11	120	90 to 120	3	109
2000	Framework 13	120	60 to 120	6	109
2001	Framework 14	120	90 to 120	3	115
2002	Framework 14	120	90 to 120	3	115
2003	Framework 15	120	90 to 120	3	114
2004	Framework 16		42 (MAX.62)	7	103
2005	Framework 16		40 (MAX.117)	5	87
2006	Framework 18		52	5	89
2007	Framework 18		51	5	101
2008	Framework 19		35	5	75
2009	Framework 19		37	5	83
2010	Framework 21		38	4	84
2011	Framework 22		32	4	72
2012	Framework 22		34	4	73
2013	Framework 24		33	2	56

Note that before 2004, access area trips counted toward annual DAS. For example, 10DAS would be charged per vessel if they participated in an access area program. Vessels did not have to take access area trips, but if they did 10 or 12 DAS would be charged against their annual allocation depending on the area and year. Since 2004 vessels are allocated open area DAS and area specific trips (without any corresponding DAS allocation). If vessels do not take any access area trips, they do not get any additional DAS. Possession limit for the access area trips could vary from year to year and it was reduced to 13,000 lb. in 2013 fishing year from 18,000 lb. in 2012 fishing year. Therefore, DAS allocated and DAS charged after 2003 refers only to the open area trips, while DAS-used based on the VTR data reflects actual number of days spent at sea including the steam time from the port. Last column shows a decline in days-used from 123 days in 1994 fishing year to 56 days in 2013 fishing year.

After fishing year 1999, fishing effort started to increase as more limited access vessels participated in the sea scallop fishery. The increase in total effort was mostly due to the increase in the number of vessels because total DAS allocations (mostly less than 120 days) were lower than the DAS allocations in the mid-1990s (over 142 days, **Table 30**). The recovery of the scallop resource and the dramatic increase in fishable abundance after 1999 increased the profits in the scallop fishery, thus leading to an increase in participation by limited access vessels that had been inactive during the previous years. Georges Bank closed areas were opened to scallop fishing starting in 1999 by Framework 11 (CAII) and later by Framework 13 (CAII, CAI, NLS), encouraging many vessel owners to take the opportunity to fish in those lucrative areas. Frameworks 14 and 15 provided controlled access to Hudson Canyon and VA/NC areas. As a result, the number of active limited access permits in the sea scallop fishery increased from 258 in 2000 to 303 in 2003. The total fishing effort by the fleet increased to about 33,000 days in 2003 from about 26,700 days in 2000 (Figure 58). Total fishing effort (DAS used) declined

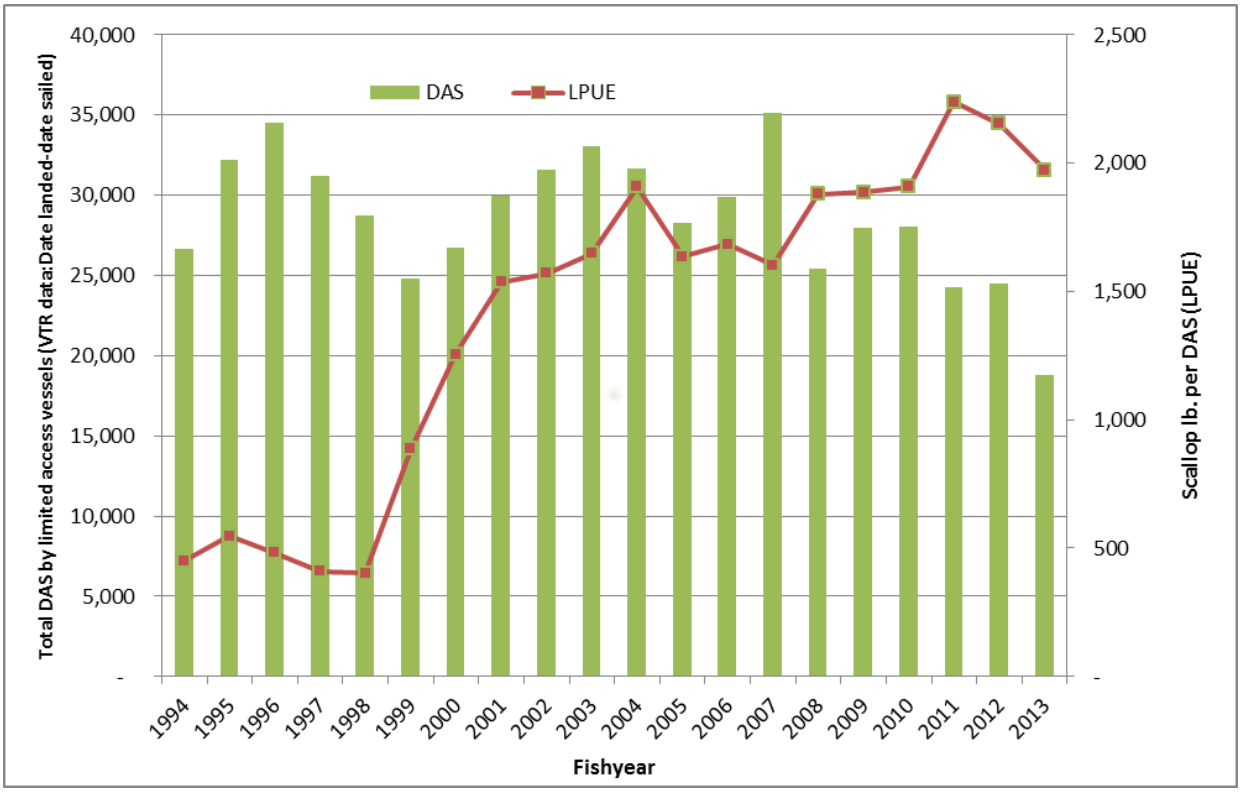
after 2003 even though the number of active vessels increased to 340 vessels in 2006 from 303 vessels in 2003 (Table 45).

The column 1 in of Table 3 shows total DAS allocations (not DAS-used or days fished). Until the implementation of Amendment 10, each access area trip were assigned a 10 DAS trade-off such that any vessel that choose not to fish in access areas could instead fish for scallops in the open areas for 10 DAS. Thus, total DAS allocation for the access areas is calculated as the number of trips multiplied by 10 DAS (even though it might have taken less than 10 DAS to land the possession limit in those areas). Following this method, Column 1 shows that total DAS allocations for open and access areas per full-time vessel declined from 204 DAS in 1994 to 120 DAS in 2003.

With the implementation of Amendment 10 (2004) the limited access vessels were allocated DAS for open areas and area specific access area trips with no open area trade-offs. Although the vessels could no longer use their access area allocations in the open areas, Amendment 10 and Frameworks 16 to 18 continued to include an automatic DAS charge of 12 DAS for each access area trip until it was eliminated by NMFS.

Total DAS-used declined further in 2008 to about 25,400 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). Total DAS-used by the limited access vessels were higher in 2010 despite lower number of access area trips (4 trips per vessel). Open area DAS allocations were slightly higher in 2010 (38 DAS versus 37 DAS in 2009) and vessels spend more time fishing in the access areas. Total DAS-used further declined in 2011, however, despite the increase in the open area DAS allocations. This because DAS-used in the access areas declined due higher LPUEs in these areas compared to 2010 fishing year. As a result of reduction in the number of access area trips to two trips per full-time vessel in 2013 fishing year, the total DAS-used reached its lowest level in this year with a total of 18,809 days as defined by the difference in the date landed and date sailed from the VTR records.

Figure 58. Total DAS-used (Date landed – Date sailed from VTR data) by all limited access vessels and LPUE



The impact of the decline in effort below 30,000 days 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 2237 pounds per day-at-sea in 2011 and to about 1900 lb. per day-at-sea in all areas (As estimated from date landed – date sailed from VTR data, **Figure 58**). **Figure 59** shows that LPUE for the full-time dredge vessels was higher (about 2200 lb. in 2013 fishing year) than the LPUE of small dredge vessels (about 1416 lb. in 2013 fishing year).

It must be cautioned that these LPUE numbers are lower than the estimates used in the PDT analyses used to estimate open area DAS allocations. The numbers in **Figure 58** through **Figure 59** are obtained from the VTR database and include the steam time as calculated the days spent at sea starting with the sail date and ending with the landing date. In addition, those numbers include both open and access areas. In contrast, total "DAS used" in the fishery is the value incorporated in the LPUE models by the PDT to calculate future DAS allocations in the open areas for the full-time vessels. In these models, 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 it wouldn't include the time from (to) the port to (from) the demarcation line at the start (end) of the trip. Therefore, the DAS-used (LPUE) calculated from the VTR data would be greater (lower) than the DAS-used (LPUE) calculated from the demarcation line in the DAS database. Because VTR data is available for a longer period, however, it is useful in analyzing the historical trends in LPUE (from port to port) since 1994.

As a result of this increasing trend in LPUE from about 450 pounds per DAS in 1994 to over 2000 pounds per DAS since 2011, scallop revenue per vessel tripled in the last 10 years since 2004 compared to the levels in 1998.

Figure 59. LPUE for full-time vessels by permit category (VTR data, includes steam time and vessels with IFQ permits)

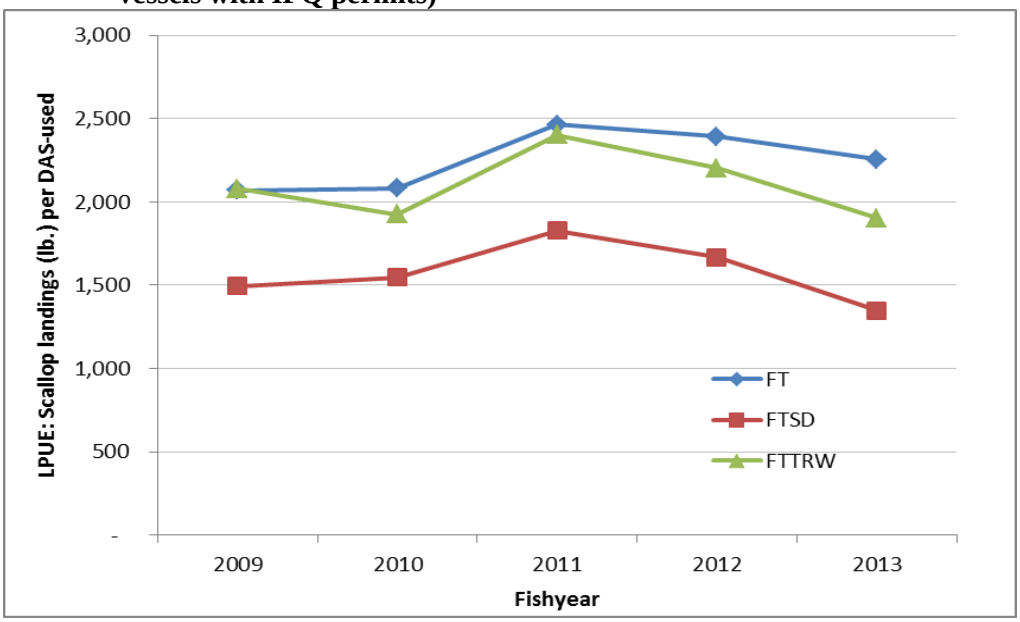
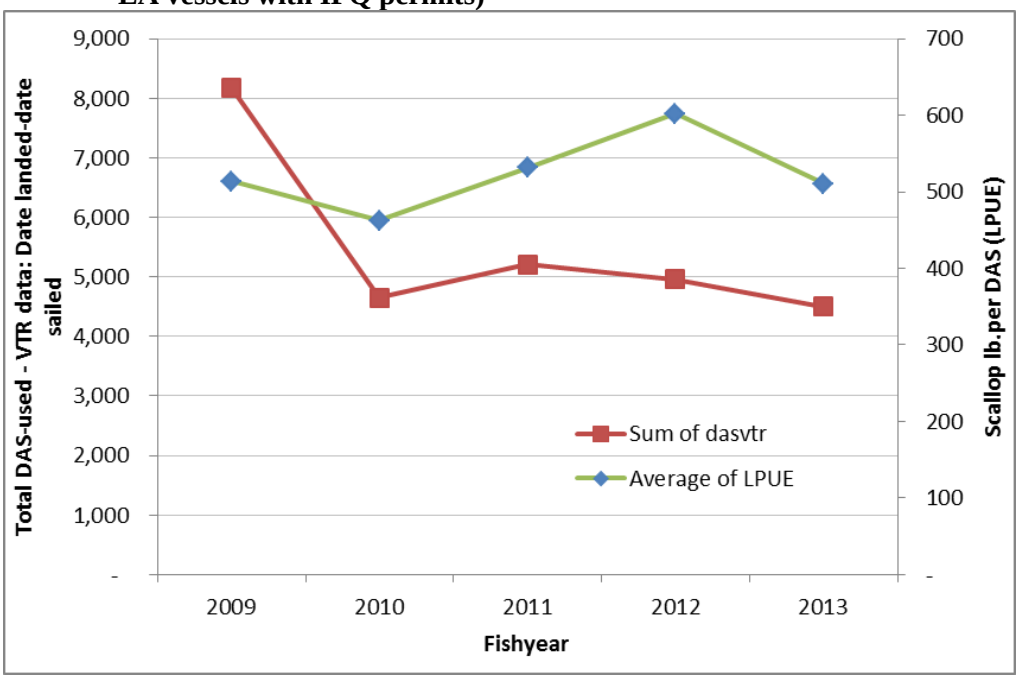


Figure 60. LPUE and DAS-used for LAGC-IFQ vessels (VTR data includes steam time, excluding LA vessels with IFQ permits)



4.4.3.1 LPUE estimated by area

The PDT has begun to analyze estimated LPUE by area using data from 2009-2013. Catch per day is calculated using the time a vessel crosses the VMS demarcation line on the way out and on the way in, equivalent to DAS charged. Estimates were prepared for LA and LAGC vessels separately. Note that the catch rates for LAGC are based on LPUE per 24 hours, not per trip; therefore total catch may be higher than the 600 possession limit if trips are less than 24 hours. The estimates are provided in **Table 31 - Table 36** for each year separately starting with preliminary results for 2014, and summarized overall by area and year in **Figure 61**.

Overall, average LPUE is highest when an access area first opens, and declines each year after that as biomass decreases. This is evident in all cases (Closed Area I, Closed Area II, NL, HC, ETA, and Delmarva). For limited access vessels, average catch rates are usually above 2,000 pounds in the first year an access area is open. In some cases the catch rates remain relatively high in subsequent years, but in some cases average catch rates have fallen faster and were below 1,000 pounds a day in year 3 or 4. Average catch rates are not as consistent for LAGC vessels in access areas, some areas show declining catch rates over time, and some do not.

Average open area catch rates for LA vessels increased from under 2,000 pounds per day in 2009 to almost 2,800 pounds per day in 2012. Average catch rates have declined in 2013 and 2014 (to date), but are still higher than 2009 values. Average LAGC catch rates show a similar trend, increasing to a maximum in 2012, and then decreasing in 2013 and 2014.

Table 31 – Summary of landings and catch rates per area for each scallop permit type (FY2014) (preliminary)

Scallop Fishing Year 2014

LA

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	*	*	*	*	*
Closed Area 2	1,768,679	166	1,255	7.5605	1,409
Nantucket Lightship	957,948	100	629	6.2869	1,524
Hudson Canyon	83,058	19	82	4.3264	1,010
Elephant Trunk	0	0	0	0	0
DelMarVa	2,674,188	273	1,315	4.8178	2,033
Open Area	19,439,861	1,101	8,668	7.8732	2,243

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	0	0	0	0	0
Nantucket Lightship	1,906	3	4	1.2907	492
Hudson Canyon	0	0	0	0	0
Elephant Trunk	0	0	0	0	0
DelMarVa	235,894	387	318	0.8225	741
Open Area	1,405,581	3,006	2,548	0.8476	552

* Less than three vessels

Table 32 – Summary of landings and catch rates per area for each scallop permit type (FY2013)

Scallop Fishing Year 2013

LA

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	489,637	85	657	7.7245	746
Closed Area 2	2,407,521	203	1,535	7.5621	1,568
Nantucket Lightship	1,862,924	184	1,004	5.4543	1,856
Hudson Canyon	2,795,486	383	2,840	7.4154	984
Elephant Trunk	0	0	0	0	0
DelMarVa	0	0	0	0	0
Open Area	26,793,224	1,410	10,181	7.2203	2,632

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	0	0	0	0	0
Nantucket Lightship	38,252	64	56	0.8757	683
Hudson Canyon	634	6	10	1.6606	64
Elephant Trunk	0	0	0	0	0
DelMarVa	0	0	0	0	0
Open Area	2,410,585	4,919	3,852	0.7831	626

Table 33 – Summary of landings and catch rates per area for each scallop permit type (FY2012)

Scallop Fishing Year 2012

LA

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	4,918,575	406	3,040	7.4865	1,618
Closed Area 2	5,472,672	333	2,802	8.415	1,953
Nantucket Lightship	3,070,473	223	1,395	6.2539	2,202
Hudson Canyon	8,699,436	675	4,902	7.2615	1,775
Elephant Trunk	0	0	0	0	0
DelMarVa	196,225	24	217	9.0227	906
Open Area	28,127,128	1,267	10,087	7.9613	2,788

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	0	0	0	0	0
Nantucket Lightship	22,346	37	45	1.2269	492
Hudson Canyon	42,676	123	158	1.2832	270
Elephant Trunk	0	0	0	0	0
DelMarVa	1,353	5	9	1.7574	154
Open Area	2,964,520	5,787	4,022	0.695	737

Table 34 – Summary of landings and catch rates per area for each scallop permit type (FY2011)

Scallop Fishing Year 2011

LA

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	8,570,376	542	3,387	6.2487	2,531
Closed Area 2	2,879,122	181	1,337	7.3873	2,153
Nantucket Lightship	0	0	0	0	0
Hudson Canyon	5,786,273	408	2,420	5.9311	2,391
Elephant Trunk	928,268	155	1,495	9.645	621
DelMarVa	5,680,085	458	3,388	7.3983	1,676
Open Area	28,493,791	1,223	10,253	8.3833	2,779

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	27,273	47	60	1.2833	452
Closed Area 2	0	0	0	0	0
Nantucket Lightship	0	0	0	0	0
Hudson Canyon	346,691	602	466	0.7735	745
Elephant Trunk	1,340	10	16	1.6395	82
DelMarVa	13,306	64	90	1.4122	147
Open Area	2,498,858	5,963	3,757	0.6301	665

Table 35 – Summary of landings and catch rates per area for each scallop permit type (FY2010)

Scallop Fishing Year 2010

LA

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	0	0	0	0	0
Nantucket Lightship	5,630,166	381	2,441	6.4061	2,307
Hudson Canyon	0	0	0	0	0
Elephant Trunk	9,028,820	902	7,727	8.5668	1,168
DelMarVa	5,843,769	447	2,950	6.5989	1,981
Open Area	29,638,612	1,455	12,489	8.5833	2,373

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	0	0	0	0	0
Nantucket Lightship	245,919	476	517	1.0863	476
Hudson Canyon	0	0	0	0	0
Elephant Trunk	16,243	56	91	1.6211	179
DelMarVa	308,602	667	558	0.8367	553
Open Area	1,872,252	5,203	3,151	0.6056	594

Table 36 – Summary of landings and catch rates per area for each scallop permit type (FY2009)

Scallop Fishing Year 2009

LA

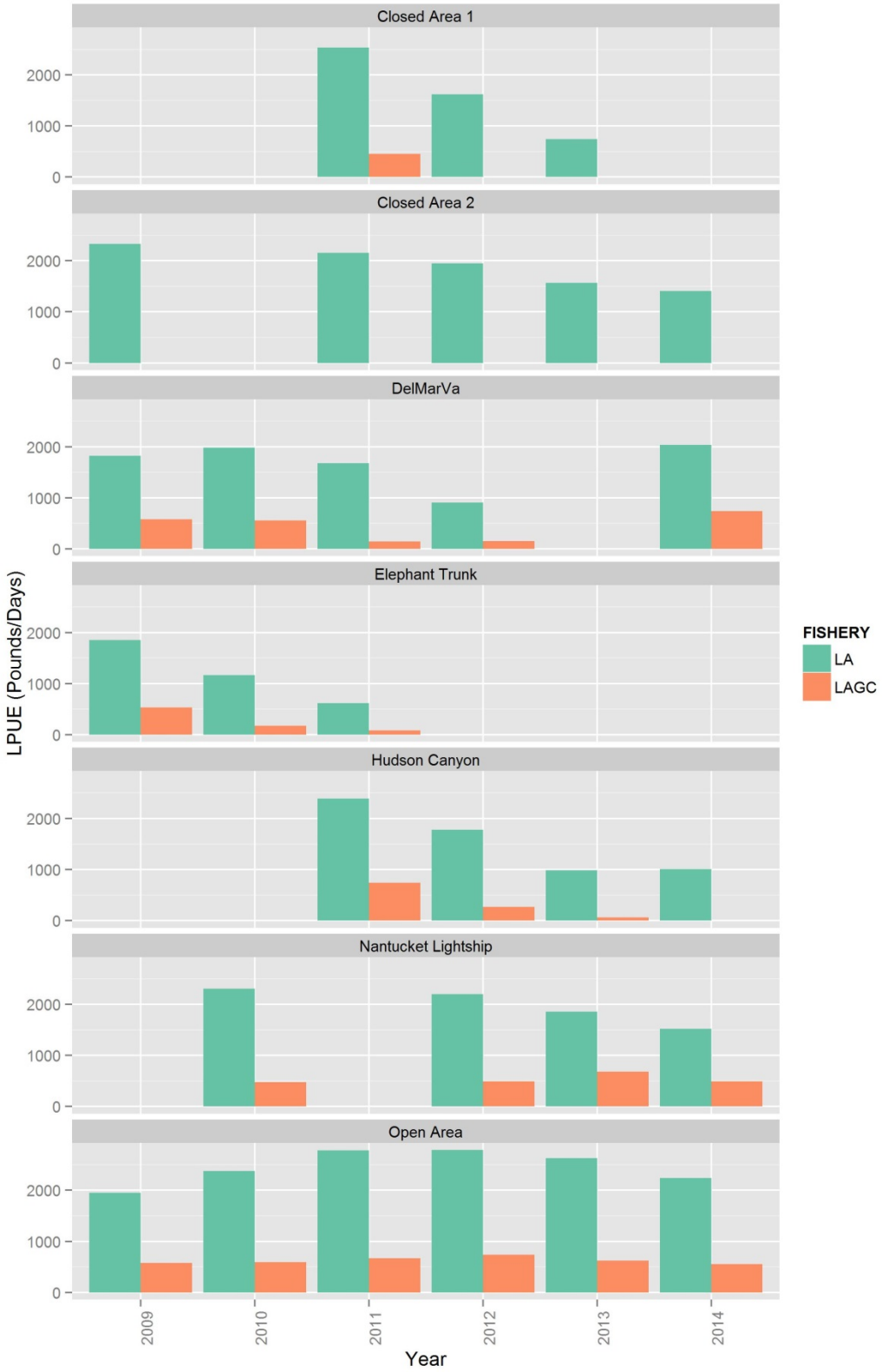
	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	0	0	0	0	0
Closed Area 2	3,288,141	200	1,409	7.0454	2,334
Nantucket Lightship	0	0	0	0	0
Hudson Canyon	0	0	0	0	0
Elephant Trunk	16,292,184	1,240	8,786	7.0852	1,854
DelMarVa	5,355,394	422	2,943	6.9729	1,820
Open Area	24,108,835	1,394	12,383	8.8833	1,947

LAGC

	Landed Pounds	Number of trips	Total Days	Average Trip Duration	LPUE
Closed Area 1	*	*	*	*	*
Closed Area 2	0	0	0	0	0
Nantucket Lightship	*	*	*	*	*
Hudson Canyon	0	0	0	0	0
Elephant Trunk	819,418	1,781	1,544	0.8672	531
DelMarVa	293,114	693	505	0.7281	581
Open Area	3,440,981	9,031	5,973	0.6613	576

* Less than three vessels

Figure 61 – Summary of estimated LPUE by year, area, and permit type



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 over 20% during 2006-2008, to 15% in 2009 -2011 and to about 20% in 2012-2013 compared to less than 10% in 2000-2004. Similarly, the share of 11-20 count scallops increased from 13% in 1999 to 79% in 2011 and 63% in 2013. On the other hand, the share of 30 or more count scallops declined from 37% in 1999 to 1% or less since 2008 (**Table 38**). Larger scallops priced higher than the smaller scallops contributed to the increase in average scallop prices especially since 2010 (Table 39 and **Figure 53**).

Table 37. Scallop landings by market category

Fishyear	UNDER 10 COUNT	11-20 COUNT	21-30 COUNT	>30 COUNT	Grand Total
1999	3,690,533	2,613,754	6,195,369	7,365,692	19,865,348
2000	2,393,703	6,771,024	14,364,895	7,282,469	30,812,091
2001	1,520,424	10,783,931	24,596,256	4,587,499	41,488,110
2002	2,484,107	7,436,720	34,083,568	2,133,778	46,138,173
2003	3,644,668	12,221,010	31,844,817	1,755,259	49,465,754
2004	5,105,290	28,928,288	24,986,628	588,931	59,609,137
2005	6,906,267	31,608,791	11,482,597	1,126,285	51,123,940
2006	13,273,263	28,801,692	10,772,955	705,158	53,553,068
2007	14,903,951	32,021,763	7,518,148	2,227,602	56,671,464
2008	12,293,851	27,677,737	10,229,476	366,744	50,567,808
2009	8,420,979	35,689,194	12,145,131	172,383	56,427,687
2010	8,737,293	35,978,383	10,932,767	66,311	55,714,754
2011	8,564,518	45,261,304	3,247,867	309,435	57,383,124
2012	10,546,525	41,957,522	3,499,366	77,778	56,081,191
2013	8,661,071	24,739,918	5,579,649	131,537	39,112,175

Table 38. Size composition of scallop landings

Fishyear	UNDER 10 COUNT	11-20 COUNT	21-30 COUNT	>30 COUNT	Grand Total
1999	19%	13%	31%	37%	100%
2000	8%	22%	47%	24%	100%
2001	4%	26%	59%	11%	100%
2002	5%	16%	74%	5%	100%
2003	7%	25%	64%	4%	100%
2004	9%	49%	42%	1%	100%
2005	14%	62%	22%	2%	100%
2006	25%	54%	20%	1%	100%
2007	26%	57%	13%	4%	100%
2008	24%	55%	20%	1%	100%
2009	15%	63%	22%	0%	100%
2010	16%	65%	20%	0%	100%
2011	15%	79%	6%	1%	100%
2012	19%	75%	6%	0%	100%
2013	22%	63%	14%	0%	100%

Table 39. Price of scallops by market category (all prices are expressed in 2013 inflation adjusted prices)

Fish year	UNDER 10 COUNT	11-20 COUNT	21-30 COUNT	>30 COUNT	Grand Total
1999	8.3	8.5	7.8	6.9	7.6
2000	9.2	7.0	6.2	6.3	6.6
2001	7.7	4.9	4.6	4.7	4.8
2002	7.1	5.1	4.8	5.6	5.0
2003	6.2	5.1	5.2	5.7	5.3
2004	7.4	6.4	6.0	6.2	6.3
2005	9.4	9.2	9.1	9.0	9.2
2006	6.9	7.6	8.0	7.9	7.5
2007	7.7	7.4	7.1	6.6	7.4
2008	7.7	7.4	7.3	7.1	7.5
2009	8.7	6.7	6.6	6.3	7.0
2010	11.2	8.0	8.7	9.0	8.6
2011	10.5	10.2	10.7	10.1	10.3
2012	10.4	9.8	9.9	9.8	9.9
2013	12.3	11.3	11.4	11.1	11.5

4.4.5 Trends in permits by permit plan and category

Table 40 shows the number of limited access vessels by permit category from 2003 to 2014. The fishery is primarily full-time, with a small number of part-time permits. There are no occasional permits left in the fishery since 2009 because these were converted to part-time small dredge. Of

these permits, the majority are dredge vessels, with a small number of full-time small dredge and full-time trawl permit holders. The permit numbers shown in **Table 40** include duplicate entries because replacement vessels receive new permit numbers and when a vessel is sold, the new owner would get a new permit number. The unique vessels with right-id numbers are shown in **Table 42** for 2008-2012. For example, only 347 out of 356 permits in 2008 belonged to unique vessels. The number of LAGC permits held by limited access vessels are shown in **Table 41**.

Table 40. Number of limited access vessels by permit category and gear

Permit category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Full-time	238	242	248	255	256	254	259	252	253	257	254	251
Full-time small dredge	39	48	57	59	63	56	55	54	53	53	52	52
Full-time net permit	16	15	19	14	12	11	11	11	11	11	12	12
Total full-time	293	305	324	328	331	321	326	317	316	321	318	315
Part-time	10	4	3	3	2	2	2	2	2	2	2	2
Part-time small dredge	19	26	30	34	35	32	34	34	32	33	32	33
Part-time trawl	8	3	-	-	-	-	-	-				
Total part-time	37	33	33	37	37	34	37	38	34	35	34	35
Occasional	3	3	1	2	1	1	-	-	-			
Occasional trawl	8	5	5	-	-	-	-	-	-			
Total occasional	11	8	6	2	1	1	0	0	0	0	0	0
Total Limited access	342	346	363	367	369	356	361	353	351	356	352	350

Note: The permit numbers above include duplicate entries because replacement vessels receive new permit numbers and when a vessel is sold, the new owner would get a new permit number.

Table 41. LAGC permits held by limited access vessels by permit category

AP-YEAR	IFQ	NGOM	Incidental
2008	41	19	87
2009	43	28	116
2010	40	28	114
2011	42	28	114
2012	41	27	119
2013	41	27	118
2014	40	27	115

Note: The permit numbers above include duplicate entries because replacement vessels receive new permit numbers and when a vessel is sold, the new owner would get a new permit number. 2014 numbers are preliminary.

Table 42. Scallop Permits by unique right-id and category by application year

Permit category	2008	2009-2014
Full-time	250	250
Full-time small dredge	52	52
Full-time net boat	11	11
Total full-time	**313**	**313**
Part-time	2	2
Part-time small dredge	31	32
Part-time trawl	0	0
Total part-time	**33**	**34**
Occasional	1	0
Total Limited access	347	347

Table 43 shows that the number of general category permits, including permits held by LA vessels, declined considerably after 2007 as a result of the Amendment 11 provisions. 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 43**). The numbers of LAGC permits by category, excluding the LA vessels that also have an LAGC permit, are shown in **Table 44**. The number of permits includes the permits of the replacement vessels within a given year.

Table 43. General category permit before and after Amendment 11 implementation (including the LAGC permits by Limited access vessels

AP_YEAR		Number of permits qualify under Amendment 11 program			Grand Total
	General category permit (up to 2008)	Limited access general category (A)	Limited access NGOM permit (B)	Incidental catch permit (C)	
2000	2263				2263
2001	2378				2378
2002	2512				2512
2003	2574				2574
2004	2827				2827
2005	2950				2950
2006	2712				2712
2007	2493				2493
2008		342	99	277	718
2009		344	127	301	772
2010		333	122	285	740
2011		288	103	279	670
2012		290	110	280	680
2013		278	97	282	657
2014		263	104	267	634

Table 44. LAGC permits after Amendment 11 implementation (excluding the LAGC permits held by limited access vessels)

AP-YEAR	IFQ	NGOM	Incidental
2008	280	79	173
2009	304	100	190
2010	293	94	172
2011	248	82	166
2012	237	70	163
2013	222	77	149
2014	204	68	136

Note: 2014 is preliminary.

The trends in the estimated number of active limited access vessels are shown in Table 45 by permit plan. Table 46 shows the number of active LAGC vessels by permit category excluding those LA vessels which have both LA and LAGC permits and indicates that there quota has been fished by fewer vessels in 2013 compared to the earlier years.

Table 45. Active vessels by fishyear and permit category (Vessels that landed any amount of scallops, Dealer Data)

Fishyear	FT	PT	FTSD	PTSD	FTTRW	PTTRW	OCTRW	Grand Total
1994	188	9	3	4	24	17	13	258
1995	185	9	2	2	24	12	8	242
1996	183	11	2	5	22	17	6	246
1997	176	8		4	18	16	3	225
1998	182	5	1	2	19	16	2	227
1999	196	8	1	3	14	16	6	244
2000	206	10	1	3	16	16	6	258
2001	212	12	11	6	16	17	6	280
2002	217	12	24	7	16	9	5	290
2003	225	10	30	12	15	6	3	301
2004	230	4	42	18	13	3	3	313
2005	234	3	50	23	12		2	324
2006	243	2	49	28	12			334
2007	248	2	53	30	11			344
2008	243	2	52	28	11			336
2009	244	2	53	31	11			341
2010	249	2	52	32	11			346
2011	250	2	53	32	11			348
2012	252	2	52	30	11			347
2013	250	2	52	30	11			345
2014	241	2	50	28	10			331

Table 46. Number of active vessels with LAGC permits by permit category (VTR data, excludes LA vessels with LAGC permits)

Fishyear	IFQ	INCINDENTAL	NGOM	Grand Total
2009	199	92	14	305
2010	139	76	13	228
2011	138	76	12	226
2012	126	82	19	227
2013	118	70	26	214
2014	111	39	20	170

*Note: The numbers for 2014 is up to September.

4.4.4 Trends in landings by permit category, state and port, and gear type

4.4.4.1 Landings by permit category

Table 47 through **Table 48** describes scallop landings by limited access vessels by gear type and permit category. These tables were obtained by combining the dealer and permit databases. Most limited access category effort is from vessels using scallop dredges, including small dredges. The number of full-time trawl permits has decreased continuously and has been at 11 full-time trawl permitted vessels since 2008 (**Table 40**). Furthermore, according to the 2009-2011 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. There has also been an increase in the numbers of full-time and part-time small dredge vessels after 2002.

Table 48 shows the percent of limited access landings by permit and year. In terms of gear, majority of the scallop landings by the limited access vessels were with dredge gear including the small dredges, with significant amounts also landed by full-time and part-time trawls until 2000. **Table 48** shows that the percentage of landings by FT trawl permits declined after 1998 to about 3% of total limited access scallop landings in 2011. There were only 11 FT trawl permits in 2011. However, 2009-2011 VTR data also show that over 90% of the scallop pounds by the FT trawl permitted vessels are landed using dredge gear (10 vessels) since these vessels are allowed to use dredge gear even though they have a trawl permit. Similarly, all of the part-time trawl and occasional trawl permits are converted to small dredge vessels. Over 80% of the scallop pounds are landed by vessels with full-time dredge and close to 13% landed by vessels with full-time small dredge permits since the 2007 fishing year. Including the full-trawl vessels that use dredge gear, the percentage of scallop pounds landed by dredge gear amounted to over 99% of the total scallop landings in 2009-2011.

Table 47. Scallop landings (lbs.) by limited access vessels by permit category

Fishyear	FT	PT	FT Small Dredge	PT Small Dredge	FT Trawl	PT Trawl	Occasional Trawl
1994	12,992,793	77,668	NA	NA	1,804,974	191,825	4,290
1995	13,752,423	205,147	NA	NA	1,477,777	140,178	45,409
1996	14,185,833	259,791	NA	13,336	1,282,612	376,874	93,375
1997	11,078,071	148,742		19,093	773,243	242,396	NA
1998	9,486,893	84,929	NA	NA	1,111,119	351,722	NA
1999	18,877,937	303,397	NA	15,692	1,382,335	564,111	15,950
2000	29,221,728	599,186	NA	80,741	1,871,048	710,032	14,284
2001	38,707,405	861,087	765,342	208,176	2,578,316	744,057	17,062
2002	42,319,380	918,534	1,757,695	269,284	2,980,542	504,441	31,876
2003	45,461,772	932,815	3,125,474	482,472	2,612,065	272,668	NA
2004	48,873,669	323,389	5,654,387	825,223	2,432,866	125,949	NA
2005	37,935,508	236,757	4,788,085	1,379,360	1,250,771		NA
2006	40,846,955	NA	5,223,125	1,304,877	1,339,748		
2007	43,091,302	NA	6,917,823	1,601,167	1,678,258		
2008	37,617,260	NA	6,117,525	1,298,183	1,536,814		
2009	41,266,837	NA	6,971,699	1,397,169	1,821,156		
2010	42,484,132	NA	6,774,054	1,927,559	1,790,240		
2011	43,662,880	NA	6,944,234	1,651,826	1,908,903		
2012	42,781,924	NA	7,081,245	1,391,171	1,780,017		
2013	30,809,109	NA	4,057,183	937,523	1,226,997		
2014	19,479,493	NA	2,438,280	544,575	700,174		

*Note: Although these vessels have trawl permits, majority of these vessels used dredge gear. As a result, over 90% of the scallop landings by the FT trawl permitted vessels are caught using dredge gear in 2009-2010 according to the VTR data.

Table 48. Percentage of scallop landings (lbs.) by limited access vessels by permit category

Fishyear	FT	PT	FT Small Dredge	PT Small Dredge	FT Trawl	PT Trawl	Occasional Trawl
1994	85.93%	0.51%		0.02%	11.94%	1.27%	0.03%
1995	87.74%	1.31%		0.06%	9.43%		0.29%
1996	87.35%	1.60%		0.08%	7.90%	2.32%	0.57%
1997	90.35%	1.21%		0.16%	6.31%	1.98%	0.00%
1998	85.92%	0.77%		0.00%	10.06%	3.19%	0.03%
1999	89.21%	1.43%		0.07%	6.53%	2.67%	0.08%
2000	89.88%	1.84%		0.25%	5.76%	2.18%	0.04%
2001	88.21%	1.96%		0.47%	5.88%		0.04%
2002	86.75%	1.88%	3.60%	0.55%	6.11%		0.07%
2003	85.96%	1.76%	5.91%	0.91%	4.94%		0.00%
2004	83.90%		9.71%	1.42%	4.18%		0.03%
2005	83.18%		10.50%	3.02%	2.74%		0.03%
2006	83.72%		10.70%	2.67%	2.75%		0.00%
2007	80.58%		12.94%	2.99%	3.14%		0.00%
2008	80.41%		13.08%	2.78%	3.29%		0.00%
2009	79.84%		13.49%	2.70%	3.52%		0.00%
2010	79.84%		12.73%	3.62%	3.36%		0.00%
2011	80.29%		12.77%	3.04%	3.51%		0.00%
2012	80.35%		13.30%	2.61%	3.34%		0.00%
2013	82.85%		10.91%	2.52%	3.30%		0.00%
2014	83.83%		10.49%	2.34%	3.01%		0.00%

*Note: Although these vessels have trawl permits, majority used dredge gear in 2009-2010 and over 90% of the scallop landings by the FT trawl permitted vessels are caught using dredge gear during the same years.

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 49, 2014 numbers are preliminary estimates for the partial fishing year from March 2014 to September 2014). Amendment 11 implemented a limited entry program for the general category fishery allocating 5% of the total projected scallop catch to the general category vessels qualified for limited access. The main objective of the action was to control capacity and mortality in the general category scallop fishery. There is also a separate limited entry program for general category fishing in the Northern Gulf of Maine. In addition, a separate limited entry incidental catch permit was adopted that will permit vessels to land and sell up to 40 pounds of scallop meat per trip while fishing for other species.

During the transition period to the full-implementation of Amendment 11, the general category vessels were allocated 10% of the scallop TAC. Beginning with 2010 fishing year, limited access general category IFQ vessels were allocated 5% of the estimated scallop catch resulting a decline in landings by the general category vessels (Table 49 and Table 50). These tables were obtained from the dealer and permit databases. The trip information obtained from the dealer data shows the permit number but does not specify whether a particular trip was taken as a limited access (LA) or general category (LAGC) trip. Because many vessels had and have both

LA and general category permits, to separate the LA trips from LAGC trips for the same vessel requires some assumptions. If a vessel had both an LA and LAGC-IFQ permit, it was assumed that if scallop landings were equal or less than 400lb. (600lb.) for years up to 2010 (after 2010), that was an LAGC trip. If an LA vessel also had an LAGC-incidental permit, it was assumed that if scallop landings were equal or less than 100lb. that was an LAGC-incidental trip. For the LAGC-NGOM fishery it was assumed that if the scallop landings were equal or less than 200lb., that trip was a LAGC trip, otherwise it was an LA trip. In addition to these issues, there were many trips that were not associated with any valid permit plan (perhaps due to mistakes in the entry of permit number by dealers). Thus, it must be pointed out that the separation of landings by permit plan were estimated from the above assumptions and could differ slightly from actual landings. For example, Table 50 shows that in 2011 fishyear, the *estimated landings* by LAGC vessels including those by vessels with IFQ, NGOM and incidental catch permits and including the LAGC landings by the LA vessels that have both permits, amounted to 5.8% of total scallop landings in that fishyear.

Table 49. *Estimated Landings* by permit plan before and after Amendment 11 implementation in 2010 fishing year.

Fishyear	Gencat & LAGC	LA	NA	Grand Total
1994	125,001	15,128,621	1,203,669	16,457,291
1995	123,952	15,675,688	1,080,425	16,880,065
1996	213,535	16,234,409	759,431	17,207,375
1997	357,684	12,264,001	825,890	13,447,575
1998	164,185	11,042,134	567,277	11,773,596
1999	150,498	21,160,523	368,907	21,679,928
2000	425,364	32,510,711	354,600	33,290,675
2001	1,649,749	43,882,217	191,046	45,723,012
2002	1,124,933	48,784,134	132,652	50,041,719
2003	1,861,075	52,930,243	301,670	55,092,988
2004	3,699,334	58,288,383	652,773	62,640,490
2005	7,723,080	45,750,967	184,078	53,658,125
2006	7,097,155	48,888,678	288,678	56,274,511
2007	5,488,221	53,560,101	621,568	59,669,890
2008	4,785,198	46,842,633	847,472	52,475,303
2009	4,203,751	51,738,924	2,030,811	57,973,486
2010	2,330,701	53,277,449	1,352,837	56,960,987
2011	3,122,403	54,432,220	924,766	58,479,389
2012	2,962,148	53,296,551	899,001	57,157,700
2013	2,438,971	37,201,916	710,662	40,351,549
2014*	1,539,230	23,264,651	405,847	25,209,728

*2014 numbers are preliminary, includes only March 2014 to Sept 2014.

Table 50. *Estimated Landings* by permit plan (Dealer Data)

Fishyear	Gencat & LAGC*	LA	NA	Grand Total
1994	0.76%	91.93%	7.31%	100.00%
1995	0.73%	92.87%	6.40%	100.00%
1996	1.24%	94.35%	4.41%	100.00%
1997	2.66%	91.20%	6.14%	100.00%
1998	1.39%	93.79%	4.82%	100.00%
1999	0.69%	97.60%	1.70%	100.00%
2000	1.28%	97.66%	1.07%	100.00%
2001	3.61%	95.97%	0.42%	100.00%
2002	2.25%	97.49%	0.27%	100.00%
2003	3.38%	96.07%	0.55%	100.00%
2004	5.91%	93.05%	1.04%	100.00%
2005	14.39%	85.26%	0.34%	100.00%
2006	12.61%	86.88%	0.51%	100.00%
2007	9.20%	89.76%	1.04%	100.00%
2008	9.12%	89.27%	1.61%	100.00%
2009	7.25%	89.25%	3.50%	100.00%
2010	4.09%	93.53%	2.38%	100.00%
2011	5.34%	93.08%	1.58%	100.00%
2012	5.18%	93.24%	1.57%	100.00%
2013	6.04%	92.19%	1.76%	100.00%
2014**	6.11%	92.28%	1.61%	100.00%

*Includes landings by LAGC IFQ, NGOM and incidental permits and LAGC landings by LA vessels.
**2014 numbers are preliminary, includes only March 2014 to Sept 2014.

The general category scallop fishery has always been a comparatively small but diverse part of the overall scallop fishery. The number of vessels participating in the general category fishery has continued to rise until 2007 when the New England Fisheries Management Council proposed limiting access in response to concerns of redirected effort from other fisheries. When the limited access general category was implemented, in 2008, there was a corresponding decline in the total number of active vessels. Then again in 2010, there was a decline in the number of active general category vessels when the GC IFQ program began and a "hard" Total Allowable Catch of 5% of the total scallop catch limit was established. These declines are evident in Table 49 and Table 50and Table 46 where the overall number of active vessels and scallop landings dropped, both in 2008 and in 2010.

4.4.4.1 Landings by state and port

The Scallop PDT generally describes changes in the scallop fishery at the community level based on both port of landing, and home port state. A port of landing is the actual port where fish and shellfish have been landed, where a home port is the port identified by a vessel owner on a vessel permit application and is where supplies are purchased and crew is hired. Statistics based on port of landing begin to describe the benefits that other fishing related businesses (such as dealers and processors) derive from the landings made in their port. Alternatively, statistics

based on homeport give an indication of the benefits received by vessel owners and crew from that port. However, during this analysis the PDT observed that many vessels declare a primary port for the year and it does not always match up with the actual port the vessel landed the majority of scallop catches for the year. Therefore, these results should take that into consideration.

In terms of home state, the majority of the limited access vessels are from MA, followed by NJ, VA and NC (Table 51). The same is true in terms of primary state of landing, however, the number of vessels with a primary port of VA has increased and those with a primary port of NC have declined since 2009.

Table 51. Number of limited access permits by home state (Permit data)

HPST	2009	2010	2011	2012	2013	2014
CT	10	10	10	10	9	9
FL	4	4	4	4	3	3
MA	148	147	152	153	151	149
ME	3	3	3	3	3	3
NC	42	38	39	40	40	40
NJ	92	92	95	94	95	95
NY	3	3	2	2	2	1
PA	5	4	3	3	3	3
RI	3	3	2	2	2	2
VA	44	46	43	45	44	45
Grand Total	**354**	**350**	**353**	**356**	**352**	**350**

The largest numbers of permitted limited access scallop vessels have home ports of New Bedford, MA and Cape May, NJ, which represent 39% and 21% of all limited access vessels, respectively (Table 52). The number of vessels homeported in some ports on the periphery of scallop fishing grounds has declined over time. Many ports have remained relatively stable in terms of LA vessels, but in ports like Newport News, VA and Norfolk, VA the number of LA vessels homeported in those areas has decreased between 2001 and 2011. On the other hand, some southern ports like New Bern, NC, Beaufort, NC and Seaford, VA have seen increases in the number of LA vessels homeported in those areas. Several southern ports have remained constant such as Wanchese, NC, Lowland NC, and Hampton, VA. Highlighting the difference between port of landing and home port however, are ports like New Bern, NC and Wanchese, NC, both of which are the home ports of a number of vessels with scallop landings but where no (or very little) landings were made. It should also be noted that some scallop companies have merged over time, and while a vessel may still be homeported in one state, it may actually be owned by a company from another state, and product landed in that state compared to the homeport of the vessel. These nuances cannot easily be tracked.

Table 52. Number of permitted limited access scallop vessels. By homeport, 2001-2014

State	Homeport	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
MA	NEW BEDFORD	90	97	102	111	125	131	133	132	134	133	137	139	136	134
NJ	CAPE MAY	36	42	50	54	68	71	73	68	67	67	73	75	76	76
VA	NEWPORT NEWS	21	21	21	22	23	19	19	18	17	18	16	17	17	17
VA	SEAFORD	2	3	4	4	5	5	5	5	6	7	12	14	13	13
NC	NEW BERN	8	8	8	8	13	12	14	11	12	11	11	10	11	11
NJ	BARNEGAT LIGHT	9	8	8	10	11	10	10	10	10	10	10	10	10	10
NC	WANCHESE	8	7	7	6	6	8	8	8	8	8	8	8	8	8
NC	LOWLAND	7	7	8	9	8	8	8	7	7	7	7	7	7	6
NJ	POINT PLEASANT	3	3	3	4	3	3	3	6	7	9	6	4	4	4
VA	HAMPTON	6	6	6	7	4	8	6	6	6	5	6	6	6	7
CT	NEW LONDON	1	1	1	1	3	5	5	5	5	5	5	5	4	4
MA	BOSTON	12	11	10	7	7	7	7	6	5	6	5	4	4	5
MA	FAIRHAVEN	10	8	8	7	8	7	5	4	4	4	5	6	7	7
NC	BEAUFORT							1	2	5	4	5	6	5	5
VA	NORFOLK	27	27	27	22	13	11	11	11	11	12	5	4	4	4
CT	STONINGTON	4	6	7	7	4	4	5	4	4	4	4	4	4	4
PA	PHILADELPHIA	5	5	6	6	5	5	5	5	5	4	3	3	3	3
RI	POINT JUDITH	1	1	2	1	2	3	3	3	3	2	3	2	2	2

In terms homeport state, most LA trips are from vessels with homeports in MA, followed by NJ, then VA and NC (**Table 54**). The results are very similar in terms of scallop catch by homeport state of vessels (

Table 55). The results are very similar when summarized by the primary port identified by the vessel, with some important differences. For example, vessels with homeports in some states like Florida, Pennsylvania and Rhode Island are not landing scallops in those states, so the catch is distributed in other primary states of landing such as MA, NJ, and VA (**Table 57**). For North Carolina for example, more catch is attributed to vessels homeported in NC, but much of those landings are being landed in other states. Furthermore, there are still vessels that declare the primary port to be NC, but based on dealer records, that catch is not being landed in NC.

Table 53. Number of limited access permits by primary state (Permit data)

PPST	2009	2010	2011	2012	2013	2014
CT	10	10	10	10	9	9
MA	149	148	153	154	152	151
ME	3	3	3	3	3	3
NC	26	24	24	25	26	26
NJ	97	94	97	97	97	95
NY	2	3	2	2	2	1
PA	1	1	1	1	1	1
RI	3	3	2	2	2	2
VA	63	64	61	62	60	62
Grand Total	**354**	**350**	**353**	**356**	**352**	**350**

Table 54. Number of limited access trips by home state (excluding LAGC trips)

Home State	2009	2010	2011	2012	2013	2014
CT	92	92	93	98	59	30
FL	46	41	39	39	21	13
MA	1,334	1,338	1,293	1,290	1,008	594
ME	24	25	32	25	21	11
NC	420	332	359	349	272	171
NJ	951	1,010	833	835	722	424
NY	36	25	19	23	18	6
PA	54	39	31	46	35	17
RI	21	23	15	17	13	11
VA	436	427	393	391	324	177

Table 55. Scallop landings by home state of landing for limited access vessels (excluding LAGC trips)

State	2009	2010	2011	2012	2013	2014
CT	1,671,132	1,653,705	1,725,970	1,705,315	1,089,217	568,371
FL	603,183	547,730	603,549	542,016	282,815	191,460
MA	24,786,691	24,991,691	25,600,949	25,298,809	17,675,733	10,417,443
ME	419,850	416,240	513,595	481,804	316,595	110,666
NC	5,046,205	4,472,765	5,142,301	5,057,049	3,132,035	2,193,256
NJ	11,341,917	12,895,577	12,601,420	11,994,651	8,907,305	11,118,006
NY	422,543	310,400	261,909	245,561	173,391	NA
PA	683,509	552,992	387,755	372,035	249,037	NA
RI	403,023	427,099	370,684	382,473	283,454	220,612
VA	6,714,116	6,858,909	6,612,304	6,494,402	4,533,545	2,885,228

Table 56. Number of limited access trips by primary state of landing (excluding LAGC trips)

State	2009	2010	2011	2012	2013	2014
CT	92	92	93	98	59	30
MA	1,343	1,348	1,305	1,302	1,015	597
ME	24	25	32	25	21	11
NC	269	200	204	211	170	80
NJ	1,009	1,040	867	904	769	450
NY	23	25	19	23	18	NA
PA	11	11	9	8	7	NA
RI	21	23	15	17	13	11
VA	622	588	563	525	421	266

Table 57. Scallop landings by primary state of landing for limited access vessels (excluding LAGC trips)

State	2009	2010	2011	2012	2013	2014
CT	1,671,132	1,653,705	1,725,970	1,705,315	1,089,217	568,371
MA	24,932,641	25,104,066	25,733,949	25,422,389	17,775,783	10,465,243
ME	419,850	416,240	513,595	481,804	316,595	110,666
NC	2,770,711	2,421,264	2,622,506	2,683,507	1,810,390	921,027
NJ	11,813,389	13,054,188	12,825,188	12,267,248	8,880,892	11,309,542
NY	265,543	310,400	261,909	245,561	173,391	NA
PA	163,449	168,220	196,808	147,000	129,918	NA
RI	403,023	427,099	370,684	382,473	283,454	220,612
VA	9,652,431	9,571,926	9,569,827	9,238,818	6,183,487	4,267,786

LAGC IFQ vessels are distributed up and down the coast as well. The number of LAGC IFQ trips for these vessels have been summarized by both homeport state and primary port state as

identified by the permit owner (**Table 58** and **Table 59**). There are some differences, but overall the number of permits are similar. The vessels homeported in MA and NJ landed the major proportion of scallops since 2009 (**Table 60**).

Table 58. Number of LAGC-IFQ permits by home state (excludes LA vessels, Permit data)

HPST	2008	2009	2010	2011	2012	2013	2014
CT	5	5	4	1	3	3	3
DE	3	3	3	3	3	3	3
FL	2	2					
GA	2	1	1				
MA	98	111	107	95	89	84	79
MD	7	11	10	9	8	7	5
ME	26	22	16	12	11	8	6
NC	32	39	40	30	29	25	21
NH	9	10	7	6	6	5	5
NJ	62	69	75	62	56	57	53
NY	19	20	17	17	18	17	17
PA	1	1	1	1	1	1	1
RI	5	5	6	7	7	6	6
TX					1	1	1
VA	9	5	6	5	5	5	4
Grand Total	**280**	**304**	**293**	**248**	**237**	**222**	**204**

Table 59. Number of LAGC-IFQ permits by primary state (excludes LA vessels, Permit data)

PPST	2008	2009	2010	2011	2012	2013	2014
CT	5	5	4	1	3	3	3
DE	1	1	1	1	1	1	1
FL	2	3	1	1			
GA	2	1	1				
MA	101	113	109	97	90	85	80
MD	10	14	13	12	11	10	8
ME	23	20	14	11	11	8	6
NC	30	36	39	29	30	26	22
NH	8	9	6	5	5	4	4
NJ	64	70	75	62	56	57	53
NY	18	20	17	17	18	17	17
RI	6	6	7	7	7	6	6
VA	10	6	6	5	5	5	4

Table 60. Scallop landings(lb.) by home state for LAGC-IFQ vessels (excluding IFQ trips by LA vessels, VTR and permit data)

HPST	2009	2010	2011	2012	2013	2014*
CT	NA	NA	NA	48,146	37,214	14,829
DE	27,532	NA	NA	NA	NA	NA
MA	560,247	664,736	979,306	1,202,558	946,677	416,851
MD	502,948	140,291	29,414	11,691	640	91,028
ME	NA	NA	NA	NA	NA	5,925
NC	10,475	3,582	2,456	3,120	3,122	3,825
NH	NA	2,120	1,478	10,067	NA	NA
NJ	2,066,436	983,242	1,554,841	1,276,496	1,065,371	574,798
NY	783,800	221,969	383,017	316,507	200,730	117,476
RI	113,024	82,810	115,402	73,720	52,693	44,117
VA	65,402	135,829	12,517	3,885	5,219	33,265
Grand Total	**4,139,972**	**2,241,120**	**3,084,822**	**2,949,325**	**2,315,868**	**1,304,199**

*Notes: 2014 numbers are preliminary. "NA" indicates that either there were no landings or that the data could not be shown for the confidentiality reasons because the number of vessels was less than 3.

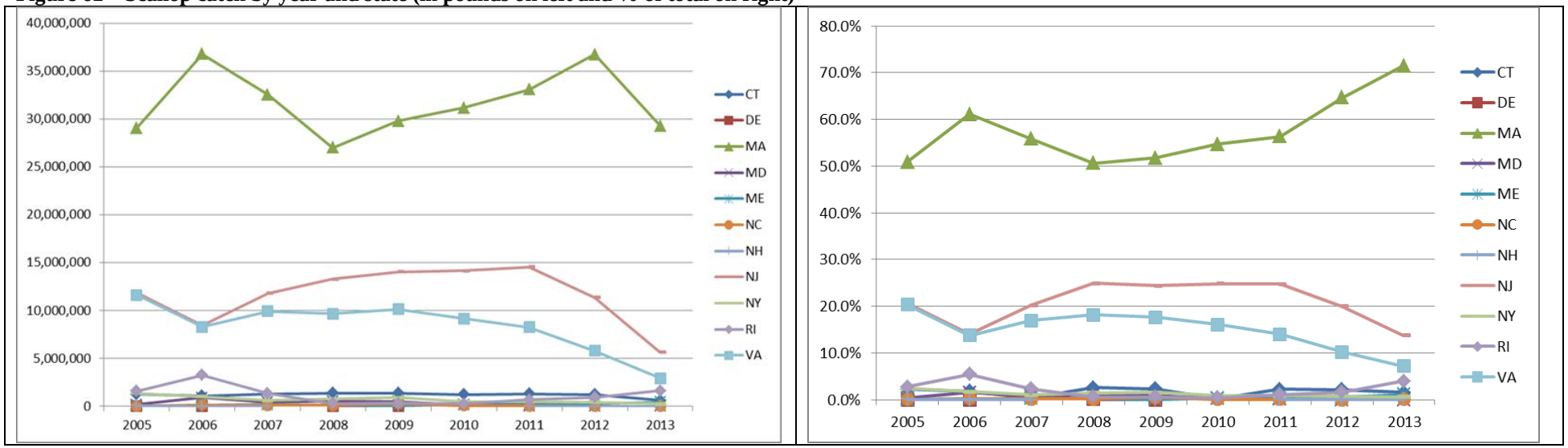
Atlantic Coastal Cooperative Statistics Program (ACCSP) also tracks scallop catch by dealer in each state. All scallop catch from both state and federal vessels has been summarized by calendar year and state (Table 61 and Figure 62). These data are non-confidential and may not reflect true totals as confidential data has been removed; note these landings are not based on where the vessel is from, but where the product was reported as landed. The state of Massachusetts has had over 50% of total scallop landings since 2005, and that has increased over 60% in 2012 and over 70% in 2013. At the same time landings in both NJ and VA were about 20% each of total landings, and NJ has fallen to about 15% of total catch in 2013, and VA is below 10%. Many of the other states are more stable; with the exception of Rhode Island which has seen an increase in total percent of landings and revenues in recent years (was less than 1% of total catch in 2008 and is about 4% of total catch in 2013) (Table 62 and Figure 63). In addition, the state of Maine has also seen an increase in total percentage of landings and revenue, less than one percent of both for all years, and over 1% in 2013. This increased catch and revenue from Maine is mostly from increased catches in state waters.

- **Scallop Landings – By all dealers per state (in pounds and percent of total)**

Table 61 – Scallop catch by state (ACCSP dealer data)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
CT	1,272,129	1,103,649	1,312,897	1,385,402	1,373,807	1,259,808	1,317,861	1,231,244	639,702
DE	12,569	15,717		37,612	20,859				
MA	29,081,254	36,787,335	32,538,199	27,011,286	29,781,715	31,155,911	33,091,860	36,725,263	29,277,441
MD	209,825	931,296	449,770	568,321	516,480	149,481	53,105	11,498	
ME	18,001	153,992	176,718	136,338	79,170	200,606	182,234	294,957	447,568
NC	41,314	143,908	131,305	108,043	298,257	79,676	53,866	6,637	23,346
NH	72,052	19,430	2,021		550		890	6,343	22,959
NJ	11,833,245	8,457,473	11,807,580	13,281,508	14,044,545	14,170,590	14,544,802	11,378,797	5,651,654
NY	1,400,276	1,040,441	619,411	782,133	909,242	507,509	522,346	429,877	255,539
RI	1,591,182	3,282,626	1,356,814	309,921	354,820	267,240	690,412	944,263	1,647,589
VA	11,634,508	8,302,261	9,915,741	9,684,732	10,136,881	9,167,498	8,260,487	5,798,490	2,958,489

Figure 62 – Scallop catch by year and state (in pounds on left and % of total on right)

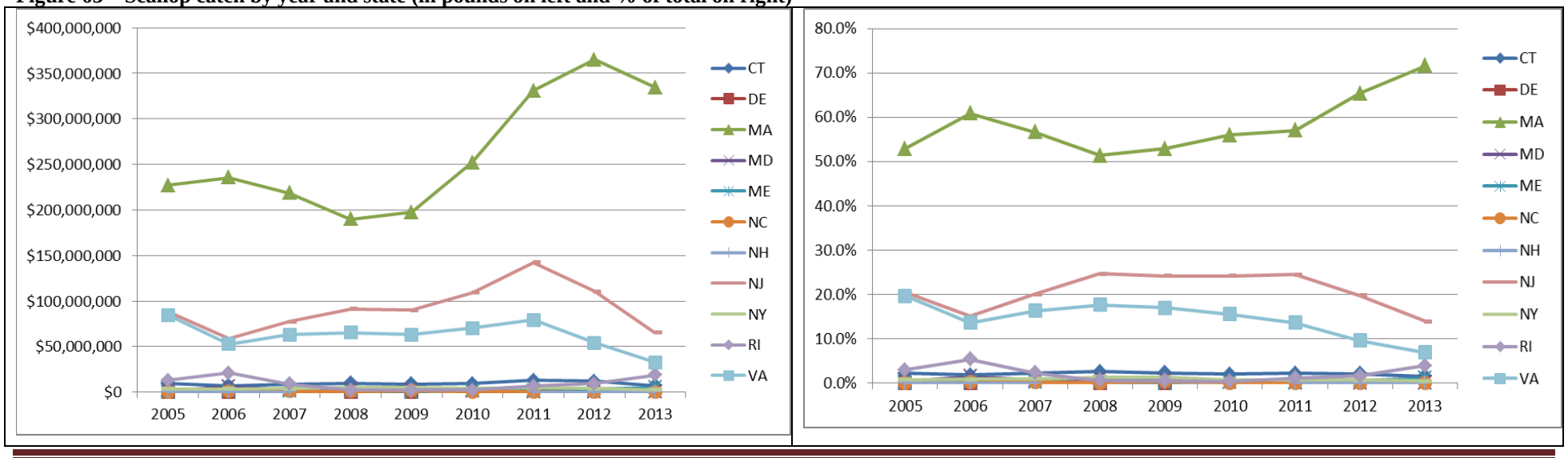


- **Revenue – By all dealers per state (in pounds and percent of total)**

Table 62 – Scallop revenue by state (ACCSP dealer data)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
CT	$9,760,606	$7,229,310	$8,605,213	$9,861,382	$8,866,068	$9,458,061	$13,003,692	$12,005,054	$7,219,183
DE	$101,524	$98,511		$256,261	$142,328				
MA	$227,117,156	$235,565,032	$218,280,795	$189,891,360	$197,280,476	$252,253,339	$330,943,512	$364,863,779	$334,552,061
MD	$1,608,916	$6,201,042	$2,808,970	$3,753,439	$3,127,965	$1,162,504	$503,534	$120,691	
ME	$154,139	$1,246,918	$1,406,084	$1,012,640	$588,746	$1,618,862	$1,820,409	$3,285,557	$5,505,984
NC	$281,761	$974,257	$831,161	$675,369	$1,777,610	$566,496	$522,501	$63,914	$257,974
NH	$487,407	$112,046	$16,411		$3,978		$8,701	$79,730	$263,457
NJ	$88,482,451	$58,537,919	$77,359,202	$91,317,139	$90,150,183	$109,117,836	$142,505,107	$110,559,547	$65,330,585
NY	$3,617,174	$3,519,392	$3,871,617	$5,050,356	$4,957,971	$3,778,153	$4,960,137	$4,082,955	$2,601,565
RI	$13,146,785	$20,821,954	$8,962,748	$2,168,955	$2,334,258	$2,156,250	$6,833,783	$9,190,809	$18,657,781
VA	$84,595,114	$52,764,318	$63,012,907	$65,534,006	$63,312,434	$70,204,042	$79,427,167	$54,076,122	$32,610,231

Figure 63 – Scallop catch by year and state (in pounds on left and % of total on right)



4.4.4.1.1 Scallop revenue by port

The top rated ports in terms of scallop revenue in 2013 are summarized in **Table 63**. New Bedford, MA by far has the highest revenues from scallops of all other ports, with over $300 million dollars annually since 2011. Cape May and Barnegat Light NJ rank second and third. Newport News used to have a higher share of scallop revenue, but was about the same as Seaford VA in 2013 ($15 million). Hampton, VA also used to rank higher in terms of overall scallop related revenue, but that port has fallen behind several others with only about $2 million dollars overall in 2013. Stonington, CT used to rank several spots higher, but has fallen behind several ports in Rhode Island recently that have increased scallop revenue.

Table 63 – Top 25 scallop ports in 2013 by landed value, including landed value from 2008-2013

Port	ST	2008	2009	2010	2011	2012	2013
NEW BEDFORD	MA	176,084,968	183,956,353	235,735,846	300,332,638	332,130,950	307,171,485
CAPE MAY	NJ	56,004,412	53,142,451	65,111,480	81,422,986	60,561,509	25,880,949
BARNEGAT LIGHT	NJ	17,061,549	16,049,848	19,119,909	25,738,146	22,085,071	18,133,941
SEAFORD	VA	14,360,003	14,597,444	15,755,426	20,380,451	19,421,600	15,307,697
NEWPORT NEWS	VA	36,567,285	34,910,323	42,836,752	45,434,012	26,173,003	15,218,573
FAIRHAVEN	MA	9,737,822	10,633,254	11,165,513	18,177,645	17,004,180	15,063,811
POINT PLEASANT	NJ	8,524,280	10,143,987	9,276,147	15,426,912	13,822,873	11,087,209
POINT JUDITH/ NARRAGANSETT	RI	1,388,016	758,732	1,756,342	4,136,973	4,087,135	8,732,105
NEWPORT	RI	776,770	1,577,167	79,069	1,433,240	3,448,943	8,123,275
STONINGTON	CT	5,615,816	4,381,095	10,581,215	6,330,626	8,440,970	6,675,622
CHATHAM	MA	1,780,119	591,582	1,882,971	2,519,249	2,871,277	3,650,746
WILDWOOD	NJ	3,638,704	3,464,599	5,133,869	5,057,859	4,735,600	3,421,886
ATLANTIC CITY	NJ	1,647,595	1,297,102	833,546	2,120,186	1,963,282	2,904,928
PROVINCETOWN	MA	349,928	488,251	1,096,276	2,062,982	2,885,603	2,591,655
AVALON	NJ	*	*	*	*	*	*
HAMPTON	VA	14,115,580	12,832,253	10,353,503	13,315,444	8,417,654	2,061,279
NORTH KINGSTOWN	RI	*	*	*	*	*	*
BARNSTABLE	MA	327,031	156,469	386,651	1,140,121	1,170,677	1,400,484
SANDWICH	MA	327,636	488,617	568,918	494,531	1,137,143	1,249,910
MONTAUK	NY	1,147,678	1,405,719	2,862,578	2,639,450	2,025,683	994,017
PEMBROKE	ME	46,011	35,108	228,245	214,007	245,602	963,518
SHINNECOCK/ HAMPTON BAYS	NY	732,033	880,868	647,547	934,936	943,970	956,400
LUBEC	ME		67,255	139,993	243,438	410,370	950,852
BRIELLE	NJ	*	*	*	*	*	*
GLOUCESTER	MA	394,747	188,642	437,464	3,780,788	4,456,018	788,089

* Cannot report less than 3 vessels, data pulled July 9, 2014
*** Note: Barnegat Light NJ includes Barnegat Light/Long Beach; North Kingstown RI includes Davisville and Davisville(Community); and Barnstable MA includes Cotuit, Hyannis, Hyannisport, and Osterville

4.4.4.2 Landings by gear type

Essentially all LA effort is with dredge gear. A LA vessel can specify gear annually, but there are currently no LA permits registered as trawl gear. Most general category effort is, and has been from vessels using scallop dredge. The total scallop pounds and number of vessels by gear type for all LAGC IFQ permits are summarized in **Table 64**. There is about 500,000 pounds of scallops landed annually by trawl gear, and it seems that some vessels declare the gear type as scallop trawl and some as "other trawl", but the actual gear types are likely similar.

Table 64 – Scallop landings and number of LAGC IFQ vessels by gear type
** Less than 3 vessels not shown*

		DREDGE,SCALLOP	TRAWL,OTHER	TRAWL,SCALLOP	DREDGE,OTHER	MISC
1994	lbs	144,139	9,564	*	*	260
	vessels	33	42	*	*	4
1995	lbs	501,910	43,585	11,797	4,812	1,146
	vessels	91	48	4	4	5
1996	lbs	578,884	19,460	*	1,352	3,314
	vessels	101	49	*	7	13
1997	lbs	682,270	30,227	0	3,253	3,465
	vessels	118	55	0	6	9
1998	lbs	334,930	19,677	*	6,049	2,443
	vessels	100	52	*	10	8
1999	lbs	236,482	17,537	3,970	18,322	599
	vessels	87	61	5	10	3
2000	lbs	303,168	173,827	8,179	6,446	1,411
	vessels	78	91	3	7	9
2001	lbs	1,254,153	404,709	28,276	91,939	6,518
	vessels	122	118	6	4	7
2002	lbs	1,266,144	74,686	41,977	21,888	919
	vessels	147	104	9	3	3
2003	lbs	1,590,575	171,511	196,376	22,614	*
	vessels	155	116	17	6	*
2004	lbs	2,499,393	422,426	340,921	36,260	2,359
	vessels	218	173	34	8	10
2005	lbs	4,808,194	721,039	885,559	187,571	*
	vessels	280	175	56	24	*
2006	lbs	5,583,477	399,909	549,745	189,786	5,431
	vessels	369	151	58	28	5
2007	lbs	4,519,800	222,931	398,883	142,044	724
	vessels	280	124	30	26	4
2008	lbs	2,596,790	525,675	290,179	88,761	1,502
	vessels	130	62	21	9	5
2009	lbs	2,690,335	840,019	376,905	72,766	*
	vessels	135	57	28	8	*

2010	lbs	1,603,950	238,774	175,610	63,795	0
	vessels	102	41	16	11	0
2011	lbs	2,428,282	321,756	189,703	75,543	*
	vessels	94	42	15	9	*
2012	lbs	2,449,062	241,346	170,905	134,958	2,785
	vessels	94	40	17	11	3
2013	lbs	2,142,323	159,629	131,343	59,794	0
	vessels	102	29	13	8	0

4.4.5 Dependence on the scallop fishery

Many scallop vessels have permits in other fisheries, but most are not very active in other fisheries. For example, most LA scallop vessels have some type of bluefish, dogfish, herring, monkfish, multispecies, skate, squid-mackerel-butterfish, summer flounder, surf clam, and tilefish permit (**Table 65**). Similarly, most LAGC permits also have other permits (**Table 66**).

Table 65 – Number of LA scallop vessels with permits in other fisheries, and percentage of LA vessels with those permits

Fishery Management Plan	Limited Access Vessels	%
Black Sea Bass	143	41
Bluefish	320	93
Dogfish	333	97
Herring	292	85
HMS--Incidental squid trawl	30	9
Lobster	222	64
Monkfish	342	99
Multispecies	336	97
NAFO Regulatory Area	0	0
Ocean Quahog	282	82
Red Crab	282	82
Scallop Limited Access	345	100
Scallop LA General Category	180	52
IFQ	40	12
NGOM	27	8
Incidental	113	33
Scup	135	39
Skates	314	91
Squid-Mackerel-	327	95

Butterfish		
Summer Flounder	295	86
Surf Clam	282	82
Tilefish	307	89

Table 66 - Number of LAGC scallop vessels with permits in other fisheries, and percentage of LAGC vessels with those permits (IFQ, NGOM, and Incidental)

Fishery Management Plan	LAGC-IGQ	%	LAGC-NGOM	%	LAGC-Incidental	%
Black Sea Bass	96	40	18	19	129	51
Bluefish	221	91	87	92	222	88
Dogfish	221	91	90	95	239	94
Herring	197	81	91	96	214	85
HMS--Incidental squid trawl	14	6	2	2	24	9
Lobster	144	59	73	77	180	71
Monkfish	234	96	91	96	243	96
Multispecies	203	84	89	94	232	92
NAFO Regulatory Area	0	0	0	0	0	0
Ocean Quahog	156	64	55	58	194	77
Red Crab	174	72	70	74	203	80
Scallop Limited Access	40	16	27	28	113	45
Scallop LA General Category						
IFQ	243	100				
NGOM		0	95	100		
Incidental		0			253	100
Scup	102	42	22	23	137	54
Skates	225	93	85	89	227	90
Squid-Mackerel- Butterfish	216	89	86	91	228	90
Summer Flounder	146	60	38	40	191	75
Surf Clam	153	63	58	61	194	77
Tilefish	199	82	75	79	226	89

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 (90%) derived more than 90% of their revenue from the scallop fishery in 2013, as well as previous years (**Table 67**). Comparatively, part-time limited access vessels were less dependent on the scallop fishery in 2013, with only 39% of part-time vessels earning more than 90% of their revenue from scallops,

and even fewer part-time vessels heavily dependent on scallop revenues in earlier years (Table 67).

Table 68 shows that general category permit holders (IFQ and NGOM) are less dependent on scallops compared to vessels with limited access permits. It is important to note that this table also includes data for all vessels with a LAGC permit, including vessels that also have a LA scallop permit. Therefore, the level of dependence on scallops is inflated since LA activity is included. For example, of the 243 LAGC IFQ permits, 40 of those permit have LA scallop permits as well, similarly 27 of the 95 NGOM permits are on vessels with LA scallop permits as well (Table 66). In 2013, about 39% of IFQ permitted vessels earned greater than 90% of their revenue from scallops, and about 32% of active NGOM permitted vessels, both including vessels with LA permits as well.

Table 67 – Number of LA vessels based on level of dependence on scallop revenue for 2008-2013 (full time and part time vessels)

	2008		2009		2010		2011		2012		2013	
	FULLTIME	PARTTIME	FULLTIME	PARTTIME	FULLTIME	PARTTIME	FULLTIME	PARTTIME	FULLTIME	PARTTIME	FULLTIME	PARTTIME
<75%	9	14	5	15	8	11	9	11	5	14	16	15
<90%	14	7	18	4	12	9	12	11	22	4	14	5
90-100%	288	12	288	16	294	15	294	13	289	16	283	13
total vessels	311	33	311	35	314	35	315	35	316	34	313	33

Table 68 – Number of LAGC vessels based on level of dependence on scallop revenue for 2008-2013 (IFQ and NGOM)

	2008		2009		2010		2011		2012		2013	
	IFQ	NGOM	IFQ	NGOM	IFQ	NGOM	IFQ	NGOM	IFQ	NGOM	IFQ	NGOM
0%	49	62	46	75	72	65	52	53	66	46	63	40
<10%	48	2	35	7	35	5	32	4	17	5	18	8
<50%	33	1	36	3	28		25	2	24	2	20	4
<75%	29	1	41	2	22	2	19	3	16	2	16	5
<90%	20	0	18	2	16	3	18	3	18	5	17	5
90-100%	99	19	118	23	85	26	88	24	85	25	84	30
total vessels	278	85	294	112	258	101	234	89	226	85	218	92

Finally, the total landed value, percentage of landed value, and number of vessels that landed scallops and other species is summarized in **Table 69** for LA scallop vessels and **Table 70** for LAGC vessels (including vessels that have both a LA and LAGC permit). For the fishery overall, less than 5% of all full-time LA revenue are from other species, primarily including summer flounder squid, monkfish, and black sea bass. About 20-35% of total revenue for part-time LA vessels is from other species depending on the year. About 10% from summer flounder for most years and an increasing proportion from menhaden, shrimp, other shellfish, black sea bass, scup and squid. However, the number of vessels that are participating in these other fisheries has remained relatively stable since 2008. For the LAGC fishery the overall percentage of landed value is lower for scallops, and the number of other species landed more diverse compared to the LA fishery, including several groundfish species like winter flounder, cod and haddock, as well as lobster.

Table 69 – Landed value, percentage of landed value, and number of LA vessels with landings by species (2008-2013)

		Landed value (by fishing year)						Percentage of landed value						Number of vessels					
Permit cat	Species	2008	2009	2010	2011	2012	2013	2008	2009	2010	2011	2012	2013	2008	2009	2010	2011	2012	2013
FULLTIME	SCALLOP, SEA	317,310,783	325,237,104	413,794,716	526,846,291	504,057,212	413,624,441	96.9	97.7	97.7	97.7	97.6	96.8	309	309	314	315	315	313
FULLTIME	FL, SUMMER	1,775,421	1,870,286	2,275,319	2,802,612	3,061,089	3,323,450	0.5	0.6	0.5	0.5	0.6	0.8	66	71	85	74	67	63
FULLTIME	SQUID (LOLIGO)	1,447,941	1,077,803	1,462,675	1,458,535	1,929,673	3,123,985	0.4	0.3	0.3	0.3	0.4	0.7	29	22	31	35	25	28
FULLTIME	ANGLER	2,484,743	1,692,836	1,393,661	1,897,651	1,880,317	1,380,435	0.8	0.5	0.3	0.4	0.4	0.3	276	246	231	218	228	236
FULLTIME	SEA BASS, BLACK	371,942	368,161	589,010	745,330	540,569	1,062,581	0.1	0.1	0.1	0.1	0.1	0.2	26	29	33	36	27	32
PARTTIME	SCALLOP, SEA	11,327,036	10,577,332	17,403,641	18,662,455	16,049,476	11,780,646	72.8	73.5	80.4	76.9	71.3	63.0	32	34	35	35	33	33
PARTTIME	FL, SUMMER	1,087,822	1,404,000	1,751,846	1,992,516	2,380,226	1,952,183	7.0	9.8	8.1	8.2	10.6	10.4	21	22	24	22	20	20
PARTTIME	MENHADEN	115,935	445,219	665,226	1,390,821	1,826,175	1,637,906	0.7	3.1	3.1	5.7	8.1	8.8	3	3	5	4	3	3
PARTTIME	SHRIMP,BROWN	939,432	635,508	338,278	347,243	435,023	727,151	6.0	4.4	1.6	1.4	1.9	3.9	9	9	7	4	6	8
PARTTIME	OTHER SHELLFISH	580,818	189,858	166,019	296,558	474,309	643,971	3.7	1.3	0.8	1.2	2.1	3.4	9	8	5	4	7	8
PARTTIME	SEA BASS, BLACK	144,694	149,577	323,011	392,776	497,212	580,045	0.9	1.0	1.5	1.6	2.2	3.1	19	17	20	18	17	18
PARTTIME	SCUP	147,501	80,683	155,551	223,100	258,452	423,339	0.9	0.6	0.7	0.9	1.1	2.3	10	13	18	17	13	16
PARTTIME	SQUID (LOLIGO)	280,324	231,368	111,947	236,300	108,544	267,880	1.8	1.6	0.5	1.0	0.5	1.4	16	16	13	17	15	10

NOTE: contains only species that accounted for at least 1% of the landed value for that permit category (or otherwise at least the top 5 species landed in terms of value)

* cannot report if less than three vessels

Table 70 - Landed value, percentage of landed value, and number of LAGC vessels with landings by species (2008-2013)

		Landed value (by fishing year)						Percentage of landed value						Number of vessels					
	Species	2008	2009	2010	2011	2012	2013	2008	2009	2010	2011	2012	2013	2008	2009	2010	2011	2012	2013
IFQ	SCALLOP, SEA	55,123,115	62,165,227	64,626,630	90,055,541	84,570,665	68,837,990	55.0	59.9	58.0	62.3	62.9	60.1	229	248	187	182	160	155
	FLOUNDER, SUMMER	4,331,549	5,061,507	6,757,012	8,450,324	8,724,876	8,339,104	4.3	4.9	6.1	5.8	6.5	7.3	124	122	125	114	104	100
	FLOUNDER, WINTER	4,166,554	3,824,153	3,066,558	4,631,078	5,267,802	5,649,852	4.2	3.7	2.8	3.2	3.9	4.9	92	74	60	45	49	49
	COD	4,896,581	4,016,552	3,876,726	6,655,015	4,499,543	2,894,421	4.9	3.9	3.5	4.6	3.3	2.5	82	73	72	52	50	46
	CLAM, SURF	1,316,948	2,107,902	1,182,176	2,575,274	2,311,134	2,508,570	1.3	2.0	1.1	1.8	1.7	2.2	6	10	3	8	8	6
	ANGLER	3,742,298	2,363,411	2,499,444	3,549,581	3,111,724	2,465,226	3.7	2.3	2.2	2.5	2.3	2.2	212	219	189	172	171	162
	LOBSTER	2,786,921	2,186,324	2,226,526	2,298,402	2,598,376	2,356,995	2.8	2.1	2.0	1.6	1.9	2.1	88	79	77	52	62	48
	SQUID (LOLIGO)	1,340,717	1,162,110	1,706,780	2,628,538	3,267,597	2,308,798	1.3	1.1	1.5	1.8	2.4	2.0	59	66	70	67	67	61
	HADDOCK	4,650,766	5,172,164	7,029,055	5,873,580	2,441,030	2,203,201	4.6	5.0	6.3	4.1	1.8	1.9	70	62	53	43	39	33
	QUAHOG, OCEAN	3,791,416	3,353,203	5,483,776	3,057,467	2,968,402	2,008,218	3.8	3.2	4.9	2.1	2.2	1.8	7	4	6	5	5	4
	SEA BASS, BLACK	927,265	534,597	1,222,463	1,065,696	1,062,006	1,684,380	0.9	0.5	1.1	0.7	0.8	1.5	61	61	70	62	65	61
	POLLOCK	1,238,092	1,066,891	1,055,401	1,667,610	1,721,062	1,356,380	1.2	1.0	0.9	1.2	1.3	1.2	63	56	51	41	42	33
	WHELK, WAVED	*	*	*	*	134,250	1,183,226	*	*	*	*	0.1	1.0	*	*	*	*	9	9
	SCUP	598,886	708,130	896,611	1,104,797	1,120,965	1,118,925	0.6	0.7	0.8	0.8	0.8	1.0	44	50	64	64	61	60
NGOM	SCALLOP, SEA	22,567,094	29,057,300	39,101,360	47,442,528	46,027,183	37,651,202	59.5	60.0	65.6	70.1	71.4	69.1	23	37	36	36	39	52
	HERRING, ATLANTIC	2,990,716	2,545,869	2,227,829	3,075,792	2,878,541	3,100,608	7.9	5.3	3.7	4.5	4.5	5.7	3	7	7	4	9	6
	LOBSTER	2,010,046	1,742,467	2,014,275	2,174,283	2,190,028	2,907,391	5.3	3.6	3.4	3.2	3.4	5.3	48	47	38	37	33	38
	SQUID (LOLIGO)	162,986	1,160,443	1,143,032	1,279,207	1,903,224	1,739,117	0.4	2.4	1.9	1.9	3.0	3.2	9	17	18	20	13	11
	POLLOCK	1,177,251	1,673,326	1,266,103	1,477,769	1,556,599	1,445,658	3.1	3.5	2.1	2.2	2.4	2.7	47	57	48	36	39	28
	ANGLER	1,777,923	1,769,736	2,047,275	2,171,516	1,975,628	1,422,197	4.7	3.7	3.4	3.2	3.1	2.6	68	80	73	60	65	66
	HAKE, WHITE	697,011	992,692	1,268,967	1,316,031	1,324,175	1,255,442	1.8	2.1	2.1	1.9	2.1	2.3	45	51	43	34	37	27
	COD	3,217,212	3,750,864	4,063,001	3,340,604	2,169,980	987,645	8.5	7.7	6.8	4.9	3.4	1.8	52	63	55	39	41	32
	FLOUNDER, SUMMER	84,715	595,360	756,192	1,093,472	1,094,509	843,378	0.2	1.2	1.3	1.6	1.7	1.5	6	21	19	17	13	12
	FLOUNDER, AM. PLA	635,000	1,117,861	1,185,754	856,171	859,404	768,631	1.7	2.3	2.0	1.3	1.3	1.4	46	58	51	38	40	30

NOTE: contains only species that accounted for at least 1% of the landed value for that permit category
(or otherwise at least the top 5 species landed in terms of value)

* cannot report if less that three vessels

NOTE ALSO: General category vessels includes vessels that also have a limited access permit

4.4.6 Trip Costs for the Limited Access Full-time vessels

Data for variable costs, i.e., trip expenses include food, fuel, oil, ice, water and supplies and obtained from observer cost data for 1994-2014. Because of the increase in fuel prices in 2011, the share of fuel costs increased to 80% of the total trip cost and average trip cost per DAS for the full-time dredge vessels amounted to over $1950 per day-at-sea (Table 72). Average trip costs for full-time small dredge vessels were about $1250 per day-at-sea in 2011 (Table 74).

Table 71. Observer data information for the full-time dredge vessels

Fishyear	Number of trips	Scallop lb. per trip	Average DAS fished	Average LPUE (lb./DAS all areas)	Average crew per trip
1994	17	5090	12.65	399	6.6
1995	18	5852	10.67	494	6.7
1996	34	6591	12.71	487	6.0
1997	22	6085	13.32	444	6.2
1998	12	6699	7.83	2380	5.7
1999	68	11115	8.16	1446	6.5
2000	237	11155	7.07	1724	6.5
2001	85	18030	9.76	1897	7.0
2002	99	17026	9.94	1681	7.0
2003	96	19816	10.61	1843	7.0
2004	220	18466	8.45	2215	6.9
2005	134	18315	9.39	2028	6.9
2006	123	13580	7.58	1873	6.9
2007	204	15572	7.82	2111	6.8
2008	150	16541	8.17	2101	6.8
2009	96	18711	9.02	2048	7.0
2010	77	18093	8.40	2099	6.9
2011	103	19821	8.18	2388	7.1
2012	131	21489	9.05	2311	7.1
2013	92	18650	8.28	2261	6.9
2014	74	18303	8.74	2038	7.0
1994-2014 average	**2092**	**16306**	**8.66**	**1952**	**6.8**

Table 72. Fuel and total trip costs for FT dredge vessels (in 2013 inflation adjusted prices)

Fishyear	Average fuel price	Average fuel costs per DAS	Average trip costs per DAS*	Average total trip costs per trip*	Average fuel costs per trip	Fuel costs as a % of total trip costs
1994	4.0	2235	2450	31352	28999	92%
1995	3.2	2055	2183	24509	23586	96%
1996	3.9	2311	2566	32028	28917	90%
1997	3.1	1845	2169	28466	24676	87%
1998	3.7	2128	2631	21869	18443	84%
1999	1.4	2095	2137	19290	18994	98%
2000	3.6	1893	2130	14473	12974	90%
2001	3.7	1721	1977	18938	16972	90%
2002	3.8	1936	2169	21380	19442	91%
2003	3.3	1838	2063	21248	19520	92%
2004	3.4	1788	2118	17681	15109	85%
2005	3.4	1811	2086	19073	16791	88%
2006	3.2	1703	1960	14414	13181	91%
2007	3.3	1778	2152	16711	14159	85%
2008	3.6	1802	1976	15524	14406	93%
2009	3.6	2027	2065	18889	18675	99%
2010	3.5	1947	2264	18528	16436	89%
2011	3.6	1918	2117	17343	15907	92%
2012	3.5	2039	2226	19004	18150	96%
2013	3.6	2070	2171	17508	16745	96%
2014	3.7	2386	2606	22580	21091	93%
1994-2014 average	**3.4**	**1897**	**2139**	**18241**	**16530**	91%

***Includes fuel, supply and damage costs**

Table 73. Observer data information for the full-time small dredge vessels

Fishyear	Number of trips	Scallop lb. per trip	Average DAS fished	Average LPUE (lb./DAS all areas)	Average crew per trip
2003	4	5559	5.75	921	5.0
2004	21	10646	9.24	1174	5.0
2005	13	11903	8.54	1349	5.0
2006	18	13841	8.39	1627	5.6
2007	32	11290	7.44	1571	5.4
2008	41	13370	7.37	1774	5.3
2009	22	10168	6.32	1405	5.3
2010	10	11239	5.90	1870	5.3
2011	16	11863	6.88	1660	5.4
2012	26	13882	7.69	1708	5.3
2013	16	8112	6.13	1211	5.4
2014	9	8562	6.22	1353	4.9
Average for 2003-2014	**230**	**11639**	**7.42**	**1531**	**5.3**

Table 74. Fuel and total trip costs for full-time LAGC IFQ vessels (in 2011 inflation adjusted prices)

Fishyear	Average fuel price	Average fuel costs per DAS	Average trip costs per DAS*	Average total trip costs per trip*	Average fuel costs per trip
2003	3.0	1606	2268	11457	8439
2004	3.3	916	1132	10867	9047
2005	3.3	1313	1436	11568	10779
2006	3.3	2251	2896	13212	11108
2007	3.4	1380	1754	12264	9789
2008	3.5	1098	1468	10954	8428
2009	3.6	1161	1234	7066	6903
2010	3.3	1106	1243	7277	6511
2011	3.5	1236	1190	8793	9335
2012	3.5	1297	1569	11631	10479
2013	3.8	1367	1823	10788	7515
2014	3.7	1463	1755	10938	9138
Average for 2003-2014	**3.4**	**1305**	**1597**	**10761**	**9080**

***Includes fuel, supply and damage costs**

Table 75. Observer data information for LAGC IFQ vessels

Fishyear	Number of trips	Scallop lb. per trip	Average DAS fished	Average LPUE (lb./DAS all areas)	Average crew per trip
2008	10	323	1.10	313	2.9
2009	13	340	1.00	340	3.0
2010	19	361	1.00	361	2.9
2011	78	438	1.05	430	3.1
2012	44	500	1.00	500	3.4
2013	106	392	1.01	389	2.9
2014	81	416	1.02	412	2.6
Average for 2008-2014	**351**	**416**	**1.02**	**412**	**2.9**

Table 76. Fuel and total trip costs for LAGC IFQ vessels (in 2011 inflation adjusted prices)

Fishyear	Average fuel price	Average fuel costs per DAS	Average trip costs per DAS*	Average total trip costs per trip*	Average fuel costs per trip
2008	4.0	705	829	1197	998
2009	3.4	815	942	1354	1205
2010	3.5	551	568	682	642
2011	3.7	415	486	590	510
2012	3.7	451	472	483	461
2013	3.6	596	668	696	621
2014	3.7	667	821	889	726
Average for 2008-2014	**3.7**	**602**	**693**	**818**	**714**

***Includes fuel, supply and damage costs**

4.4.7 Trends in Foreign Trade

Figure 10 shows scallop exports and imports in pounds including fresh, frozen and processed scallops. Although though numbers possibly include exports of bay, calico or weathervane scallops, it mainly consists of sea scallops.

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 scallops led to a tripling of U.S. exports of scallops from about 5 million pounds in 1999 to a record amount of 32 million pounds in 2011. Total exports declined 21 million lb. in 2013 as the landings declined by 30% in the same year.

In contrast, imports of scallops declined to 42 million lb. in 2011 from about 60 million lb. in 2010, that is, by almost 30% (**Figure 64**). Because of the increase in the value of scallop exports to over $214 million in 2011, scallop trade deficit (the difference in the value of exported and imported scallops) reached to its lowest level, $42 million, since 1994 (**Figure 65**). Therefore, rebuilding of scallops as a result of the management of the scallop fishery benefited the nation by reducing the scallop trade deficit in addition to increasing the revenue for the scallop fishery as a whole.

However, this trend was sharply reversed in the 2013 fishing year as the value of imports jumped to about $380 million and the value of exports declined to about $140 million. Unfortunately, trade data doesn't include the market category (size) of the imported and exported scallops. However, **Table 77** and **Table 78** shows the prices, values and pounds by price group, which could reflect the changes in exports and imports by market category. **Table 77** shows that most of the decline in the exported pounds happened in the category of scallops with average price ranging from $4 to $8 per pound. **Table 78** shows that there was big increase in the imported pounds for scallops with average price ranging from $8 to $10 per pound.

Figure 64 - Scallop exports and imports (lb.)

Figure 65 - Value of scallop exports and imports ($, in inflation adjusted 2013 prices))

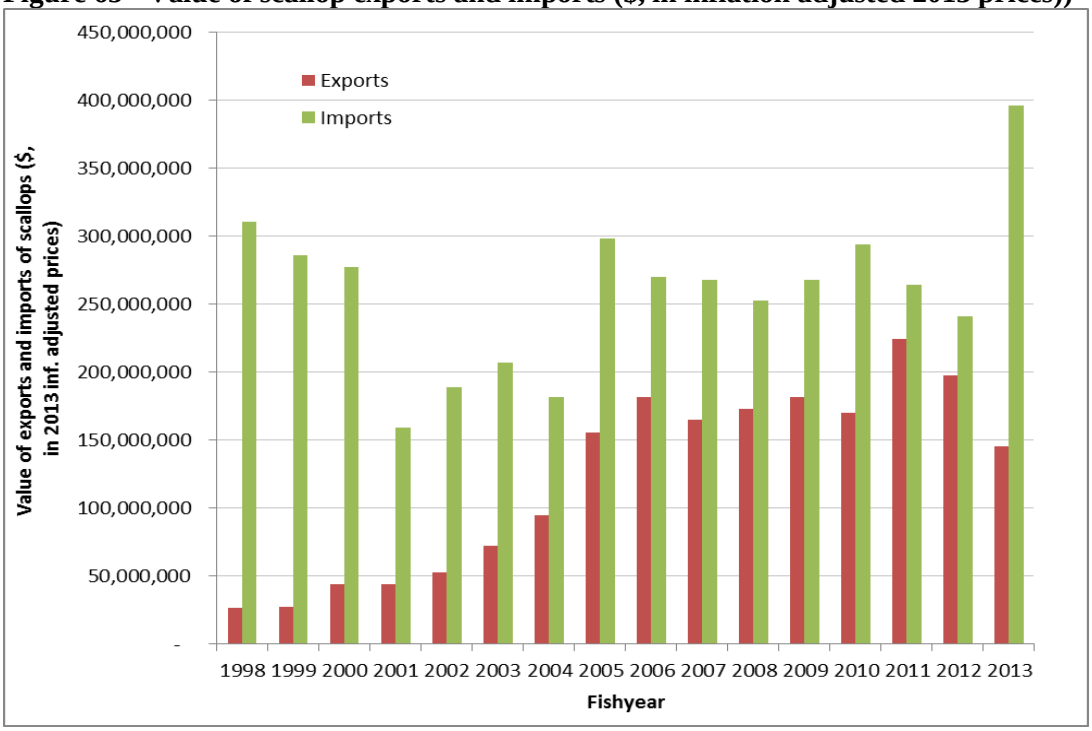


Figure 66 – Average annual price of scallop exports and imports ($, in inflation adjusted 2013 prices))

Table 77. Average price of exported scallops by price category by calendar year (in current prices)

Price group	Values	2011	2012	2013	2014
<=$4	Export lb.	1,127,620	829,379	541,972	251,468
	Export value ($)	3,355,953	2,705,167	1,822,139	807,309
	Average price	3.0	3.3	3.4	3.2
$4 - $8	Export lb.	23,023,200	21,801,576	14,338,774	8,089,819
	Export value ($)	145,267,895	138,437,041	93,920,861	50,288,736
	Average price	6.3	6.3	6.6	6.2
$8 - $10	Export lb.	7,869,161	5,991,124	6,148,233	2,596,624
	Export value ($)	65,808,565	51,042,066	52,914,802	23,749,313
	Average price	8.4	8.5	8.6	9.1
>$10	Export lb.	115,631	133,846	176,366	196,732
	Export value ($)	1,261,326	1,460,860	1,912,062	2,122,441
	Average price	10.9	10.9	10.8	10.8
Total Export lb.		**32,135,612**	**28,755,925**	**21,205,344**	**11,134,643**
Total Export value ($)		**215,693,739**	**193,645,134**	**150,569,864**	**76,967,799**
Average annual price		6.7	6.7	7.1	6.9

Table 78. Average price of imported scallops by price category by calendar year (in current prices)

Price group	Values	2011	2012	2013	2014
<=$4	Import value ($)	117,326,262	43,948,300	77,310,278	63,378,130
	Import lb. ($)	35,408,755	14,155,893	24,460,284	20,811,007
	Average price	3.3	3.1	3.2	3.0
$4 - $8	Import value ($)	53,149,509	44,698,767	74,898,749	43,100,927
	Import lb. ($)	9,333,062	7,244,596	14,215,757	8,806,023
	Average price	5.7	6.2	5.3	4.9
$8 - $10	Import value ($)	33,178,701	39,668,477	120,862,749	47,072,167
	Import lb. ($)	3,565,438	4,095,331	13,247,014	4,945,678
	Average price	9.3	9.7	9.1	9.5
>$10	Import value ($)	96,724,634	96,424,449	98,810,977	109,002,922
	Import lb. ($)	8,496,341	8,966,992	8,955,458	9,347,627
	Average price	11.4	10.8	11.0	11.7
Total import value ($)		**300,379,106**	**224,739,993**	**371,882,753**	**262,554,146**
Total Import lb. ($)		**56,803,596**	**34,462,812**	**60,878,512**	**43,910,337**
Average annual price		5.3	6.5	6.1	6.0

4.4.8 Trends in NGOM Scallop Fishery and state water fisheries

Since adoption of the NGOM federal fishery in 2008 total landings from that area have been relatively low. However, landings increased in 2013, and catches in 2014 have been higher as well (Figure 67 and Table 79). Scallop fishing in the GOM is traditionally a winter fishery. The

state of Maine scallop season is from December – March. As catches increase in federal waters within the NGOM, the risk of the federal TAC being reached and vessels with state permits not being able to fish in state waters is higher. For comparison, the state water landings in both Maine and Massachusetts are much higher than federal water landings (**Table 81**).

Figure 67 – 2012 and 2013 VTR fishing locations within the NGOM (all scallop permit types)

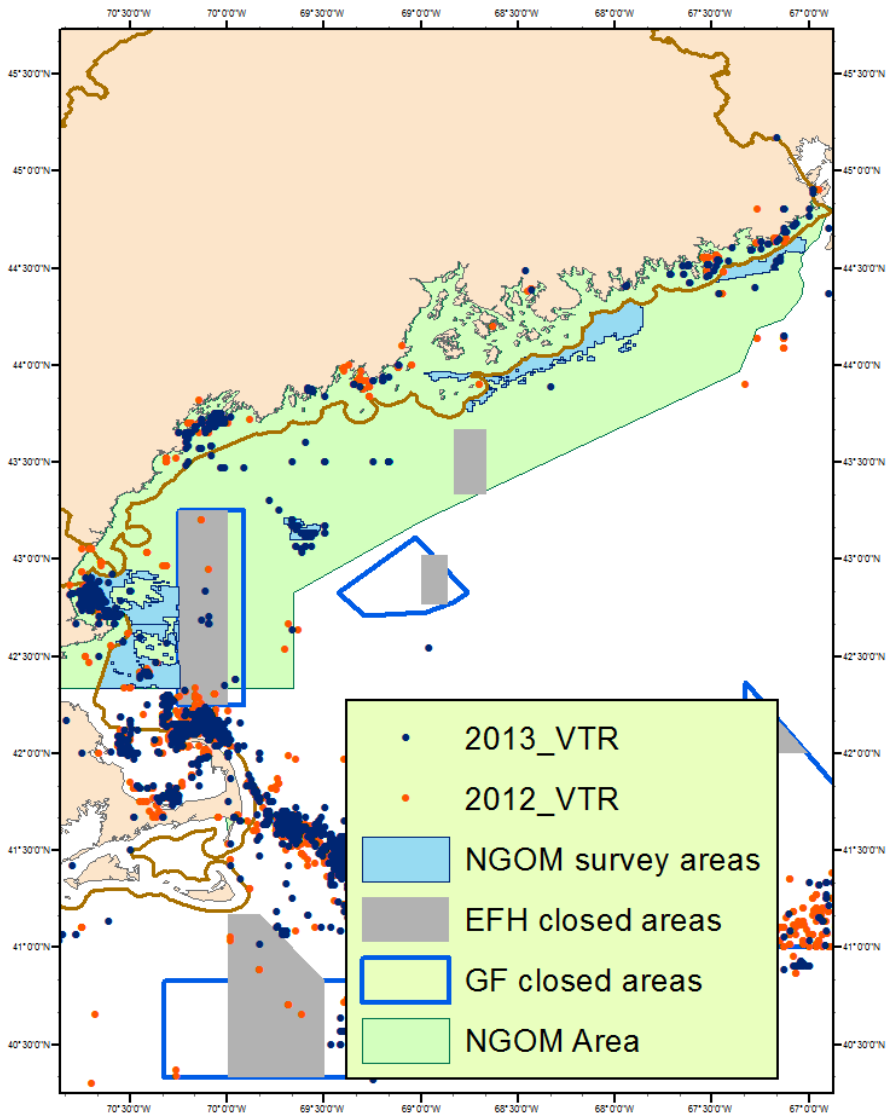


Table 79 – Summary of NGOM scallop catch

Year	NGOM landings	% of TAC (70,000 lbs.)
2010	11,539	16.5%
2011	7,946	11.4%
2012	7,733	11.0%
2013	40,663	58.1%
2014 to date (Mar1-May21)	11,940	17.1%

4.4.8.1 State water fisheries in the NGOM

Table 80 is a summary of the number of known fishers that have state only permitted vessels that land scallops. All states have been combined, except Maine, the only state with a substantial number of state only permitted vessels. **Table 81** is a summary of sea scallop catch from state permitted vessels from state waters in 2008-2013. 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 80 – Number of known fishers that contribute to state only scallop catch (calendar year 2008-2012) (Source: ACCSP).

	Number of Known Fishers				
	2010	20102	2011	2012	2013
ME Dealer Reports	119	222	280	353	401
ME Harvester Reports**	228	250	287	369	364
Other States	30	24	29	26	41

Table 81 - Calendar year scallop landings from state permitted vessel that do not have a federal permit (Source: ACCSP). Small landings from several other states not listed.

Year	2008	2009	2010	2011	2012	2013
Massachusetts	28,986	167,865	121,416	205,898	132,869	53,873
Maine (Harvester reports)*	87,808	132,769	253,527	234,557	359,444	454,096

**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.*

4.4.8.1.1 Massachusetts

In Massachusetts, no person can possess scallops 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).

Federal scallopers may be dually permitted (i.e., hold federal scallop permit and a state CAP permit) thereby enabling them to fish mobile gear for scallops in state and federal waters or they may be federal-only (i.e., hold a federal scallop permit but no CAP) thereby limiting their mobile gear fishing for scallops to federal waters. Federal-only scallopers landing in MA must hold some state landing permit (e.g., boat permit). LAGC vessels likely make up the majority of dual permit holders while LA vessels dominate the federal-only permit class in Massachusetts.

The state amended state waters sea scallop dredge measures in the fall of 2011 to constrain daily catches of sea scallops within the state waters fishery and require gear modifications to reduce bycatch. Originally implemented by permit conditions, a suite of state waters sea scallop regulations (322 CMR 4.10 and 6.05) were codified in the summer of 2013. All vessels fishing in state waters under the authority of a CAP are subject to the following regulations:

1. Trip Limit.

* CAP holders may not retain or possess more than 200 lbs. of sea scallop meats or 2,000 lbs. of whole (shell-on) sea scallops per 24-hour day or per trip, whichever is longer;
* In those instances when a vessel has both shucked meats and whole scallops, the weight of the whole scallops will be multiplied by 0.10 to determine its equivalency in meats;
* Exceptions: i) Federally permitted scallop vessels that hold a CAP, may fish in state waters but must adhere to the state trip limit while fishing in state waters. ii) Federal sea scallop permit holders may possess sea scallops in excess of these limits provided the dredge gear is stowed and they are transiting state waters for the purpose of landing their catch.
* Compliance with the whole in-shell sea scallop trip limit will be determined through a volumetric equivalency: one level-filled standard fish tote is the equivalent to 100 pounds of whole in-shell sea scallops. For mixed landings of in-shell and shucked sea scallops, the weight of whole in-shell sea scallops is multiplied by 0.10 to determine its equivalent shucked sea scallop weight. Federal sea scallop permit holders may possess sea scallops in excess of these limits provided the dredge gear is stowed and they are transiting state waters for the purpose of landing their catch.
* Lastly, it is now unlawful by state regulation (in addition to federal regulation) for commercial fishermen who have only a state permit to fish in federal waters. Moreover, the discard of live sea scallops is prohibited in the harbors and estuaries known as the inshore restricted waters and defined at 322 CMR 4.02(2).

2. Gear Modifications to reduce by catch.

* Effective January 1, 2012, it shall be unlawful to fish with or have aboard a sea scallop dredge with rings less than 4 inches in inside diameter;
* Also effective on January 1, 2012, it shall be unlawful to fish with or have aboard a sea scallop dredge with twine top that has square or diamond mesh openings smaller than 10 inches; no additional material is allowed to cover the twine top to restrict the mesh openings to less than 10 inches in diameter.

It remains unlawful to catch scallops in MA with a shell less than 3.5-inches with a 10% tolerance for undersized scallops and no scallops can be landed in-shell unless the area fished is approved by the National Shellfish Sanitation Program.

In summary, there are about 160 state water only permits in MA, and about 60 permits that have dual permits (state and federal permit). The vast majority, about 90%, of state water harvest is from vessels with state water only permit, no federal permit.

Table 82 – Total number of permits issued by type in Maine

PERMIT TYPE	2010	2011	2012	2013
SW Only	167	165	164	162
SW & LA	3	3	3	3
SW & IFQ (A)	29	29	25	25
SW & NGOM (B)	12	9	11	10
SW & Incidental (C)	19	20	20	16
Total Active	230	226	223	216
Dual Permit Total	63	61	59	54

Source: MADMF and NMFS Permitting

Table 83 – Total state waters sea scallop harvest by permit category (calendar year in live pounds)

PERMIT TYPE	2010	2011	2012	2013
SW Only	1,365,073	2,021,463	1,854,836	1,681,241
SW & LA	0	0	0	0
SW & IFQ (A)	94,533	252638	107,907	154171
SW & NGOM (B)	0	0	4207	18284
SW & Incidental (C)	2,916	0	133	0
Total Catch	1,462,522	2,274,101	1,967,083	1,853,696
Dual Permit Total	97,449	252,638	112,247	172,455
%SW Harvest by Dual	6.7%	11.1%	5.7%	9.3%

Source: MA Trip Level Reports and NMFS VTR's

Table 84 – Total state waters sea scallop harvest by area (top) and month (bottom) (calendar year in live pounds)

Area	2010	2011	2012	2013
1	12,537	52,584	2,207	57,752
2	0	825	5,331	72,968
3	25,967	***	17,580	***
4	***	9,794	***	***
5	48,202	65,567	110,884	95,480
6	89,973	93,661	50,212	77,918
7	335,380	409,327	222,926	320,603
8	791,576	1,212,361	1,312,009	1,023,271
9	149,156	412,655	230,693	166,764
10	***	9,417	***	***
11	0	0	0	0
12	0	0	***	***
13	0	6,673	0	***
14	128	***	0	***
Total	**1,462,521**	**2,274,101**	**1,967,083**	**1,853,697**

Source: MA Trip Level Reports & NMFS VTR's

*** = Confidential

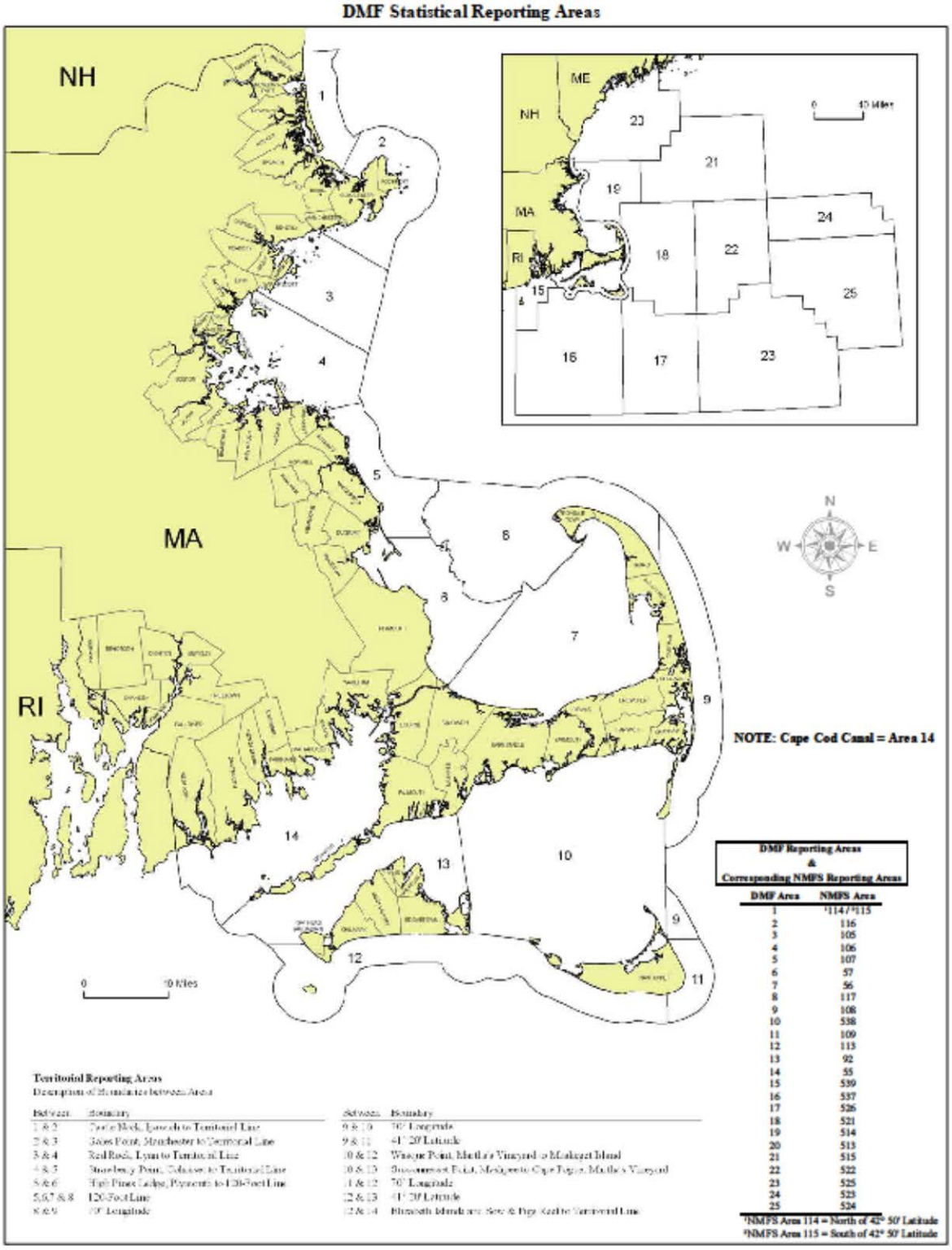
See: http://www.mass.gov/eea/docs/dfg/dmf/commercialfishing/statarea.pdf

Month	2010	2011	2012	2013
1	86,820	159,615	103,943	163,380
2	38,984	158,565	111,024	93,915
3	115,772	263,454	229,249	246,990
4	199,499	369,440	243,735	228,674
5	210,909	334,350	280,352	274,372
6	158,114	259,409	218,606	282,115
7	113,997	250,218	208,094	235,503
8	150,554	142,240	148,882	91,771
9	78,941	68,688	117,593	73,388
10	72,411	110,011	88,883	52,582
11	93,405	56,949	72,326	36,111
12	143,115	101,162	144,397	74,896
Grand Total	1,462,521	2,274,101	1,967,083	1,853,697

Source: MA Trip Level Reports & NMFS VTR's

*** = Confidential

Figure 68 – Massachusetts Department of Marine Fisheries Statistical Reporting Areas



4.4.8.1.2 Maine

The state of Maine has a very developed state water management program that 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 70 day fishing season for state waters, except Cobscook Bay which is a 50 day season, between December and March 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. Areas such as Cobscook Bay and Gouldsboro Bay have maximum dredge widths (5.5 ft. and 4.5 ft., respectively). In-shell scallops must be 4-inches, there is a possession limit of 15 gallons of meats (~135 pounds) per day per vessel (10 gallons or ~90 pounds in Cobscook Bay), and non-commercial licenses may not possess more than 1 gallon of scallop meats per day. Finally, license holder must be on board when vessel is scallop fishing.

In 2012, the state implemented 3 scallop management zones, allowing for different rebuilding strategies to be employed in each. For Zone 1, the western part of the state, the previously closed areas were retained as Limited Access Areas with fishing restricted to 1 day per week and well as targeted closures aimed at protecting broodstock scallops. In Zone 2, the eastern part of the state, a 10 year rotational management plan is currently being phased in, where 2/3rd of the bottom will be closed for rebuilding and 1/3 open (**Figure 69** and **Figure 70**). In Zone 3, the Cobscook Bay area, the previously closed area was retained as a Limited Access Area with 1 day per week harvest and a reduced season of 50 days and limit of 10 gallons of meats has been implemented.

For the upcoming 2014-15 season, the entire fishery will now be governed by a trigger mechanism whereby when in-season data indicate that 30-40% of the harvestable biomass has been removed from any area, it will be closed via emergency rulemaking. Also, the 10 year rotational management plan will be fully phasing in for Zone 2 with only 1/3 of the bottom open for harvest while the remaining 2/3rds rotates closed for rebuilding. Lastly, targeted closures have been implemented prior to the opening of the season to protect high concentrations of sublegal scallops, spat-producing scallops as well as six municipal moorings fields from dragging activity.

For more information about the 2014-15 Maine state waters fishery see: http://www.maine.gov/dmr/rm/scallops/management/2013-14/2014-15/MaineDMRScallopManagement2014-15.htm

Figure 69 – Scallop management zones in Maine state waters

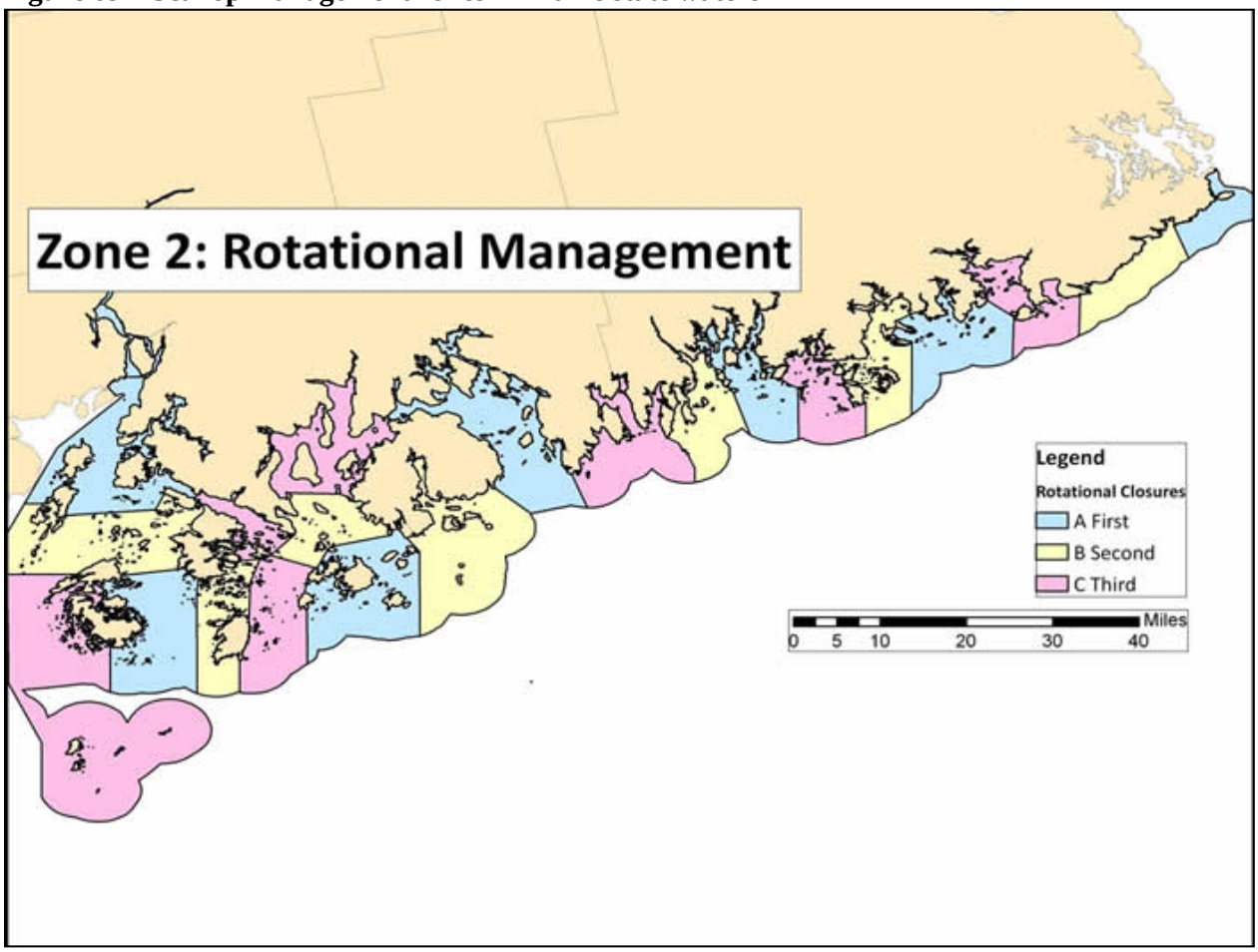
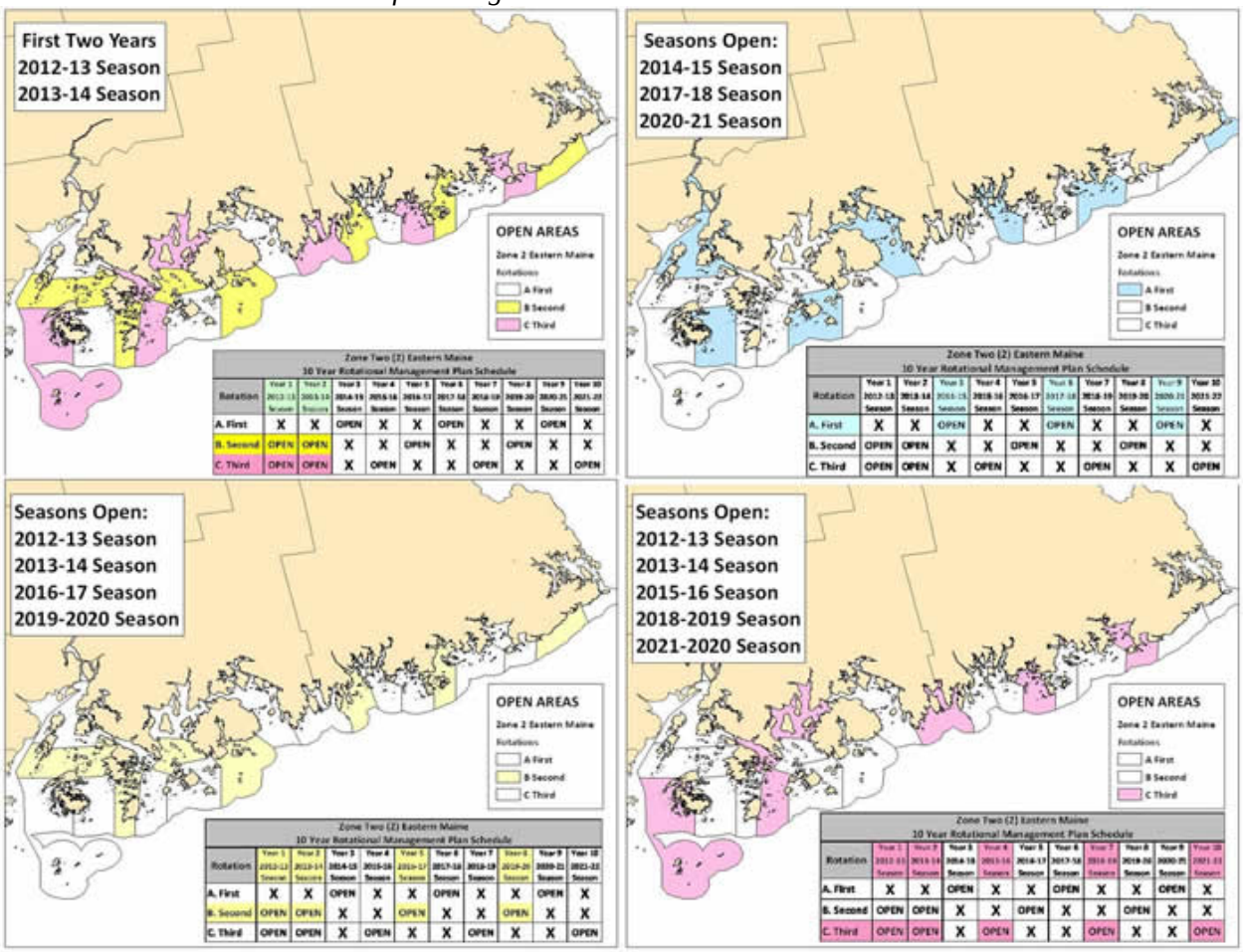


Figure 70 – Rotational Management Schedule for Maine State Waters

Areas divided into three different rotations (A=First, B=Second, C=Third). For the first two years, the areas shaded in PINK and YELLOW were open. This season, one third of the coast will be open for harvest and will rotate with each following season



Scallop effort has increased in Maine state waters in recent years. There has been a relatively large amount of reactivated effort in the state fishery primarily due to: 1) the newly rebuilt closed areas reopening last year; 2) the high price for scallops; and 3) the decline in the multispecies fishery and the northern shrimp moratorium. All of these factors have likely lead to the increase in scallop fishing effort within state waters. The new participants and reopening of the newly rebuilt closed areas resulted in a 9 year landings high in 2012 of 289,827 pounds, which is an eight fold increase from the all-time low in 2005 (**Figure 71**) with the December 2012 landings being higher than the entire 2009 landings (Table 85 and **Figure 72**). However, those landings were caught by approximately 150 additional participants compared to previous years (**Figure 75**).

Figure 71 - Maine scallop landings from 1950 to 2013. Landings are reported in meat pounds.
http://www.maine.gov/dmr/commercialfishing/documents/scallop.graph.pdf

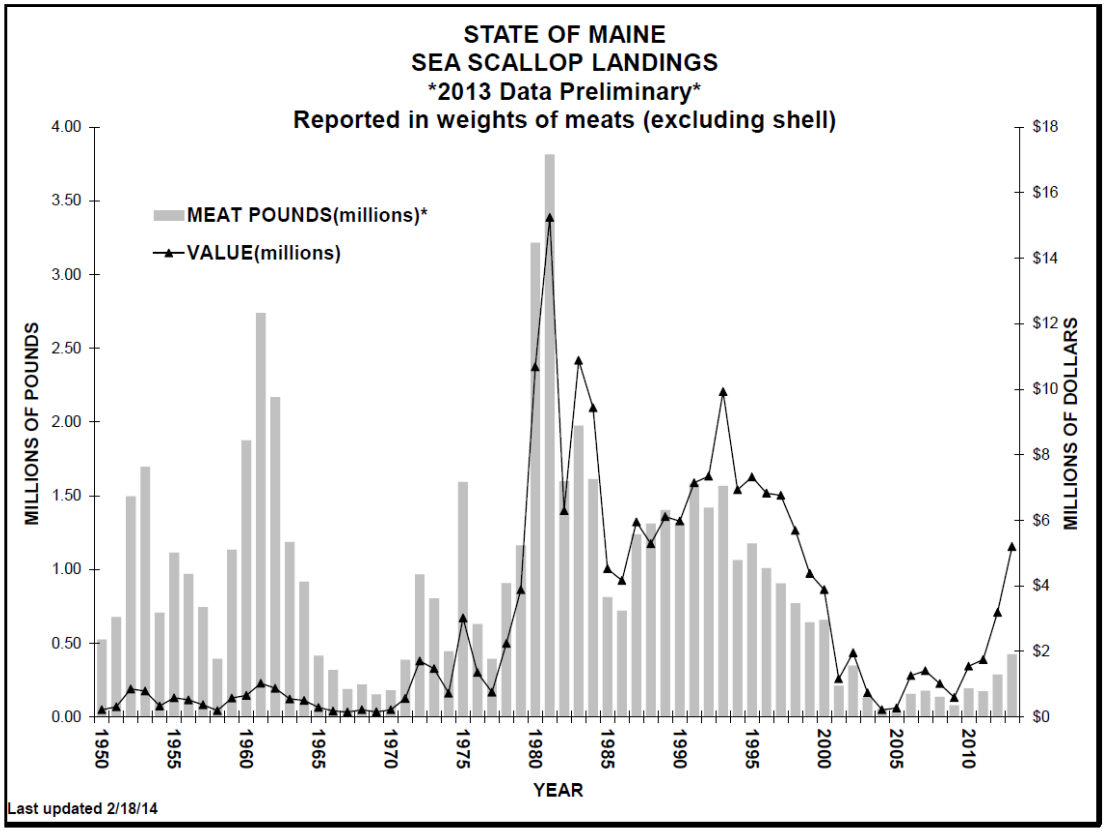


Table 85 - Landings by Month (5 Year Trend)

Scallop Meat Pounds by Month (Dealer Data)						
Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
January	39,252	3,835	70,884	80,410	41,400	181,329
February	20,765	2,609	44,980	31,883	32,039	32,733
March	11,275	19,114	23,476	15,004	52,759	50,619
December	58,962	52,861	53,018	47,759	124,043	138,450
Total Landings	**136,556**	**79,923**	**193,753**	**175,123**	**251,631**	**424,547**

Figure 72 – Monthly scallop landings (2008-2012) (in meat pounds)

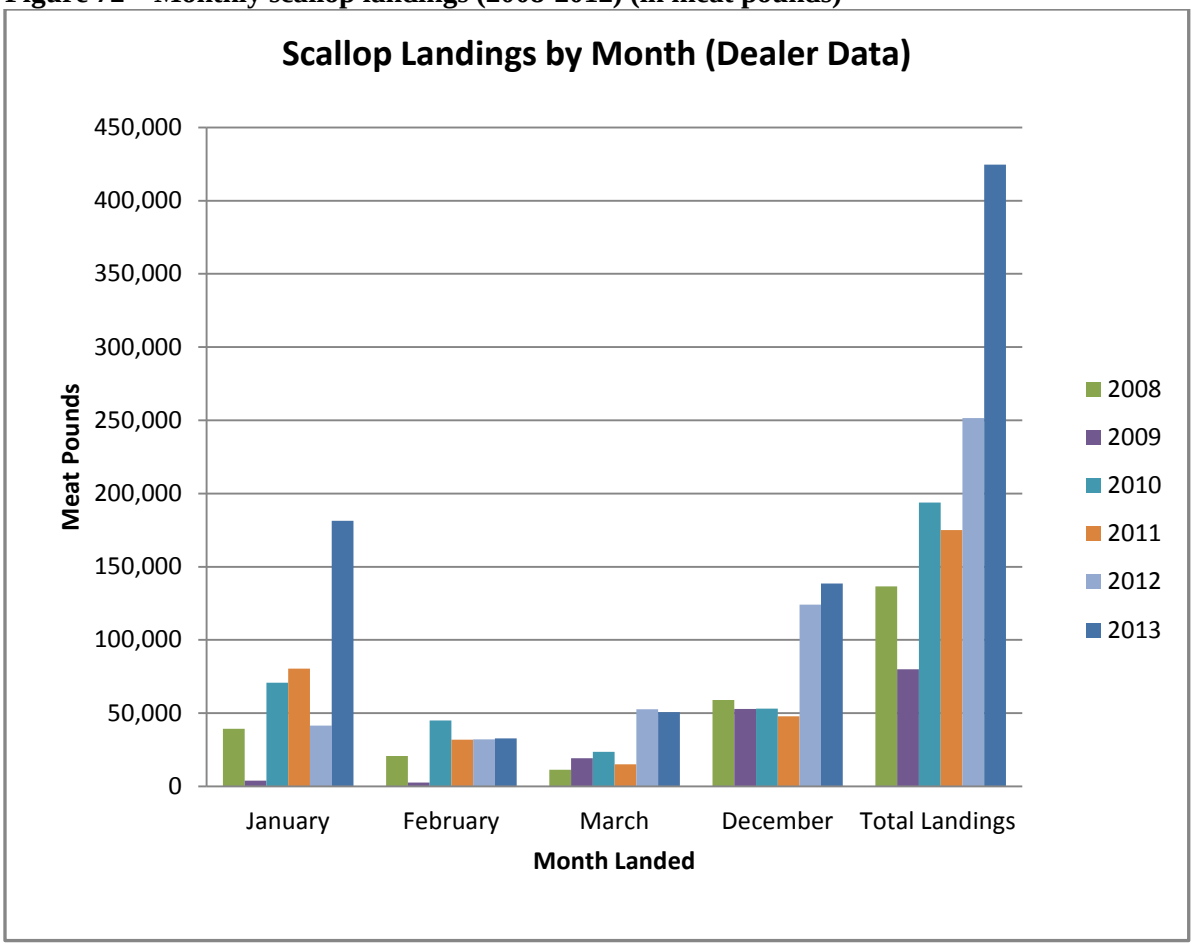


Table 86 - Value Month (5 Year Trend)

Scallop Value by Month (Dealer Data)						
Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
January	$295,448	$29,431	$512,797	$776,234	$471,395	$1,986,304
February	$160,996	$19,252	$332,430	$310,290	$367,588	$410,682
March	$92,359	$134,061	$188,075	$148,491	$521,135	$599,525
December	$420,688	$398,650	$504,463	$512,252	$1,495,170	$1,948,819
Total Value	**$1,014,667**	**$592,386**	**$1,547,293**	**$1,747,931**	**$2,867,776**	**$5,194,553**

Figure 73 – Monthly scallop revenue (2008-2012)

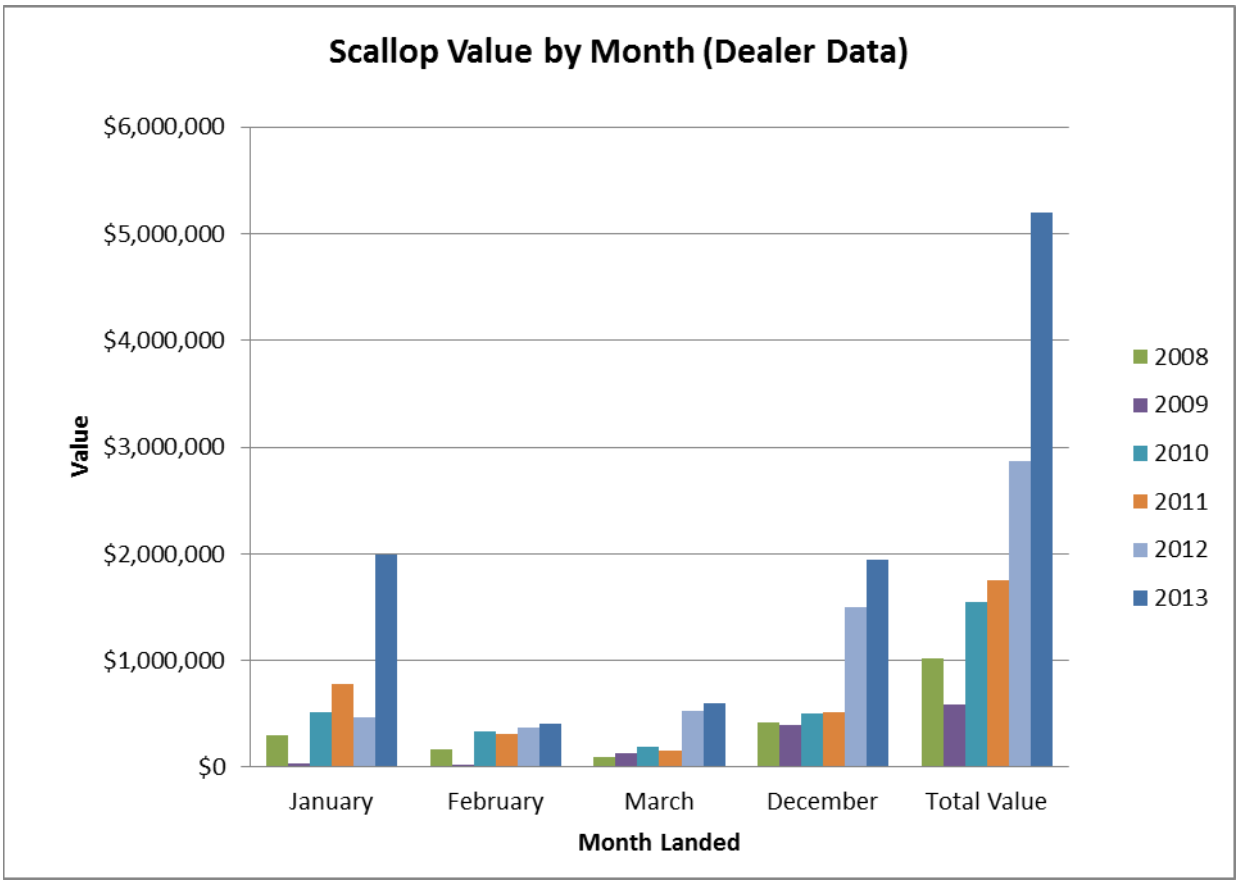


Table 87 – Landings by season (5 Year Trend)

Scallop Meat Pounds by Season (Dealer Data)					
Year	2008-09	2009-10	2010-11	2011-12	2012-13
Total Landings	84,519	192,201	180,315	170,529	427,080

Figure 74 – Total scallop revenue in Maine (2008-2012)

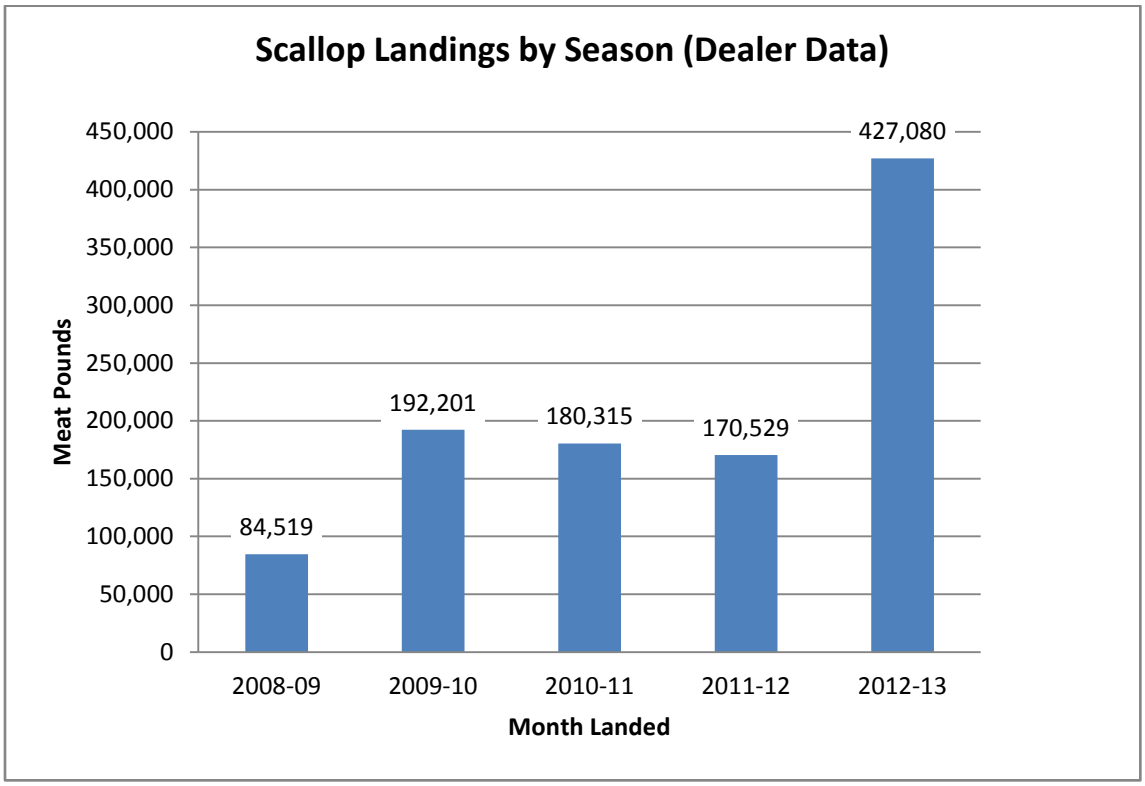


Table 88 – Value by season (5 Year Trend)

Scallop Value by Season (Dealer Data)					
Year	2008-09	2009-10	2010-11	2011-12	2012-13
Total Value	$603,433	$1,431,952	$1,739,479	$1,822,183	$4,865,447

Figure 75 – Number of active ME state water license holders in each season for the past five years

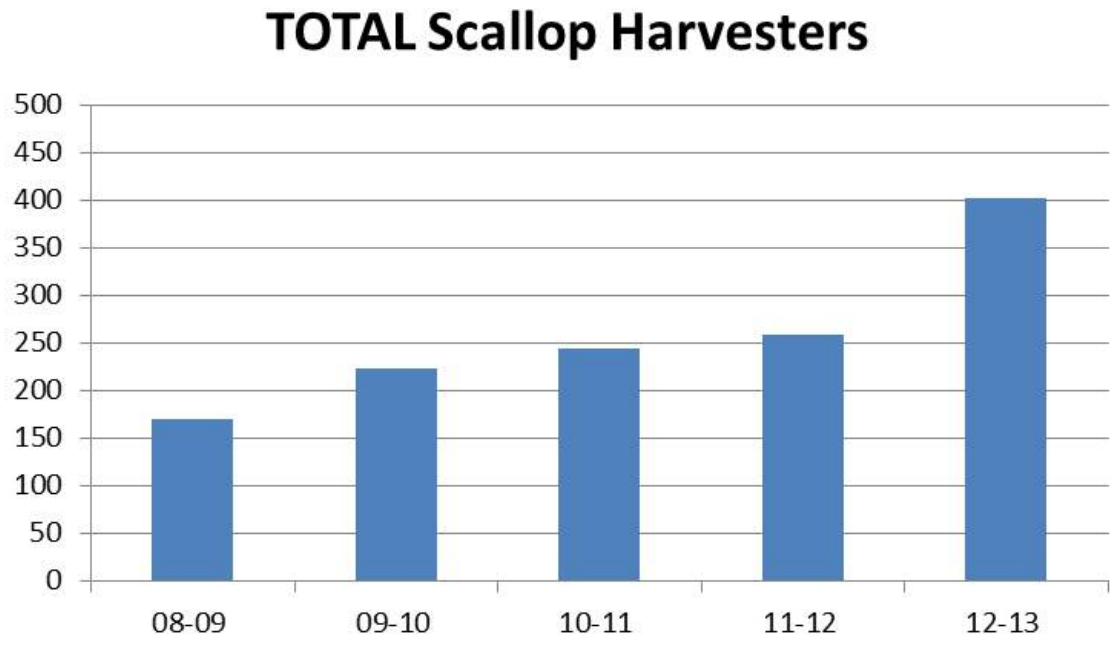


Table 89 – Summary of scallop landings from state waters for harvesters in Maine by permit held

2011-2013 Harvester Reported Scallop Landings and Value*

Maine	State water only			NGOM			IFQ		
	Lbs.	Value	# Harvesters	Pounds	Value	# Harvesters	Pounds	Value	# Harvesters
2011	256,036	$2,555,239	305	4,073	$40,649	5			
2012	377,059	$4,200,437	386	12,886	$143,550	7	1,601	$17,835	3
2013**	489,481	$5,991,247	385	34,413	$421,215	12	1,831	$22,411	3

*Data pulled from harvester reported data (State and Federal). Value was calculated using average price paid each year from dealer reported data.
**2013 data is preliminary and subject to change without notice.
Data pulled 8/7/2014
All pounds are reported in meat weights.

4.5 NON-TARGET SPECIES

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. There are several measures in place that were designed to reduce bycatch including gear modifications, limits on effort, seasonal restrictions 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 previous scallop framework actions based primarily 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 90.

Assessment data 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 90 for the current status of these species, which has been updated based on assessment results summarized in Groundfish FW53, Skate FW2, and Monkfish FW7.

Table 90: Status of non-target species known to be caught in scallop fishing gear, updated with assessment results summarized in GF FW53, Monkfish FW7 and Skate FW2

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	No
Northeast Skate Complex	Thorny skate	Yes	Yes
Northeast Skate Complex	Winter skate	No	Yes
Multispecies	Windowpane - GOM/GB	Yes	Yes
Multispecies	Windowpane - SNE/MA	No	No
Multispecies	Winter flounder - GB	Yes	Yes
Multispecies	Winter flounder - GOM	Unknown	No
Multispecies	Winter flounder - SNE/MA	Yes	No
Multispecies	Yellowtail flounder - CC/GOM	Yes	Yes
Multispecies	Yellowtail flounder - GB	Unknown	Unknown
Multispecies	Yellowtail flounder - SNE/MA	No	No
Atlantic Surfclam	Mid-Atlantic Coast	No	No
Ocean Quahog	Atlantic Coast	No	No

Updates available through NMFS's Status of U.S. Fisheries Quarterly Reports
http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm

The only bycatch species with sub-ACLs for the scallop fishery are in the groundfish plan: GB YT, SNE/MA YT, and SNE/MA WP flounder. The tables below describe a summary of multispecies catch from the scallop fishery in fishing year 2013 under the Multispecies plan. A complete summary of all catch in the multispecies fishery for 2013 can be found at: http://www.greateratlantic.fisheries.noaa.gov/aps/monitoring/nemultispecies.html

Total catch of GB YT by the scallop fishery was much lower in 2013 (37.5mt) compared to 2012 (164mt) (Table 91 and

Table 93). This is consistent with overall lower DAS allocations and total projected catches for 2013 compared to 2012. FT LA vessels were allocated 2 fewer DAS in 2013 compared to 2012 (32 DAS versus 34 DAS in 2012, and less access in CA2 South in 2013, an area that typically has higher YT bycatch rates compared to other areas on GB. Landings of YT in the scallop fishery was still relatively low in 2012 even though LA scallop vessels were required to land all legal sized YT in 2012 (under 30 mt for both stocks). Most YT was discarded in the scallop fishery. In 2013 that requirement to land legal sized YT was lifted, and now YT landings are even lower (under 5mt for both YT stocks combined).

Total catch of SNE/MA YT by the scallop fishery in 2013 was relatively similar in 2013 (48.6 mt) compared to 2012 (54 mt), both substantially lower than 2011 levels (110.9 mt) (Table 91 and
Table 93). Overall effort levels were lower in 2013 compared to both 2012 and 2011.

Table 92 and Table 94 compare the GF catch in the scallop fishery to the sub-ACLs and total ACLs for all GF species that have a sub-ACL allocated for the scallop fishery. In 2013 the scallop fishery used about 90% of the sub-ACL allocation for GB YT, about 111% of the SNE/MA YT sub-ACL allocation , and about 71% of the sub-ACL allocation of SNE/MA YT. AMs were not triggered for the overage of SNE/MA YT in this case because the overall ACL was not exceeded, and the scallop fishery did not exceed their sub-ACL by more than 50%.

In 2012, the scallop fishery did catch more YT than their sub-ACL (104%), but again AMs were not triggered since the total ACL was not exceeded and the scallop fishery did not exceed their sub-ACL by more than 50%. For SNE/MA YT the scallop fishery was allocated a sub-ACL of 127 mt, but only 42.5% was caught, equal to less than 6% of total SNE/MA YT catch.

Table 91 – Summary of 2013 year end accounting of NE Multispecies catch (mt)

Stock	Total Catch	Scallop Catch	Total GF Landings	Scallop Landings	Total GF Discards	Scallop Discards
GB YT	93.3	37.5	46.2	3.6	9.6	33.9
SNE/MA YT	466.1	48.6	361.5	1.5	11.8	47.1
SNE/MA WP	554.7	129.1	0.1	0.0	115.9	129.1

Table 92– Summary of 2013 ACLs, catch, and percent of ACLs caught by the scallop fishery (mt and %)

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	208.5	41.5	37.5	90.3%	18.0%
SNE/MA YT	665	43.6	48.6	111.4%	7.3%
SNE/MA WP	527	183	129.1	70.5%	24.5%

Table 93 – Summary of 2012 year end accounting of NE Multispecies catch (mt)

Stock	Total Catch	Scallop Catch	Total GF Landings	Scallop Landings	Total GF Discards	Scallop Discards
GB YT	384.9	164.0	227.5	25.1	157.4	138.9
SNE/MA YT	593.5	54.0	435.6	2.4	157.9	51.6

Table 94 – Summary of 2012 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	547.8	156.9	164.0	104.5%	30%
SNE/MA YT	936	127	54.0	42.5%	5.8%

5.0 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

5.1 SCALLOP RESOURCE

5.1.1 OVERFISHING LIMIT AND ANNUAL BIOLOGICAL CATCH

There are relatively new requirements to set annual catch limits (ACLs) and accountability measures (AMs). 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. The Science and Statistical Committee (SSC) is responsible for setting ABC.

5.1.1.1 Alternative 1 - No Action for OFL and ABC

Under "No Action", the overall OFL and ABC would be equivalent to default 2015 values adopted in Framework 25 (Table 7). The No Action ABC is about 1,800 mt or 4 million pounds lower than the proposed ABC in this action because biomass has increased. However, the No Action ABC and the proposed ABC in this action are relatively similar and not great enough to have direct impacts on the fishery specifications set in the framework since fishgin targets are set well below these limits. Therefore, the potential impacts of the No Action ABC on the scallop resource are neutral.

5.1.1.2 Alternative 2 - Updated OFL and ABC for FY2015 and FY2016 (default) *(Preferred Alternative)*

The values approved by the SSC are summarized in Table 8. The updated OFL and ABC estimates are about 1,800 mt or 4 million pounds higher than the No Action default values because updated surveys suggest scallop biomass is higher than previous estimates. Overall, these values are based on the most updated information; therefore, there should be indirect positive impacts on the scallop resource from setting fishery limits with updated data. Compared to the No Action, these values could have low negative to neutral impacts if fishery allocations are set higher. However, in reality specifications are set based on fishing targets well below both of these values. Since fishing targets are set lower the plan reduces the risk of overfishing and optimizes overall yield from the fishery.

5.1.2 Fishery specifications

5.1.2.1 Summary of biological projections for overall specification alternatives considered in this action

The biological impacts for the allocation alternatives considered in this action are based on results from an updated version of the SAMS (Scallop Area Management Simulator) model. This model has been used to project abundances and landings to aid management decisions since 1999. SAMS is a size-structured model that forecasts scallop populations in a number of areas. The model was updated this year to include a total of 19 areas, including several new areas that are under consideration in this action (expansion of CA2 south, NL and subdividing ETA). For each alternative 1,000 stochastic runs were completed with the same initial fishery mortality conditions, but various inputs for natural mortality and recruitment were selected for each run. An overall mean of the 1,000 runs is produced for each alternative, as well as percentiles around the mean to help describe the uncertainty of the estimates (i.e. 10th percentile, 25% percentile,

etc). Because natural mortality and future recruitment are relatively uncertain, this has an effect on the projected landings for all scenarios, especially for several years into the future.

It is important to note that this model is based on fishing mortality by area and the inputs are not fishery-based in terms of DAS, etc. The simulation does not model individual vessels or trips; it models the fleet as a whole. The output of the model is then used to eventually compute individual DAS allocations after set-asides, general category landings, etc. are removed. The SAMS model provides projected exploitable biomass estimates, scallop landings, estimates of fishing mortality, average LPUE, DAS used and bottom area swept by area. All of these projections are described in the following tables and figures. Projections are run out 14 years to provide long-term impacts as required by law. After year two, the model uses the same assumptions for allocations in 2016 and beyond. Therefore, the only difference between the overall performances of alternatives is during the first 2 years.

In order to assess the potential impacts of the various specification alternatives under consideration the PDT developed seven separate scenarios. Most of them are actual specification alternatives, and two of them are not. The non-specification alternatives were completed to assess other alternatives in the document. For example, the LAGC scenario (Run6) was developed to assess the potential impacts of allocating more access for LAGC vessels in MA AA in 2015 (2 million pounds). These analyses are for Section 2.2.2, not the overall specification alternatives. In addition, the status quo run (Run 7) is not an alternative, but is completed to compare impacts to 2014 allocations (31 DAS and two 13,000 pound access area trips).

The other scenarios evaluate specification alternatives (Runs 1-5); therefore more focus will be on these runs for assessing the potential impacts of the specifications. Runs 3 and 4 both evaluate Specification Alternative 3 – the alternative that considers closing new areas as scallop access areas; Run 3 includes all three closure options and Run 4 only includes two of the three closure options. A description of all seven scenarios is summarized below as well as a table with the model assumptions for fishing mortality rates (Table 95).

- Run 1 – Alternative 1 (No Action)
- Run 2 – Alternative 2 (Base Run)
- Run 3 – Alternative 3 (All 3 closures: CA2, NL and ETA subarea)
- Run 4 – Alternative 3 (Only 2 closures: CA2 and NL extensions only)
- Run 5 – Alternative 4 (Reduced F in MA AA and closing CA2 and NL extensions)
- Run 6 – Increased LAGC effort available in MA AA (2 million pounds)
- Run 7 – Status Quo – FY2014 measures (31 DAS and 2 13,000 pound trips)

In addition, at the November Scallop Committee meeting the Committee selected their preferred alternative, Alternative 3 with NL and ETA subarea only. This specific set of closure options was not one of the seven original runs. Therefore, the PDT completed an additional run with the Committee preferred alternative that was presented to the Council for the final Council meeting in November. A summary of the results for the preferred alternative, and how they compare to Alternative 2 the base run, and Run 3 (all 3 closures) are summarized in Section 5.1.2.2.3

Table 95 – Summary of assumptions used for the various scenarios developed for FW26 analyses

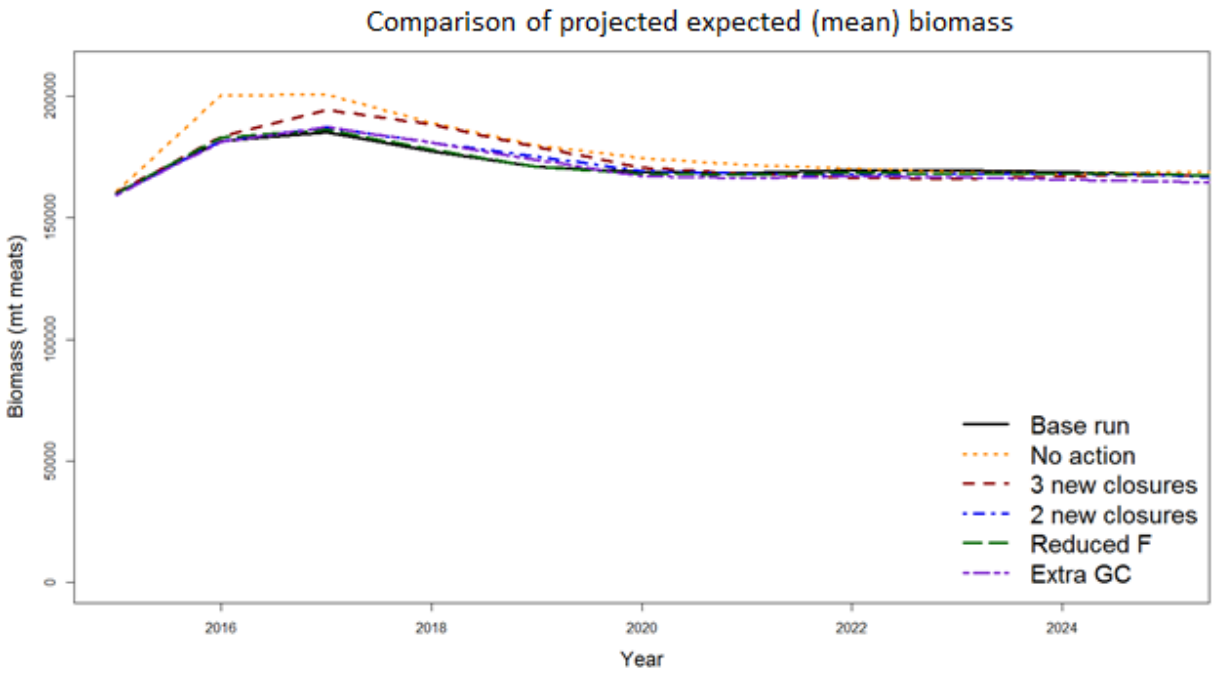
No Action		**2015 F**	**2016 F**	**2017 F**
	Open Areas	0.30	0.48	0.48
	HC	0.00	0.40	0.50
	ETA open	0.00	0.50	0.60
	ETA closed	0.00	0.50	0.60
	Del	0.00	0.40	0.50
Alt 2		**2015 F**	**2016 F**	**2017 F**
Base Run	**Open Areas**	0.48	0.48	0.48
Lottery Allocation	**HC**	0.35	0.40	0.50
	ETA open	0.35	0.50	0.60
	ETA closed	0.35	0.50	0.60
	Del	0.35	0.40	0.50
Alt 3		**2015 F**	**2016 F**	**2017 F**
3 new closures	**Open Areas**	0.48	0.48	0.48
Flexible Allocation	**HC**	0.35	0.40	0.50
	ETA open	0.50	0.50	0.60
	ETA closed	0.00	0.00	0.60
	Del	0.30	0.40	0.50
Alt 3		**2015 F**	**2016 F**	**2017 F**
2 new closures	**Open Areas**	0.48	0.48	0.48
Flexible Allocation	**HC**	0.35	0.40	0.50
	ETA open	0.35	0.50	0.60
	ETA closed	0.35	0.50	0.60
	Del	0.30	0.40	0.50
Alt 4		**2015 F**	**2016 F**	**2017 F**
Reduced F in MA AA	**Open Areas**	0.48	0.48	0.48
2 new closures	**HC**	0.40	0.40	0.50
Lottery Allocation	**ETA open**	0.30	0.50	0.60
	ETA closed	0.30	0.50	0.60
	Del	0.30	0.40	0.50
LAGC		**2015 F**	**2016 F**	**2017 F**
Increase F in MA AA	**Open Areas**	0.48	0.48	0.48
to be 2 mil for LAGC	**HC**	0.37	0.40	0.50
2 new closures	**ETA open**	0.37	0.50	0.60
Flexible Allocation	**ETA closed**	0.37	0.50	0.60
	Del	0.37	0.40	0.50
Status Quo		**2015 F**	**2016 F**	**2017 F**
FY2014 measures	**Open Areas**	0.50	0.48	0.48
31 DAS	**HC**		0.40	0.50
Two 13,000 trips	**ETA open**		0.50	0.60
	ETA closed		0.50	0.60
	Del		0.40	0.50

Note: An additional run was completed with the Council preferred alternative (Alternative 3 with NL and ETA closures only – See Section 5.1.2.2.3.

5.1.2.1.1 Projected total biomass

Overall the projected biomasses for the various runs are very similar (Figure 76). In 2015 the projected biomass is essentially the same for all runs. In 2016 the No Action run has higher biomass because effort levels were so low in 2015. In general, the alternative that closes the inshore area of ETA (Alt 3: 3 new closures) has higher biomass in the middle years compared to other runs that allow access in that area. In the long term there is very little difference in total biomass between the alternatives.

Figure 76 – Comparison of projected total scallop biomass



5.1.2.1.2 Projected landings

Overall the projected landings for the various runs are very similar (Figure 77). In 2015 the projected landings for Alternatives 2 and 4 are 45 million pounds and Alternative 3 is 46 million pounds. No Action is lower, 19 million pounds because it only includes 17 DAS for the LA FT vessels. In 2016 there are larger differences in projected landings based on allocation from 2015. Alternative 3 with 3 closures has lower landings because the inshore part of ETA would still be closed. Alternatives 2 and 4 have higher landings in 2016. After the ETA area opens in 2017 landings are higher for the alternative that closes the ETA area. Overall there are not major differences in landings in either the short term or the long term. It is important to keep in mind that these are mean values, and based on various assumptions for natural mortality and future recruitment, projected landings can vary. Figure 78 shows different percentiles for the 1,000 individual stochastic runs completed for the base run. For example, the mean landings for the base run in 2015 is projected to be 45 million pounds (about 20,400 mt). However, excluding the highest 10% and the lowest 10% of the runs, actual catch could reasonably fall between 18-

26,00 mt for the base run, or 40-57 million pounds in 2015, and the uncertainty gets larger the farther out the model projects.

Figure 77 – Comparison of projected landings (in mt)

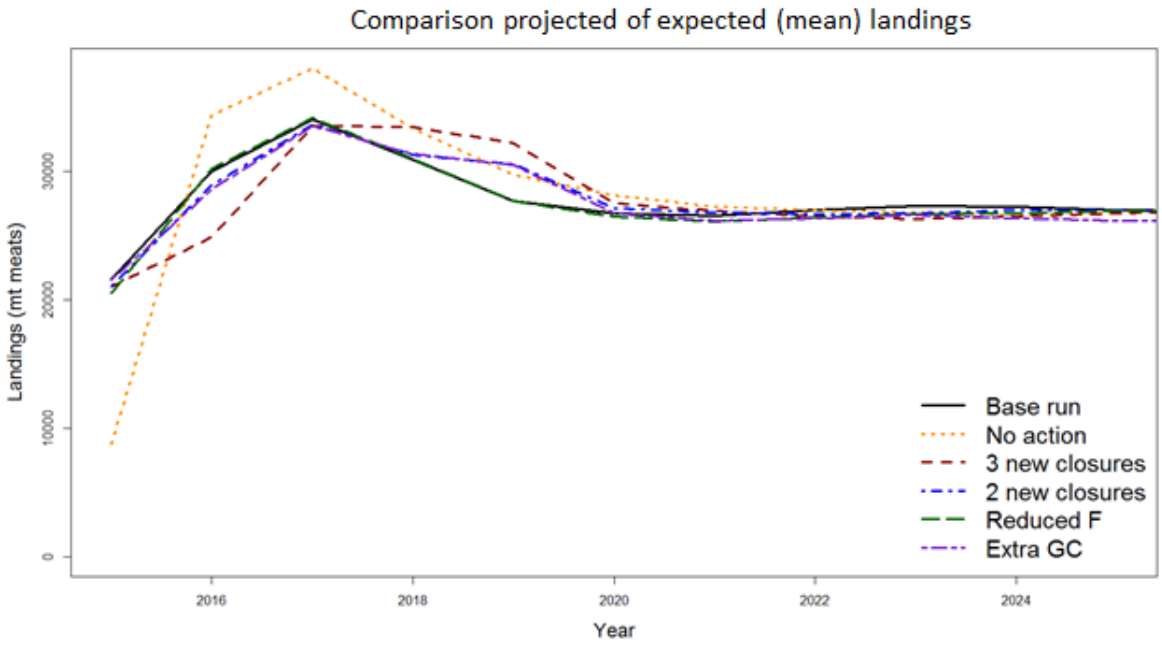
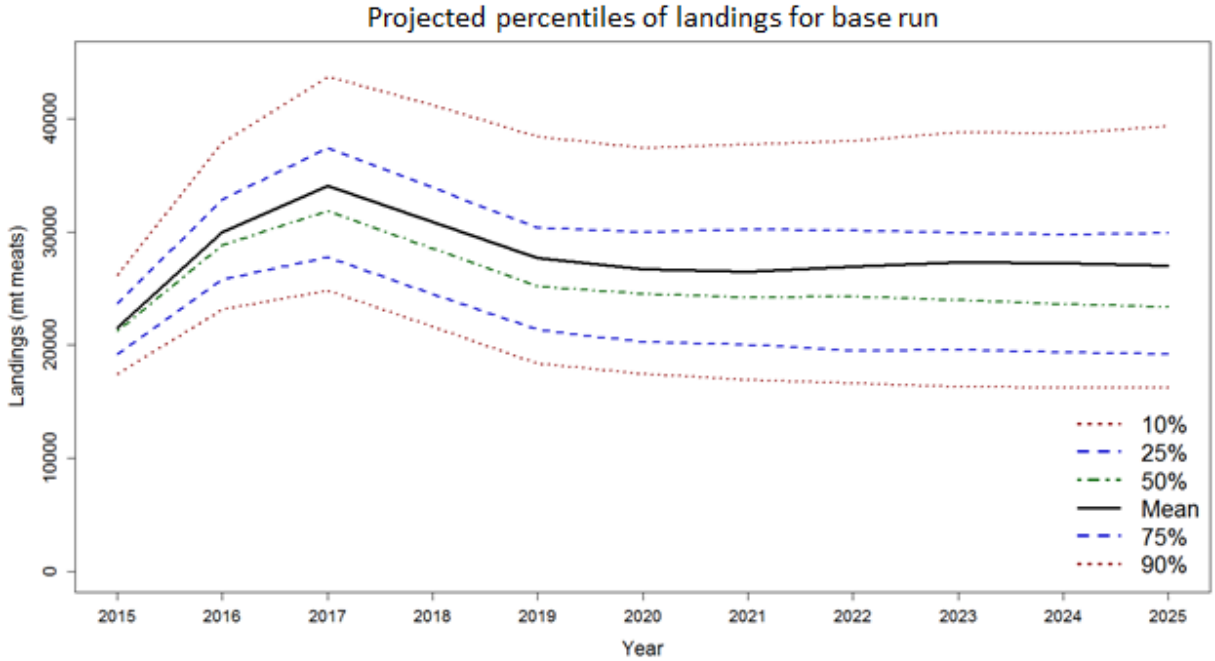


Figure 78 – Comparison of projected landings for base run (with percentiles for all 1,000 runs)



5.1.2.1.3 Projected biomass and landings for ETA only

The results for the base run for just ETA are summarized below broken out by "ETA offshore" and "ETA Inshore" (Table 96). The inshore area is the 7 ten minute square area under consideration for closure in Alternative 3. If the same fishing mortality is applied to both the inshore and offshore areas, the biomass and landings projections for each area are summarized below. Biomass in the inshore area is relatively low in 2014 because most of the scallops are small. As those scallops grow the biomass projections for the area increase greatly from 3,784 mt in 2014 to over 18,000 mt in 2016, with fishing in the area. These increases in biomass and landings from that area may be even higher if fishing is prohibited from the area.

The overall model estimates suggest that closing the area in 2016 and 2017 would yield about 1 million more pounds than just leaving the area open to fishing. One million pounds is a beneficial impact of about 12 million dollars, but for the fishery overall that is not a very large benefit spread over several years. There may be reasons the model is underestimating the benefits of closing the inshore ETA area.

First, the area is relatively small and model results for small areas may not be as pronounced as larger areas. Second, the model is aware of the size selectivity of the 4-inch rings; therefore, the model assumes the majority of small scallops get through the gear if the area is fished. An assumption of incidental mortality is applied, but that may be underestimated if small scallops are in high densities, potentially clogging up gear and experiencing greater impacts. Third, the model assumes that effort within the ETA will be distributed evenly, and that is not how the area will be fished. In the past when MA access areas open the shallow areas are generally fished first; they are closer to shore and scallops grow faster in shallow waters. If effort is higher in the shallow portion of ETA compared to offshore areas the impacts on smaller scallops distributed in the shallow portion of the area may be greater than the model assumes. Finally, closing the ETA area may be more risk averse overall by leaving part of the area closed. Access areas do not always perform as projected and if more flexibility is afforded to vessels to fish trips in any area, the impacts on small scallops in ETA may be greater than the results suggest. All of these factors together may be leading to an underestimate of impacts on small scallops in the inshore part of ETA, thus reducing the potential benefits overall of closing that area to the fishery. This is a one year action and while the projections for Alternative 3 assume a two year closure of the area, it is possible to open the area in 2016 if future surveys suggest the scallops are larger and ready to be fished.

Table 96 – Projected biomass and landings for Elephant Trunk area only (base run – Alternative2)

		BIOMASS		LANDINGS	
Year	F for Base Run	ETA Offshore	ETA Inshore	ETA Offshore	ETA Inshore
2014	0.00	21,344	3,784	0	0
2015	0.35	24,581	11,800	4,256	1,285
2016	0.50	21,478	18,409	4,609	4,313
2017	0.60	17,521	18,806	4,263	5,521
2018	0.60	14,207	15,583	2,950	4,141

5.1.2.1.4 Fishing mortality

- All the alternatives under consideration have a total estimate of fishing mortality considerably lower than the target used to set fishery allocations for the fishery (updated to F=0.32 based on the recent benchmark assessment). The range under consideration is between 0.08 (No Action) and 0.24 for several alternatives, and 0.25 if LAGC effort is increased to 2 million pounds in MA AAs.
- Because there is currently a relatively large amount of total biomass within EFH, GF closed areas, as well as MA access areas, and much of the total biomass is small, the overall F rates are relatively low for the fishery.
- Therefore, the risk of overfishing is relatively low for all of the alternatives under consideration since the projected F rates are well below 0.32. However, the model does tend to underestimate fishing mortality. In recent years when the Scallop PDT has evaluated the projected F rate compared with the actual F rate the following year, total F has been underestimated by 20-30% in some years.

Table 97 – Projected overall F for alternatives under consideration

Average of OverallF		Scenario					
subperiod	Fishing yea	1. No Action	2. Basic Run	3. 3 new closures	4. 2cl	5. Reduced F	6. Extra GC with 2 closure
2015-2016	2015	0.08	0.24	0.21	0.24	0.24	0.25
	2016	0.30	0.29	0.19	0.26	0.29	0.26
2015-2016 Total		**0.19**	**0.26**	**0.20**	**0.25**	**0.26**	**0.26**
2017-2019	2017	0.34	0.33	0.30	0.32	0.33	0.32
	2018	0.32	0.31	0.32	0.31	0.32	0.31
	2019	0.30	0.29	0.34	0.32	0.30	0.33
2017-2019 Total		**0.32**	**0.31**	**0.32**	**0.32**	**0.32**	**0.32**
2020-2028	2020	0.29	0.29	0.30	0.29	0.29	0.29
	2021	0.29	0.29	0.29	0.29	0.29	0.29
	2022	0.29	0.29	0.29	0.29	0.29	0.29
	2023	0.29	0.29	0.29	0.29	0.29	0.29
	2024	0.29	0.29	0.29	0.29	0.29	0.29
	2025	0.29	0.29	0.29	0.29	0.29	0.29
	2026	0.29	0.29	0.29	0.29	0.29	0.29
	2027	0.29	0.29	0.29	0.29	0.29	0.30
	2028	0.30	0.29	0.29	0.29	0.29	0.30
2020-2028 Total		**0.29**	**0.29**	**0.29**	**0.29**	**0.29**	**0.29**
Grand Total		0.28	0.29	0.29	0.29	0.29	0.29

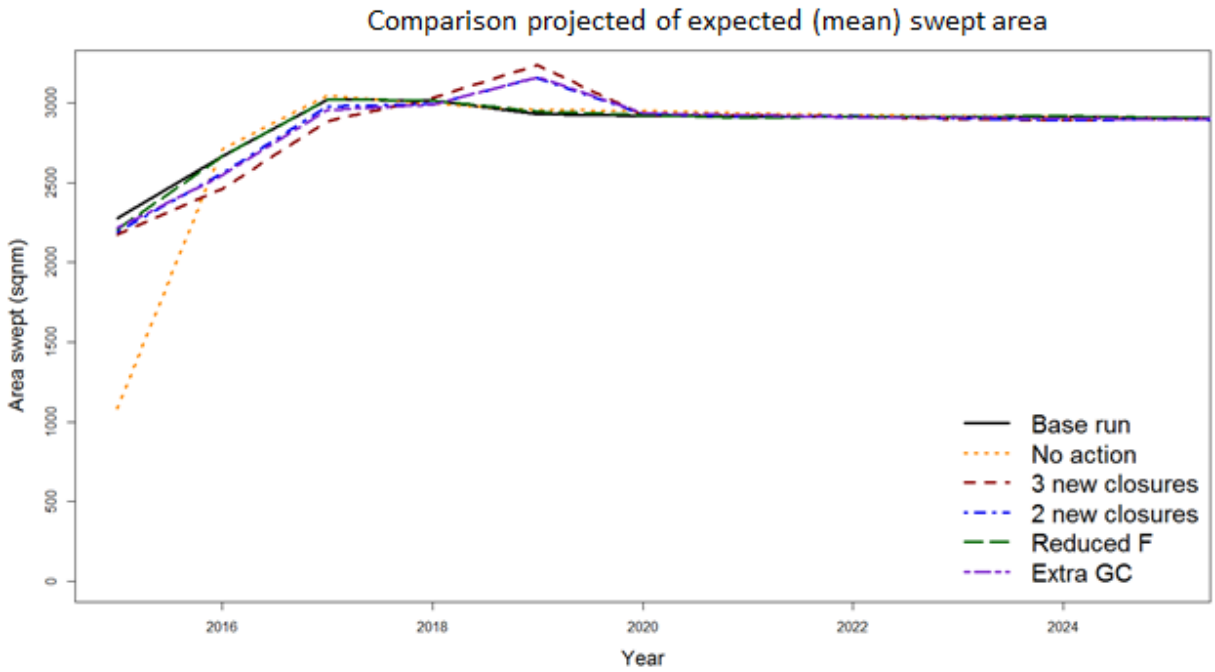
5.1.2.1.5 Projected bottom area swept

- Area swept is an indicator of the level of fishing associated with each alternative; higher area swept values represent higher potential impacts on the resource and associated impacts.
- Overall, all the alternatives have similar total area swept estimates, about 2,200 square nautical miles (Figure 79).
- No Action (Alternative 1) has the lowest estimate of area swept since it does not include any access area effort and greatly reduced DAS (17 DAS for the year).
- Alternative 3 with 3 closures has the lowest area swept in the short term and mid-term years, but the differences are very small.
- It is important to note that while there are small differences between these alternatives in terms of projected area swept, overall all of the alternatives have lower area swept projections than recent years. The range under consideration in this action is about 1,100 square nautical miles for No Action and up to 2,200 for the base run. Framework 25

estimated area swept to be about 2,800 in 2014 and FW24 estimated 2013 measures to have about 4,000 square nautical miles for total area swept. In 2010 values were estimated closer to 5,000; therefore, area swept is declining overall in this fishery under area rotation.

- Therefore, in terms of potential impacts on the environment from scallop fishing including incidental scallop mortality, bycatch of scallops and other species, as well as potential impacts on benthic habitats, all the alternatives under consideration have potentially fewer associated impacts compared to recent fishing years since the estimates of area swept for all alternatives are lower than recent years.

Figure 79 – Comparison of projected area swept



5.1.2.1.6 Projected shell/height frequencies per access area

The Scallop PDT has completed projections of shell height frequencies per area for the next several years to show the composition of scallops in each area based on 2014 survey results and estimated growth, fishing mortality, and natural mortality. The black line in the following figures is the size and frequency of scallops measured in the 2014 survey season, the red line is the projected size and frequency of those scallops for May 2015, and finally the blue dashed line is the projected size and frequency of the same scallops for May 2016. These estimates assumed fishing effort based on Specification Alternative 2, the basic run.

The projected shell height frequencies for scallops in the existing Closed Area 2 south scallop access area as well as the extension under consideration are shown in **Figure 80**. Scallops are larger in the existing access area, and some will be ready for harvest in 2015, but the majority of scallops in that area are projected to be between 100 and 140 mm in 2016. The extended area

has smaller scallops; less than 60 mm now. Those scallops are projected to be about 80mm in 2015.

Figure 80 – Projected shell height frequencies for CA2 south (top) versus CA2 south extension

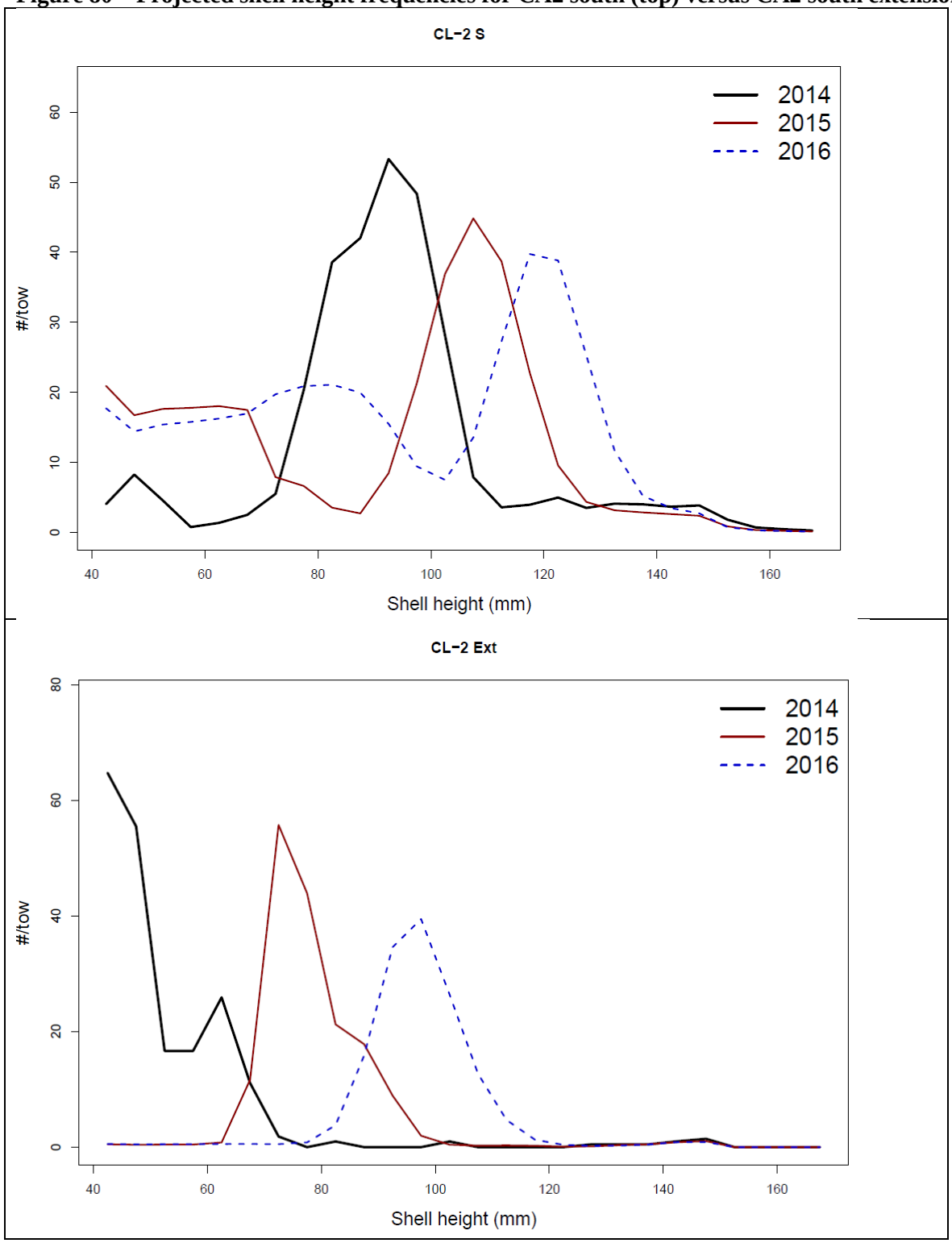


Figure 81 – Projected shell height frequencies for current access area in NL (top), NL closed (middle) and potential extension of NL (bottom)

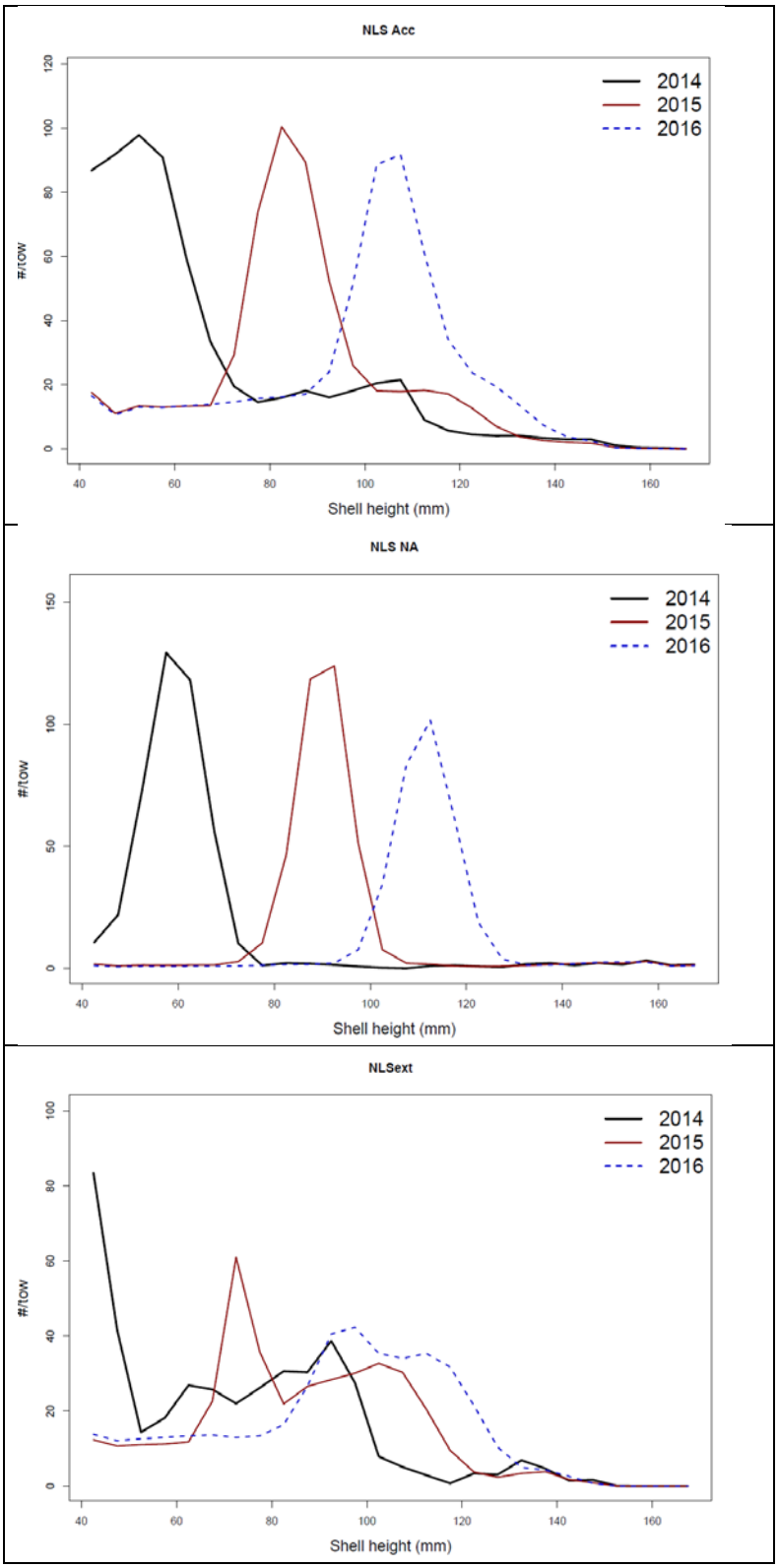


Figure 82 – Projected shell height frequencies for ETA offshore (top) and ETA inshore (bottom)

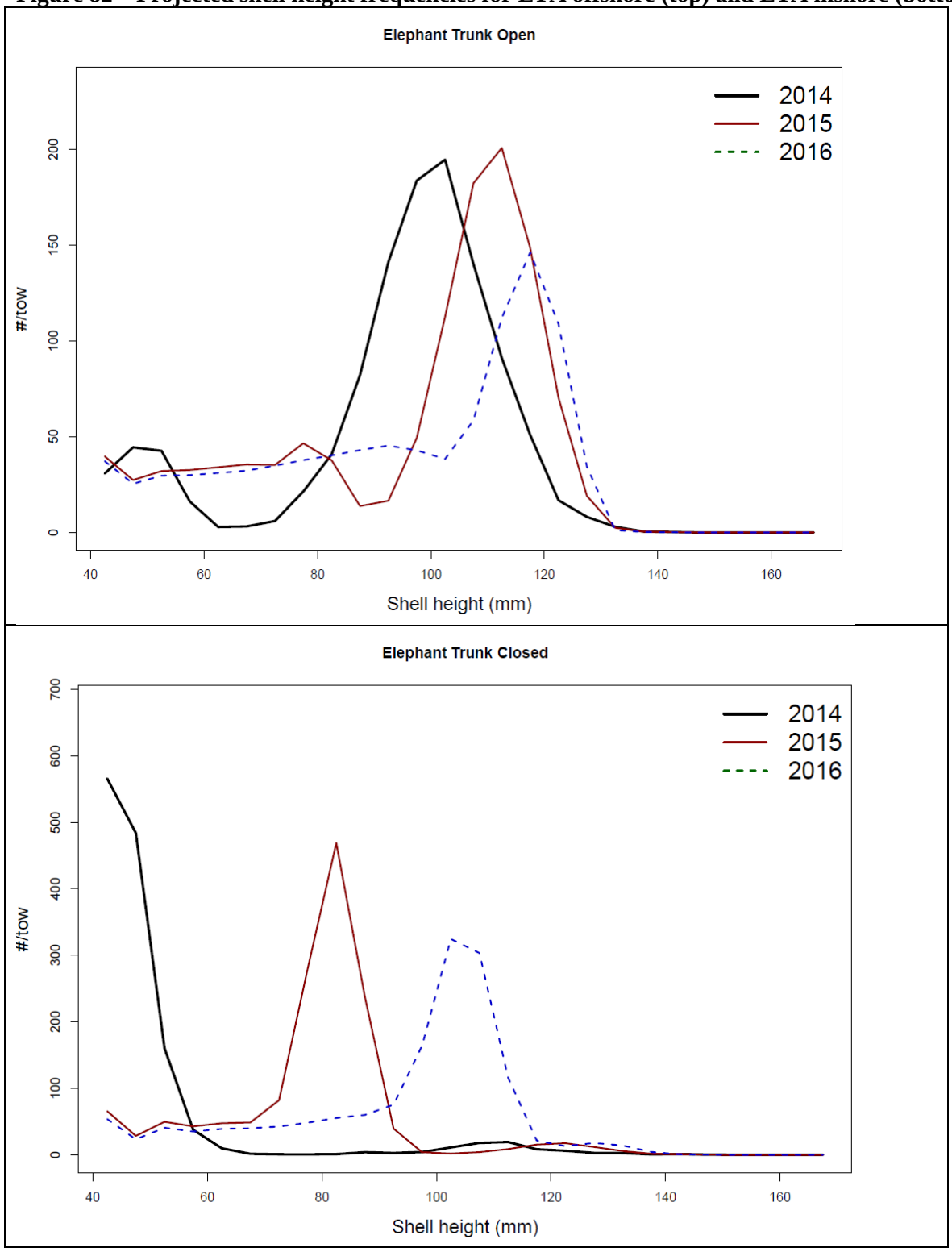
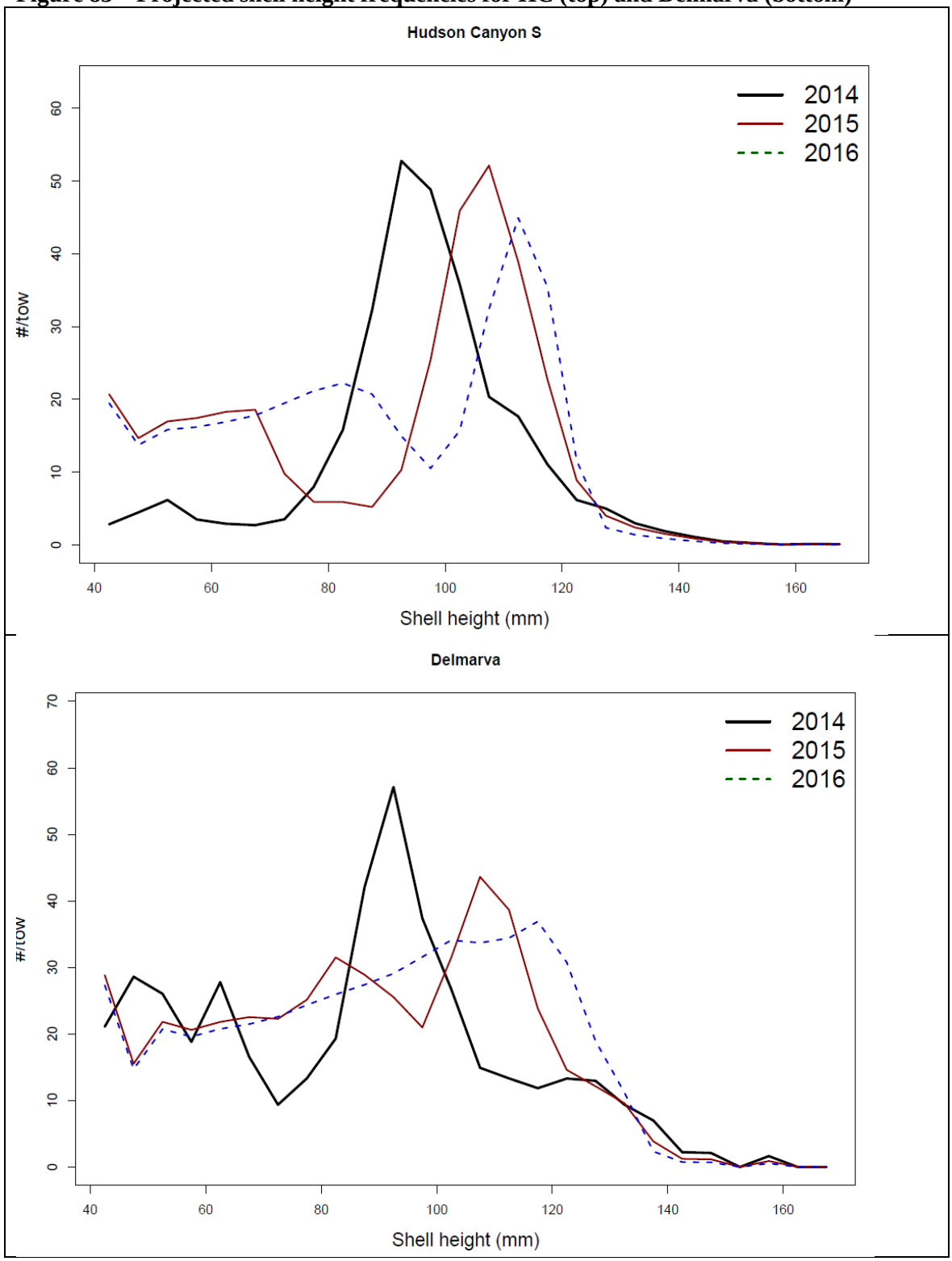


Figure 83 – Projected shell height frequencies for HC (top) and Delmarva (bottom)



5.1.2.2 Overall fishery allocations

A summary of the various allocation alternatives for the LA fishery are described in Table 14.

5.1.2.2.1 Alternative 1 (No Action – Default measures from Framework 25)

Under No Action, the sub-ACL for the LA fishery would be 21,879 mt (48,234,778 lb). The specifications would include default measures approved in Framework 25 for FY2015 which are 75% of the projected DAS for that year. For full-time vessels that is equivalent to 17 DAS (75% of 23 DAS) and 7 DAS for part-time vessels. There are no access area allocations under No Action. These measures would remain in place until replaced by another action.

Under FY2015 default measures the LAGC IFQ allocation is 1,274 mt for vessels with a LAGC IFQ permit as well as LA vessels with a LAGC IFQ permit. This allocation is equivalent to 5.5% of the ACL projected for FY2015 from FW25. No action for the NGOM hard TAC is 70,000 pounds and the target TAC for vessels with a LAGC Incidental permit is 50,000 pounds.

The Council recommended very precautionary default measures for the second fishing year in FW25 knowing that this subsequent action would replace the default measures. Since the default measures from FW25 only included 75% of projected DAS and no access area trips, when any of the FW26 specification alternatives are compared to No Action the total landings are higher and therefore would be characterized in this document as having negative impacts to the scallop resource. However, the No Action alternative is not realistic since the intent is to replace those measures with more updated/increased allocations after survey results are available for the following fishing year.

The impacts of the No Action alternative are positive on the scallop resource; estimates of fishing mortality are low under these specifications, thus the risk of overfishing is low (Table 97). Total biomass projections are higher under the No Action alternative in the early years, but in the long run the alternatives have similar biomass estimates (Figure 76).

5.1.2.2.2 Alternative 2 (Specifications based on basic run using fishing mortality target principles in the FMP with no modifications to scallop access area boundaries)

When the fishing target principles of the FMP are applied to the estimated biomass in each area for FY2015 the allocations for full-time LA vessels are:

- 31 DAS for FT vessels in open areas.
- Access area landings equivalent to 8,700 mt (19.2 million pounds), corresponding to three trips per FT LA vessels at 17,000 pounds per trip in ET, Delmarva and HC.
- The remaining scallop access areas would be closed to the scallop fishery in 2015: Closed Area I, Closed Area II, and Nantucket Lightship.
- Total projected landings for Alternative 2 from all sources of catch (including set-asides and LAGC catch) is about 45 million pounds.
- Sub-ACL for LAGC IFQ vessels is 1,348mt (about 2.97 million pounds).
- NGOM hard TAC of 70,000 pounds and the target TAC for vessels with a LAGC Incidental permit at 50,000 pounds.

Estimates of fishing mortality are low under Alternative 2, thus the risk of overfishing is low (Table 97). Total biomass projections are high under this alternative, and very similar to other

alternatives under consideration in this action (Figure 76). The impacts of Alternative 2 on the scallop resource of this alternative are neutral compared to No Action (same DAS but no access area trips). While Alternative 2 includes more access in several access areas, this has a small impact on overall estimates of fishing mortality and biomass projections since the level of effort from these access area trips is low, and a relatively high proportion of total biomass is in areas that are closed to the fishery (GF and EFH closures).

Alternative 2 would have neutral impacts compared to Alternative 3 since these alternatives are very similar in terms of overall projected biomass and fishing mortality, with only one difference about closing additional areas under Alternative 3. Similarly, Alternative 2 would have neutral impacts compared to Alternative 4; the results for projected biomass and fishing mortality are essentially the same for these two alternatives. Since a large proportion of the total biomass is not available to the fishery the impacts on the scallop resource overall are relatively similar for all the alternatives under consideration.

5.1.2.2.3 Alternative 3 (Specifications based on basic run using fishing mortality target principles in the FMP with modifications to scallop access area boundaries) *(Preferred Alternative)*

Three different closure modifications to existing access areas are under consideration in this alternative to reduce impacts on small scallops observed in various areas. One or more of these closure options could be selected. In addition to the three possible closures, the other specifications include:

- 30 DAS for FT vessels in open areas.
- Access area landings equivalent to 8,700 mt (19.2 million pounds), corresponding to three trips per FT LA vessels at 17,000 pounds per trip in ET, Delmarva and HC.
- The remaining scallop access areas would be closed to the scallop fishery in 2015: Closed Area I, Closed Area II, and Nantucket Lightship.
- Total projected catch for Alternative 3 varies slightly depending on the sub-options selected; overall it is about 46 million pounds (including set-asides and LAGC catch).
- Sub-ACL for LAGC IFQ vessels is 1,348mt (about 2.97 million pounds).
- NGOM hard TAC of 70,000 pounds and the target TAC for vessels with a LAGC Incidental permit at 50,000 pounds.

Option 1 – Modification to access area in Closed Area II

Option 1 is an extension of the scallop access area in Closed Area II to include concentrations of small scallops that are near existing boundaries of current access area. If selected, vessels would be prohibited from transiting through the scallop access areas within Closed Area II.

Option 2 – Modification to access area in Nantucket Lightship *(Preferred Alternative)*

Option 2 is an extension of the scallop access area in Nantucket Lightship to include concentrations of small scallops that are near existing boundaries of current access areas. If selected, vessels would be allowed to transit through the NL scallop access area.

Option 3 – Modification to Elephant Trunk (prohibit access in northwest corner) (2 options considered) *(Preferred Alternative)*

Option 3 is different in that this option proposes to close areas *within* current scallop access areas, or a temporary prohibition to fish in a subset of a current scallop access area. Option 3 is confined to Elephant Trunk. If selected, vessels would be prohibited from transiting through the closure within Elephant Trunk.

The PDT originally ran two separate model runs to assess the impacts of this alternative. Run 3 included all three closure options, and Run 4 only included two of the three closure options (not the ETA closure). Run 3 with all three areas closed does have the lowest estimate of fishing mortality than all the other runs; for 2015 and 2016 combined it is 0.20, while the other alternatives are 0.25 and 0.26 (Table 97). However, all of the alternatives have relatively low estimates of overall fishing mortality and are well below the fishing mortality target limits of 0.32. Run 3 also has higher estimates of biomass in the short and middle years since ETA was closed for 2 years (Figure 76). But overall since a large proportion of the total biomass is not available to the fishery the impacts on the scallop resource overall are relatively similar for all the alternatives under consideration. Section 5.1.2.1.3 summarizes the potential biomass and landings from just ETA and describes some of possible limitations of the model results when it comes to potential benefits of the ETA closure.

Run 4 does not close ETA and overall the results are very similar to Run 3; except Run 3 estimates about 1 million pounds more catch from the ETA closure overall compared to Run 4 that keeps the area open.

Closing CA2 south extension (Option 1) costs about 1 DAS in 2015 by converting that open area to a closed area. Closing the NL extension area (option 2) does not seem to impact the short term estimates of biomass or landings. The two closures combined increase landings overall by about 3 million pounds, and in the short term the overall fishing mortality estimate for Run4 (2 closures only) is slightly lower than the basic run (Alternative 2) and Alternative 4. But again, overall all the alternatives are expected to have beneficial impacts on the resource since overall estimates of biomass are high for all the runs, and overall fishing mortality estimates are low for all of the alternatives under consideration.

At the last Scallop Committee meeting the Committee identified a preferred alternative that would include Alternative 3 with closure Options 2 and 3 only; Option 1, the CA2 extension option was not part of the preferred alternative, which is not one of the original seven runs prepared by the PDT. Therefore, following the final Committee meeting the PDT completed additional analyses of the preferred specification alternative for the full Council to consider at the final meeting.

Overall, the impacts of the preferred alternative on the resource are very similar to Alternative 3 with 3 closures (Run 3). However, the overall estimate of total biomass is slightly higher for the alternative that closes all three areas compared to the preferred alternative that only closes NL and ETA (Figure 84). The preferred alternative has higher projected biomass compared to all the other alternatives except for Alternative 3 with 3 closures and No Action (Figure 76).

Figure 84 – Estimate of total biomass for several FW26 runs (Alternative 2 (base run), Alternative 3 with 3 closures and Alternative 3 with 2 closures (NL and ETA)

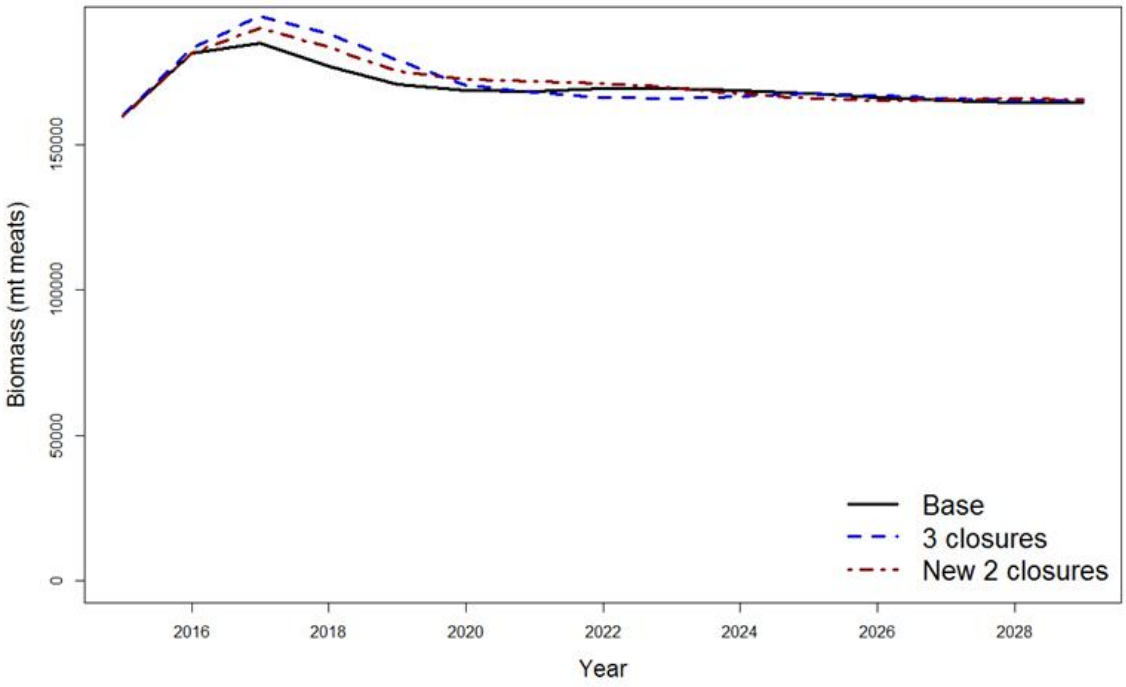
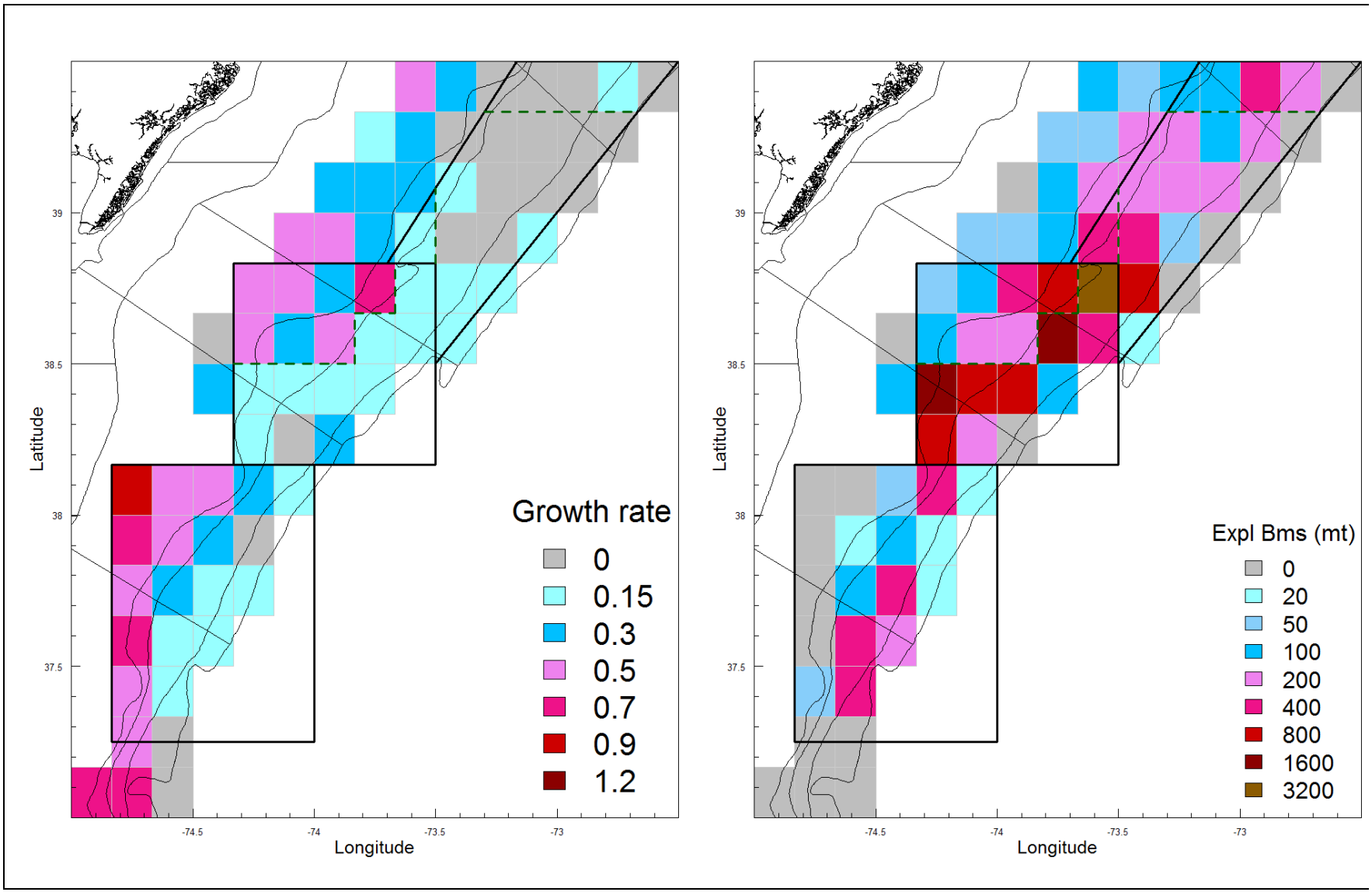


Figure 85 is an analysis of projected growth rates by ten minute square and exploitable biomass estimates for FY2015. In general, the larger area proposed for ETA, Option 3 with seven ten minute squares included, contains approximately 10% of the exploitable biomass that is within all three MA access areas, and 15% of the exploitable biomass in EAT only. For HC options, the HC north as well as the small triangle on the western boundary combined contain about 7% of the total exploitable biomass for all three MA areas combined, and 34% of exploitable biomass in HC. If the two areas are combined (larger one in ETA and two subareas in HC), about 17% of all MA AA exploitable biomass are within the boundaries. If the areas were closed and the same catch was desired form access areas, F in the remaining portions would need to be increased about 20%.

Figure 85 – Projected growth rates and exploitable biomass per ten minute square using 2014 VIMS data



5.1.2.2.4 Alternative 4 (Specifications based on basic run using fishing mortality target principles in the FMP, but reduce fishing mortality target for MA access areas lower than allowable limits to reduce incidental mortality on small scallops in those areas)

The same overall principles would be used to set fishing targets for the fishery; however, the allowable fishing mortality limit used to set allocations for MA access areas would be reduced by some amount to reduce impacts on small scallops observed in those areas. For example, in the base run the fishing mortality was set at 0.35 for all three MA access areas; for this alternative it was reduced to 0.30, but there is no closure in Elephant Trunk. This reduction in fishing mortality target would translate into lower catch allowed to be removed from the access areas (possession limits reduced by about 1,000 pounds per trip). This alternative can be combined with options that close extensions of CA2 and/or NL, but this alternative does not include the ETA closure option.

Under this alternative:

- 31 DAS for FT vessels in open areas.
- Access area landings equivalent to 7,650 mt (about 16.9 million pounds), corresponding to three trips per FT LA vessels at 16,000 pounds per trip in ET, Delmarva and HC.
- The remaining scallop access areas would be closed to the scallop fishery in 2015: Closed Area I, Closed Area II, and Nantucket Lightship.
- Total projected catch for Alternative 4 is about 45 million pounds (including set-asides and LAGC catch).
- Sub-ACL for LAGC IFQ vessels is 1,348mt (about 2.97 million pounds).
- NGOM hard TAC of 70,000 pounds and the target TAC for vessels with a LAGC Incidental permit at 50,000 pounds.

Estimates of fishing mortality are low under Alternative 4, thus the risk of overfishing is low (Table 97). Total biomass projections are high under this alternative, and very similar to other alternatives under consideration in this action (Figure 76). The impacts of Alternative 4 on the scallop resource of this alternative are neutral compared to No Action (same DAS but no access area trips). While Alternative 4 includes more access in several access areas, this has a small impact on overall estimates of fishing mortality and biomass projections since the level of effort from these access area trips is low, and a relatively high proportion of total biomass is in areas that are closed to the fishery (GF and EFH closures).

Alternative 4 has essentially the same potential impacts as Alternative 2 since the results of projected biomass and fishing mortality are essentially the same. Compared to Alternative 3 the impacts on the resource may not be as beneficial in the short term since fishing mortality estimates are slightly higher under Alternative 4 than Alternative 3, but overall the impacts are low since fishing mortality estimates are well below the limits allowed under the FMP.

5.1.2.3 Allocation of LAGC IFQ trips in access areas

The LAGC IFQ fishery is allocated a fleetwide total number of access area trips. Individual vessels are not required to take trips in specific areas like access area trips allocated to the limited access fishery. Instead, a maximum number of trips is identified for each area and once that limit is reached, the area closes to all LAGC IFQ vessels for the remainder of the fishing year.

This action is considering four options for allocating fleetwide trips to the LAGC IFQ fishery. Option 1 is No Action; LAGC IFQ trips will not be allocated in any of the scallop access areas in 2015 or 2016 (default). Under Option 2 the LAGC fishery would be allocated 5.5% of the total 2015 access area TAC for every area open in a particular year. In 2015, an allocation of 5.5% of access area landings is equivalent to 1.05 million pounds, or 1,758 trips with a 600 pound possession limit. Option 3 would allocate 2 million pounds to the LAGC fishery from access areas, increasing the overall access LAGC vessels would have to areas that are projected to have more productive fishing areas in 2015. Two million pounds is about 67% of the total LAGC IFQ allocation for 2015 (2.97 million pounds). Two million pounds for the LAGC fishery is about 10.4% of the total access area catch available in 2015, and that allocation is equivalent to 3,333 trips with a 600 pound possession limit. Finally, Option 4, the preferred option, would provide about the same level of access for LA and LAGC vessels in access areas in 2015 in terms of the total proportion of catch for the year. For example, access area catch is about 41.7% of total catch for FY2017, and if that proportion is applied to the LAGC IFQ that would be about 1.2 million pounds, 41.7% of the total LAGC IFQ for 2015 (2.97 million pounds). That allocation is about 6.5% of the total access area catch available in 2015, equivalent to 2,065 trips at 600 pounds each.

If trips are not taken in these areas, LAGC catch is assumed to be taken in open areas instead. In some cases, catch rates are higher in access areas so it may take longer for a LAGC vessel to fish for IFQ in open areas; however, in other cases catch rates can be higher in some open areas compared to access areas. Overall, LAGC catch in access areas is a small percentage of the overall catch and vessels tend to fish where catch rates are higher, so if they are higher in access areas most trips should be fished there, and if they are not more LAGC catch could come from open areas.

Under No Action (Option 1) LAGC IFQ vessels would not be allocated trips in access areas. Therefore all IFQ catch would come from open areas. Since the overall allocation of LAGC IFQ is a relatively small proportion of total scallop catch the location of effort does not have a major impact on the resource. Thus, impacts of No Action are neutral on the scallop resource. Option 2 would allocate 5.5% of each area TAC to the LAGC IFQ fishery in fleetwide trips per access area. In theory this option would have low positive impacts on the resource compared to No Action because LAGC IFQ effort would be distributed over more areas and not all in open areas. However, these trips are voluntary, and even if LAGC IFQ trips are available in an access area the fleet may fish in open areas instead. Therefore, the impacts of this measure are generally neutral compared to No Action.

Option 3 allocates 2 million pounds to LAGC vessels in access areas, on top of the scheduled allocation for LA vessels in access areas. The PDT ran a SAMS run for this to evaluate the effects of removing about an additional million pounds from the access areas in year 1, without adjusting LA allocations to accommodate that increased catch. Overall the results suggest that the impacts on the resource are minimal. Overall fishing mortality for 2015 does increase from 0.24 to 0.25 when comparing Alternative 3 with 2 closures and Run 6 (increased LAGC catch with Alternative 3 and 2 closures). That increase in F is temporary and does not seem to impact future catches or mortality estimates beyond the next year; 1 million pound increase in year 1 and 1 million pound decrease in year 2. Furthermore, because these trips are voluntary, the fleet may fish more in access areas and less in open areas, and they may not if catch rates are not

substantially different. Ultimately, since the overall LAGC catch in access areas is a small percentage of the overall catch the spatial impacts of removing that catch in one area and not another are minimal. Therefore, the impacts of this measure on the resource are generally neutral compared to No Action.

Option 4 would provide more access for LAGC vessels compared to Option 1 and 2, but less than Option 3. Again, since the overall LAGC catch in access areas is a small percentage of the overall catch the spatial impacts of removing that catch in one area and not another are minimal. Therefore, the impacts of this measure on the resource are generally neutral compared to No Action

5.1.2.4 Additional measures to reduce impacts on small scallops

This action is considering two options for this issue. Option 1 (No Action) would maintain that access areas not have a crew limit. Option 2, the preferred option, would implement the same crew limits that exist for open areas: 7 individuals per LA vessel, and if a vessel is participating in the small dredge program it may not have more than five people on board.

Since the MA access areas have relatively high concentrations of small scallops Option 2 would help reduce the potential for highgrading. Compared to No Action this measure could have low positive impacts on the scallop resource in MA AAs by limiting the overall number of crew. Crew limits have been eliminated for scallop access area trips since there is a possession limit controlling effort in access areas, but if scallops are generally smaller an additional crew member or two could increase the potential mortality from that area if vessels do not bother to target larger scallops and instead cut higher amounts of smaller scallops to attain the same possession limit. Therefore, under No Action there could be low negative impacts on the resource if vessels highgrade. If Option 2 reduces the incentive for highgrading, which increases mortality, it could have low positive impacts on the resource compared to No Action.

5.1.3 Allocation method for Mid-Atlantic access area trips in 2015 only

5.1.3.1 No Action (lottery allocation)

Under this alternative 2015 Mid-Atlantic access area trips would be allocated to LA vessels similar to how trips have been allocated in the past. For 2015, each full-time limited access vessel would receive 3 trips; two allocated to ETA, and the third from either HC or Delmarva. The third trip would be allocated by lottery. The lottery for the third trip would not be split 50/50 between the two areas. The projected biomass is higher for HC compared to Delmarva, so more trips would be allocated to HC. The third trip lottery split for all three specification alternatives would be 56% of trips to HC, and 44% to Delmarva.

This method of allocation is expected to have neutral impacts on the resource. Trips would be allocated and distributed based on projected biomass results. Under this alternative a LA vessel would need to fish in a particular area. If projections are underestimated a vessel may need to fish longer to attain the possession limit, which can have negative impacts on the resource if catch rates fall very low. However, vessels can carryover access area trips to the first 60 days of the following year, so if catch rates are low, a vessel can wait to fish remaining catch in March and April of 2016, potentially minimizing any negative impacts on the resource from fishing areas with lower catch rates.

5.1.3.2 Flexible allocation for Mid-Atlantic access area trips *(Preferred Alternative)*

The three MA AA areas would be considered one area using their existing boundaries for FY2015. Vessels would declare a MA AA trip and could freely fish inside all three areas on the same trip. Under this alternative, limited access vessels would receive their total access area allocation in pounds, and that allocation could be fished in any of the MA AAs (and across multiple AAs on a single trip) up to a certain possession limit.

This method of allocation is expected to have slight positive to slight negative impacts on the resource and depends on fishing behavior. Impacts may be slightly positive if vessels are given flexibility to fish access areas trips if they decide to fish those trips in areas with the highest catch rates. Under No Action, if a vessel is allocated a trip by lottery that has lower catch rates than another area, the vessel would still need to fish in that area. Under the preferred alternative vessel could chose to fish that trip in a different area, with potentially higher catch rates. Biomass projections are uncertain and if catch rates are underestimated for a particular area, it could take a vessel longer to harvest their allocation, having potentially low negative impacts on the resource. Overall any positive impact is likely low in magnitude since the estimates are fairly robust because the estimates were based on combined results from several resource surveys of the MA access areas in 2014.

On the other hand, flexibility could also increase fishing pressure in some areas to a level that could have some negative impacts on the resource. Potential impacts of this alternative may be more uncertain because there is less control on where vessels fish. In theory if a vessel is fishing in an access area and catch rates drop off the vessel would move to a higher catch area. However, on access areas trips vessels are not on the clock, so they may decide to continue fishing in a lower catch area for other reasons (i.e. distance from port, etc). This can have some negative impacts on the resource if vessels decide to fish in lower catch areas for other reasons. Since these potential impacts are dependent on fishing behavior and could range from low negative to low positive It is possible that

For example, in 2015 the area with the highest concentration of exploitable scallops is the deeper water portion of ETA. If all three access areas have flexible boundaries vessels may start fishing access area trips when they entire the larger access area (northern part of HC for vessels from New England, inshore ETA for vessels from NJ, and Delmarva for vessels from southern ports). This could spread effort out, but could also increase fishing pressure in other areas. For example, more fishing in inshore parts of ETA could have negative impacts on small scallops in that area. Vessels are not on the clock in access areas, so while it seems that vessels would move if catch rates fall, some may not having potential impacts. In an extreme example, what if all vessels fished all three trips in ETA. That is not probable, but f rates could be higher in that area than projected. High fishing mortality in the first year of an opening can reduce the overall yield from an access area. Finally, impacts may be more uncertain from this alternative if there is reduced ability to monitor where catch is coming from. Overall the potential impacts on the resource range from low positive to low negative depending on fishing behavior, but ultimately catch will be constrained by the total allocation in access areas and if effort is distributed unevenly, future surveys will indicate if one area needs to be fished less. Therefore, any potential negative impacts are likely to be short term and non-significant.

5.1.4 Adjustments to provisions related to allocating and monitoring access area trips

5.1.4.1 No Action (trip allocations continue and broken trip procedures)

Under this alternative, vessels would continue to be allocated access area trips with associated possession limits, which could actually be taken across multiple trips. For example, if vessels receive 3 trips at 17,000 lb into the Mid-Atlantic access areas, although they would be allowed to land the entire 51,000 lb during the fishing year under multiple trips, they would still need to follow current broken trip procedures. This measure is administrative in nature and does not have direct impacts on the resource.

5.1.4.2 Remove broken trip process and replace with prelanding reports *(Preferred Alternative)*

Under this alternative, vessels would be given a simple poundage allocation in an access area, instead of referring to it as a trip allocation with associated pounds that can actually be fully harvested under multiple trips. For example, in a given fishing year, a vessel receives a17,000 lb allocation in Delmarva and a 34,000 lb allocation in Elephant Trunk, which can be harvested on multiple trips, but trips would have a possession limit of 17,000 lb. Trip exchanges would still occur, but a vessel would only exchange a full-possession limit between areas. Notice that none of this changes in any way how the fishery currently operates, but it is using terminology that is more in line with how the fishery actually functions.

If this alternative is adopted, for each trip, vessels would submit a preland through their VMS unit to indicate pounds caught. If a vessel is unable to land a full possession limit on a single trip, the vessel could go out and fish it on multiple trips without having to submit broken trip reports to request a compensation trip. Similar to No Action, this modification would be administrative in nature and does not have direct impacts on the resource.

5.1.4.2.1 Option 1: Require vessels cross the VMS demarcation line and submit a preland within last 60 days of the fishing year in order to fish those pounds in the first 60 days of the following fishing year.

This option would be status quo -- there is already the potential to carryover all unused access area pounds into the next year, but vessels would still be required to take action (i.e., cross demarcation line and submit a preland or a broken trip form) in the last 60 days that an access area in open in a given fishing year in order to receive the carryover pounds for that area. This measure is administrative in nature and does not have direct impacts on the resource.

5.1.4.2.2 Option 2: Allow for all unlanded access area pounds to be carried over without any action from vessels *(Preferred)*

This would be similar to status quo because there is already the potential to carryover all unused access area pounds into the next year, but vessels would no longer be required to break a trip in the last 60 days of a fishing year. Under this option a vessel would not have to actually go out in their vessel to physically break a trip by crossing the VMS demarcation line. This measure is administrative in nature and does not have direct impacts on the resource.

As background the PDT evaluated recent catches per area to assess the level of current carryover. Note there is not an actual TAC per access area. Instead these values were calculated by multiplying the possession limit * the number of LA vessels. Based on this information it does not seem that a large portion of access area effort is being carried over. Therefore, if this option

adds flexibility and increases the total amount of carryover the potential impacts on the resource are limited because vessels are currently allowed to carryover catch and the magnitude of carryover is relatively low. In only one instance, Closed Area I in 2013, the majority of catch was not harvested in the year it was allocated, and that was due to very low catch rates in that area.

Table 98 – Area "TAC" in million pounds compared to actual landings per access area (LA vessels only)

Access Area	2012	2013	2014*
Closed Area I	5.89	1.53	Closed
	4.99 (85%)	0.49 (32%)	Closed
Closed Area II	5.89	2.37	2.36
	5.51 (94%)	2.41 (102%)	1.79
Nantucket Lightship	3.06	1.51	1.39
	2.94 (104%)	1.86 (124%)	0.84
Hudson Canyon	8.82	2.73	Closed
	8.83 (100%)	2.79 (102%)	Closed
Elephant Trunk	Open Area	Closed	Closed
	Open Area	Closed	Closed
Delmarva	0	Closed	3.76
	0.20	Closed	2.36
Total AA	23.66	8.14	7.51
	22.47 (95%)	7.55 (93%)	5.07

**** Preliminary – FY2014 is not complete yet. Data through September 10, 2014***

5.1.5 Measures to allow fishing in state waters after federal NGOM TAC is reached

5.1.5.1 No Action

Once the federal NGOM hard TAC is reached, all vessels with a federal scallop permit are prohibited from fishing for scallops in the NGOM, INCLUDING state waters. This is not expected to have any direct effects on the federal scallop resource. There could be some low positive impacts on the scallop resource within state waters if this measure prohibits effort from vessels with federal permits from fishing in state waters if the federal NGOM hard TAC is reached. However, the magnitude of this effort is very limited so the overall effects are expected to be minor.

5.1.5.2 All vessels with both a state scallop permit and federal NGOM permit allowed to fish in state waters after the federal TAC is reached

If the federal NGOM hard TAC is reached and the area is closed, but a vessel has both a federal NGOM permit and a state water scallop permit, that vessel would be permitted to fish exclusively in state waters for scallops under state water rules. All other vessels with federal scallop permits would be prohibited to fish for scallops in state waters in the NGOM management area after the TAC is reached (LA, LAGC IFQ, and LAGC Incidental).

In general this alternative should have neutral impacts on the resource compared to No Action. The federal NGOM hard-TAC is set based on somewhat limited surveys of the federal resource only. This measure is primarily about access to the state water fishery. The current regulations

prevent a vessel with a federal permit to fish in state waters if the federal TAC is reached. Since state water scallop fisheries are primarily active in the winter, there is a chance that the federal TAC could be reached before the state fishery begins.

The only states with active state water scallop fisheries are Maine and Massachusetts. Both states have management programs in place to control fishing activity in state waters. Therefore, allowing vessels with federal permits to fish in state waters even if the federal TAC is caught should not have any additional impacts on the resource in either federal or state waters. The hard-TAC in federal waters would still control overall removals from federal waters, and individual states have measures in place to restrict fishing in state waters. For example, the state of Maine has a rotational management program with limited fishing seasons of 70 days (50 days in Cobscook Bay) as well as a handful of other input controls. The number of license holders has increased from about 150 in 2008 to about 400 in 2012. The scallop fishing licenses are not owner operator; the permit holder just needs to be on board during fishing operations. The license holder does not have to declare a vessel at the time the license is being issued. Therefore, any vessel with a federal scallop permit could fish in state waters if a licensed individual is onboard.

In the state of Massachusetts there are about 160 state water only permits, and about 60 of those also have federal scallop permits. About 10 vessels have both a NGOM permit and a state water scallop permit. The vast majority of state water harvest is by vessels with just a state water permit (90%). Therefore, this alternative would have minimal impacts either way since only about 10 vessels would be able to fish in state waters after the NGOM federal TAC is reached. In the last few years the state implemented scallop management measures to constrain daily catches and implement gear restrictions to be more consistent with the federal NGOM program. Therefore, state water fishing is constrained in both MA and ME by state water programs; so the impacts on the resource from this alternative should be neutral.

5.1.5.3 Revise the state water exemption program provisions to allow a state to request a specific exemption related to fishing in state waters after the NGOM TAC is reached *(Preferred Alternative)*

No changes would be made to the regulations prohibiting all vessels with a federal scallop permit to fish for scallops in state waters after the NGOM hard TAC is reached (§648.62). Instead, the regulations related to state water exemptions would be revised to allow an individual state to request a specific exemption related to fishing in state waters after the NGOM TAC is reached.

The potential impacts of this alternative on the resource are likely neutral compared to No Action as well as the other alternative under consideration. This measure in and of itself would not have any direct impacts since it would only add a provision to list of measures that state water fisheries can be exempt from. This alternative may be more flexible than the other alternative under consideration that is constrained to just federal NGOM permit holders. This alternative may include other scallop permit types (i.e. incidental, IFQ, etc). For example, in Massachusetts there are only ten vessels with both a federal NGOM permit as well as a state scallop permit, 25 vessels with a federal LAGC IFQ permit as well as a state water scallop permit, and 16 with both a federal incidental and state water scallop permit. In Maine the state water scallop licenses are not linked to a vessel, so as long as the license holder is onboard, the license could be used on any vessel.

It is important to note with this alternative that before anything is approved an individual state would need to request an exemption directly to NMFS and it would need to be approved. If a state requests an exemption the Regional Administrator shall review the changes and determine if the state's conservation program does not jeopardize the biomass and fishing mortality objectives of the Scallop FMP.

5.1.6 Measures to make turtle regulations consistent

There are two specific measures in place in the Scallop FMP that are designed specifically to reduce mortality on sea turtles; the turtle chain mat requirement and the turtle deflector dredge requirement. The chain mat regulation is in effect from May 1 through November 30 for any vessel with a sea scallop dredge in waters south of 41°9.0′ N. latitude. The turtle deflector dredge is in effect from May 1 through October 31 for any limited access scallop vessel using a dredge, regardless of dredge size or vessel permit category, or any LAGC IFQ scallop vessel fishing with a dredge with a width of 10.5 ft (3.2 m) or greater, that is fishing for scallops in waters west of 71° W long. The action is considering No Action which would keep these measures as they are, and an alternative to make the seasons and areas consistent (preferred).

Both of the alternatives under consideration are expected to have neutral impacts on the resource. The measure to make these regulations consistent was developed primarily to reduce regulatory complexity; therefore, it is administrative in nature. Both measures will still be in place to reduce impacts on turtles in the same overall area and season. Making these regulations consistent is not expected to dramatically change fishing behavior in any way that would have direct impacts on the resource since the overall area is only slightly modified (chain mat area reduced to 71W), and the season is only changed slightly (one month longer for the TDD than before).

5.1.7 Measures to develop new accountability measures for northern windowpane flounder and modify existing accountability measures for gb and sne/ma yellowtail flounder

5.1.7.1 No Action

Under No Action, there would be no new proactive AMs in the scallop fishery. Overall there are currently several measures in the Scallop and Northeast Multispecies FMPs that were designed to reduce finfish bycatch. Scallop Framework 23 described these measures as proactive AMs that reduce YT bycatch (See Section 2.2.3 of FW23). These measures were implemented well before AMs were required, but they likely help reduce bycatch and potentially help keep the scallop fishery below sub-ACLs during the fishing year. The list of measures include: area rotation overall, seasonal restrictions in scallop access areas on GB, gear modifications such as larger rings and larger twine tops, voluntary bycatch avoidance programs, and other voluntary gear modifications used by some vessels in the fleet (number of rows in the apron and reduced handing ratio of twine top). A proactive AM for SNE/MA WP was specifically implemented in 2014 under Scallop FW25, a maximum of seven rows in the apron of a scallop dredge in all open areas in the Mid-Atlantic west of 71 W.

Under No Action, no new measures would be adopted that would constrain the scallop fishery if the sub-ACLs are exceeded. Therefore, the No Action would have neutral impacts on the scallop resource because it would not alter fishing activity.

5.1.7.2 Proactive AM to modify the number of rinds in apron of dredge restricted area *(Preferred Alternative)*

Currently there is a requirement that all scallop dredges have a MINIMUM of seven rows of rings in the apron of the dredge in all areas east of 71 W. Framework 25 modified this outdated regulation for all waters west of 71W, excluding Mid-Atlantic access areas, already as a proactive AM for southern windowpane flounder, but the requirement to have a minimum 7-ring apron still exists for all other areas.

This alternative would modify the current requirement to have at least a seven row apron, and instead require all vessels to have a MAXIMUM of seven rows. This would apply to all open areas and access areas, all year long. As noted, this requirement is already in place as a proactive AM for southern WP in open areas west of 71W. If this alternative is adopted that would apply to all other areas as well, Mid-Atlantic access areas, scallop access areas on GB, and open areas east of 71 W as well.

Changing the requirement to a maximum of seven, from a minimum of seven, would enable vessels to fish with fewer rings and a larger twine top. A larger twine top reduces bycatch of finfish and small scallops. There may be beneficial impacts on the scallop resource from this measure since fewer rows of rings increases the escapement of small scallops and is not expected to cause too many large scallops to escape, which would require vessels to fish longer (**Table 99**).

Increased fishing time to compensate for any potential loss in scallop catch is somewhat limited, at least for LA vessels fishing in open areas. Since LA vessels are under DAS in open areas vessels cannot increase the fishing time beyond their annual allocation of DAS. If fewer small scallops are caught with shorter aprons, discard mortality would be lower, having potentially low positive impacts on the resource compared to No Action. These potential benefits may be limited compared to current fishing practices because many vessels already fish with seven rows in the apron of the dredge. Furthermore, LAGC IFQ vessels and LA vessels in access areas are not on DAS, so in theory could fish longer, negating any potential positive impact on the resource from increased escapement of small scallops from shorter aprons.

However, adopting this measure would prevent vessels from fishing with more than seven rows, and enable vessels to fish with fewer rows than seven voluntarily. Fewer rows (i.e. five rows of rings) have been found to reduce bycatch, but fewer than seven is currently prohibited in the regulations. If some vessels decide to fish with fewer than seven rows as a result of this proactive AM that may reduce impacts on scallop mortality since results suggest that dredges with fewer rings are more selective for larger scallops, and catch fewer small scallops.

Table 99 and

Figure 86 summarize the number of rows in all LA scallop dredges observed by year. The most common configuration for LA vessels includes nine rows of rings, followed by ten and eight. There are some vessels using seven, but the majority of the LA fleet seems to be using longer aprons. The number of vessels already using five rows is very small, five out of 600 observed vessels in 2013. Therefore, if this AM is implemented the majority of the LA fleet would need to reduce their aprons.

The majority of the LAGC fishery is also fishing with aprons longer than 7 rows, based on all observed LAGC trips between 2010 and 2014 to date (Figure 87). But most fishing with aprons with eight rows (about 30%), followed by seven (over 20%), and about 20% of all observed trips had aprons with nine rows.

Table 99 – Number of rows in apron on observed scallop trips by year

No. of Rows in Apron	2008	2009	2010	2011	2012	2013	Grand Total
4	21	11	13	2	0	0	47
5	14	6	6	0	0	5	31
6	21	23	3	4	1	5	57
7	139	128	105	90	93	67	622
8	243	277	153	217	189	129	1208
9	352	403	298	226	412	184	1875
10	239	256	150	198	251	158	1252
11	72	55	29	72	47	28	303
12	45	18	33	38	30	19	183
13	12	19	15	6	16	5	73
14	1	4	2	9	2	0	18
Grand Total	1159	1200	807	862	1041	600	5669

Figure 86 - Number of rows in apron on all observed LA scallop trips (all years combined)

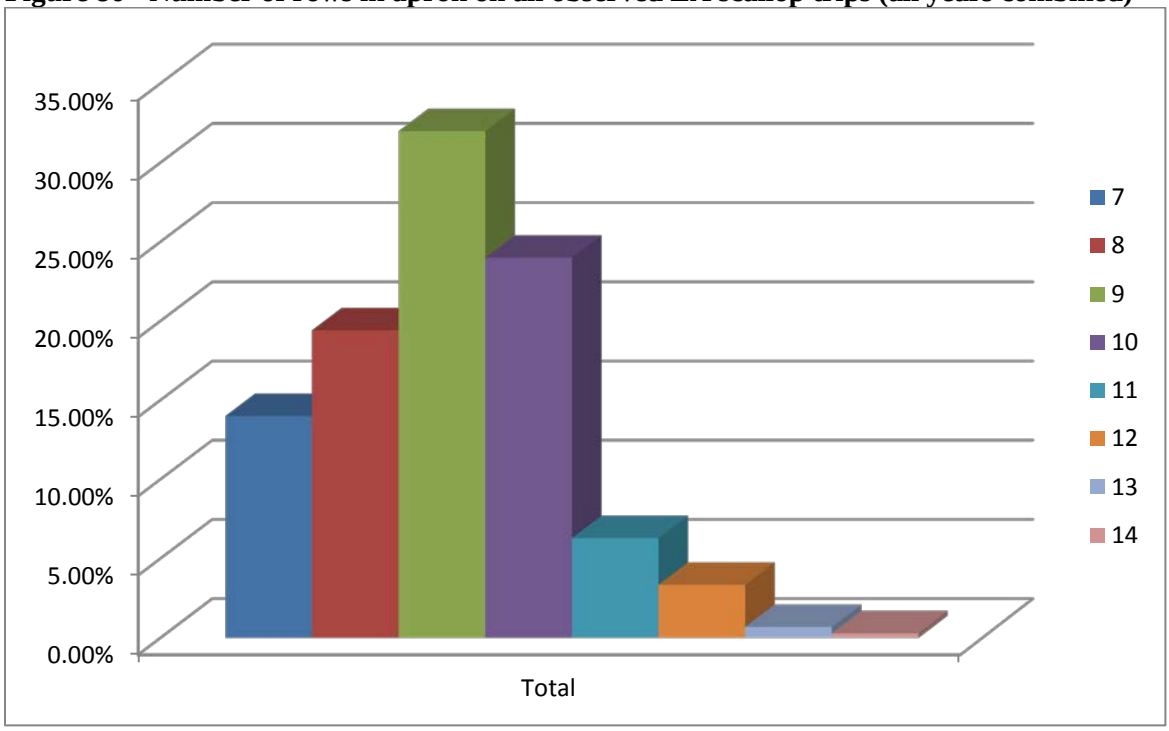
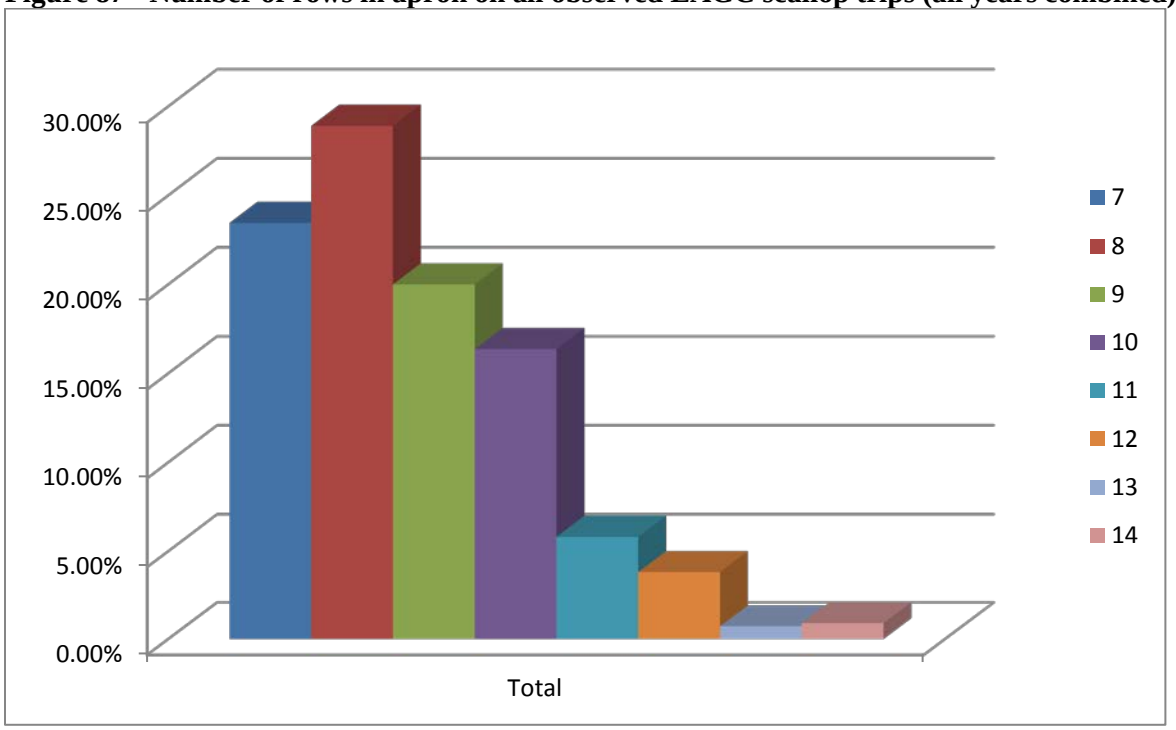


Figure 87 - Number of rows in apron on all observed LAGC scallop trips (all years combined)



5.1.7.3 Proactive AM to eliminate the restriction on the number of rings in apron of dredge

This alternative would eliminate the regulation on number of rings in the apron all together. A vessel could fish with any number of rings in the apron of the dredge. Eliminating the restriction may have more conservation benefit for flatfish compared to No Action, which requires vessels to fish with a minimum of seven, if vessels choose to fish with seven or less rows of rings. However, simply eliminating the restriction could enable a vessel to fish with as many rows as they want (i.e. more than seven). So compared to No Action this may have some benefit for flatfish for vessels that choose to fish with less than currently allowed (minimum of seven rows), but not as much potential benefit as the option that would implement a maximum of seven rows (Alternative **2.7.2**).

This alternative could have low negative to low positive impacts on the resource depending on how many rows vessels decide to fish with. Eliminating the provision would enable vessels to fish with fewer rows, which could have some beneficial impacts on small scallops, but it would not require it. By simply eliminating it vessels could also fish with seven or more rows in the apron, potentially having negative impacts on the resource if more small scallops are retained in the gear.

5.1.8 Measures to allow a limited access vessel to declare out of fishery on return to homeport

While the Council developed this alternative it was discussed that future DAS allocations may need to be adjusted to account for any changes in how DAS are charged. Currently DAS are allocated to the limited access fishery based on an estimate of projected catch in open areas divided by an estimate of average catch per day for all LA vessels combined. This estimate of

catch per DAS uses "DAS charged"; the time between when a vessel crosses the VMS demarcation line on the way out, and the way back to port. But for some ports there are long steams from fishing grounds to the first location a vessel can get off the clock. Since this action considered several alternatives that would provide more flexibility to get off the clock on the return to port, the PDT developed a method to estimate those potential impacts on future DAS charged values and LPUE estimates. A detailed description of this method is included in Appendix II.

5.1.8.1 No Action

Limited access scallop vessels on an open area DAS trip are charged DAS from the time a vessel positions seaward of the VMS demarcation line until it once again positions shoreward of the demarcation line. Direct impacts on the resource from this method of charging DAS would have neutral impacts on the resource since this is how DAS have been charged in this fishery for many years.

5.1.8.2 Implement a separate VMS declaration code for steaming back to port

Limited access vessels could finish their open area scallop trip by going inside the demarcation line, ending their scallop DAS trip, and declare out of the fishery (this would require a new DOF code to identify transiting with product on board). Once this DOF trip has been declared, vessels could go outside of the demarcation line to travel back to port so long as they are in compliance with several requirements to help enforce that vessels are not fishing while under this declaration. If this alternative is adopted an adjustment will be made to DAS allocations. As long as the adjustment applied is adequate and captures any steaming time that was previously considered part of a vessels "DAS charged", the direct impacts of this measure on the resource should be neutral. If the adjustment is too high there could be low positive impacts on the resource, and if the adjustment is too high there could be low negative impacts on the resource. These adjustments are temporary in nature and could be adjusted. Therefore, if the PDT finds that it needs to be changed it could be corrected to mitigate any potential negative impacts on the resource.

5.1.8.3 Implement a separate VMS declaration code for steaming back to port south of Cape May only *(Preferred Alternative)*

Limited access vessels fishing an open area trip could finish their scallop trip by going inside the VMS demarcation line at a specific point, i.e. between Cape Henelopen and Cape May NJ in Delaware Bay, or inside of the VMS demarcation line south of 39 N. This alternative is similar to the previous one, except it would only apply to vessels that intend to land scallops south of Cape May. A vessel would be prohibited from declaring out of the fishery in Cape May, and then transiting to a port north of that area. The potential impacts on the resource are similar to the alternative above, except this one would likely have even lower effects since fewer vessels are likely to take advantage of this measure. Only vessels steaming south of Cape May to unload are expected to use this provision if adopted. Therefore, the overall impacts on the resource are likely neutral, if the adjustment applied is adequate, and limited overall since the number of vessels potentially involved in minimal.

5.1.9 Modify regulations related to flaring bar provision for turtle deflector dredge

This action is considering two alternatives: No Action would not change the current provisions related to the flaring bar only being attached to the dredge in one place, as well as an alternative

that would clarify that a flaring bar could be attached in more than one place (preferred). This measure is administrative and related to safe handling of gear and has no direct impacts on the scallop catch efficiency of the gear. Therefore, there are no expected impacts on the resource from either No Action or the alternative that would modify the gear to allow use of a flaring u-shaped bar.

5.2 PHYSICAL ENVIRONMENT AND ESSENTIAL FISH HABITAT

This section is a qualitative review of the possible impacts to Essential Fish Habitat that could result from adoption of alternatives included in this framework adjustment. These evaluations consider impacts to benthic habitat generally, across the EFH designations for various species (scallops, groundfish, etc.) in aggregate, rather than evaluating impacts at the level of individual EFH designations. This is consistent with the fact that there are considerable spatial overlaps between individual EFH designations in areas where the scallop fishery operates.

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 negative habitat impacts. 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 positive habitat impact would be expected. The magnitude of these 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 shift as follows under the new ABC, ACLs, and annual specifications:

- The lower No Action specifications would have low positive impacts on EFH due to reduced effort levels, although landings would also be lower under No Action. The various alternative specifications (Alternatives 2, 3, and 4) are predicted to be similar to one another in terms of their potential impacts to EFH.
- LAGC access area allocation alternatives all have similar predicted EFH impacts.
- Crew size limits may have a slight positive impact on EFH.

Other measures related to management of the scallop fishery are not expected to have substantial positive or negative impacts on EFH relative to No Action. These include:

- Mid-Atlantic access trip allocation method: slight positive to slight negative impacts
- Allocating/monitoring access trips: generally administrative; no change in impacts expected
- Fishing in state waters after NGOM TAC reached: neutral to slightly negative impacts given state restrictions on fishing also in effect
- Turtle gear consistency measures: no change in impacts expected

- Accountability measures for northern windowpane, GB yellowtail, and SNE-MA yellowtail: no change in impacts expected
- VMS declaration measures: no change in impacts expected
- Turtle deflector dredge flaring bar provision: no change in impacts expected

5.2.1 Overfishing limit and Annual Biological Catch

Alternative 1 - No Action for OFL and ABC

Under "No Action", the overall OFL and ABC would be equivalent to default 2015 values adopted in Framework 25.

- OFL = 34,247 mt;
- ABC=29,683 mt;
- Discards=5,701 mt;
- ABC less discards available to fishery=ACL=23,982 mt.

These levels, which are based upon updated scientific information, are lower than the alternative specifications. Thus, fishing effort and impacts to habitat are expected to be lower under No Action as compared to the alternative OFL and ABC. However, associated catch levels will also be lower.

Alternative 2 - Updated OFL and ABC for FY2015 and FY2016 (default) ***(Preferred Alternative)***

The action alternative updates OFL and ABC numbers for 2015, and sets 2016 default values as well.

- For FY 2015:
  - OFL = 38,061 mt;
  - ABC= 31,459 mt;
  - Discards= 6,107 mt;
  - ABC less discards available to fishery=ACL= 25,352 mt.
- Default FY 2016:
  - OFL = 45,456 mt;
  - ABC= 37,309 mt;
  - Discards= 6,096 mt;
  - ABC less discards available to fishery=ACL= 31,807 mt.

Additional fishing effort and habitat impacts are expected under the alternative specifications because they are higher than the No Action values, i.e., negative impacts to EFH are expected relative to No Action. However, these updated values are consistent with the most recent data and are expected to be a more accurate estimation for the scallop resource, thus maintaining catch efficiency over time in the fishery. (Of greater concern would be higher catch allocations that are not supported by scallop biomass, such that landings per unit effort decline and area swept increases relative to landings.)

5.2.2 Fishery specifications

5.2.2.1 Overall fishery allocations

Specification alternatives 1-4 are compared in terms of their impacts to EFH using the projected bottom area swept values from the SAMS model simulations (see scallop resource impacts section for details). These area swept estimates are closely related to the LPUE estimates. Generally, scenarios with higher LPUE have lower area swept, and scenarios with lower LPUE have higher area swept.

Alternative 1 (No Action – Default measures from Framework 25)
In the scallop FMP, the No Action specifications are 75% of the default from the previous specifications framework, with no access area allocations. No Action specifications are 17 DAS for full-time vessels.

Under FY2015 default measures the LAGC IFQ allocation is 1,274 mt for vessels with a LAGC IFQ permit as well as LA vessels with a LAGC IFQ permit. No action for the NGOM hard TAC is 70,000 pounds and the target TAC for vessels with a LAGC Incidental permit is 50,000 pounds.

During 2015, No Action has lower allocations than the alternative specifications, and does not include access area trips. Thus, 2015 effort and area swept would be lower under this alternative, as compared to any of the action alternatives, resulting in fewer impacts to EFH during 2015. During 2016, area swept is very similar across all the alternatives. Combining these two years, No Action would have low positive impacts on EFH, but it also has the lowest projected landings of any of the alternatives.

Alternative 2 (Basic run using fishing mortality target principles with no modifications to scallop access area boundaries)
When the fishing target principles of the FMP are applied to the estimated biomass in each area for FY2015 the allocations for full-time LA vessels are:

- 31 DAS for FT vessels in open areas.
- Access area landings equivalent to 8,700 mt (19.2 million pounds), corresponding to three trips per FT LA vessels at 17,000 pounds per trip in ET, Delmarva and HC.
- The remaining scallop access areas would be closed to the scallop fishery in 2015: Closed Area I, Closed Area II, and Nantucket Lightship.
- Total projected landings for Alternative 2 from all sources of catch (including set-asides and LAGC catch) is about 45 million pounds.
- Sub-ACL for LAGC IFQ vessels is 1,348mt (about 2.97 million pounds).
- NGOM hard TAC of 70,000 pounds and the target TAC for vessels with a LAGC Incidental permit at 50,000 pounds.

Area swept estimates are discussed in the scallop resource impacts section. All of the action alternative scenarios have similar area swept estimates during fishing years 2015 and 2016, such that impacts to EFH will be similar under any of the alternatives. Alternative 2 would have negative impacts relative to No Action, but also much lower landings during 2015 for reasons discussed above. Leaving the access area boundaries as they currently exist appears to have limited influence on estimated area swept.

Alternative 3 (Basic run using fishing mortality target principles with modifications to scallop access area boundaries) *(Preferred Alternative)*
Three different closure modifications to existing access areas are under consideration in this alternative to reduce impacts on small scallops observed in various areas. One or more of these closure options could be selected. In addition to the three possible closures, the other specifications include:

- 30 DAS for FT vessels in open areas (one less than Alternative 2).
- Total projected catch for Alternative 3 varies slightly depending on the sub-options selected; overall it is about 46 million pounds (including set-asides and LAGC catch); slightly higher than Alternative 2
- Other specifications are the same as Alternative 2

Option 1 – Modification to access area in Closed Area II: Option 1 is an extension of the scallop access area in Closed Area II to include concentrations of small scallops that are near existing boundaries of current access area. If selected, vessels would be prohibited from transiting through the scallop access areas within Closed Area II.

Option 2 – Modification to access area in Nantucket Lightship *(Preferred Alternative)*: Option 2 is an extension of the scallop access area in Nantucket Lightship to include concentrations of small scallops that are near existing boundaries of current access areas. If selected, vessels would be allowed to transit through the NL scallop access area.

Option 3 – Modification to Elephant Trunk *(Preferred Alternative)*: Option 3 is different in that this option proposes to close areas *within* current scallop access areas, or temporarily prohibit fishing in a subset of a current scallop access area. If selected, vessels would be prohibited from transiting through the closure within Elephant Trunk.

SAMS model scenarios relevant to this alternative assume either two or three of the boundary changes. The two closure run reflects adjustments to CA2 and NL only (i.e. implementing Options 1 and 2 above). The three closure run (i.e. implementing Options 1, 2, and 3 above) assumes all three boundaries are adjusted. During 2015, both scenarios have very similar area swept projections, such that similar EFH impacts are expected regardless of the option or options selected. As noted in the resource impacts discussion, all of the scenarios have similar area swept estimates, and the trend over time has been for area swept projections to decrease, from about 2,800 square nautical miles in the Framework Adjustment 25 scenarios to about 2,200 square nautical miles for the scenarios relevant to this action. Therefore, while Alternative 3 with any combination of options has minor negative impacts compared to No Action (default) specifications, impacts are expected to be low positive compared to more recent fishery conditions.

Alternative 4 (Basic run using fishing mortality target principles, with reduced F in MA access areas)
The same overall principles would be used to set fishing targets for the fishery; however, the allowable fishing mortality limit used to set allocations for MA access areas would be reduced by some amount to reduce impacts on small scallops observed in those areas. For example, in the base run the fishing mortality was set at 0.35 for all three MA access areas; for this alternative it was reduced to 0.30, but there is no closure in Elephant Trunk. This reduction in

fishing mortality target would translate into lower catch allowed to be removed from the access areas (possession limits reduced by about 1,000 pounds per trip). This alternative can be combined with options that close extensions of CA2 and/or NL, but this alternative does not include the ETA closure option.

Under this alternative:

- 31 DAS for FT vessels in open areas.
- Access area landings equivalent to 7,650 mt (about 16.9 million pounds), corresponding to three trips per FT LA vessels at 16,000 pounds per trip in ET, Delmarva and HC.
- Total projected catch for Alternative 4 is about 45 million pounds (including set-asides and LAGC catch).
- Other specifications are the same as Alternative 2

Area swept values and therefore projected EFH impacts associated with reductions in F in the MA access areas are very similar to the other SAMS model scenarios during 2015. In 2016, there is slightly higher area swept predicted under the reduced MA access area F scenario as compared to the scenarios which include two or three boundary changes. Again, projected habitat impacts of this alternative are very similar to the other action alternatives, with low negative impacts expected relative to No Action.

5.2.2.2 Allocation of LAGC IFQ trips in access areas

These options consider how to allocate access area trips to the LAGC fishery during 2015. These trips have a 600 lb possession limit. Option 1 is No Action; LAGC IFQ trips will not be allocated in any of the scallop access areas in 2015 or 2016 (default). Under Option 2 the LAGC fishery would be allocated 5.5% of the total 2015 access area TAC for every area open in a particular year. Option 3 would allocate 2 million pounds to the LAGC fishery from access areas, increasing the overall access LAGC vessels would have to areas that are projected to have more productive fishing areas in 2015. Finally, Option 4, the preferred option, would provide about the same level of access for LA and LAGC vessels in access areas in 2015 in terms of the total proportion of catch for the year (Table 15).

As noted in the scallop resource impacts section, if LAGC trips are not taken in the access areas, LAGC catch is assumed to come from open areas instead. This could result in lower or higher catch efficiency relative to the access area trips, depending on the open area fished and the resource conditions there. Overall, LAGC catch in access areas is a small percentage of the overall catch and vessels tend to fish where catch rates are higher, so if they are higher in access areas most trips should be fished there, and if they are not more LAGC catch could come from open areas. This means that while the access area allocation options may increase flexibility for LAGC vessels in terms of where they can fish, impacts to habitat (and the resource) are likely to be similar for all options, including No Action.

5.2.2.3 Additional measures to reduce impacts on small scallops

Option 1 would maintain the current measure, no crew size limits when fishing in scallop access areas. Option 2, the preferred option, would limit crew size to one additional crew member above open area limits. Limiting crew size could have two different influences on fishing behavior. Having additional crew could make it easier to fish in areas with smaller animals, i.e. more scallops to shuck. Crew limits could encourage vessels to fish in locations with larger animals. The behavior probably does not have a substantial effect on fishing time or habitat impacts.

However, if unlimited crew sizes lead to highgrading, where smaller animals are fished for and then discarded in favor of larger animals, this could increase fishing time and habitat impacts to catch the possession limit. Therefore, Option 2 is expected to have slight positive impacts on habitat relative to Option 1/No Action.

5.2.2.4 Allocation method for Mid-Atlantic access area trips in 2015 only

These alternatives determine how to allocate Mid-Atlantic access area trips during FY 2015. Under No Action, each full-time limited access vessel would receive 3 trips; two allocated to ETA, and the third from either HC or Delmarva. The third trip would be allocated by lottery. The action alternative proposes that vessels would declare a MA access area trip and could freely fish inside all three areas on the same trip (preferred alternative). Under this alternative, limited access vessels would receive their total access area allocation in pounds, and that allocation could be fished in any of the MA access areas (and across multiple access areas on a single trip) up to a certain possession limit.

The impacts of this alternative on both the resource and on fish habitat are dependent on how fishing behavior adjusts in response to the flexible allocation, as well as on resource conditions, which makes the impacts difficult to predict. If the flexible action alternative allocation method encourages vessels to fish on the most concentrated scallop aggregations, then the action alternative could have positive impacts relative to No Action. Fishing on the highest concentrations of scallops would be the most efficient way to reach the possession limits, resulting in shorter fishing times and less area swept. However, if the flexible action alternative allocation scheme causes vessels to fish in areas where scallops are less dense, then fishing times could increase, increasing habitat impacts relative to No Action. This could occur if vessels choose to fish a lower density area because it is closer to port, for example, reducing fuel costs or overall trip duration. Therefore, the impacts on EFH may range from low positive to low negative depending on changes in fishing behavior.

5.2.2.5 Adjustments to provisions related to allocating and monitoring access area trips

The alternatives in this section adjust the way that access trip monitoring occurs. Under No Action, although access area allocations are allocated by trip, the allocations can be fished in other poundage increments, provided that broken trip provisions are adhered to. Because there is currently no penalty for broken access area trips, the allocations are in fact more flexible than the 'trip' language would indicate.

The action alternative, the preferred alternative, streamlines the regulations to be more consistent with current industry practices. Under this alternative, vessels would be given a simple poundage allocation in an access area, instead of referring to it as a trip allocation with associated pounds per trip. If this alternative is adopted, vessels would submit a prelanding report through their VMS unit to indicate pounds caught. If a vessel is unable to land a full possession limit on a single trip, the vessel could go out and fish it on multiple trips without having to submit broken trip reports to request a compensation trip. Trading allocations between vessels would occur in increments of full possession limits, i.e. 17,000 lbs. Two options for the action alternative would either:

- Require vessels cross the VMS demarcation line and submit a preland within last 60 days of the fishing year in order to fish those pounds in the first 60 days of the following fishing year (Option 1).
- Allow for all unlanded access area pounds to be carried over without any action from vessels (Option 2). Under Option 2, a vessel would not have to actually go out in their vessel to physically break a trip by crossing the VMS demarcation line (Option 2)

Because the allocations are the same under both alternatives, and the alternative action serves mainly to simplify administration of the access area allocations, no impacts to EFH are expected to result from these alternatives.

5.2.3 Measures to allow fishing in state waters after federal NGOM TAC is reached

These alternatives could change the rules about fishing in state waters once the NGOM hard TAC is reached.

Under No Action, once the federal NGOM hard TAC is reached, all vessels with a federal scallop permit are prohibited from fishing for scallops in the NGOM, inclduing within state waters. This is not expected to have any direct effects on the federal scallop resource or EFH in that area. There could be some low positive impacts on the scallop resource and EFH within state waters if this measure prohibits effort from vessels with federal permits from fishing in state waters if the federal NGOM hard TAC is reached. However, the magnitude of this effort is very limited so the overall effects (positive or negative) are expected to be minor.

Under the first action alternative, if the federal NGOM hard TAC is reached, only those vessels that have both a federal NGOM permit and a state waters scallop permit could continue to fish. They would be restricted to state waters only and would be subject to state waters regulations.

Under the second action alternative, the preferred alternative, no changes would be made to the regulations prohibiting all vessels with a federal scallop permit to fish for scallops in state waters after the NGOM hard TAC is reached (§648.62). Instead, the regulations related to state water exemptions would be revised to allow an individual state to request a specific exemption related to fishing in state waters after the NGOM TAC is reached.

In the past, the NGOM TAC has not been limiting, but the fishery has come closer in recent years to achieving the TAC such that these alternatives may be triggered in the future. Either of the action alternatives could allow for fishing in state waters after the NGOM TAC is reached. However, fishing in state waters is subject to restrictions that would limit fishing effort and therefore EFH impacts. In Massachusetts, mobile gear commercial fishermen are subject to a daily possession limit of 200 lb. as well as gear restrictions to limit bycatch. Maine also has a daily possession limit and gear restrictions, as well as rotational management. The rotational system includes triggered closures when 30-40% of the biomass has been removed from the area. Thus, both states, particularly Maine, limit scallop fishing in state waters. This would limit any additional impacts to EFH that result from fishing in state waters under the two action alternatives, such that the impacts of the action alternatives on EFH are expected to be neutral (TAC not exceeded) to slightly negative (TAC exceeded).

5.2.4 Measures to make turtle regulations consistent

Under No Action, there is a chain mat regulation as well as a turtle deflector dredge regulation. Chain mats are required between May 1 and November 30 south of 41°9.0′ N. latitude. Turtle deflector dredges are required between May 1 and October 31 west of 71° W. The deflector dredge is required for any limited access scallop vessel using a dredge, regardless of dredge size or vessel permit category, or any LAGC IFQ scallop vessel fishing for scallops with a dredge width of 10.5 ft (3.2 m) or greater.

The action alternative, the preferred alternative, would revise the turtle chain mat regulations to have a consistent boundary with the TDD requirement, and revise the TDD regulations to have a consistent season with the chin mat regulations. If approved, both gear elements would be required for the waters west of 71° W from May 1 through October 31.

Framework 23, which implemented the turtle deflector dredge requirements, notes that the gear performs similar to a standard dredge in terms of scallop catchability (Section 5.1.1.2.1 of FW23). The TDD is estimated to be slightly more efficient than the standard New Bedford dredge (about 4.3%), but the difference was not statistically significant. Thus, an adjustment to the season is not expected to influence the amount of fishing occurring or the location of fishing effort, and therefore no impacts to EFH are expected as a result of this change.

5.2.5 Measures to develop new accountability measures for northern windowpane flounder and modify existing accountability measures for GB and SNE/MA yellowtail flounder

This section has three alternatives: 1) No Action includes no new proactive AMs in the scallop fishery; 2) proactive AM to modify the number of rings in the apron of dredge (preferred alternative); and 3) proactive AM to eliminate the restriction on the number of rows in the apron of a dredge.

Under No Action, no new measures would be adopted that would constrain the scallop fishery if sub-ACLs are exceeded. Therefore, the No Action would have neutral impacts on the scallop resource and EFH because it would not alter fishing activity. Furthermore, both the alternative to modify and the alternative to eliminate the restriction on the number of rows in the apron of the dredge would have neutral impacts on EFH as this hear modification is related to the top of the dredge, which does not come into contact with the seafloor. So long as this modification does not cause a substantial increase in area swept, then EFH impacts should be neutral.

5.2.6 Measures to allow a limited access vessel to declare out of fishery on return to homeport

This section has three alternatives: 1) No Action – LA vessels on an open area DAS trips are charged DAS from the time a vessel positions seaward of the VMS demarcation line until it once again positions shoreward of the line; 2) LA open area trip would end when vessel positions shoreward of demarcation line and that vessel declares out of fishery; and 3) a LA vessel wanting to land an open area trip in ports south of Cape May could get off the clock shoreward of demarcation line south of 39N and declare out of fishery there to avoid DAS charges on steam back to ports south of Cape May (preferred alternative).

Under No Action there are no direct impacts on the resource or EFH since there are no changes in how DAS would be charged, thus area swept remains the same. Under both the DOF from

anywhere alternative and the DOF from Cape May only alternative, an adjustment to DAS would be applied. As long as the adjustment is adequate and captures any steaming time that was previously considered part of a vessels' "DAS charged", the direct impacts of these measures on the resource and EFH should be neutral. If the adjustment is too high there could be low positive impacts, and if the adjustment is too low there could be low negative impacts if fishing time increases. These adjustments are temporary in nature and could be adjusted. Therefore, if the PDT finds that it needs to be changed it could be corrected to mitigate any potential negative impacts on the resource or EFH.

5.2.7 Modify regulations related to flaring bar provision for turtle deflector dredge

Under No Action, no change would be made to the flaring bar regulations. The action alternative, the preferred alternative, would slightly revise the description of the "flaring bar" within the turtle deflector dredge regulations so that it is not limited to being attached in one place only. This revision is not expected to influence the impacts of the turtle deflector dredge on the seabed, so expected impacts of the action alternative are neutral, relative to No Action.

5.3 PROTECTED RESOURCES

5.3.1 Overfishing limit (OFL) and Annual Biological Catch (ABC)

5.3.1.1 Alternative 1: No Action for OFL and ABC

The overfishing limit and annual biological catch are the absolute limits the fishery is not allowed to exceed. Under the "No Action," the overall OFL and ABC would be equivalent to default 2015 values adopted under Framework 25 (ABC=29, 683 mt (including discards); OFL=34,247 mt (including discards). Although the impacts to ESA listed species under this alternative are somewhat uncertain, as a quantitative analysis has not been performed, the analyses have qualitatively considered how the fishery has operated in regards to listed species from 2012, when TDD regulations became effective (77 FR 20728, April 6, 2012) in the scallop fishery, resulting in dual requirements (TDD and chain mat) in the fishery to reduce serious injury and mortality to sea turtles, and NMFS issued a biological opinion (Opinion) on the scallop fishery in 2012 (NMFS 2012). The Opinion issued on July 12, 2012, included an incidental take statement authorizing the take of specific numbers of ESA listed species of sea turtles and Atlantic sturgeon. The sea scallop fishery is currently covered by the incidental take statement authorized in NMFS 2012 Opinion.

The 2012 Opinions for the sea scallop fishery concluded that the fishery may affect, but will not jeopardize the continued existence of any ESA listed species of sea turtles or Atlantic sturgeon (NMFS 2012). In 2011, pursuant to the reauthorization of the Magnuson Act, and thus, to date, total landings for the sea scallop fishery have increased, decreased, or remained stable. The ABC and OFL being proposed in the "No Action" are no greater than or are within the range of total landings that have been authorized by the fishery over the last 3 years (since 2012). As previously authorized ABC and OFL levels for the sea scallop fishery have not resulted in the exceedance of NMFS authorized take of any ESA listed species from 2012 to the present, the ABC and OFL levels for the fishery under No Action are not expected to result in the sea scallop fishery introducing any new risks or additional takes to ESA listed species that have not already been considered and authorized by NMFS to date (NMFS 2012). As a result, the ABC and OFL

under the "No Action" are not, as concluded in the NMFS 2012 Opinion, expected to result in levels of take that would jeopardize the continued existence of ESA listed species. For these reasons, and since this action would still require compliance with sea turtle chain mat and TDD regulations, the No Action would likely have neutral impacts on protected resources.

5.3.1.2 Alternative 2: Updated OFL and ABC (*Preferred Alternative*)

The ABC proposed under Alternative 2 is about 1,800 mt or 4 million pounds higher than the ABC under No Action. Similar to the No Action, the proposed OFL and ABC are no greater than or are within the range of the ABC and OFL that have been authorized by the fishery over the last 3 years (since 2012). As previously authorized ABC and OFL levels for the sea scallop fishery have not resulted in the exceedance of NMFS authorized take of any ESA listed species from 2012 to the present, the proposed ABC and OFL levels in Alternative 2 are not expected to result in the sea scallop fishery introducing any new risks or additional takes to ESA listed species that have not already been considered and authorized by NMFS to date (NMFS 2012). As a result, although Alternative 2 has the potential to increase interactions with protected species due to higher overall catch limits, the level of take is not expected to go beyond those that have been considered and authorized in NMFS 2012 Opinion (NMFS 2012) and therefore, as concluded in the 2012 Opinion, jeopardize the continued existence of any protected species. Based on this information, and the fact compliance with sea turtle chain mat and TDD regulations would still be required, Alternative 2 would likely result in low negative to neutral impacts to protected resources.

The No Action ABC is lower than the proposed ABC (Alternative 2) because biomass has increased based on updated survey results. However, the No Action ABC and the proposed ABC in FW26 are similar and not great enough to have direct impacts on the fishery since allocations and actual landings in the fishery are set well below these limits. Therefore, in general the potential impacts of the No Action ABC, as well as the updated ABC values under the preferred alternative are neutral and not expected to have direct impacts on protected resources since these measures are only legal limits and not tied directly to specific allocations that affect fishing effort. The proposed ABC may have low negative (if allowable catches actually set higher) impacts compared to No Action since the limit is higher, but in reality allocations are set well below these limits. Therefore, impacts are expected to be neutral. The direct impacts of the fishery allocations on protected resources are assessed in Section 5.3.2.1 below.

5.3.2 Fishery specifications

5.3.2.1 Overall fishery allocations

Specification alternatives 1-4 are compared in terms of their impacts to protected resources using the projected bottom area swept values from the SAMS model simulations (see scallop resource impacts section for details). These area swept estimates are closely related to the LPUE estimates. Generally, scenarios with higher LPUE have lower area swept, and scenarios with lower LPUE have higher area swept.

The specifications under consideration in this action have estimates of area swept all below the overall estimates for the fishery in recent years. The range under consideration in this action is about 1,100 square nautical miles for No Action and up to 2,200 square nautical miles for the base run (Alternative 2) (Figure 79). Framework 25 estimated total area swept to be about 2,800

square nautical miles in 2014, and FW24 estimated 2013 to be about 4,000 square nautical miles for total area swept under proposed fishery specifications. In 2010 values were estimated closer to 5,000 nm2; therefore, total area swept for the fishery has been declining overall under area rotation.

Alternative 1 (No Action – Default measures from Framework 25)

In the Scallop FMP, the No Action specifications are 75% of the default from the previous specifications framework, with no access area allocations. No Action specifications are 17 DAS for full-time vessels.

Under FY2015 default measures the LAGC IFQ allocation is 1,274 mt for vessels with a LAGC IFQ permit as well as LA vessels with a LAGC IFQ permit. No action for the NGOM hard TAC is 70,000 pounds and the target TAC for vessels with a LAGC Incidental permit is 50,000 pounds.

During 2015, the No Action has lower allocations and landings than the alternative specifications, and does not include access area trips. As a result, 2015 effort and area swept would be lower under this alternative, as compared to any of the action alternatives. Specifically, the No Action alternative would have less effort in the Mid-Atlantic because there would be no access area trips allocated under this alternative. Based on this information, the No Action is likely to have fewer potential interactions with sea turtles or Atlantic sturgeon relative to the alternative specifications. In regards to sea turtles, although loggerhead sea turtles are known to occur in the Gulf of Maine (GOM), feeding as far north as southern Canada, in general, hard shelled species of sea turtles are most common in the Mid-Atlantic (i.e., south of Cape Cod, MA, See Section 4.3.2.1.2). As a result, sea turtle distribution commonly overlaps with the sea scallop fishery in Mid-Atlantic waters. In fact, estimated bycatch rates in trawl and dredge gear are higher in the Mid-Atlantic than in other waters in the affected environment (Murray 2011 and Warden 2011a). However, since the No Action will result in less effort relative to the action alternatives, and does not include any access area trips in the MA or other access areas, the number of potential interactions with sea turtles is likely to be lower under this alternative.

In regards to Atlantic sturgeon, according to the NMFS 2012 Opinion, available information has shown no Atlantic sturgeon reported as caught in scallop dredge or in trawl gear where the haul target or trip target is scallop (NMFS 2012). Given the known capture of Atlantic sturgeon in trawl fisheries operating in the affected environment (Stein *et al*. 2004; ASMFC 2007; NEFSC 2011a), the NMFS 2012 Opinion concluded that it is reasonable to anticipate that some small level of bycatch may occur in the scallop trawl fishery; however, given the way that scallop dredges operate, the lack of documented interactions is likely reflective of a true lack of captures of Atlantic sturgeon in scallop dredge gear and therefore, Atlantic sturgeon interactions with dredge gear is not expected. As the sea scallop fishery is primarily executed with dredge gear (~95% of the fisheries fleet) and the No Action does not change the gear usage or usage rate in the fishery, interactions with Atlantic sturgeon are expected to be low, with or without any changes in effort.

Taking into consideration the above information, and the reasons provided in Section 5.3.1, the No Action alternative is expected to have low positive to neutral impacts to protected species. Specifically, as the specifications authorized in the No Action are lower than or are within the range of specifications that have been authorized by the fishery over the last 3 years (since

2012), and previously authorized specifications for the sea scallop fishery have not resulted in the exceedance of NMFS authorized take of any ESA listed species from 2012 to the present, the No Action specifications are not expected to result in any new risks or additional takes to ESA listed species that have not already been considered and authorized by NMFS to date (NMFS 2012). As a result, the specifications under the "No Action" are not, as concluded in the 2012 Opinion, expected to result in levels of take that would jeopardize the continued existence of ESA listed species. For these reasons, and the fact that compliance with sea turtle chain mat and TDD regulations would still be required, the No Action would likely have low positive to neutral impacts on protected resources, even when compared to Alternatives 2-4.

Alternatives 2 - 4

Area swept estimates are discussed in the scallop resource impacts section (Section 5.1.2.1.5). All of the action alternative scenarios have similar area swept estimates during fishing years 2015 and 2016, with each action alternative showing an increase in effort in the MA, specifically in the MA access areas compared to No Action that has no access area trips in MA access areas. Although this effort in MA access areas increases the potential for impacts on protected resources it does not extend beyond the range of effort or effects to protected species considered in the 2012 Biological Opinion. Further details are discussed below.

Alternative 2 is based on the general fishing target principles developed under the area rotation program adopted under Amendment 10, which does not include any adjustments to the access area boundaries as they currently exist. Because this alternative includes higher specifications (MA access area trips and higher DAS) this increase in effort has higher potential impacts to sea turtles or Atlantic sturgeon compared to No Action. As described above, within the scallop fishery area, sea turtles are most common in the Mid-Atlantic and in fact, estimated bycatch rates in trawl and dredge gear are higher in the Mid-Atlantic than in other waters in the affected environment (Murray 2011 and Warden 2011a). With increased effort under Alternative 2, in addition to trip allocations in MA access areas, the number of potential interactions with sea turtles may increase as compared to the No Action.

However, for the reasons described in the "No Action specification section," the specifications for Alternative 2, albeit higher than the No Action, are not such that levels of incidental take of protected resources are expected to go above and beyond that which has been considered and authorized by NMFS since 2012, and thus, above and beyond a level that, as concluded in the 2012 Opinion, could jeopardize the continued existence of listed species of sea turtles or Atlantic sturgeon (NMFS 2012). For these reasons, and the fact that the sea turtle chain mat and TDD regulations are in place during the months when turtles are present in the Mid-Atlantic, Alternative 2 is likely to have neutral impacts to protected resources. However, compared to the No Action, Alternative 2, with higher allocations and higher landings than the No Action specifications, would likely have low negative impacts to protected resources relative to the No Action. Albeit for different reasons, Alternative 2 will also have low negative impacts on protected resources relative to Alternative 3 and 4 (see below for details).

Alternative 3 includes some modifications to the access areas (e.g., extension of the access area in CA2 (Option 1) and NL (Option 2); area of closure within the Elephant Trunk access area (Option 3). ***The preferred alternative is Alternative 3 with Options 2 and 3 for closures***. The options on GB (i.e., Option 1 and 2) are expected to have neutral impacts on protected resources since sea turtles are less common on GB and interactions are anticipated to be low. Option 3

under Alternative 3 is a closure within ETA, an area that does overlap with turtle distributions off the coast of New Jersey. This closure is expected to have neutral to low positive impacts. Impacts could be neutral because while an area would be closed with previously observed sea turtle takes, the same overall effort will be allocated to the fishery in Mid-Atlantic access areas, just restricted to areas outside of the proposed closures. Any shifts in effort would be minimal and occur in areas that are already subject to fishing by dredge or trawl gear and therefore, in areas which have been considered by NMFS in its assessment of fishery effects to protected resources (i.e. NMFS 2008; NMFS 2012).

However impacts from Option 3 under Alternative 3 could also be low positive because the closure is inshore of 60 meters and in general interaction rates of loggerhead turtles in commercial fishing gear tend to be higher in warm surface waters (>15C), depths <60m, and in regions of the southern Mid-Atlantic (<39N) depending on the time of year (Murray and Orphanides 2013, Murray 2011, Warden 2011a). Therefore, if effort that would have taken place in shallower portions of ETA (with potentially higher interactive rates) is shifted to deeper waters, there may be low positive impacts on sea turtles, depending on the season. If trips are taken outside the season when turtles are in the area, overall impacts of the closure would be neutral. For these reasons, as well as the reasons provided above for Alternative 2, Alternative 3 is likely to have low positive to neutral impacts to protected species. Compared to Alternative 2, Alternative 3 would have more of a positive impact on protected species due to the proposed closures in the ETA; however, compared to the No Action and Alternative 4, Alternative 3 may have less of a positive impact on protected resources, at least in the short term (2015).

Finally, Alternative 4 may have low positive impacts on protected resources compared to Alternative 2 and 3 because it sets overall fishing mortality lower in all three MA access areas, thus area swept is lower in areas with higher abundances of sea turtles. However, the model includes slightly higher area swept estimates in 2016 for this alternative when fishing mortality is increased in MA access areas after small scallops are larger and more optimal for exploitation. Therefore, the overall impact on protected resources may be similar to the other action alternatives when the potential impacts of both years are combined. Compared to the No Action; however, Alternative 4 may have low negative impacts on protected resources with higher specifications and access area trips relative to the No Action.

Overall, more effort is expected in the Mid-Atlantic under all of the action alternatives under consideration; however, all action alternatives also have potentially fewer associated impacts compared to recent fishing years since the estimates of area swept for all alternatives are lower than recent years (see Section 5.1.2.1.5). When total area swept is lower, fewer interactions with protected species are possible. In addition, for the reasons described in the "No Action specification" section, the specifications for Alternative 2-4, albeit higher than the No Action, are not such that levels of incidental take of protected resources are expected to go above and beyond that which has been considered and authorized by NMFS over the last 3 years, and thus, above and beyond a level that, as concluded in the 2012 Opinion, could jeopardize the continued existence of listed species of sea turtles or Atlantic sturgeon (NMFS 2012). For these reasons, and the fact that the sea turtle chain mat and TDD regulations are in place during the months when turtles are present in the Mid-Atlantic, overall, impacts to protected species from any of the alternatives are expected to be at minimum, neutral.

5.3.2.2 Allocation of LAGC IFQ trips in access areas

These options consider how to allocate access area trips to the LAGC fishery during 2015, and the preferred option is Option 4. The options that allocate more access in MA access areas (Option 3, followed by Option 4, and finally Option 2) could increase effort in the Mid-Atlantic if vessels from ports farther north decide to relocate and fish those access areas instead of open areas farther north. This could have negative impacts on protected resources compared to alternatives that allocate less potential access in MA access areas. However, as noted in the scallop resource impacts section, if LAGC trips are not taken in the access areas, LAGC catch is assumed to come from open areas instead. This could result in lower or higher catch efficiency relative to the access area trips, depending on the open area fished and the resource conditions there. Overall, LAGC effort in access areas is a small percentage of the overall catch and vessels tend to fish where catch rates are higher. Therefore, if catch rates are higher in access areas most trips are expected to be fished there, and if they are not higher, more LAGC catch is expected to come from open areas. This means that while the access area allocation options may increase flexibility for LAGC vessels in terms of where they can fish, it does not necessarily equate to a concentrated increase in effort in these access areas under any of the alternatives. As a result interactions with protected resources are possible under either scenario; however, the levels of potential take do not go beyond those that have been analyzed and authorized in the 2012 Biological Opinion (NMFS 2012) and therefore, as concluded in the 2012 Opinion, jeopardize the continued existence of any protected species. Based on this, and the fact the sea turtle chain mat and TDD regulations (for LAGC dredges greater than 10.5 feet) will be in place, impacts to protected resources (and the resource) are likely to be neutral for all options.

No Action may have potentially low positive impacts on protected resources if allocating zero trips in MA access areas reduces the overall effort in the Mid-Atlantic and reduces incentive for vessels to fish in the MA from other areas with lower potential overlap with turtles (i.e. vessels from ports farther north). However, there are many LAGC vessels from the MA that would have to fish their quota exclusively from open areas if zero trips were allocated in access areas. If open areas have lower catch rates compared to access areas there could be increased area swept for the same catch; this could increase the potential for an interaction with a protected resource. However, overall, as this is a relatively small fraction of the total effort expected in the MA for the total scallop fishery, any shifts in effort are expected to be minimal and therefore, elevated rates of listed species interactions are not expected. Based on this information, and the fact that sea turtle chain mat and TDD regulations (for LAGC dredge greater than 10.5 feet) will be in place, impacts to protected resources are likely to be neutral.

5.3.2.3 Additional measures to reduce impacts on small scallops

This action is considering two options for this issue. Option 1 (No Action) would maintain that access areas not have a crew limit. Option 2, preferred, would allow one additional crew member above open area limits: eight individuals per LA vessel, and if a vessel is participating in the small dredge program it may not have more than six people on board. The potential impacts of these measures on fishing behavior are probably minimal, and not expected to have substantial effects on fishing time or impacts on protected resources. However, if unlimited crew size leads to highgrading, where smaller animals are fished for and then discarded in favor of larger animals, this could increase fishing time and potential impacts on protected species. Therefore, Option 2 is expected to have slight positive impacts on protected resources relative to

Option 1/No Action if fishing behavior changes and vessels increase bottom time overall in MA access areas with no crew limits.

5.3.2.4 Allocation method for Mid-Atlantic access area trips in 2015 only

These alternatives determine how to allocate Mid-Atlantic access area trips during FY 2015. Under No Action, each full-time limited access vessel would receive 3 trips; two allocated to ETA, and the third from either HC or Delmarva. The third trip would be allocated by lottery. The action alternative, the preferred alternative, proposes that vessels would not be allocated trips in specific areas, instead they would declare a MA access area trip and could freely fish inside all three areas on the same trip.

The impacts of the action alternative on both the resource and protected resources are dependent on how fishing behavior adjusts in response to the flexible allocation, as well as on resource conditions, which makes the impacts difficult to predict. If the flexible allocation method encourages vessels to fish on the most concentrated scallop aggregations, then the action alternative could have positive impacts relative to No Action. Fishing on the highest concentrations of scallops would be the most efficient way to reach the possession limits, resulting in shorter fishing times and less area swept. However, if the flexible action alternative allocation scheme causes vessels to fish in areas where scallops are less dense, then fishing times could increase, increasing potential impacts on protected resources relative to No Action. This could occur if vessels choose to fish a lower density area because it is closer to port, for example, reducing fuel costs or overall trip duration. Therefore, the overall impacts on protected resources potentially range from low positive to low negative depending on how vessels adjust fishing behavior.

5.3.2.5 Adjustments to provisions related to allocating and monitoring access area trips

The alternatives in this section adjust the way that access trip monitoring occurs. Under No Action, although access area allocations are allocated by trip, the allocations can be fished in other poundage increments, provided that broken trip provisions are adhered to. Because there is currently no penalty for broken access area trips, the allocations are in fact more flexible than the 'trip' language would indicate.

The action alternative, the preferred alternative, streamlines the regulations to be more consistent with current industry practices. Under this alternative, vessels would be given a simple poundage allocation in an access area, instead of referring to it as a trip allocation with associated pounds per trip. If this alternative is adopted, vessels would submit a prelanding report through their VMS unit to indicate pounds caught. Two sub-options were considered with the action alternative that would either:

- Require vessels cross the VMS demarcation line and submit a preland within last 60 days of the fishing year in order to fish those pounds in the first 60 days of the following fishing year (Option 1).
- Allow for all unlanded access area pounds to be carried over without any action from vessels (Option 2). Under Option 2, a vessel would not have to actually go out in their

vessel to physically break a trip by crossing the VMS demarcation line (Option 2, preferred)

Because the allocations are the same under both alternatives, and the alternative action serves mainly to simplify administration of the access area allocations, no impacts to protected resources are expected to result from these alternatives.

5.3.3 Measures to allow fishing in state waters after federal NGOM TAC is reached

These alternatives could change the rules about fishing in state waters once the NGOM hard TAC is reached. Under No Action, once the federal NGOM hard TAC is reached, all vessels with a federal scallop permit are prohibited from fishing for scallops in the NGOM, including within state waters. Under the first action alternative, if the federal NGOM hard TAC is reached, only those vessels that have both a federal NGOM permit and a state waters scallop permit could continue to fish. They would be restricted to state waters only and would be subject to state waters regulations. Under the second action alternative, the preferred alternative, no changes would be made to the regulations about the hard TAC; instead, the regulations related to state water exemptions would be revised to allow an individual state to request a specific exemption related to fishing in state waters after the NGOM TAC is reached.

As this region is much farther north than the species of sea turtles that have been documented to interact with scallop dredge gear (e.g., loggerheads, Kemp's ridleys) are most commonly distributed, direct impacts to sea turtle species are not expected from any of these alternatives. In regards to Atlantic sturgeon, as scallop dredge gear is the only gear type permitted in this region of the scallop fishery, and as noted above, sturgeon are not expected to interact with this gear type, direct impacts to this species are also not expected.

5.3.4 Measures to make turtle regulations consistent

Under No Action, there is a chain mat regulation as well as a turtle deflector dredge regulation. Chain mats are required from May 1 through November 30 south of 41°9.0′ N. latitude. Turtle deflector dredges are required from May 1 through October 31 west of 71° W long. The deflector dredge is required for any limited access scallop vessel using a dredge, regardless of dredge size or vessel permit category, or any LAGC IFQ scallop vessel fishing for scallops with a dredge width of 10.5 ft (3.2 m) or greater.

The action alternative, the preferred alternative, would revise the turtle chain mat regulations to have a consistent boundary with the TDD requirement, and revise the TDD regulations to have a consistent season with the chain mat regulations. If approved, both gear elements would be required for the waters west of 71° W from May 1 through November 30.

Framework 23, which implemented the turtle deflector dredge requirements, notes that the gear performs similar to a standard dredge in terms of scallop catchability (Section 5.1.1.2.1 of FW23). The TDD is estimated to be slightly more efficient than the standard New Bedford dredge (about 4.3%), but the difference was not statistically significant. Thus, an adjustment to the season is not expected to influence the amount of fishing occurring or the location of fishing effort, and therefore no negative impacts to protected resources are expected as a result of this TDD change.

Based on observer data, there have been some observed takes of turtles east of 71° W with bottom tending gear, including two Kemp's ridleys captured on southern George's Bank by scallop dredge gear, but the vast majority of observed takes have been west of that boundary (Figure 41-Figure 46). Therefore, while we expect that takes of sea turtles east of 71° W will be less common than potential takes west of 71° W, the chain mats do provide a conservation benefit in terms of increased survival to any turtles in that area in that they reduce injuries associated with being captured in the dredge bag. Reducing the size of the chain mat required area may reduce benefits to sea turtles.

In the month of November, there are fewer observed takes west of 71° W compared to May-October, but there are some, especially inshore of Delmarva (Figure 42). While none of the observed takes in November were with scallop dredge gear, the animals are in the area and subject to dredge interactions, since they were observed in other bottom tending gears. By December, the vast majority of observed takes are farther south than the scallop fishery is prosecuted, off North Carolina (Figure 43). Satellite data provides similar information; the majority of tagged turtles overlap scallop fishing grounds in May – October (Figure 47), and some tagged turtles are still in the southern range of the fishery in the early part of November. Therefore, extending the TDD requirement in November (Figure 48) is expected to provide additional conservation benefits to turtles.

Overall, this alternative is expected to have neutral benefits on protected resources. Any small decrease in conservation benefit from a reduction in the size of the area that chain mats would be required (east of 71W and south of 41 9 N) is offset by the potential increase in conservation benefit from an extension of the season that TDDs would be required (month of November). The alignment of the gear modifications in time and space would result in maintaining the conservation benefit to sea turtles as described in the previous rules that implemented the measures. Further, any effects from reducing the chain may area and adding an additional month of coverage to the TDD regulations are not anticipated to be significantly different than what was analyzed in the 2012 Opinion. Used together, chain mats and TDDs are thought to maximize the conservation benefit to turtles, because chain mats help reduce the impact to turtles from interactions occurring in the water column, and the TDD helps reduce the impact to turtles from interactions with the dredge frame on the bottom (Smolowitz et al. 2010; DuPaul et al. 2004). In regards to Atlantic sturgeon, as the proposed measure is not expected to change fishing effort or result in any shift in effort, and will not change the primary gear used in the fishery (i.e., scallop dredge), impacts to Atlantic sturgeon are expected to be neutral.

5.3.5 Measures to develop new accountability measures for northern windowpane flounder and modify existing accountability measures for GB and SNE/MA yellowtail flounder

This section has three alternatives: 1) No Action includes no new proactive AMs in the scallop fishery; 2) proactive AM to *modify* the number of rings in the apron of dredge; and 3) proactive AM to *eliminate* the restriction on the number of rows in the apron of a dredge. Alternative 2 is the preferred alternative; modify the maximum number of rings allowed in the apron of the dredge to seven for all scallop dredge vessels.

There are no direct impacts expected from any of these alternatives on protected resources because the proactive AM is a gear modification related to the topside of the dredge bag and is not expected to have positive or negative impacts on protected resources. So long as this gear

modification does not cause vessels to increase area swept, there should not be any impacts on protected resources.

5.3.6 Measures to allow a limited access vessel to declare out of fishery on return to homeport

This section has three alternatives: 1) No Action – LA vessels on an open area DAS trips are charged DAS from the time a vessel positions seaward of the VMS demarcation line until it once again positions shoreward of the line; 2) LA open area trip would end when vessel positions shoreward of demarcation line and that vessel declares out of fishery; and 3) a LA vessel wanting to land an open area trip in ports south of Cape May could get off the clock shoreward of demarcation line south of 39N and declare out of fishery there to avoid DAS charges on steam back to ports south of Cape May. Alternative 3 is the preferred alternative.

Under No Action there are no direct impacts on protected resources since there are no changes in how DAS would be charged, thus area swept remains the same. Under both the DOF from anywhere alternative and the DOF from Cape May only alternative, an adjustment to DAS would be applied. As long as the adjustment is adequate and captures any steaming time that was previously considered part of a vessels' "DAS charged", the direct impacts of these measures on the resource and protected resources should be neutral. If the adjustment is too high there could be low positive impacts, and if the adjustment is too low there could be low negative impacts if fishing time increases. These adjustments are temporary in nature and could be adjusted. Therefore, if the PDT finds that it needs to be changed it could be corrected to mitigate any potential negative impacts on the resource or protected resources.

5.3.7 Modify regulations related to flaring bar provision for turtle deflector dredge

This action is considering two alternatives: No Action would not change the current provisions related to the flaring bar only being attached to the dredge in one place, as well as an alternative that would clarify that a flaring bar could be attached in more than one place, preferred. This measure is administrative and related to safe handling of gear and has no direct impacts on the scallop catch efficiency of the gear. Therefore, there are no expected impacts on the resource or protected resources from either No Action or the alternative that would modify the gear to allow use of a flaring u-shaped bar.

5.4 ECONOMIC IMPACTS

The following sections analyze the economic impacts of the management alternatives considered in Framework 26 and compare these with two baselines, No Action alternative and Status Quo scenario. The objective of the cost-benefit analysis is to evaluate the net economic benefits arising from changes in consumer and producer benefits that are expected to occur with implementation of a regulatory action. As the NMFS Guidelines for the Economic Analysis of the Fishery Management Action (NMFS, 2007) [4] state "the proper comparison is '*with the action' to 'without the action'* rather than to *'before and after the action,*' since certain changes may occur even without action and should not be attributed to the regulation." The guidelines also

[4] Guidelines for Economic Reviews of National Marine Fisheries Service Regulatory Actions, March 2007, http://www.nmfs.noaa.gov/sfa/domes_fish/EconomicGuidelines.pdf

state that "No Action alternative does not necessarily mean a continuation of the present situation, but instead is the most likely scenario for the future, in the absence of other alternative actions"[5]. Even without action, the scallop stock abundance in open and access areas will be different, and as a result, landings, scallop prices, fishing costs, revenues and benefits from the fishery would change compared to the present levels. The Status Quo scenario as projected in this Framework action reflects this reality and, in addition to the No Action alternative, is used as one of the baselines to assess economic impacts of the proposed measures especially for the purposes of E.O.12866.

While NMFS 2007 guidelines indicate "The No Action alternative should be the basis of comparison for other alternatives", it very often use the terms "No Action" and "Status Quo" interchangeably[6]. The economic analyses presented in this section make a distinction in the definition of those terms, however, with "No Action" referring to a "regulatory" baseline and "Status Quo" referring to a state with no changes from the present allocations for open area DAS and access area trips. The definition of "No Action" as described in Section 2.2.1.1 of the document refers to the default measures that are specified in Framework 25 until the next Framework action is implemented. No Action alternative is used as one of the baselines for comparison of the biological and economic impacts of the proposed specification measures to those of default measures in accordance with the NMFS guidelines.

However, as discussed in detail in Section 5.4.2 below, default measures are temporary in nature and as such, allocations under those measures are usually set at considerably lower levels than the allocations either in the current (in 2014) or the projected allocations in the next fishing year (2015) to prevent fishing effort exceeding the sustainable levels due to the delays in the implementation of the proposed measures in next Framework Action. As a result, the projections for landings, revenues and economic benefits under the No Action alternative are considerably lower than the current levels and the levels that are expected under the proposed measures. Because of this, when economic benefits of the proposed alternatives are estimated using No Action as the baseline, the impacts on the economy are overstated in the short-term compared to the present circumstances.

OMB recommends using more than one baseline when the choice of baseline will significantly affect estimated benefits and costs. [7] For these reasons, the economic analyses in this framework also include a Status Quo scenario *(SQ)* to provide an assessment of how landings, revenues and total economic benefits from the scallop fishery would change if the current allocations were continued in 2015 but taking into account the impacts of projected changes in the productivity and the spatial distribution of the scallop resource on landings, revenues and total economic benefits. From that perspective, SQ is a more realistic baseline to assess the impacts of the proposed measures on the economy from the perspective of E.O.12866. Section 5.4.2 provides a

[5] Ibid, p.12

[6] For example, see p. 15 of 2007 NMFS guidelines: "For economic analysis of regulatory actions, changes in net benefits are measured by the difference in the present value of the discounted stream of net benefits of regulatory action, as compared to the status quo. In this context, a positive result means that the net present value of the regulatory action exceeds that of the status quo."

[7] Circular A-4, September 17, 2003, http://www.whitehouse.gov/sites/default/files/omb/assets/regulatory_matters_pdf/a-4.pdf

description of the Status Quo scenario and discusses the implications of using the No Action and SQ scenarios as baselines to evaluate the economic benefits of the proposed measures.

As the Guidelines for Economic Analysis of Fishery Management Actions specify, "benefits and costs are measured from the perspective of the Nation, rather than from that of private firms or individuals. Benefits enjoyed by other nations are not included, although tax payments by foreign owners, and export revenues, are benefits to the Nation."

The overall benefit and costs of the fishery management actions generally vary over time depending on the rate of growth of the stock and according to the nature of management measures implemented to maximize the yield from fishery. Although a general guideline for the period of analysis cannot be established for all fishery management actions due to the diversity of possible situations and measures to be dealt with, the Guidelines state that "the period of analysis could reflect the time it takes for the fishery to move from its initial equilibrium along the expansion path to the final equilibrium point (including the time needed for the present value of costs and benefits to approximate zero) due to the adoption of the proposed regulation, holding all other influence constant." In addition, the Guidelines indicate that "a reasonable attempt should be made to conduct the analysis over a sufficient period of time to allow a consideration of all expected effects."

Because fishery management actions in general result in short-term costs for the industry in terms of foregone revenue, "choosing a period of analysis that is too short may bias the analysis toward costs, where costs are incurred in the short-term and benefits are realized later." Similarly, the Office of Management and Budget (OMB, 2003) indicated that the analyses should "present the annual time stream of benefits and costs expected to result from the rule," and state that "the beginning point for your stream of estimates should be the year in which the final rule will begin to have effects" and "the ending point should be far enough in the future to encompass all the significant benefits and costs likely to result from the rule."[8]

Furthermore, the economic impacts of the proposed regulations over the long-term should be evaluated by the discounted cumulative present value of the stream of benefits since benefits or costs that occur sooner are generally more valuable (or have a positive time preference). OMB Circular points out that the analytically preferred method of handling temporal differences between benefits and costs is to adjust all the benefits and costs to reflect their value in equivalent units of consumption and to discount them at the rate consumers and savers would normally use in discounting future consumption benefits (OMB, 2003). Discount rate is the interest rate used in calculating the present value of expected yearly benefits and costs. This Circular suggests that for regulatory analysis, the cost-benefit analyses should provide estimates of net benefits using both three percent and seven percent.

This section examines the economic impacts of the proposed regulations in Framework 26. Although Framework 26 is a one year action, it will have impacts on the future yield from scallop resources, on scallop revenues and total economic benefits. The short- and the long-term economic impacts of the specification alternatives are analyzed in Section 5.4.2. The present value of long-term benefit and costs of the specification alternatives are estimated using both a

[8] OMB Circular A-4 (September 17, 2003), http://www.whitehouse.gov/omb/circulars_a004_a-4/

3% and a 7% discount rate. The higher discount rate provides a more conservative estimate and a lower bound for the economic benefits of alternatives compared with the benefits predicted using a lower discount rate.

5.4.1 Acceptable Biological Catch (Section 2.1.1)

5.4.1.1 No Action ABC

Reauthorization of the MSA requires the SSC to set an acceptable biological catch (ABC), or maximum catch level that can be removed from the resource taking into account all sources of biological uncertainty. The Council is prohibited from setting catch limits above that level. This requirement is expected to have long-term economic benefits on the fishery by helping to ensure that catch limits and fishing mortality targets are set at or below ABC. This should help prevent overfishing and optimize yield on a continuous basis. Under "No Action" for FY 2015, the overall ABC for each year would be identical to that of the default FY 2015 ABC for the fishery.

No Action ABC is lower than the proposed ABC in this action because biomass has increased from 2014 levels. However, the difference between No Action ABC and the proposed ABC in FW26 is similar and not great enough to have direct impacts on the fishery specifications set in the framework. Therefore, the potential impacts of the No Action ABC on economic benefits are neutral.

5.4.1.2 ABC for 2015 and default for 2016

The updated OFL and ABC estimates are higher than the No Action default values because updated surveys suggest scallop biomass is higher than previous estimates. Overall, using these estimates to set fishery specifications should have positive economic impacts over the long-term because the ABC values were determined based on the recent surveys and best available science to prevent overfishing of the scallop resource. However, as indicated above, the difference between No Action ABC and the proposed ABC in FW26 is similar and not great enough to have direct impacts on the fishery specifications set in the framework. Therefore, the potential impacts of the updated ABC on economic benefits compared to No Action values are neutral.

5.4.2 Economic impacts of the Framework 26 specification alternatives

5.4.2.1 Proposed specification alternatives, No Action and Status quo

Framework 26 includes three allocation alternatives (ALT2, ALT3, and ALT4) in addition to the "No Action" alternative (ALT1). These alternatives allocate a different number of open area DAS and access area trips in 2015. The biological model projected landings, LPUE and size composition of landings for each of these alternatives for 2015-2028. These projections were then used as inputs in the economic model to estimate prices, revenues, costs, producer and consumer surpluses and total economic benefits from the scallop fishery. The impacts of alternatives on individual vessels are expected to be proportional to the aggregate impacts on revenues, fishing costs and net revenues (producer surplus).

Following the 2007 NMFS Guidelines for the Economic Analysis of the Fishery Management Action (NMFS, 2007) [9], the biological and economic impacts of the proposed alternatives are compared in this Section to the "No Action" (i.e., temporary default measures) alternative as defined in Section 2.1.2.1 of the document. They were also compared to the projected economic impacts under the Status Quo alternative to provide a more realistic estimate of the impacts on the overall economy for the reasons explained below. Furthermore, those estimates were presented in the majority of Tables in 2014 dollars to provide insight for the managers and the industry participants about the impacts of the proposed measure relative to the current values. They were also summarized in terms of constant 2001 dollars to be consistent with the requested format in OMB Circular A-4 and in assessing the regulatory significance under E.O.12866.[10] See Table 100 and Table 102 for the estimates of revenues and net economic benefits of the proposed alternatives in terms of the 2001 constant dollars using the GDP deflator.

The definition of "No Action" in this document follows a regulatory approach and refers to the default measures specified in Framework 25 until the next Framework action is implemented in 2015. For the last several years the Council has recommended that default measures be used in the absence of new fishery specifications rather than fishery allocations simply rolling over from the previous year, as is the case in many other fisheries. Because of the spatial nature of area rotation used in the scallop fishery, rolling over allocations from one year to the next can potentially have negative impacts on the resource and fishery since allocations often vary in magnitude and area each year under this management system. Instead default measures have been developed that are designed to be only a fraction of the ultimate allocations for a subsequent fishing year. They are designed to provide some level of fishing access at the start of a subsequent fishing year in the event that new fishery specifications are not in place. Therefore, the "No Action" alternative does not reflect, a "state" or baseline that correspond to the same amount of fishing effort in the current year (2014), but rather it provides a literal interpretation of "what is likely to occur" if there is a delay in the implementation of the new regulations. However, the default (the no action) measures are not intended to be in place for an entire fishing year without some sort of subsequent action.

Default measures are temporary in nature and as such, allocations under those measures are usually set at considerably lower levels than the allocations either in the current (in 2014) or the projected allocations in the next fishing year (2015) to prevent fishing effort exceeding the sustainable levels due to the delays in the implementation of the proposed measures in next Framework Action. For example, if No Action was taken in 2015, open area DAS allocations would equal 17 days-at-sea per full-time vessels, or 75% of the original projected allocations for 2015 (23 days) and include no access area allocations. As a result, total landings for No Action are estimated to be about 19.3 million lb. in 2015. This is about half as much of the projected landings for the current fishing year (2014) and less than half as much of the projected landings for the proposed alternatives in 2015 fishing year, resulting in considerably smaller revenues and economic benefits compared to the present circumstances as well as from the levels under the

[9] Guidelines for Economic Reviews of National Marine Fisheries Service Regulatory Actions, March 2007, http://www.nmfs.noaa.gov/sfa/domes_fish/EconomicGuidelines.pdf

[10] Page 32 of Circular A-4 (2003) states that: "In presenting the stream of benefits and costs, it is important to measure them in constant dollars to avoid the misleading effects of inflation in your estimates", and page 45 states that: "Please report all monetized effects in 2001 dollars. You should convert dollars expressed in different years to 2001 dollars using the GDP deflator".

proposed alternatives. Conversely, when economic benefits of the proposed alternatives are estimated using No Action as the baseline, the impacts on the economy is overstated in the short-term compared to the current levels, since the No Action measures have been determined at very precautionary default levels, for a fraction of the year, and intended to be replaced with subsequent measures based on updated survey information.

This poses a challenge in terms of determination of significance under the Executive order 12866 based on 'an annual effect on the economy of $100 million or more', which is one of the criteria for a significant regulatory action. If No Action was used as a baseline to assess the impacts of the proposed measures, the economic benefits for all the proposed alternatives would be close to $243.3 million 2015 (in 2001 dollars) exceeding the $100 million threshold for significant regulatory action. Again this would be because the default measures were intentionally set the allocations at very low levels -- to limit the fishing effort in those few months until the implementation of the new regulations-- resulting in drastically lower economic benefits compared to any other alternative. As a result, economic comparisons based on the regulatory 'No Action' scenario (equivalent to the default measures) do not realistically reflect the expected impacts on the overall economy. If a realistic baseline was not employed, any government agency could create some very strict transitory default measures to keep the bar low so that any new action compared to that baseline would result in extremely small costs (or very high economic benefits) from the perspective of E.O.12866. Obviously, this would contradict the intent of E.O.12866, which requires federal agencies to try to assess whether the action will have significant impacts on the economy or whether the benefits of the intended regulation justify its costs.

OMB recommends using more than one baseline when the choice of baseline will significantly affect estimated benefits and costs. 11 For these reasons, the economic analyses provided for this framework also includes a Status Quo scenario (SQ) to reflect the changes in landings and economic benefits as a result of projected changes in the scallop resource stock and the composition of landings. In contrast to the "No Action" alternative that defines the baseline using a literal interpretation from regulatory perspective, the Status Quo (SQ) scenario provides a better assessment of what would happen in terms of landings, revenues and total economic benefits from the scallop fishery if the current level of allocations (in 2014) were continued in 2015 taking into account recent changes in the productivity and the spatial distribution of the scallop resource. Therefore, under the Status Quo scenario for this action, allocations in 2015 would be the same as they were in the 2014 fishing year with 31 open area days and 2 access area trips at 13,000 pounds per trip for full-time vessels, resulting in total projected landings of 37.5 million lb. in 2015 fishing year.

It is important to point out that SQ is not an alternative under consideration for selection in this action, but was developed by the PDT to reflect another baseline to be used to evaluate the economic impacts of the proposed alternatives if there were no changes in the allocations from the levels in 2014 fishing year. This baseline is more reflective of current fishing conditions since it includes the same level of access to the fishery as in FY2014. It is also more consistent with the intent and the principles of E.O.12866 which requires that:" Each agency shall identify

[11] Circular A-4, September 17, 2003, http://www.whitehouse.gov/sites/default/files/omb/assets/regulatory_matters_pdf/a-4.pdf

the problem that it intends to address …" This is important because 'the baseline" has to be related to the primary problem the agency is trying to solve given that it serves as a main point of comparison for the analysis of the proposed regulation and for assessing whether or not any proposed regulation is a "significant regulatory action" under criteria specified by E.O. 12866.

The primary need of Framework 26 is "to achieve the objectives of the Atlantic Sea Scallop FMP to prevent overfishing and improve yield-per-recruit from the fishery" and the primary purpose is "to set annual specifications" to address this need. Therefore, the primary need of Framework 26 is much broader in scope than just replacing the temporary default measures (NAA) set in the previous framework to prevent issues related to the delays in implementation. Default measures were specifically designed to provide some access to the fishery until the new regulations are in place but also prevent vessels using more open area DAS or taking more access area trips than they would be allocated with the new action. Since any DAS that were used for fishing during those few months would count toward the allocations in the new action for the fishing year, the default measures are intended to serve as a smooth transition to the new regulations rather than to be applied for the whole fishing year. In this sense, they could even be considered as a part of the process of implementing the new regulations. Therefore the SQ baseline is what is used to evaluate whether the action will have a significant economic impact on the economy under the requirements of E.O.12866.

For the purposes of Framework 26 analyses, the projected economic benefits for alternatives will be compared both to the benefits for Status Quo and the No Action in Table 100, Table 101 and Table 102 below. The comparisons to the No Action address estimated economic impacts of the proposed measures compared to the default measures set in Framework 25 using a literal interpretation of "what is likely to happen" if there is a delay in the implementation of new regulations" and comparisons to the SQ address the estimated economic impacts assuming the current allocations in the 2014 fishing year were continued in 2015 fishing year as well as to address the requirement for determining whether the proposed action qualify as a significant regulatory action.

Each specification alternative also includes default measures for 2016 fishing year until the next framework action is implemented. Under those measures, LA vessels would be allocated a reduced level of open area DAS (set at 75% of the projected DAS allocation for 2016, 26 DAS for FT vessels) and one access area trip (17,000 lb. for FT vessels). These default measures are similar to year two measures used in the past that allow reduced levels of access to the fishery at the start of the year with the intent that additional allocations are provided later in the fishing year under a subsequent action. In addition, LA compensation trips from FY2015 could occur in the first 60 days of FY2016 in any area a vessel has compensation pounds left in. The MA access areas would be open to LAGC vessels as well, the equivalent of 6.5% of the one trip available to LA vessels (about 600 trips). Default 2016 allocations for LA vessels could not be used in those areas until April 1, 2016. Lastly, FY2016 RSA compensation fishing could not take place in those areas unless allowed under a subsequent framework action. Because these measures are expected to prevent fishing effort exceeding the sustainable levels and the potentially negative impacts on the resource and scallop yield until the next Framework Action is in place, they will have positive economic benefits for the scallop fishery in the long-term.

5.4.2.2 Summary of the economic impacts of the proposed specification alternatives

The economic impacts of the proposed specification alternatives are summarized in Table 100and Table 101 below both in 2014 and in 2001 constant dollars compared to the No Action and Status Quo scenarios. Section 5.4.2.1 to 5.4.2.2.4 provide a summary of the economic impacts of each alternative separately, in terms of landings, revenues and total economic benefits (producer surplus plus consumer surplus) followed by in 5.4.2.2.5, a discussion of the comparative impacts of the specification alternatives. Section 5.4.2.2.5.1 to Section 5.4.2.2.5.5 provide a detailed discussion of economic impacts for landings, prices, effort, employment, trip costs, consumer and producer surpluses and total economic benefits both for the short-term (2015) and long-term (2015-2028).

Table 100. Economic Impacts for 2015: Estimated landings (Mill.lb.), revenues and economic benefits (Mill. $)

Values	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	3.NL+ETA (Preferred)	4. Reduced F	Extra GC with 2 closures	Status Quo (SQ)
FT LA Open area DAS	17	31	30	30	31	31	30	31
Total landings (Mill. lb.)	19.3	45.2	46.3	46.4	47.4	45.2	47.4	37.5
Difference from No Action		25.9	27.1	27.2	28.1	25.9	28.2	18.2
Difference from SQ	-18.2	7.7	8.9	9.0	9.9	7.7	10.0	
	In 2014 dollars							
Total revenue (Mill. $)	263.0	557.8	567.1	570.3	578.1	557.6	580.3	477.2
Difference from No Action		294.8	304.1	307.3	315.2	294.7	317.3	214.2
Difference from SQ	-214.2	80.6	89.9	93.1	101.0	80.4	103.1	
Producer Surplus (Mill. $)	245.3	516.0	524.7	527.4	534.8	515.9	536.5	442.2
Difference from No Action		270.7	279.4	282.1	289.5	270.5	291.2	196.9
Difference from SQ	-196.9	73.8	82.5	85.1	92.6	73.6	94.2	
Total Economic Benefits (Mill. $)	248.5	542.0	551.7	554.8	563.1	541.8	565.1	459.9
Difference from No Action		293.5	303.3	306.3	314.6	293.3	316.6	211.4
Difference from SQ	-211.4	82.1	91.9	94.9	103.3	81.9	105.2	
	In 2001 dollars							
Total revenue (Mill. $)	203.4	431.3	438.5	441.0	447.0	431.1	448.7	369.0
Difference from No Action		227.9	235.1	237.6	243.7	227.9	245.3	165.6
Difference from SQ	-165.6	62.3	69.5	72.0	78.1	62.2	79.7	0.0
Producer Surplus (Mill. $)	189.7	399.0	405.7	407.8	413.5	398.9	414.8	341.9
Difference from No Action		209.3	216.0	218.1	223.8	209.2	225.2	152.2
Difference from SQ	-152.2	57.1	63.8	65.8	71.6	56.9	72.8	0.0
Total Economic Benefits	192.1	419.1	426.6	429.0	435.4	418.9	436.9	355.6
Difference from No Action		226.9	234.5	236.8	243.3	226.8	244.8	163.5
Difference from SQ	-163.5	63.5	71.1	73.4	79.9	63.3	81.3	0.0

Table 101. Long-term Economic Impacts: Cumulative present value of revenues, producer surplus and total economic benefits *net of No action and net of Status quo* values (in 2014 dollars)

Values	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	3.NL+ETA (Preferred)	4. Reduced F	Extra GC with 2 closures	Status Quo
Total landings (million lb.)	854.9	846.5	849.8	843.6	846.6	843.4	842.2	841.3
Total landings *net of No Action* landings (million lb.)		-8.4	-5.1	-11.3	-8.3	-11.5	-12.7	-13.6
Total landings *net SQ* landings (million lb.)	13.6	5.2	8.5	2.4	5.3	2.2	0.9	
Cumulative Present values	**At 3% discount rate**							
Revenue ($ million)	8077.6	8118.4	8123.9	8098.4	8105.9	8088.7	8088.4	8041.7
Total Benefits ($ million)	8024.7	8037.5	8045.7	8015.3	8024.0	8005.3	8004.3	7959.6
Cumulative Present values	**At 7% discount rate**							
Revenue ($ million)	6467.3	6541.7	6534.2	6524.8	6521.0	6512.6	6520.0	6461.2
Total Benefits ($ Million)	6429.1	6478.5	6472.5	6459.7	6456.1	6447.1	6454.2	6396.7
Difference from Status Quo	**At 3% discount rate**							
Revenue ($ Million)	35.9	76.7	82.2	56.7	64.2	47.0	46.7	
Total Benefits ($ Million)	65.1	78.0	86.1	55.7	64.4	45.8	44.7	
Difference from No Action	**At 3% discount rate**							
Revenue ($ Million)		40.9	46.3	20.8	28.3	11.1	10.8	-35.9
Total Benefits ($ Million)		12.9	21.0	-9.4	-0.7	-19.4	-20.4	-65.1
Difference from Status Quo	**At 7% discount rate**							
Revenue ($ Million)	6.0	80.4	73.0	63.5	59.7	51.4	58.8	
Total Benefits ($ Million)	32.3	81.7	75.8	62.9	59.4	50.3	57.5	
Difference from No Action	**At 7% discount rate**							
Revenue ($ Million)		74.4	66.9	57.5	53.7	45.3	52.8	-6.0
Total Benefits ($ Million)		49.4	43.5	30.6	27.1	18.0	25.2	-32.3

Table 102. Long-term Economic Impacts: Cumulative present value of revenues and total economic benefits *net of No Action and net of Status Quo* values (in 2001 dollars)

Values	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	3.NL+ETA (Preferred)	4. Reduced F	Extra GC with 2 closures	Status Quo
Cumulative Present values	**At 3% discount rate**							
Revenue ($ million)	6245.7	6277.2	6281.5	6261.8	6267.6	6254.3	6254.0	6217.9
Total Benefits ($ million)	6204.8	6214.7	6221.0	6197.5	6204.2	6189.8	6189.0	6154.4
Cumulative Present values	**At 7% discount rate**							
Revenue ($ million)	5000.6	5058.1	5052.3	5045.0	5042.1	5035.6	5041.3	4995.9
Total Benefits ($ Million)	4971.0	5009.2	5004.6	4994.7	4991.9	4985.0	4990.5	4946.0
Difference from Status Quo	**At 3% discount rate**							
Revenue ($ Million)	27.8	59.3	63.6	43.8	49.6	36.3	36.1	0.0
Total Benefits ($ Million)	50.3	60.3	66.6	43.1	49.8	35.4	34.6	0.0
Difference from No Action	**At 3% discount rate**							
Revenue ($ Million)	0.0	31.6	35.8	16.1	21.9	8.6	8.4	-27.8
Total Benefits ($ Million)	0.0	10.0	16.2	-7.3	-0.5	-15.0	-15.8	-50.3
Difference from Status Quo	**At 7% discount rate**							
Revenue ($ Million)	4.6	62.2	56.4	49.1	46.2	39.7	45.5	0.0
Total Benefits ($ Million)	25.0	63.2	58.6	48.6	45.9	38.9	44.5	0.0
Difference from No Action	**At 7% discount rate**							
Revenue ($ Million)	0.0	57.5	51.7	44.5	41.5	35.0	40.8	-4.6
Total Benefits ($ Million)	0.0	38.2	33.6	23.7	21.0	13.9	19.5	-25.0

5.4.2.2.1 No Action – Default measures for 2015

As a result of fewer open area DAS (17 days instead of 31 days in 2015) and no allocations to access areas, the landings are projected to be 19.3M lb., revenues are estimated to be $263.0 million, and total economic benefits are estimated to be $248.5 for No Action, much lower compared to the other alternatives in 2015 (Table 1). Over the long-term from 2015 to 2028, the present value of revenues, producer surplus and total economic benefits under No Action will still be lower compared to all alternatives using a 7% discount rate except for compared to the Status Quo scenario. This is because the large negative impacts in 2015, about $300 million reduction in revenue compared to ALT2 to ALT4, outweighs the positive impacts on landings and economic benefits after 2015 (Table 101). However, if the future benefits were discounted less, i.e., at 3%, then the long-term economic benefits of No Action would exceeds the benefits for ALT3 with 3 closures as well as the benefits for ALT4 and SQ scenarios.

Under FY2015 default measures the LAGC IFQ allocation is 1,274mt for vessels with a LAGC IFQ permit as well as LA vessels with a LAGC IFQ permit. This allocation is equivalent to 5.5% of the ACL projected for FY2015 from FW25. This alternative does not include any access area trips for LAGC IFQ vessels. No action for the NGOM hard TAC is 70,000 pounds and the target

TAC for vessels with a LAGC Incidental permit is 50,000 pounds. These measures would have neutral impacts on LAGC vessels since the allocations are very similar to current levels, and for LAGC IFQ vessels only marginally less than the total IFQ proposed in FW26 (1,274 mt. under 2015 default measures compared to 1,348mt under the proposed action for FY2015).

5.4.2.2.2 ALT2 -Basic Run using fishing mortality target principles in the FMP with no modifications to scallop access area boundaries

ALT2 would have short and long term positive economic impacts compared to the No Action and Status Quo scenarios. This alternative would result in higher landings (45.2M lb.), revenues ($557.8M), and total economic benefits ($542M) in 2015 compared to No Action because it allows 2 access area trips while keeping the open area days at 31 DAS. Revenues for Alternative 2 in 2015 would be $80.6 million higher and total economic benefits would be $82.1 million higher than SQ. Over the long-term from 2015 to 2028, the present value of revenues, producer surplus and total economic benefits under this alternative would be higher than No Action and the SQ scenarios as well (**Table 100** and Table 101).

Under ALT2 (as well as under ALT3 and ALT4), allocation for the LAGC IFQ fishery including the LA vessels with IFQ permits (1,348mt, 2.9 million lb.) will be 5.8% higher than the allocation under the default measures (1274mt, 2.8 million lb.). It is also 23% higher than the Status Quo level, that is, ACL for 2014 (1,099mt, or 2.42 million lb.). As a result, the economic impacts on the LAGC IFQ fishery is expected to be positive compared to both No Action and Status Quo levels. Because the NGOM hard TAC and the target TAC for vessels with a LAGC Incidental permit is equivalent to the No Action values, economic impacts on those vessels will be neutral.

5.4.2.2.3 ALT3 with 3 closures and options with 2 closures (Preferred with only NL and ETA closures)

This alternative includes three different closure modifications to existing access areas to reduce impacts on small scallops observed in various areas. Option 1 is an extension of the scallop access area in Closed Area II (CA2) to include concentrations of small scallops that are near existing boundaries of current access area. Option 2 is an extension of the scallop access area in Nantucket Lightship (NL) to include concentrations of small scallops that are near existing boundaries of current access areas. Option 3 proposes to close areas *within* current scallop access areas or a temporary prohibition to fish in a subset of a current scallop access area and is confined to Elephant Trunk (ETA). The preferred alternative includes only the NL and ETA closures.

The PDT ran three separate model runs to assess the impacts of this alternative, including all three closure options (ALT3 with 3 new closures), closures of CA2 and NL, and the preferred alternative which includes only the NL and ETA closures. ALT3 would have short and long term positive economic impacts for all these options compared to both No Action, and the SQ scenario because it would allocate more open area DAS than No Action and also would allocate three access area trips rather than none under No Action and two trips under SQ (**Table 100** and Table 101).

The revenues and total economic benefits for this alternative would be slightly lower with three closures (prohibiting access in northwest corner of ETA) than that of ALT3 with two closures in the short-term, with landings of about 46.3M lb. (46.4M lb. for two closures), revenues of about $567.1M ($570.3M for 2 closures), and total economic benefits of $551.7M ($554.8M for 2 closures) in 2015. Limiting the new closures to two areas, NLS and ETA, will increase the open area DAS by one days and the estimated landings by 1.1 million lb. in the 2015 fishing year, resulting in about $11 million higher revenues and in over $11.4 million in higher total economic benefits in the 2015 fishing year compared to the three closures that includes closing CA2.

Over the long-term from 2015 to 2028, however, the present value of revenues, producer surplus and total economic benefits for ALT3 with 3 closures would exceed the values for ALT3 with 2 closures whether that included CA2 or ETA (Table 101). Over the long-term, the total economic benefits of ALT3 with 3 closures would be $75.8 million (at 7% discount rate) to $86.1 million (at 3% discount rate) higher than the benefits for SQ scenario. Total economic benefits for the two closure option that includes a closure of CA2 but not ETA would be $55.7 million (at 7% discount rate) to $62.9 million (at 3% discount rate) higher than the benefits for SQ scenario. The preferred alternative that would closure NL and ETA only would result in higher benefits ($64.4 million) over the long-term compared to the option that closes CA2 and NL using a 3% discount rate. However, the economic benefits of closing NL and ETA would be slightly lower over the long-term compared to closing CA2 and NL if the future benefits are discounted at 7% because the benefits of closing ETA would accrue in later years. In short, ALT3 with three closures will have slightly lower revenues and economic benefits in 2015, but higher revenues and total economic benefits over the long-term compared to ALT3 with two closures.

Under the preferred alternative (as well as under ALT2 and ALT4), allocation for the LAGC IFQ fishery including the LA vessels with IFQ permits (1,348mt, 2.9 million lb.) will be 5.8% higher than the allocation under the default measures (1274mt, 2.8 million lb.). It is also 23% higher than the Status Quo level, that is, ACL for 2014 (1,099mt, or 2.42 million lb.). As a result, preferred alternative is expected to have positive economic impacts on the LAGC IFQ fishery compared to both No Action and Status Quo levels. Because the NGOM hard TAC and the target TAC for vessels with a LAGC Incidental permit is equivalent to the No Action values, economic impacts on those vessels will be neutral.

5.4.2.2.4 ALT4 - Reduced F for MA access areas to reduce incidental mortality on small scallops

Because this alternative would provide 31 open area days and three access area trips, it would have short and long term positive economic impacts compared to the No Action, except when future benefits are discounted at a lower rate (3%), total economic benefits for ALT4 would be lower compared to the No Action total benefits. This is because, under no Action, future landings are higher and prices are lower than projected for ALT4, resulting in a higher consumer surplus, which constitutes a part of total economic benefits (Table 1 and Table 101). Revenues, producer surplus and total economic benefits for ALT4 would exceed the Status Quo levels both in 2015 (mainly due to allocation of three instead of two access area trips) and over the long term as well.

Under ALT4 (as well as under ALT2 and ALT3), allocation for the LAGC IFQ fishery including the LA vessels with IFQ permits (1,348mt, 2.9 million lb.) will be 5.8% higher than the allocation under the default measures (1274mt, 2.8 million lb.). It is also 23% higher than the Status Quo

level, that is, ACL for 2014 (1,099mt, or 2.42 million lb.). As a result, the economic impacts on the LAGC IFQ fishery is expected to be positive compared to both No Action and Status Quo levels. Because the NGOM hard TAC and the target TAC for vessels with a LAGC Incidental permit is equivalent to the No Action values, economic impacts on those vessels will be neutral.

5.4.2.2.5 Comparison of economic impacts of specification alternatives

This section provides a discussion of the comparative impacts of the Framework 26 alternatives on landings, prices, revenues, costs, employment, consumer and producer surpluses and total economic benefits. Although the Tables include the results of the run with extra allocations to the LAGC IFQ fishery and the SQ scenario, the discussion in this section will highlight a comparison of the alternatives ALT2, ALT3 and ALT4 with No Action as well as with Status Quo (SQ). The projections with extra allocations to the LAGC IFQ fishery will be discussed in Section 2.2.2 in evaluating the economic impacts of this option. These results are summarized for 2015 fishing year and over the long-term (2015-2028) as follows:

- Alternatives ALT2 to ALT4 would allocate 3 access area trips and about 30 to 31 open area DAS, considerably higher than the allocations for No Action and higher than the two access trips for SQ. Consequently, the landings and revenues for those alternatives (ALT 2 to ALT 4) are projected to exceed the landings for No Action levels in 2015 fishing year (Table 1).
- The landings under those alternatives range from 45.2 million lb. for ALT2 and ALT4, and over 46 million lb. for ALT3 in 2015, exceeding the projected landings both under No action (by more than 25M lb.) and SQ (by more than 7.7M lb., Table 1).
- Starting with 2016 and over the long-term, the landings for all alternatives are expected to be lower than the No Action levels because the drastic reduction in landings to only 19.3 million lb. or less than one half of the landings compared other alternatives in 2015, the scallop stock yield is expected to increase significantly allowing higher landings in the rest of the period. (Table 2). The cumulative sum of landings over the long-term for all alternatives exceeds the landings for SQ scenario, however.
- Overall, ALT3 with 3 closures is estimated to result in second highest landings in the long-term compared to No Action exceeding the landings under SQ by 8.5 million, and other alternatives by about 3M lb. to 6M lb. The projected landings for ALT3 with three closures are slightly lower than landings with 2 closures, but much lower in 2016 compared to landings with two closures and landings for other alternatives.
- ALT3 with both options (2 or 3 closures) would have higher revenues and total economic benefits compared to both ALT2 ($557.8M revenue, and $542M total benefits) and ALT4 in 2015 ($557.6M in revenues and $565.1M in total economic benefits, Table 1). ALT3 with 2 closures would have slightly higher economic benefits in 2015 compared to the option with 3 closures. ALT4 would have the lowest economic benefits in 2015 (Table 1). The increase in present value of total economic benefits will range from about $82 million (ALT2 and ALT4) to $85 million (ALT 3, 2 closures) in 2015.
- Even though the sum of landings over the long-term (2015-2028) is lower than landings for No Action alternative, the long-term present value of revenues, producer surplus (revenue net of trip costs) and total economic benefits (consumer plus producer surplus) will exceed the No Action values for all alternatives using a 7% discount rate. This is mainly because the increase in revenues compared to No Action levels is quite large in 2015 (ranging from about $270.7 million for ALT2 and ALT4 to $282.1 million for ALT3), outweighing the negative impacts on revenues in the rest of the period (Table 1

and Table 2). The present value of the cumulative economic benefits for ALT2 would exceed the benefits of the other alternatives over the long-term when the future benefits are estimated using a discount rate of 7% (2015-2028, Table 2).

- If the long-term present value of the cumulative economic benefits were calculated using a discount rate of 3%, that is, by giving more weight to future benefits compared to discounting at 7%, both ALT3 with 2 closures and ALT4 would have lower economic benefits compared to No Action and ALT3 with 3 closures would generate the largest net benefits to the nation compared to all the other alternatives (Table 3).
- Although the present value of the revenues, producer and total economic benefits (absolute values) would be slightly lower for all alternatives if a 7% discount rate was applied, the increase in those values compared to No Action levels would be larger. This is because, a 7% discount rate places less weight to decline in future revenue compared to a 3%. As a result, increase in the short-term revenue outweighs the decline in future revenue to a greater degree, changing the rank of alternatives in terms of their impacts on the revenues and total economic benefits (Table 101).
- It should be pointed out that the actual values of revenues for all alternatives could potentially exceed those shown in Table 1 to Table 101. They are based on conservative estimates for prices (Table 105 below) assuming no change in import prices, disposable income and exports in order to separate out the impacts of landings on prices. However, the reverse is possible too, if for example, import prices and exports decline resulting in lower prices than estimated. The results would also depend on how close the actual landings will be to the projected landings in 2015 and in future years. For these reasons, projected numbers for revenues and economic benefits should be mainly used for comparing one alternative with another rather than for predicting the actual values for future years.
- As compared to the Status Quo, the overall DAS used will increase by 19.5% (ALT2) to 22.8% (ALT3 with 2 closures) in 2015 (
- Table 113). Therefore, the level of employment in the scallop fishery as measured by CREW*DAS will be higher under all alternatives compared to Status Quo.
- Finally, each specification alternative also includes default measures for 2016 fishing year that would be in place until the next Framework action is implemented. Instead of rolling over the projected DAS in 2015 until the new Framework is implemented, the proposed measures would allocate only 75% of the projected DAS in FY2015 for LA vessels or a 20 day minimum if 75% of projected DAS are less than 20 DAS to prevent potentially negative impacts on the resource and scallop yield. Thus those measures are expected to have positive economic benefits for the scallop fishery in the long-term.

The following sections describes the detailed results of the proposed options on landings, effort, prices, revenues, producer and consumer surpluses and total economic benefits annually (for 2015 and beyond) and also for distinct periods including short-term (2015-2016) and long-term (2015 to 2028) for all alternatives.

5.4.2.2.5.1 Impacts on Landings, Price and Revenue

The alternatives two and four (ALT2, ALT3 with 2 closures ALT4) would result in higher landings in the short-term (2015-2016) compared ALT3 with 3 closures (Table 5). Because No Action would allocate zero access area trips and keep the open area DAS allocation at 17 DAS per LA vessel, the landings with No Action would be about 19.3 million lb. in 2015, while under

the alternatives ALT2 to ALT4, it would exceed 45 million lb. For the overall long-term period from 2015 to 2028, however, landings for No Action are estimated to exceed the levels for the for the rest of the alternatives due to the increase in scallop yield resulting from a drastic reduction in landings to 19.3M lb. in 2015 under No Action. Landings for all alternatives other than No Action, however, will exceed the SQ levels both in 2015 and over the long-term.

Table 103. Estimated landings (Million lb.) (Estimated landings in 2014, 40 to 41 mill.lb.)

Sub period	Fishing year	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3.NL+ETA (Preferred)
2015-2016	2015	19.3	45.2	46.3	46.4	45.2	47.4	37.5	47.4
	2016	75.7	66.7	54.8	63.9	66.6	63.0	68.5	56.5
2015-2016 Total		**95.0**	**111.8**	**101.1**	**110.4**	**111.7**	**110.4**	**105.9**	**103.9**
2017-2019	2017	83.7	75.3	73.9	74.3	75.2	73.9	76.4	73.5
	2018	73.4	68.4	73.7	68.8	68.2	69.0	68.1	72.1
	2019	65.6	62.3	70.9	66.3	61.0	67.2	60.8	64.2
2017-2019 Total		**222.7**	**206.0**	**218.6**	**209.4**	**204.5**	**210.1**	**205.3**	**209.8**
2020-2028	2020	62.0	61.1	60.7	58.4	58.4	58.9	59.9	60.9
	2021	60.1	60.4	59.3	57.6	57.5	57.7	59.3	60.6
	2022	59.5	59.3	58.3	57.9	58.2	58.1	58.0	60.3
	2023	59.0	58.1	57.9	58.2	58.8	58.6	57.2	59.8
	2024	58.7	57.3	58.3	59.2	58.9	58.1	57.5	59.4
	2025	59.0	57.9	59.0	59.2	59.3	57.6	58.3	58.1
	2026	59.6	58.4	59.3	58.6	59.4	57.4	59.5	57.5
	2027	59.8	58.1	58.8	57.7	58.5	57.5	60.3	58.0
	2028	59.6	57.9	58.4	57.3	58.3	57.9	60.0	58.4
2020-2028 Total		**537.2**	**528.6**	**530.1**	**523.9**	**527.2**	**521.7**	**530.0**	**532.9**
Grand Total		**854.9**	**846.5**	**849.8**	**843.6**	**843.4**	**842.2**	**841.3**	**846.6**

Table 104. Estimated landings net of SQ levels (Million lb.)

Sub Period	Fishing year	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	3.NL+ETA (Preferred)
2015-2016	2015	-18.2	7.7	8.9	9.0	7.7	10.0	9.9
	2016	7.2	-1.8	-13.7	-4.5	-1.9	-5.5	-12.0
2015-2016 Total		**-11.0**	**5.9**	**-4.9**	**4.4**	**5.8**	**4.5**	**-2.1**
2017-2019	2017	7.3	-1.1	-2.5	-2.1	-1.2	-2.6	-3.0
	2018	5.3	0.3	5.7	0.7	0.1	1.0	4.0
	2019	4.7	1.5	10.1	5.4	0.2	6.4	3.4
2017-2019 Total		**17.4**	**0.7**	**13.3**	**4.0**	**-0.9**	**4.8**	**4.4**
2020-2028	2020	2.1	1.3	0.8	-1.5	-1.5	-1.0	1.0
	2021	0.8	1.1	0.0	-1.7	-1.8	-1.6	1.3
	2022	1.4	1.2	0.3	-0.2	0.2	0.0	2.2
	2023	1.8	0.9	0.7	1.0	1.6	1.4	2.6
	2024	1.2	-0.2	0.9	1.7	1.4	0.6	1.9
	2025	0.6	-0.4	0.6	0.8	1.0	-0.8	-0.2
	2026	0.1	-1.1	-0.2	-0.9	-0.2	-2.1	-2.0
	2027	-0.5	-2.2	-1.4	-2.6	-1.8	-2.8	-2.3
	2028	-0.3	-2.0	-1.6	-2.7	-1.7	-2.1	-1.5
2020-2028 Total		**7.2**	**-1.4**	**0.1**	**-6.1**	**-2.7**	**-8.3**	**3.0**
Grand Total		**13.6**	**5.2**	**8.5**	**2.4**	**2.2**	**0.9**	**5.3**

Prices are estimated using the ex-vessel price model that takes into account the impacts of changes in meat count, domestic landings, exports, import prices, income of consumers, and composition of landings by market category (i.e., size of scallops) including a price premium on

under count 10 scallops. The price estimates shown in Table 7 correspond to the price model outputs assuming that the import prices will be constant at their 2014 levels, scallop exports will constitute about 43% of the domestic landings (average ratio for 2011-2013 fishing years), and the disposable income will be constant at the current levels in 2014, so that only the effects of the reduction in and changes in the size composition of landings could be identified. As such, these are conservative estimates for prices and actual prices could be higher (lower) than the values estimated in Table 7 if the import prices, exports and disposable income increase (decrease) in the future years.

Although the absolute values for revenues, producer and consumer surpluses, and total economic benefits would change with the value of estimated prices, the percentage differences of these values for alternatives 2 to 4 relative to the No Action or Status Quo scenarios would not change in any substantial way. Higher prices than estimated in Table 7 will increase the short-term positive impact of all the alternatives on revenues compared to No Action, while lower prices reduce this impact. The long-term benefits will be greater with higher prices and smaller with lower prices, however.

Table 105. Estimated ex-vessel prices (in 2014 inflation adjusted prices)
(Estimated price in Avg. Price in 2012=$10.1, 2013=$11.68 in inflation adjusted 2014 prices)

Sub period	Fishing year	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3.NL+ETA (Preferred)
2015-2016	2015	13.65	12.35	12.24	12.28	12.35	12.24	12.74	12.20
	2016	10.89	11.24	11.74	11.35	11.25	11.39	11.15	11.66
2015-2016 Total		**12.06**	**12.27**	**11.79**	**11.99**	**11.82**	**11.80**	**11.81**	**11.93**
2017-2019	2017	10.50	10.82	10.88	10.87	10.83	10.89	10.77	10.89
	2018	10.95	11.17	10.94	11.16	11.17	11.15	11.17	11.00
	2019	11.27	11.43	11.11	11.31	11.47	11.27	11.48	11.33
2017-2019 Total		**10.73**	**10.91**	**11.14**	**10.98**	**11.11**	**11.15**	**11.10**	**11.07**
2020-2028	2020	11.46	11.52	11.51	11.61	11.62	11.58	11.57	11.53
	2021	11.58	11.56	11.58	11.68	11.69	11.66	11.58	11.55
	2022	11.61	11.61	11.64	11.67	11.67	11.66	11.64	11.56
	2023	11.63	11.66	11.67	11.68	11.64	11.63	11.69	11.59
	2024	11.65	11.70	11.66	11.63	11.63	11.65	11.69	11.60
	2025	11.66	11.69	11.63	11.61	11.62	11.68	11.65	11.65
	2026	11.62	11.66	11.61	11.64	11.61	11.69	11.60	11.70
	2027	11.61	11.67	11.63	11.68	11.64	11.70	11.56	11.68
	2028	11.61	11.69	11.66	11.71	11.67	11.69	11.57	11.66
2020-2028 Total		**11.41**	**11.60**	**11.64**	**11.62**	**11.66**	**11.64**	**11.66**	**11.61**
Grand Total		**11.55**	**11.55**	**11.54**	**11.56**	**11.56**	**11.56**	**11.56**	**11.54**

The economic impacts of the alternatives considered in this Framework were compared in Table 100 and Table 101 with the No Action alternative to be consistent with the definition provided in Section 2.2.1 and with Guidelines for the Economic Analysis of the Fishery Management Action (NMFS, 2007). The value of the estimated revenue alternatives ALT2 to ALT4 would be higher in the short-term (2015) compared to No Action. The main reason for this is that the regulations would allow no access area trip allocations in 2015 and area DAS allocations will equal to 17 days-at-sea per full-time vessels compared 3 trips and at least 30

open areas days for other alternatives. In this section, however, comparisons were mainly made to the Status Quo values since that provides a scenario with no change in the allocations compared to the allocations in the 2014 fishing year, reflecting the current circumstances better than No Action.

The impacts of the Framework 26 alternatives on the annual revenues and the present value of the cumulative revenues for each period are shown in Table 106 (undiscounted values) and in Table 107 (at 3% discount rate) to Table 110 (at 7% discount rate). ALT3 with both options (2 or 3 closures) would have higher revenues and total benefits compared to both ALT2 ($557.8M revenue, and $542M total benefits) and ALT4 in 2015 ($557.6M revenues and $565.1 total economic benefits, Table 1) If the future revenues and economic benefits were discounted at a higher rate (7% versus 3%), the revenues and benefits for ALT3 with 3 closures would be lower than the value of benefits for ALT2.

Table 106. Scallop Revenue Projections (Million $, in 2014 inflation adjusted values prices, not discounted) (2012 Fishyear revenues=$577 million, estimated revenues for Fishyear 2013=$471million adjusted for inflation in 2014 prices)

Sub period	Fishing year	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3. NL+ETA (Preferred)
2015-2016	2015	263.0	557.8	567.1	570.3	557.6	580.3	477.2	578.1
	2016	824.5	749.4	642.7	726.0	748.7	717.5	763.9	658.7
2015-2016 Total		**1087.5**	**1307.2**	**1209.8**	**1296.3**	**1306.3**	**1297.8**	**1241.1**	**1236.9**
2017-2019	2017	879.5	814.7	804.5	807.3	814.3	804.4	822.9	800.0
	2018	804.2	764.2	806.9	768.0	762.3	769.7	760.2	793.5
	2019	739.2	712.2	788.0	749.6	699.6	757.1	698.6	727.5
2017-2019 Total		**2422.9**	**2291.1**	**2399.4**	**2324.8**	**2276.2**	**2331.2**	**2281.7**	**2321.0**
2020-2028	2020	710.5	704.1	698.3	678.2	678.1	682.0	692.4	701.5
	2021	695.8	697.9	687.2	672.3	671.9	672.6	686.9	700.0
	2022	690.3	688.1	678.9	675.3	679.6	676.9	675.3	696.5
	2023	686.3	677.9	675.9	679.1	684.1	681.0	668.9	692.8
	2024	683.5	670.7	680.0	688.0	685.3	676.5	672.0	689.0
	2025	687.3	677.4	685.6	687.3	689.4	672.5	679.8	677.2
	2026	692.7	681.3	688.9	681.7	689.1	671.2	690.7	673.0
	2027	693.5	677.5	684.1	673.5	681.4	672.7	696.7	677.0
	2028	692.7	677.1	681.2	670.7	680.3	677.0	694.2	681.5
2020-2028 Total		**6232.5**	**6152.0**	**6160.0**	**6106.1**	**6139.1**	**6082.5**	**6156.9**	**6188.5**
Grand Total		**9742.9**	**9750.3**	**9769.1**	**9727.2**	**9721.7**	**9711.5**	**9679.6**	**9746.3**

Table 107. Present value of total scallop revenue (Million $, using 3% discount rate, in 2014 inflation adjusted prices)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3. NL+ETA (Preferred)
2015-2016	1063.5	1285.4	1191.0	1275.1	1284.5	1276.9	1218.8	1217.7
2017-2019	2221.7	2100.0	2196.8	2129.7	2086.8	2135.3	2092.0	2126.6
2020-2028	4792.4	4733.0	4736.0	4693.5	4717.4	4676.3	4730.8	4761.6
Grand Total	**8077.6**	**8118.4**	**8123.9**	**8098.4**	**8088.7**	**8088.4**	**8041.7**	**8105.9**

Table 108. Present value of total scallop revenue net of Status Quo revenue (Million $, using 3% discount rate, in 2014 inflation adjusted prices)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	3. NL+ETA (Preferred)
2015-2016	-155.4	66.6	-27.8	56.3	65.7	58.0	-1.2
2017-2019	129.7	8.0	104.8	37.7	-5.2	43.2	34.6
2020-2028	61.6	2.2	5.2	-37.3	-13.4	-54.6	30.8
Grand Total	**35.9**	**76.7**	**82.2**	**56.7**	**47.0**	**46.7**	**64.2**

Table 109. Present value of total scallop revenue (Million $, using 7% discount rate)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3. NL+ETA (Preferred)
2015-2016	1033.5	1258.2	1167.7	1248.8	1257.3	1250.8	1191.1	1193.8
2017-2019	1988.6	1878.7	1962.5	1903.8	1867.3	1908.5	1872.2	1901.5
2020-2028	3445.1	3404.8	3404.0	3372.2	3388.0	3360.7	3397.9	3425.7
Grand Total	**6467.3**	**6541.7**	**6534.2**	**6524.8**	**6512.6**	**6520.0**	**6461.2**	**6521.0**

Table 110. Present value of total scallop revenue net of Status Quo revenue (Million $, using 7% discount rate)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	3. NL+ETA (Preferred)
2015-2016	-157.6	67.1	-23.4	57.7	66.2	59.7	2.7
2017-2019	116.3	6.5	90.2	31.6	-5.0	36.2	29.2
2020-2028	47.3	6.9	6.1	-25.7	-9.9	-37.1	27.8
Grand Total	**6.0**	**80.4**	**73.0**	**63.5**	**51.4**	**58.8**	**59.7**

5.4.2.2.5.2 Impacts of Framework 26 specification alternatives on DAS, fishing costs and open area days and employment

Table 111 shows open area DAS per full-time vessel for each alternative and fishing year and Table 112 show total fleet DAS from all areas. Total effort measured in terms of DAS used as a sum total of all areas will be higher in the short-term for all the alternatives compared to No Action because No Action alternative would allocate no access area trips and only 17 open area days. However, starting in 2016, total effort measured in terms of DAS used will be lower under those alternatives compared to No Action because lower fishing mortality in 2015 under the No Action alternatives makes it possible to allocate more access area trips and open area DAS in the future years.

As compared to the Status Quo, the overall DAS used will increase by 19.5% (ALT2) to 22.8% (ALT3 with 2 closures) in 2015 (
Table **113**). Therefore, the level of employment in the scallop fishery as measured by CREW*DAS will be higher under all alternatives compared to Status Quo. Employment level in the scallop fishery as measured by CREW*DAS will be higher under all alternatives compared to No Action (ALT1) as well. Employment will be higher under ALT6 and ALT3 with 2 closured compared to other alternatives in 2015. Over the long-term, however, employment is not expected to change much compared to Status Quo.

Total trip costs for the fleet vary with the total DAS-used for each alternative. Trip costs per DAS for the LA vessels are set at the values observed as of the recent fishing year, i.e. in 2015 ($2371 per DAS). Table 115 shows that those alternatives that allocate more DAS and access area trips result in higher trip costs both in the short-term and long-term, thus the trip costs would be

higher for ALT2 to Alt4 compared to both No Action and SQ scenarios in 2015, but slightly lower over the long-term from No Action values.

Present value of the fleet costs are summarized in Table 116 using a discount rate of 3% and in Table 117 using a discount rate of 7%. In general, the differences in the cumulative present value of the trip costs are quite low, amounting to a million $ for over 15 years.

Table 111. Open area DAS per limited access vessel (average per year)

Sub period	Fishing year	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3. NL+ETA (Preferred)
2015-2016	2015	17	31	30	30	31	30	31	31
	2016	40	36	34	34	36	34	36	35
2015-2016 Total		**29**	**34**	**32**	**32**	**34**	**32**	**34**	**33**
2017-2019	2017	39	68	54	65	68	65	70	56
	2018	62	58	49	56	58	56	58	50
	2019	59	56	62	57	55	59	55	58
2017-2019 Total		**53**	**61**	**55**	**59**	**60**	**60**	**61**	**55**
2020-2028	2020	56	55	55	53	53	54	55	55
	2021	54	55	54	52	52	53	54	55
	2022	53	53	53	53	53	53	53	55
	2023	53	52	53	53	53	53	52	54
	2024	53	51	53	54	53	52	52	53
	2025	53	52	53	53	53	52	53	52
	2026	54	52	53	53	53	52	54	52
	2027	54	52	53	52	52	52	55	52
	2028	54	52	53	52	52	52	54	53
2020-2028 Total		**54**	**53**	**53**	**53**	**53**	**53**	**54**	**53**
Grand Total		**50**	**52**	**51**	**51**	**52**	**51**	**52**	**51**

Table 112. Total DAS (sum of open and access areas)

Sub period	Fishing year	1. No Action	2. Basic Run	3. 3 new closures	4. CA2+NL	4. Reduced F	6. Extra GC with 2 closures	Status Quo	3. NL+ETA (Preferred)
2015-2016	2015	7441	17616	17873	18100	17611	18481	14742	18272
	2016	27217	24327	20218	23388	24293	23044	24878	20803
2015-2016 Total		**34658**	**41943**	**38091**	**41488**	**41904**	**41525**	**39620**	**39075**
2017-2019	2017	29307	26671	26103	26304	26644	26197	26992	25963
	2018	25615	24202	25795	24310	24107	24362	24023	25330
	2019	23391	22534	25263	23708	22018	24034	22032	23106
2017-2019 Total		**78313**	**73407**	**77161**	**74322**	**72769**	**74593**	**73047**	**74399**
2020-2028	2020	22400	22271	22022	21301	21298	21472	21870	22159
	2021	21929	22051	21694	21170	21139	21229	21673	22126
	2022	21747	21681	21425	21338	21457	21389	21306	22020
	2023	21616	21301	21333	21488	21611	21503	21115	21890
	2024	21546	21052	21490	21763	21658	21316	21257	21729
	2025	21709	21340	21675	21701	21801	21168	21549	21340
	2026	21883	21457	21786	21486	21751	21127	21944	21235
	2027	21892	21333	21600	21185	21472	21219	22129	21355
	2028	21868	21329	21523	21112	21451	21389	21985	21518
2020-2028 Total		**196590**	**193815**	**194548**	**192544**	**193638**	**191812**	**194828**	**195372**
Grand Total		**309561**	**309165**	**309800**	**308354**	**308311**	**307930**	**307495**	**308846**

Table 113. Percentage increase in total DAS compared to No Action DAS (Sum of open and access areas)

Sub period	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3. NL + ETA (Preferred)
Short-term-2015	136.7%	140.2%	143.2%	136.7%	148.4%	98.1%	145.6%
2015-2016	21.02%	9.91%	19.71%	20.91%	19.81%	14.32%	12.74%
2017-2019	-6.26%	-1.47%	-5.10%	-7.08%	-4.75%	-6.72%	-5.00%
2020-2028	-1.41%	-1.04%	-2.06%	-1.50%	-2.43%	-0.90%	-0.62%
2015-2028	**-0.13%**	**0.08%**	**-0.39%**	**-0.40%**	**-0.53%**	**-0.67%**	**-0.23%**

Table 114. Percentage increase in total DAS compared to Status Quo DAS (Sum of open and access areas)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	4. 2 closures	5. Reduced F	6. Extra GC with 2 closures	3. NL + ETA (Preferred)
Short-term - 2015	-49.5%	19.5%	21.2%	22.8%	19.5%	25.4%	23.9%
2015-2016	-12.52%	5.86%	-3.86%	4.71%	5.76%	4.81%	-1.38%
2017-2019	7.21%	0.49%	5.63%	1.75%	-0.38%	2.12%	1.85%
2020-2028	0.90%	-0.52%	-0.14%	-1.17%	-0.61%	-1.55%	0.28%
2015-2028	**0.67%**	**0.54%**	**0.75%**	**0.28%**	**0.27%**	**0.14%**	**0.44%**

Table 115. Total trip costs (in 2014 inflation adjusted values prices, not discounted) ($ Million)

Sub period	Fishing year	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3. NL + ETA (Preferred
2015-2016	2015	17.6	41.8	42.4	42.9	41.8	43.8	35.0	43.3
	2016	64.5	57.7	47.9	55.5	57.6	54.6	59.0	49.3
2015-2016 Total		**82.2**	**99.4**	**90.3**	**98.4**	**99.4**	**98.5**	**93.9**	**92.6**
2017-2019	2017	69.5	63.2	61.9	62.4	63.2	62.1	64.0	61.6
	2018	60.7	57.4	61.2	57.6	57.2	57.8	57.0	60.1
	2019	55.5	53.4	59.9	56.2	52.2	57.0	52.2	54.8
2017-2019 Total		**185.7**	**174.0**	**182.9**	**176.2**	**172.5**	**176.9**	**173.2**	**176.4**
2020-2028	2020	53.1	52.8	52.2	50.5	50.5	50.9	51.9	52.5
	2021	52.0	52.3	51.4	50.2	50.1	50.3	51.4	52.5
	2022	51.6	51.4	50.8	50.6	50.9	50.7	50.5	52.2
	2023	51.3	50.5	50.6	50.9	51.2	51.0	50.1	51.9
	2024	51.1	49.9	51.0	51.6	51.4	50.5	50.4	51.5
	2025	51.5	50.6	51.4	51.5	51.7	50.2	51.1	50.6
	2026	51.9	50.9	51.7	50.9	51.6	50.1	52.0	50.3
	2027	51.9	50.6	51.2	50.2	50.9	50.3	52.5	50.6
	2028	51.8	50.6	51.0	50.1	50.9	50.7	52.1	51.0
2020-2028 Total		**466.1**	**459.5**	**461.3**	**456.5**	**459.1**	**454.8**	**461.9**	**463.2**
Grand Total		**734.0**	**733.0**	**734.5**	**731.1**	**731.0**	**730.1**	**729.1**	**732.3**

Table 116. Present value of cumulative trip costs (in 2014 inflation adjusted values prices, at 3% discount rate, $ Million)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3. NL + ETA (Preferred
2015-2016	80.3	97.8	88.9	96.8	97.7	96.9	92.2	91.2
2017-2019	170.4	159.6	167.5	161.5	158.2	162.0	158.9	161.7
2020-2028	358.4	353.6	354.6	350.9	352.8	349.6	354.9	356.4
Grand Total	**609.0**	**610.9**	**611.1**	**609.1**	**608.7**	**608.5**	**606.0**	**609.3**

Table 117. Present value of cumulative trip costs (in 2014 inflation adjusted values prices, at 7% discount rate, $ Million)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3. NL + ETA (Preferred
2015-2016	78.0	95.7	87.2	94.7	95.6	94.9	90.1	89.4
2017-2019	152.6	142.8	149.7	144.4	141.7	144.9	142.2	144.6
2020-2028	257.6	254.4	254.9	252.1	253.3	251.3	254.8	256.5
Grand Total	**488.1**	**492.9**	**491.7**	**491.3**	**490.6**	**491.0**	**487.2**	**490.5**

5.4.2.2.5.3 Present Value of Producer Surplus

Producer surplus (benefits) for a particular fishery shows the net benefits to harvesters, including vessel owners and crew, and is measured by the difference between total revenue and operating costs. Table 100 and Table 101 with the No Action alternative to be consistent with the definition provided in Section 2.2.1 and with Guidelines for the Economic Analysis of the Fishery Management Action (NMFS, 2007). In this section, however, comparisons were mainly made to the Status Quo values since that provides a scenario with no change in the allocations compared to the allocations in the 2014 fishing year, reflecting the current circumstances better than No Action.

Annual values for the producer surplus are shown in Table 118 and indicate that ALT3 results in largest producer surplus in 2015 but smallest in 2016 fishing year. As a result, ALT3 with 3 closures would reduce the present value of the cumulative producer surplus for 2015-206 from the SQ levels, but would still result in higher producer benefits compared to the No Action.

The increase in present value of total producer surplus compared to Status Quo would range from $44.3M for ALT 4 to $77.1 million for ALT3 with 3 closures in the long-term using a discount rate of 3% (2015-2028, Table 19). However, discounting the future year at a higher rate (7%) would reverse the rank of alternatives in terms of the present value of producer surplus with ALT2 resulting in highest benefits.

Table 118. Annual values for producer surplus (Million $, in 2014 inflation adjusted values, not discounted)

Sub period	Fishing year	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	6. Extra GC with 2 closures	Status Quo	3. NL + ETA (Preferred
2015-2016	2015	245	516	525	527	516	536	442	535
	2016	760	692	595	671	691	663	705	609
2015-2016 Total		**1005**	**1208**	**1119**	**1198**	**1207**	**1199**	**1147**	**1145**
2017-2019	2017	810	751	743	745	751	742	759	738
	2018	743	707	746	710	705	712	703	733
	2019	684	659	728	693	647	700	646	673
2017-2019 Total		**2237**	**2117**	**2216**	**2149**	**2104**	**2154**	**2108**	**2145**
2020-2028	2020	657	651	646	628	628	631	641	649
	2021	644	646	636	622	622	622	635	648
	2022	639	637	628	625	629	626	625	644
	2023	635	627	625	628	633	630	619	641
	2024	632	621	629	636	634	626	622	637
	2025	636	627	634	636	638	622	629	627
	2026	641	630	637	631	638	621	639	623
	2027	642	627	633	623	630	622	644	626
	2028	641	626	630	621	629	626	642	630
2020-2028 Total		**5766**	**5692**	**5699**	**5650**	**5680**	**5628**	**5695**	**5725**
Grand Total		**9009**	**9017**	**9035**	**8996**	**8991**	**8981**	**8951**	**9014**

Table 119. Present value of producer surplus (using 3% discount rate, Million $)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3. NL + ETA (Preferred
2015-2016	983	1188	1102	1178	1187	1180	1127	1126
2017-2019	2051	1940	2029	1968	1929	1973	1933	1965
2020-2028	4434	4379	4381	4343	4365	4327	4376	4405
Grand Total	**7469**	**7508**	**7513**	**7489**	**7480**	**7480**	**7436**	**7497**

Table 120. Present value of producer surplus net of Status Quo values (using 3% discount rate, Million $)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	3. NL + ETA (Preferred
2015-2016	-143.4	61.0	-24.5	51.8	60.2	53.4	-0.1
2017-2019	118.2	7.3	96.1	35.0	-4.6	40.0	31.8
2020-2028	58.1	3.5	5.4	-33.3	-11.3	-49.3	29.2
Grand Total	**32.8**	**71.8**	**77.1**	**53.5**	**44.3**	**44.1**	**60.9**

Table 121. Present value of producer surplus (using 7% discount rate, Million $)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	6. Extra GC with 2 closures	Status Quo	3. NL + ETA (Preferred
2015-2016	956	1163	1081	1154	1162	1156	1101	1104
2017-2019	1836	1736	1813	1759	1726	1764	1730	1757
2020-2028	3188	3150	3149	3120	3135	3109	3143	3169
Grand Total	**5979**	**6049**	**6042**	**6034**	**6022**	**6029**	**5974**	**6031**

Table 122. Present value of producer surplus net of Status Quo values (using 7% discount rate, Million $)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	6. Extra GC with 2 closures	3. NL + ETA (Preferred
2015-2016	-145.4	61.5	-20.5	53.0	60.7	54.9	3.3
2017-2019	106.0	5.9	82.8	29.4	-4.4	33.6	26.9
2020-2028	44.5	7.4	6.1	-23.0	-8.4	-33.6	26.2
Grand Total	**5.1**	**74.7**	**68.4**	**59.5**	**47.9**	**54.9**	**56.4**

5.4.2.2.5.4 Present Value of Consumer Surplus

Consumer surplus for a particular fishery is the net benefit that 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 the amount of fish harvested goes up. Present value of the consumer surplus are shown in Table 22 (using a 3% discount rate) and Table 24 (using a 7% discount rate), and the cumulative present values net of Status Quo levels are summarized in Table 23 and Table 25. In the short-term (2015-2016), all alternatives except for ALT3 with 3 closures have a positive impact on the consumer surplus compared to SQ levels. However, over the long-term from 2015 to 2028, the present value of the consumer surplus is estimated to

decline compared to the No Action levels (Table 23 and Table 25). This is mainly because No Action would result in slightly higher landings over the long-term compared to all alternatives. All alternatives would result in higher consumer surplus over the long-term compared to SQ values.

Table 123. Present value of consumer surplus (using 3 % discount rate, Million $)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	6. Extra GC with 2 closures	Status Quo	3. NL + ETA (Preferred)
2015-2016	70	79	63	76	78	76	73	66
2017-2019	183	157	175	162	155	163	156	162
2020-2028	303	294	295	288	292	286	295	299
Grand Total	**556**	**530**	**533**	**526**	**525**	**524**	**524**	**527**

Table 124. Present value of consumer surplus net of Status Quo values (using 3% discount rate, Million $)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	3. NL + ETA (Preferred)
2015-2016	-2.8	5.7	-10.0	3.1	5.5	2.9	-6.4
2017-2019	26.3	0.8	18.4	5.3	-1.4	6.2	5.6
2020-2028	8.8	-0.2	0.6	-6.1	-2.7	-8.6	4.4
Grand Total	**32.3**	**6.2**	**9.0**	**2.3**	**1.5**	**0.6**	**3.5**

Table 125. Present value of consumer surplus (using 7% discount rate, Million $)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo	3. NL + ETA (Preferred)
2015-2016	68	77	62	74	76	74	71	65
2017-2019	164	141	156	145	139	146	140	145
2020-2028	218	212	212	207	210	206	212	216
Grand Total	**450**	**430**	**430**	**426**	**425**	**425**	**423**	**426**

Table 126. Present value of consumer surplus net of Status Quo values (using 7% discount rate, Million $)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	3. NL + ETA (Preferred)
2015-2016	-3.2	5.8	-9.2	3.4	5.6	3.2	-5.8
2017-2019	23.7	0.6	15.8	4.3	-1.3	5.1	4.7
2020-2028	6.8	0.7	0.8	-4.2	-2.0	-5.8	4.1
Grand Total	**27.3**	**7.0**	**7.4**	**3.5**	**2.4**	**2.6**	**2.9**

5.4.2.2.5.5 Present Value of Total Economic Benefits

Economic benefits include the benefits both to the consumers and to the fishing industry, and equal the sum of benefits to the consumers and producers. Annual values for the economic

benefits are shown in Table 26. Table 100 and Table 101 with the No Action alternative to be consistent with the definition provided in Section 2.2.1 and with Guidelines for the Economic Analysis of the Fishery Management Action (NMFS, 2007). In this section, however, comparisons were mainly made to the Status Quo values since that provides a scenario with no change in the allocations compared to the allocations in the 2014 fishing year, reflecting the current circumstances better than No Action. The cumulative present value of the total benefits are summarized in Table 128(3% discount rate) and Table 29 (7% discount rate), and the economic benefits net of Status Quo (SQ) levels are shown in Table 28 (3% discount rate) and in Table 131 (7% discount rate).

The short-term (2015-2016) economic benefits for all alternatives are expected to exceed the levels for No Action, and also compared to SQ except that ALT3 with 3 closures would be lower than the total economic benefits for SQ. There are trade-offs between the short-term and the long-term benefits, however, with ALT3 with 3 closures resulting in highest net economic benefits over the long-term from 2015 to 2028 by $78 million compared to SQ and using a 3% discount rate to estimate present values. However, ALT would result in highest economic benefits ($81.7 million) compared to SQ if future benefits weighted less by using a 7% discount rate. This is followed again by ALT3 with 3 closures ($75.8 million) and ALT3 with 2 closures ($62.9 million) using a 7% discount rate and compared to SQ levels (Table 131).

Although the present value of the total revenues and economic benefits for two closures with NL and ETA would exceed the values for three closures respectively by $26.6 million and $25.6 million in 2015-2016, in the next three years from 2017 to 2019, this alternative would result in $70.2 million lower revenue and in $77.2 lower economic benefits compared to the values for three closures (using a 3% discount rate, **Table 132**). If instead the future benefits were discounted at a higher rate, by 7%, the estimated revenues for the 3 closures would exceed the revenues for 2 closures respectively by $61 million and the total economic benefits by $67 million from 2017 to 2019 (**Table 132**).

Table 127. Annual values of total economic benefits (undiscounted, in 2014 inflation adjusted values, Million $)

Sub period	Fishing year	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo (SQ)	3. NL + ETA (Preferred)
2015-2016	2015	248	542	552	555	542	565	460	563
	2016	829	746	632	721	745	711	762	649
2015-2016 Total		**1077**	**1288**	**1183**	**1275**	**1287**	**1277**	**1222**	**1212**
2017-2019	2017	892	819	808	811	818	807	828	803
	2018	808	763	811	767	761	769	759	796
	2019	736	706	789	747	693	755	691	723
2017-2019 Total		**2436**	**2288**	**2407**	**2325**	**2272**	**2332**	**2279**	**2321**
2020-2028	2020	704	697	691	670	669	674	685	694
	2021	688	690	679	663	662	663	679	693
	2022	682	680	670	666	670	668	666	689
	2023	678	669	667	670	675	672	659	685
	2024	675	661	671	679	677	667	662	681
	2025	679	668	677	679	681	663	671	668
	2026	685	672	680	673	681	662	682	663
	2027	686	668	675	664	673	663	689	668
	2028	685	668	672	661	671	668	686	673
2020-2028 Total		**6161**	**6075**	**6082**	**6025**	**6060**	**6000**	**6079**	**6113**
Grand Total		**9674**	**9651**	**9673**	**9625**	**9619**	**9608**	**9579**	**9646**

Table 128. Present value of total economic benefits (using 3% discount rate, Million $)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	Status Quo (SQ)	3. NL + ETA (Preferred
2015-2016	1053.3	1266.2	1165.0	1254.4	1265.2	1255.8	1199.5	1192.9
2017-2019	2234.0	2097.5	2204.0	2129.8	2083.5	2135.8	2089.5	2126.9
2020-2028	4737.4	4673.8	4676.6	4631.1	4656.6	4612.7	4670.6	4704.2
Grand Total	**8024.7**	**8037.5**	**8045.7**	**8015.3**	**8005.3**	**8004.3**	**7959.6**	**8024.0**

Table 129. Net economic benefits net of SQ values (using 3% discount rate, Million $)

Sub Period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	3. NL + ETA (Preferred
2015-2016	-146.2	66.7	-34.5	54.9	65.7	56.3	-6.6
2017-2019	144.5	8.1	114.5	40.3	-6.0	46.3	37.4
2020-2028	66.8	3.2	6.0	-39.5	-14.0	-57.9	33.6
Grand Total	**65.1**	**78.0**	**86.1**	**55.7**	**45.8**	**44.7**	**64.4**

Table 130. Present value of total economic benefits (using 7% discount rate, Million $)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	6. Extra GC with 2 closures	Status Quo	3. NL + ETA (Preferred
2015-2016	1023.2	1239.1	1142.1	1228.2	1238.2	1230.0	1171.8	1169.4
2017-2019	2000.0	1876.8	1969.0	1904.1	1864.7	1909.1	1870.4	1901.9
2020-2028	3405.8	3362.6	3361.4	3327.3	3344.2	3315.2	3354.5	3384.8
Grand Total	**6429.1**	**6478.5**	**6472.5**	**6459.7**	**6447.1**	**6454.2**	**6396.7**	**6456.1**

Table 131. Present value of total economic benefits net of SQ values (using 7% discount rate, Million $)

Sub period	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	4. Reduced F	Extra GC with 2 closures	3. NL + ETA (Preferred)
2015-2016	-148.6	67.3	-29.7	56.4	66.3	58.1	-2.5
2017-2019	129.6	6.4	98.6	33.8	-5.7	38.7	31.6
2020-2028	51.3	8.0	6.9	-27.2	-10.3	-39.4	30.3
Grand Total	**32.3**	**81.7**	**75.8**	**62.9**	**50.3**	**57.5**	**59.4**

Table 132. Comparative benefits of new closures (All dollar values are expressed in 2014 inflation adjusted values and estimated using a 3% discount rate)

Period	3 new closures (CA2+ETA+NLS)	2 new closures (Preferred, ETA+NLS)	Difference in benefits from 3 closures
	Open area DAS per FT vessel		
2015-2016	64	66	2.0
2017-2019	165	164	-1.0
2020-2028	480	481	1.0
2015-2028	**709**	**711**	**2.0**
	Scallop landings (mill.lb.)		
2015-2016	101.1	103.9	2.8
2017-2019	218.6	209.8	-8.8
2020-2028	530.1	532.9	2.8
2015-2028	**849.8**	**846.6**	**-3.2**
	Present value of scallop revenue ($ million)		
2015-2016	1191.0	1217.7	26.6
2017-2019	2196.8	2126.6	-70.2
2020-2028	4736.0	4761.6	25.6
2015-2028	**8123.9**	**8105.9**	-18.0
	Present value of producer surplus ($ million)		
2015-2016	1102.1	1126.5	24.4
2017-2019	2029.3	1965.0	-64.3
2020-2028	4381.4	4405.2	23.8
2015-2028	**7512.8**	**7496.6**	-16.2
	Present value of total economic benefits ($ million)		
2015-2016	1165.0	1192.9	27.9
2017-2019	2204.0	2126.9	-77.2
2020-2028	4676.6	4704.2	27.6
2015-2028	**8045.7**	**8024.0**	-21.7

5.4.2.3 Allocation of LAGC IFQ trips in access areas

The LAGC IFQ fishery is allocated a fleetwide total number of access area trips. Individual vessels are not required to take trips in specific areas like access area trips allocated to the limited access fishery. Instead, maximum number of trips is identified for each area and once that limit is reached, the area closes to all LAGC IFQ vessels for the remainder of the fishing year.

5.4.2.3.1 Option 1 – No Action – No access area trips allocated for LAGC IFQ vessels

Under No Action (Option 1) LAGC IFQ vessels would not be allocated trips in access areas. Although IFQ catch would come from open areas, the cost of fishing could be higher compared to fishing in access areas which are expected to have a higher stock abundance. In addition, the prohibition of fishing in those areas could also affect the size distribution of landings. Usually larger scallops have a price premium compared to smaller ones and if larger scallops are more abundant in access areas, not being able to fish in those areas could affect the revenues negatively as well. Thus, this option could have negative economic impacts on the LAGC IFQ vessels.

5.4.2.3.2 Option 2 - Allocate fleetwide trips equivalent to 5.5% of catch per access area open to the fishery

This alternative would allocate 5.5% of the access area TAC per area to the LAGC fishery in the form of fleetwide trips. An allocation of 5.5% of that amount is equivalent to 1.05 million pounds, or 1,758 trips with a 600 pound possession limit. This option would allow the LAGC IFQ effort to be distributed over more areas providing opportunity to vessels to fish in more productive areas to reduce their fishing costs by catching the possession limit in a shorter time-period as well as to optimize the size composition of their landings by selectively fishing in areas abundant with larger scallops. Since larger scallops in general command a higher price, this option could also have positive impacts on revenues. In short, given that the access areas of the Georges Bank will be closed in 2015 and it could be costlier to fish in some offshore open areas, this option will also help lower fishing costs and could also possibly increase revenues. Therefore Option 2 is expected to have positive economic impacts compared to No Action.

5.4.2.3.3 Option 3 – Allocate fleetwide trips equivalent to 2 million pounds from access areas open to the fishery

This option would increase the overall access LAGC vessels would have to areas that are projected to have more productive fishing areas in 2015, with larger scallops expected in ETA and some other parts of the access areas resulting in higher LPUE in access versus the open areas (See Section 5.1.2.1 of the Biological Projections). Two million pounds is about 67% of the total LAGC IFQ allocation for 2015 (2.97 million pounds) and is about 10.4% of the total access area catch available in 2015.

The impacts of allocating 2 million lb. to LAGC IFQ fishery in addition to the access area trip allocations for the LA vessel is evaluated with an additional run of the SAMS model. The projections for this run in terms of landings, revenues and total economic benefits were included in Table 100 to Table 131 by removing about an additional million pounds from the access areas in year 1, without adjusting LA allocations to accommodate that increased catch. Overall, this could increase the landings in 2015 to about 47.4 million, but is not expected to have much impact on future landings beyond the next year; 1 million pound increase in year 1 and 1 million pound decrease in year 2. As a result, the impacts of this option on landings and revenues from the scallop fishery over the long-term would be low compared to other LAGC allocation options discussed in this section. However, fishing in more productive access areas with relatively higher LPUEs compared to the open areas, will reduce the trip length and lower trip costs such as for fuel for LAGC-IFQ vessels. The size composition of the catch could also favor larger scallops with a price premium with positive impacts on revenues. Therefore, the economic impacts on the LAGC-IFQ fishery will be positive due to lower costs and higher revenues associated with this flexibility provided to the fishermen to land a major proportion of their quota from access areas if those areas prove to be more productive as projected. However, if the open areas turn out to be more economically optimal for the LAGC-IFQ fleet, they could chose to direct their effort to those areas as well since this option provide such flexibility. In short, this option is expected to have positive economic impacts compared to both No Action and Option 2.

5.4.2.3.4 Option 4 (Preferred) - Allocate fleetwide trips to LAGC vessels in access areas equivalent to the overall proportion of total catch from access areas compared to total catch

Option 4 (Preferred option) would provide about the same level of access for LA and LAGC vessels in access areas in 2015 in terms of the total proportion of catch for the year. For example, access area catch is about 41.7% of total catch for FY2015, and if that proportion is applied to the LAGC IFQ that would be about 1.2 million pounds. That allocation is about 6.5% of the total access area catch available in 2015, equivalent to 2,065 trips at 600 pounds each. Option 4 is similar Option 3 above; however, it would have lower positive economic impacts compared to Option 3 since the number of access area trips that would be allocated to the LAGC0-IFQ fishery would be less compared to Option 3. Option 4 would also have positive economic impacts compared to the No Action alternative and greater economic benefits than Option 2 that allocates 5.5% of the access area TAC to the LAGC IFQ fishery.

5.4.2.4 Additional measures to reduce impacts on small scallops

5.4.2.4.1 Option 1 – No Action – No crew limits in scallop access areas

Under no action there will be no crew size limits when fishing in scallop access areas. When vessels fish in those areas with a large number of crew sorting and shucking scallops, this could increase the potential for highgrading and the discard mortality, with negative long-term impacts on the scallop resource, yield and economic benefits.

5.4.2.4.2 Option 2 - Restrict crew limits in Mid-Atlantic access areas as an additional measure to reduce incidental and discard mortality on small scallops open in 2015 (Preferred Alternative)

Because there are concentrations of small scallops in all three of the MA access areas, especially in shallow portions of ETA, if the areas open under this action, a crew limit could help reduce the potential for highgrading and mortality on smaller scallops from incidental mortality. This could have positive impacts on the long-term yield and economic benefits from the scallop fishery compared to no action. Option 1 would implement the same crew limits that exist for open areas, 7 individuals per LA vessel, and if a vessel is participating in the small dredge program it may not have more than five people on board. The preferred option 2 is less restrictive than Option 1 and would allow one additional crew member above open area limits, that is, 8 for LA vessels and 6 for small dredge vessels. In the short-term, this restriction could have some low negative economic impacts on vessels and could increase costs by reducing the flexibility to adjust crew size for each resource area; but with preferred option those negative impacts would be smaller. In either case, the long-term economic benefits of this measure are expected to outweigh the short-term costs. However, Option 1 could have larger economic benefits over the long-term if that is more effective in limiting highgrading and discard mortality compared to the preferred option.

5.4.3 Allocation method for Mid-Atlantic access area trips in 2015 only

5.4.3.1 No Action (lottery allocation)

Under this alternative 2015 Mid-Atlantic access area trips would be allocated to LA vessels by lottery as in the past years. For 2015, each full-time limited access vessel would receive 3 trips; two allocated to ETA and the third from either HC or Delmarva. The third trip would be allocated by lottery. The third trip lottery split for all three specification alternatives would be 56% of trips to HC, and 44% to Delmarva.

Under No Action, a LA vessel would need to fish in a particular area allocated by lottery. If projections are underestimated stock abundance in an area resulting in lower catch rates, a vessel may need to fish longer to catch the possession limit, which would increase trip costs. If the catch rates continue to fall, in the extreme case, it may even become economically suboptimal to fish in that area. However, vessels can carryover access area trips to the first 60 days of the following year, so if catch rates are low, a vessel can wait to fish remaining catch in March and April of 2016, potentially minimizing any potentially negative economic impacts from low catch rates. Under the lottery alternative each vessel would be allocated two trips in ETA. If the inshore portion of ETA is closed that will concentrate a relatively high level of effort in a rather small area.

5.4.3.2 Flexible allocation for Mid-Atlantic access area trips (Preferred Alternative)

The three MA AA areas would be considered one area using their existing boundaries for FY2015. Under this alternative, limited access vessels would receive their total access area allocation in pounds, and that allocation could be fished in any of the MA AAs (and across multiple AAs on a single trip) up to a certain possession limit.

This method of allocation is expected to have positive economic impacts on the scallop vessels in the short-term by providing the flexibility to fish access areas trips in areas with the highest catch rates. Under No Action (Option 1) even if catch rates are lower in the area allocated by lottery, the vessels would still need to fish in that area. The flexibility to fish in areas with highest catch rates will reduce the fishing costs per pound of scallops landed and could increase the revenues as well if the composition of landings include larger scallops with higher prices. This could have slightly positive impacts on the scallop resource and on the economic benefits in the long-term if it helps the fishermen to avoid fishing in less productive areas with smaller scallops. This flexibility may also help spread effort out in 2015, which could have positive impacts on the fishery and resource. The Elephant Trunk area is expected to have the highest concentrations of scallops overall, and with this alternative some vessels may choose to fish in other access areas on their way to and from ETA. For example, a vessel from New Bedford may start fishing in HC and a vessel from VA may start fishing in Delmarva on their way to ETA. This could help reduce overall fishing costs and impacts of concentrated fishing effort.

On the other hand, flexibility could also increase fishing pressure in some areas to a level that could have slightly negative impacts on the resource. In general, if a vessel is fishing in an access area and catch rates decline, the vessel would move to a higher catch area to maximize their profits. However, on access areas trips vessels are not on the clock, so they may decide to continue fishing in a lower catch area for other reasons (i.e. distance from port, etc.). For

example, more fishing in inshore parts of ETA or fishing all three trips in this area could increase the F rate and reduce the yield in future years. In addition, this alternative will reduce the monitoring capability since NMFS will not be able to easily track catch by area if this is selected with indirect negative impacts on the fishery. Therefore, this alternative could also have slightly negative impacts on the scallop resource and as a result, negative impacts on landings, revenues and total economic benefits over the long-term.

In conclusion, although the short-term economic impacts of Option 2 are expected to be positive, the long-term economic impacts are uncertain and would range from a slight negative to slight positive impact depending on the fishing behavior.

5.4.4 Adjustments to provisions related to allocating and monitoring access area trips

5.4.4.1 No Action (trip allocations continue and broken trip procedures)

Under this alternative, vessels would continue to be allocated access area trips with associated possession limits, which could actually be taken across multiple trips. For example, if vessels receive 3 trips at 17,000 lb. into the Mid-Atlantic access areas, although they would be allowed to land the entire 51,000 lb. during the fishing year under multiple trips, they would still need to follow current broken trip procedures. This measure does not have direct impacts on the fishery, it is administrative in nature.

5.4.4.2 Remove broken trip process and replace with prelanding reports (Preferred Alternative)

If this alternative is adopted, for each trip, vessels would submit a preland through their VMS unit to indicate pounds caught. If a vessel is unable to land a full possession limit on a single trip, the vessel could go out and fish it on multiple trips without having to submit broken trip reports to request a compensation trip. Because this alternative reduces reporting requirements, it will have slight positive economic impacts on the vessels in the short-term.

5.4.4.2.1 Option 1: Require vessels cross the VMS demarcation line and submit a preland within last 60 days of the fishing year in order to fish those pounds in the first 60 days of the following fishing year.

This option would be Status Quo -- there is already the potential to carryover all unused access area pounds into the next year, but vessels would still be required to take action (i.e., cross demarcation line and submit a preland or a broken trip form) in the last 60 days that an access area in open in a given fishing year in order to receive the carryover pounds for that area. Needing to cross demarcation does have some associated costs; therefore this activity does have minimal negative impacts on the fishery. However, compared to not being able to rollover access area catch these costs are minimal.

5.4.4.2.2 Option 2: Allow for all unlanded access area pounds to be carried over without any action from vessels (Preferred Alternative)

This would be similar to Status Quo but under this option a vessel would not have to actually go out in their vessel to physically break a trip by crossing the VMS demarcation line. Because this

option reduces reporting requirements and allows flexibility to vessels to carry over unlanded pounds without the necessity of breaking a trip in the last 60 days of a fishing year, it could reduce the fishing costs and have low positive economic impacts on the scallop vessels.

5.4.5 Measures to allow fishing in state waters after federal NGOM TAC is reached

5.4.5.1 No Action

Once the federal NGOM hard TAC is reached, all vessels with a federal scallop permit are prohibited from fishing for scallops in the NGOM, INCLUDING state waters. This alternative would continue to prohibit these vessels that have both State and Federal NGOM permits fishing for scallops exclusively in the state waters. Because state water scallop fisheries are primarily active in the winter, there is a chance that the federal TAC could be reached before the state fishery begins.

Since the scallop resource in the state waters is regulated by separate management programs, No Action represents an unnecessary restriction since catch in the state waters doesn't affect the fishing mortality in the NGOM management area. Thus, No Action could have negative economic impacts on those vessels that fish in state waters if they are prohibited to do so if the NGOM hard-TAC is reached. For many vessels the activity in state waters is much higher than activity in federal waters; therefore being prohibited from fishing in state waters if the federal NGOM hard TAC is reached could potentially reduce landings, revenues and total economic benefits for those vessels.

5.4.5.2 All vessels with both a state scallop permit and federal NGOM permit allowed to fish in state waters after the federal TAC is reached

This alternative would allow vessels regardless of whether they have both Federal NGOM and state permit to fish exclusively in state waters for scallops under state water rules. All other vessels with federal scallop permits would be prohibited to fish for scallops in state waters in the NGOM management area after the TAC is reached (LA, LAGC IFQ, and LAGC Incidental).

This measure is not expected to have negative impacts on the scallop resource and future yield in either federal or state waters. Maine and Massachusetts, the only states with active state water scallop fisheries, have management programs in place to control fishing activity in state waters. The state of Maine has a rotational management program with limited fishing seasons of 70 days (50 days in Cobscook Bay) as well as a handful of other input controls. The number of license holders has increased from about 150 in 2008 to about 400 in 2012. In Maine the state water scallop licenses are not linked to a vessel, so as long as the license holder is onboard, any vessel with a federal scallop permit could fish in state waters.

In the state of Massachusetts there are about 160 state water only permits, and about 60 of those also have federal scallop permits. About 10 vessels have both a NGOM permit and a state water scallop permit. The vast majority of state water harvest is by vessels with just a state water permit (90%). Therefore, this alternative would have minimal impacts on most vessels with state water only permits, but would allow those vessels from MA and ME with both state and federal NGOM licenses to fish for scallops after the NGOM federal TAC is reached with positive impacts on the revenues and profits of these vessels.

5.4.5.3 Revise the state water exemption program provisions to allow a state to request a specific exemption related to fishing in state waters after the NGOM TAC is reached (Preferred Alternative)

This alternative (preferred) could be more flexible than the other alternative since it could include other scallop permit types (i.e. incidental, IFQ, etc.) not just the NGOM permit holders. Thus, this alternative could have positive impacts on the revenues of a larger number of scallop vessels if exemption is granted to fish in state waters after the NGOM TAC is reached. For example, in Massachusetts there are only ten vessels with both a federal NGOM permit as well as a state scallop permit, 25 vessels with a federal LAGC IFQ permit as well as a state water scallop permit, and 16 with both a federal incidental and state water scallop permit. In Maine the state water scallop licenses are not linked to a vessel, so as long as the license holder is onboard, the license could be used on any vessel with federal permit. On the other hand, this exemption is not automatic and would need to be approved by NMFS after a review of state's conservation program to make sure this exemption does not jeopardize the biomass and fishing mortality objectives of the Scallop FMP. In general, however, this measure can have higher economic benefits for a larger number of scallop vessels if it is possible to provide the exemption without negatively affecting the scallop resource.

5.4.6 Measures to make turtle regulations consistent

5.4.6.1 No Action

The turtle chain mat requirement and the turtle deflector dredge requirement are two specific measures in place in the Scallop FMP that are designed specifically to reduce mortality on sea turtles. The chain mat regulation is in effect from May 1 through November 30 for any vessel with a sea scallop dredge in waters south of 41°9.0′ N. latitude. The turtle deflector dredge is in effect from May 1 through October 31 for any limited access scallop vessel using a dredge, regardless of dredge size or vessel permit category, or any LAGC IFQ scallop vessel fishing with a dredge with a width of 10.5 ft. (3.2 m) or greater, that is fishing for scallops in waters west of 71° W long. This difference in seasons and area increases regulatory complexity and monitoring costs, thus has slight negative impacts on the total economic benefits from the fishery.

5.4.6.2 Revise season and area for turtle chain mat and turtle deflector dredge to be consistent (Preferred Alternative)

Making these regulations consistent is not expected to dramatically change fishing behavior in any way that would have direct impacts on the resource since the overall area is only slightly modified (chain mat area reduced to 71W), and the season is only changed slightly (one month longer for the TDD than before). However, by reducing the regulatory complexity and thus the administrative costs, this alterative is expected to have slightly positive impacts on the overall economic benefits from the fishery. Vessels are already required to have both of these gear modifications if they want to fish in the MA during certain months; therefore, there are no direct additional costs.

5.4.7 Measures to develop new accountability measures for northern windowpane flounder and modify existing accountability measures for GB and SNE/MA yellowtail flounder AM for northern windowpane flounder

This section has three alternatives: 1) No Action includes no new proactive AMs in the scallop fishery; 2) proactive AM to *modify* the number of rings in the apron of dredge (preferred); and 3) proactive AM to *eliminate* the restriction on the number of rows in the apron of a dredge.

5.4.7.1 No Action

Under No Action, no new measures would be adopted that would constrain the scallop fishery if sub-ACLs are exceeded. Therefore, the No Action would have neutral impacts on the scallop resource and fishery because it would not alter fishing activity.

5.4.7.2 Proactive AM to modify the restriction on the number of rings in apron of dredge (Preferred Alternative)

This alternative would modify the current requirement to have at least a seven row apron, and instead require all vessels to have a MAXIMUM of seven rows. This requirement is already in place as a proactive AM for southern WP in open areas west of 71W. If this alternative is adopted that would apply to all other areas as well, Mid-Atlantic access areas, scallop access areas on GB, and open areas east of 71 W as well.

Changing the requirement to a maximum of seven, from a minimum of seven, is expected to reduce bycatch of finfish and small scallops. Currently, the most common configuration includes nine rows of rings, followed by ten and eight. There are some vessels using seven, but the majority of the fleet (about 85%) seems to be using longer aprons. The number of vessels already using five rows is very small, five out of 600 observed vessels in 2013. Therefore, if this AM is implemented the majority of the fleet would need to reduce their aprons. There are no direct costs with this gear modification in terms of investment in gear that vessels do not already need or have. This measure will reduce the number of rows of rings needed, and increase the twine top. If anything, twine top is less expensive than rings. Crew will need to spend some time making these modifications to gear, but the total amount of time is not expected to be substantial, when compared to time spend with regular gear maintenance before and during a trip. If fewer small scallops are caught with shorter aprons, discard mortality would be lower, having potentially low positive impacts on the resource, scallop yield and long-term economic benefits from the fishery compared to No Action.

The impact of reducing the number of rings on scallop catch is uncertain. Although using fewer rings could also increase the fishing time and costs, this impact is somewhat limited. If catch rates are lower with shorter aprons vessels could try increasing the number of tows and fish longer; however, LA vessels are under DAS in open areas, so they cannot increase the fishing time beyond their annual allocation of DAS. On the other hand, LAGC IFQ vessels and LA vessels in access areas are not on DAS, so in theory could fish longer. Increased fishing time would reduce positive impact on the resource from increased escapement of small scallops from shorter aprons. And fishing longer would increase trip costs, reducing the net revenues from scallop fishing. Therefore, the economic impacts of this alternative will depend on the changes

in the fishing behavior and on the extent the positive impacts on the scallop resource and long-term economic benefits outweigh the increase in fishing costs.

Overall, the increases in gear and trip costs are expected to be minimal compared to the potential long-term benefits form this measure especially considering that the intent of proactive AMs is to help prevent a fishery from exceeding a sub-ACL. To the extent this gear modification helps achieve that, there could be positive economic impacts from this alternative compared to negative impacts of reactive AMs. In general, reactive AMs can have negative impacts on the fishery if they impose seasonal closures or seasonal restrictions that impact when and where a vessel can fish.

5.4.7.3 Proactive AM to eliminate the restriction on the number of rings in apron of dredge

This alternative would eliminate the regulation on number of rings in the apron altogether. As a result, this alternative could have low negative to low positive impacts on the resource depending on how many rows vessels decide to fish with. Eliminating the provision would enable vessels to fish with fewer rows if they choose to do so, which could have some beneficial impacts on small scallops, long-term yield and economic benefits. By eliminating the restriction altogether would also allow vessels to fish with seven or more rows in the apron, potentially having negative impacts on the resource if more small scallops are retained in the gear with negative impacts on the long-term yield and economic benefits from the fishery. Again, the direct costs associated with modifying the number of rows is minimal.

So the economic impacts of this measure compared to No Action are unclear depending on whether the vessels will continue using the same gear as before or whether some vessels will choose to fish with less or more than seven rows of rings. The potential economic benefits of this alternative are expected to be less than the alternative that would implement a maximum of seven rows, however, some vessels would prefer to fish with taller aprons and they would be allowed to do that under this alternative. .

5.4.8 Measures to allow a limited access vessel to declare out of fishery on return to homeport

5.4.8.1 No Action

Limited access scallop vessels on an open area DAS trip are charged DAS from the time a vessel positions seaward of the VMS demarcation line until it once again positions shoreward of the demarcation line. However, the current VMS demarcation line results in a higher DAS charge for each trip for the vessels homeported in Virginia and North Carolina due to the longer steaming times to reach the line. In order to prevent steaming time counted as DAS charged, some vessels from those more distant ports choose to land their scallops in New Jersey and ports closer to fishing grounds. When vessels change where they unload product there can be negative impacts on shoreside facilities, especially in ports farther from primary fishing grounds. If vessels decide to steam farther to land product, trip costs will be higher, which can reduce profits for crew from additional costs in fuel etc. If vessels decide to land product closer to primary fishing grounds, trip costs would be lower, and profits could be higher due to shorter steaming times. Under No Action, ports and the shoreside businesses that support them that are closer to primary fishing

grounds benefit when additional product is landed there; while other ports that are more distant, or have less activity due to vessels changing behavior, may be impacted negatively under No Action.

5.4.8.2 Implement a separate VMS declaration code to allow vessels to declare out of the fishery at any point (DOF from anywhere)

This alternative would allow a vessel to declare out of the fishery once it crosses the VMS demarcation line at any point (Alternative 2.8.3 – "DOF from anywhere"). If this alternative is adopted an adjustment will be made to DAS allocations for all vessels since the lower DAS charge for vessels from VA/NC will result in higher DAS to land scallops. Currently DAS are allocated to the limited access fishery based on an estimate of projected catch in open areas divided by an estimate of average catch per day for all LA vessels combined. This estimate of catch per DAS uses "DAS charged"; the time between when a vessel crosses the VMS demarcation line on the way out, and the way back.

The estimated gains and loss to vessels from different ports and adjustment to DAS to keep the total fishing mortality constant at the projected levels are shown in Table 133 and distributional economic impacts are shown in Table 134. Under the worst case scenario for this alternative, the open area DAS for all FT limited access vessels has to be reduced by 2.24 days. The gains in DAS charged is estimated to be about 1.51 days for vessels homeported in MA, 2.2 days for vessels homeported in NJ and about 3.99 days for vessels homeported in VA/NC areas if vessels take advantage of this option. The net gains or loss is the difference between the gains in DAS and adjustment to open area DAS allocations. Table 133 shows that vessels from MA will have their DAS reduced on the net by 0.73 days, but the vessels from VA/NC would have an additional 1.74 days, again if they take advantage of this option (see the last column of Table 133, net gain/loss in DAS). For the realistic scenario, adjustment for DAS would be less, about 0.70 days, however, the net gains for the vessels homeported in VA/NC would be higher with a net gain of 2.6 days.

The vessels homeported in MA, or New England states, could incur the largest net loss in their open area days under the worst case scenario with this alternative; estimated revenues per vessel could decline by $22,514 and net revenues by $20,778 (using the projected LPUE and prices for 2015 fishing year). This alternative would have positive economic impacts on the vessels from VA/NC with an estimated increase in revenues per vessel by $53,538 and an increase in net revenues per vessel by $49,410 for the worst case scenario (Table 134). Under a more realistic scenario, the loss to the vessels from MA would be slightly lower, but relatively higher from the vessels from NJ since this scenario assumes no gains from DAS charge for NJ vessels. Because the adjustment to total DAS is smaller for this scenario, the net gains for the vessels from VA/NC would be higher ($79,062 in revenue and $72,966 in net revenue per vessel). The last two columns of Table 134 show the changes in total revenue and net revenue for all the vessels by port.

These adjustments would be implemented for both 2015 and 2016 fishing years. Therefore, the distributional impacts from this alternative, that is, the gain in revenues for the vessels homeported in VA/NC and the loss in revenues for vessels homeported in MA and NJ would continue in 2016 fishing year in similar magnitudes. This alternative will continue having distributional impacts on vessels from different ports beyond the 2016 fishing year as well. The

changes in the future spatial distribution of resource, and changes in open and access area measures will determine the extent of these long-term impacts compared to the no action VMS declaration system.

5.4.8.3 Implement a separate VMS declaration code for steaming back to port south of Cape May only (Preferred Alternative)

Limited access vessels fishing an open area trip could finish their scallop trip by going inside the VMS demarcation line at a specific point, i.e. between Cape Henelopen and Cape May NJ in Delaware Bay, or inside of the VMS demarcation line south of 39 N. This alternative is similar to the previous one, except it would only apply to vessels that intend to land scallops south of Cape May. A vessel would be prohibited from declaring out of the fishery in Cape May, and then transiting to a port north of that area (Alternative 2.8.4).

This alternative is estimated to have smaller economic impacts compared to the above option because it is more spatially limited. Under the worst case scenario for this alternative, the open area DAS for all FT limited access vessels has to be reduced by 0.40 days and under the realistic scenario, it has to be reduced by 0.14 days. Accordingly, the vessels from VA/NC would have an additional net 1.5 days for the worst case and an additional 1.74 days for the realistic scenario (see the last column of Table 133 net gain/loss in DAS).

The estimated revenues for the vessels homeported in MA and NJ could decline by $12,319 per vessel and net revenues by $11,369 per vessel for the worst case scenario (net of trip costs, using the projected LPUE and prices for 2015 fishing year). This alternative would have positive economic impacts on the vessels from VA/NC with an estimated increase in their revenues by $45,228 and an increase in net revenues by $41,740 per vessel for the worst case scenario (Table 134).

Under the realistic scenario, the loss to the vessels from both MA and NJ would be lower (a decline of $4,420 in revenues and of $4,079 in net revenues, and since adjustment in DAS would decline to 0.14 days. Because the adjustment to total DAS is smaller in this case, the net gains for the vessels from VA/NC would be lower as well compared to Option1 but still higher than compared to the worst case scenario ($53,390 in revenue and $49,274 in net revenue). The last two columns of Table 134 show the changes in total revenue and net revenue for all the vessels by port.

These adjustments would be implemented for both 2015 and 2016 fishing years. Therefore, the distributional impacts from this alternative, that is, the gain in revenues for the vessels homeported in VA/NC and the loss in revenues for vessels homeported in MA and NJ would continue in 2016 fishing year in similar magnitudes. This alternative will continue having distributional impacts on vessels from different ports beyond the 2016 fishing year as well. The changes in the future spatial distribution of resource, and changes in open and access area measures will determine the extent of these long-term impacts compared to the no action VMS declaration system.

Table 133. Adjustment to open area DAS and net gain/loss by homeport

DOF Anywhere	Region	# vessels	Total DAS	DAS gain per vessel	DAS cost per vessel	Net gain/loss in DAS
Worse case	Mass	160	242	1.51	2.24	-0.73
	NJ	97	213	2.20	2.24	-0.05
	VA/NC	70	279	3.99	2.24	1.74
	All vessels	327	734			
Realistic	Mass	160	0	0	0.70	-0.70
	NJ	97	0	0	0.70	-0.70
	VA/NC	70	229	3.27	0.70	2.6
	All vessels	327	229			
DOF Cape May only	**Region**	**# vessels**	**Total DAS**	**DAS gain**	**DAS cost**	**Net gain/loss**
Worse case	Mass	160	0	0	0.40	-0.40
	NJ	97	0	0	0.40	-0.40
	VA/NC	70	131	1.9	0.40	1.5
	All vessels	327	131			
Realistic	Mass	178	0	0	0.14	-0.14
	NJ	124	0	0	0.14	-0.14
	VA/NC	**25**	47	1.9	0.14	1.74
	All vessels	327	47			

Table 134. Distributional economic impacts of the VMS demarcation line alternatives for 2015 fishing year (Assuming LPUE=2500 lb. per Das, price $12.30 and trip costs of $2,371 per DAS)

DOF Anywhere	Region	# vessels	Change in revenue per vessel	Change in costs per vessel	Change in net revenue per vessel	Total change in revenue	Total Change in net revenue
Worse case	Mass	160	(22,514)	-1736	(20,778)	(3,602,170)	(3,324,422)
	NJ	97	(1,500)	-116	(1,384)	(145,475)	(134,258)
	VA/NC	70	53,538	4128	49,410	3,747,644	3,458,680
	All vessels	327				-	-
Realistic	Mass	160	(21,534)	-1660	(19,874)	(3,445,505)	(3,179,837)
	NJ	97	(21,534)	-1660	(19,874)	(2,088,837)	(1,927,776)
	VA/NC	70	79,062	6096	72,966	5,534,342	5,107,612
	All vessels	327				-	-
DOF Cape May only	**Region**	**# vessels**	**Change in revenue per vessel**	**Change in costs per vessel**	**Change in net revenue per vessel**	**Total change in revenue**	**Total Change in net revenue**
Worse case	Mass	160	(12,319)	-950	(11,369)	(1,971,009)	(1,819,033)
	NJ	97	(12,319)	-950	(11,369)	(1,194,924)	(1,102,789)
	VA/NC	70	45,228	3487	41,740	3,165,933	2,921,822
	All vessels	327				-	
Realistic	Mass	178	(4,420)	-341	(4,079)	(786,711)	(726,051)
	NJ	124	(4,420)	-341	(4,079)	(548,046)	(505,788)
	VA/NC	25	53,390	4117	49,274	1,334,757	1,231,840
	All vessels	327				-	-

5.4.9 Modify regulations related to flaring bar provision for turtle deflector dredge

This Action is considering two alternatives: No Action would not change the current provisions related to the flaring bar only being attached to the dredge in one place, as well as an alternative that would clarify that a flaring bar could be attached in more than one place (preferred). The preferred alternative is administrative and related to safe handling of gear and has no direct impacts on the scallop catch efficiency of the gear and on the economic benefits from the fishery. Modifying a flaring bar is a relatively low cost and if approved in this action would be completely voluntarily. A vessel would not be required to change an existing flaring bar; if approved a vessel would simply be allowed to modify it to connect in more than one place if that vessel believes that would enable safer handling of the dredge. Therefore, the economic impacts are neutral compared to no action.

5.4.10 Uncertainties and risks

The economic impacts presented in the above sections are analyzed using the estimate of prices, costs, revenues and total net benefits based on the economic model provided in Appendix II. The estimated fishing costs are used in calculating producer surplus for the proposed alternatives, which shows total revenue net of variable costs. The costs and the benefits of the proposed alternatives were analyzed based on the biological projections of landings, DAS and LPUE and

the available information about the vessel costs and characteristics, crew shares and prices. The numerical results of these analyses should be interpreted with caution due to uncertainties about the likely changes in:

- factors affecting scallop resource abundance
- fishing behavior
- fixed costs
- variable costs
- import prices
- demand for scallop exports
- bycatch and revenues from other fisheries
- the crew share system
- change in the number of active vessels
- structural changes in ownership
- changes in the composition of fleet in terms of tonnage, HP and crew size of the active vessels
- disposable income and preferences of consumers for scallops.

The estimated values of the economic cost/benefit analysis should be used solely in comparing preferred action with the other alternatives since the uncertainties related to landings and prices are expected to affect all alternatives in the same direction.

The landings streams, DAS and LPUE were obtained from the biological model, which is based on fishing mortality by area and the inputs are not fishery-based in terms of DAS, etc. The biological simulations do not model individual vessels or trips; it models the fleet as a whole. The output of the biological model and the landings streams were used to estimate the costs and benefits of the preferred action and alternatives. The results for economic impacts would change if the actual landings, size composition of landings and LPUE are different than the forecasted values from the biological model.

The prices are estimated using the ex-vessel price model described in Appendix II. This model takes into account the impacts of changes in meat count, domestic landings, exports, price of imports, income of consumers, and composition of landings by market category (i.e., size of scallops) including a price premium on under count 10 scallops.

The important changes in external factors, i.e., in exports, imports, value of dollar, export and import prices had some unpredictable impacts on scallop prices in recent years, first resulting an increase to over $8 per pound (in terms of 2008 prices) in 2005, then a consequent decline to about $7 per pound (in terms of 2008 prices) in 2006 even though there was not a significant increase in scallop landings in 2006 (about 56 million lb.) compared to 2005 (about 54 million lb.). Since 2010 fishing year, however, the decline in the value of dollar, strong demand for scallops especially from the European countries and a diminished supply from Japan and other competing, scallop-producing nations resulted in much higher prices than anticipated in the previous frameworks. Thus, any change in the external factors that affect price, such as in import prices or in the differences between the actual and projected landings will result in differences in the actual and estimated prices.

In addition, the prices were estimated by holding the values of the all the variables that impact prices, such as import prices and disposable income, at the recent levels. For example, disposable income per capita and import prices are assumed to stay constant at the 2014 levels for the economic analyses of this Framework action. This is because it is not possible to predict accurately the changes in the future values of the explanatory variables and also because our goal is determine the response in prices to the change in landings and the composition in terms of market category given other things held constant. Therefore, future prices could be higher (or lower) than predicted depending on the values of the explanatory variables.

For these reasons, the empirical results of the economic analyses should be used to compare alternatives with each other and with No Action or Status Quo --rather than to estimate the absolute values--since a change in the variables listed above will change the numerical results in the same direction. For example, an increase in import prices would lead to a rise in ex-vessel prices and revenues for all alternatives above the levels estimated in the sections above. An increase in the price of oil, on the other hand, would increase the variable costs and reduce the cost savings under all options. While these changes would affect the absolute values of net economic benefits, the ranking of alternatives in terms of their impacts on revenues, costs, and net benefits are not expected to change.

5.5 SOCIAL IMPACTS

The consideration of the social impacts of the changes made in this framework is required pursuant to the National Environmental Policy Act (NEPA) of 1969 and the Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 1976. NEPA requires that before any agency of the federal government may take “actions significantly affecting the quality of the human environment,” that agency must prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS) that includes the integrated use of the social sciences (NEPA Section 102(2)(C)). Social science analysis is required by multiple sections of the MSA. Section 303(b)(6) on limited entry requires examination of "(A) present participation in the fishery, (B) historical fishing practices in, and dependence on, the fishery, (C) the economics of the fishery, (D) the capability of fishing vessels used in the fishery to engage in other fisheries, (E) the cultural and social framework relevant to the fishery and any affected fishing communities, and (F) any other relevant considerations." Section 303A provides guidelines for implementing social and economic components of Limited Access Privilege Programs (LAPPs). Section 303(a)(9) on preparation of Fishery Impact Statements notes they "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; and (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."

Finally, National Standard 8 stipulates that “conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities” (16 U.S.C. § 1851 *et seq*.). A fishing community is then defined as being “substantially dependent on or substantially engaged in the harvest or processing of fishery

resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community" (16 U.S.C. § 1802 (17)).

The need to measure, understand and mitigate the social impacts of fisheries policy is an essential part of the management process. Managers have an obligation to consider how policy changes affect the human context of the fishery, including the direct and indirect impacts on the safety, wellbeing, quality of life, fishery dependence, culture and social structure of communities. These impacts can be felt at the individual, family and community level which can make measuring and considering them difficult as the impact variables are typically differentially distributed. There is general consensus however, as to the types of impact to be considered; the section of the human environment where the impacts may be felt; likely social impacts; and the steps to enhance positive impacts while mitigating negative ones (ICPGSIA, 2003).

Broadly defined, social impacts that need to be considered are the "social and cultural consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organize to meet their needs, and generally cope as members of society" (Burdge and Vanclay 1995). Identifying possible social impact variables is a topic of much debate but the development of standard definitions for a set of the most common and consequential social impacts are underway. The current National Marine Fisheries Service "Guidelines for Social Impact Assessment," provides some assistance in defining relevant social factors/variables. It is suggested that the following five social factors/variables should be considered when comparing the preferred management alternative to the alternatives not selected:

1. The *Size and Demographic Characteristics* of the fishery-related work force residing in the area; these determine demographic, income, and employment effects in relation to the work force as a whole, by community and region.
2. The *Attitudes, Beliefs and Values* of fishermen, fishery-related workers, other stakeholders and their communities; these are central to understanding behavior of fishermen on the fishing grounds and in their communities.
3. The effects of proposed actions on *Social Structure and Organization*; that is, changes in the fishery's ability to provide necessary social support and services to families and communities.
4. The *Non-Economic Social Aspects* of the proposed action or policy; these include lifestyle issues, health and safety issues, and the non-consumptive and recreational uses of living marine resources and their habitats.
5. The *Historical Dependence on and Participation* in the fishery by fishermen and communities, reflected in the structure of fishing practices, income distribution and rights. (NMFS, 2007)

Longitudinal data describing these social factors region-wide and in comparable terms is limited; though the new cost and crew surveys currently being implemented by the NEFSC will begin to alleviate this. For this framework the "guidelines" document provides a range of variables to consider when predicting potential social impacts. It should also be noted that the academic literature on the subject has provided multiple lists of potential social variables, but it also cautions that such lists should not be considered "exhaustive" or "a checklist" (ICGPSIA, 1994;

Vanclay, 2002; Burdge, 2004). Ultimately judgment must be used in choosing which variables are salient in any particular case.

Yet another source of information regarding potential social factors specific to fishing communities in the Northeast can be gleaned from a series of ten "social impact informational meetings" sponsored by the NEFMC during the preparation of Amendment 13 to the (NE) Multispecies FMP. Based on comments provided by local stakeholders during these meetings five social impact factors were developed to describe the level of impact felt by fishing communities and families because of management changes: 1) regulatory discarding; 2) safety; 3) disruption in daily living; 4) changes in occupational opportunities and community infrastructure; and 5) formation of attitudes. These factors, while initially developed for the multispecies fishery, overlap with those variables suggested by NMFS guidelines and have the added benefit of reflecting specific concerns of fishermen in the Northeast.

In the preparation of this document, qualitative and quantitative methods have been used to assess the relative impact of the proposed management measures. Ports most closely involved with the scallop fishery, and likely to be affected by the proposed measures, have been identified in this and in previous scallop SAFE reports. While some management measures tend to produce certain types of social impacts it is not always possible to predict precise effects when there are multiple overlaying management measures such as in this proposed action. Also changes to the human environment often occur in small, incremental amounts and the character of a particular impact can be hidden by the gradual nature with which it occurs. Such impacts will be noted where they are possible to discern or where the potential for cumulative impacts seems likely. Therefore the discussion of social impacts for alternatives will indicate the likely directional impacts of specific measures e.g., positive, negative, or neutral.

5.5.1 Overfishing limit and ABC

The current default ABC for is 23,982 mt, after accounting for discards, which is lower than the ABCs recommended by the SSC for this action, however the difference is not great enough to cause significant impacts. If Alternative 1 (no action) is adopted there will likely be no significant negative social impacts in the near-term felt by the individuals and communities involved in the scallop fishery. However, long-term sustained catches that significantly fall below the recommended ABC could translate into low negative social impacts threatening the *Historical Dependence on and Participation* in the fishery. It is also possible that the adoption of the default ABC could have a small but negative impact on the formation of *Attitudes and Beliefs* regarding government and management because these ABCs would not be based on the best available science.

Compared to Alternative 1, the No Action alternative, the ABCs set by Alternative 2 are higher and would increase catches of scallops for the years specified. If Alternative 2, the preferred alternative, is adopted a near-term, positive but small impact (compared to no action) should be expected on the *Size and Demographic Characteristics* of the fishery-related work force as increased catch and revenue would affect income, and employment opportunities. Therefore, the long-term effects of adopting Alternative 2 would likely have a small but positive impact on both the *Size and Demographic Characteristics* of and the *Historical Dependence on and Participation* in the fishery. It is also possible that the adoption of new ABCs based on the best available science, could have a small but positive impact on the formation of *Attitudes and Beliefs* regarding management and government.

5.5.2 Fishery specifications

5.5.2.1 Overall fishery allocations

If Alternative 1 (no action) is adopted there will likely be negative social impacts felt by the individuals and communities involved in the scallop fishery in the near-term, especially regarding the *Size and Demographic Characteristics* of the fishery-related work force and *Historical Dependence on and Participation* in the fishery, as reduced catch and revenue and no access area allocations, as compared to other alternatives, would affect income and employment opportunities. The reduced sense of security in an individual's future planning of fishery operations would also have a negative effect on the *Lifestyle/Noneconomic social aspects* of the fishery. These negative social impacts could be substantial if additional actions were not taken to increase allocations above default measures, which are set at reduced levels to be precautionary.

Alternatives 2-4 all provide higher economic benefits in the near-term (see Economic Impacts section), thus they would likely (to differing degrees) positive affect related social impacts as the overall *Size and Demographic Characteristics* in the fishery, compared with the No Action alternative. Alternatives 2 and 4 contain the same number of allocated open access days and similar total projected landings, but Alternative 4 has slightly reduced access trip allocations in the Mid-Atlantic, which may have greater impact on less mobile fishermen whose fishing grounds are in this region. Alternative 3 has one less open access days in exchange for higher total projected landings; alternative 3 with three closures has the highest revenues and total economic benefits over the long-term (see Economic Impacts), and thus would have the most positive social impacts on *Historical Dependence on and Participation* in the fishery. Alternative 3 with three closures would also have a greater probability of positively affecting *Size and Demographic Characteristics* in the long-term, but at the risk of slightly reducing operational flexibility (from access area modifications), thus slightly impacting negatively the *Life-style/Non-economic social aspects* of the fishery, especially for those fishermen less mobile or whose preferred fishing grounds are affected. Alternative 3 with two closures, the preferred alternative includes one additional DAS and higher landings, thus positive social impacts compared to the other alternatives considered.

5.5.2.2 Allocation of LAGC IFQ trips in access areas

The LAGC IFQ fishery is allocated a fleetwide total number of access area trips. Individual vessels are not required to take trips in specific areas like access area trips allocated to the limited access fishery. Instead, a maximum number of trips is identified for each area and once that limit is reached, the area closes to all LAGC IFQ vessels for the remainder of the fishing year.

If Option 1 (no action) is adopted there will likely be negative social impacts felt by the individuals and communities involved in the LAGC-IFQ scallop fishery in the near-term, especially regarding the *Size and Demographic Characteristics* of the fishery-related work force and *Historical Dependence on and Participation* in the fishery, as no access area trips, as compared to other options, would affect income and employment opportunities. The reduced sense of security in an individual's future planning of fishery operations would also have a negative effect on the *Lifestyle/Noneconomic social aspects* of the fishery. The negative impacts would likely be low negative because LAGC vessels could still harvest catch in other areas, just not in access areas.

Options 2-4 all provide the opportunity for LAGC vessels to gain access in access areas, which may have higher catch rates compared to open areas. Therefore, fishing in areas with higher catch rates can lead to higher income and employment opportunities, thus they would likely (to differing degrees) positive affect related social impacts as the overall *Size and Demographic Characteristics* and *Historical Dependence on and Participation* in the fishery, compared with the No Action, but option 3 has the potential for the highest positive economic impact, and thus the highest social impacts that are positively affected by revenue and employment, such as individual and community participation in the fishery. Option 4 is the preferred option, with low positive social impacts compared to No Action since LAGC vessels would have some access in access areas, which may have higher catch rates compared to open areas.

5.5.2.3 Additional measures to reduce impacts on small scallops

Option 1 would likely have no short-term social impacts on the scallop fishery, though if the lack of crew limits does have an anticipated effect on small scallops, it could have long-term low negative impacts on the resource biomass, thus negatively impacting the *Size and Demographic Characteristics* and *Historical Dependence on and Participation* in the scallop fishery in the future. Option 2, the preferred alternative, would likely stem the potential of long-term negative impacts on resource biomass from increased crew effort. However, option 2 could have social impacts on the *Size and Demographic Characteristics* of the fishery-related work force, in that crew limits would favor the hiring of more experienced crew, thus impacting not only income distribution among potential crew but also the training of new or younger fishermen.

5.5.2.4 Allocation method for Mid-Atlantic access areas trips in 2015

The alternative to allow a flexible allocation of access trips in the Mid-Atlantic, the preferred alternative, would likely have short-term positive social impacts on the *Historical Dependence on and Participation* in the fishery, in that it could enhance the flexibility to fish in areas with higher concentrations of scallops or that may be preferable for other reasons. Such flexibility may also enhance the *Non-Economic Social Aspects* compared to No Action (lottery system), if it is less likely to interrupt traditional fishing patterns. However, given the long-term impacts on the biomass and the economics of the fishery are unclear, likewise social impacts from the *Size and Demographic Characteristics* of the fishery to the *Historical Dependence on and Participation* in the fishery are also somewhat uncertain.

5.5.2.5 Adjustments to provisions related to allocating and monitoring access area trips

The alternative to remove the current broken trip process, the preferred alternative, would likely have slightly positive social impacts on the *Non-Economic Social Aspects* in the fishery, in that it could enhance the flexibility to fish in access areas without the potential burden of reporting requirements should a broken trip arise, although potentially replacing with other reports. Such flexibility comes at the cost of agency ability to monitor fishing activity more precisely, with potentially negative long-term impacts on the biomass; likewise social impacts from the *Size and Demographic Characteristics* of the fishery to the *Historical Dependence on and Participation* in the fishery are also uncertain.

5.5.3 Measures to allow fishing in state waters after federal NGOM TAC is reached

Alternatives 2 and 3, compared to no action, would have some positive social impacts on scallop fishermen eligible to fish in the scallop fisheries in state waters. With little expected impact on

biomass, there would likely be no long-term negative effects on biomass-related social impacts, but there would be positive impacts on the *Attitudes, Beliefs and Values* of fishermen, given these alternatives would allow permitted fishermen to continue having access to fishing grounds they may feel they have rights to fish in. Alternative 3 has the potential to include more scallop fishermen and thus may have more positive impact on The *Size and Demographic Characteristics* of the fishery-related work force, though its impact on the fishermen in the state waters only fishery is unknown. Alternative 3 is the preferred alternative.

5.5.4 Measures to make turtle regulations consistent

Since both of the alternatives under consideration are expected to neither impact the resource nor change fishing behavior in any significant way since there are only slight modifications to the area and season affected, no social impacts of any significance on fishermen are to be expected. Reducing regulatory complexity through adopting alternative 2, the preferred alternative; however, may have slightly positive impact on the *Attitudes, Beliefs and Values* of anyone involved in the fishery.

5.5.5 Measures to develop New Accountability measures for northern windowpane flounder and modify existing accountability measures for gb and sne/ma yellowtail flounder

This section has three alternatives: 1) No Action includes no new proactive AMs in the scallop fishery; 2) proactive AM to *modify* the number of rings in the apron of dredge (preferred); and 3) proactive AM to *eliminate* the restriction on the number of rows in the apron of a dredge.

If Alternative 1 (no action) is adopted there will likely be no near-term social impacts felt by the individuals and communities involved in the scallop fishery since no fishing practices would change. However, the alternative to modify scallop dredges to having a maximum of seven rows of apron rings may, if the beneficial impacts from reducing mortality on small scallops do occur, have low positive long-term social impacts on the *Historical Dependence on and Participation* in the fishery and on the *Size and Demographic Characteristics* of the fishery-related work force from higher biomass in the future. It is also possible that the adoption of this alternative could have a small but positive impact on the formation of *Attitudes and Beliefs* regarding government and management because it would allow fishermen to use gear that has less negative impact on the environment. Reducing impact on other fisheries would certainly have positive social impacts on fishermen who participate in the affected fisheries. Since most scallop fishermen would have to modify their scallop dredges to comply, however, there would be short-term economic costs and short-term negative social impacts on the *Size and Demographic Characteristics* of the scallop fishery.

The alternative to eliminate any restriction on the number of apron rings would have more uncertain impacts on the scallop biomass and on bycatch biomass. Depending on whether fishermen changed the apron rings and in which direction, this alternative could have negative or positive impacts on the *Historical Dependence on and Participation* in the fishery, the *Size and Demographic Characteristics* of the fishery-related work force, and *Attitudes and Beliefs.*

5.5.6 Measures to allow a limited access vessel to declare out of fishery on return to homeport

Alternative 2, the DOF from anywhere alternative, could have regional distributional impacts compared to No Action, depending on how fishermen ultimately change their behavior in

response to the alternative. If modeling of behavior is correct (see Economic Impacts section), then the charge to DAS and loss of revenue to vessels in MA and NJ would result in small to moderate negative social impacts to the *Size and Demographic Characteristics* of the fishery-related work force residing in these areas (and small to moderate positive social impacts in VA/NC); small to moderate negative social impacts to the *Historical Dependence on and Participation* in the fishery by fishermen, especially crew, in MA and NJ (and small to moderate positive social impacts in VA/NC); and some negative impacts to *Social Structure and Organization* on shoreside facilities in MA and NJ if landings are redirected away from ports closer to fishing grounds and to ports closer to homeports (and positive social impacts in VA/NC). The alternative could have positive social impacts on the *Non-Economic Social Aspects* on fishermen in VA/NC if it changes the length of fishing trips and time spent away from home communities. It could also have positive social impacts on the *Attitudes, Beliefs and Values* of fishermen in VA/NC to the extent that it might rectify a regulation that may be perceived as inequitably charging DAS to fishermen in VA/NC to begin with.

Alternative 3, the preferred alternative, given that it applies only to ports south of Cape May, would be expected to have similar impacts as Alternative 2, expect that the negative impacts would be lessened at the expense of slightly reduced positive impacts.

5.5.7 Modify regulations related to flaring bar provision for turtle deflector dredge

Since the alternative under consideration is administrative and is expected to have no direct impacts on the scallop catch efficiency of the gear, no significant social impacts on fishermen are to be expected. Since Alternative 2, the preferred alternative is related to safe handling of gear, however, it may have some positive impact on the *Attitudes, Beliefs and Values* of anyone involved in the fishery, as well as some positive impact on the *Non-Economic Social Aspects* of the proposed action or policy, through enhancing health and safety issues.

5.6 NON-TARGET SPECIES

5.6.1 Overfishing limit and annual biological catch

The overfishing limit and annual biological catch are the absolute limits the fishery is not allowed to exceed. The No Action ABC is lower than the proposed ABC in this action because biomass has increased based on updated survey results. However, the No Action ABC and the proposed ABC in FW26 are similar and not great enough to have direct impacts on the fishery since allocations are set well below these limits. Therefore, the potential impacts of the No Action ABC, as well as the updated ABC values under the preferred alternative are neutral and not expected to have direct impacts on non-target species. The proposed ABC may have low negative to neutral impacts compared to No Action since the limit is higher, but in reality allocations are set well below these limits. The direct impacts of the fishery allocations are assessed in Section 5.6.2 below.

5.6.2 Fishery specifications

Specification alternatives 1- 4 are primarily compared in terms of their impacts to non-target species and other fisheries using several sources of information: 1) the projected bottom area swept values from the SAMS model simulations (Section 5.1.2.1.5); and 2) projected catch estimates. Alternative 3 with closed area options 2 and 3 is preferred.

The area swept estimates are closely related to the LPUE estimates. Generally, scenarios with higher LPUE have lower area swept, and scenarios with lower LPUE have higher area swept. The Scallop PDT also estimated the projected catch of the three sub-ACLs allocated to the scallop fishery: GB yellowtail flounder, SNE/MA yellowtail flounder, and SNE/MA windowpane flounder. In addition, the PDT also estimated the projected catch of northern windowpane flounder because that was under consideration for a sub-ACL in Framework 53 to the Groundfish FMP. However, a sub-ACL for northern WP was not recommended by the Council at this time, but those estimates are still provided since the scallop fishery has been responsible for a considerable amount of the total catch in recent years.

Section 5.1.2.1 summarizes the methods used and projected catch values for all the specification alternatives. Bycatch projections were not completed for every possible specification scenario, instead just the projected catch estimates for the preferred alternative are summarized here. When considering these estimates it is important keep in mind that bycatch projections are complex because they combine not only projections of future scallop biomass, but also projections of biomass for bycatch species, bycatch rates, and assumptions of future fishing behavior in terms of spatial and temporal fishing patterns. Therefore, the projected bycatch estimates are helpful for providing a potential catch estimate, but these estimates should not be considered a precise prediction of actual bycatch in a future fishing year.

- **Area swept**

All FW26 specification alternatives have lower total bottom contact time compared to recent levels. The range under consideration in this action is about 1,100 square nautical miles for No Action and up to 2,200 for the base run. Framework 25 estimated area swept to be about 2,800 in 2014 and FW24 estimated 2013 measures to have about 4,000 square nautical miles for total area swept. In 2010 values were estimated closer to 5,000; therefore, area swept is declining overall in this fishery under area rotation (Figure 79). Therefore, in terms of potential impacts on non-target species from scallop fishing, all the alternatives under consideration have potentially fewer associated impacts compared to recent fishing years since the estimates of area swept for all alternatives are lower than recent years. The less area covered by the fishery, the lower the potential bycatch and associated impacts on non-target species. In 2015, the preferred alternative (Alternative 3 with 2 closures only) has an estimate of about 2,259 nm^2, less than estimates for 2014 current levels.

- **Projected catch of YT and WP**

The Scallop PDT estimated the scallop fishery's projected catches of the three groundfish stocks with sub-ACL allocations as well as northern WP flounder (Table 136). The projections are for the preferred alternative only, Alternative 3 with 2 closures (NL and ETA). A range has been provided for GB YT and northern WP because the magnitude of scallop fishing for GB open areas is more uncertain. The model estimates that a substantial amount of 2015 effort will occur in the southeast part of GB and within the CA2 extension area, and that seems somewhat unrealistic. Therefore a "high" estimate has been prepared based on where the model estimates open effort to go compared to a "low" estimate that reduces the level of scallop fishing in both those areas. The high estimate is about twice the estimate of catch of the low estimate for both GB YT and northern WP.

Table 135 – Estimated bycatch rates and projected catches (in mt) for four primary bycatch species for the preferred scallop specification alternative (Alternative 3 with 2 closed areas only)

GBYT	Sch	NEP	SEP	CL2-Ext			TOTALS
Y:S 2015	0.0358	0.0008	0.0099	0.013			
YT Catch (High)	14.2	0.6	28.2	6.7			**49.6**
YT Catch (Low)	14.2	0.6	9.9	2.6			**27.9**
SNEYT	**ET**	**HCS**	**NYB**	**LI**	**SNE**		
Y:S 2015	6.80E-05	0.001	0.003	0.0207	0.0136		
YT Catch	0.3	1.7	8.1	33.1	10.8		**54.0**
NoWP	**CA1**	**CA2**	**CA2Ext**	**Sch**	**SEP**	**NEP**	
W:S	0.003	0.005	0.027	0.005	0.022	0.009	
WP Catch (High)	0	0	14	11	63	6	**94.0**
WP Catch (Low)	0	0	5	11	22	6	**45.0**
SoWP	**DMV**	**ET**	**HCS**	**NYB**	**LI**	**SNE**	
W:S 2015	0.004	0.0058	0.0075	0.0128	0.0152	0.04	
WP Catch	6.1	24.8	12.6	34.5	24.3	31.7	**134.1**

The projected catch estimates are compared to the respective sub-ACLs allocated to the scallop fishery (Table 136). The 2015 sub-ACL allocation for GB YT is 38 mt, 66 mt for SNE/MA YT and 183 mt for SNE/MA WP.

Table 136 – Comparison of projected catches and sub-ACLs for 2015

	GB YT	SNE/MA YT	No. WP	So. WP
2015 sub-ACL	**38**	**66**	**N/A**	**183**
Pref Alt	**27.9 - 49.6**	**54**	**45-94**	**134**
% of sub-ACL	**73.4% - 130.5%**	**81.8%**	**N/A**	**73.2%**

All of the alternatives under consideration are expected to have similar amounts of non-target bycatch since the overall allocations are relatively similar in terms of fishery allocations, with the exception of No Action. The No Action alternative would have lower catches of bycatch because it only includes DAS, no access area trips. However, this alternative also has the lowest scallop landings associated with the allocations. Since all the other specification alternatives include access area landings and DAS, they all have potentially higher catch of non-target species compared to the No Action specifications.

The projected catches of the preferred scallop specification alternative, Alternative 3 with 2 closures, are below associated sub-ACLs, except using the high estimate for GB YT (Table 136). FY2013 is the most recent year of complete data and in that year the estimate of catch for scallop

fishery was 37.5mt of GB YT, 48.6 mt of SNE/MA YT, and 129.1 mt of SNE/MA WP. These are all lower than the projected catches for 2015, so bycatch may increase compared to 2013. However, scallop allocations in 2013 were a 30% reduction from 2012 and were lower than recent years. Scallop effort is expected to increase for the next few years, so total bycatch may increase compared to those levels. However, the projected catches are less than the allocated sub-ACLs, so if they are realized, overall impacts on bycatch should be minimal and within levels set-aside for bycatch of groundfish species. Estimates of northern windowpane, a stock that does not have a sub-ACL, are less than recent levels. The projected catch for 2015 is between 45-94mt, within the range of recent years. Final catch estimates for the scallop fishery were 76mt in 2012 and 41 mt in 2013. More scallop effort was allocated in 2012 compared to 2013, and more of the total effort was on GB (primarily more access in CA2).

Overall, the potential impacts on non-target species is expected to be neutral for all the specification alternatives under consideration compared to recent years, and low negative compared to No Action since the allocations levels are very reduced under that alternative.

5.6.2.1 Allocation of LAGC IFQ trips in access areas

The LAGC IFQ fishery is allocated a fleetwide total number of access area trips. Individual vessels are not required to take trips in specific areas like access area trips allocated to the limited access fishery. Instead, a maximum number of trips is identified for each area and once that limit is reached, the area closes to all LAGC IFQ vessels for the remainder of the fishing year.

This action is considering four options for allocating fleetwide trips to the LAGC IFQ fishery. Option 1 is No Action; LAGC IFQ trips will not be allocated in any of the scallop access areas in 2015 or 2016 (default). Under Option 2 the LAGC fishery would be allocated 5.5% of the total 2015 access area TAC for every area open in a particular year. Option 3 would allocate 2 million pounds to the LAGC fishery from access areas, increasing the overall access LAGC vessels would have to areas that are projected to have more productive fishing areas in 2015. Finally, Option 4, the preferred option, would provide about the same level of access for LA and LAGC vessels in access areas in 2015 in terms of the total proportion of catch for the year (Table 15).

As noted in the scallop resource impacts section, if LAGC trips are not taken in the access areas, LAGC catch is assumed to come from open areas instead. This could result in lower or higher catch efficiency relative to the access area trips, depending on the open area fished and the resource conditions there. Overall, LAGC catch in access areas is a small percentage of the overall catch and vessels tend to fish where catch rates are higher, so if they are higher in access areas most trips should be fished there, and if they are not more LAGC catch could come from open areas. This means that while the access area allocation options may increase flexibility for LAGC vessels in terms of where they can fish, impacts to non-target species (and the resource) are likely to be similar for all options, including No Action.

5.6.2.2 Additional measures to reduce impacts on small scallops

This action is considering two options for this issue. Option 1 (No Action) would maintain that access areas not have a crew limit. Option 2, the preferred option, would allow one additional crew member beyond open area limits. The potential impacts of these measures on fishing behavior are probably minimal, and not expected to have substantial effects on fishing time or

impacts on non-target species. However, if unlimited crew sizes lead to highgrading, where smaller animals are fished for and then discarded in favor of larger animals, this could increase fishing time and impacts on non-target species. Therefore, Option 2 is expected to have slight positive impacts on non-target species relative to Option 1/No Action if fishing behavior changes and vessels fish increase bottom time overall.

5.6.2.3 Allocation method for Mid-Atlantic access area trips in 2015 only

These alternatives determine how to allocate Mid-Atlantic access area trips during FY 2015. Under No Action, each full-time limited access vessel would receive 3 trips; two allocated to ETA, and the third from either HC or Delmarva. The third trip would be allocated by lottery. The action alternative proposes that vessels would declare a MA access area trip and could freely fish inside all three areas on the same trip.

The impacts of the action alternative, the preferred alternative, on both the resource and on non-target species are dependent on how fishing behavior adjusts in response to the flexible allocation, as well as on resource conditions, which makes the impacts difficult to predict. If the flexible allocation method encourages vessels to fish on the most concentrated scallop aggregations, then the action alternative could have positive impacts relative to No Action. Fishing on the highest concentrations of scallops would be the most efficient way to reach the possession limits, resulting in shorter fishing times and less area swept. However, if the flexible action alternative allocation scheme causes vessels to fish in areas where scallops are less dense, then fishing times could increase, increasing potential impacts on non-target species relative to No Action. This could occur if vessels choose to fish a lower density area because it is closer to port, for example, reducing fuel costs or overall trip duration.

5.6.2.4 Adjustments to provisions related to allocating and monitoring access area trips

The alternatives in this section adjust the way that access trip monitoring occurs. Under No Action, although access area allocations are allocated by trip, the allocations can be fished in other poundage increments, provided that broken trip provisions are adhered to. Because there is currently no penalty for broken access area trips, the allocations are in fact more flexible than the 'trip' language would indicate.

The action alternative, the preferred alternative, streamlines the regulations to be more consistent with current industry practices. Under this alternative, vessels would be given a simple poundage allocation in an access area, instead of referring to it as a trip allocation with associated pounds per trip. If this alternative is adopted, vessels would submit a prelanding report through their VMS unit to indicate pounds caught. Two sub-options were considered under the action alternative that would either:

- Require vessels cross the VMS demarcation line and submit a preland within last 60 days of the fishing year in order to fish those pounds in the first 60 days of the following fishing year (Option 1).
- Allow for all unlanded access area pounds to be carried over without any action from vessels (Option 2, preferred). Under Option 2, a vessel would not have to actually go out in their vessel to physically break a trip by crossing the VMS demarcation line (Option 2)

Because the allocations are the same under both alternatives, and the alternative action serves mainly to simplify administration of the access area allocations, no impacts to non-target species are expected to result from these alternatives.

5.6.3 Measures to allow fishing in state waters after federal NGOM TAC is reached

These alternatives could change the rules about fishing in state waters once the NGOM hard TAC is reached. Under No Action, once the federal NGOM hard TAC is reached, all vessels with a federal scallop permit are prohibited from fishing for scallops in the NGOM, including within state waters. Under the first action alternative, if the federal NGOM hard TAC is reached, only those vessels that have both a federal NGOM permit and a state waters scallop permit could continue to fish. They would be restricted to state waters only and would be subject to state waters regulations. Under the second action alternative, the preferred alternative, no changes would be made to the regulations about the hard TAC; instead, the regulations related to state water exemptions would be revised to allow an individual state to request a specific exemption related to fishing in state waters after the NGOM TAC is reached.

Under No Action, there are no direct effects on the federal scallop resource or non-target species in that area. There could be some low positive impacts on the scallop resource and non-target species within state waters if this measure prohibits effort from vessels with federal permits from fishing in state waters if the federal NGOM hard TAC is reached. However, the magnitude of this effort is very limited so the overall effects (positive or negative) are expected to be minor.

In the past, the NGOM TAC has not been limiting, but the fishery has come closer in recent years to achieving the TAC such that activities in state waters could be impacted. Either of the action alternatives could allow for fishing in state waters after the NGOM TAC is reached. However, fishing in state waters is subject to restrictions that would limit fishing effort and therefore potential impacts on non-target species. In Massachusetts, mobile gear commercial fishermen are subject to a daily possession limit of 200 lb. as well as gear restrictions to limit bycatch. Maine also has a daily possession limit and gear restrictions, as well as rotational management. The rotational system includes triggered closures when 30-40% of the biomass has been removed from the area. Thus, both states, particularly Maine, limit scallop fishing in state waters. This would limit any additional impacts on non-target species that result from fishing in state waters under the action alternatives, such that the impacts of the action alternatives are expected to be neutral (TAC not exceeded) to slightly negative (TAC exceeded).

5.6.4 Measures to make turtle regulations consistent

Under No Action, there is a chain mat regulation as well as a turtle deflector dredge regulation. Chain mats are required between May 1 and November 30 south of 41°9.0′ N. latitude. Turtle deflector dredges are required between May 1 and October 31 west of 71° W. The deflector dredge is required for any limited access scallop vessel using a dredge, regardless of dredge size or vessel permit category, or any LAGC IFQ scallop vessel fishing for scallops with a dredge width of 10.5 ft (3.2 m) or greater.

The action alternative, the preferred alternative, would revise the turtle chain mat regulations to have a consistent boundary with the TDD requirement, and revise the TDD regulations to have a consistent season with the chin mat regulations. If approved, both gear elements would be required for the waters west of 71° W from May 1 through October 31.

Framework 23, which implemented the turtle deflector dredge requirements, notes that the gear performs similar to a standard dredge in terms of scallop catchability (Section 5.1.1.2.1 of FW23). The TDD is estimated to be slightly more efficient than the standard New Bedford dredge (about 4.3%), but the difference was not statistically significant. Thus, an adjustment to the season is not expected to influence the amount of fishing occurring or the location of fishing effort, and therefore no impacts to non-target species as a result of this change. Overall the TDD has been found to reduce catches of some bycatch species such as several flounder and skate species. The action alternative would increase the season of the TDD requirement by one month, adding the month of November. Framework 23 explains that the results were not statistically significant, but fewer YT and WP were caught in the TDD compared to the standard Bew Bedford dredge. Therefore the overall impacts of the action alternative may be neutral to low positive for non-target species if the additional month reduces overall bycatch compared to the standard dredge. However, November is generally a low fishing month and some vessels may simply fish with TDDs all year, regardless of the season, so overall impacts are likely neutral.

5.6.5 Measures to develop new accountability measures for northern windowpane flounder and modify existing accountability measures for gb and sne/ma yellowtail flounder

This section has three alternatives: 1) No Action includes no new proactive AMs in the scallop fishery; 2) proactive AM to *modify* the number of rings in the apron of dredge (preferred); and 3) proactive AM to *eliminate* the restriction on the number of rows in the apron of a dredge.

The scallop fishery interacts with non-target species, which has associated negative impacts. Overall impacts are assumed to be low negative since there are measures in place to minimize the overall impacts of this fishery on non-target species and overall effort levels have reduced overtime. Under No Action, no new measures would be adopted that would constrain the scallop fishery if sub-ACLs are exceeded; therefore, the No Action would have neutral impacts on the scallop resource. Thus the same low negative impacts on non-target species would be expected under No Action. The alternative to *modify* the number of rings in the apron of the dredge is expected to have low positive to neutral impacts on non-target species. The potential beneficial impacts from this gear modification are influenced by how much of a change vessels would need to make to current gear to comply with this gear modification. To evaluate this aspect, the Scallop PDT reviewed gear specifications that are recorded on all observed scallop trips.

When an observer is deployed on a vessel, it records detailed information about the gear being fished including the height of the apron in the dredge as well as the hanging ratio. Table 99 and Figure 86 and Figure 87 describe the number of rows on observed trips on LA and LAGC vessels from 2008-2014. While this is not the entire fleet, hundreds of LA and LAGC vessels are observed each year, so this summary is likely representative of the fishery overall.

Shorter aprons have been shown to reduce bycatch since twine tops improve escapement of bycatch compared to 4-inch rings on the topside of the dredge. Direct field tests of dredges with different apron heights were compared in a 2011 RSA project titled, "*Optimizing the Georges Bank Scallop Fishery by Maximizing Meat Yield and Minimizing Bycatch*"." Fourteen research trips were conducted in both Closed Area I and II from October 2010 through April 2012. Seasonal variations in scallop meat weights and YT flounder bycatch rates were evaluated. The final report from this research was included as Appendix IV to Framework 24. Based on the 14

vessels that participated in that study, most fished with 7 or 8 rows, and 3 fished with more than 10 rows. This research projects supports that shorter aprons improve fish escapement.

Table 137 from the final report shows bycatch rates of YT from trips grouped by apron height. The same standard "turtle" dredge was towed on one side of the vessel with an 8 row apron on all trips, and the other New Bedford style dredge towed on the other side varied by vessel. Most of the vessels fished with an 8 or 7 row apron, and three (the top group) fished with 10 or 13 rows of rings in their apron. When these vessels are separated by group and compared to the turtle dredge, the overall YT bycatch rate is substantially higher for the dredges with higher aprons (0.035 for the turtle dredge with 8 rows and 0.051 for the vessels with higher aprons). About 100 tows were completed on each trip.

Table 137 - Bycatch rates for the selected stations inside CAI and CAII combined with the trips grouped by apron height (larger apron sizes tested are 10 and 13 rows versus smaller aprons of 7 and 8 rows).

			Yellowtail (lbs)		Scallops (lbs)		Bycatch Rate	
All stations	**Twine Top Size**	**Apron Size**	**Turtle**	**New Bedford**	**Turtle**	**New Bedford**	**Turtle**	**New Bedford**
Arcturus (Mar)	8.5 x 90	10 x 40	249	477	7360	8495	0.034	0.056
Westport (May)	8.5 x 80	13 x 40	182	260	9798	9757	0.019	0.027
Wisdom (Jan)	11 x 90	10 x 38	334	432	4617	4543	0.072	0.095
Total			765	1170	21775	22796	**0.035**	**0.051**
Celtic 2010 (Oct)	7.5 x 60	8 x 40	619	538	7575	6666	0.082	0.081
Celtic 2011 (Apr)	7.5 x 60	8 x 40	224	282	7078	7777	0.032	0.036
Liberty (June)	8.5 x 90	7 x 38	231	215	15517	12087	0.015	0.018
Endeavour (July)	8.5 x 80	8 x 40	222	270	9836	9185	0.023	0.029
Regulus (Aug)	7.5 x 43	8 x 38	544	514	6179	5565	0.088	0.092
Resolution (Sept)	10.5 x 36	8 x 42	637	400	5456	5638	0.117	0.071
Ranger (Oct)	9 x 33	7 x 38	763	372	6085	5491	0.125	0.068
Horizon (Dec)	8 x 96	8 x 44	445	336	4501	4338	0.099	0.077
Venture (Feb)	7.5 x 80	7 x 36	332	201	4288	3102	0.077	0.065
Regulus (March)	7.5 x 43	8 x 38	304	360	4040	4166	0.075	0.086
Endeavour (April)	8.5 x 80	8 x 40	446	366	5205		0.086	
Total			4765	3854	75760	64015	**0.063**	**0.060**
Turtle Dredge	8 x 40							

Source: Coonamessett Farm Foundation et al, 2011 RSA Final Report, *Optimizing the Georges Bank Scallop Fishery by Maximizing Meat Yield and Minimizing Bycatch*, August 2012

Since the majority of both the LA and LAGC fleets fish with aprons longer than seven rows, implementing a maximum of seven rows for all areas is expected to have beneficial impacts on non-target species. If vessels have to fish longer to harvest the same amount of scallops then some of these beneficial impacts could be reduced, but increased fishing time is limited since LA vessels are on DAS in open areas and the potential loss of scallops is not expected to be very high from reduced aprons, especially seven row aprons. This proactive gear modification would be implemented with FW26, and is not based on an overage of a sub-ACL.

On the other hand, the alternative to *eliminate* the restriction on the number of rows in the apron could have low negative to low positive impacts on non-target species depending on what vessels decide to do. If vessels decide to voluntarily reduce the number of rows in the apron of their dredge that could have beneficial impacts, but vessels would also be permitted to fish with even more than current requirement of seven rows if the restriction was eliminated altogether. Increasing the length of the apron is expected to have negative impacts on bycatch. However, compared to no action, minimum of seven rows in the apron, the impacts may be neutral to potentially positive because the current regulations prohibit a vessel from fishing with less than seven. Impacts would be neutral if all vessels continued to fish with seven or more rings, or positive if the prohibition was eliminated and some vessels chose to fish with fewer rows of rings. Table 99 and Figure 86 and Figure 87 summarize the number of rows in all scallop dredges observed by year, and the most common configuration is nine rows for LA vessels and eight rows for LAGC vessels.

5.6.6 Measures to allow a limited access vessel to declare out of fishery on return to homeport

This section has three alternatives: 1) No Action – LA vessels on an open area DAS trips are charged DAS from the time a vessel positions seaward of the VMS demarcation line until it once again positions shoreward of the line; 2) LA open area trip would end when vessel positions shoreward of demarcation line and that vessel declares out of fishery; and 3) a LA vessel wanting to land an open area trip in ports south of Cape May could get off the clock shoreward of demarcation line south of 39N and declare out of fishery there to avoid DAS charges on steam back to ports south of Cape May (preferred alternative).

Under No Action there are no direct impacts on the resource or non-target species since there are no changes in how DAS would be charged, thus area swept remains the same. Under both the DOF from anywhere alternative and the DOF from Cape May only alternative, an adjustment to DAS would be applied. As long as the adjustment is adequate and captures any steaming time that was previously considered part of a vessels' "DAS charged", the direct impacts of these measures on the resource and non-target species should be neutral. If the adjustment is too high there could be low positive impacts, and if the adjustment is too low there could be low negative impacts if fishing time increases. These adjustments are temporary in nature and could be adjusted. Therefore, if the PDT finds that it needs to be changed it could be corrected to mitigate any potential negative impacts on the resource or non-target species.

5.6.7 Modify regulations related to flaring bar provision for turtle deflector dredge

This action is considering two alternatives: No Action would not change the current provisions related to the flaring bar only being attached to the dredge in one place, as well as an alternative that would clarify that a flaring bar could be attached in more than one place (preferred). This measure is administrative and related to safe handling of gear and has no direct impacts on the scallop catch efficiency of the gear. Therefore, there are no expected impacts on the resource or non-target species from either No Action or the alternative that would modify the gear to allow use of a flaring u-shaped bar.

5.7 CUMULATIVE EFFECTS

5.7.1 Introduction

The Council on Environmental Quality (CEQ) and agency policy (NOAA Administrative Order 216-6) require a cumulative effects assessment (CEA) as part of an EIS or EA. CEQ regulations (40 CFR Part 1508.7) define the term "cumulative effects" 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 other words, the purpose of the CEA is to integrate into the impact analyses, the combined effects of many actions over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective but rather, the intent is to focus on those effects that are truly meaningful.

This section examines the potential direct and indirect effects of the preferred alternatives in FW 26 together with past, present, and reasonably foreseeable future actions that affect the human environment. These predictions of potential synergistic effects from multiple actions, past, present and/or future will generally be qualitative in nature.

<u>Valued Ecosystem Components (VEC)</u>

The Affected Environment (Section 4.0) identified and described the following VECs considered in this action and CEA:

1. Atlantic sea scallop resource;
2. Physical environment and essential fish habitat (EFH);
3. Protected resources;
4. Human communities (includes economic and social effects on the fishery and fishing communities); and
5. Non-target species

<u>Temporal Scope of the VECs</u>

While the effects of historical fisheries are considered, the temporal scope of past and present actions for scallop resource and non-target species is primarily focused on actions that have taken place since implementation of the initial Atlantic Sea Scallop FMP in 1982. The temporal scope for the human communities VEC extends back to 1994. This is when Amendment 4 first adopted a limited entry program which had distributional impacts on individuals and port that participated in the scallop fishery. For protected resources, the temporal context focuses back to the 1980s and 1990s, when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ thereby creating a baseline for current stock assessments. Finally, for the physical environment and EFH, the temporal context focuses back to 1996 when the Magnuson-Stevens Act was reauthorized and included specific requirements to describe and identify essential fish habitat in each FMP.

The temporal scope of future actions for all VECs extends five years into the future (2020). This period was chosen because the dynamic nature of resource management and the lack of specific information on future projects make it difficult to predict impacts beyond this timeframe.

Geographic Scope of the VECs

The geographic scope of the analysis of impacts to the scallop resource, non-target species and habitat for this action is the total range of these VECs in the Western Atlantic Ocean, as described in the Affected Environment section of the document (Section 4.0). The physical range of the Atlantic sea scallop resource in northeast region of the United States ranges 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 endangered and protected species, the geographic range is the total range of each species (Section 4.3).

Because the potential exists for far-reaching sociological or economic impacts on U.S. citizens who may not be directly involved in fishing for the managed resources, the overall geographic scope for human communities is defined as all U.S. human communities. Limitations on the availability of information needed to measure sociological and economic impacts at such a broad level necessitate the delineation of core boundaries for the human communities. Therefore, the geographic range for the human communities is defined as those fishing communities bordering the range of the scallop fishery (Section 4.4) from the U.S.-Canada border to, and including, North Carolina.

Analysis of Total Cumulative Effects

The cumulative effects assessment of an EA ideally makes effect determinations based on the culmination of three elements:

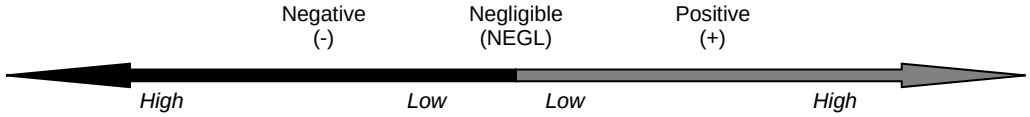
(1) impacts from past, present and reasonably foreseeable future actions; PLUS
(2) the baseline condition for resources and human communities (note – the baseline condition consists of the present condition of the VECs plus the combined effects of past, present and reasonably foreseeable future actions); PLUS
(3) impacts from the preferred alternatives.

Table 139 presents a description of past, present and reasonably foreseeable future actions. The baseline conditions of the resources and human community are subsequently summarized although it is important to note that beyond the stocks managed under this FMP and protected species, quantitative metrics for the baseline conditions are not available. Finally, this section includes a brief summary of the impacts from the alternatives contained in this framework. The culmination of all these factors is considered when making the cumulative effects assessment.

To enhance the clarity and maintain consistency this EA evaluates impacts using the definitions and qualifiers outlined in Table 138.

Table 138 – Impact definitions for cumulative effects analyses

VEC	Direction		
	Positive (+)	**Negative (-)**	**Negligible/Neutral (0)**
Allocated target species, other landed species, bycatch, and protected resources	Actions that increase stock/population size	Actions that decrease stock/population size	Actions that have little or no positive or negative impacts to stocks/populations
Physical Environment/ Habitat/EFH	Actions that improve the quality or reduce disturbance of habitat	Actions that degrade the quality or increase disturbance of habitat	Actions that have no positive or negative impact on habitat quality
Human Communities	Actions that increase revenue and social well-being of fishermen and/or associated businesses	Actions that decrease revenue and social well-being of fishermen and/or associated businesses	Actions that have no positive or negative impact on revenue and social well-being of fishermen and/or associated businesses
	Impact Qualifiers:		
All VECs: Mixed	**both positive and negative**		
Low (L, as in low positive or low negative)	To a lesser degree		
High (H; as in high positive or high negative)	To a substantial degree		
Likely	Some degree of uncertainty associated with the impact		



5.7.2 Past, present and reasonably foreseeable future actions

The following is a synopsis of the most applicable past, present, and reasonably foreseeable future actions that have the potential to interact with the current action (Table 139). For a complete historical list of this past, present, and reasonably foreseeable future actions, please see Amendment 15 – the last EIS developed for the Atlantic Sea Scallop FMP.

Section 4.0 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, protected resources and non-target species that may be affected by the Preferred Alternative.

Table 139. Summary of Effects on VECs from, Past, Present, and Reasonably Foreseeable Future FMP and Other Fishery Related Actions

Actions	Scallop Resource	Habitat/ EFH	Protected Resources	Human Communities	Non-Target species
Past and Present Fishing Actions					
Scallop FMP (1982)- sought to restore adult scallop stock and reduce fluctuation in stock abundance	+	+	+	+	+
Scallop Amendment 4 (1994) - implemented a limited access program. Qualifying vessels were assigned DAS limits according to which permit category they qualified for: full-time, part-time or occasional. Also included new gear regulations to improve size selection and reduce bycatch, a vessel monitoring system, and an open access general category scallop permit.	+	+	+	Mixed	+
Amendment 7 (1998) - changed the overfishing definition, the day-at-sea schedule, and lowered mortality targets. Also established two new scallop closed areas (Hudson Canyon and VA/NC Areas) in the Mid-Atlantic to protect concentrations of small scallops until they reached a larger size.	+	+	+	+	+
Framework 11 (1999) - allowed the first scallop fishing within portions of the Georges Bank groundfish closed areas since 1994. This successful "experiment" with closing an area and reopening it for controlled scallop fishing further motivated the Council to shift overall scallop management to an area rotational system	+	+	+	H+	0
Amendment 10 (2004) - 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.	+	+	+	+	+
Amendment 11 (2008) - implemented a limited entry program for the general category fishery to control capacity and mortality. Each qualifying vessel received an individual allocation in pounds of scallop meat with a possession limit of 400 pounds. The fleet of qualifying vessels receives a total allocation of 5% of the total projected (LA and LAGC) scallop catch each fishing year. Also established separate limited entry programs for general category fishing in the Northern Gulf of Maine, limited access scallop fleet fishing under general category rules, and an incidental catch permit category.	+	+	+	Mixed	+
Amendment 15 (2011) - Implemented ACLs and AMs to prevent overfishing of scallops and yellowtail flounder; addressed excess capacity in the LA scallop fishery; and adjusted several aspects of the overall program to make the Scallop FMP more effective, including making the EFH closed areas consistent under both the scallop and groundfish FMPs for scallop vessels.	+	+	L- to L+	L+	+
Framework 23 (2012) - required a turtle deflector dredge to minimize impacts of the scallop fishery on sea turtles.	L+	0	+	L- to L+	0
Amendment 13 to the Multispecies FMP (2004) - implemented a range of measures to minimize the impacts of bottom trawling in the GOM, GB and SNE. Closed 2,811 square nautical miles (Habitat Closed Areas) to all bottom-tending mobile fishing gear, including scallop dredges	Mixed	+	0	Mixed	+

Actions	Scallop Resource	Habitat/ EFH	Protected Resources	Human Communities	Non-Target species
Amendment 16 to the Multispecies FMP (2010) - 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.	0	+	0	Mixed	+
Framework 44 to the Multispecies FMP (2010) - provided an incentive for scallop fishermen to reduce their YT bycatch in order to maximize scallop yield. Required that all limited access vessels be required to land all legal-sized yellowtail flounder, which will improve data quality.	0	0	0	L+	L- to L+
Framework 47 to the Multispecies FMP (2012) - removed the cap that limited the catches of yellowtail flounder in the Georges Bank access areas to 10 percent of the ACL. Implemented AMs for the scallop fishery if the overall ACLs for either Georges Bank or SNE/MA are exceeded or, if the total ACL for a given broad stock area is not exceeded but the scallop fishery exceeds its sub-ACL for that area by 50 percent or more. Enabled an in-season yellowtail flounder transfer to the groundfish fishery.	0	0	0	L- to L+	+
Framework 48 to the Multispecies FMP (2013) - implemented a sub-ACL for southern windowpane flounder to the scallop fishery, sub-ACL allocation of GB YT for the scallop fishery: 40% of the US ACL in 2013, and a set allocation of 16% for future years.	0	0	0	0	+
Framework 51 and 52 to the Multispecies FMP (2013 and 2014) – revised rebuilding programs for several GF stocks and revised annual catch limits, prohibit possession of YT by LA scallop fishery.	0	0	0	L- to L+	L- to L+
Reasonably Foreseeable Future Fishing Actions					
Omnibus Essential Fish Habitat Amendment (2015 or 2016)- Phase 2 would consider the effects of fishing gear on EFH and move to minimize, mitigate or avoid those impacts that are more than minimal and temporary in nature. Further, it would reconsider closures put in place to protect EFH and groundfish mortality in the Northeast Region.	ND	Likely +	ND	ND	Likely +
Framework 27 (2016) - will set specifications for fishing years 2016 and default measures for 2017.	Likely +	ND	ND	ND	ND
Atlantic Trawl Rule- would require the use of TEDs in trawl fisheries off the Northeast coast including the scallop trawl fishery.	ND	ND	ND	ND	ND

Note: ND = Not determined

Scallop Resource

The cumulative impacts of past, present, and reasonably foreseeable future management actions have resulted in substantial effort reductions in the scallop fishery. Sea scallop biomass increased considerably between from 1998 to 2004, and has been fairly steady since then, with modest decreases in 2013 and 2014. The resource was declared rebuilt in 2001, and has not been considered overfished since then. Overfishing has not been considered to be occurring since

2005, although it has been very close during a few years since 2005. It is estimated that area rotation management and allocating effort using ACL management will continue to prevent overfishing and provide a healthy resource for the scallop industry and nation for the long-term. In general, the actions in the foreseeable future are expected to have positive impacts on the scallop resource overall. In summary, the cumulative impacts of past, present and reasonably foreseeable future actions are positive for the scallop resource.

Physical Environment and EFH

Mobile bottom-tending gear (trawls and dredges) reduce the bottom habitat complexity (NRC 2002). When repeated over the long term trawling and dredging can also result in discernible changes in benthic communities and can result in loss of benthic productivity and thus biomass available for fish. These effects varied with sediment type. Sandy communities experience a low level of impact since there is higher natural disturbance. Hard-bottom areas such as bedrock, cobble and coarse gravel have a high degree of impact from mobile bottom-tending gear the substrate and attached epifauna are more stable.

The primary gear used in the scallop fishery is dredge gear; however, there is some limited use of otter trawl gear. 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 other actions that have reduced fishing effort and increased efficiency. The EFH Omnibus Amendment will most likely implement a new suite of measures to minimize impacts on habitat and EFH overall. Thus positive impacts are expected from this future action. Overall, the combination of past, present and reasonably foreseeable future actions is expected to reduce fishing effort and hence reduce damage to habitat; however, it is likely that fishing and non-fishing activities will continue to degrade habitat quality.

Protected Species

The primary protected species impacted by the scallop fishery is sea turtles. The sea scallop FMP has several measures that minimize impacts on sea turtles. A gear modification called turtle chains was implemented in 2006 to minimize impact of takes. General reductions in scallop fishing have also reduced takes. In general, scallop effort has declined (e.g., reduced DAS allocations and access area trips) over the years and catch per-unit-of-effort has increased dramatically under area rotation, implemented through Amendment 10 in 2004. In more recent years scallop effort has shifted from the Mid-Atlantic region to areas of Georges Bank, which 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.

Finally, FW23 to the Scallop FMP required all dredges greater than 10 feet 6 inches fishing in the Mid-Atlantic from May-October to use a turtle deflector dredge (TDD). The key elements of the turtle deflector dredge are: a forward cutting bar, a reduced number of bale bars, and reduced

spacing of struts. All these elements are expected to reduce the likelihood of a turtle passing under the dredge frame and getting stuck in the dredge frame.

Other non-scallop fishery actions that have been implemented over the last decade to protect sea turtles include: requiring turtle excluder devices (TEDs) in summer flounder trawls, gillnet mesh-size regulations, prohibitions on the use of pound net leaders, hook and bait requirements for pelagic longline gear, and regulations regarding how to handle sea turtles in such a manner as to prevent injury.

Overall, the cumulative impacts of past, present and reasonably foreseeable future actions are positive for protected resources, due to reduced gear interactions with sea turtles.

Human Communities

All actions taken under the Scallop FMP have had effects on human communities. None have specifically been developed to primarily address elements of fishing related businesses and communities, but many actions have included specific measures designed to improve flexibility and efficiency. 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 and Amendment 11 for the general category fishery 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. Future actions are expected to continue this trend. Therefore, the cumulative impacts of past, present and reasonably foreseeable future actions are positive for human communities.

Non-target Species

Actions taken by the Council in the Scallop FMP in the past and present are mostly positive on non-target species. Specific gear and area restrictions have reduced bycatch of various non-target species. Effort controls and increased efficiency of the fleet have also likely reduced impacts on non-target species. However, some non-target species are still overfished (see Table 142). Future actions are anticipated to continue rebuilding and maintaining sustainable stocks. There are several stocks that have been allocated a sub-ACL as bycatch in the scallop fishery (GB YT, SNE/MA YT and SNE/MA windowpane flounder). Having a sub-ACL and AMs likely reduces overall bycatch of these stocks in the scallop fishery. Therefore, the cumulative impacts of past, present and reasonably foreseeable future actions should yield positive impacts for non-target species in the long-term.

5.7.2.1 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,

ocean acidification, 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 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. 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. 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.

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 scallop resource, 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 Council has recently added a specific research priority to the Scallop RSA program that would support research in this subject. Specifically, proposals focused on research aimed at the effects of chemicals, water quality, and other environmental stressors on reproduction and growth of scallops is now in the “medium” priority category. Hopefully future research proposals will be submitted related to this subject to improve the current understanding of these potential impacts on the scallop resource and fishery.

Table 140 summarizes non-fishing impacts applicable to this action.

Table 140 - Summary of effects from non-fishing activities

Action	Description	Impacts on Scallops	Impacts on Habitat	Impacts on Protected Resources	Impacts on Human Communities	Impacts on Non-target species
P,Pr,RFFA Near shore human induced non-fishing activities	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.	**Negative at Site-** impacts primarily inshore	**Likely Negative Inshore** – may lead to destruction of habitat	**Negative at Site** – inshore species impacted by reduced water quality	**Likely Negative** - loss of fishing opportunities may occur	**Negative at Site** – inshore species impacted by reduced water quality
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	**Likely negative –** no data	**Likely negative –** no data	**Likely negative –** no data	**Likely negative –** no data	**Likely negative –** no data
P, Pr, RFFA Exotic Species	Introduction of non-indigenous and reared species	**Likely Negative**- while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species	**Likely Negative**- exotic species (ex., tunicates) found to adversely impact EFH and displace marketable and forage species	**Likely Negative**– ecosystem effects of non-native species	**Likely Negative**- while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species	**Likely Negative**– ecosystem effects of non-native species
RFFA Liquefied Natural Gas (LNG) terminals & Offshore Wind Energy Facilities	Transportation of natural gas via tanker to terminals located offshore and onshore, Construction of wind turbines to harness electrical power	**Likely Negative**– short-term disruption of habitat during construction could negatively impact organisms	**Negative** - habitat negatively impacted during construction phase and vessel traffic	**Negative** – may disrupt protected species during construction through increased noise and poor water quality	**Negative** - may restrict access to fishing areas **Positive –** location of LNG facilities offshore may protect or improve communities. Wind provides renewable clean energy	**Negative** – may disrupt species during construction through increased noise and poor water quality
P, Pr, RFFA Ocean acidification and warming	The acidification and warming of the Earth's oceans due to rising levels of carbon dioxide	**Likely Negative-** interferes with development, growth and survival of shellfish	**Likely Negative-** Coral are particularly sensitive to increasing acidity	**Likely Negative-** changes in food webs may occur but are not well understood	**Likely Negative-** if loss of fishing opportunities occur	**Likely Negative-** changes in food webs may occur but are not well understood
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		**Likely Negative**	**Likely Negative**	**Likely Negative**	**Likely Negative**	**Likely Negative**

Table 141 summarizes the effects of past, present and reasonably foreseeable future fishing and non-fishing actions on the VECs identified for Framework 26.

Table 141 – Summary effects of past, present and reasonably foreseeable future fishing and non-fishing actions on the VECs identified for Framework 26

VEC	Past Actions	Present Actions	Reasonably Foreseeable Future Actions	Combined Effects of Past, Present, Future Actions
Scallop Resource	**Positive** Combined effects of past actions have improved scallop biomass	**Positive** Current regulations continue to manage for a sustainable resource	**Positive** Future actions are anticipated to maintain a sustainable resource	**Positive** The scallop resource is rebuilt and sustainable stocks are expected to continue through current and future management
Physical Environment/ Habitat/EFH	**Mixed** Combined effects of effort reductions and better control of non-fishing activities have been positive. But fishing activities and non-fishing activities continue to reduce habitat quality	**Mixed** Effort reductions and better control of non-fishing activities have been positive. But fishing activities and non-fishing activities continue to reduce habitat quality	**Mixed** Future regulations will likely control effort and thus habitat impacts. But fishing activities and non-fishing activities continue to reduce habitat quality	**Mixed** Continued fisheries management will likely control effort and thus fishery related habitat impacts. But fishery and non-fishery related activities will continue to reduce habitat quality
Protected Resources	**Positive** Combined effects of past fishery actions have reduced effort and thus interactions with protected resources	**Positive** Current regulations continue to control effort, thus reducing opportunities for interactions	**Positive** Future regulations will likely control effort and decrease interactions through gear modifications	**Positive** Continued effort controls along with past fishery regulations will likely help stabilize protected species interactions. Some negative impacts from non-fishery related activities, but additional protections in place for turtles outweigh these negative environmental factors from non-fishing activities.
Human Communities	**Positive** Fishery resources have been rebuilt to support profitable industries and communities	**Positive** Current regulations continue to manage for sustainable stocks and profitable industries	**Positive** As effort controls and rotation management are maintained or strengthened, economic impacts will be positive	**Positive** Sustainable resources should support viable communities and economies
Non-Target Species	**Mixed** Combined effects of past actions have decreased effort, improved habitat protection, and implemented rebuilding plans when necessary. However, some stocks remain overfished	**Positive** Current regulations continue to manage for sustainable stocks, thus controlling effort on direct and discard/bycatch species	**Positive** Future actions are anticipated to continue rebuilding and strive to maintain sustainable stocks	**Short-term Negative** Several groundfish stocks are currently overfished, have overfishing occurring, or both **Long-Term Positive** Stocks are being managed to attain rebuilt status

Impact Definitions:
-Scallop resource, Non-target species, Endangered and Other Protected Species: positive=actions that increase stock size and negative=actions that decrease stock size
-Habitat: positive=actions that improve or reduce disturbance of habitat and negative=actions that degrade or increase disturbance of habitat
-Human Communities: positive=actions that increase revenue and well-being of fishermen and/or associated businesses and negative=actions that decrease revenue and well-being of fishermen and/or associated businesses

5.7.3 Baseline Conditions for Resources and Human Communities

For the purposes of a cumulative effects assessment, the baseline conditions for resources and human communities is considered the present condition of the VECs plus the combined effects of the past, present, and reasonably foreseeable future actions. Table 142 summarizes the added effects of the condition of the VECs (i.e., status/trends from Section 5.7.2) and the sum effect of the past, present and reasonably foreseeable future actions (from

Table 141 above). The resulting CEA baseline for each VEC is exhibited in the last column (shaded). In general, straightforward quantitative metrics of the baseline conditions are only available for the managed resources, non-target species, and protected resources. The conditions of the habitat and human communities VECs are complex and varied. As such, the reader should refer to the characterizations given in Sections 5.2 and 5.4. As mentioned above, this cumulative effects baseline is then used to assess cumulative effects of the proposed management actions in Table 143.

Table 142. Cumulative effects assessment baseline conditions of the VECs

VEC		Status/ Trends, Overfishing Occurring	Status/ Trends, Overfished	Combined Effects of Past, Present Reasonably Foreseeable Future Actions (Table 3)	Combined CEA Baseline Conditions
Scallop Resource		No	No	**Positive** The scallop resource is rebuilt and sustainable stocks are expected to continue through current and future management	**Positive** The scallop resource is not overfished or experiencing overfishing. Stocks are being managed to retain this status
Habitat		Fishing impacts are complex and variable and typically adverse (see section 4.2); Non-fishing activities had historically negative but site-specific effects on habitat quality.		**Mixed** – future regulations will likely control effort and thus habitat impacts . But non-fishing activities occurring. An omnibus amendment to the FMP with mitigating habitat measures is under development.	**Mixed** - reduced habitat disturbance by fishing gear but impacts from non-fishing actions, such as global warming, could increase and have a negative impact.
Protected Resources		Leatherback, Kemp's ridley and green sea turtles are classified as endangered under the ESA and loggerhead sea turtles are classified as threatened.		**Positive** – reduced gear encounters through gar modifications and additional management actions taken under the ESA.	**Positive** – reduced gear encounters through gar modifications and additional management actions taken under the ESA.
Human Communities		Fishery resources have been rebuilt to support profitable industries and communities		**Positive -** Sustainable resources should support viable communities and economies	**Positive -** Sustainable resources should support viable communities and economies
Non-Target Species		***Overfished?***	***Overfishing?***		
	GB Yellowtail Flounder	Unknown	Unknown	**Negative** – short term: Several stocks are currently overfished, have overfishing occurring, or both; **Positive** – long term: Stocks are being managed to attain rebuilt status. Continued management of directed stocks will also control incidental catch/bycatch	**Negative** – short term: Overharvesting in the past contributed to several stocks being overfished or where overfishing is occurring; **Positive –** long term: Regulatory actions taken over time have reduced fishing effort and with the addition, stocks are expected to rebuild in the future.
	SNE/MA Yellowtail Flounder	No	No		
	CC/GOM Yellowtail Flounder	*Yes*	*Yes*		
	GB Winter Flounder	*Yes*	*Yes*		
	GOM Winter Flounder	Unknown	No		
	SNE/MA Winter Flounder	*Yes*	No		
	Northern (GOM-GB) Windowpane Flounder	*Yes*	*Yes*		
	Southern (SNE-MA) Windowpane Flounder	No	No		
	Summer flounder (fluke)	No	No		
	Monkfish (Northern GB)	No	No		
	Monkfish (Southern GB/MA)	No	No		
	Barndoor skate	No	No		
	Clearnose skate	No	No		
	Little skate	No	No		
	Rosette skate	No	No		
	Smooth skate	No	No		
	Thorny skate	*Yes*	*Yes*		
	Winter skate	No	*Yes*		
	Atlantic Surfclam	No	No		
	Ocean Quahog	No	No		

5.7.4 Summary Effects of Framework 26 Actions

The alternatives contained in Framework 26 can be divided into two broad categories, as seen in Table 143 (summary of impacts from action – for a complete discussion of impacts please see Section 5.0 of document). First, this action set specifications for the different components of the scallop fishery in FY 2015 and default measures for FY2016. Second, the action considered a handful of other measures not directly related to specifications.

In general, the adoption of all of these measures will benefit the scallop resource because collectively they make it more likely that mortality targets are reasonable and will not be exceeded. The measures that constitute the Proposed Action (if based on the Preferred Alternatives) are designed to maintain the sustainability of the scallop resource. The preferred alternative changes have the potential to reduce incentive to catch SNE/MA WP as bycatch and have positive impacts on the stock. Overall the measures are expected to have negligible impacts on protected resources or habitat when compared to the No Action alternative. The specifications are likely to have positive impacts on communities in the short term and long term.

The estimate of YT catch associated with the specifications proposed in this action are projected to be above the 2014 sub-ACL allocations of those non-target species. In general, selecting an alternative that allocates scallop fishing effort with a high probability of exceeding its bycatch sub-ACL for a stock runs a greater risk of exceeding the overall ACL. This could have negative impacts on the bycatch stock and the GF fishery overall. It is important to note that bycatch projections are complex; they are based on variety of assumptions and in the last few years final catch estimates have been below projected catches in most cases.

The Council discussed that there may be more risk of exceeding the GB YT sub-ACL with the specification alternatives that increase scallop fishery DAS, but the Council was comfortable that there are several measures in place that will help the fishery reduce overall YT catch. For example, the voluntary bycatch avoidance program has been expanded to include open areas as well as windowpane flounder. By expanding the spatial area and number of species included in the program, overall bycatch of non-target species may be reduced if vessels voluntarily move from areas with higher bycatch rates reported through the avoidance program. In addition, there is a seasonal closure in CA2 that was recently modified to prevent scallop fishing in this relatively high bycatch area during the season with higher bycatch rates (mid-August through mid-November). Vessels have to fish CA2 trips around this season, potentially reducing YT catch overall. This seasonal restriction was in place in FY2013 and may have been one of the factors that reduced observed bycatch rates in 2013 compared to 2012.

In addition, there are several gear modifications that some vessels are using voluntarily that have been shown to reduce flatfish bycatch. Specifically, shorter aprons and reduced hanging ratios have been documented to reduce flatfish bycatch substantially. If approved in this action, dredge vessels will be prohibited from having more than seven rows of rings in the apron of their dredge in all waters west of 71° W, excluding access areas, as a proactive AM to reduce flatfish bycatch. Finally, GF FW51 includes a prohibition on possession of YT for LA vessels. Prohibiting possession eliminates any incentive to target YT while fishing for scallops.

All of these measures combined are expected to reduce bycatch overall in the scallop fishery, thus FW25 specifications are expected to have likely negligible impacts on non-target species and bycatch. Since all these measures are designed to help keep the fishery below the sub-ACL it is unlikely that the sub-ACL would be exceeded. In recent years in particular the scallop fishery has demonstrated the ability to reduce bycatch of stocks with sub-ACLs. Total bycatch of some of these stocks by the scallop fishery have declined. Specifically, in the last two years a transfer of unused GB YT bycatch has been transferred from the scallop sub-ACL to the GF sub-ACL.

Table 143 – Summary of Impacts expected on the VECs

Management Measure		VECs				
		Managed Resources	**Habitat Including EFH**	**Protected Resources**	**Human Communities**	**Non-target Species**
FISHERY SPECS	**OFL/ABC**	**Positive-** Updated OFL/ABC based on best available science and should not lead to overfishing	**Low Negative to Neutral -** Updated OFL/ABC are higher than No Action, thus higher potential area swept	**Neutral -** measures are not expected to create additional impacts to Protected Resources	**Short Term- Positive Long term- Positive** Proposed ABC values are similar to the No Action values and not great enough to have direct impacts on the fishery specifications set in the framework.	**Neutral-** measures are not expected to create additional impacts to non-target species
	OVERALL SPECIFICATIONS FOR LA AND LAGC VESSELS	**Positive** – Expected to prevent overfishing and maintains high total biomass, but total biomass even higher under No Action alternative	**Low negative to Low positive** – low negative impacts compared to No Action, but low positive compared to recent years (2012 and 2013) based on projected area swept estimates	**Low negative to Low positive** – low negative impacts compared to No Action, but low positive compared to recent years – higher Mid-Atlantic access area effort expected with potentially negative impacts, but inshore closure of ETA could have positive impacts	**Short Term- Positive Long term- Neutral to Positive** Landings, revenues and net economic benefits will be higher than No Action levels in the short- term and neutral to positive in the long-term depending on the discount rate used to estimate long-term net benefits.	**Neutral to Low negative** – Overall, neutral impacts expected compared to recent years in terms of area swept and projected catches of bycatch are within sub-ACL limits (except for high estimate for GB YT), and low negative compared to No Action since the allocations levels are very reduced under that alternative.

DECISIONS RELATED TO FISHERY SPECS	**ALLOCATION OF LAGC IFQ TRIPS IN ACCESS AREAS**	**Neutral –** Overall LAGC effort small fraction of total effort, some access may help spread effort out compared to No Action (no access)	**Neutral –** Overall LAGC effort small fraction of total effort, some access may help spread effort out compared to No Action (no access)	**Neutral to Low Negative –** Overall small proportion of effort so neutral impacts likely, low negative compared to NO Action which would not allocate any access in MA areas	**Positive -** Would provide opportunity to LAGC vessels to fish in more productive areas reducing fishing costs and optimizing the size composition of their landings by selectively fishing in areas abundant with larger scallops.	**Neutral –** Overall LAGC effort small fraction of total effort, some access may help spread effort out compared to No Action (no access)
	ADDITIONAL MEASURES TO REDUCE IMPACTS ON SMALL SCALLOPS (CREW LIMITS IN ACCESS AREAS)	**Neutral to low positive** – May reduce incidental and discard mortality on small scallops from highgrading, but overall not expected to have substantial behavior effect	**Neutral to low positive –** If unlimited crew limit (No Action) leads to highgrading could increase overall area swept and impacts on EFH	**Neutral to low positive –** If unlimited crew limit (No Action) leads to highgrading could increase overall area swept and impacts on EFH	**Short-term low negative, long-term positive –** Could increase costs by reducing the flexibility to adjust crew size for each resource area. The long-term economic benefits are expected to outweigh the short-term cost by limiting potential for highgrading and increasing yield over the long-term.	**Neutral to low positive**– Neutral since relatively small amount of effort, but if highgrading results under No Action higher area swept, thus neutral to low positive impacts if crew limit imposed.
	ALLOCATION METHOD FOR MID-ATLANTIC ACCESS AREA TRIPS IN 2015 ONLY	**Low negative to low positive** – Depends on fleet behavior changes	**Low negative to low positive** – Depends on fleet behavior changes and resource conditions	**Low negative to low positive** – Depends on fleet behavior changes and resource conditions	**Short-term positive, long-term low negative to low positive –** Positive economic impacts on scallop vessels in the short-term by providing the flexibility to fish access areas trips in areas with the highest catch rates. Long-term impacts depend on fleet behavior and resource conditions.	**Low negative to low positive** – Depends on fleet behavior changes and resource conditions
	ADJUSTMENTS TO PROVISIONS RELATED TO ALLOCATING AND MONITORING ACCESS AREA TRIPS	**Neutral** – Administrative measure so neutral impacts	**Neutral** – Administrative measure so neutral impacts on EFH	**Neutral** – Administrative measure so neutral impacts	**Neutral** – Administrative measure so neutral impacts	**Neutral** – Administrative measure so neutral impacts

OTHER MEASURES	**MEASURES TO ALLOW FISHING IN STATE WATERS AFTER FEDERAL NGOM TAC IS REACHED**	**Neutral –** Overall NGOM effort very small fraction of total effort, states have measures in place to limit effort so overall impacts neutral compared to No Action	**Neutral to low negative –** No impact on EFH in federal waters, but could allow fishing in state waters after federal TAC reached.	**Neutral –** Sea turtles are not typically found in the NGOM thus no expected impacts from any of these measures	**Low positive –** Allowing those vessels with both state and federal NGOM licenses to fish for scallops in state waters after the NGOM federal TAC is reached could have positive impacts on the revenues and profits of these vessels.	**Neutral to low negative –** No impact on non-target species in federal waters, but could allow fishing in state waters after federal TAC reached.
	MEASURES TO MAKE TURTLE REGULATIONS CONSISTENT	**Neutral –** Not expected to impact fishing effort levels or patterns compared to No Action	**Neutral –** Not expected to impact fishing effort levels or patterns compared to No Action	**Neutral –** Overall, neutral benefits expected. Any reduction in the size of the area that chain mats would be required (east of 71W) is balanced by an extension of the season that TDD would be required (month of November).	**Neutral to low positive -** Reducing the regulatory complexity and the administrative costs could have slightly positive impacts on the overall economic benefits from the fishery.	**Neutral –** Not expected to impact fishing effort levels or patterns compared to No Action. Preferred alternative would increase requirement for TDD one month longer, and some species shown to have lower bycatch rates with TDD, but low fishing levels in Nov.
	MEASURES TO MODIFY OR ELIMINATE PROACTIVE AMs IN PLACE TO REDUCE FLATFISH BYCATCH	**Low Positive –** Shorter apron more selective for larger scallops, but if escapement increases there may be some level of increased area swept with potentially higher impacts on incidental mortality	**Neutral –** Gear modification is related to top of dredge, which does not contact the ocean floor. So long as it does not cause substantial increase in area swept EFH impacts should be neutral.	**Neutral –** Gear modification is not expected to have any impact on PR directly. So long as it does not cause substantial increase in area swept impacts on PR should be neutral.	**Short Term - Low negative** economic impacts due to reduced flexibility and potentially lower landings (marginally) due to fishing with modified gear. **Long Term – Positive** economic benefits on the resource if it enables vessels to reduce bycatch and reduce the likelihood that reactive AMs are triggered.	**Low Positive –** Shorter aprons shown to reduce flatfish bycatch. If vessels have to fish longer some of these beneficial impacts could be reduced if total fishing time increases.

	MEASURES TO ALLOW A LA VESSEL TO DECLARE OUT OF FISHERY ON RETURN TO HOMEPORT	**Neutral –** Impacts to resource expected to be neutral if DAS adjustment applied is adequate	**Neutral –** Impacts to resource expected to be neutral if DAS adjustment applied is adequate	**Neutral –** Impacts to resource expected to be neutral if DAS adjustment applied is adequate	**Neutral –** Distributional impacts benefiting vessels homeported in VA/NC but reducing allocations for vessels in other ports, with neutral impacts overall on the scallop fishery**.**	**Neutral –** Impacts to resource expected to be neutral if DAS adjustment applied is adequate
	MODIFY REGULATIONS RELATED TO FLARING BAR PROVISION FOR TURTLE DEFLECTOR DREDGE	**Neutral –** Administrative measure and no impacts on selectivity of dredge from this proposed modification	**Neutral –** Administrative measure so neutral impacts	**Neutral –** Administrative measure so neutral impacts	**Neutral –** Administrative measure so neutral impacts	**Neutral –** Administrative measure so neutral impacts

5.7.4 Cumulative Effects Analysis

The regulatory atmosphere within which Federal fishery management operates requires that management actions be taken in a manner that will optimize the conditions of resources, habitat, and human communities. Consistent with NEPA, the M-S Act requires that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. Given this regulatory environment, and because fishery management actions must strive to create and maintain sustainable resources, **the overall cumulative effects of the preferred alternative on all VECs should yield non-significant neutral to low positive impacts**. This is not to say that some aspects of the various VECs are not experiencing negative impacts, but rather that when taken as a whole and compared to the level of unsustainable effort that existed prior to and just after the fishery came under management control, the overall long-term trend is positive.

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). Table 143 provides as a summary of likely cumulative effects found in the various groups of management alternatives contained in Framework 25. The CEA baseline that, as described above in Table 142, represents the sum of the past, present, and reasonably foreseeable future (identified hereafter as "other") actions and conditions of each VEC. When an alternative has a positive effect on a VEC, for example, reduced fishing mortality on a managed species, it has a positive cumulative effect on the stock size of the species when combined with the "other" actions that were also designed to increase stock size. In contrast, when an alternative has a negative effect on a VEC, such as increased mortality, the cumulative effect on the VEC would be negative and tend to reduce the positive effects of the "other" actions. The resultant positive and negative cumulative effects are described below for each VEC.

Scallop Resource

As noted in Table 142, the combined impacts of past federal fishery management actions have rebuilt the scallop resource and increased scallop biomass. The actions proposed by FW 26 are expected to have positive to neutral impacts and continue the sustainability of the scallop resource. The proposed ABC and fishery specifications in this action are well below the OFL and are expected to prevent overfishing. Setting sustainable ACLs and specifications will have positive impacts on the scallop resource over the long-term. The other measures proposed in this action are expected to have primarily neutral impacts on the scallop resource. 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.**

Habitat, Including EFH

As noted in Table 142, the combined impacts of past federal fishery management actions have had positive impacts on EFH. In terms of reasonably foreseeable future actions, there are several EFH actions that may have potentially positive effects on EFH. In addition, better control of non-fishing activities has also been positive for habitat protection. However, both fishing and non-fishing activities continue to decrease habitat quality. None of the measures in FW 26 are expected to have substantial impacts on habitat or EFH. The proposed specifications may result in reduced area swept compared to recent years, thereby providing some minor short-term benefits to habitat. Overall, the combination of past, present, and future actions is expected to reduce fishing effort and hence reduce damage to habitat; however, it is likely that fishing and non-fishing activities will continue to degrade habitat quality. The other measures proposed in this action 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 impacts on habitat and EFH.**

Protected Resources

As noted in Table 142, the combined impacts of past federal fishery management actions have had positive to neutral effects on protected resources. However, sea turtles, have been, are, and will continue to be, negatively impacted by a variety of fishing and non-fishing activities. 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. The direct and indirect effects of the measures under consideration in Framework 26 are expected to have low negative to low positive impacts on protected resources. The proposed specifications may lead to reduced area swept per catch, and thus reducing interactions with sea turtles, but more overall effort is expected in the Mid-Atlatnic region compared to GB in 2015. The other measures proposed in this action are expected to have primarily neutral impacts on protected resources. 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 non-significant neutral impacts on protected resources.**

Human Communities

As noted in Table 142 the past federal fishery management actions have adjusted open area DAS allocations, implemented trip limits and allocations for the access areas and rotation area management. These past actions have had positive impacts on the scallop industry by increasing the revenues, producer and consumer surpluses and net benefits.

The direct and indirect effects of the measures under consideration in Framework 26 are expected to be positive both in the short-term and over the long-term because prevention of overfishing will keep scallop stock biomass, catches and revenues at sustainable levels benefiting the communities engaged in scallop fishing and related industries (Table 143).

The actions proposed by Framework 26 are expected to increase fleet revenues, profits and total economic benefits compared to No Action and Status Quo both in the short-term. The total scallop revenue for the preferred action would exceed the No Action levels by $307.3 million and Status Quo levels by $93.1 million in 2015 fishing year. Total economic benefits will exceed No Action levels by $306.3 million and Status Quo levels by $94.6 million in 2015 fishing year. Over the long-term, present value of the cumulative benefits for the preferred alternative will exceed No Action levels by $30.6 million using a 7% discount rate but slightly lower than the No Action by 9.4 million if a 3% discount rate is used. However, Status Quo scenario provides a better baseline for the estimation of impacts on the economy for the reasons discussed in Section 5.4.2. Over the long-term, present value of the cumulative benefits for the preferred alternative will exceed Status Quo levels by $62.9 million ($55.7 million) using a 7% (3%) discount rate. Therefore, net cumulative impacts of the proposed measures and the past actions on revenues and economic benefits from the scallop fishery would be positive in 2015. As a result, cumulative economic benefits, which measure the sum of benefits from previous and preferred alternatives, are expected to be positive.

In terms of reasonably foreseeable future actions, there is one scallop related action that is expected to have positive impacts overall, Framework 27 and several other actions related to EFH and protected resources that may have impacts that are not determined yet but could be potentially low positive or low negative on fishery-related businesses and communities. Therefore, the overall effects of reasonably foreseeable future actions on the fishery-related businesses and communities are neutral (Table 143). In addition, the effects of non-fishing activities on the fishery-related businesses and communities are mostly potentially negative (**Table 140**).

In summary, 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

As noted in Table 142, the combined impacts of past federal fishery management actions 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. The actions proposed by Framework 26 are expected to continue this trend. FW 26 includes measures to proactively help the scallop fishery reduce flatfish

bycatch in all areas, which should have positive impacts on those resources. 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. The other measures proposed in this action are expected to have primarily neutral impacts on non-target species. 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. **Overall, the cumulative effects should yield non-significant neutral to low positive impacts on non-target species.**

Table 144 - Summary of cumulative effects of the preferred alternative

	Scallop Resource	**Physical Habitat/EFH**	**Protected Resources**	**Human Communities**	**Non-Target Species**
Direct/Indirect Impacts of Preferred Alternative	Likely Positive to Neutral	Neutral	Neutral	Likely Positive to Neutral	Neutral to Likely Positive
Combined Cumulative Effects Assessment Baseline Conditions	Positive	Mixed	Positive	Positive	Short term Negative Long term Positive
Cumulative Effects	Non-significant Positive	Non-significant Neutral	Non-significant Neutral to Positive	Non-significant Positive	Non-significant Neutral to Low Positive

6.0 COMPLIANCE WITH APPLICABLE LAW

6.1.1 Magnuson-Stevens Fishery Conservation and Management Act

6.1.1.1 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.

The OFL/ABC/ACLs developed in this action are consistent with the ACL structure adopted under Amendment 15 to prevent overfishing. Specifically, OFL is set at Fmsy (updated to 0.48 from the recent benchmark assessment) and the ABC control rule sets ABC at the F rate estimated to have a 25% change of exceeding OFL (also recently updated to 0.38). In the

Scallop FMP ACL is equivalent to ABC, after removing discard and incidental mortality, and the fishery allocations (ACT) are set at or below the fishing level estimated to have a 25% chance of exceeding ABC, which is currently 0.34 for this fishery.

This action included four overall specification alternatives with several sub-options. They are all slightly different in terms of the days-at-sea allocations for the fishery and level of access in several scallop access areas. The No Action alternative includes DAS only, default measures set in Framework 25. Alternatives 2 allocations are based on three principles used in this fishery to set target catches. Alternative 3 considered several different closed areas to protect small scallops. Finally, Alternative 4 included reduced access in some access areas to reduce impacts on small scallops.

The preferred alternative, Alternative 3, with Option 2 and Option 3 closed areas has an overall estimate of F of 0.22. Since this level is well below the thresholds set in this plan these specifications are expected to prevent overfishing. The preferred alternative does provide more landings for the fishery in 2015 compared other alternatives considered and is expected to optimize yield for the US scallop fishery in the long term.

All specification alternatives have the same LAGC allocations (IFQ, NGOM and Incidental permits). The LAGC IFQ is the same since it is based on the total ACL for the fishery, which is the same under all alternatives. The LAGC sub-ACL for this action is 1,348mt, an increase compared to recent years.

In this action the Council had available updated estimates of fishing mortality from the recent benchmark assessment through 2013 (SARC 59). Section 4.1. includes a summary of the recent assessment and status of the fishery. Total biomass was estimated to be 133,000 mt in 2013 and overall F was estimated at 0.32. That biomass estimate is well above the overfishing threshold of 48,240 mt, and the overfished threshold of 0.48 (OFL). **Therefore, overfishing is not occurring and this resource is not overfished**.

(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. Although there are some limitations to the data used in the analysis, these data are considered to be the best available.

In addition, the biological projections are based on the CASA model that is expected to generate more accurate results using a wide variety of data sources. This model uses information from all available sources, including surveys conducted outside of the NMFS federal scallop survey. Specifically, results from three other scallop surveys were integrated into the overall CASA model: optical survey by SMAST, dredge survey from VIMS, and optical survey from HABCAM. The CASA model was reviewed and approved for management use in the 2007

scallop assessment. This in addition to the Scallop Area Management Simulator (SAMS) model and Swept Area Seabed Impact (SASI) model used for habitat analysis are current, peer-reviewed modeling methods.

Lastly, the Council's SSC reviewed and approved the Acceptable Biological Catch (ABC) for this fishery for 2015 and 2016(default) based on updated analyses of biological uncertainty in the parameters used to assess the scallop resource. All of these models were recently updated for status determination and development of new reference points in July 2014 at the Stock Assessment Workshop in Woods Hole, MA (NEFSC, 2014). Therefore, this is considered the best available science to set MSY in order to prevent overfishing.

(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. This action includes allocation measures, but they do not discriminate between vessels from various states. Limited access vessels are relatively mobile and are expected to fish in various access areas. Limited access vessels are permitted to trade access area trips with other vessels; therefore, if an area is far from their homeport and they do not want to fish in that area, they can trade for a trip closer to their homeport. In 2015 the access areas open to the fishery are all in the Mid-Atlantic, but the boundaries within the areas are flexible. A vessel does not have to fish exclusively in one area per trip. This will add flexibility for the fleet, and enables vessels to fish access area trips in a larger area overall. General category vessels are not allocated individual access into access areas; it is a fleet-wide allocation of trips for that fishery. Thus, general category vessels can decide to participate in an access area program or not. Therefore, if a vessel is relatively small and cannot fish far offshore or travel great distances to fish in an access area, that vessel can fish its allocation in open areas.

This action also includes a measure to allow LA vessels to declare out of the fishery on open area trips when they are south of Cape May (Section 2.8). Any LA vessel that is interested in landing in ports south of Cape May, NJ, can take advantage of this measure, so long as they have the required state permits to land scallops. While this measure is expected to have differential impacts on vessels, one of the reasons it was developed is to address that the DAS system overall has had differential impacts on vessels to start with. The VMS system is based the Co Reg line, which was not drawn for purposes of managing the scallop fishery or other fisheries. It was

originally drawn to separate where inshore navigational rules are applied versus international rules, and the distance from shore varies along the coast depending on where navigable waters are. Overtime the difference in the distance from shore has had cumulative effects on some fisheries, particularly fisheries in the Mid-Atlantic where the line is closer to shore. For the most part commercial fishing vessels are unable to safely steam inshore of this line south of Cape May. As a consequence, vessels in DAS managed fisheries that steam back to ports south of Cape May are charged for that time, compared to other vessels from other ports that for the most part are able to stay inside of the VMS demarcation line for the majority of their steam back to port.

When these differences are taken into account an overall adjustment will be applied to help ensure that overall effort does not increase as a result of this measure. The analyses used in this action estimate that the equivalence of about 25 vessels from ports in VA and NC currently return open area catch to ports in VA. When the time from Cape May south is taken off the clock it is estimated to cost about 0.14 DAS overall for the fleet, or 3.5 hours per vessel. When that is converted into dollars it is estimated to cost about $4,000 per vessel for the DAS adjustment, but vessels that would declare out of the fishery and steam to ports south are expected to gain about $50,000 per year from the DAS savings. In 2013, the estimate of total revenue per FT LA vessel was about $1.4 million dollars, and that is expected to increase in future years as landings increase. Therefore, the potential benefit for some vessels, as well as the cost for the entire fleet from the DAS adjustment, is considered relatively minor compared to the overall revenue for the vessel.

When the Council discussed this measure at the final Council meeting it was voiced that because the LA scallop industry overall developed and supported this measure it must be considered fair by the fleet. One speaker commented that the measure would help bring a level of fairness back to the southern fleet for open area trips. Others noted that some vessels will “lose” as a result of this measure due to the DAS adjustment, and others will win from future DAS savings, but the process has worked hard to develop a solution that the industry is satisfied with and is enforceable.

(5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The Preferred Allocation Alternative should promote efficiency in the utilization of fishery resources by allocating effort in areas with higher catch rates. In general area rotation promotes efficiency by increasing catch rates and reducing area swept, which reduce fishing time and increase profits for the fishery.

(6) Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

The Proposed Action takes into account variations among and contingencies in fisheries, fishery resources, and catches. This action enhances the ability of the FMP to adapt to changing resource conditions. The access program is expected to allow the FMP to stabilize fishing effort

in open areas, and potentially allowing the FMP greater flexibility to achieve optimum yield through rotational area management in the future. Natural resources vary and adjusting fishery specifications on a regular basis allows for relatively rapid changes to adjust to varying resource conditions. Variations in annual catch and allocations are still to be expected under area rotation, a system that is designed to optimize yield from variable recruitment patterns by area and year.

(7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The Council considered the costs and benefits associated with the Proposed Action when developing this action. The proposed action does not introduce any new measures that duplicate measures already in place. Area rotation and DAS controls were implemented in 1994; the full area rotation program was implemented in June 2004. Both these types of measures are necessary components of the FMP to achieve the annual mortality targets and prevent the stock from becoming overfished. The increase in the average size of scallops landed, a primary objective of both the FMP and the proposed action, continues to be a major factor that minimizes harvesting costs. 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. There are several specific measures proposed that would reduce costs and avoid unnecessary duplication related to monitoring and allocating access area effort (Section 2.4). These modifications are expected to improve the overall administration of access areas and reduce burdens for both the industry and the Agency.

(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. The economic and social impacts, which affect fishing communities, are analyzed and discussed in Sections 5.4 and 5.5. The proposed action will not change these impacts anticipated under Amendment 10.

The proposed action, however, is not expected to jeopardize the sustained participation of fishing communities that have depended on the scallop resource. The area rotation and DAS adjustments are expected to continue to ensure a healthy resource that will be able to support historical levels of participation by fishing communities.

The aggregate economic impacts of the preferred alternative on net economic benefits are expected to be positive in the short-term compared both to the No Action and Status Quo levels. Preferred alternative would result in highest landings (47.4M), revenues ($578.1 million) and total economic benefits ($563.1 million) in 2015 compared to the other alternatives considered in

this Framework. The total economic benefits of the preferred alternative would exceed the No Action levels by $314.6 million and the SQ levels by $103.3 million in the 2015 fishing year in terms of current (2014) prices (**Table 100**). Over the long-term from 2015 to 2028 fishing years, the present value of the revenues for the preferred alternative will exceed No Action values by about $28.3 million ($59.7 million) using a discount rate of 3% (7%). Total economic benefits of the preferred alternative is estimated to be higher than No action values by $27.1 million using a discount rate of 7%, but marginally lower than No Action values by $0.7 million if the future benefits were discounted at a lower rate, at 3%. Total economic benefits of the preferred alternative is estimated to be higher than Status Quo values by $59.4 million ($64.4 million) using a discount rate of 7% (3%) over the long-term (**Table 101** of Section 5.4.2).

The economic impacts on the LAGC fishery are the same under all the specification alternatives considered since the IFQ allocation remains the same under all the alternatives,1,348 mt. This total catch is slightly higher than No Action levels under default measures for (1,274 mt).

Alternative 2.5.3 is proposed to allow vessels with a federal permit to participate in state water fisheries if the NGOM hard TAC is reached. This measure recognizes that state water fisheries are an important component of revenue for some vessels in the NGOM as well as the relatively small fishing communities in Massachusetts and Maine.

Alternative 2.8.3 is proposed to minimize negative impacts on some vessels and recognize the importance scallop revenues have in coastal communities in the southern range of the fishery (i.e. Virginia). Scallop landings have declined in some ports farther from primary fishing grounds, and this measure was developed to address one of the factors that may have contributed to the decline (DAS costs for steaming back to ports in the southern range of the fishery).

(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 minimized as a result of efficiencies under the overall area rotation system, which has increased scallop landings but reduced overall area swept. 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.

The proposed action includes a proactive accountability measure that will reduce the number of rows allowed in the apron of all scallop dredges. Analyses contained in this document (Section 5.6) support that the gear modification is expected to reduce bycatch of flatfish, including windowpane and yellowtail flounder.

The Preferred Alternative for fishery specifications, Alternative 3 with closure options 2 and 3, does have a projected catch of GB yellowtail flounder that is potentially close to, or even higher than the sub-ACL allocated to the scallop fishery in 2015, using the higher estimate. Therefore, there is a potential risk that the scallop fishery may exceed their sub-ACL and cause the total ACL to be exceeded (Section 5.6.2). It is noted that bycatch projections can vary greatly from actual catch, and have been overestimated in the past. Furthermore, there are several measures in

place that may help reduce bycatch in the scallop fishery including a voluntary bycatch avoidance program, potential gear modifications, and elimination of the requirement to land legal sized YT. The total estimate of area swept from these specifications are lower than recent years; therefore, the preferred alternative should to the extent practicable, minimize bycatch.

A summary of the impacts of these measures are analyzed and described in Section 5.6. Bycatch of protected species is analyzed in Section 5.3.

(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. Fishing is dangerous all times of the year, but some of the more restrictive alternatives would limit when vessels could fish in warmer months.

6.1.1.2 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 in this document describes 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.

The SSC reviewed the most recent work on assessing this resource and determined that acceptable biological catch be set at 31,459 mt in 2015 and 37,903 mt in 2016 (default), including an approximate 6,000 mt for non-yield fishing mortality (discards and incidental mortality) in both years. Therefore, the overall ABC for the fishery, excluding discards and incidental mortality is 25,352 mt in 2015 and 31,807 mt in 2016 (default). 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.

This level was recommended by the Science and Statistical Committee (SSC) and various sources of scientific uncertainty were considered when setting this value. ABC calculations were based on the updated hybrid overfishing alternative proposed in Amendment 15. Under this OFD, the overfishing threshold will remain as status quo (spatially averaged F = 0.48 based on updated assessment results). Fishery specifications are based on the ACT, or annual catch target. The control rule for target catches used in this FMP is that the spatially combined target fishing mortality must be no higher than that which gives a 25% probability of exceeding the ABC. This current estimate is a maximum of 0.34 for the ACT in the Scallop FMP. Target fishing mortalities can be set below these limits but not above them. Under these principles, the probable future condition of this fishery is sustainable.

Current domestic landings and processing capabilities are around 50-60 million lbs. Total landings have been above that level in some years since 2004, and are projected to be close to 47 million pounds for 2015 for the proposed action (Section 5.4.3). However, the actual landings could be higher or lower than this amount depending on the actual recruitment and scallop stock biomass in the open areas. In the past, actual landings of scallops exceeded the projected landings, but in 2014 they may be lower than projections.

(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 general category 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 action proposed in this framework does 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 t does not further address or modify those EFH definitions. There are no additional impacts to the physical environment or EFH expected from the action proposed in this framework.

(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, Amendment 15, Framework 16, and Frameworks 18 - 25). Any additional impacts from measures proposed in this action on fishery participants are summarized in Section 5.4 and 5.5. 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.

(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 2014 and are presented and explained in Section 4.1.1.1 of this document. Under this OFD, the overfishing threshold will be based on the spatially averaged $F = 0.48$. 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. ABC for this fishery is set by applying 0.38, the fishing mortality rate that has a 25% chance of exceeding the OLF. Finally, the target fishery specifications are set below ABC at a fishing mortality target that has a 25% chance of exceeding the ABC (ACT = 0.34). The preferred alternative for this action has an overall spatially averaged fishing mortality target of 0.22.

(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.

(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 Proposed Action does not address recreational fishing regulations. There are no substantial recreational or charter fishing sections in the scallop fishery. 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 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 proposes increased catch levels from FY2014, and closer to the average from more recent years (50 million pounds). The measures included in this action are expected to have positive economic impacts in the short- term (2015) compared both to the No Action alternative and Status scenario. The proposed measures are expected to have positive economic impacts over the long-term (2015-2028) as well compared to the Status Quo scenario. The economic impacts of the proposed measures in the long-term (2015-2028) will be either positive or marginally negative compared to the No Action alternative depending on the discount rate that is used to calculate present value of the long-term benefits (**Table 101** of Section 5.4.2). The proposed specification measures will affect the vessels with limited access permits participating in the sea scallop fishery in similar proportions since each vessel will receive the same number of open areas DAS and access area trip allocations according to their categories they belong, and the limited access general category IFQ vessels receive 5.5% of the total ACL. As a result, the proposed specification measures will have proportionally similar impacts on revenues and profits of each vessel compared to No Action levels.

The proposed action recommends allocating access area trips in a flexible manner, by allowing each vessel to decide which MA access area to fish in. This flexibility treats all vessels fairly. 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 overall FMP or participants in the federal fishery.

(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 proposed action includes catch limits for certain sectors of the scallop fishery, as well as effort controls for the rest of the fishery that is not under a direct TAC or quota. This action covers 2015 and 2016 (default) only. Measures have been set well below the fishing mortality threshold of 0.48, so overfishing is not expected to occur.

Amendment 15 was approved in 2011, which brought the Scallop FMP in compliance with new annual catch limits required under the reauthorized Magnuson-Stevens Act of 2007. The ABC was set in this action under the same principles and the respective values are: 31,459 mt in 2015 and 37,903 mt in 2016 (default). Fishery allocations under the proposed action are set at F = 0.22 overall, and the annual catch from all areas associated with that fishing mortality level is projected to be around 47 million pounds in 2015 under the proposed action.

6.1.2 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.

6.1.2.1 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 proposed action);
- The environmental impacts of the proposed action 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 ix;
- 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 proposed action are described in Section 5.7;
- A list of preparers is in Section 6.1.2.3.

6.1.2.2 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 proposed action. 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 proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?

Response: No, the proposed action is not reasonably expected to jeopardize the sustainability of the sea scallop resource. Section 5.1 summarizes the overall impacts of this action on the target species. This action sets specifications for fishing years 2015 and 2016 (default) by modifying the rotational area management program implemented by Amendment 10. None of the modifications are expected to cause increases in fishing mortality above the overfishing threshold that would jeopardize the sustainability of the scallop resource. The action is designed to be consistent with the mortality targets adopted in Amendment 10 and the overall target has been set at a level less than ABC taking into account sources of biological and management uncertainty, as proposed in Amendment 15.

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

Response: No, the proposed action 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 5.6 summarizes the overall impacts of this action on non-target species. In general, this action does not increase overall fishing effort above levels assessed in Amendment 15, thus there is no indication that impacts on non-target species will be different.

Due to the distribution and behavior of yellowtail flounder, bycatch in the scallop fishery has been documented and is expected to continue under this action. The estimate of GB YT catch associated with the specifications proposed in this action are projected to be at or above the 2015 sub-ACL, and below the sub-ACLS for the other allocated stocks (SNE/MA YT and southern WP). In general, selecting an alternative that allocates scallop fishing effort with a high probability of exceeding its bycatch sub-ACL for a stock runs a greater risk of exceeding the overall ACL. This could have negative impacts on the bycatch stock and the GF fishery overall. It is important to note that bycatch projections are complex; they are based on variety of assumptions and in the last few years final catch estimates have been below projected catches in most cases. Also, actual catch of GB YT may be below the sub-ACL because there is a low

estimate of GB YT under the proposed action that projects less overall catch. The low estimate is based on a more realistic projection of where open area effort is going to go in 2015.

(3) Can the proposed action 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 proposed action is not reasonably expected to cause substantial damage to the ocean and coastal habitats and/or EFH. Section 5.1 summarizes the overall impacts of this action on habitat and 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 proposed action be reasonably expected to have a substantial adverse impact on public health or safety?

Response: No, the proposed action 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.

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

Response: No, the proposed action 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 proposed action on endangered and threatened species. Overall, none of the proposed measures are expected to have a significant impact on these species as fishing behavior is not expected to change in any substantial way. There is a measure proposed that would make the turtle deflector dredge and turtle chain mat regulations consistent in terms of spatial boundary and season. Overall this measures is expected to have neutral impacts on sea turtles because any reduction in the size of the area that chain mats would be required (east of 71W) is balanced by an extension of the season that TDD would be required (month of November). Used together, chain mats and TDDs are thought to increase the conservation benefit to turtles, because chain mats help reduce the impact to turtles from interactions occurring in the water column, and the TDD helps reduce the impact to turtles from interacting with the dredge frame on the bottom.

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

Response: The proposed action 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. In general, this action proposes to maintain fishing mortality at levels

similar to those established under Framework 25 (2014 fishing year); therefore, 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 proposed action improves flexibility and performance of the rotational area management program, which has 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 proposed action.

(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 and the proposed specifications are based on the best available science. Section 5.0 assesses the expected impacts of the preferred alternative on the human environment, and Section 5.7 describes the potential cumulative impacts of this action on the human environment.

(9) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?
Response: It is possible that historic or cultural resources such as shipwrecks could be present in the area where the scallop fishery is prosecuted. However, vessels try to avoid fishing too close to wrecks due to the possible loss or entanglement of fishing gear. Therefore, it is not likely that the proposed action would result in substantial impacts to unique areas.

(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 been managed under this FMP since 1982; therefore, the likely effects on the human environment are well understood.

(11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?
Response: No, the proposed action 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 proposed action 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, bycatch, 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 proposed action will modify the rotational area management program, which will have positive impacts on the long-term success of the program at preventing overfishing and achieving optimum yield on a continuing basis.

(12) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?
Response: Although there are shipwrecks present in areas where fishing occurs, including some registered on the National Register of Historic Places, vessels try to avoid fishing too close to wrecks due to the possible loss or entanglement of fishing gear. Therefore, it is not likely that the proposed action would adversely affect the historic resources.

(13) Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?
Response: No, the proposed action is not reasonably expected to result in the introduction or spread of a nonindigenous species. The only nonindigenous species known to occur in any substantial 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 proposed action 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 proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about future consideration?
Response: No, the proposed action is not likely to establish a precedent for future action with significant effects, and it does not represent a decision in principle about future consideration. This action modifies an existing rotational area management program that is designed to be reviewed and adjusted every one to two years. Area rotation was established under Amendment 10, which was an EIS that assessed the long-term impacts of area rotation.

(15) Can the proposed action reasonably be expected to threaten a violation of Federal, State or local law or requirements imposed for the protection of the environment?
Response: No, the proposed action 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 proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?
Response: No, the proposed action 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, 5.6, and 5.7). In general, this action will modify the rotational area management program, which will 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 26 to the Sea Scallop Fishery Management Plan, it is hereby determined that Framework 26 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 proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

Regional Administrator, Greater Atlantic Regional Fisheries Office, NMFS — Date 4/9/15

6.1.2.3 List of Preparers; Point of Contact

Questions concerning this document may be addressed to:

Mr. Thomas A. Nies, Executive Director
New England Fishery Management Council
50 Water Street, Mill 2
Newburyport, MA 10950
(978) 465-0492

Additional copies of this EA can be requested via the above contact or through the Council's website at http://www.nefmc.org/scallops/index.html

Framework Adjustment 26 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 is included in Table 145.

Table 145 – List of Scallop PDT members (2013)

Scallop Plan Development Team
Deirdre Boelke, PDT Chair, NEFMC
Lt. Josh Boyle, USCG
Matthew Camisa, MA DMF
Trisha Cheney, ME DMR
Dr. William DuPaul, VIMS
Travis Ford, NMFS, SFD
Emily Gilbert, NMFS, SFD
Ben Galuardi, NMFS APS
Dr. Demet Haksever, NEFMC
Dr. Dvora Hart, NEFSC, Population Dynamics
Brian Hooper, NMFS, NEPA
Chad Keith, NEFSC, Observer Program

Emily Keiley, SMAST
Kevin Kelly, ME DMR
Kimberly Murray, NEFSC, Protected Species
Dr. Julia Olsen, NEFSC, Social Science Branch
Dr. David Rudders, VIMS

In addition, other individuals contributed data and technical analyses for the document. Dr. Burton Shank from NEFSC; and Dr. Jamie Cournane, Dr. Rachel Feeney, Dr. Fiona Hogan, Michelle Bachman, and Woneta Cloutier from NEFMC staff assisted with various sections of this document.

6.1.2.4 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

6.1.2.5 Opportunity for Public Comment

The proposed action was developed during the period April 2014 through November 2014 and was discussed at the meetings listed in Table 146, below. Opportunities for public comment were provided at each of these meetings.

Table 146 – Summary of meetings with opportunity for public comment for Framework 26

Meeting	Location	Date
Scallop PDT Meeting	Fairfield Inn & Suites, New Bedford, MA	4/8/14
Scallop PDT	Conference Call	5/12/14
Scallop Advisory Panel Meeting	Omni Providence Hotel, Providence, RI	5/20/2014
Scallop Committee Meeting	Omni Providence Hotel, Providence, RI	5/21/14
NEFMC Council Meeting	Holiday Inn by the Bay, Portland, ME	6/17-19/14
Scallop PDT	Conference Call	7/2/14
Scallop PDT Meeting	Parker River Refuge, Plum Island, MA	8/6/14
Scallop PDT Meeting	Coonamessett Inn, Falmouth, MA	8/26-27/14
Scallop PDT	Conference Call	9/10/14
Scallop PDT	Conference Call	9/18/14
Scallop Advisory Panel Meeting	Hotel Providence, Providence, RI	9/23/14
Scallop Committee Meeting	Hotel Providence, Providence, RI	9/24/14
NEFMC Council Meeting	Cape Codder Resort, Hyannis, MA	9/30-Oct 2/14
Scallop PDT Meeting	Mariners House, Boston, MA	10/15/14
Scallop PDT	Conference Call	10/21/14
Scallop Advisory Panel Meeting	Courtyard by Marriott, Providence, RI	10/28/14
Scallop Committee Meeting	Courtyard by Marriott, Providence, RI	10/29/14
Scallop PDT	Conference Call	11/10/14

Scallop Advisory Panel Meeting	Four Points Sheraton, Revere, MA	11/13/14
Scallop Committee Meeting	Four Points Sheraton, Revere, MA	11/14/14
NEFMC Council Meeting	Newport Marriott, Newport, RI	11/17-20/14

6.1.3 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 proposed action as analyzed in Framework 25. A final determination of consistency with the MMPA will be made by the agency when Framework 26 is implemented.

6.1.4 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 proposed action as analyzed in Framework 26. A final determination of consistency with the ESA will be made by the agency when Framework 26 is implemented.

6.1.5 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 eighteen meetings open to the public on Framework 26 (Table 146). The Council initiated this action at the June 2014 Council meeting and approved final measures at the November 2014 meeting. After submission to NMFS, a proposed rule and notice of availability for Framework 26 under the M-S Act will be published to provide opportunity for public comment.

6.1.6 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 26 includes revisions to the current PRA collection requirements associated with the GARFO Scallop Report Family of Forms (OMB Control No. 0648-0491). These revisions are due to the new pre-landing notification requirements for limited access vessels on access area trips, as well as limited access vessels that choose to DOF from Cape May, NJ. The amount that the proposed action would alter the burden hour estimates will be described and evaluated in an updated PRA analysis and public comments will be sought through Framework 26 proposed rulemaking.

6.1.7 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 proposed action 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 26 to NMFS, NMFS will request consistency reviews by CZM state agencies directly.

6.1.8 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 Greater Atlantic Regional Fisheries 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 2013. 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 Greater Atlantic Regional Fisheries 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.

6.1.9 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.

6.1.10 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.

6.1.11 Executive Order 12866 (Regulatory Impact Review)

6.1.11.1 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).

The Framework 26 document contains all the elements of the RIR/RFA, and the relevant sections are identified by reference to the document. Economic impacts of this action are summarized in Section 5.4 of this 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.

6.1.11.2 Economic Impacts

Section 5.4 evaluated economic impacts of Framework 26 proposed measures and alternatives considered by the Council. The combined impacts of the specification alternatives on scallop fishery, on consumers and total economic benefits to the nation are analyzed in Section 5.4.2 and subsection from 5.4.2.1 to 5.4.2.7. The economic impacts of the individual measures are discussed in Sections of 5.4.2.8 through 5.4.2.12 as indicated above. The values for economic impacts are presented in terms of 2014 dollars in Section 5.4, and for the determination of the significant impacts, cumulative present value of the net economic benefits to the nation are also estimated in terms of 2001 dollars consistent with the guidelines in Circular A-4 (2003) [12]. The results of the economic impacts in 2001 dollars were summarized in **Table 100** and **Table 102** in Section 5.4.2.2 and in **Table 147** and **Table 148** below.

- 5.4.1 Acceptable Biological Catch
- 5.4.2 Economic impacts of the Framework 26 specification alternatives
- 5.4.2.1 Proposed specification alternatives, No Action and Status quo
- 5.4.2.2 Summary of the economic impacts of the proposed specification alternatives
- 5.4.2.3 Allocation of LAGC IFQ trips in access areas
- 5.4.2.4 Additional measures to reduce the impacts on small scallops
- 5.4.3 Allocation method for Mid-Atlantic access area trips in 2015 only

[12] Page 32 of Circular A-4 (2003) states that: "In presenting the stream of benefits and costs, it is important to measure them in constant dollars to avoid the misleading effects of inflation in your estimates", and page 45 states that: "Please report all monetized effects in 2001 dollars. You should convert dollars expressed in different years to 2001 dollars using the GDP deflator".

- 5.4.4 Adjustments to provisions related to allocating and monitoring access area trips
- 5.4.5 Measures to allow fishing in state waters after federal NGOM TAC is reached
- 5.4.6 Measures to make turtle regulations consistent
- 5.4.7 Measures to develop New Accountability measures for northern windowpane flounder and modify existing accountability measures for GB and SNE/MA yellowtail flounder AM for northern windowpane flounder
- 5.4.8 Measures to allow a limited access vessel to declare out of fishery on return to homeport
- 5.4.9 Modify regulations related to flaring bar provision for turtle deflector dredge
- 5.4.10 Uncertainties and risks

6.1.11.2.1 Baseline for determination of significant impacts

Framework 26 is a one year action that will be implemented for the 2015 fishing year. It also includes default measures for 2016 in case the next Framework Action is delayed. The economic impacts of the proposed measures are estimated both relative to the "No Action" and relative to the Status Quo (SQ) levels in Section 5.4. The "No Action" alternative is used as a baseline for comparison of the biological and economic impacts of the proposed specification measures to the default measures in accordance with the 2007 NMFS guidelines, while the SQ scenario is used to evaluate whether the action will have a significant economic impact on the economy under the requirements of E.O.12866 for the reasons discussed in detail in Section 5.4 and summarized below.

- The definition of "No Action" follows a regulatory approach and refers to the default measures that are specified in the previous action, Framework 25, until the next Framework action is implemented in 2015. For the last several years the Council has recommended that default measures be used in the absence of new fishery specifications rather than fishery allocations simply rolling over from the previous year, as is the case in many other fisheries. Because of the spatial nature of area rotation used in the scallop fishery, rolling over allocations from one year to the next can potentially have negative impacts on the resource and fishery since allocations often vary in magnitude and area each year under this management system. Instead default measures have been developed that are designed to be only a fraction of the ultimate allocations for a subsequent fishing year. Therefore, the "No Action" alternative does not reflect, a "state" or baseline that correspond to the same amount of fishing effort in the current year (2014), but rather it refers to the implementation of the default measures until the new Framework takes effect.
- However, default measures are temporary in nature as they are not intended to be in place for an entire fishing year without some sort of subsequent action. As a result, allocations under those measures were set at considerably lower levels than the allocations either in the current (in 2014) or the projected allocations in the next fishing year (2015) to prevent fishing effort exceeding the sustainable levels due to the delays in the implementation of the proposed measures in next Framework Action. For example, if No Action was taken in 2015, open area DAS allocations would equal 17 days-at-sea per full-time vessels, or 75% of the original projected allocations for 2015 (23 days) and include no access area allocations. As a result, total landings for No Action are estimated to be about 19.3 million lb. in 2015. This is about half as much of the projected landings for the current fishing year (2014) and less than half as much of the projected landings for

the proposed alternatives in 2015 fishing year, resulting in considerably smaller revenues and economic benefits compared to the present circumstances as well as from the levels under the proposed alternatives.

- Conversely, when economic benefits of the proposed alternatives are estimated using No Action as the baseline, the impacts on the economy is considerably overstated in the short-term compared to the current levels. Again, this is because the No Action measures have been determined at very precautionary low levels, corresponding to a fraction of allocations for the entire year, and intended to be replaced with subsequent measures based on updated survey information.
- OMB recommends using more than one baseline when the choice of baseline will significantly affect estimated benefits and costs. [13] For this reason, the economic analyses provided for this framework also includes a Status Quo scenario (SQ) to reflect the changes in landings and economic benefits as a result of projected changes in the scallop resource, but holding the allocations at the same levels as in the 2014 fishing year; 31 open area days and 2 access area trips.
- It is important to point out that SQ is not an alternative under consideration for selection in this action, but was developed by the PDT to reflect another baseline to be used to evaluate the economic impacts of the proposed alternatives if there were no changes in the allocations from the levels in 2014 fishing year. For this reason, this baseline is more reflective of current fishing conditions since it includes the same level of access to the fishery as in FY2014. Status Quo results in projected landings of 37.5 million lb. in 2015, close to the estimated levels for the 2014 fishing year and as such, it provides a better baseline to evaluate the impacts of the proposed measures on the economy.
- SQ as a baseline is also more consistent with the intent and the principles of E.O.12866 which requires that:" Each agency shall identify the problem that it intends to address …" This is important because 'the baseline" has to be related to the primary problem the agency is trying to solve given that it serves as a main point of comparison for the analysis of the proposed regulation and for assessing whether or not any proposed regulation is a "significant regulatory action" under criteria specified by E.O. 12866.
- The primary need of Framework 26 is "to achieve the objectives of the Atlantic Sea Scallop FMP to prevent overfishing and improve yield-per-recruit from the fishery" and the primary purpose is "to set annual specifications" to address this need. Therefore, the primary need of Framework 26 is much broader in scope than just replacing the temporary default measures (No Action) set in the previous framework to prevent issues related to the delays in implementation. Default measures were specifically designed to provide some access to the fishery until the new regulations are in place but also prevent vessels using more open area DAS or taking more access area trips than they would be allocated with the new action. Since any DAS that were used for fishing during those few months would count toward the allocations in the new action for the fishing year, the default measures are intended to serve as a smooth transition to the new regulations rather than to be applied for the whole fishing year. In this sense, they could even be considered as a part of the process of implementing the new regulations. Therefore the SQ baseline is

[13] Circular A-4, September 17, 2003, http://www.whitehouse.gov/sites/default/files/omb/assets/regulatory_matters_pdf/a-4.pdf

what is used to evaluate whether the action will have a significant economic impact on the economy under the requirements of E.O.12866. Further discussion of the No Action and the Status Quo scenarios is provided in see Section 5.4.2 along with detailed comparisons in terms of both 2001 and 2014 dollars.

6.1.11.2.2 Summary of the aggregate economic impacts of the proposed measures

- The aggregate economic impacts of the preferred alternative and other alternatives, including the open area DAS and access area trip allocations and TAC for the general category fishery, are expected to be positive both in the short-term (2015) compared to both No Action and SQ scenarios. The preferred alternative (ALT3 with Option 2 and 3) will result in highest landings (47.4M), revenues ($447 million) and total economic benefits ($435.4 million) in 2015 among all the alternatives considered in this Framework (**Table 147**). The total economic benefits of the preferred alternative will be higher than the SQ levels by $79.9 million in the 2015 fishing year. Although the difference from the No Action levels is much higher (about $243.3 million), as explained above, economic benefits compared to No Action do not realistically reflect the marginal impacts of the proposed measures on the economy. Again, this is because the allocations under No Action were intentionally set quite low and intended for a fraction of the year.
- Over the long-term from 2015 to 2028 fishing years, the cumulative present value of the revenues for the preferred alternative will exceed Status Quo values by $49.8 million ($45.9 million) using a discount rate of 3% (7%) over the long-term (Table 3 of Section 5.4.2). Present value of cumulative economic benefits of the preferred alternative for the same period is estimated to be higher than No Action values by $21 million using a discount rate of 7%, but marginally lower than No Action values by $0.5 million if the future benefits were discounted at a lower rate, at 3%. Again, the SQ scenario provides a more realistic impacts estimate of long-term as well as short-term impacts on the economy compared to No Action alternative.

Table 147. Economic Impacts for 2015: Estimated landings (Mill.lb.), revenues and total economic benefits (Mill.$, in 2001 constant dollars)

Values	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	3.NL+ETA (Preferred)	4. Reduced F	Status quo (SQ)
FT LA Open area DAS	17	31	30	30	31	31	31
Total landings (Mill. lb.)	19.3	45.2	46.3	46.4	47.4	45.2	37.5
Total revenue (Mill. $)	203.4	431.3	438.5	441.0	447.0	431.1	369.0
Difference from No Action		227.9	235.1	237.6	243.7	227.9	165.6
Difference from SQ	**-165.6**	**62.3**	**69.5**	**72.0**	**78.1**	**62.2**	**0.0**
Total Economic Benefits	192.1	419.1	426.6	429.0	435.4	418.9	355.6
Difference from No Action		226.9	234.5	236.8	243.3	226.8	163.5
Difference from SQ	**-163.5**	**63.5**	**71.1**	**73.4**	**79.9**	**63.3**	**0.0**

Table 148. Long-term Economic Impacts from 2015 to 2028 fishing years: Cumulative present value of revenues and total economic benefits *net of No Action and net of Status quo* values (in 2001 Prices)

Values	1. No Action	2. Basic Run	3. 3 new closures	3. CA2+NL	3.NL+ETA (Preferred)	4. Reduced F	Status quo
Difference from No Action	**At 3% discount rate**						
Revenue ($ Million)	0.0	31.6	35.8	16.1	21.9	8.6	-27.8
Total Benefits ($ Million)	0.0	10.0	16.2	-7.3	-0.5	-15.0	-50.3
Difference from No Action	**At 7% discount rate**						
Revenue ($ Million)	0.0	57.5	51.7	44.5	41.5	35.0	-4.6
Total Benefits ($ Million)	0.0	38.2	33.6	23.7	21.0	13.9	-25.0
Difference from Status Quo	**At 3% discount rate**						
Revenue ($ Million)	27.8	59.3	63.6	43.8	49.6	36.3	0.0
Total Benefits ($ Million)	**50.3**	**60.3**	**66.6**	**43.1**	**49.8**	**35.4**	**0.0**
Difference from Status Quo	**At 7% discount rate**						
Revenue ($ Million)	4.6	62.2	56.4	49.1	46.2	39.7	0.0
Total Benefits ($ Million)	**25.0**	**63.2**	**58.6**	**48.6**	**45.9**	**38.9**	**0.0**

- The preferred alternative will have a smaller increase in revenues, producer surplus and total economic benefits over the long-term compared to ALT2, ALT 3 with 3 closures and ALT3 with Option 1 and 2 (closure of CA2 and NL access areas) when a 7% discount rate is used, but slightly more benefits from ALT3 with CA2 and NL closure if a 3% discount rate is used to estimate the present values. The total economic benefits for the preferred alternative will be higher than the estimated benefits for ALT4 both in the short- and the long-term whether a 3% of a 7% discount rate is used (**Table 102**).
- The level of employment in the scallop fishery as measured by CREW*DAS will be higher under all alternatives compared to No Action (ALT1) in 2015. Employment will be higher in 2015 under the preferred alternative (ALT3 with closures of NL+ETA) compared to other alternatives. Overall DAS and employment is expected to be about 23.9% higher compared to Status Quo and more than double compared to No action in 2015. Employment under the preferred alternative and other alternatives will be similar over the long-term (2015-2028) to both No Action and Status Quo levels.
- Each specification alternative also includes default measures for 2015 fishing year that would be in place until the next Framework action is implemented. Instead of rolling over the projected DAS in 2015 (31 DAS under the preferred alternative) until the new Framework is implemented, this measure would allocate only 75% of the projected DAS or minimum of 20 DAS in FY2015 for LA vessels to prevent potentially negative impacts on the resource and scallop yield. Thus those measures are expected to have positive economic benefits for the scallop fishery in the long-term.
- The cumulative impacts of the measures from Framework 26 proposed measures, and the past actions including Amendment 10, Amendment 11, Amendment 15, Framework 25 and Framework 24 to the scallop FMP, are estimated to be positive over the long-term. Adjustment of the open area DAS allocations, implementation of trip limits and allocations for the access areas and rotation area management had positive impacts on the

scallop industry by increasing the revenues, producer and consumer surpluses and net benefits in the past. The Framework 26 measures are estimated to have positive impacts on consumer, producer and total economic benefits in 2015 as well. Therefore, net cumulative impacts of the proposed measures and the past actions on revenues and economic benefits from the scallop fishery would be positive in 2015. The actions proposed by Framework 26 are expected to increase fleet revenues and profits compared to No Action over the long-term. The impacts on total economic benefit compared to No action will either be marginally low or will be positive over the long-term depending on the discount rate used to estimate present values. As a result, cumulative economic benefits, which measure the sum of benefits from previous and preferred alternatives, are expected to be positive.

6.1.11.2.3 Summary of the impacts of the individual measures

- The updated OFL and ABC estimates are higher than the No Action default values because updated surveys suggest scallop biomass is higher than previous estimates. Overall, using these estimates to set fishery specifications should positive economic impacts over the long-term because the ABC values were determined based on the recent surveys and best available science to prevent overfishing of the scallop resource. However, the difference between No Action ABC and the proposed ABC in FW26 is similar and not great enough to have direct impacts on the fishery specifications set in the framework. Therefore, the potential impacts of the updated ABC on economic benefits compared to No Action values are neutral.
- Under the preferred alternative, ALT2 and ALT4, allocation for the LAGC IFQ fishery including the LA vessels with IFQ permits (1,348mt, 2.9 million lb.) will be 5.8% higher than the allocation under the default measures (1,274mt, 2.8 million lb.). It is also 23% higher than the Status Quo level, that is, ACL for 2014 (1,099mt, or 2.42 million lb.). As a result, preferred alternative is expected to have positive economic impacts on the LAGC IFQ fishery compared to both No Action and Status Quo levels. Using updated ABC values to set LAGC IFQ ACL should have positive economic impacts over the long-term all well since that is based on recent surveys and best available science to prevent overfishing of the scallop resource.
- The preferred alternative will keep the value of incidental catch at (50,000 lb.) and the NGOM TAC at 70,000 lb. Since there is no change in these values from the previous action, preferred alternative will have the same economic impacts as the No Action.
- Providing about the same level of access for LA and LAGC vessels in access areas in 2015 in terms of the total proportion of catch for the year (Option 4, Section 2.2.2.4) would have positive economic impacts compared No Action or compared to allocating 5.5% of the access area TAC to the LAGC IFQ fishery. The economic impacts on the LAGC-IFQ fishery will be positive due to lower costs and higher revenues associated with the flexibility provided to the fishermen to land a major proportion of their quota from access areas if those areas prove to be more productive as projected.
- Restricting the crew size in access areas to open area limits with an additional crew member is expected to have positive impacts on the long-term yield and economic benefits from the scallop fishery by reducing the potential of highgrading and discard mortality compared to No Action (Preferred alternative, Option 1, Section 5.4.2.3.2).

- Flexible allocation for Mid-Atlantic access area trips (Option 2) is expected to have positive economic impacts on the scallop vessels in the short-term by providing the opportunity to fish access areas trips in areas with the highest catch rates. This is expected to reduce the fishing costs per pound of scallops landed and could increase the revenues as well if the composition of landings include larger scallops with higher prices. This measure could have slightly positive impacts on the scallop resource and on the economic benefits in the long-term if it helps the fishermen to avoid fishing in less productive areas with smaller scallops. On the other hand, flexibility could also increase fishing pressure in some areas to a level that could have slightly negative impacts on the resource and as a result, could have negative impacts on landings, revenues and total economic benefits over the long-term. Therefore, although the short-term economic impacts of this alternative are expected to be positive, the long-term economic impacts are uncertain and would range from a slight negative to slight positive impact depending on the fishing behavior.
- Removing broken trip process and allowing flexibility to vessels to carry over unlanded pounds without the necessity of breaking a trip in the last 60 days of a fishing year, the preferred alternative could reduce the fishing costs and have low positive economic impacts on the scallop vessels. (Section 5.4.4.2.2, Option 2).
- The preferred alternative would allow a state to apply for an exemption from the prohibition to fish in state waters if the federal NGOM hard TAC is reached with positive impacts on the revenues of scallop vessels that were granted such exemption and positive impacts on overall economic benefits from the scallop resource in state waters (Section 5.4.5)
- Making the regulations regarding season and area for turtle chain mat and turtle deflector dredge consistent is expected to reduce the regulatory complexity and the administrative costs with slightly positive impacts on the overall economic benefits from the fishery (Section 5.4.6)
- Modifying the restriction on the number of rings in apron of dredge to a maximum of seven rows as a proactive AM for northern WP (Section 2.7.1.2), for GB YT and SNE/MA YT (Section 2.7.2.2), is expected to reduce bycatch of finfish and small scallops and help prevent a fishery from exceeding a sub-ACL. Although using a fewer rings could increase the fishing time and costs, this impact is expected to be minimal. If fewer small scallops are caught with shorter aprons, discard mortality would be lower, having potentially low positive impacts on the resource, scallop yield and long-term economic benefits from the fishery compared to No Action (Section 5.4.7)
- Implementing a separate VMS declaration code for steaming back to port south of Cape May is not expected to have impacts on overall economic benefits. However, it would have positive economic impacts on the vessels from VA/NC and possibly some negative impacts on the net revenues of the vessels from MA and NJ due to the overall reduction in open area DAS per vessel (by 0.14 days in 2015, Section 5.4.8)
- Modifying regulations regarding to flaring bar provision for turtle deflector dredge is an administrative measure and related to safe handling of gear. The economic impacts of this measure are neutral because it has no direct impacts on the scallop catch efficiency of the gear (Section 5.4.9).

6.1.11.3 Enforcement Costs

The enforcement costs and benefits of the proposed options for Framework 26 are within the range of impacts addressed in Section 8.9 of Amendment 10 FSEIS and Section 5.4.22 and Section 5.6.3 of Amendment 11. The qualitative analysis included a discussion of the pros and cons of the proposed alternatives from an enforcement perspective. The proposed measures by Framework 26 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. 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.

6.1.11.4 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.

Framework 26 is not expected to constitute a "significant regulatory action" based on the economic analyses provided in Section 5.4.2 and summarized above:

1. Framework 26 is a one year action that will be implemented for the 2015 fishing year. The short - term (2015) impacts of the preferred alternative on net economic benefits and on employment are expected to be positive compared both to the No Action and Status Quo levels. The total economic benefits of the preferred alternative would exceed the No Action levels by $243.3 million and the SQ levels by $79.9 million in the 2015 fishing year in terms of 2001 prices. However, for the reasons discussed in detail above (Section 5.4.2.1) economic comparisons based on 'No Action' do not realistically reflect the expected impacts of Framework 26 on the overall economy. No Action was primarily used to address the NMFS 2007 guidelines and to discuss the impacts of the proposed measures compared to the very stringent default measures that were to be set in place for a fraction of the year, until the next Framework Action is implemented. Because under the default measures the allocations were intentionally set at considerably low levels compared both to the current (2014) and to the proposed allocations, comparison of the impacts of the proposed measures relative to No Action levels significantly overestimates the impacts on the economy.
2. In contrast, the status quo (SQ) scenario provides a reasonably realistic evaluation of the impacts of the proposed measures on the economy, a better assessment of what would happen in terms of revenues and total economic benefits from the scallop fishery if there

was no change from the current level of allocations (2014), or if the same level of allocations were continued in 2015, taking into account recent changes in the productivity and the spatial distribution of the scallop resource. Thus SQ scenario is used to evaluate whether the action will have significant economic impacts on the economy under the requirements of E.O.12866. The results show that the proposed measures are estimated to have positive impacts on the economy by about $79.9 million (in 2001 dollars), lower than $100 million threshold for significance, in 2015 fishing year.

3. Over the long-term from 2015 to 2028 fishing years, the cumulative present value of the revenues for the preferred alternative will exceed Status Quo values by $49.8 million ($45.9 million) using a discount rate of 3% (7%) over the long-term (Table 3 of Section 5.4.2). Present value of cumulative economic benefits of the preferred alternative for the same period is estimated to be higher than No Action values by $21 million using a discount rate of 7%, but marginally lower than No Action values by $0.5 million if the future benefits were discounted at a lower rate, at 3%. Again, the SQ scenario provides a more realistic estimate of long-term as well as short-term impacts on the economy compared to No Action alternative.

Thus, the preferred alternative will not have short or a long-term negative or positive annual impact on the economy by $100 million or more compared to Status Quo. However, the preferred alternative is expected to have a positive impact on the economy by 79.9 million in the short-term (2015). It is also expected to have a cumulative positive impact on the economy over the long-term (from 2015 to 2028) by $45.9 Million (at 7% discount rate) to $$49.8 million in 2001 dollars. The proposed measures will have positive impacts on employment in the scallop fishery. 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 and 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 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.

6.1.12 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.”

6.1.12.1 Problem Statement and Objectives

The purpose of the action and need for management is described in Section 1.2 of the Framework 26 document.

6.1.12.2 Management Alternatives and Rationale

The preferred alternative and other alternatives including "no action" are described in several sections in Section 2.0 of the framework document.

6.1.12.3 Determination of Significant Economic Impact on a Substantial Number of Small Entities

6.1.12.3.1 Description of the scallop permits and vessels

The proposed regulations of Framework 26 would affect vessels with limited access scallop and limited access general category permits. SAFE Report for 2014 (Section 4.4, Affected Environment, 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 unique number of limited access permits by right-id is provided in Table 149. According to the recent permit data, there were 313 unique vessels that obtained full-time limited access permits in 2013, 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. Some of those vessels also had limited access general category IFQ, NGOM and incidental permits (Table 150).

The number of LAGC-IFQ permits (excluding those with LA permits) declined from 304 in 2009 to 212 in 2013 (Table 44). There were 77 applications for NGOM and 149 applications for incidental catch permits. The number limited access general category vessels with active IFQ permits (with landings) has declined in recent years, to 155 vessels in 2013 (218 total – 66 with no catch) from 248 vessels in 2009 (294 total-49 with no landings, Table 68). It should be pointed out that only the vessels with LAGC-IFQ permits would be affected with the Framework 26 measures, since Framework 26 will have no changes to the total TAC for LAGC NGOM or TAC for the LAGC incidental catch fisheries.

Especially 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, 283 out of 313 vessels, derived more than 90% of their revenue from the scallop fishery during 2009-2013 while about one third of the part-time small dredge vessels derived 90% of their revenue from scallops in the same year (Table 67). Although the current data on the limited access general category fishery is less than perfect, the available information shows again that more than 50% of the active vessels with LAGC-IFQ permits, or 84 out of 155 in 2013, derived more than 90% of their revenues from the scallop fishery (Table 68). Therefore, scallop fishing is an important source of income for the majority of the vessels in the scallop fishery. The LAGC-IFQ report provided by the Council in July 2014 provide detailed information on limited access general category IFQ n the composition of revenue and revenues from other species for the limited access general category vessels.

In conclusion, including the vessels with LA and LA IFQ permits, the proposed alternatives of Framework 26 are expected to have impacts on a substantial number of small entities.

Table 149. Scallop Permits by unique right-id and category by application year

Permit category	2008	2009-2014
Full-time	250	250
Full-time small dredge	52	52
Full-time net boat	11	11
Total full-time	313	313
Part-time	2	2
Part-time small dredge	31	32
Part-time trawl	0	0
Total part-time	33	34
Occasional	1	0
Total Limited access	347	347

Table 150. LAGC permits held by limited access vessels by permit category

AP-YEAR	IFQ	NGOM	Incidental
2008	41	19	87
2009	43	28	116
2010	40	28	114
2011	42	28	114
2012	41	27	119
2013	41	27	118
2014	40	27	115

Note: The permit numbers above include duplicate entries because replacement vessels receive new permit numbers and when a vessel is sold, the new owner would get a new permit number. 2014 numbers are preliminary.

Table 151. LAGC permits after Amendment 11 implementation (excluding the LAGC permits held by limited access vessels)

AP-YEAR	IFQ	NGOM	Incidental
2008	280	79	173
2009	304	100	190
2010	293	94	172
2011	248	82	166
2012	237	70	163
2013	222	77	149
2014	204	68	136

Note: 2014 is preliminary.

Table 152 – Number of LA vessels based on level of dependence on scallop revenue for 2008-2013 (full time and part time vessels)

	2008		2009		2010		2011		2012		2013	
	FULLTIME	PARTTIME	FULLTIME	PARTTIME	FULLTIME	PARTTIME	FULLTIME	PARTTIME	FULLTIME	PARTTIME	FULLTIME	PARTTIME
<75%	9	14	5	15	8	11	9	11	5	14	16	15
<90%	14	7	18	4	12	9	12	11	22	4	14	5
90-100%	288	12	288	16	294	15	294	13	289	16	283	13
total vessels	311	33	311	35	314	35	315	35	316	34	313	33

Table 153 – Number of LAGC vessels based on level of dependence on scallop revenue for 2008-2013 (IFQ and NGOM)

	2008		2009		2010		2011		2012		2013	
	IFQ	NGOM	IFQ	NGOM	IFQ	NGOM	IFQ	NGOM	IFQ	NGOM	IFQ	NGOM
0%	49	62	46	75	72	65	52	53	66	46	63	40
<10%	48	2	35	7	35	5	32	4	17	5	18	8
<50%	33	1	36	3	28		25	2	24	2	20	4
<75%	29	1	41	2	22	2	19	3	16	2	16	5
<90%	20	0	18	2	16	3	18	3	18	5	17	5
90-100%	99	19	118	23	85	26	88	24	85	25	84	30
total vessels	278	85	294	112	258	101	234	89	226	85	218	92

6.1.12.3.2 Description of the small business entities

The RFA recognizes three kinds of small entities: small businesses, small organizations, and small governmental jurisdictions. It defines a small business in shellfish fishery as a firm that is independently owned and operated and not dominant in its field of operation, with receipts of up to $5.5 million annually.

The limited access (LA) and Limited Access General category (LAGC) vessels in the Atlantic sea scallop fishery grossed less than $5.5 million in scallop revenue according to the dealer's data since 1994 fishing year. In terms of scallop landings and revenue, 2011 was a record year (Table 154). According to the dealer data, average annual revenue was 1,329,013 per full-time vessel, $788,012 per full-time small dredge and $309,375 per part-time vessel in 2013 fishing year. Average scallop revenue per limited access general category IFQ vessel was $240,159 in 2013 fishing year (Table 155).

According to the ownership data for the scallop fishery, several individuals have ownership interest in one single vessel or multiple vessels. In other words, every vessel has multiple owners and some owners of a particular vessel have ownership interest in other vessels with different individuals constituting affiliations some of which with total revenues in excess of $5.5 million annually. Next section provides information regarding the numbers and revenues of those affiliations for 2011-2013 fishing years.

Table 154. Scallop revenue (Dollar values are in inflation adjusted 2013 prices, including TAC set-aside funds used by individual vessels, excluding revenues from IFQ trips).

Fishyear	Full-time dredge	Full-time small dredge	PT and PTSD
1994	536,395	123,910	23,160
1995	581,421	132,524	131,246
1996	653,735	93,580	132,926
1997	591,684	35,369	119,211
1998	460,027	36,083	82,974
1999	753,058	14,479	239,383
2000	951,584	99,008	380,588
2001	879,554	361,054	289,015
2002	980,428	365,446	291,859
2003	1,056,663	539,547	338,598
2004	1,343,930	831,225	307,044
2005	1,493,113	926,289	560,366
2006	1,264,869	746,715	340,858
2007	1,284,859	987,475	392,598
2008	1,118,698	844,701	353,394
2009	1,114,692	757,754	298,059
2010	1,402,335	1,090,767	481,067
2011	1,701,699	1,234,938	490,079
2012	1,612,895	1,204,123	390,239
2013	1,329,013	788,012	309,375

Source: Dealer data

Table 155. Estimated Average annual revenue per limited access general category vessel by permit type (Dollar values are in inflation adjusted 2013 prices, including TAC set-aside funds used by individual vessels, excludes LA vessels with LAGC permits, Dealer Data)

Fishyear	IFQ	NGOM	INCIDENTAL
2009	121,273	9,961	18,230
2010	129,481	5,697	22,732
2011	224,499	6,637	8,516
2012	247,424	20,673	7,196
2013	240,159	39,693	6,524

Limited access scallop fishery: Vessel affiliations and business entities

The vessel affiliations and the corresponding business entities in the scallop fishery are derived using the database provided by the Social Sciences branch of Northeast Science Center. The primary industry of each affiliation was determined based on which activity, in the most recent year produced the greatest gross revenue (see section 121.107 of SBA's regulations which state that the most recent year of data should be used for defining a business's major activity). The

size category for each business (i.e., small versus large) is determined based on the average annual receipts of these entities over the most recent three years, for 2011-2013.

Table 156 shows that, as of 2013 fishing year, 188 vessels belonged to 18 large business entities in shellfish industry that grossed more than an average of $5.5 million during the last three years, including annual receipts both from scallops and other species. Each of these entities had at least one vessel with a limited access (LA) permit including those with both Limited Access (LA) and Limited Access General category (LAGC) permits. The rest of the 257 vessels owned by small businesses and grossed less than $5.5 million. Majority of the small business entities in the shellfish groups belonged to individuals who owned either one or two boats, while the large business entities owned on the average 10 vessels in 2013. It must be reminded that some of the vessels shown in Table 156 owned did not have scallop permits, but belonged to an affiliation that held scallop permits on one or more of its vessels. Four of those affiliations belonged to the Finfish Industry because they derived a larger percentage of their revenue in 2013 from finfish rather than from scallops or other shellfish. These affiliations owned on the average 6.3 vessels and had total revenues of about $4.6 million, with a $2.3 million average revenue from scallop fishing in the last three years. The scallop revenue comprised about an average of 34% of the total revenue for the affiliations in the Finfish industry, while the affiliations in the Shellfish industry derived over 90% of their revenue form scallops (Table 156).

In contrast to Table 156 , Table 157 includes only those business entities such that every boat in the affiliation had a scallop limited access permit. There have been 141 such distinct business entities in the shellfish industry in 2013 that owned a total 236 vessels with scallop limited access permits. Nine of these entities were classified as large and the rest 132 as small businesses by the SBA standards. For all of these entities, scallop revenue averaged over 96% of the total revenue during the 2011-2013 fishing years. The dependence of the businesses in the finfish industry on scallops declined from 54% in 2011 to 34% in the 2013 fishing year (Table 158).

Table 156. Number of small and large business entities that include one or more vessels with scallop limited access permits (based on average annual receipts for 2011-2013, revenues include both from LA and LAGC trips for vessels that have both permits).

Business Type	Values	FINFISH	SHELLFISH	Grand Total
Large	Number of business entities (affiliates)		18	18
	Number of vessels		188	188
	Number of vessels per business entity		10.4	10.4
	Average total revenue for 2011-2013 per entity		12,442,099	12,442,099
	Average scallop revenue for 2011-2013		11,188,236	11,188,236
	Average total revenue for 2013 per entity		11,115,140	11,115,140
	Average scallop revenue for 2013		9,883,669	9,883,669
	Scallop revenue as a % of total		92%	92%
Small	Number of business entities (affiliates)	4	150	154
	Number of vessels	25	232	257
	Number of vessels per business entity	6.3	1.5	1.7
	Average total revenue for 2011-2013 per entity	4,625,316	1,977,177	2,045,960
	Average scallop revenue for 2011-2013	2,233,058	1,953,895	1,961,440
	Average total revenue for 2013 per entity	4,051,081	1,736,779	1,796,891
	Average scallop revenue for 2013	1,460,320	1,659,305	1,654,137
	Scallop revenue as a % of total	34%	96%	94%
All Business Entities				
Number of business entities (affiliates)		4	168	172
Number of vessels		25	420	445
Number of vessels per business entity		6.3	2.5	2.6
Average total revenue for 2011-2013 per entity		4,625,316	3,098,419	3,133,928
Average scallop revenue for 2011-2013		2,233,058	2,979,933	2,961,936
Average total revenue for 2013 per entity		4,051,081	2,741,604	2,772,056
Average scallop revenue for 2013		1,460,320	2,540,487	2,515,367
Scallop revenue as a % of total		34%	95%	94%

Table 157. Number of small and large business entities that are solely comprised of vessels that have a scallop limited access permit (based on the average annual receipts for 2011-2013, revenues include both from LA and LAGC trips for vessels that have both permits).

Business Type	Values	SHELLFISH
Large	Number of business entities (affiliates)	9
	Number of vessels	66
	Number of vessels per business entity	7.3
	Average total revenue for 2011-2013 per entity	11,184,009
	Average scallop revenue for 2011-2013	11,059,342
	Average total revenue for 2013 per entity	10,089,530
	Average scallop revenue for 2013	9,983,467
	Scallop revenue as a % of total	99%
Small	Number of business entities (affiliates)	132
	Number of vessels	170
	Number of vessels per business entity	1.3
	Average total revenue for 2011-2013 per entity	1,923,892
	Average scallop revenue for 2011-2013	1,940,086
	Average total revenue for 2013 per entity	1,691,113
	Average scallop revenue for 2013	1,645,514
Large	Scallop revenue as a % of total	97%
All Business Entities		
Number of business entities (affiliates)		141
Number of vessels		236
Number of vessels per business entity		1.7
Average total revenue for 2011-2013 per entity		2,514,963
Average scallop revenue for 2011-2013		2,548,036
Average total revenue for 2013 per entity		2,227,182
Average scallop revenue for 2013		2,177,724
Scallop revenue as a % of total		97%

Table 158. Scallop revenue for small and large entities with LA permits per fishing year (Current values)

Business Type	Fishery	Values	2011	2012	2013
Large	**SHELLFISH**	Number of business entities	18	18	18
		Number of vessels	188	188	188
		Total scallop revenue ($)	213,290,105	213,955,621	179,870,040
		Average scallop revenue per entity ($)	11,849,450	11,886,423	9,992,780
		Scallop revenue % of total revenue	93%	93%	92%
Small	**FINFISH**	Number of business entities	4	4	4
		Number of vessels	25	25	25
		Total scallop revenue ($)	10,375,265	9,902,415	5,835,669
		Average scallop revenue per entity ($)	2,593,816	2,475,604	1,458,917
		Scallop revenue % of total revenue	54%	51%	34%
	SHELLFISH	Number of business entities	147	150	150
		Number of vessels	228	232	232
		Total scallop revenue ($)	309,130,479	295,450,639	244,308,811
		Average scallop revenue per entity ($)	2,102,928	1,969,671	1,628,725
		Scallop revenue % of total revenue	96%	95%	96%
All entities					
Number of business entities			169	172	172
Number of vessels			441	445	445
Total scallop revenue ($)			532,795,849	519,308,675	430,014,520
Average scallop revenue per entity ($)			3,152,638	3,019,236	2,500,084
Scallop revenue % of total revenue			95%	94%	94%

Limited access general category scallop fishery: Multi-boat owners and affiliations

Table 159 shows the ownership information for vessels with LAGC-IFQ permits excluding those that also have LA permits. Overall, there were 115 business entities in 2013 fishing year that owned 175 active vessels with general category limited access permits. The primary industry for the 30 business entities was identified as Finfish and the primary industry for the rest of the 85 entities was identified as Shellfish based on the proportion of revenue from these species. All of these business entities were classified as small because their total revenues were less than $5.5 million, lower than the threshold value for both the Finfish and Shellfish industry to qualify as large business. The small business entities in the Shellfish industry had a high dependence on scallop revenues, which comprised an average of 75% of their total revenue during the last three fishing years, while the business in the Finfish industry derived about 7% of their revenue form scallops during the same period. The number of vessels, total revenue and dependence on scallops as a source of income by the primary industry type is provided in Table 160 for each of the fishing years from 2011 to 2013.

Therefore, Framework 26 will have economic impacts on a substantial number of small business entities in the scallop fishery with limited access and limited access general category permits.

Table 159. Annual average revenue for 2011-2013 fishing years and number of small business entities that include one or more vessels with a LAGC-IFQ permit (including all vessels with scallop landings but excluding affiliations with limited access permit vessels)

Values	FINFISH	SHELLFISH	Grand Total
Number of business entities (affiliates)	30	85	115
Number of vessels	52	123	175
Number of vessels per business entity	1.7	1.4	1.5
Average total revenue for 2011-2013 per entity	698,732	467,242	527,630
Average scallop revenue for 2011-2013	63,651	269,487	215,791
Average total revenue for 2013 per entity	603,699	460,920	498,167
Average scallop revenue for 2013	30,662	271,871	208,947
Scallop revenue as a % of total	7%	75%	57%

Table 160. Scallop revenue for small business entities with LAGC_IFQ permits per fishing year (Active vessels only, in current values)

Entity	Values	2011	2012	2013
FINFISH	Number of business entities	29	29	30
	Number of vessels	47	47	52
	Total scallop revenue ($)	2,667,902	1,553,153	897,979
	Average scallop revenue per entity ($)	91,996	53,557	29,932
	Scallop revenue % of total revenue	25%	15%	7%
SHELLFISH	Number of business entities	86	84	85
	Number of vessels	123	121	123
	Total scallop revenue ($)	21,727,104	23,280,398	22,437,967
	Average scallop revenue per entity ($)	252,641	277,147	263,976
	Scallop revenue % of total revenue	66%	70%	75%
Number of business entities		115	113	115
Number of vessels		170	168	175
Total scallop revenue ($)		24,395,006	24,833,551	23,335,946
Average scallop revenue per entity ($)		212,130	219,766	202,921
Scallop revenue % of total revenue		55%	56%	57%

6.1.12.4 Economic impacts of proposed measures and alternatives

6.1.12.4.1 Summary of the aggregate impacts of the DAS and access area allocation alternatives

Rationale for the proposed specification measures is provided in Section 2.1.3 of Framework 26 and aggregate economic impacts of these measures including the open area DAS allocations, and

access area trip allocations are analyzed in Section 5.4. The following sections provide an analysis of the impacts on the individual vessel and small business entities based on the fleet-wide impacts of the specification alternatives analyzed in Section 5.4.2.

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 aggregate economic impacts of the proposed measures and other alternatives including access area allocations, open area DAS allocations and TAC for the general category fishery are analyzed in Section 5.4.2 both relative to No Action and status quo (SQ) landings from a net national benefit perspective and using a cost-benefit framework. The rationale for comparing the economic impacts to both No Action and Status Quo are described in detail in 5.4.2.1. In summary, the comparisons to the No Action address NMFS guidelines (2007) and to show the economic impacts compared to the estimated impacts under the default measures, and comparisons to the SQ address the requirements for E.O.12866 for determining whether the proposed action will have significant impacts on the overall economy and on small businesses.

The primary goal of RFAA analysis is to consider, however, the effect of regulations on small businesses and other small entities, 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 potential economic impacts of the preferred specification alternative (Alternative 3, or ALT3 (NL and ETA closed)) and other alternatives on an average scallop vessel are expected to be proportional to the aggregate economic impacts. The proposed regulations will change the allocations of the scallop vessels in the same proportions. In 2015 fishing year, under the preferred alternative (ALT3), each limited access vessel's open area DAS allocations (31 DAS) will change in exactly the same percentage compared to the no action (17 days) and stay at the same levels as the status quo allocations (31 DAS). Similarly, each full time vessel will be allocated three access area trips in 2015 (total of 51,000 pounds) compared to no trips under the No Action alternative, and two 13,000 pound trips under SQ allocations (26,000 pounds).

This is expected to result in proportional impacts on the single-boat as well as on the multi-boat owners compared to No Action since the open area DAS and access area trips will increase in the same proportions for both groups. This proportional increase in open area DAS and the number of access area trips are expected to increase annual scallop landings and revenues of the large versus and small entities in approximately similar proportions compared to No Action levels.

For these reasons, the following discussion will focus only on the small business entities and the analyses will be conducted on an individual vessel level given that majority of the small business entities included ownership of either one or two boats (Table 156). The analyses below show the impacts on annual scallop revenues for each average individual vessel with a full-time limited access permit in the scallop fishery although the percentage change in scallop revenues would be similar for part-time vessels and small business entities with ownership of more than one vessel as well.

6.1.12.4.2 Impacts of Framework 26 specification alternatives on scallop vessels and small business entities

Because the thrust of the RFA analysis is short- and medium-term in nature, the RFA analyses provided below focused on the medium-term (near-term) impacts from 2015 to 2019 fishing years whereas cost-benefit analyses considered impacts also for the long-term from 2015 to 2028 fishing years. The analysis of the fleet-wide aggregate economic impacts indicated that the preferred alternative will have positive economic impacts compared to both No Action and Status Quo levels in the short-term (2015) as well as over the long-term (2015-2028) (**Table 100** through **Table 102** in Section 5.4.2.2).

Table 161 and
Table 162 provide an analysis of impacts on an average full-time vessel in the scallop fishery based on the economic analyses provided in Section 5.4, by converting annual fleet revenue and net revenue to a per full-time vessel equivalent level (excluding the research and observer set-asides, the share for the general category fishery). Overall, it is estimated that the limited access fishery would land roughly 93.3% of the total scallop landings (after the set asides, buffer for LA fishery, and LAGC TAC is removed), which in turn, is divided by 327 full-time equivalent vessels to estimate the landings and revenue per FT limited access vessel. The impacts of the proposed measures on vessel revenues and net revenues were analyzed in terms of percentage changes from the No Action and Status Quo values although, the latter provides a more realistic estimate of the impacts on the vessels from the recent levels. Since expressing the total values in either 2014 or in 2001 constant dollars would not affect the percentage changes relative to the baseline, the values for revenues and net revenues per vessels were expressed only in 2014 dollars in this section for the purposes of RFA analyses. Fleet-wide revenues and net economic benefits were presented in **Table 100** (for 2015 fishing year) and in **Table 102** (for 2015-2028 fishing years) in 2001 dollars as well in Section 5.4.2.1.

Although Framework 26 is a one year action, the revenue and net revenue streams both in 2015 and over the medium term from 2015 to 2019 were estimated to evaluate the possible impacts of the preferred alternative (ALT3, with closures of NL+ETA) and the alternatives on the business entities active in the scallop fishery. The revenue (net revenue) for the preferred alternative is estimated to be 120% (119%) greater than the No Action levels in 2015 fishing year because it would allocate three access area trips and 31 open area DAS while under No Action there will be no access area trips and open area DAS allocations would be reduced to 17 days in accordance with the default measures set in Framework 25. Although in the following years estimated gross and net revenue for the preferred alternative would be lower than the values for No Action, the cumulative present value of the net scallop revenue for the preferred alternative would exceed the levels for No Action every year during the medium-term from 2015 to 2019 (Table 163 and Table 164). This is because higher revenue under the preferred and other alternatives in 2015 compared to No Action values would outweigh the negative impacts on revenue in the following years. Overall, the cumulative present value of the net revenue per full-time vessel under the preferred alternative would be 2% higher than the No Action net revenue in the medium term from 2015 to 2019.

The comparison of results with the No Action alternative does not reflect the changes compared to the recent levels of revenue and economic benefits, however, for the reasons discussed in

detail in Section 5.4.2.1. Under No Action, the vessels would be allocated considerably fewer open area DAS (17 days) compared to what they had (31 days in 2014) and will have no access area trips compared to two trips they had in the 2014 fishing year. For these reasons, total fleet revenue for No Action would be significantly lower ($263 million) compared to the actual revenue in 2013 ($460 million) and the estimated revenue in 2014 (estimated to be more than $460 million).

As indicated in Section 5.4.2, the economic analyses provided for this framework also included a status quo scenario (SQ) to reflect the changes in landings and economic benefits as a result of allocating the same level of access as 2014, but incorporating the projected changes in the scallop resource stock and the composition of landings in 2015 and beyond. In contrast to the "No Action" alternative that defines the baseline from a 'regulatory" perspective, the status quo (SQ) scenario provides a better assessment of what would happen in terms of landings, revenues and total economic benefits from the scallop fishery if the current allocations were continued in 2015 taking into account recent changes in the productivity and the spatial distribution of the scallop resource. For RFA purposes, comparison with the SQ scenario provides insight about how the revenues of the small business entities would change in 2015 even if the allocations remained at exactly the same number of open area DAS (31 days) and access area trips (2 trips) in 2015 as the number of allocations in 2014. It is important to point out that allocating the same level of allocations in 2015 as were allocated in 2014 (SQ) is not an actual alternative that was considered in FW26. The PDT developed this scenario exclusively for this analysis only to reflect another baseline to be used to evaluate the economic impacts of the proposed alternatives especially for the purposes of E.O.12866 and for the small business entities from the RFA perspective.

Total fleet revenue for the preferred alternative (ALT3 - NL+ETA) is estimated to be $578.1 million in 2015 fishing year, which is higher than the estimated revenue for the Status quo ($477.2 million). As a result, gross and net scallop revenue per FT vessel is expected to exceed SQ levels by 21% in the 2015 fishing year (Table 161 and Table 162). The estimated net revenue per FT vessel under the preferred alternative, about $1,640,451, is also expected to exceed the revenues per vessel for the 2013 and 2014 fishing years. Gross and net revenue per FT vessel under SQ is estimated to exceed the values for the preferred alternative in 2016 (by 14%) and 2017 (by 3%). The cumulative present value of net revenue per FT vessel is expected to be about 1% higher during the medium term from 2015 to 2019 fishing years. In conclusion, the impacts of the preferred alternative on the net revenue per small business entity would be positive in 2015 fishing year and would be low positive in the medium term from 2016 to 2019 compared to Status quo levels.

Each specification alternative also includes default measures for 2016 fishing year that would be in place until the next Framework action is implemented. Instead of rolling over the projected DAS in 2015 (31 DAS under the preferred alternative) until the new Framework is implemented, this measure would allocate 75% of the projected DAS in FY2015 for LA vessels or if 75% of the projected DAS for 2016 is less than 20 DAS for FT LA vessels, the default allocation would be increased to 20 DAS. Default 2016 measures would also include one access area trip that could be used in the MA access areas (i.e. 17,000 pounds for FT vessel). The default measures

are expected to prevent potentially negative impacts on the resource and scallop yield, thus would have positive economic benefits for the scallop fishery in the long-term.

Table 161. Estimated fleet revenue and revenue per limited access vessel in 2014 dollars (Total scallop revenue in 2010=$475 million, total scallop revenue in 2011=$582 million, estimated revenue in 2012=$550 million, estimated revenue in 2013 fishing year=$460 million)

Fishing year	Alternative	Fleet scallop revenue (*) ($ million)	Revenue per FT vessel	Change from No Action	% Ch. from SQ levels
2015	ALT1. No Action	263.0	748,731	0%	-45%
	ALT2. Basic Run	557.8	1,592,242	113%	17%
	ALT3.NL+ETA (Preferred alt.)	578.1	1,650,451	120%	21%
	ALT3. 3 new closures	567.1	1,618,858	116%	19%
	ALT3. CA2+NL	570.3	1,627,986	117%	20%
	ALT4. Reduced F	557.6	1,591,748	113%	17%
	SQ. Status quo	477.2	1,361,611	82%	0%
2016	ALT1. No Action	824.5	2,355,361	0%	8%
	ALT2. Basic Run	749.4	2,140,503	-9%	-2%
	ALT3.NL+ETA (Preferred alt.)	658.7	1,881,008	-20%	-14%
	ALT3. 3 new closures	642.7	1,835,030	-22%	-16%
	ALT3. CA2+NL	726.0	2,073,424	-12%	-5%
	ALT4. Reduced F	748.7	2,138,409	-9%	-2%
	SQ. Status quo	763.9	2,181,911	-7%	0%
2017	ALT1. No Action	879.5	2,512,641	0%	7%
	ALT2. Basic Run	814.7	2,327,249	-7%	-1%
	ALT3.NL+ETA (Preferred alt.)	800.0	2,285,214	-9%	-3%
	ALT3. 3 new closures	804.5	2,298,094	-9%	-2%
	ALT3. CA2+NL	807.3	2,305,976	-8%	-2%
	ALT4. Reduced F	814.3	2,326,230	-7%	-1%
	SQ. Status quo	822.9	2,350,850	-6%	0%
2019	ALT1. No Action	804.2	2,297,093	0%	6%
	ALT2. Basic Run	764.2	2,182,738	-5%	1%
	ALT3.NL+ETA (Preferred alt.)	793.5	2,266,638	-1%	4%
	ALT3. 3 new closures	806.9	2,304,849	0%	6%
	ALT3. CA2+NL	768.0	2,193,534	-5%	1%
	ALT4. Reduced F	762.3	2,177,393	-5%	0%
	SQ. Status quo	760.2	2,171,262	-5%	0%
2019	ALT1. No Action	739.2	2,111,280	0%	6%
	ALT2. Basic Run	712.2	2,033,966	-4%	2%
	ALT3.NL+ETA (Preferred alt.)	727.5	2,077,735	-2%	4%
	ALT3. 3 new closures	788.0	2,250,788	7%	13%
	ALT3. CA2+NL	749.6	2,140,903	1%	7%
	ALT4. Reduced F	699.6	1,997,876	-5%	0%
	SQ. Status quo	698.6	1,994,954	-6%	0%

(*) Includes set asides and general category share

Table 162. Estimated net revenue per limited access vessel (in 2014 constant dollars)

Fishing year	Alternative	Fleet net revenue (*) ($ million)	Net revenue per FT vessel	Change from No Action	% Ch. from SQ levels
2015	ALT1. No Action	245.3	698,255	0%	-45%
	ALT2. Basic Run	516.0	1,472,745	111%	17%
	ALT3.NL+ETA (Preferred alt.)	534.8	1,526,504	119%	21%
	ALT3. 3 new closures	524.7	1,497,618	114%	19%
	ALT3. CA2+NL	527.4	1,505,205	116%	19%
	ALT4. Reduced F	515.9	1,472,285	111%	17%
	SQ. Status quo	442.2	1,261,610	81%	0%
2016	ALT1. No Action	760.0	2,170,735	0%	8%
	ALT2. Basic Run	691.7	1,975,482	-9%	-2%
	ALT3.NL+ETA (Preferred alt.)	609.4	1,739,892	-20%	-14%
	ALT3. 3 new closures	594.7	1,697,882	-22%	-16%
	ALT3. CA2+NL	670.5	1,914,773	-12%	-5%
	ALT4. Reduced F	691.1	1,973,619	-9%	-2%
	SQ. Status quo	704.9	2,013,152	-7%	0%
2017	ALT1. No Action	810.0	2,313,839	0%	7%
	ALT2. Basic Run	751.5	2,146,327	-7%	-1%
	ALT3.NL+ETA (Preferred alt.)	738.4	2,109,095	-9%	-3%
	ALT3. 3 new closures	742.6	2,121,025	-8%	-2%
	ALT3. CA2+NL	744.9	2,127,544	-8%	-2%
	ALT4. Reduced F	751.2	2,145,492	-7%	-1%
	SQ. Status quo	759.0	2,167,751	-6%	0%
2019	ALT1. No Action	743.4	2,123,335	0%	6%
	ALT2. Basic Run	706.8	2,018,565	-5%	1%
	ALT3.NL+ETA (Preferred alt.)	733.5	2,094,813	-1%	4%
	ALT3. 3 new closures	745.7	2,129,870	0%	6%
	ALT3. CA2+NL	710.3	2,028,629	-4%	1%
	ALT4. Reduced F	705.2	2,013,864	-5%	0%
	SQ. Status quo	703.2	2,008,303	-5%	0%
2019	ALT1. No Action	683.8	1,952,608	0%	6%
	ALT2. Basic Run	658.8	1,881,108	-4%	2%
	ALT3.NL+ETA (Preferred alt.)	672.7	1,920,996	-2%	4%
	ALT3. 3 new closures	728.1	2,079,417	6%	13%
	ALT3. CA2+NL	693.4	1,980,081	1%	7%
	ALT4. Reduced F	647.4	1,848,518	-5%	0%
	SQ. Status quo	646.3	1,845,501	-5%	0%

(*) Includes set asides and general category share

Table 163. Estimated cumulative present value of net revenue per limited access vessel (in 2014 constant prices, using a 3% discount rate)

Fishing year	Alternative	Fleet net revenue (*) ($ million)	Net revenue per FT vessel	Change from No Action	% Ch. from SQ levels
2015	ALT1. No Action	245	698,255	0%	-45%
	ALT2. Basic Run	516	1,472,745	111%	17%
	ALT3.NL+ETA (Preferred alt.)	535	1,526,504	119%	21%
	ALT3. 3 new closures	525	1,497,618	114%	19%
	ALT3. CA2+NL	527	1,505,205	116%	19%
	ALT4. Reduced F	516	1,472,285	111%	17%
	SQ. Status quo	442	1,261,610	81%	0%
2016	ALT1. No Action	983	2,809,272	0%	-13%
	ALT2. Basic Run	1,188	3,394,196	21%	5%
	ALT3.NL+ETA (Preferred alt.)	1,126	3,219,226	15%	0%
	ALT3. 3 new closures	1,102	3,149,554	12%	-2%
	ALT3. CA2+NL	1,178	3,367,715	20%	5%
	ALT4. Reduced F	1,187	3,391,927	21%	5%
	SQ. Status quo	1,127	3,219,633	15%	0%
2017	ALT1. No Action	1,747	4,993,692	0%	-5%
	ALT2. Basic Run	1,896	5,420,720	9%	3%
	ALT3.NL+ETA (Preferred alt.)	1,823	5,210,656	4%	-1%
	ALT3. 3 new closures	1,802	5,152,228	3%	-2%
	ALT3. CA2+NL	1,881	5,376,534	8%	2%
	ALT4. Reduced F	1,895	5,417,664	8%	3%
	SQ. Status quo	1,842	5,266,352	5%	0%
2019	ALT1. No Action	2,427	6,940,150	0%	-2%
	ALT2. Basic Run	2,543	7,271,299	5%	2%
	ALT3.NL+ETA (Preferred alt.)	2,494	7,131,012	3%	0%
	ALT3. 3 new closures	2,485	7,104,667	2%	0%
	ALT3. CA2+NL	2,531	7,236,323	4%	2%
	ALT4. Reduced F	2,540	7,263,940	5%	2%
	SQ. Status quo	2,486	7,107,540	2%	0%
2019	ALT1. No Action	3,035	8,678,227	0%	-1%
	ALT2. Basic Run	3,128	8,945,848	3%	2%
	ALT3.NL+ETA (Preferred alt.)	3,091	8,841,002	2%	1%
	ALT3. 3 new closures	3,131	8,955,412	3%	2%
	ALT3. CA2+NL	3,147	8,998,809	4%	3%
	ALT4. Reduced F	3,115	8,909,534	3%	2%
	SQ. Status quo	3,060	8,750,452	1%	0%

Table 164. Estimated cumulative present value of net revenue per limited access vessel (in 2014 constant prices, using a 7% discount rate)

Fishing year	Alternative	Fleet net revenue (*) ($ million)	Net revenue per FT vessel	Change from No Action	% Ch. from SQ levels
2015	ALT1. No Action	245	698,255	0%	-45%
	ALT2. Basic Run	516	1,472,745	111%	17%
	ALT3.NL+ETA (Preferred alt.)	535	1,526,504	119%	21%
	ALT3. 3 new closures	525	1,497,618	114%	19%
	ALT3. CA2+NL	527	1,505,205	116%	19%
	ALT4. Reduced F	516	1,472,285	111%	17%
	SQ. Status quo	442	1,261,610	81%	0%
2016	ALT1. No Action	956	2,730,356	0%	-13%
	ALT2. Basic Run	1,163	3,322,366	22%	6%
	ALT3.NL+ETA (Preferred alt.)	1,104	3,155,947	16%	0%
	ALT3. 3 new closures	1,081	3,087,799	13%	-2%
	ALT3. CA2+NL	1,154	3,298,088	21%	5%
	ALT4. Reduced F	1,162	3,320,164	22%	6%
	SQ. Status quo	1,101	3,146,436	15%	0%
2017	ALT1. No Action	1,663	4,754,507	0%	-6%
	ALT2. Basic Run	1,819	5,200,207	9%	3%
	ALT3.NL+ETA (Preferred alt.)	1,749	5,001,268	5%	-1%
	ALT3. 3 new closures	1,729	4,943,540	4%	-2%
	ALT3. CA2+NL	1,805	5,159,523	9%	2%
	ALT4. Reduced F	1,818	5,197,275	9%	3%
	SQ. Status quo	1,764	5,042,989	6%	0%
2019	ALT1. No Action	2,270	6,490,730	0%	-3%
	ALT2. Basic Run	2,396	6,850,906	6%	2%
	ALT3.NL+ETA (Preferred alt.)	2,348	6,714,208	3%	0%
	ALT3. 3 new closures	2,338	6,685,097	3%	0%
	ALT3. CA2+NL	2,384	6,818,437	5%	2%
	ALT4. Reduced F	2,393	6,844,137	5%	2%
	SQ. Status quo	2,338	6,685,312	3%	0%
2019	ALT1. No Action	2,792	7,983,121	0%	-1%
	ALT2. Basic Run	2,898	8,288,750	4%	2%
	ALT3.NL+ETA (Preferred alt.)	2,861	8,182,483	2%	1%
	ALT3. 3 new closures	2,893	8,274,230	4%	2%
	ALT3. CA2+NL	2,913	8,331,787	4%	3%
	ALT4. Reduced F	2,887	8,257,118	3%	2%
	SQ. Status quo	2,831	8,095,991	1%	0%

6.1.12.4.3 Comparison with other alternatives and the Mitigating Factors

The estimated revenue and net revenue for the scallop vessels and the small business entities under all alternatives, including the preferred alternative (ALT3, NL+ETA) considered in this Framework Action are expected to be higher than both No Action and SQ levels in 2015 fishing year.

Table 161 compares the gross revenue per FT vessel for the preferred alternative and for other alternatives from 2015 to 2019. Table 162 provides a similar comparison based on the net revenue (gross revenue minus trip costs) per FT vessel. The results show that the preferred alternative will have the largest revenue compared to all the other alternatives in 2015 fishing year. The net revenue in the medium term, estimated as the cumulative present value of net revenue from 2015 to 2019, will be slightly less for the preferred alternative compared to other alternatives including ALT2, ALT3 with three closures, ALT3 with closure of CA2 and NL and ALT4 (Table 163 and Table 164).

In addition to the aggregate economic impacts of the DAS and access area allocations, the economic impacts of the individual measures including those specifications for LAGC IFQ, incidental and NGOM permits are discussed in the relevant subsections of Section 5.4 and summarized in the following sections.

6.1.12.4.4 Economic impacts of the individual measures

The Council rationale for the proposed measures is summarized in Table 1 in the Executive Summary.

Acceptable Biological Catch

- Economic impacts are analyzed in Section 5.4.1
- **Summary of the impacts of the proposed option and mitigating factors**:
- The difference between No Action ABC and the proposed ABC in FW26 is similar and not great enough to have direct impacts on the fishery specifications set in this framework. Therefore, the potential economic impacts of the updated ABC on small business entities in the scallop fishery are expected to be marginal. In general, using the updated ABC values to set fishery specifications should have positive economic impacts over the 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 both in the short- or the long-term.

Specifications for limited access general category IFQ vessels

- Economic impacts are analyzed in Section 5.4.2
- **Summary of the impacts of the proposed option and mitigating factors**: Under the preferred alternative, ALT2 and ALT4, allocation for the LAGC IFQ fishery including the LA vessels with IFQ permits (1,348mt, 2.9 million lb.) will be 5.8% higher than the allocation under the default measures (1274mt, 2.8 million lb.). It is also 23% higher than the Status Quo level, that is, ACL for 2014 (1,099mt, or 2.42 million lb.). As a result, preferred alternative is expected to have positive economic impacts on the LAGC IFQ fishery compared to both No Action and Status Quo levels.
- **Comparison of the impacts with the alternative options:** There are no other alternatives that would generate higher economic benefits for the scallop fishery as a whole including the small business entities in the LAGC IFQ fishery. The allocation under ALT2 and ALT4 would at the same level as under the preferred, and No Action would have a lower allocation compared to the preferred alternative.

Allocation of LAGC IFQ trips in access areas

- Economic impacts are analyzed in Section 5.4.2.3
- **Summary of the impacts of the proposed option and mitigating factors**: Providing about the same level of access for LA and LAGC vessels in access areas in 2015 in terms of the total proportion of catch for the year (Option 4) would have positive economic impacts on the small business entities in the LAGC IFQ fishery. The economic impacts on the LAGC-IFQ fishery will be positive due to lower costs and higher revenue associated with the flexibility provided to the fishermen to land a major proportion of their quota from access areas if those areas prove to be more productive as projected.
- **Comparison of the impacts with the alternative options:** Preferred option (Option 4) would have positive economic impacts compared to the No Action alternative that allocates no access area trips and greater economic benefits than Option 2 that allocates 5.5% of the access area TAC to the LAGC IFQ fishery in 2015. However, preferred option would allocate about 6.5% of the total access area catch available in 2015 to LAGC IFQ fishery, lower than compared to allocation (10.4% of total access area catch) under Option 3. Therefore, Option 3 would have higher economic benefits on the small business entities in the scallop LAGC-IFQ fishery compared to the preferred option.

Northern Gulf of Maine (NGOM) Hard-TAC

- Economic impacts are analyzed in Section 5.4. 2
- **Summary of the impacts of the proposed option and mitigating factors**: Preferred alternative includes a 70,000 pounds hard-TAC for the NGOM, which is equivalent to the "No Action" scenario as specified in the previous Framework action 21. Thus, the preferred alternative will not have additional economic impacts on the participants of the NGOM fishery.
- **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.

Additional measures to reduce mortality on smaller scallops

- Economic impacts are analyzed in Section 5.4.2.4
- **Summary of the impacts of the proposed option and mitigating factors**:
- In the short-term, restricting the crew size in access areas to open area limits with an additional crew member could have some low negative economic impacts on vessels and could increase costs by reducing the flexibility to adjust crew size for each resource area; but with preferred option those negative impacts would be smaller. The long-term economic benefits of this measure are expected to outweigh the short-term costs.
- **Comparison of the impacts with the alternative options:** The alternative crew limit option (Option 1) would implement the same crew limits that exist for open areas, 7 individuals per LA vessel, and five people for small dredge vessels. The preferred option 2 is less restrictive than Option 1 because it would allow one additional crew member above open area limits. Therefore, the preferred option would minimize the short-term negative impacts on vessels compared to Option1 (Section 5.4.2.3.2).

Allocation Method for Mid-Atlantic Access Area Trips in 2015 only

- Economic impacts are analyzed in Section 5.4.3
- **Summary of the impacts of the proposed option and mitigating factors**:

- The preferred measure (Option 2) is expected to have positive economic impacts on the scallop vessels in the short-term by providing the opportunity to fish access areas trips in areas with the highest catch rates. This is expected to reduce the fishing costs per pound of scallops landed and could increase the revenue as well if the composition of landings include larger scallops with higher prices.
- **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.

Adjustments to provisions related to allocating and monitoring access area trips

- Economic impacts are analyzed in Section 5.4.4
- **Summary of the impacts of the proposed option and mitigating factors**:
- The preferred measure (Option 2) is expected to reduce costs and have positive economic impacts on the scallop vessels in the short-term by removing broken trip process and allowing flexibility to vessels to carry over unlanded pounds without the necessity of breaking a trip in the last 60 days of a fishing year. (Section 5.4.4.2.2, Option 2).
- **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. Under Option 1 vessels would still be required to take action (i.e., cross demarcation line and submit a preland or a broken trip form) in the last 60 days that an access area in open in a given fishing year in order to receive the carryover pounds for that area with higher costs compared to the preferred Option 2.

Measures to allow fishing in state waters after federal NGOM TAC is reached

- Economic impacts are analyzed in Section 5.4.5
- **Summary of the impacts of the proposed option and mitigating factors**:
- The preferred alternative would allow a state to apply for an exemption from the prohibition to fish in state waters if the federal NGOM hard TAC is reached. This is expected to have positive impacts on the revenue of scallop vessels that were granted such exemption and positive impacts on overall economic benefits from the scallop resource in state waters (Section 5.4.5).
- **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. While alternative option would allow vessels with both Federal NGOM and state permit to fish exclusively in state waters for scallops under state water rules, it would prohibit other vessels with federal scallop permits to fish for scallops in state waters in the NGOM management area after the TAC is reached (LA, LAGC IFQ, and LAGC Incidental). Preferred alternative is more flexible since it could include other scallop permit types (i.e. incidental, IFQ, etc.) not just the NGOM permit holders in the exemption.

Measures to make turtle regulations consistent

- Economic impacts are analyzed in Section 5.4.6
- **Summary of the impacts of the proposed option and mitigating factors**:
- Making the regulations regarding season and area for turtle chain mat and turtle deflector dredge consistent is expected to reduce the regulatory complexity and the administrative costs with slightly positive impacts on the overall economic benefits from the fishery.

- **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.

Measures to develop New Accountability measures for northern windowpane flounder and modify existing accountability measures for GB and SNE/MA yellowtail flounder AM for northern windowpane flounder

- Economic impacts are analyzed in Section 5.4.7
- **Summary of the impacts of the proposed option and mitigating factors:** Modifying the restriction on the number of rings in apron of dredge to a maximum of seven rows as a proactive AM for northern WP (Section 2.7.1.2), for GB YT and SNE/MA YT (Section 2.7.2.2), is expected to reduce bycatch of finfish and small scallops and help prevent a fishery from exceeding a sub-ACL. In general, reactive AMs can have negative impacts on the fishery if they impose seasonal closures or seasonal restrictions that impact when and where a vessel can fish. Although using a fewer rings could increase the fishing time and costs, this impact is expected to be minimal. Therefore, the preferred alternative is expected to have low positive impacts on the small business entities compared to No Action both in the short- and the long term (Section 5.4.7)
- **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.

Measures to allow a limited access vessel to declare out of fishery on return to homeport

- Economic impacts are analyzed in Section 5.4.8
- **Summary of the impacts of the proposed option and mitigating factors:** Preferred alternative is expected to have differential impacts on the small businesses homeported in VA/NC versus the vessels from MA and NJ. Implementing a separate VMS declaration code for steaming back to port south of Cape May is not expected to have positive economic impacts on the vessels from VA/NC and possibly some negative impacts on the net revenue of the vessels from MA and NJ due to the overall reduction in open area DAS per vessel (by 0.14 days in 2015, Section 5.4.8).
- **Comparison of the impacts with the alternative options:** There are no alternatives that would generate higher overall economic benefits for the participants of the scallop fishery. The current VMS demarcation line results in a higher DAS charge for each trip for the vessels homeported in Virginia and North Carolina due to the longer steaming times to reach the line. Under No Action, ports and the shoreside businesses that support the vessels that are closer to primary fishing grounds benefit when additional product is landed there; while other ports that are more distant, or have less activity due to vessels changing behavior, may be impacted negatively under No Action.

Modify regulations related to flaring bar provision for turtle deflector dredge

- Economic impacts are analyzed in Section 5.4.9
- **Summary of the impacts of the proposed option and mitigating factors:** Modifying regulations regarding to flaring bar provision for turtle deflector dredge is an administrative measure and related to safe handling of gear. The economic impacts of this measure are neutral because it has no direct impacts on the scallop catch efficiency of the gear.

- **Comparison of the impacts with the alternative options:** There are no alternatives that would generate higher overall economic benefits for the participants of the scallop fishery.

6.1.12.5 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 Framework on the fleet revenue and profits will be positive in the short-term compared to No Action and status quo conditions, their indirect and induced impacts are expected to be positive in the short-term as well. Over the medium term from 2015 to 2019, the indirect and induced impacts of the preferred alternative on the indirectly affected businesses will be small compared to No Action and other alternatives considered in this action. Over the long-term, 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.

6.1.12.6 Identification on Overlapping Regulations

The proposed regulations do not create overlapping regulations with any state regulations or other federal laws.

7.0 GLOSSARY

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.

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.

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.

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.

Endangered species – a species that is in danger of extinction throughout all or a significant portion of its range.

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[14].

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.

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.

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.

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.

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.

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.

[14] 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.

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.

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.

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.

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.

Shucking – a manual process of cutting scallop meats from the shell and viscera.

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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Appendix I

Economic Model

1.1 ESTIMATION OF PRICES, COSTS, PROFITS AND NATIONAL BENEFITS

The economic model includes an ex-vessel price equation, a cost function and a set of equations describing the consumer and producer surpluses. The ex-vessel price equation is used in the simulation of the ex-vessel prices, revenues, and consumer surplus along with the landings and average meat count from biological projections. The cost function is used for projecting harvest costs and thereby for estimating the producer benefits as measured by the producer surplus. The set of equations also includes the definition of the consumer surplus, producer surplus, profits to vessels, and total economic benefits.

1.1.1 Estimation of annual ex-vessel prices

Fish prices constitute one of the important channels through which fishery management actions affect fishing revenues, vessel profits, consumer surplus, and net economic benefits for the nation. The degree of change in ex-vessel price in response to a change in variables affected by management, i.e., scallop landings and size composition of landed scallops, is estimated by a price model, which also takes into account other important determinants of price, such as disposable income of consumers and price of imports.

Given that there could be many variables that could affect the price of scallops, it is important to identify the objectives in price model selection for the purposes of cost-benefit analyses. These objectives (in addition to developing a price model with sound statistical properties) are as follows:

- To develop a price model that uses inputs of the biological model and available data. Since the biological model projects annual (rather than monthly) landings, the corresponding price model should be estimated in terms of annual values.

- To select a price model that will predict prices within a reasonable range without depending on too many assumptions about the exogenous variables. For example, the import price of scallops from Japan could impact domestic prices differently than the price of Chinese imports, but making this separation in a price model would require prediction about the future import prices from these countries. This in turn would complicate the model and increase the uncertainty regarding the future estimates of domestic scallop prices.

In addition to the changes in size composition and landings of scallops, other determinants of ex-vessel price include level of imports, import price of scallops, disposable income of seafood consumers, and the demand for U.S. scallops by other countries. The main substitutes of sea scallops are the imports from Canada, which are almost identical to the domestic product, and imports from other countries, which are generally smaller in size and less expensive than the domestic scallops. An exception is the Japanese imports, which have a price close to the Canadian imports and could be a close substitute for the domestic scallops as well.

The ex-vessel price model estimated below includes the price, rather than the quantity of imports as an explanatory variable, based on the assumption that the prices of imports are, in general,

determined exogenously to the changes in domestic supply. This is equivalent to assuming that the U.S. market conditions have little impact on the import prices. An alternative model would estimate the price of imports according to world supply and demand for scallops, separating the impacts of Canadian and Japanese imports from other imports since U.S. and Canadian markets for scallops, being in proximity, are highly connected and Japanese scallops tend to be larger and closer in quality to the domestic scallops. The usefulness of such a simultaneous equation model is limited for our present purposes, however, since it would be almost impossible to predict how the landings, market demand, and other factors such as fishing costs or regulations in Canada or Japan and in other exporting countries to the U.S. would change in future years.

Since the average import price is equivalent to a weighted average of import prices from all countries weighted by their respective quantities, the import price variable takes into account the change in composition of imports from Canadian scallops to less expensive smaller scallops imported from other countries. This specification also prevents the problem of multi-colinearity among the explanatory variables, i.e., prices of imports from individual countries and domestic landings. In terms of prediction of future ex-vessel prices, this model only requires assignment of a value for the average price of imports, without assuming anything about the composition of imports, or the prices and the level of imports from individual countries. The economic impact analyses of the fishery management actions usually evaluate the impact on ex-vessel prices by holding the average price of imports constant. The sensitivity of the results affected by declining or increasing import prices could also be examined, however, using the price model presented in this section.

The price model presented below estimates annual average scallop ex-vessel price by market category (PEXMRKT) as a function of

- Meat count (MCOUNT)
- Average price of all scallop imports (PIMPORT)
- Per capita personal disposable income (PCDPI)
- Total annual landings of scallops (SCLAND)
- Percent share of landings by market category in total landings (PCTLAND)
- A dummy variable as a proxy for price premium for Under 10 count scallops (PP10).
- Dummy variables for 2005 (D05) and 2010 (D10) to take into account the problems with the Japanese aquaculture in those years that reduced the supply of large scallops from this country and increased the demand for US sea scallops.
- Ratio exported pounds to the landings of domestic scallops (REXPLAN)

Because the data on scallop landings and revenue by meat count categories were mainly collected since 1998 through the dealers' database, this analysis included the 1998-2013 fishing years. All

the price variables were corrected for inflation and expressed in 2013 prices by deflating current levels by the consumer price index (CPI).

The ex-vessel prices are estimated in semi-log form to restrict the estimated price to positive values only as follows:

> Log (PEXMRKT) = f (MCOUNT, PIMPORT, PCDPI, SCLAND, PCTLAND, DU10, D2005, D2010, REXPLAN)

The market categories above 30-count are grouped together since landings of scallops over 40-, 50- or 60-count were almost nonexistent since 1998 and also to be consistent with the grouping in the biological model which estimates composition of scallop landings in terms of four market categories. The data for the regression analysis did not include the landings of scallops with unclassified market category.

The estimation of the price model using the Nonlinear GMM method produced robust estimates of the coefficient of variation and the parameter as shown in **Table 1** and **Table 2**. Adjusted R^2 indicates that changes in meat count, composition of landings by size of scallops, domestic landings, average price of all imports, disposable income, price premium on under 10 count scallops, 2005 and 2010 dummy variables and ratio of exports to domestic landings explain over 87 percent of the variation in ex-vessel prices by market category.

Table 1 - Estimation results for price model

Observations Processed
Read 64
Solved 64
GMM with HCCME=1

The MODEL Procedure

Nonlinear GMM Summary of Residual Errors

Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq
Log (PEXMRKT)	10	54	0.4019	0.00744	0.0863	0.8959	0.8785

Table 2 - Coefficients of the Price Model

Nonlinear GMM Parameter Estimates

Parameter	Estimate	Approx Std Err	t Value	Approx Pr > |t|
INTERCEPT	0.51439	0.4824	1.07	0.2910
MCOUNT	-0.00512	0.00198	-2.58	0.0125
PIMPORT	0.086544	0.0270	3.21	0.0023
PP10	0.046582	0.0528	0.88	0.3814
PCTLAND	-0.20172	0.0554	-3.64	0.0006
SCLAND	-0.00596	0.00159	-3.75	0.0004
D10	0.161308	0.0457	3.53	0.0009
D5	0.169627	0.0410	4.14	0.0001
DPICPC	0.033619	0.0133	2.52	0.0147
REXPLAN	0.681612	0.1909	3.57	0.0008

The coefficients of the model are used first to estimate the prices by market category and then a weighted (by share in total landings) average of the estimated prices is calculated to estimate the annual average price.

Figure 1 shows that this model provides a very good fit to the actual values of ex-vessel prices especially given that data is imperfect and there are possibly several other factors that affect prices in some small degree that cannot be practically included in the model. In terms of data, a percentage of landings remain unclassified in terms of market category (**Table 3**). Average annual prices were estimated assuming that composition of the unclassified landings is similar to the composition of the landings by classified market categories, it likely that actual distribution were different from what was assumed. Another data issue is that dealer data combines U12 scallops with usually demand a higher premium with scallops up to 20-count scallops. Because of that, the price model cannot take into account the proportion of U12's in landings.

Figure 1 – Estimated and actual annual ex-vessel prices

In addition to these data issues the changes in import price of scallops coming from different countries, or changes in the seasonal composition of landings are among other factors that could affect annual average ex-vessel prices. However, as mentioned above, the goal was to develop a price model that uses inputs of the biological model, which projects annual rather than seasonal landings. Another important goal was to select a price model that will predict prices within a reasonable range without depending on too many assumptions about the exogenous variables, including the composition of imports from different countries. Although numerical results should be interpreted with caution, since the analysis covers about 16 years of annual data from a period during which the scallop fishery underwent major changes in management policy including area closures, controlled access, and rotational area management, overall, the above price model has the proper statistical properties and provides a robust estimate of average annual prices. In 14 out of 16 years, the difference in estimated price from the actual price was less than 5% and in the last 6 years with better data compared to the previous years, this difference was at most was 3% (**Table 4**).

Table 3 - Composition of scallop landings by market category

Fishyear	Unclassified	Under 10 count	10 to 20 count	20 to 30 count	>30 count	Grand Total
1998	24%	2%	17%	21%	35%	100%
1999	12%	16%	12%	28%	33%	100%
2000	10%	7%	20%	42%	21%	100%
2001	13%	3%	23%	52%	10%	100%
2002	11%	5%	14%	66%	4%	100%
2003	13%	6%	21%	56%	3%	100%
2004	8%	8%	45%	39%	1%	100%
2005	7%	13%	58%	21%	2%	100%
2006	7%	23%	50%	19%	1%	100%
2007	7%	24%	52%	12%	4%	100%
2008	4%	23%	52%	19%	1%	100%
2009	3%	15%	62%	21%	0%	100%
2010	2%	15%	63%	19%	0%	100%
2011	2%	15%	77%	6%	1%	100%
2012	2%	18%	73%	6%	0%	100%
2013	3%	21%	61%	14%	0%	100%
Period average	**7%**	**14%**	**48%**	**27%**	**4%**	**100%**

Table 4 - Percentage difference of estimated annual ex-vessel price from the actual price

Fishyear	Percent difference of estimated price from actual prices
1998	-2.0%
1999	-2.0%
2000	0.7%
2001	15.2%
2002	4.6%
2003	4.6%
2004	-9.2%
2005	-2.3%
2006	0.5%
2007	-4.8%
2008	2.1%
2009	0.4%
2010	-1.7%
2011	-2.9%
2012	3.1%
2013	-2.0%
Period average	**0%**

1.1.2 Estimation of variable costs

Data for variable costs, i.e., trip expenses include food, fuel, oil, ice, water and supplies and damage costs. Trip costs estimates for Framework purposes were estimated using the observer cost data for 1994-2014. Those estimates were provided in Section 4.4.6 Tables 71 to 76. Because of the increase in fuel prices in 2011, the share of fuel costs increased to 80% of the total trip cost and average trip cost per DAS for the full-time dredge vessels amounted to over $1950 per day-at-sea (Table 71). Average trip costs for full-time small dredge vessels were about $1250 per day-at-sea in 2011 (Table 73).

The trip costs per day-at-sea (ffiwospda) were also estimated to be a function of vessel crew size (CREW), vessel size in gross tons (GRT), vessel length (LEN) fuel prices (FUELP), and dummy variables for limited access general category (LGC) and small dredge (SMD) vessels to identify important variables that affect trip expenses. This cost equation was assumed to take a double-logarithm form and estimated with data obtained from observer database. The empirical equation presented in Table 3 estimated more than 52% of the variation in trip costs and has proper statistical properties using the observer data from 1991 to 2012 fishing years for the limited access and limited access general category vessels.

Table 5. Estimation of total trip costs per DAS used for the limited access and limited access general category vessels

Number of Observations Used 922

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	6	92.52095	15.42016	170.10	<.0001
Error	915	82.94714	0.09065		
Corrected Total	921	175.46809			

Root MSE	0.30109	R-Square	0.5273
Dependent Mean	7.60870	Adj R-Sq	0.5242
Coeff Var	3.95712		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	3.35505	0.43567	7.70	<.0001
lngrt	1	0.17412	0.04209	4.14	<.0001
lnlen	1	0.46272	0.11760	3.93	<.0001
lncrew	1	0.20396	0.09783	2.08	0.0374
lnfuelpr	1	0.83778	0.07341	11.41	<.0001
SMD	1	-0.29295	0.04042	-7.25	<.0001
lgc	1	-0.62941	0.10317	-6.10	<.0001

1.1.3 Estimation of fixed costs

The fixed costs include those expenses that are not usually related to the level of fishing activity or output. These are insurance, maintenance, license, repairs, office expenses, professional fees,

dues, taxes, utility, interest, communication costs, association fees and dock expenses. According to the observer data on fixed costs for the period 2001 to 2007, the fixed costs including maintenance, repairs, engine and gear replacement and hull and liability insurance averaged $162,000 per full-time vessel (Table 5). Table 6 shows that fixed costs of the vessels varies by the ton class and larger vessels have higher fixed costs than the smaller boats. The fixed cost estimates were updated for the LAGC IFQ fishery (http://www.nefmc.org/library/ifq-report-information) using the recent Fixed Cost Surveys for 2011 and 2012. Fixed costs for years after 2007 for the LA will be updated using the NMFS 2012 Cost Survey.

Table 6. Annual fixed costs for full-time limited access scallop vessels by year (in 2006 inflation-adjusted prices and includes only those observations for insurance cost was available)

Data	2001	2002	2003	2004	2005	2006	2007	2001-2007
Number of vessels	7	20	36	50	40	24	39	216
Maintenance ($)	96,659	52,308	79,108	49,953	69,048	91,045	38,717	63,452
Repairs and replacement ($)	86,912	65,400	81,452	73,349	44,287	38,714	33,414	58,283
Insurance ($)	40,980	35,127	60,501	57,117	61,933	65,896	62,129	57,941
Total fixed costs ($)	224,552	141,719	206,304	155,711	159,542	171,252	122,631	161,819
GRT	148	156	157	156	156	144	150	153
HP	876	799	832	825	813	792	840	822

Table 7. Annual fixed costs of full-time limited access scallop vessels by ton class (2006 inflation adjusted prices, including only those observations for which insurance data were available)

Data	51-100 GRT	101-150 GRT	>150	Average (2001-07)
Number of vessels	18	75	123	216
GRT	75	129	180	153
HP	461	690	957	822
Maintenance ($)	32,657	60,145	70,585	63,452
Repairs ($)	26,152	47,860	70,255	58,283
Insurance ($)	46,784	48,615	65,295	57,941
Total fixed cost ($)	100,780	142,482	182,652	161,819
Ratio of fixed costs to the average for the fleet	0.62	0.88	1.13	1.0

The 2006 and 2007 fixed cost survey data included other cost items such as office, accounting, and interest payments in addition to the repairs, maintenance and insurance.

The model shown in Table 7 is based on the fixed cost survey data and estimates fixed costs as a function of length, year built, horse power and a dummy variable for boats that have multispecies permit. The data included 196 observations and the fixed costs are estimated by using the 97 observations for vessels with dredge and trawl gear. Because the data on communications costs and association fees were missing for most observations, these costs were not included in the estimation but their average values for the scallop vessels were deducted from the gross stock when estimating net boat and crew shares (Table 8).

Table 8. Estimation of basic fixed costs

```
                                GMM with HCCME=1                                  235

                              The MODEL Procedure

                     Nonlinear GMM Summary of Residual Errors

                   DF     DF                                            Adj   Durbin
Equation       Model  Error       SSE       MSE  Root MSE  R-Square     R-Sq   Watson

lnfcbasic          5     92   15.8206    0.1720    0.4147    0.7283   0.7165   2.2736


                         Nonlinear GMM Parameter Estimates

                                     Approx                   Approx
            Parameter       Estimate     Std Err    t Value     Pr > |t|

            intc            -242.988     65.7063      -3.70       0.0004
            lenco           1.588635      0.1986       8.00       <.0001
            bltco           32.51993      8.6562       3.76       0.0003
            d10co           -0.51566      0.1039      -4.96       <.0001
            hpco            0.168211      0.1174       1.43       0.1554


                 Number of Observations     Statistics for System

                 Used                 97    Objective        2.3E-18
```

Table 9. Average association fee and communication costs by vessel size

	Average annual association fee	Average annual Communication Costs
All Vessels	1610	3446
Large (>=80 feet)	1895	3939
Medium (<80 feet)	1459	3185

Using the survey cost data, total fixed costs are estimated to be $176,516 per full-time vessel in 2006 constant dollars and $188,343 in 2008 dollars (Table 9). These estimates exclude vessel improvement costs (other than repairs and maintenance) which could be considered as discretionary investment and could be postponed when there is a temporary shortfall in cash earnings. Using this survey data information for the estimated value for fixed costs for 2011, i.e., $191,167 and assuming a vessel share for 48% of gross revenue, it could be estimated that in order to cover the fixed costs in full, a vessel has to earn a gross revenue of $398,264 (break-even revenue) any amount above that would generate profits. If instead average fixed costs were equal to the averages values ($161,819, Table 5), estimated from the observer data for 2001-2007, then adjusting this value for 2011 would result in a total fixed cost of $180,424 and a break-even revenue of $376,313.

Table 10. Estimated fixed costs per full-time vessel

Data	2007	In 2011 Inflation adjusted prices

Estimated basic fixed costs	$176,516	$191,167
Improvement Costs (Difference)	$50,023	$54,175

1.1.4 Profits and crew incomes

As it is well known, the net income and profits could be calculated in various ways depending on the accounting conventions applied to gross receipts and costs. The gross profit estimates used in the economic analyses in the FSEIS simply show the difference of gross revenue over variable (including the crew shares) and fixed expenses rather than corresponding to a specific accounting procedure. It is in some ways similar to the net income estimated from cash-flow statements since depreciation charges are not subtracted from income because they are not out-of-pocket expenses.

Gross profits per vessel are estimated as the boat share (after paying crew shares) minus the fixed expenses such as maintenance, repairs and insurance (hull and liability). Based on the input from the scallop industry members and Dan Georgianna on the lay system, the profits and crew incomes are estimated as follows:

- The association fees, communication costs and a captain bonus of 5% are deducted from the gross stock to obtain the net stock.
- Boat share is assumed to be 48% and the crew share is assumed to be 52% of the net stocks.
- Profits are estimated by deducting fixed costs from the boat share.
- Net crew income is estimated by deducting the trip costs from the crew shares.

1.1.5 Consumer surplus

Consumer surplus measures the area below the demand curve and above the equilibrium price. For simplicity, consumer surplus is estimated here by approximating the demand curve between the intercept and the estimated price with a linear line as follows:

CS= (PINT*SCLAN-EXPR*SCLAN)/2

$$PVCS = \sum_{t=2000}^{t=2008} (CS_t /(1+r)^t)$$

Where: r=Discount rate.

CS_t= Consumer surplus at year “t”

PVCS= Present value of the consumer surplus

EXPR= Ex-vessel price corresponding to landings for each policy option.

PINT=Price intercept i.e., estimated price when domestic landings are zero.

SCLAN= Sea scallop landings for each policy option.

Although this method may overestimate consumer surplus slightly, it does not affect the ranking of alternatives in terms of highest consumer benefits or net economic benefits.

1.1.6 Producer surplus

The producer surplus (PS) is defined as the area above the supply curve and the below the price line of the corresponding firm and industry (Just, Hueth & Schmitz (JHS)-1982). The supply curve in the short-run coincides with the short-run MC above the minimum average variable cost (for a competitive industry). This area between price and the supply curve can then be approximated by various methods depending on the shapes of the MC and AVC cost curves. The economic analysis presented in this section used the most straightforward approximation and estimated PS as the excess of total revenue (TR) over the total variable costs (TVC). It was assumed that the number of vessels and the fixed inputs would stay constant over the time period of analysis. In other words, the fixed costs were not deducted from the producer surplus since the producer surplus is equal to profits plus the rent to the fixed inputs. Here fixed costs include various costs associated with a vessel such as depreciation, interest, insurance, half of the repairs (other half was included in the variable costs), office expenses and so on. It is assumed that these costs will not change from one scenario to another.

PS=EXPR*SCLAN- ΣOPC
ΣOPC = Sum of operating costs for the fleet.

$$PVPS = \sum_{t=2000}^{t=2008} (PS_t / (1+r)^t)$$

Where: r=Discount rate.

PS_t= Producer surplus at year "t"
PVPS= Present value of the producer surplus .
SCALN= Sea scallop landings for each policy option.
EXPR= Price of scallops at the ex-vessel level corresponding to landings for each policy option

Producer Surplus also equals to sum of rent to vessels and rent to labor. Therefore, rent to vessels can be estimated as:

RENTVES=PS – CREWSH

Rentves= Quasi rent to vessels
Crewsh= Crew Shares

1.1.7 Total economic benefits

Total economic benefits (TOTBEN) is estimated as a sum of producer and consumer surpluses and its value net of status quo is employed to measure the impact of the management alternatives on the national economy.

TOTBEN=PS+CS

Present value of the total benefits= PVTOTBEN= PVPS+PVCS

1.1.8 Ownership and affiliations in the Scallop Fishery

According to the ownership data for the scallop fishery, several individuals have ownership interest in one single vessel or multiple vessels. In other words, every vessel has multiple owners and some owners of a particular vessel have ownership interest in other vessels with different individuals. Therefore, it necessary to develop a method that would take into account these affiliations in order to derive distinct business entities and assign an entity number to each group of vessels connected by common ownership for the purposes of RFA and other analyses.

The vessel affiliations and the corresponding business entities in the scallop fishery is derived using a method based on 'maximum ownership' criteria. This method follows SBA's criteria for affiliation to the extent possible, which is based on the principle of control that "may arise through ownership, management, or other relationships or interactions between the parties" including foreign affiliations even when the control is not exercised (CFR 121.103 in its Small Business Size Regulations). However, due to the lack of data on those relationships other than ownership of vessels, the business entities are identified based on the the ownership interest only. This approach is also consistent with the way ownership is defined for the purposes of 5% ownership cap provision in the scallop limited access fishery.

The maximum ownership criteria is basically a tool used in assigning all the vessels owned by an individual into the same entity and including the co-owners in the same pool of affiliation. A major proportion of vessels in the scallop fishery is owned by more than two individuals and sometimes as much as 20 or more people making it very time consuming identify the common owners for each vessel. For this reason, a SAS program is developed that identifies the main owner and then the business entities in several steps:

1. In the first step, the program calculates total number of vessels owned by each individual listed as an owner for each scallop vessel (i.e. vessels with scallop permits) as the following examples show.

Table 11. Owners of scallop vessels

Owner	Person-id	Number of vessels owned
Mrs.B	100	7
Mr. A	120	5
Mr. C	130	2
Mrs. D	175	6
Mr. E	125	6

Table 12. Vessels and Affiliations

Vessel	Owner 1	Owner 2	Main owner	Affiliation id
1	Mrs. B	Mr.A	Mrs. B	100
2	Mrs. B	Mr.A	Mrs. B	100
3	Mrs. B	Mr.A	Mrs. B	100
4	Mrs. B	Mr.A	Mrs. B	100

5	Mrs. B	Mr.A	Mrs. B	100
6	Mrs. B	Mr.C	Mrs. B	100
7	Mrs. B	Mr.C	Mrs. B	100
8	Mrs. D	Mr. E	Mrs. D	175
9	Mrs. D	Mr. E	Mrs. D	175
10	Mrs. D	Mr. E	Mrs. D	175
11	Mrs. D	Mr. E	Mrs. D	175
12	Mrs. D	Mr. E	Mrs. D	175
13	Mrs. D		Mrs. D	175
14		Mr. E	Mr. E	125

2. The information in Table 10 is then combined with each vessel entry and the "main owner" for each vessel is identified as that owner who owns the largest number of vessels in Table 11. For example, if Mr. A and Mrs. B were listed as the joint owners of the same 5 vessels and Mrs. B and Mr. C were listed as the joint owners of additional two vessels, Mrs. B has been assigned as the primary owner of these 7 vessels. Consequently, those 7 vessels were considered as one business entity (one affiliation) because they all have one common owner, Mrs.B with control on all these vessels through ownership. The SAS program is then used the person-id for Mrs.B is as the affiliation number for that particular group of vessels.

3. In cases where a vessel has multiple owners that own same number of vessels, a simple method assigns the person with the maximum person-id as the main person of that vessel. For example, if Mr. E and Mrs. D were listed as the joint owners of the same 5 vessels and each also owned another vessel separately, and if Mr.A's person-id is 125 and Mrs.D's person-id is 75, then Mr.E is identified as the main owner of those jointly owned five vessels, and Mr.E is identified as the sole owner of vessel 14. Only issue with this approach is that it is not clear if the revenues earned from vessel 14 by Mr.E is used as investment purposes for the operation of vessels 8 to 12 he jointly owns with Mrs.D. If he did, all the vessels in the group (vessel 8 to 14) would have been considered as one business entity.

4. Using the above method resulted in 3 affiliated business entities in the scallop fishery; Entity 100, entity 175 and entity 125. In the second example, instead of selecting the owner based on the highest person-id, we could have selected the person with minimum person-id or maximum revenue or by some random index as the main owner without affecting the number of entities.

It must be pointed out that the concentration of ownership could be even more than estimated with the above method because not all family relationships could be taken into account in identifying the entities. For example, son or a daughter of an owner has the sole ownership of a vessel, that vessel is considered as a separate business entity with the above method.

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Daniel Georgianna, A.Caas and P.Amaral (1999); The Cost of Fishing for Sea Scallops in the Northeastern United States. University of Massachusetts Dartmouth, Cooperative Marine Education and Research Program, NMFS, Contract Number NA67FE0420. December 16, 1999.

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Appendix II

Summary of Scallop PDT Analyses used for Developing and Assessing the Potential Impacts of Alternatives Designed to Allow Limited Access Vessels Declare out of the Fishery on Return to Port from Open Area Trips

1.0 Background

Currently DAS are allocated to the limited access fishery based on an estimate of projected catch in open areas divided by an estimate of average catch per day for all LA vessels combined. This estimate of catch per DAS uses "DAS charged"; the time between when a vessel crosses the VMS demarcation line on the way out, and the way back. Framework 26 considered measures to allow a vessel more flexibility to get off the clock on the return to port, which would have impacts on the DAS charged value, thus the LPUE estimate.

FW26 considered three alternatives (See Section ???). Alternative 2.8.1, the No Action – LA vessels on an open area DAS trips are charged DAS from the time a vessel positions seaward of the VMS demarcation line until it once again positions shoreward of the line. Alternative 2.8.2 - LA open area trip would end when vessel positions shoreward of demarcation line and that vessel declares out of fishery. Finally, Alternative 2.8.3 - a LA vessel wanting to land an open area trip in ports south of Cape May could get off the clock shoreward of demarcation line south of 39N and declare out of fishery there to avoid DAS charges on steam back to ports south of Cape May (preferred alternative).

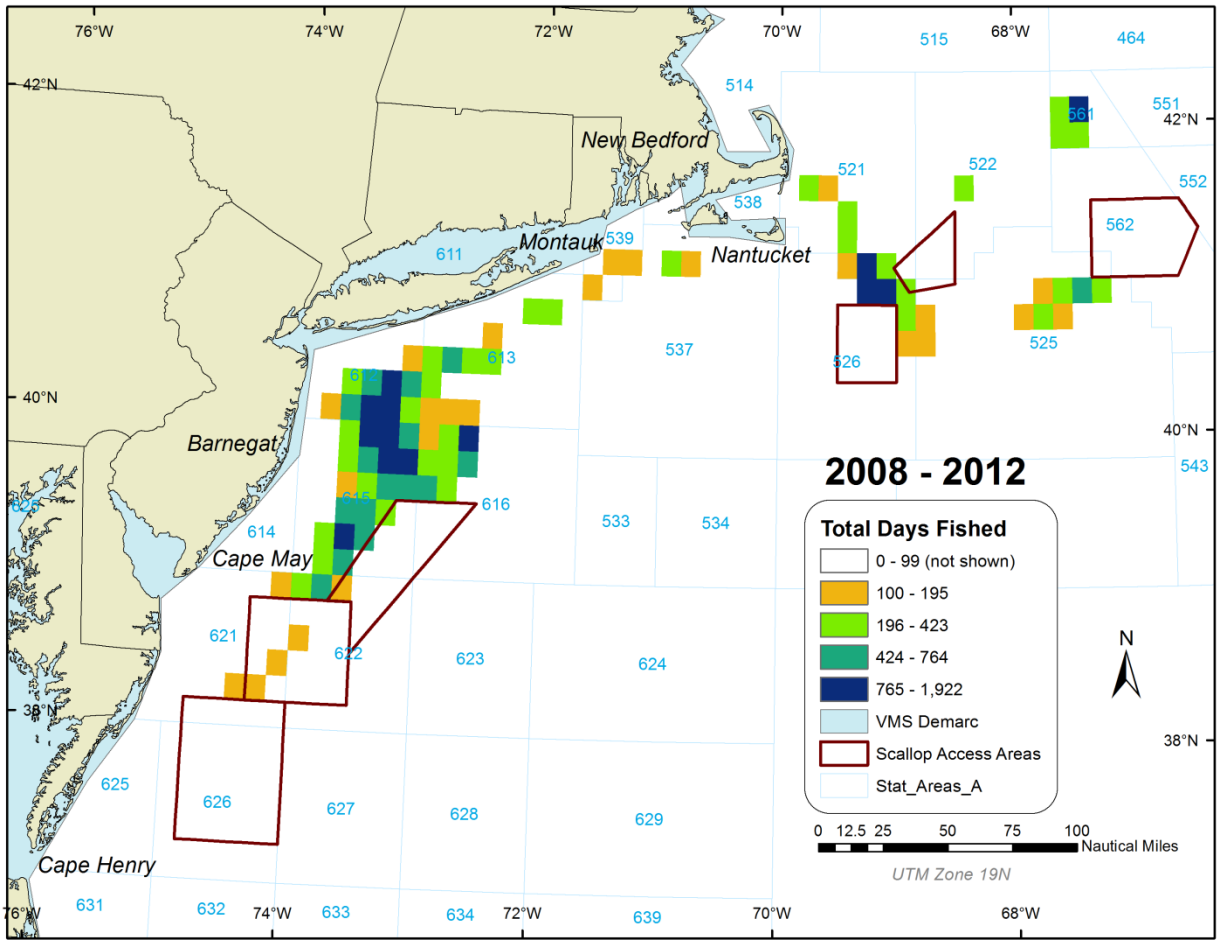
The PDT used several data sources and analyses to support development and analyses of these alternatives. The methods are described below, and additional analyses are included in Section 5.0 of FW26.

2.0 Methods

Under each scenario, some amount of time that is currently part of "DAS charged", would no longer be charged. That will have some effect on future estimates per DAS. The PDT developed a method for estimating those potential effects.

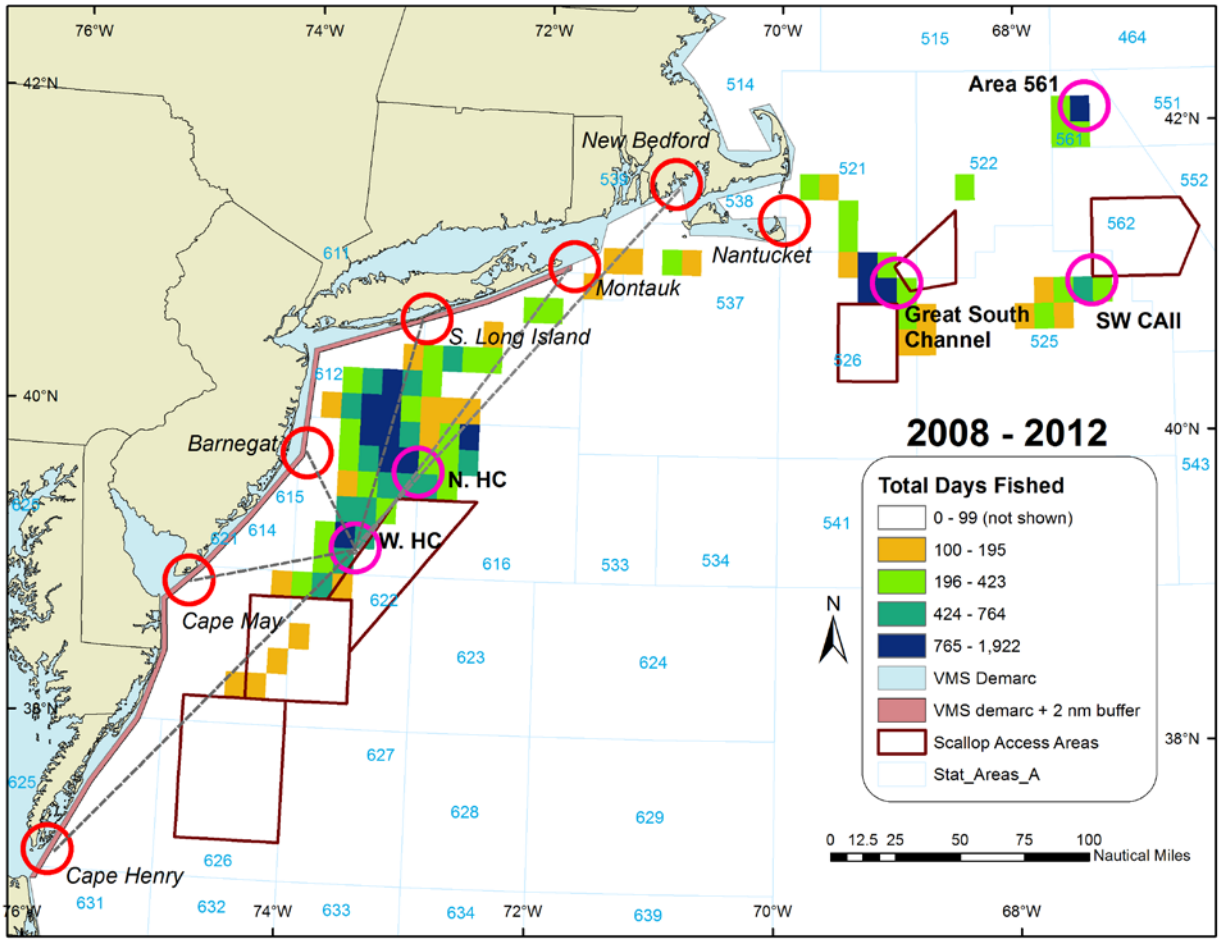
VMS data have been summarized by ten minute square for all LA vessels. In addition to the raw VMS data, these analyses also use model results from a NEFSC project that has calculated the probability that a vessel is fishing or steaming for each VMS poll by fishery (D. Records and C. Demarest, unpublished). Maps of binned values for total hours fished, based on the Records and Demarest model, were used to determine fishing hotspots in open areas using 2008-2012 VMS data. Trips that had VMS pollings within scallop access areas were removed, leaving just open area trips for the last five years of VMS data available (2008-2012). A map of total DAS fished for LA open area trips is summarized below for 2008-2012 (Figure 1).

Figure 1 – Total days fished for 2008-2012 for all open area LA trips based on VMS model



This map was used to identify five general hot spots in open areas (3 on GB and 2 in MA): Area 561 near northern edge; SW CAII just outside of CA2south; Great South Channel between CA1 and NL scallop access areas; the "gully" on the north side of the approach to New York City; and open areas north of the Hudson Canyon scallop access area (Figure 2). These hot spots do change over time and a similar map was developed for each year separately (Figure 3).

Figure 2 – Primary open area fishing location hotspots (pink circles), and primary destinations (major ports or closest access inside VMS demarcation (red circles).
Lines indicate examples of measurements made



Vessels from different regions have different open area fishing patters. Limited access vessels were separated into a series of homeport groups based on permit data. All vessels were put in one of three homeport state groups:

1) Massachusetts (All New England states: ME, NH, MA, RI, CT = MA) (Figure 4)
2) New Jersey (NY, NJ, PA = NJ) (Figure 5)
3) Virginia (VA, NC, DE, and MD = VA) (Figure 6)

Figure 3 - Total days fished by year all open area LA trips based on VMS model

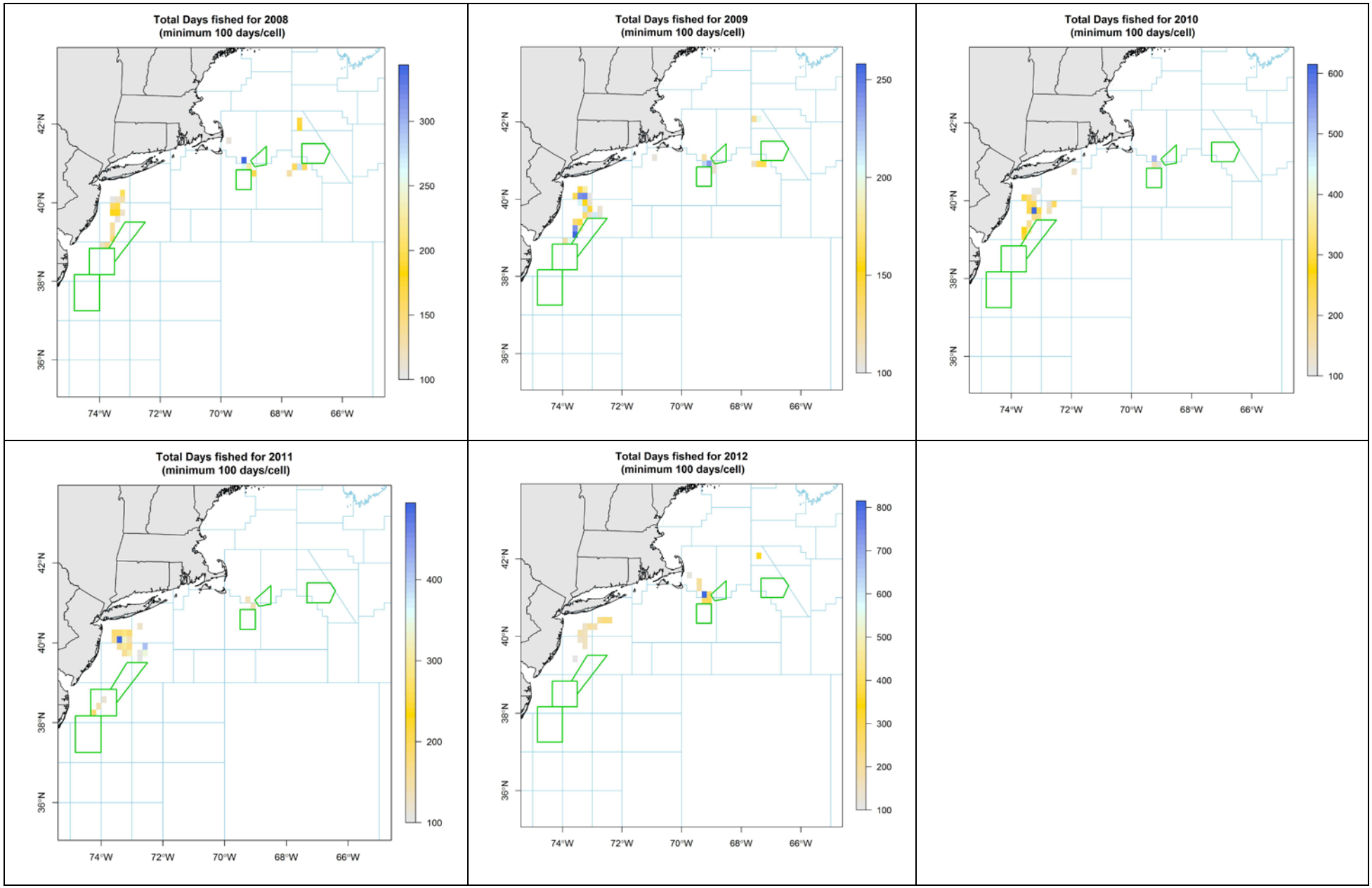


Figure 4 - Total days fished by year for all open area LA trips on "MA" vessels based on VMS model

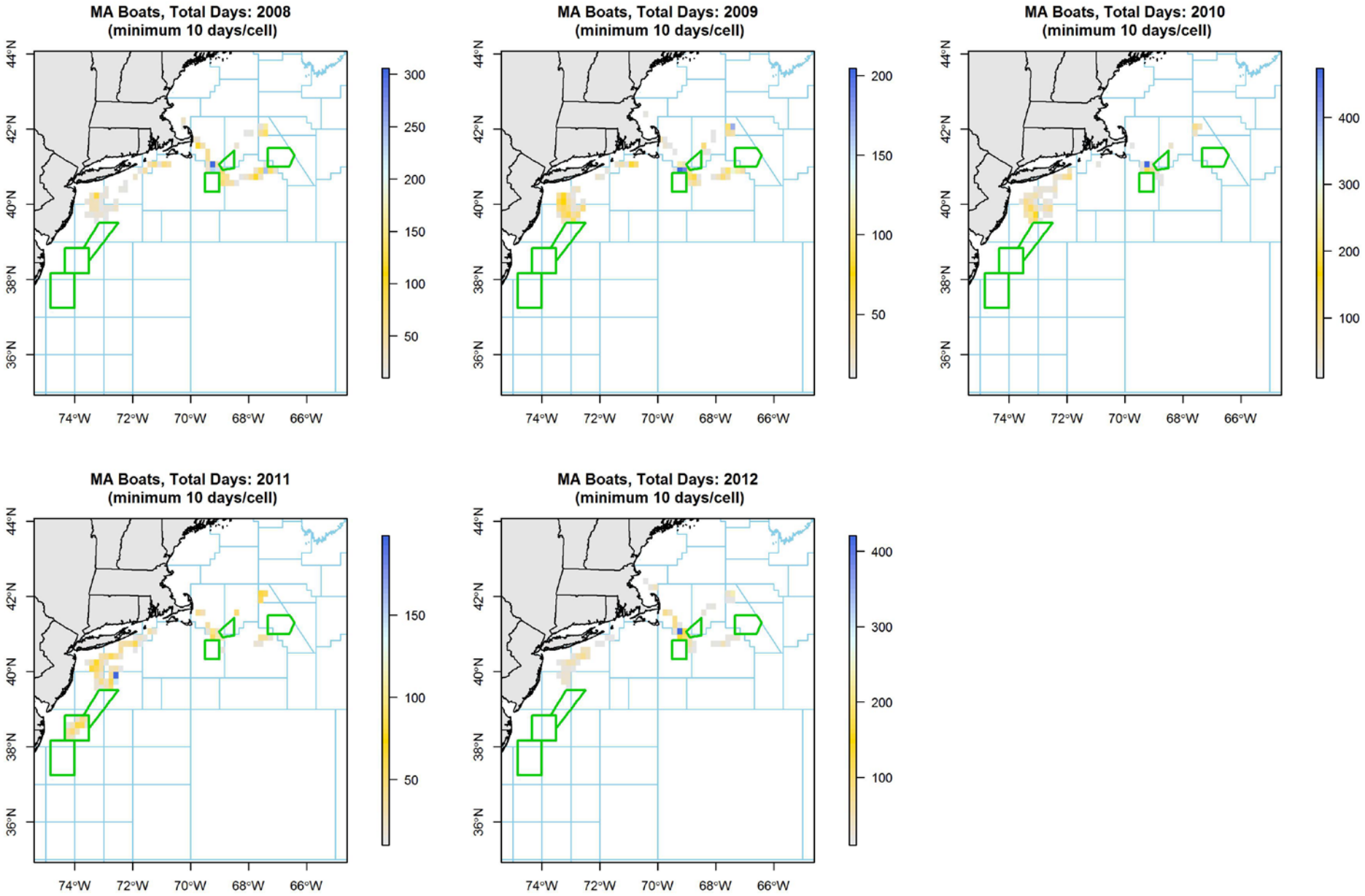


Figure 5 - Total days fished by year for all open area LA trips on "NJ" vessels based on VMS model

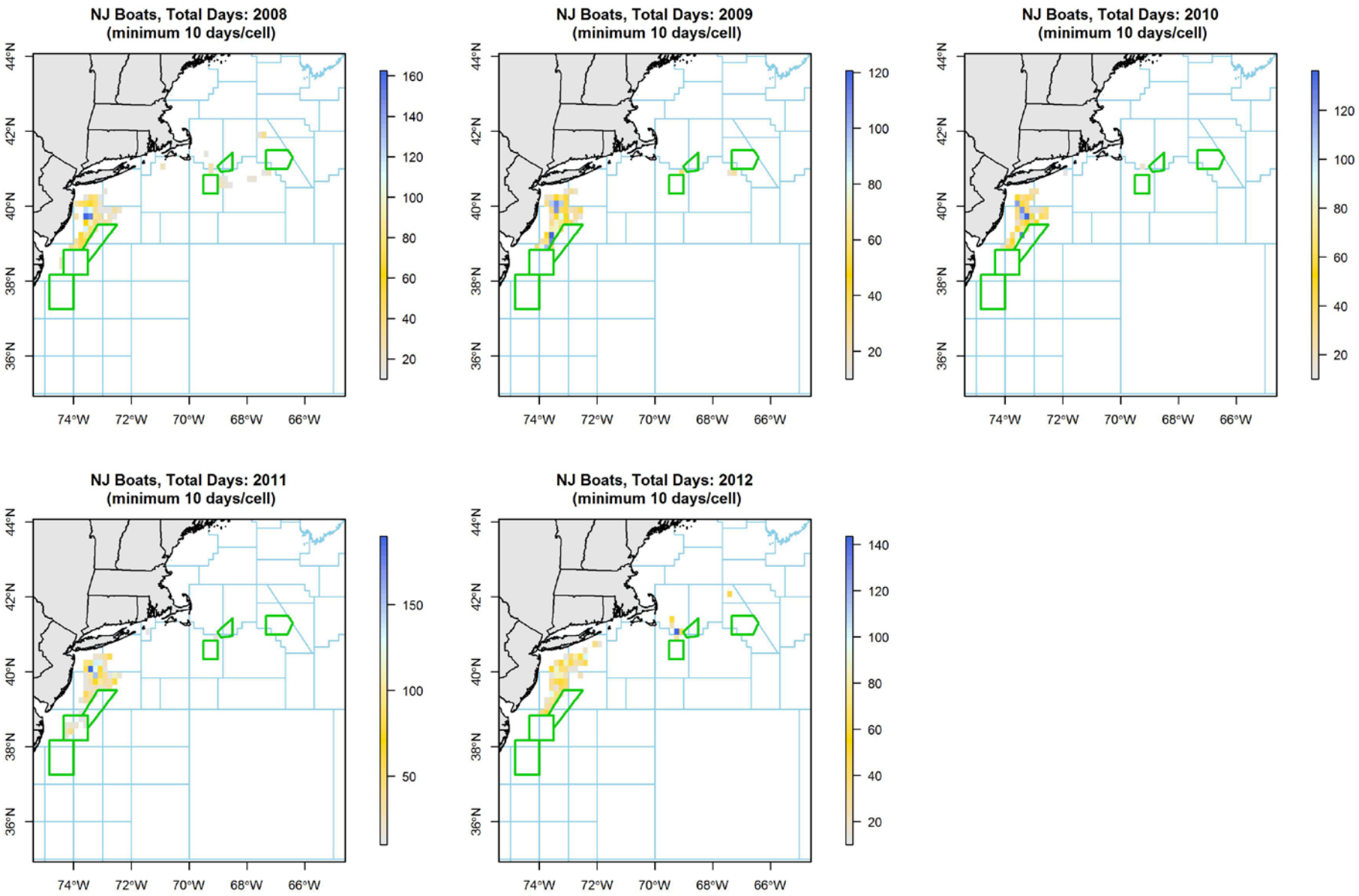
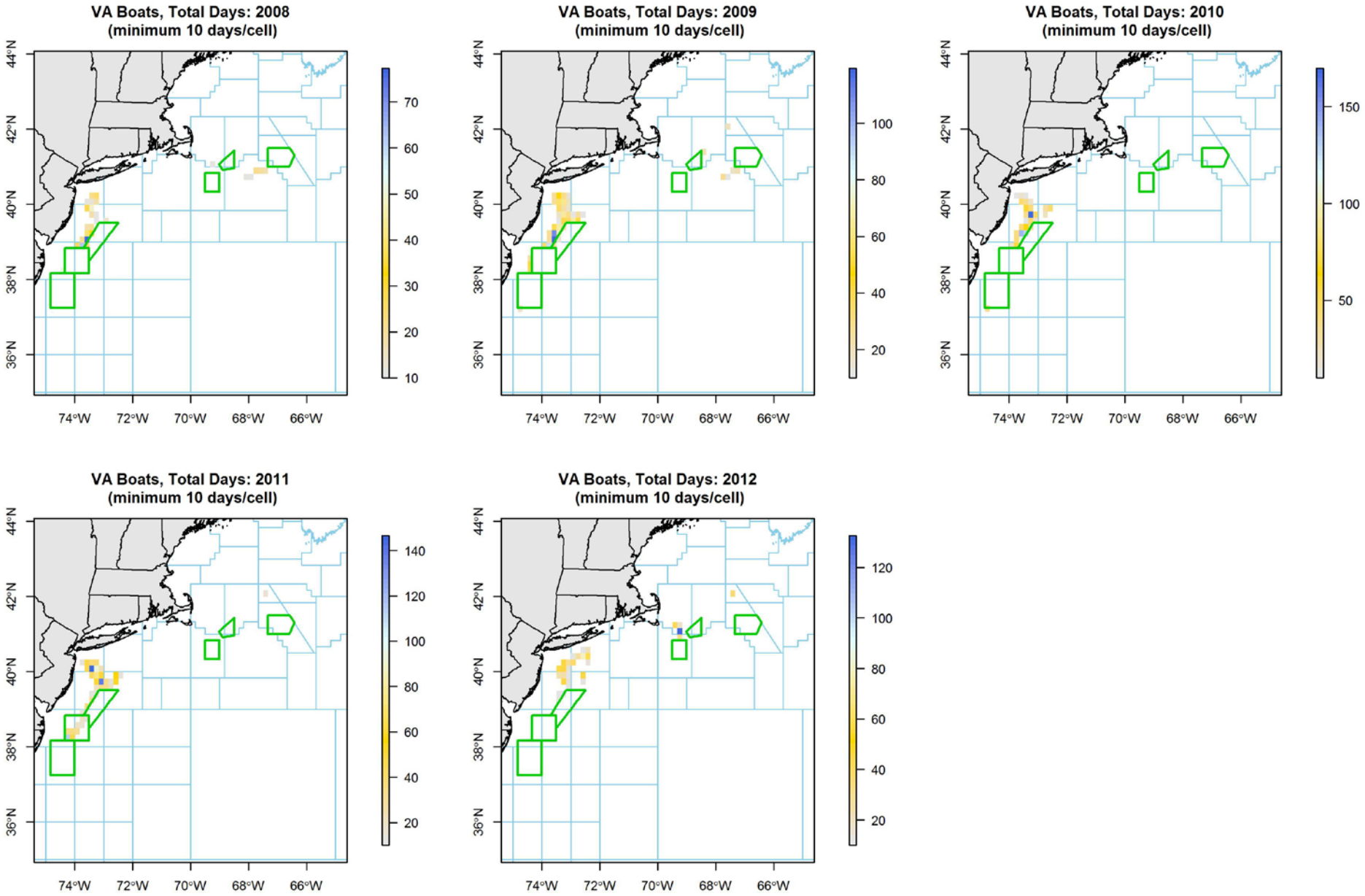


Figure 6 - Total days fished by year for all open area LA trips on "VA" vessels based on VMS model



Distances from hotspots to primary landing ports and demarcation line entry points were measured using *GIS routing*, a measuring tool available in ArcGIS. Distances from likely demarcation line entry points and final port were also measured. The difference between the demarcation line entry point and final port is the assumed savings in the Day at Sea calculation.

Some key assumptions

- Assume 8.5 kts cruising speed for steaming back to port.
- The PDT decided not to measure to nearest demark from Georges Bank hotspots as these are most heavily fished by New England vessels and the DAS savings from Nantucket to New Bedford is minimal. It should be recognized that there would be some savings if the DOF everywhere alternative is selected, but these analyses do not include an estimate for those potential savings.
- However, the PDT did estimate a DAS savings for New England vessels fishing in MA open areas and returning back to New England ports. For these trips an entry point of Fire Island New York was used as a likely re-entry for return trips to New Bedford.
- The PDT selected several demarcation entry points along the New Jersey coast and measured distances to likely ports. The "Cape May only" option is considered a subset of the "DOF anywhere". Sample distances are provided in
- The PDT did not directly provide results for the VMS corridor alternative, since the Committee recommends that alternative be removed from consideration. Those analyses could be completed at a later date if necessary.

Table 1 - Distances from likely demarc entry points to likely ports (nautical miles). These distances were measured in ArcGIS and were used in subsequent calculations.

	Demarc entry to final port			
	Barnegat	**Cape May**	**Cape Henry**	**New Bedford**
Monmouth	**37**	**95**	**222**	
Atlantic City		**30**	**157**	
Cape May			**127**	
Nantucket		**260**	**371**	
Fire Island				**103**

Figure 7 - Massachusetts region (all New England states) fishing hotspots for 2008-2012. Distances between hotspots (pink circles), assumed demarc entry locations (red circles) are shown in purple. Distances between demarc entry point and final port are shown in red text. All distances are geodesic, in nautical miles and typically follow the VMS demarcation line. Curved lines are used for aesthetics.

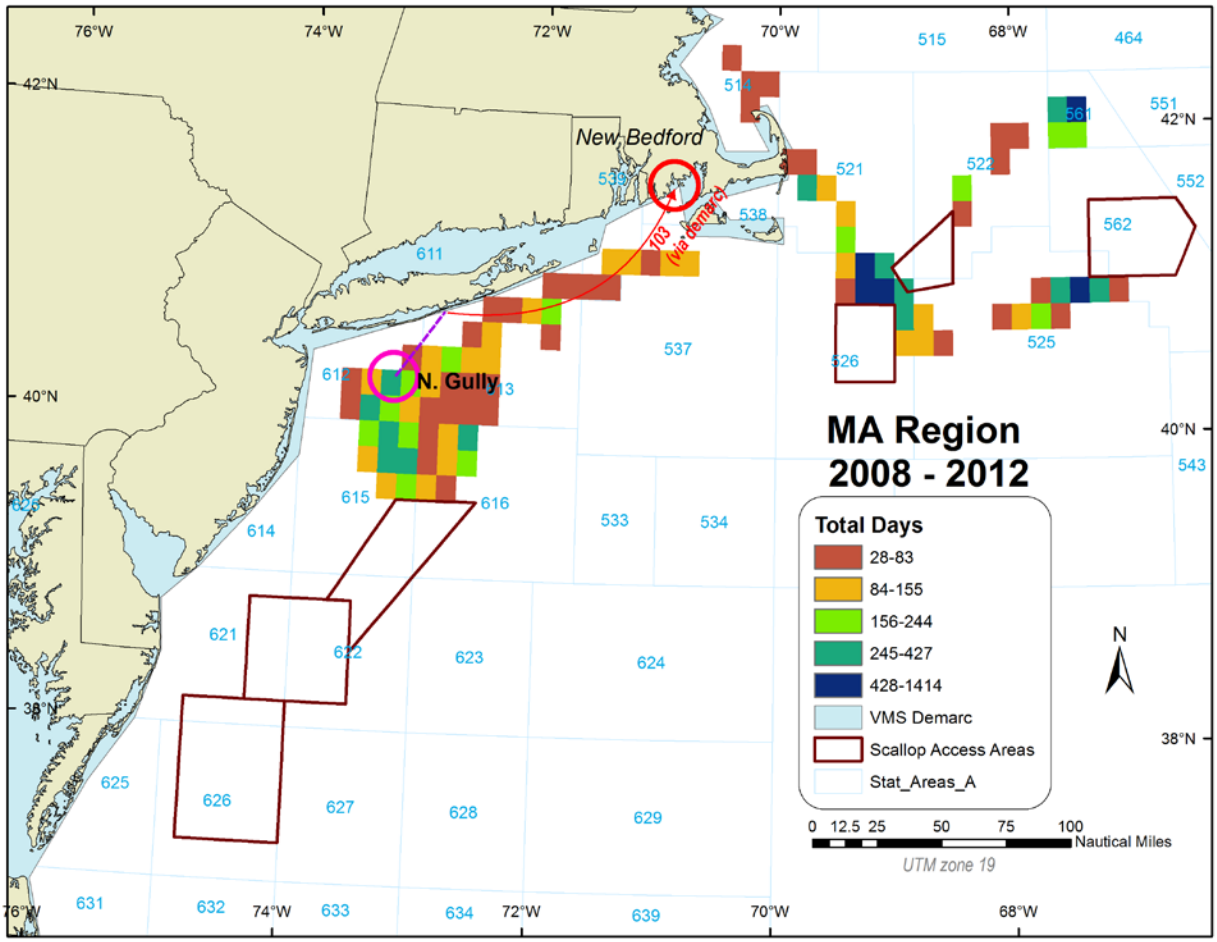


Figure 8 - New Jersey region (NJ, NY, PA) fishing hotspots for 2008-2012. Distances between hotspots (pink circles), assumed demarc entry locations (red circles) are shown in purple. Distances between demarc entry point and final port are shown in red text. All distances are geodesic, in nautical miles and typically follow the VMS demarcation line. Curved lines are used for aesthetics.

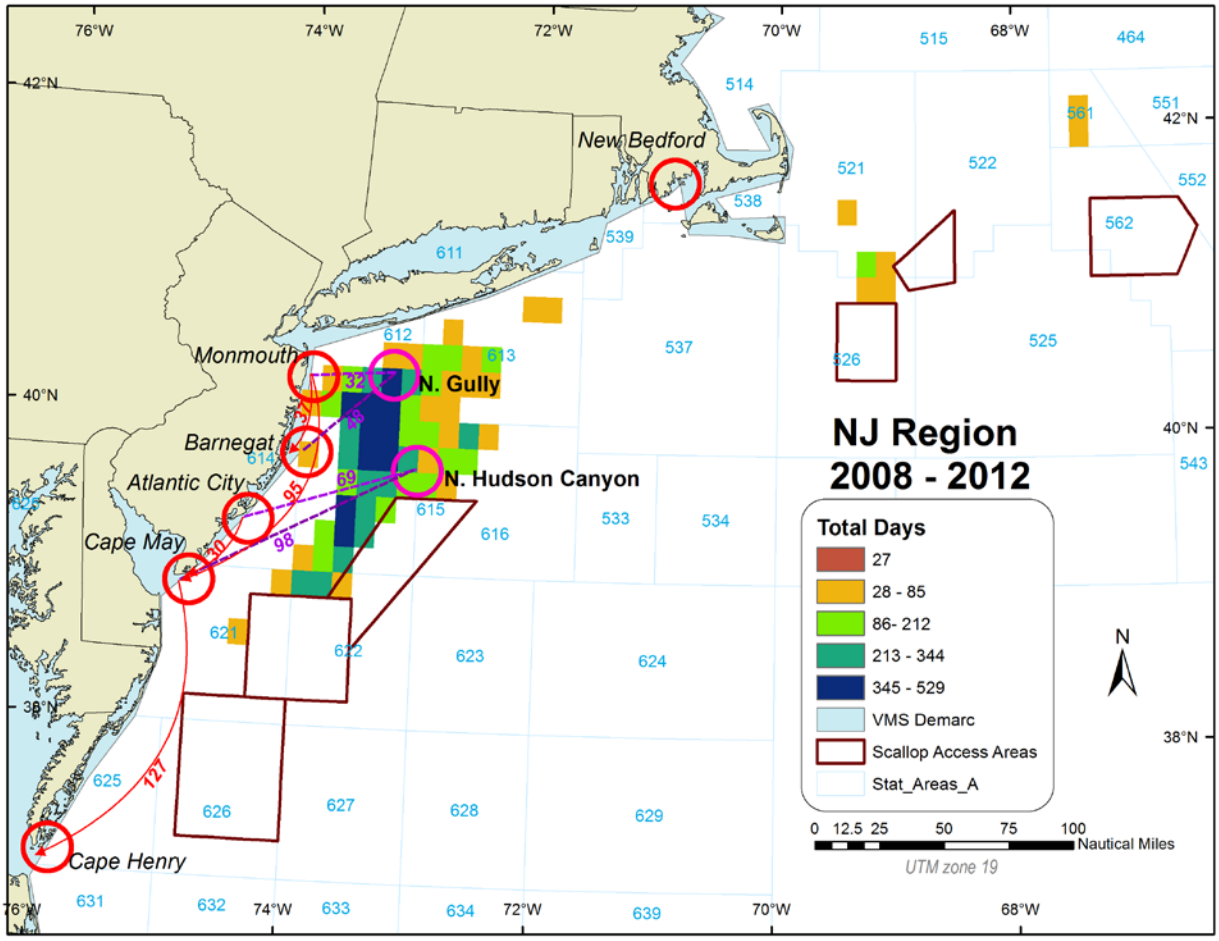
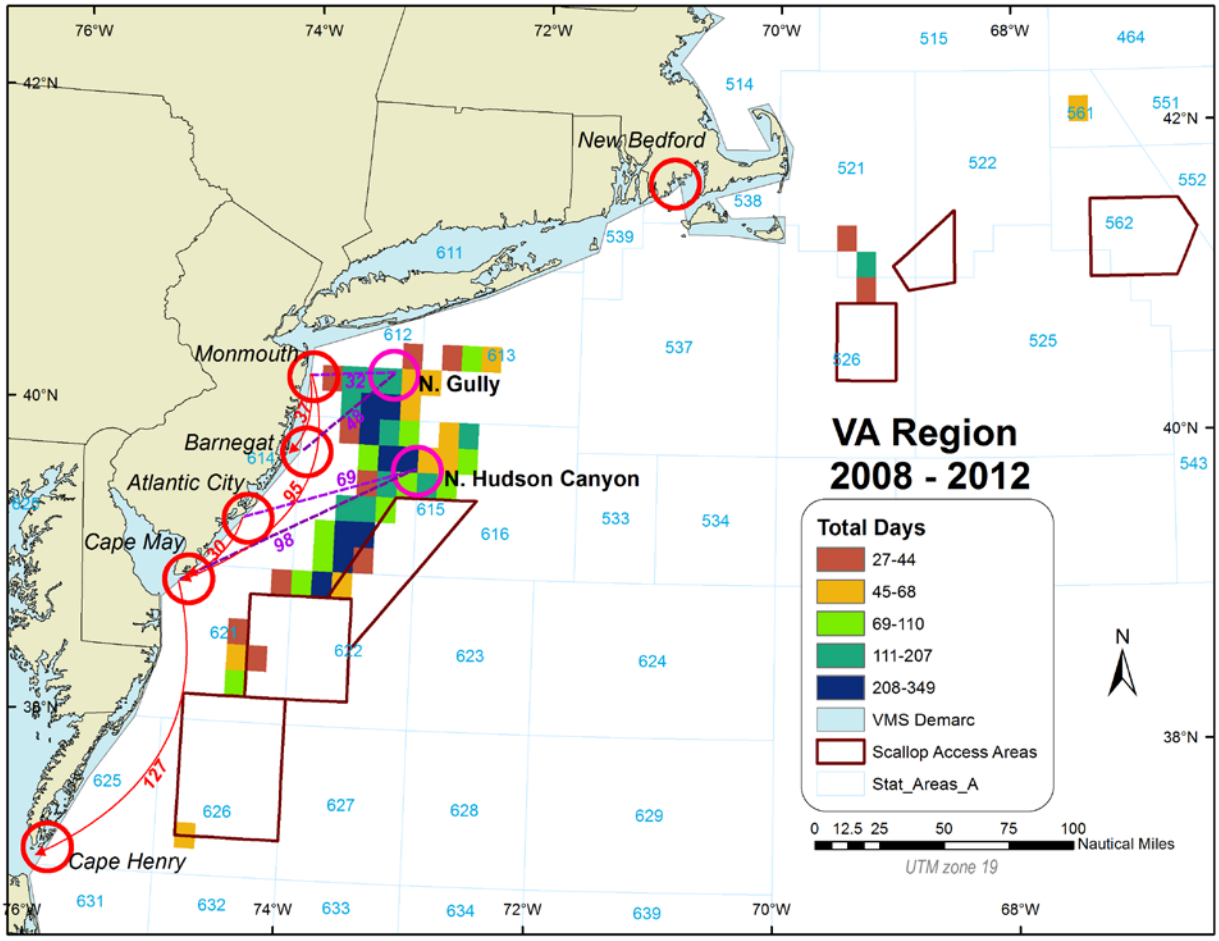


Figure 9 - Virginia region (VA, NC, MD, DE) fishing hotspots for 2008-2012. Distances between hotspots (pink circles), assumed demarc entry locations (red circles) are shown in purple. Distances between demarc entry point and final port are shown in red text. All distances are geodesic, in nautical miles and typically follow the VMS demarcation line. Curved lines are used for aesthetics.



2.1 Scenarios for Analysis

The PDT identified a handful of scenarios to capture the potential DAS savings for both DOF alternatives. A "worse case" as well as a more "realistic" scenario were developed for both the DOF anywhere and the DOF Cape May Alternatives. It should be noted that predicting fishing behavior is very complex and none of these scenarios may reflect how vessels actually respond to new measures to provide more flexibility for vessels to save DAS on open area trips. There are many factors involved with where a vessel decides to land product and these analyses could never capture all the issues involved.

The scenarios were informed by using landings information by homeport of the vessel (permit data) and landing port (based on VMS), as well as the fishing location information from the region specific VMS analyses. There are about 345 limited access vessels including all permit categories (part time, full-time small dredge etc.). When all LA permit types are converted into "full-time equivalents" or FTE, the total number is 327 vessels. For these analyses the PDT divided those 327 FTE vessels as such: MA = 160

vessels; NJ = 97 vessels; and VA = 70 vessels (Table 2). A distribution of landings by homeport state and state of landings is summarized in Table 3.

Table 2 – Sum of LA permitted vessels by homeport state (2011)

Row Labels	Sum of 2011
CT	9
MA	147
NC	31
NJ	89
PA	3
RI	3
VA	39
Grand Total	**321**

Table 3 –Scallop landings by home state and state landed (Sum total for 2009-2013 fishyears, LA vessels only, excludes IFQ trips, VTR data)

Home State	State landed					
	CT+RI	MA+NE+NH	NC	NJ+NY+MD+DE	VA	Grand Total
CT+RI	71%	24%	0%	4%	0%	100%
MA+ME	0%	98%	0%	2%	0%	100%
NC	2%	30%	3%	24%	41%	100%
NJ+NY+PA	4%	27%	0%	64%	5%	100%
VA	0%	25%	0%	8%	67%	100%

For these analyses the PDT assumes each vessel will take three ten-day open area trips, but it should be noted that is probably a low estimate since some years have higher allocations, and some vessels take shorter trips. For example, if all vessels took four trips instead of three the results would be different. A summary of the scenarios below as well as described in Table 4.

Alternative 2.8.2 – Implement a separate VMS declaration code for steaming back to port

More vessels would potentially use this alternative so the adjustment needed would be higher.

Worse Case – MA – all three open area trips in Mid-Atlantic region; for NJ vessels one of three trips in GB and 2/3 trips in Mid-Atlantic; for VA vessels 1/3 trips on GB and 2/3 trips in Mid-Atlantic

Realistic – MA – 2/3 trips in Mid-Atlantic and 1/3 GB; for NJ vessels and VA vessels – all three trips in Mid-Atlantic. *But no DAS savings assumed for MA vessels or NJ vessels because all vessels assumed to steam back to port inside demark. If this is not the case mode DAS adjustment should be applied for MA vessels steaming from trips in Mid-Atlantic.*

Alternative 2.8.3 – Implement a separate VMS declaration code for steaming back to port south of Cape May only

Fewer vessels would potentially use this alternative so the adjustment would be lower.

Worse Case – MA – ignored – minimal savings; for NJ vessels – ignored – minimal savings; for VA vessels 3/3 trips in Mid-Atlantic

Realistic – MA – ignored – minimal savings; for NJ vessels – ignored – minimal savings; for VA vessels 3/3 trips in Mid-Atlantic, but only half of the vessels will return to VA (35 vessels) because it is assumed that half of the VA fleet is already steaming back.

Table 4 – Summary of scenarios analyzed for both DOF Alternatives

DOF Everywhere	**Region**	**# vessels**	**Trip Assumptions**
Worse case	NE Region	160	3/3 in MA region
	NJ	97	1/3 GB; 2/3 MA
	VA/NC	70	1/3 GB; 2/3 MA
Realistic	NE Region	160	2/3 MA; 1/3 GB
	NJ	97	3/3 MA
	VA/NC	70	3/3 MA
DOF Cape May only	**Region**	**# vessels**	**Trip Assumptions**
Worse case	NE Region	160	N/A
	NJ	97	N/A
	VA/NC	70	3/3 trips in MA
Realistic	NE Region	178	N/A
	NJ	114	N/A
	VA/NC	**35**	3/3 trips in MA

An excel file was created to translate the total number of days assumed to be saved into DAS charged or DAS adjustment per LA vessel for both the DOF everywhere and the DOF Cape May only options. Figure 7 shows how these analyses work for various assumptions of trips and number of vessels that may potentially take advantage of DAS savings provided under the alternatives considered. For example, if the DOF Cape May option was selected, and all 70 vessels from VA region took advantage of the DAS savings from Cape May south on three trips per year, which would be a total of 130.7 DAS. When the total DAS are divided by 327 FT equivalent vessels the DAS adjustment is 0.4DAS per LA vessel.

$$\frac{(3 \text{ trips} * 70 \text{ vessels} * \text{distance from Cape May to Cape Henry (127nm)})}{\text{Steaming speed (8.5 knots) / 24 hours}} = 130.7 \text{ days}$$

130.7 days / 327 LA vessels = 0.4 DAS per vessel

Using the excel file an estimate of DAS cost can be determined for each scenario. For DOF anywhere the worse case DAS charge would be 2.25 DAS and 0.7 for the realistic scenario. For DOF Cape May only, the worse case scenario comes in at 0.4 DAS per LA vessel and the realistic scenario is 0.2 DAS or 5 hours per LA vessel (Table 5).

These results were presented to the Scallop Advisory Panel before final action, and they recommended that the "realistic" scenario used to calculate the DAS cost was too high, based on 35 vessels. The AP explained that the equivalent of 35 FT vessels is not an accurate estiamte of the number of vessels currently returning to ports in VA. A more realistic estimate is 25 vessels. Therefore, the final value the Council recommended as the DAS cost for adopting this measure is consistent with that reduced number (an adjustment of 0.14 for FT vessels and 0.06 for PT vessels). That value was easily pulled from the excel file created by the PDT that provided a DAS savings for every combination of vessels and trips expected to return to southern ports (Figure 10).

Table 5 – Summary of potential DAS costs associated with both DOF alternatives

DOF Anywhere	**Region**	**# vessels**	**Trip Assumptions**	**Total DAS**	**DAS adjustment**	**Final DAS cost**	**DAS in hours**
Worse case	Mass	160	3/3 in MA region	242	0.75		
	NJ	97	1/3 GB; 2/3 MA	123 + 90	0.37 + 0.27		
	VA/NC	70	1/3 GB; 2/3 MA	127 + 152	0.4 + 0.46	2.25	54
				Total = 734 DAS			
Realistic	Mass	160	2/3 MA; 1/3 GB	0	0		
	NJ	97	3/3 MA	0	0		
	VA/NC	70	3/3 MA	229	0.7	0.7	17
DOF Cape May only	**Region**	**# vessels**	**Trip Assumptions**	**Total DAS**	**DAS adjustment**	**Final DAS cost**	**DAS in hours**
Worse case	Mass	160	N/A	0	0		
	NJ	97	N/A	0	0		
	VA/NC	70	3/3 trips in MA	131	0.4	0.4	10
Realistic	Mass	178	N/A	0	0		
	NJ	114	N/A	0	0		
	VA/NC	**35**	3/3 trips in MA	65	0.2	0.2	5

Figure 10 – Screenshot of excel file used to evaluate DAS savings and adjustments

1						nm					
2		Gully	Cape May		114		Cape May only alternative				
3		Cape May	Newport News	via demarc	140		DOF anywhere				
4		Monmouth	Barnegat		37		DOF anywhere				
5		Monmouth	Cape May		95		DOF anywhere				
6		Atlantic City	Cape May		30		DOF anywhere				
7		Cape May	Cape Henry	via demarc	127		DOF anywhere				
8		Nantucket	Cape henry		371		DOF anywhere				
9		Nantucket	Cape May		260		DOF anywhere				
10											
11		average speed on return steam			8.5	kts	full time	part time			
12		Number of LA permits			327		313	14			
13		DAS allocated (full time)			31						
14	Virginia Region										
15	Cape May only option										
16		Days at sea					Difference/permit in DAS				
17		Number of trips					Number of trips				
18	number of boats	1	2	3	4		1	2	3	4	nu
19	1	0.623	1.245	1.868	2.490		0.002	0.004	0.006	0.008	
20	2	1.245	2.490	3.735	4.980		0.004	0.008	0.011	0.015	
21	3	1.868	3.735	5.603	7.471		0.006	0.011	0.017	0.023	
22	4	2.490	4.980	7.471	9.961		0.008	0.015	0.023	0.030	
23	5	3.113	6.225	9.338	12.451		0.010	0.019	0.029	0.038	
24	6	3.735	7.471	11.206	14.941		0.011	0.023	0.034	0.046	
25	7	4.358	8.716	13.074	17.431		0.013	0.027	0.040	0.053	
26	8	4.980	9.961	14.941	19.922		0.015	0.030	0.046	0.061	
27	9	5.603	11.206	16.809	22.412		0.017	0.034	0.051	0.069	
28	10	6.225	12.451	18.676	24.902		0.019	0.038	0.057	0.076	
29	11	6.848	13.696	20.544	27.392		0.021	0.042	0.063	0.084	
30	12	7.471	14.941	22.412	29.882		0.023	0.046	0.069	0.091	
31	13	8.093	16.186	24.279	32.373		0.025	0.049	0.074	0.099	
32	14	8.716	17.431	26.147	34.863		0.027	0.053	0.080	0.107	
33	15	9.338	18.676	28.015	37.353		0.029	0.057	0.086	0.114	
34	16	9.961	19.922	29.882	39.843		0.030	0.061	0.091	0.122	
35	17	10.583	21.167	31.750	42.333		0.032	0.065	0.097	0.129	
36	18	11.206	22.412	33.618	44.824		0.034	0.069	0.103	0.137	
37	19	11.828	23.657	35.485	47.314		0.036	0.072	0.109	0.145	
75	57	35.485	70.971	106.456	141.941		0.109	0.217	0.326	0.434	
76	58	36.108	72.216	108.324	144.431		0.110	0.221	0.331	0.442	
77	59	36.730	73.461	110.191	146.922		0.112	0.225	0.337	0.449	
78	60	37.353	74.706	112.059	149.412		0.114	0.228	0.343	0.457	
79	61	37.975	75.951	113.926	151.902		0.116	0.232	0.348	0.465	
80	62	38.598	77.196	115.794	154.392		0.118	0.236	0.354	0.472	
81	63	39.221	78.441	117.662	156.882		0.120	0.240	0.360	0.480	
82	64	39.843	79.686	119.529	159.373		0.122	0.244	0.366	0.487	
83	65	40.466	80.931	121.397	161.863		0.124	0.247	0.371	0.495	
84	66	41.088	82.176	123.265	164.353		0.126	0.251	0.377	0.503	
85	67	41.711	83.422	125.132	166.843		0.128	0.255	0.383	0.510	
86	68	42.333	84.667	127.000	169.333		0.129	0.259	0.388	0.518	
87	69	42.956	85.912	128.868	171.824		0.131	0.263	0.394	0.525	
88	70	43.578	87.157	130.735	174.314		0.133	0.267	0.400	0.533	
89											