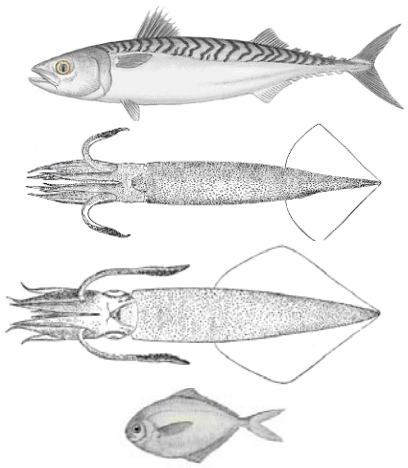
AMENDMENT 14 TO THE ATLANTIC MACKEREL, SQUID, AND BUTTERFISH (MSB) FISHERY MANAGEMENT PLAN (FMP)

Draft Environmental Impact Statement
The Executive Summary will serve as the Public Hearing Document



----------April 2012 ----------

Mid Atlantic Fishery Management Council
in cooperation with
the National Marine Fisheries Service (NOAA Fisheries)

A Publication of the Mid-Atlantic Fishery Management Council pursuant to National Oceanic and Atmospheric Administration Award No. NA10NMF4410009

Note: Only the sections through Section 3 are included in this public hearing document but the full table of contents for the full draft environmental impact statement is included in case the public is interested in additional information.

1.0 TABLE OF CONTENTS

1.1 LIST OF TABLES

1.2 LIST OF FIGURES

2.0 EXECUTIVE SUMMARY

This Amendment deals with incidental catch and general management of blueback herring, alewife, American shad, and hickory shad. In this document, "river herrings" include blueback herring and alewife. "Shads" include American shad and hickory shad. These four species are described together as **"RH/S"** and the Amendment addresses three potential RH/S management problems, described below (A,B, and C). Considering, and if appropriate, implementing solutions to these potential problems are the purposes of this Amendment. The analytical goals described below summarize the analyses conducted to support decisions for this Amendment.

Problem A: Relatively low levels of catch monitoring have resulted in relatively high uncertainty about the incidental catch of river herrings and shads in ocean intercept fisheries.

Purpose A: "**Implement Effective RH/S Catch Monitoring**" – Purpose A is to consider alternatives that would implement monitoring programs for the Mackerel, Squid, and Butterfish (MSB) fisheries that are sensitive enough and robust enough to the spatial and temporal variability of RH/S distributions so that good RH/S catch estimates can be generated. The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires Councils "to specify the pertinent data which shall be submitted to the Secretary with respect to…fishing…in the fishery" (Section 303(a)(5)) and Section 8 under discretionary fishery management plan provisions allows implementation of observer requirements.

Analytical Goals:

A1. "**RH/S Catch**" - Establish the best available information on the catch of RH/S in the MSB and/or other fisheries.

A2. **"Effectiveness"** - Evaluate how effective various alternatives would be in terms of improving the precision of RH/S catch estimates.

A3. **"Practicability" -** Evaluate the socioeconomic impacts from the alternatives and the ability of management to implement them.

Problem B: Catch of RH/S in the MSB fisheries may be negatively impacting RH/S populations.

Purpose B: "**Reduce RH/S Bycatch and/or Catch**" – Purpose B is to consider alternatives to reduce bycatch (discards) and/or total catch of RH/S in the MSB fisheries. The MSA requires Councils to minimize bycatch (discards) to the extent practicable (Section 301 – National Standard 9) and provides discretionary authority to "include management measures in the plan to conserve…non-target species…considering the variety of ecological factors affecting fishery populations" (Section 303(b)(12)). Because information on how much RH/S catch might be sustainable is lacking, it is not currently possible to quantify the impact on RH/S stocks of any catch reductions that may occur but such catch reductions would be likely to have a positive impact to some degree.

Analytical Goals:

B1. "**RH/S Bycatch**" - Evaluate if bycatch (discards) of river herrings and shads in the MSB fisheries has been minimized to the extent practicable (National Standard 9).

Analytical Goals: (continued)

B2. **"Effectiveness"** - Evaluate how effective various alternatives would be in reducing the bycatch and/or or catch of RH/S.

B3. **"Practicability"** - Evaluate the socioeconomic impacts from the alternatives and the ability of management to implement them.

Problem C: The overall existing federal/state/regional management framework may be insufficient to adequately conserve RH/S stocks.

Purpose C: "**Consider RH/S NS1 Stock Issues**" – Purpose C is to consider alternatives that would bring RH/S into the MSB plan as a managed stock in terms of Council management responsibilities, including annual catch limits and accountability measures, in order to improve overall RH/S management and conservation. The Magnuson-Stevens Fishery Conservation and Management Act's National Standard One (NS1) states "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery…" NMFS guidance on NS1 suggests that Councils have the discretion to add additional non-target species as stocks in the fishery to existing FMPs.

Analytical Goals:

C1. **"Effectiveness"** - Evaluate how effective various alternatives would be in terms of improving RH/S management.

C2. **"Practicability"** - Evaluate the socioeconomic impact on the fisheries of various alternatives and the ability of management to implement them.

Alternatives

In this document, each purpose will be referenced by the bolded phrases in quotes above. Each purpose is addressed by one or more related set of alternatives, organized below by each purpose, summarized later in this executive summary, and fully described and analyzed in this document. Throughout this document the reader will note that the focus of the alternatives is on the Atlantic mackerel and longfin squid fisheries. This is intentional because those are the MSB fisheries that appear to have substantial RH/S interactions. Butterfish is primarily a incidental catch fishery and the *Illex* fishery appears to rarely interact with RH/S (see table 21).

Alternatives Related to Purpose A: Implement Effective RH/S Catch Monitoring

Alternative Set 1: Additional Vessel Reporting Measures

Alternative Set 2: Additional Dealer Reporting Measures

Alternative Set 3: Additional At-Sea Observation Optimization Measures

Alternative Set 4: Port-side and Other Sampling/Monitoring Measures

Alternative Set 5: At-Sea Observer Coverage Requirements

Alternatives Related to Purpose B: Reduce RH/S Bycatch and/or Catch

Alternative Set 6 : Mortality Caps

Alternative Set 7 : Restrictions in areas of high RH/S catch

Alternative Set 8 : Hotspot Restrictions

Alternatives Related to Purpose C: Considering RH/S NS1 Stock Issues

Alternative Set 9: Addition of RH/S as "Stocks in the Fishery" in the MSB FMP.

Approximate Timeline

April/May 2012– Public hearings for Am 14 with DEIS
June 2012 – Council receives comments on the Draft Environmental Impact Statement, (DEIS) , Council makes edits to the DEIS as appropriate, Council chooses alternatives to recommend to NMFS, and Council approves submitting FEIS to NMFS
July 2012 – FEIS Document Perfection w/ NMFS
Sept 2012 – Proposed Rule and FEIS made available for public comment
Nov 2012 – Comment Period Closes
Feb 1, 2013 – Final Rule Publishes
Mar 1, 2013 – Rule Effective

Wording Conventions

All acronyms and abbreviations used in this document should be listed in **Section 3.0, List of Acronyms and abbreviations**. Several critical wording conventions are noted below.

The Magnuson-Stevens Fishery Conservation and Management Act is the primary law governing marine fisheries management in United States federal waters. The Act was first enacted in 1976 and amended in 1996 and in 2007. In this document, the abbreviation "MSA" refers to the Magnuson-Stevens Fishery Conservation and Management Act as currently amended.

RH/S refers to blueback herring, alewife, American shad, and hickory shad collectively. "Mackerel" refers to "Atlantic mackerel." "Am14" refers to "Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish (MSB) Fishery Management Plan (FMP)." "The Council" refers to "the Mid-Atlantic Fishery Management Council." "Bycatch" refers to discards while "Incidental catch" is the catch of one species while directing upon another species (incidental catch may be retained or discarded).

Longfin squid have previously been referenced as *Loligo pealeii* or just *Loligo*. There has been a scientific name change for this species from *Loligo pealeii* to *Doryteuthis (Amerigo) pealeii*. To avoid confusion, this document will utilize the common name “longfin squid” wherever possible. Some historical documents will still refer to these squid as “*Loligo*.”

2.1 SUMMARY OF THE ALTERNATIVES AND THEIR IMPACTS

The alternatives are primarily designed to 1) improve monitoring and observing of incidental RH/S catch; 2) consider ways to reduce RH/S catch; and 3) consider adding RH/S as managed stocks in the MSB FMP (i.e. as stocks in the fishery) so as to improve overall RH/S conservation. While there are some potential impacts related to the managed species, habitat, and protected resources, those effects are secondary to the primary goals of Amendment 14. Given the impacts to the managed species, habitat, and protected resources are generally low, indirect, and positive, the textual summary in this Executive Summary focuses on impacts related to non-target species, especially river herrings and shads, and the related fishery business and human community impacts (Socio-Economic impacts). Managed species, habitat, and protected resource impacts are described in Section 7 and summarized in Table 8 later in this Executive Summary. Some alternatives with very similar impacts are grouped together.

Note: There are over 80 alternatives in this document. This means that there are millions of different possible combinations. At the beginning of each Alternative Set, it is noted which alternatives may, and which alternatives may not be, grouped together within the Alternative Set. Between Alternative Sets, alternatives generally may be combined without problem. The only broad exception to this rule is that it would appear unlikely that alternatives from both of the area-based alternatives (Sets 7 and 8) would be chosen together.

Note: To the extent that alternatives lead to better management (i.e. sustainable fisheries producing optimal yields) of RH/S or other species, then choosing such alternatives might result in long term additional benefits related to future commercial revenues, recreational opportunities, ecosystem services, cultural values for RH/S, and/or other non-market existence values (i.e. value gained by the public related to the knowledge that these species are being conserved successfully). However, due to the uncertainty about how the productivity of RH/S is impacted by current incidental catch levels, it is difficult to quantity such benefits. One would expect that higher related benefits would result from actions that were more likely to restore RH/S populations. This theme is repeated as appropriate in the Impacts Section (Section 7) and in the rest of this Executive Summary the following sentence is used to reiterate the ideas described in this paragraph rather than repeating the paragraph many times: "While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1."

2.1.1 Alternative Set 1: Additional Vessel Reporting Measures

Background/Statement of Problem/Need for Action:

The current suite of reporting and monitoring requirements may be insufficient to precisely enough estimate RH/S incidental catch in the mackerel and longfin squid fisheries based on the Council's management goals.

The measures in this Alternative Set would (alone and/or in combination with other alternatives) increase vessel reporting and/or monitoring with the overall goal of improving the precision of RH/S incidental catch estimates. While some of the focus may appear to be on mackerel and/or longfin squid general reporting compared to just RH/S in those fisheries, because extrapolations of non-target species are often made based on total landings (including the target species), accurate monitoring of the target species can be as important as determining the encounter rates of RH/S. A summary of the key biological and human community impacts (detailed in section 7) follows for each alternative.

NOTE ON COMBINATIONS: Most of the Alternative Set 1 action alternatives could be implemented individually or collectively. However, 1c (weekly VTRs for all MSB permits) would encompass 1bMack and 1bLong so these would not be selected together. The 48-hr mackerel pre-trip notification (1d48) and 72-hr mackerel pre-trip notification (1d72) would also be mutually exclusive – only one would be chosen if either. The VMS reporting alternatives (1f's and 1g's) would need the respective 1e's (that require VMS) for each fishery as a prerequisite before requiring VMS reporting.

1a. No-action

If this alternative is selected, then no measures from Alternative Set 1 would be implemented and the existing reporting measures (as described in section 5.1) would remain in place. Thus there would be no incremental impacts compared to the status quo, but there are relative impacts compared to the action alternatives, as described below.

1bMack. Institute weekly vessel trip reporting (VTR) for mackerel permits.

Summary of Biological Impact Analysis

To the degree that more rapid VTR reporting could be used to cross check dealer data to ensure that fishery closures occur appropriately, there could be potentially low positive impacts. Such closures could be related to directed fishery closures or mortality cap closures for non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

The number of total mackerel permits can vary from month to month. Of the 1,974 vessels that had mackerel permits in November 2011, 67 did not also have a weekly VTR reporting requirement from another permit (herring or NE multispecies). Thus, about 67 vessels would ultimately be subject to additional reporting requirements because of this measure. Those 67 vessels must currently submit VTR reports monthly. This alternative would result in 40 (52 (weeks) -12 (months) = 40) additional VTR submissions per year for permit holders that don't currently submit weekly VTRs. This would result in additional mailing costs of $19.36 per year (40 x $ 0.44 postage) per permitted vessel.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

1bLong. Institute weekly vessel trip reporting (VTR) for longfin squid/Butterfish permits.

Summary of Biological Impact Analysis

To the degree that more rapid VTR reporting could be used to cross check dealer data to ensure that fishery closures occur appropriately, there could be potentially low positive impacts. Such closures could be related to directed fishery closures or mortality cap closures for non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

The number of incidental squid/butterfish permits can vary from month to month. Of the 1,891 vessels that had longfin squid//Butterfish Moratorium permits or squid/butterfish incidental permits in November 2011, 74 did not also have a weekly VTR reporting requirement from another permit (herring or NE multispecies). Thus, about 74 vessels would ultimately be subject to additional reporting requirements because of this measure. Those 74 vessels must currently submit VTR reports monthly. This alternative would result in 40 (52 (weeks) -12 (months) = 40) additional VTR submissions per year for permit holders that don't currently submit weekly VTRs, resulting in additional mailing costs of $19.36 per year (40 x $ 0.44 postage) per permitted vessel. For informational purposes, about 9 of the 351 longfin squid//Butterfish moratorium permits do not currently have a weekly VTR reporting requirement from another permit (herring or NE multispecies).

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

1c. Institute weekly vessel trip reporting (VTR) for all MSB permits (Mackerel, longfin squid//Butterfish, *Illex*) so as to facilitate quota monitoring (directed landings and/or incidental mortality cap if applicable) and cross checking with other data sources.

Summary of Biological Impact Analysis

To the degree that more rapid VTR reporting could be used to cross check dealer data to ensure that fishery closures occur appropriately, there could be potentially low positive impacts. Such closures could be related to directed fishery closures or mortality cap closures for non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

The number of total mackerel permits and the number of squid/butterfish incidental permits can vary from month to month. Of the 2,622 vessels that have MSB permits in November 2011, 121 did not also have a weekly VTR reporting requirement from another permit (herring or NE multispecies). Thus about 121 vessels would ultimately be subject to additional reporting requirements because of this measure. This alternative would result in 40 (52 (weeks) -12 (months) = 40) additional VTR submissions per year for permit holders that don't currently submit weekly VTRs, resulting in additional mailing costs of $19.36 per year (40 x $ 0.44 postage) per permit holder. The 121 vessels encompass the same affected vessels from 1bMack and 1bLong above (there is also some overlap between 1bMack and 1bLong).

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1. One specific advantage of this alternative compared to 1b and 1c is that there would be uniformity of reporting in the MSB FMP and with other Northeast Region fisheries.

1d48. Require 48 hour pre-trip notification to NMFS to retain/possess/transfer more than 20,000 pounds of mackerel so as to facilitate observer placement.

This would be used to facilitate observer placement. If vessels did not notify they would not be able to land more than an incidental catch (20,000 pounds).

Summary of Biological Impact Analysis

To the degree that better observer data leads to more effective reduction of incidentally-caught species, and to the degree that this alternative leads to better observer data collection, this alternative could lead to positive impacts for non-target species. If a mortality cap on RH/S is implemented, obtaining a complete list of trips to sample becomes very important to ensure that unbiased estimates can be estimated.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

This is similar to a 72-hour trip notification requirement in the longfin squid fishery that became effective in 2011. Fishermen have reported that the 72-hour notification sometimes means they are unable to target fleeting aggregations of longfin squid because they are not able to put to sea on short notice, especially if they are selected to take an observer (if they are not selected then they often obtain a waiver sooner than 72 hours).

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

1d72. Require 72 hour pre-trip notification to NMFS to retain/possess/transfer more than 20,000 pounds of mackerel so as to facilitate observer placement.

This would be used to facilitate observer placement. If vessels did not notify they would not be able to land more than incidental catch (20,000 pounds).

Summary of Biological Impact Analysis

To the degree that better observer data leads to more effective reduction of incidentally-caught species, and to the degree that this alternative leads to better observer data collection, this alternative could lead to positive impacts for non-target species. If a mortality cap on RH/S is implemented, obtaining a complete list of trips to sample becomes very important to ensure that unbiased estimates can be estimated.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

This is similar to a 72-hour trip notification requirement in the longfin squid fishery that became effective in 2011. Fishermen have reported that the 72-hour notification sometimes means they are unable to target fleeting aggregations of longfin squid because they are not able to put to sea on short notice, especially if they are selected to take an observer (if they are not selected then they often obtain a waiver sooner than 72 hours).

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

1eMack. Require VMS for limited access mackerel vessels.

Vessel Monitoring Systems are currently utilized in many New England fisheries. They are generally used to facilitate compliance and enforcement of area-based management measures as well as catch monitoring by means of a satellite connection between shore and a fixed electronic unit installed on vessels.

Summary of Biological Impact Analysis

If area-based management alternatives are eventually selected for purposes of reducing catch of RH/S, VMS can be a useful tool for compliance/enforcement of area-based management. If port-side sampling requirements are eventually selected for purposes of monitoring landings of RH/S, VMS could also be used for compliance/enforcement if catch reporting via VMS is also required (see 1fMack and 1gMack below).

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Of the approximately 2,200 vessels that had open access mackerel permits at some point in 2011, 684 were not also required to have VMS. While not all of these vessels will qualify for mackerel limited access (being implemented currently), 684 would be an upper bound on how many vessels could have to buy new VMS units. Amendment 11 estimated that around 400 vessels might qualify for limited access. If one maintains the ratio of open access boats (684/2,200 = 31%) that would need VMS for the 400 likely qualifiers for mackerel limited access, 31% of 400 equals 124 vessels that would actually need new VMS units. Since limited access qualifiers, being more active participants, may be more likely to have other permits that require VMS, the likely range is from somewhat lower than 124 up to 684. Until the final number of qualifiers is determined it is not possible to further quantify the number of vessels that may require VMS units under this provision. The costs to equip a vessel with a VMS are approximately $1,700-$3,300, with operating costs for the unit of approximately $40-$100 per month. In addition, the vessel would need a constant power source such as a generator, or access to dockside energy, which would add to the costs.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

1eLong. Require VMS for longfin squid/butterfish moratorium vessels (see 1f and 1g below).

Vessel Monitoring Systems are currently utilized in many New England fisheries. They are generally used to facilitate compliance and enforcement of area-based management measures as well as catch monitoring by means of a satellite connection between shore and a fixed electronic unit installed on vessels.

Summary of Biological Impact Analysis

If area-based management alternatives are eventually selected for purposes of reducing catch of RH/S, VMS can be a useful tool for compliance/enforcement of area-based management. If port-side sampling requirements are eventually selected for purposes of monitoring landings of RH/S, VMS could also be used for compliance/enforcement if catch reporting via VMS is also required (see 1fLong and 1gLong below).

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Of the 351 vessels that had longfin squid//butterfish moratorium permits in 2011, 7 were not also required to have VMS because of other permits and would have to equip their vessel with VMS under this provision. The costs to equip a vessel with a VMS are approximately $1,700-$3,300, with operating costs for the unit of approximately $40-$100 per month. In addition, the vessel would need a constant power source such as a generator, or access to dockside energy, which would add to the costs.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

1fMack. Require daily VMS reporting of catch by limited access mackerel vessels so as to facilitate monitoring (directed and/or incidental catch) and cross checking with other data sources. Requiring VMS (see 1eMack above) and requiring trip declarations (would be a prerequisite for this alternative.

Summary of Biological Impact Analysis

If area-based management alternatives are eventually selected for purposes of reducing catch of RH/S, VMS catch reporting can be a useful tool for compliance/enforcement of area-based management.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

This alternative could only be selected if 1eMack was also selected. VMS costs are discussed under the 1eMack alternative. The cost of transmitting a catch report via VMS is $0.60 per transmission.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

1fLong. Require daily VMS reporting of catch by longfin squid moratorium permits so as to facilitate monitoring (directed and/or incidental catch) and cross checking with other data sources. Requiring VMS (see 1eLong above) and requiring trip declarations would be a prerequisite for this alternative.

Summary of Biological Impact Analysis

If area-based management alternatives are eventually selected for purposes of reducing catch of RH/S, VMS catch reporting can be a useful tool for compliance/enforcement of area-based management.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

This alternative could only be selected if 1eLong was also selected. VMS costs are discussed under the 1eLong alternative. The cost of transmitting a catch report via VMS is $0.60 per transmission.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

1gMack. Require 6 hour pre-landing notification via VMS to land more than 20,000 pounds of mackerel, which could facilitate quota monitoring, enforcement, and/or portside monitoring.

This would be used to facilitate catch monitoring (directed or incidental catch), cross checking with other data sources, and portside monitoring (if applicable).

Summary of Biological Impact Analysis

Pre-landing notifications could facilitate enforcement of landings limits, proper landings reporting, and port-side monitoring.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

This alternative could only be selected if 1eMack was also selected. VMS costs are discussed under the 1eMack alternative. The cost of transmitting a catch report via VMS is $0.60 per transmission.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

1gLong. Require 6 hour pre-landing notification via VMS to land more than 2,500 pounds of longfin squid, which could facilitate quota monitoring, enforcement, and/or portside monitoring.

This would be used to facilitate catch monitoring (directed or incidental catch), cross checking with other data sources, and portside monitoring (if applicable).

Summary of Biological Impact Analysis

Pre-landing notifications could facilitate enforcement of landings limits, proper landings reporting, and port-side monitoring.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

This alternative could only be selected if 1eLong was also selected. VMS costs are discussed under the 1eLong alternative. The cost of transmitting a catch report via VMS is $0.60 per transmission.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

2.1.2 Alternative Set 2 – Additional Dealer Reporting Measures

Background/Statement of Problem/Need for Action:

The current suite of reporting and monitoring requirements may be insufficient to precisely estimate RH/S incidental catch. Also, practices on how landing weights are determined are not standardized.

The measures in this Alternative Set would (alone and/or in combination with other alternatives) increase reporting and/or monitoring with the overall goal of improving the precision of RH/S incidental catch estimates. While some of the focus may appear to be on mackerel and/or longfin squid general reporting compared to just RH/S in those fisheries, because extrapolations are often made based on total landings, accurate monitoring of the target species can be as important as determining the encounter rates of RH/S. A summary of the key biological and human community impacts (detailed in section 7) follows for each alternative.

NOTE ON COMBINATIONS: Most of the Alternative Set 2 action alternatives could be implemented individually or collectively. However, 2c and 2d (weighing mackerel) would be mutually exclusive – only one would be chosen if either. Likewise, 2e and 2f (weighing longfin squid) would be mutually exclusive – only one would be chosen if either. 2g (dealers can use volume to weight conversions) would modify 2c, 2d, 2e, or 2f so 2g could only be chosen if at least one of those four alternatives was also chosen.

2a. No-action

If this alternative is selected, then no measures from Alternative Set 2 would be implemented and the existing reporting measures (as described in section 5.2) would remain in place. Thus there would be no incremental impacts compared to the status quo, but there are relative impacts compared to the action alternatives, as described below.

2b. Require federally permitted MSB dealers to obtain vessel representative confirmation of SAFIS transaction records for mackerel landings over 20,000 lb, *Illex* landings over 10,000 lb, and longfin squid landings over 2,500 lb.

This would be accomplished by vessels via Fish Online, an existing internet-based program that currently allows vessels to voluntarily check their landings records. Dealers would have to confirm with vessels that a vessel representative had checked Fish Online to confirm landings.

Summary of Biological Impact Analysis

Accurate landings data is important to ensure that quotas are not exceeded. To the extent that landings data informs incidental catch mortality caps, accurate landings data can also be important for managing catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Since internet access is pervasive in the Mid-Atlantic and New England, either vessel owners or their representative should be able to make an internet-based confirmation of dealer transactions records without substantial cost. Improving records could benefit fishermen if additional qualifications are ever considered for holding MSB permits.

2c. Require that federally permitted SMB dealers weigh all landings related to mackerel transactions over 20,000 pounds. If dealers do not sort by species, they would need to document in dealer applications how they estimate relative compositions of a mixed catch.

Summary of Biological Impact Analysis

Accurate landings data is important to ensure that directed fishery quotas are not exceeded. To the extent that directed landings informs incidental catch mortality caps (often substantially), accurate directed landings data can be important for managing catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Economic impacts would likely be varied among dealers. Some dealers currently weigh all landings in some manner and impacts for them would be low. Other dealers use volume to weight conversions and could have to purchase scales. Purchasing a truck or hopper scale can range up to $100,000 per installation or $50,000 per installation respectively while smaller scales could be bought for several hundred dollars with a wide range in between. Smaller scales could slow down processing however.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

2d. Require that federally permitted SMB dealers weigh all landings related to mackerel transactions over 20,000 pounds. If dealers do not sort by species, they would need to document with each transaction how they estimated the relative composition of a mixed catch.

Summary of Biological Impact Analysis

Accurate landings data is important to ensure that directed fishery quotas are not exceeded. To the extent that directed landings informs incidental catch mortality caps (often substantially), accurate directed landings data can be important for managing catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Economic impacts would likely be varied among dealers. Some dealers currently weigh all landings in some manner and impacts for them would be low. Other dealers use volume to weight conversions and could have to purchase scales. Purchasing a truck or hopper scale can range up to $100,000 per installation or $50,000 per installation respectively while smaller scales could be bought for several hundred dollars with a wide range in between. Smaller scales could slow down processing however.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

2e. Require that federally permitted SMB dealers weigh all landings related to longfin squid transactions over 2,500 pounds. If dealers do not sort by species, they would need to document in dealer applications how they estimate relative compositions of a mixed catch.

Summary of Biological Impact Analysis

Accurate landings data is important to ensure that directed fishery quotas are not exceeded. To the extent that directed landings informs incidental catch mortality caps (often substantially), accurate directed landings data can be important for managing catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Economic impacts would likely be varied among dealers. Some dealers currently weigh all landings in some manner and impacts for them would be low. Other dealers use volume to weight conversions and could have to purchase scales. Purchasing a truck or hopper scale can range up to $100,000 per installation or $50,000 per installation respectively while smaller scales could be bought for several hundred dollars with a wide range in between. Smaller scales could slow down processing however.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

2f. Require that federally permitted SMB dealers weigh all landings related to longfin squid transactions over 2,500 pounds. If dealers do not sort by species, they would need to document with each transaction how they estimate relative compositions of a mixed catch.

Summary of Biological Impact Analysis

Accurate landings data is important to ensure that directed fishery quotas are not exceeded. To the extent that directed landings informs incidental catch mortality caps (often substantially), accurate directed landings data can be important for managing catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Economic impacts would likely be varied among dealers. Some dealers currently weigh all landings in some manner and impacts for them would be low. Other dealers use volume to weight conversions and could have to purchase scales. Purchasing a truck or hopper scale can range up to $100,000 per installation or $50,000 per installation respectively while smaller scales could be bought for several hundred dollars with a wide range in between. Smaller scales could slow down processing however.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

2g. If any options 2c-2f were chosen, allow dealers to use volume to weight conversions if they cannot weigh landings – they would need to identify their conversion methods in their dealer application and explain why they cannot weigh all landings.

Summary of Biological Impact Analysis

Accurate landings data is important to ensure that directed fishery quotas are not exceeded. To the extent that directed landings informs incidental catch mortality caps (often substantially), accurate directed landings data can be important for managing catch of non-target species including RH/S. Volume to weight conversions may not be as accurate as simple weighing and this option could essentially make 2c-2f equivalent to the status quo because dealers would no longer have a requirement to weigh all landings.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact. This alternative would only be selected if 2c-2f were chosen. Determining volume to weight ratios would be less expensive than purchasing scales for those dealers that would need to do this, so compared to if 2c-2f were chosen alone, impacts would be expected to be positive. However to the extent that not getting accurate measurements interfered with sustainable management, there could be long-term negative impacts.

2.1.3 Alternative Set 3: Additional At-Sea Observation Optimization Measures

Background/Statement of Problem/Need for Action:

The current suite of observer monitoring requirements may be insufficient to precisely estimate RH/S incidental catch.

The measures in this Alternative Set would (alone and/or in combination with other alternatives) facilitate more accurate monitoring by observers with the overall goal of improving the precision of RH/S incidental catch estimates. Each alternative addresses an aspect of observer coverage that potentially could be improved to ultimately lead to better RH/S estimates. A summary of the key biological and human community impacts (detailed in section 7) follows for each alternative.

NOTE ON COMBINATIONS: Many of the Alternative Set 3 action alternatives could be implemented individually or collectively. However, 3h (trip termination after 1 slipped haul) and 3i (trip termination after 2 slipped hauls) would be mutually exclusive – only one would be chosen if either. Likewise, 3k (fishery-wide slippage cap at 5 mackerel slippage events) and 3l (fishery-wide slippage cap at 10 mackerel slippage events) would be mutually exclusive – only one would be chosen if either. 3m (fishery-wide slippage cap at 5 longfin slippage events) and 3n (fishery-wide slippage cap at 10 longfin slippage events) are also mutually exclusive – only one would be chosen if either. 3p would replace fishery-wide slippage caps with vessel slippage caps and it would be expected that either 3p could be chosen or 3k-3n could be chosen (if any). Also, if 3j (slippage prohibition with exceptions) was chosen then 3f or 3g could not be selected (3f and 3g require all catch to be brought aboard but 3j provides some exceptions).

If alternatives 3f – 3p are selected for mackerel, they would also require the selection of Alternative 1d48 (48-hr pre-trip notification) or 1d72 (72-hr pre-trip notification). There is already a pre-trip notification requirement in effect for longfin squid moratorium permit holders.

3a. No-action

If this alternative is selected, then no measures from Alternative Set 3 would be implemented and the existing monitoring measures (as described in section 5.3) would remain in place. Thus there would be no incremental impacts compared to the status quo, but there are relative impacts compared to the action alternatives, as described below.

3b. Require the following reasonable assistance measures: provision of a safe sampling station; help with measuring decks, codends, and holding bins; help with bycatch collection; and help with basket sample collection by crew on vessels with mackerel limited access and/or longfin squid/Butterfish moratorium permits.

Summary of Biological Impact Analysis

Such assistance could help improve observer data by allowing the observer to focus on technical aspects of observing such as species identification, weighing, measuring, etc. To the degree that such data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. Most vessels do most of these things already so impacts would be low.

Summary of Socio-Economic Impact Analysis

Impacts should be minimal as most vessels provide such assistance voluntarily.

3c. Require vessel operators to provide observers notice when pumping/haul-back occurs on vessels with mackerel limited access and/or longfin squid moratorium permits.

Summary of Biological Impact Analysis

Such notification could help improve observer data by making sure the observer is aware of all sampling opportunities. To the degree that such data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. Most vessels do most of these things already so impacts would be low.

Summary of Socio-Economic Impact Analysis

Impacts should be minimal as most vessels provide such assistance voluntarily.

3d. When observers are deployed on trips involving more than one vessel, observers would be required on any vessel taking on fish wherever/whenever possible on vessels with mackerel limited access and/or longfin squid moratorium permits.

Summary of Biological Impact Analysis

If vessels are working in pairs conducting pair trawling and both vessels are receiving fish, having observers on both vessels ensures that all catch from the pair trawling trip is observed. To the degree that such data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. The observer program usually does this already so impacts would be low.

Summary of Socio-Economic Impact Analysis

This is generally occurring already (pers com Amy VanAtten). To the extent that it is not, NMFS would have to spend additional funds on observers, or if industry funding is approved in this amendment pair-trawl vessels would always have to arrange for two observers.

3e. On vessels with mackerel limited access and/or longfin squid moratorium permits, require slippage reports - "Released Catch Affidavits" from captains on observed trips if they slip a haul.

Slippage is an important concept in this amendment and is defined as:

Unobserved catch, i.e., catch that is discarded prior to being observed, sorted, sampled, and/or brought on board the fishing vessel. Slippage can include the release of fish from a codend or seine prior to completion of pumping or the release of an entire catch or bag while the catch is still in the water.

- Fish that cannot be pumped and that remain in the net at the end of pumping operations are considered to be operational discards and not slipped catch. Observer protocols include documenting fish that remain in the net in a discard log before they are released, and existing regulations require vessel operators to assist the observer in this process. Management measures are under consideration in this amendment to address this issue and improve the observers' ability to inspect nets after pumping to document operational discards.

- Discards that occur at-sea after catch brought on board and sorted are also not considered slipped catch.

Summary of Biological Impact Analysis

This alternative would be used to improve the quality of data collected by observers by developing a better understanding of slippage events. To the degree that such data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. Since there no direct incentive not to slip impacts should be low. If a "trip termination because of slippage" alternative was selected (see below), the slippage reports could also be used by enforcement to determine if vessels had terminated appropriately after reaching the trigger number of slippage events.

Summary of Socio-Economic Impact Analysis

Minimal impacts would be expected. Vessel captains would have to fill out a form explaining the reason for any slipped hauls.

3f. Prohibit vessels with Mackerel limited access permits that have notified for a mackerel trip and are carrying an observer from releasing any discards before they have been brought aboard for sampling by the observer.

Summary of Biological Impact Analysis

If vessels being observed can release incidental catch without it being recorded, observer data will be biased. Avoiding such events would improve the observer data and any analysis or management measures that depend on observer data, including reducing incidental catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Some fishing time may be lost because nets have to be fully brought aboard after each haul. Also, this alternative could create safety problems if a vessel attempts to bring aboard a catch and/or net in dangerous conditions. The observer program reports that most vessels are already doing this a majority of the time on a voluntary basis (pers com Amy VanAtten).

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

3g. Prohibit vessels with longfin squid moratorium permits that have notified for a longfin squid trip and are carrying an observer from releasing any discards before they have been brought aboard for sampling by the observer.

Summary of Biological Impact Analysis

If vessels being observed can release incidental catch without it being recorded, observer data will be biased. Avoiding such events would improve the observer data and any analysis or management measures that depend on observer data, including reducing incidental catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Some fishing time may be lost because nets have to be fully brought aboard after each haul. Also, this alternative could create safety problems if a vessel attempts to bring aboard a catch and/or net in dangerous conditions. The observer program reports that most vessels are already doing this a majority of the time on a voluntary basis.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

3h. On vessels with mackerel limited access and/or longfin squid moratorium permits, require trip termination following 1 slipped haul on an observed trip so as to minimize slippage events.

This alternative would seek to discourage slippage events by requiring a vessel to terminate a trip if they slip any hauls on an observed trip so that data can be obtained on the composition of all catches. It would apply to vessels that had notified for a mackerel or longfin squid trip.

Summary of Biological Impact Analysis

If vessels being observed can release incidental catch without it being recorded, observer data will be biased. Avoiding such events would improve the observer data and any analysis or management measures that depend on observer data, including reducing incidental catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

It is difficult to predict the socio-economic impacts because participants are likely to have a wide variety of responses. Some vessels may just not slip where they would have previously, and the only extra cost is sorting fish on deck. If slippage occurred previously because of safety issues and vessels now took higher risks to avoid trip termination then vessel/crew safety could be reduced. If vessels are forced to terminate then they would lose the value of catch they might have made on the rest of the trip. Because of the impossibility of predicting fishery participant responses, the diversity of trips types, and the impossibility of predicting when a slipped haul might occur, it is not possible to further quantify revenue impacts related to this alternative.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

3i. On vessels with mackerel limited access and/or longfin squid moratorium permits, require trip termination following 2 slipped hauls on an observed trip so as to minimize slippage events.

This alternative would seek to discourage slippage events by requiring a vessel to terminate a trip if they slip 2 hauls on an observed trip so that data can be obtained on the composition of all catches. It would apply to vessels that had notified for a mackerel or longfin squid trip.

Summary of Biological Impact Analysis

If vessels being observed can release incidental catch without it being recorded, observer data will be biased. Avoiding such events would improve the observer data and any analysis or management measures that depend on observer data, including reducing incidental catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

It is difficult to predict the socio-economic impacts because participants are likely to have a wide variety of responses. Some vessels may just not slip where they would have previously, and the only extra cost is sorting fish on deck. If slippage occurred previously because of safety issues and vessels now took higher risks to avoid trip termination then vessel/crew safety could be reduced. If vessels are forced to terminate then they would lose the value of catch they might have made on the rest of the trip. Because of the impossibility of predicting fishery participant responses, the diversity of trips types, and the impossibility of predicting when a slipped haul might occur, it is not possible to further quantify revenue impacts related to this alternative. Negative socioeconomic impacts would presumably be less than with 3h where just a single slippage event causes a trip termination.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

3j. With the exceptions noted below, mackerel limited access and/or longfin squid moratorium permitted vessels that have notified the observer program of their intent to land 2,500 pounds of longfin squid or 20,000 pounds of mackerel and have been selected to carry an observer would be required to pump/haul aboard all fish from the net for inspection and sampling by the observer. Vessels that do not pump fish would be required to bring all fish aboard the vessel for inspection and sampling by the observer. Vessels would be prohibited from releasing fish from the net (slippage), transferring fish to another vessel (that is not carrying a NMFS-approved observer), or otherwise discarding fish at sea, unless the fish have first been brought aboard the vessel and made available for sampling and inspection by the observer.

Exceptions: 1) pumping the catch could compromise the safety of the vessel/crew
2) mechanical failure precludes bringing some or all of the catch aboard the vessel; or
3) spiny dogfish have clogged the pump and consequently prevent pumping of the rest of the catch.

If a net is released, including the exemptions above, the vessel operator would be required to complete and sign a Released Catch Affidavit providing information about where, when, and why the net was released, as well as a good-faith estimate of the total weight of fish caught on the tow and weight of fish released. Released Catch Affidavits must be submitted within 48 hours of completion of the trip.

Summary of Biological Impact Analysis

If vessels being observed can release incidental catch without it being recorded, observer data will be biased. Avoiding such events would improve the observer data and any analysis or management measures that depend on observer data, including reducing incidental catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Vessel captains would have to fill out a form explaining the reason for any slipped hauls. Since there are no termination provisions in this particular alternative, there should be minimal impacts.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

3k. Related to 3j, for mackerel limited access permitted vessels, NMFS would track the number of slippage events. Once a cap of 5 slippage events (adjustable via specifications) occur in any given year for notified and observed mackerel trips then subsequent slippage events on any notified and observed Mackerel trip would result in trip termination for the rest of that year. The goal is to minimize slippage events.

This alternative would seek to discourage slippage events by requiring a vessel to terminate a trip if they slip a haul once 5 slippage events have occurred overall in a year by vessels declaring mackerel trips. The goal is to minimize unnecessary slippage events.

Summary of Biological Impact Analysis

If vessels being observed can release incidental catch without it being recorded, observer data will be biased. Avoiding such events would improve the observer data and any analysis or management measures that depend on observer data, including reducing incidental catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

It is difficult to predict the socio-economic impacts because participants are likely to have a wide variety of responses. If less than 5 slippage events occur the impacts may be minimal. Once terminations are triggered, some vessels may just not slip where they would have previously, and the only extra cost is sorting fish on deck. If slippage occurred previously because of safety issues and vessels now took higher risks to avoid trip termination then vessel/crew safety could be reduced. If vessels are forced to terminate then they would lose the value of catch they might have made on the rest of the trip. Because of the impossibility of predicting fishery participant responses, the variety of trip types, and the impossibility of predicting when a slipped haul might occur, it is not possible to further quantify socio-economic impacts related to this alternative.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

3l. Related to 3j, for mackerel limited access permitted vessels, NMFS would track the number of slippage events. Once a cap of 10 slippage events (adjustable via specifications) occur in any given year for notified and observed mackerel trips then subsequent slippage events on any notified and observed Mackerel trip would result in trip termination for the rest of that year. The goal is to minimize slippage events.

This alternative would seek to discourage slippage events by requiring a vessel to terminate a trip if they slip a haul once 10 slippage events have occurred overall in a year by vessels declaring mackerel trips. The goal is to minimize unnecessary slippage events.

Summary of Biological Impact Analysis

If vessels being observed can release incidental catch without it being recorded, observer data will be biased. Avoiding such events would improve the observer data and any analysis or management measures that depend on observer data, including reducing incidental catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

It is difficult to predict the socio-economic impacts because participants are likely to have a wide variety of responses. If less than 10 slippage events occur the impacts may be minimal. Once terminations are triggered, some vessels may just not slip where they would have previously, and the only extra cost is sorting fish on deck. If slippage occurred previously because of safety issues and vessels now took higher risks to avoid trip termination then vessel/crew safety could be reduced. If vessels are forced to terminate then they would lose the value of catch they might have made on the rest of the trip. Because of the impossibility of predicting fishery participant responses, the variety of trip types, and the impossibility of predicting when a slipped haul might occur, it is not possible to further quantify socio-economic impacts related to this alternative. Negative socioeconomic impacts would presumably be less than with 3k where 5 slippage events triggers trip terminations upon additional slippages.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

3m. Related to 3j, for longfin squid moratorium permitted vessels, NMFS would track the number of slippage events. Once a cap of 5 slippage events (adjustable via specifications) occur in any given trimester for notified and observed longfin squid trips then subsequent slippage events on any notified and observed longfin squid trip would result in trip termination for the rest of that trimester. The goal is to minimize slippage events.

This alternative would seek to discourage slippage events by requiring a vessel to terminate a trip if they slip a haul once 5 slippage events have occurred overall in a trimester by vessels declaring longfin squid trips. The goal is to minimize unnecessary slippage events.

Summary of Biological Impact Analysis

If vessels being observed can release incidental catch without it being recorded, observer data will be biased. Avoiding such events would improve the observer data and any analysis or management measures that depend on observer data, including reducing incidental catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

It is difficult to predict the socio-economic impacts because participants are likely to have a wide variety of responses. If less than 5 slippage events occur per trimester the impacts may be minimal. Once terminations are triggered, some vessels may just not slip where they would have previously, and the only extra cost is sorting fish on deck. If slippage occurred previously because of safety issues and vessels now took higher risks to avoid trip termination then vessel/crew safety could be reduced. If vessels are forced to terminate then they would lose the value of catch they might have made on the rest of the trip. Because of the impossibility of predicting fishery participant responses, the variety of trip types, and the impossibility of predicting when a slipped haul might occur, it is not possible to further quantify socio-economic impacts related to this alternative.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

3n. Related to 3j, for longfin squid moratorium permitted vessels, NMFS would track the number of slippage events. Once a cap of 10 slippage events (adjustable via specifications) occur in any given trimester for notified and observed longfin squid trips then subsequent slippage events on any notified and observed longfin squid trip would result in trip termination for the rest of that trimester. The goal is to minimize slippage events.

This alternative would seek to discourage slippage events by requiring a vessel to terminate a trip if they slip a haul once 10 slippage events have occurred overall in a trimester by vessels declaring longfin squid trips. The goal is to minimize unnecessary slippage events.

Summary of Biological Impact Analysis

If vessels being observed can release incidental catch without it being recorded, observer data will be biased. Avoiding such events would improve the observer data and any analysis or management measures that depend on observer data, including reducing incidental catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

It is difficult to predict the socio-economic impacts because participants are likely to have a wide variety of responses. If less than 10 slippage events occur per trimester the impacts may be minimal. Once terminations are triggered, some vessels may just not slip where they would have previously, and the only extra cost is sorting fish on deck. If slippage occurred previously because of safety issues and vessels now took higher risks to avoid trip termination then vessel/crew safety could be reduced. If vessels are forced to terminate then they would lose the value of catch they might have made on the rest of the trip. Because of the impossibility of predicting fishery participant responses, the variety of trip types, and the impossibility of predicting when a slipped haul might occur, it is not possible to further quantify socio-economic impacts related to this alternative. Negative socioeconomic impacts would presumably be less than with 3m where 5 slippage events per trimester triggers trip terminations upon additional slippages.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

3o. For mackerel and/or longfin squid permitted vessels, if a trip is terminated within 24 hours because of any of the anti-slippage provisions (3g, 3h, 3k-3n), then the relevant vessel would have to take an observer on its next trip.

This would reduce a vessel's incentive to slip a haul early in a trip in order to cause a trip termination and thereby avoid having an observer on board for an extended trip.

Summary of Biological Impact Analysis

This alternative would seek to discourage observer avoidance strategies so that data can be obtained on the composition of typical trips. To the degree that such data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Vessels may experience reduced revenue and/or higher costs due to waiting for another observer or due to paying for another observer if an industry-funded observer program is in place.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

3p. Allow mackerel and/or longfin squid permitted vessels to be assigned an annual quota (set during specifications) of slippage events related to 3j, specified annually. Once their slippage quota was reached, vessels would have to terminate an observed trip as well as upon any slippage event on subsequent observed trips for the remainder of the calendar year.

This alternative would seek to discourage slippage events by requiring a vessel to terminate a trip if they slip a haul once a certain number of slippage events have occurred annually by that same vessel. While this is more intensive to track (by vessel versus by fleet), the advantage is that one vessel is not penalized for another vessel's slippage event.

Summary of Biological Impact Analysis

If vessels being observed can release incidental catch without it being recorded, observer data will be biased. Avoiding such events would improve the observer data and any analysis or management measures that depend on observer data, including reducing incidental catch of non-target species including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

This alternative would allow the Council to consider implementing slippage triggers for trip termination upon additional slippage events at the individual vessel level. The advantage of having the slippage quota be vessel based is that vessels have a direct incentive to minimize unnecessary slippage events to save their slippage quota for when they really need it (e.g. due to safety issues) and thereby avoid situations where subsequent slippage events result in forced trip terminations. Trip terminations could still occur however.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

2.1.4 Alternative Set 4 - Port-side and Other Sampling/Monitoring Measures

Background/Statement of Problem/Need for Action:

The current suite of reporting and monitoring requirements are insufficient to precisely estimate RH/S incidental catch.

The measures in this Alternative Set would (alone and/or in combination with other alternatives) increase reporting and/or monitoring with the overall goal of improving the precision of RH/S incidental catch estimates.

From a practical standpoint, it is more efficient to subsample the landings of river herring and other non-target species when a mackerel vessel reaches the dock than when it is at sea. Discards that occur at sea of non-target species are easier to monitor than are the landed fractions that go into the hold due to the large volumes that go into the hold. Dockside sampling could have higher sampling rates to better characterize the species in retained catch and an entire catch could be evaluated in one day or less as opposed to having a person at sea for multiple days. This option does not mean that at sea monitors are unnecessary – they are essential to monitor discards. However, since most RH/S are retained (esp. for mackerel trips), portside sampling could increase sampling coverage from current levels with lower costs than at-sea observers. For longfin squid trips the preceding discussion probably does not apply because most RH/S are discarded so they are not available dockside.

Several other sampling/monitoring alternatives are also included in the Alternative Set as described below including alternatives to require volumetric hold certification of Tier 3 mackerel limited access permits and longfin squid moratorium permit holders. While in Amendment 11 the fish hold certification was primarily for purposes of capacity control (not allowing vessels to reconfigure to have substantially larger fish holds), in this Amendment the measure is being considered for purposes of facilitating rapid catch weight estimates based on vessel volume for portside sampling, observer data hail weight estimates, and vessels' VTR kept-weight estimates. There is also an ongoing voluntary project by industry to use fleet communication to avoid river herring hotspots. Since this project uses extensive post-side sampling it was included in this Alternative Set – the relevant alternative in this document just commits the Council to consider the project's results once completed to determine potential management implications. A summary of the key biological and human community impacts (detailed in section 7) follows for each alternative.

NOTE ON COMBINATIONS: All of the action alternatives in this Alternative Set could be implemented singly or in combination with any other alternative(s) in this Alternative Set.

4a. No-action

If this alternative is selected, then no measures from Alternative Set 4 would be implemented and the existing monitoring measures (as described in section 5.4) would remain in place. Thus there would be no incremental impacts compared to the status quo, but there are relative impacts compared to the action alternatives, as described below.

4b. Require industry-funded 3rd party port-side landings sampling program (including total weight documentation) for mackerel landings over 20,000 pounds. Required coverage levels would be specified annually during specifications. NEFSC would accredit samplers and manage the program/data. Vessels would contract directly with providers and pay providers directly. If selected, vessels would have to wait until their sampler arrived unless a waiver is obtained from the observer program.

Summary of Biological Impact Analysis

To the degree that better non-target landings data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. Non-target species would also benefit if the costs of monitoring generally discouraged effort which would reduce interactions.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Dockside monitors for groundfish are paid $50-$70/hr and each trip would only require 1 sampling event compared to the $800/day of at-sea samplers (plus $400 in administrative costs). Different sized vessels would have different costs for offload monitoring due to different hold sizes and processor offload speeds, but a 6-14 hour offload from a 3-5 day trip would costs $300-$980 for dockside monitoring versus $3,600-$6,000 for observer costs. If the Council required 25%, 50%, 75%, or 100% of trips to be monitored then participants would have to pay for approximately that percentage of their trips to be monitored unless additional funds are available. Revenue information for different mackerel vessels/trips is available in Alternative Set 5 below.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

4c. Require industry-funded 3rd party port-side landings sampling program (including total weight documentation) for longfin squid landings over 2,500 pounds. Required coverage levels would be specified annually during specifications. NEFSC would accredit samplers and manage the program/data. Vessels would contract directly with providers and pay provider directly. If selected, vessels would have to wait until their sampler arrived unless a waiver is obtained from the observer program.

Summary of Biological Impact Analysis

To the degree that better non-target landings data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. However, since most RH/S caught on longfin squid trips are discarded rather than retained, portside sampling is probably would not be an effective way to obtain RH/S catch information. Non-target species would benefit if the costs of monitoring generally discouraged effort which would reduce interactions.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Dockside monitors for groundfish are paid $50-$70/hr and each trip would only require 1 sampling event compared to the $800/day of at-sea samplers (plus $400 in administrative costs). Different sized vessels would have different costs for offload monitoring due to different hold sizes and processor offload speeds, but a 6-14 hour offload from a 3-5 day trip would costs $300-$980 for dockside monitoring versus $3,600-$6,000 for observer costs. If the Council required 25%, 50%, 75%, or 100% of trips to be monitored then participants would have to pay for approximately that percentage of their trips to be monitored unless additional funds are available. Revenue information for different mackerel vessels/trips is available in Alternative Set 5.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

4d. Require volumetric vessel-hold certification for Tier 3 limited access mackerel permits and specify a volume to weight conversion.

Summary of Biological Impact Analysis

This alternative could facilitate rapid catch weight estimates based on vessel volume for portside sampling, observer data hail weight estimates, and vessels' VTR kept-weight estimates.
To the degree that better non-target landings data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Informal contacts by council staff with several marine surveyors during the Amendment 11 development process revealed that a fish hold measurement could run approximately $13.30-$40 per foot of vessel length, which could range from as low as $1,000 for a 75 foot vessel to as high as $6,000 for a 150 foot vessel, not including travel expenses. To the extent that surveys are already required for insurance purposes these costs may be already part of a vessels operating costs. Industry members have communicated to Council staff that, while some smaller vessels are configured in a way that could facilitate hold certifications (the refrigerated seawater or "tank" boats), many vessels that participate in a "fresh" product fishery are not configured in a way that facilitates a certification of a fixed hold capacity.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

4e. Require volumetric vessel-hold certification for longfin squid moratorium permits and specify a volume to weight conversion.

Summary of Biological Impact Analysis

This alternative could facilitate rapid catch weight estimates based on vessel volume for portside sampling, observer data hail weight estimates, and vessels' VTR kept-weight estimates. To the degree that better non-target landings data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

Informal contacts by council staff with several marine surveyors revealed that a fish hold measurement could run approximately $13.30-$40 per foot of vessel length, which could range from as low as $1,000 for a 75 foot vessel to as high as $6,000 for a 150 foot vessel, not including travel expenses. To the extent that surveys are already required for insurance purposes these costs may be already part of a vessels operating costs. Industry members have communicated to Council staff that, while some longfin squid vessels are configured in a way that could facilitate hold certifications (the refrigerated seawater or "tank" boats), many vessels that participate in a "fresh" product fishery are not configured in a way that facilitates a certification of a fixed hold capacity.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

4f. Within 6 months of the completion of the Sustainable Fisheries Coalition bycatch avoidance project (expected late 2012), the Council will meet to formally review the results and consider the appropriateness of developing a framework adjustment to implement any additional incidental catch avoidance strategies that are suggested by the results of the Sustainable Fisheries Coalition bycatch avoidance project.

This would commit the Council to consider the findings from this project as they could apply to reducing the catch of RH/S in pelagic fisheries. Full details on this project are included in Appendix 7, but generally the project is testing if oceanographic and fishery data can be used to help industry avoid potential RH/S hotspots. Implementing measures similar to this project (i.e. making participation mandatory) would be a frameworkable action.

Summary of Biological Impact Analysis

Minimal immediate impacts would be expected. This would ensure that the Council considers the findings from this project as they could apply to reducing the catch of river herrings and/or shads in pelagic fisheries. Impacts would not be known until completion of the Sustainable Fisheries Coalition bycatch avoidance project and alternatives were developed, which would be subsequently analyzed .

Summary of Socio-Economic Impact Analysis

There are no costs associated with considering the results of the Sustainable Fisheries Coalition bycatch avoidance project. If the project revealed a way for industry to cooperatively and voluntarily avoid RH/S such work could lead to a cost-efficient way to reduce RH/S interactions.

2.1.5 Alternative Set 5 – At-Sea Observer Coverage Requirements

Background/Statement of Problem/Need for Action:

The current suite of reporting and monitoring requirements is insufficient to precisely estimate RH/S incidental catch.

The measures in this Alternative Set would (alone and/or in combination with other alternatives) increase reporting and/or monitoring with the overall goal of improving the precision of RH/S incidental catch estimates. The focus of these alternatives is on increasing the observer coverage rates of mackerel and longfin squid trips. Implementation of mandatory coverage would require a trip notification provision to be implemented as well (see Alternative Set 1). NMFS has strongly communicated that the at-sea portion of any additional observer coverage would have to be paid for by industry. A summary of the key biological and human community impacts (detailed in section 7) follows for each alternative.

NOTE ON C.V.s (coefficient of variation): A C.V. of 0.30 means that the true value has approximately a 95% probability of being within ± 60% of the estimate. A C.V. of 0.20 means that the true value has approximately a 95% probability of being within ± 40% of the estimate (both assuming a normal distribution of data). Also, since some sources of uncertainty are not integrated into the C.V. calculations, the C.V.s generated by the science center are lower (look better) than they really are. As described in Section 5 of the DEIS, since obtaining a given C.V. can require very different coverage levels from year to year, and the inter-annual variability in the data drives the precision, it may be quite difficult to consistently obtain precise catch estimates via observer data when the coverage levels are determined from prior years' data (as occurred with the SBRM).

NOTE ON COMBINATIONS: Only one of the 5b (observer coverage for mackerel mid-water trawl) alternatives could be chosen. Likewise, only one of the 5c (observer coverage for mackerel small mesh bottom trawl) and one of the 5d (observer coverage for longfin squid small mesh bottom trawl) alternatives could be chosen. One alternative from each of these could be selected (a total of three). 5e1 and 5e2 (strata-fleet alternatives for mid-water trawl) are mutually exclusive as are 5e3 and 5e4 (strata-fleet alternatives for small mesh bottom trawl) but one alternative from the first pair could be chosen with one from the second pair. If any of the 5e alternatives were chosen, they would not be combinable with any of the 5b, 5c, or 5d alternatives (coverage could be based on a set percentage of trips or a set target coefficients of variation (C.V.s) but not both). 5f, 5g, and 5h provide for industry funding and review of the increased observer coverage levels proposed in 5b-5e so they could be added on to any of the other action alternatives.

If any measure in this Alternative Set is selected for mackerel, the Council would also need to select Alternative 1d48 (48-hr pre-trip notification) or 1d72 (72-hr pre-trip notification). There is already a pre-trip notification requirement in effect for longfin squid moratorium permit holders.

5a. No-action

If this alternative is selected, then no measures from Alternative Set 5 would be implemented and the existing observer measures (as described in section 5.5) would remain in place. Thus there would be no incremental impacts compared to the status quo, but there are relative impacts compared to the action alternatives, as described below.

5b. Mackerel Mid-Water Trawl (MWT)

There is currently no pool of observer coverage for general mid-water trawl vessels and the only coverage of this fleet occurs when herring-directed activity happens to catch mackerel (the observer program actually selects against declared herring trips that state their primary target is mackerel). The sub-alternatives below would require a range of percentage-based coverage levels to improve coverage from the very low levels currently occurring and improve incidental catch estimation.

5b1. Require 25% of MWT mackerel trips by federal vessels intending to retain over 20,000 pounds of mackerel to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 20,000 pounds of mackerel unless they had notified their intent to retain more than 20,000 pounds of mackerel.

5b2. Require 50% of MWT mackerel trips by federal vessels intending to retain over 20,000 pounds of mackerel to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 20,000 pounds of mackerel unless they had notified their intent to retain more than 20,000 pounds of mackerel.

5b3. Require 75% of MWT mackerel trips by federal vessels intending to retain over 20,000 pounds of mackerel to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 20,000 pounds of mackerel unless they had notified their intent to retain more than 20,000 pounds of mackerel.

5b4. Require 100% of MWT mackerel trips by federal vessels intending to retain over 20,000 pounds of mackerel to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 20,000 pounds of mackerel unless they had notified their intent to retain more than 20,000 pounds of mackerel.

Summary of Biological Impact Analysis

Coverage of this fishery has historically been low, leading to low precision of RH/S catch estimates. Higher coverage would lead to better precision. To the degree that better data is used

to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. Since mackerel trips do not comprise all MWT activity, one can not specify the precision for RH/S catches in MWT gear if only mackerel trips increase observer coverage. Details on expected precision if all MWT activity achieved the above coverage levels can be found in Section 7. Non-target species would also benefit if the costs of coverage generally discouraged effort which would reduce interactions.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

NMFS has strongly communicated that the at-sea portion of any additional observer coverage would have to be paid for by industry. The cost to vessels of at-sea observers would be about $800 per day at sea while NMFS incurs about $400/day in administrative costs. Since different vessels have different average trip lengths and trip length varies by trip it is not possible to describe the impact on any given vessel. However, cost data collected through the observer program was used to estimate the increase in daily trip costs that $800/day would cause for mackerel trips:

-23% for single MWT mackerel trips ($3,494 to $4,294)
-31% for paired MWT mackerel trips ($2,602 to $3,402)

The average trip cost values cited in this analysis include variable costs such as fuel, oil, ice, food, fishing supplies, vessel/gear damages, and water but does not include crew shares/wages, dockage fees, or boat mortgage payments. Trip costs were estimated based on 2010 observer data. These are the larger, higher-volume vessels – smaller vessels that start off with lower costs would see a higher percentage increase.

While the per trip costs are most relevant to vessels, total costs can also be considered. Since coverage in this alternative would be related to 20,000 pound mackerel trips, 2006-2010 VTR data was analyzed to determine the approximate number of seadays fished on midwater trawl trips that kept 20,000 pounds or more of mackerel. These trips averaged 643 sea days each year ranging from 272 in 2010 to 926 in 2006. If 25%, 50%, 75%, or 100% of the average seadays (643) were observed it would require 161, 322, 482, and 643 days respectivly. Given the low levels of current coverage and an uncertain future funding situation, most if not nearly all of these would or could have to be industry funded (see 5f below) if mandated. Multiplying these days by $800/day results in at-sea costs for 25%, 50%, 75%, or 100% coverage of the average seadays of approximatley $0.13 million, $0.26 million, $0.39 million, and $0.51 million per year respectivly. Multiplying these days by $400/day results in administrative costs for 25%, 50%, 75%, or 100% coverage of the average seadays of approximatley $0.06 million, $0.13 million, $0.19 million, and $0.26 million per year respectivly.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

5c. Mackerel Small Mesh Bottom Trawl (SMBT)

A very small percentage of mackerel trips are observed overall. The sub-alternatives below would require a range of percentage-based coverage levels to improve coverage from the very low levels currently occurring and improve incidental catch estimation. Analysis in the document relates these coverage levels to potential ranges of uncertainty that would result from such coverage levels.

5c1. Require 25% of SMBT (<3.5 in) mackerel trips by federal vessels intending to retain over 20,000 pounds of mackerel to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 20,000 pounds of mackerel unless they had notified their intent to retain more than 20,000 pounds of mackerel.

5c2. Require 50% of SMBT (<3.5 in) mackerel trips by federal vessels intending to retain over 20,000 pounds of mackerel to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 20,000 pounds of mackerel unless they had notified their intent to retain more than 20,000 pounds of mackerel.

5c3. Require 75% of SMBT (<3.5 in) mackerel trips by federal vessels intending to retain over 20,000 pounds of mackerel to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 20,000 pounds of mackerel unless they had notified their intent to retain more than 20,000 pounds of mackerel.

5c4. Require 100% of SMBT (<3.5 in) mackerel trips by federal vessels intending to retain over 20,000 pounds of mackerel to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 20,000 pounds of mackerel unless they had notified their intent to retain more than 20,000 pounds of mackerel.

Summary of Biological Impact Analysis

Coverage of this fishery has historically been low, leading to low precision of RH/S catch estimates. Higher coverage would lead to better precision. To the degree that better data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. Since mackerel trips comprise a small part of SMBT activity, one can not specify the precision for RH/S catches in SMBT gear if only mackerel trips increase observer coverage. Details on expected precision if all SMBT activity achieved the above coverage levels can be found in Section 7. Non-target species would also benefit if the costs of coverage generally discouraged effort which would reduce interactions.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

NMFS has strongly communicated that the at-sea portion of any additional observer coverage would have to be paid for by industry. The cost to vessels of at-sea observers would be about $800 per day at sea while NMFS incurs about $400/day in administrative costs. Since different vessels have different average trip lengths and trip length varies by trip it is not possible to describe the impact on any given vessel. However, cost data collected through the observer program was used to estimate the increase in daily trip costs that $800/day would cause for mackerel trips:

-49% for higher volume SMBT mackerel trips ($1,639 to $2,439)

The average trip cost values cited in this analysis include variable costs such as fuel, oil, ice, food, fishing supplies, vessel/gear damages, and water but does not include crew shares/wages, dockage fees, or boat mortgage payments. Trip costs were estimated based on 2010 observer data. These are the larger, higher-volume vessels – smaller vessels that start off with lower costs would see a higher percentage increase.

While the per trip costs are most relevant to vessels, total costs can also be considered. Since coverage in this alternative would be related to 20,000 pound mackerel trips, 2006-2010 VTR data was analyzed to determine the approximate number of seadays fished on SMBT trips that kept 20,000 pounds or more of mackerel. These trips averaged 172 sea days each year ranging from 113 in 2009 to 286 in 2006. If 25%, 50%, 75%, or 100% of the average seadays (172) were observed it would require 43, 86, 129, and 172 days respectivly. Given the low levels of current coverage and an uncertain future funding situation, most if not nearly all of these would or could have to be industry funded (see 5f below) if mandated. Multiplying these days by $800/day results in at-sea costs for 25%, 50%, 75%, or 100% coverage of the average seadays of approximatley $0.03 million ($30,000), $0.07 million, $0.10 million, and $0.14 million per year respectivly. Multiplying these days by $400/day results in administrative costs for 25%, 50%, 75%, or 100% coverage of the average seadays of approximatley $0.02 million, $0.03 million, $0.05 million, and $0.07 million per year respectivly.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

5d. Longfin Squid Small Mesh Bottom Trawl (SMBT)

While coverage has increased in 2011 related to the implementation of the butterfish mortality cap on the longfin squid fishery, a small percentage of longfin squid trips have been observed historically. The sub-alternatives below would require a range of percentage-based coverage levels to improve coverage from the very low levels currently occurring and improve incidental catch estimation. Analysis in the document relates these coverage levels to potential ranges of uncertainty that would result from such coverage levels.

5d1. Require 25% of SMBT (<3.5 in) longfin squid trips by federal vessels intending to retain over 2,500 pounds of longfin squid to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 2,500 pounds of longfin squid unless they had notified their intent to retain more than 2,500 pounds of longfin squid.

5d2. Require 50% of SMBT (<3.5 in) longfin squid trips by federal vessels intending to retain over 2,500 pounds of longfin squid to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 2,500 pounds of longfin squid unless they had notified their intent to retain more than 2,500 pounds of longfin squid.

5d3. Require 75% of SMBT (<3.5 in) longfin squid trips by federal vessels intending to retain over 2,500 pounds of longfin squid to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 2,500 pounds of longfin squid unless they had notified their intent to retain more than 2,500 pounds of longfin squid.

5d4. Require 100% of SMBT (<3.5 in) longfin squid trips by federal vessels intending to retain over 2,500 pounds of longfin squid to carry observers. The NEFSC would assign coverage based on pre-trip notifications. Vessels would not be able to retain more than 2,500 pounds of longfin squid unless they had notified their intent to retain more than 2,500 pounds of longfin squid.

Summary of Biological Impact Analysis

Coverage of this fishery has historically been low, leading to low precision of RH/S catch estimates. Higher coverage would lead to better precision. To the degree that better data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. Since longfin squid trips do not comprise all SMBT activity, one can not specify the precision for RH/S catches in SMBT gear if only longfin squid trips increase observer coverage. Details on expected precision if all SMBT activity achieved the above coverage levels can be found in Section 7. Non-target species would also benefit if the costs of coverage generally discouraged effort which would reduce interactions.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

NMFS has strongly communicated that the at-sea portion of any additional observer coverage would have to be paid for by industry. The cost to vessels of at-sea observers would be about $800 per day at sea while NMFS incurs about $400/day in administrative costs. Since different vessels have different average trip lengths and trip length varies by trip it is not possible to describe the impact on any given vessel. However, cost data collected through the observer program was used to estimate the increase in daily trip costs that $800/day would cause for mackerel trips:

-85% for higher volume SMBT longfin squid trips ($939 to $1,739)
-189% for lower volume SMBT longfin squid trips ($424 to $1,224)

The average trip cost values cited in this analysis include variable costs such as fuel, oil, ice, food, fishing supplies, vessel/gear damages, and water but does not include crew shares/wages, dockage fees, or boat mortgage payments. Trip costs were estimated based on 2010 observer data.

While the per trip costs are most relevant to vessels, total costs can also be considered. Since coverage in this alternative would be related to 2,500 pound longfin squid trips, 2006-2010 VTR data was analyzed to determine the approximate number of seadays fished on SMBT trips that kept 2,500 pounds of more of longfin squid. These trips averaged 5,357 sea days each year ranging from 3,932 in 2010 to 6,743 in 2006. If 25%, 50%, 75%, or 100% of the average seadays (5,357) were observed it would require 1339, 2678, 4017, and 5,357 sea days respectivly. Given the low levels of current coverage and an uncertain funding situation, most if not nearly all of these might have to be industry funded (see 5f below) if mandated. About 10% of 2,500 pound longfin squid trips were observed in 2011, so up to 10% of these might be funded but such funding is not guaranteed. Multiplying these days by $800/day results in at-sea costs for 25%, 50%, 75%, or 100% coverage of the average seadays of approximatley $1.1 million, $2.1 million, $3.2 million, and $4.3 million per year respectivly. Multiplying these days by $400/day results in administrative costs for 25%, 50%, 75%, or 100% coverage of the average seadays of approximatley $0.5 million, $1.1 million, $1.6 million, and $2.1 million per year

respectivly. However, there may be returns to scale in the sense that at higher coverage levels NMFS marginal costs may become less than $400/day.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

5e. Strata-Fleet-Based Alternatives

Analysis performed for the amendment and detailed in Section 7 suggests that around 65% coverage could result in a 0.3 C.V. goal and about 90% coverage could result in a 0.2 C.V. goal for Mid-Atlantic MWT for alewife and blueback. Also, for small mesh bottom trawl, around 40% coverage could result in a 0.3 C.V. goal and about 60% coverage could result in a 0.2 C.V. goal for alewife and blueback. This was determined by averaging the required sea days from 2009-2010 for these goals, and then comparing those averages with total average days at sea for relevant trips from VTR data, 2009-2010. However it is emphasized that from year to year it will be very hard to hit a particular C.V. target due to the inherent variability from year to year in both the directed fisheries involved and their incidental catch of river herrings. Since one cannot predict which years will require the highest coverage, some years would likely be over covered and some years would be under covered if coverage rates are determined by the previous year's data.

Note: This alternative has a major implementation issue in that NMFS has said it will not approve increased observer coverage that is not funded by industry but the MAFMC cannot compel all fisheries by gear type to pay for observer coverage (only its own).

The following sub-alternatives would require coverage levels that would be expected to result in the specified C.V. levels for river herrings. Shad were not included because very high coverage levels would be required to achieve the respective C.V.s due to lower encounter rates.

5e1. Require NMFS to allocate sea days such that Mid-Atlantic alewife and blueback catch C.V.s for MWT would each be expected to be at or below 0.30.

5e2. Require NMFS to allocate sea days such that Mid-Atlantic alewife and blueback catch C.V.s for MWT would each be expected to be at or below 0.20.

5e3. Require NMFS to allocate sea days such that alewife and blueback catch C.V.s for SMBT would each be expected to be at or below 0.30.

5e4. Require NMFS to allocate sea days such that alewife and blueback catch C.V.s for SMBT would each be expected to be at or below 0.20.

Summary of Biological Impact Analysis

To the degree that better data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. Non-target species would also benefit if the costs of coverage generally discouraged effort which would reduce interactions.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

The approximate cost for an observer is $800/day. In addition to the costs borne by vessels, NMFS has estimated that it incurs approximately $400/day in administrative costs related to each additional day at sea.

Compared to the approximate sea days provided in 2010, achieving a 0.3 C.V. for both blueback herring and alewife in the Mid-Atlantic for MWT would require 476-232 extra sea days (costing about $0.2-$0.4 million) and achieving a 0.2 C.V. for both blueback herring and alewife in the Mid-Atlantic for MWT would require 686-344 extra sea days (costing about $0.3-$0.5 million), with at sea costs being $800/day. Administrative costs to NMFS would equal an additional 50% of the at-sea costs ($400/day). The range is related to the fact that C.V.s vary from year to year related to variation in the underlying data.

Compared to the approximate sea days provided in 2010, achieving a 0.3 C.V. for both blueback herring and alewife in the SMBT (Mid-Atlantic and New England) would require 1,410-2,478 extra sea days (costing about $1.1-$2.0 million) and achieving a 0.2 C.V. for both blueback herring and alewife in the Mid-Atlantic for MWT would require 2,850-3,757 extra sea days (costing about $2.3-$3.0 million), with at sea costs being $800/day. Administrative costs to NMFS would equal an additional 50% of the at-sea costs ($400/day). The range is related to the fact that C.V.s vary from year to year related to variation in the underlying data.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

5f. Vessels would have to pay for observers to meet any observer coverage goals adopted by the Council that are greater than existing sea day allocations assigned through the sea day allocation process (already implemented in other fisheries). NEFSC would accredit observers and vessels would have to contract and pay observers.

Summary of Biological Impact Analysis

Biological impacts should be independent of who pays for data.

Summary of Socio-Economic Impact Analysis

See 5b-5e above.

5g. Phase-in industry funding over 4 years such that to achieve the target coverage selected in 4b-4e above, NMFS would pay for 100%, 75%, 50%, then 25% of the at-sea portion of the specified observer coverage (NOTE: NMFS has indicated this is not feasible from a funding point of view).

Summary of Biological Impact Analysis

Biological impacts should be independent of who pays for data.

Summary of Socio-Economic Impact Analysis

Alternatives 5b-5e above compare the cost of observer coverage relative to different coverage levels and precision targets. In the short term cost-sharing with NMFS would make the economic impacts less but would not have an impact on the long term. For this alternative, if NMFS paid 100% of the observer coverage there would be minimal socio-economic impacts. For the phase in years, the impacts per trip would be the same as described above, but the number of trips for which industry would have to pay for observers would be less, at least initially.

5h. Require reevaluation of coverage requirement after 2 years to determine if incidental catch rates justify continued expense of continued high coverage rates.

Summary of Biological Impact Analysis

This should not have any impacts other than allowing more rapid future management responses.

Summary of Socio-Economic Impact Analysis

This should not have any impacts other than allowing more rapid future management responses.

2.1.6 Alternative Set 6 - Mortality Caps

Background/Statement of Problem/Need for Action:

There are currently no limits on incidental catch of RH/S in the mackerel and/or longfin squid fisheries other than state landing requirements.

The alternatives would seek to directly limit the mortality of the relevant RH/S species in the mackerel and longfin squid fisheries. While the actual mortality cap quantities would be determined during the specifications process just as annual ACLs/AMs are set, this document explores a range of options so that likely impacts may be evaluated. The range of mortality cap quantities would be evaluated in an environmental assessment during the specifications process (though without comprehensive RH/S assessments it is not possible to determine if any particular quantity of RH/S catch is sustainable). The following values are primarily provided to give the reader a sense of impacts from a range of mortality caps that will be investigated in greater depth during the specifications process. A summary of the key biological and human community impacts (detailed in section 7) follows for each alternative.

NOTE ON COMBINATIONS: All of the action alternatives in this Alternative Set could be implemented singly or in combination with any other alternative(s) in this Alternative Set.

6a. No-action

If this alternative is selected, then no measures from Alternative Set 6 would be implemented and the existing state management measures (as described in section 5.9) would remain in place. Thus there would be no incremental impacts compared to the status quo, but there are relative impacts compared to the action alternatives, as described below.

6b. Implement a mortality cap for river herrings for the mackerel fishery whereby the mackerel fishery would close once it is determined that it created a certain level of river herring mortality (that level would be determined annually by Council in specification process unless RH/S were added as stocks in the fishery in which case SSC would be involved in ABC setting for RH/S).

One way to assign mortality caps for river herring would be to base it on the range of estimated river herring mortality conducted by the science center/FMAT to support Am14. Mid-Atlantic mid-water trawl (MWT) fishing in Quarter 1, which is largely but not completely mackerel fishing, accounted for 35% of total river herring mortality 2005-2010. MWT fishing in Quarter 1 is mixed, with mackerel comprising over 50 % of the landings, but herring making up a large amount of landings in January (see Figure 21A of Appendix 2). The table below describes total ocean and quarter 1 mid-water trawl mortalities in the leftmost columns.

Table 1. Example River Herring Caps For Mackerel

	Total Estimated Ocean Fishing Mortality (mt)	Mid-Water Trawl Quarter 1 mortality (mt) (35% of total) = Mortality Cap Possibility	Mackerel would close at these landings (mt) with high ratio, 0.86%	Mackerel would close at these landings (mt) with mean ratio, 0.45%	Mackerel would close at these landings (mt) with low ratio, 0.02%
2006	245	86	9,975	19,063	428,908
2007	664	232	27,029	51,656	1,162,263
2008	672	235	27,333	52,237	1,175,335
2009	361	126	14,679	28,053	631,190
2010	244	85	9,911	18,940	426,160

Using the separate ratio method described in Wigley et al., 2007 (modified by adding kept in the numerator in addition to discards) developed for the butterfish cap and applying it to observer trips and regular trips that landed at least 50% or at least 100,000 pounds of mackerel (encompasses almost all landings) results in annual river herring mortality ratios from 0.02% in 2007 to .86% in 2009 with a mean of 0.45. If these values were used with the above range of mortality caps, the amount of total fish (the ratio is based on all fish retained) that could be harvested by trips as defined above before the mackerel fishery was shut down by the river herring mortality cap is illustrated in the rightmost 3 columns depending of the ratio of river herring. The main point is that whether mackerel would close because of a cap would depend on how much the Council set the cap at in a given year, what the realized incidental catch of river herring was, and what the mackerel availability was. In the above table the range of caps is just a percentage of the observed catch over the years 2006-2010. Since the realized ratio can vary substantially from year to year, it is not possible to predict impacts other than to acknowledge that in some years a closure could come very early and in some years a closure could not happen at all.

Summary of Biological Impact Analysis

If a cap was set low enough to shut the directed fishery down, there would be some benefits to RH/S. However, since the linkage between incidental catch of RH/S and RH/S stock status and productivity is not known, the impacts are not quantifiable. Smaller caps and earlier closures should lead to relatively higher benefits.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

If a low cap is chosen and a high ratio is observed, the directed fishery would close due to the cap before it reached the directed fishery quota. This would result in revenue losses to fishery participants that would be dependent on the exact level of the cap and bycatch ratio, and prices for the directed species that "is left in the water" because of the cap closure. The ranges

described in the above table would suggest potentially forgone revenue as high as about $8 million or as low as zero dollars at 2010 ex-vessel prices depending on the above factors and based on the proposed 2012 quota.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

6c. Implement a mortality cap for shads for the mackerel fishery whereby the mackerel fishery would close once it is determined that it created a certain level of shad mortality (that level would be determined annually by Council in specification process unless RH/S were added as stocks in the fishery in which case SSC would be involved in ABC setting for RH/S).

One way to assign mortality caps for shad would be to base it on the range of estimated shad mortality conducted by the science center/FMAT to support Am14. Mid-Atlantic mid-water trawl fishing in Quarter 1, which is largely but not completely mackerel fishing, accounted for 12% of total shad mortality 2005-2010. The table below describes total ocean and quarter 1 mid-water trawl mortalities in the leftmost columns (2006 omitted because of lack of shad records).

Table 2. Example Shad Caps For Mackerel

	Total Estimated Ocean Fishing Mortality (mt)	Mid-Water Trawl Quarter 1 mortality (mt) (12% of total) = Mortality Cap Possibility	Mackerel would close at these landings (mt) with high ratio, 0.05%	Mackerel would close at these landings (mt) with mean ratio, 0.03%	Mackerel would close at these landings (mt) with low ratio, 0.004%
2007	60	7	14,364	23,940	179,550
2008	60	7	14,450	24,084	180,630
2009	70	8	16,903	28,172	211,290
2010	47	6	11,338	18,896	141,720

Using the separate ratio method described in Wigley et al., 2007 (modified by adding kept in the numerator in addition to discards) developed for the butterfish cap and applying it to observer trips and regular trips that landed at least 50% or at least 100,000 pounds of mackerel (encompasses almost all landings) results in annual shad mortality ratios from 0.004% in 2009 to 0.05% in 2007 with a mean of 0.03. If these values were used with the above range of mortality caps, the amount of total fish (the ratio is based on all fish retained) that could be harvested by trips as defined above before the mackerel fishery was shut down by the shad mortality cap is illustrated in the rightmost 3 columns depending of the ratio of shad. The main point is that whether mackerel would close because of a cap would depend on how much the Council set the cap at in a given year, what the realized incidental catch of shad was, and what the mackerel availability was. In the above table the range of caps is just a percentage of the observed catch over the years 2006-2010. Since the realized ratio can vary substantially from year to year, it is not possible to predict impacts other than to acknowledge that in some years a closure could come very early and in some years a closure could not happen at all.

Summary of Biological Impact Analysis

If a cap was set low enough to shut the directed fishery down, there would be some benefits to RH/S. However, since the linkage between incidental catch of RH/S and RH/S stock status and productivity is not known, the impacts are not quantifiable. Smaller caps and earlier closures should lead to relatively higher benefits.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

If a low cap is chosen and a high ratio is observed, the directed fishery would close due to the cap before it reached the directed fishery quota. This would result in revenue losses to fishery participants that would be dependent on the exact level of the cap and bycatch ratio, and prices for the directed species that "is left in the water" because of the cap closure. The ranges described in the above table would suggest potentially forgone revenue as high as about $7 million or as low as zero dollars at 2010 ex-vessel prices depending on the above factors and based on the proposed 2012 quota.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

6d. Implement a mortality cap for river herrings for the longfin squid fishery whereby the longfin squid fishery would close once it is determined that it created a certain level of river herring mortality (that level would be determined annually by Council in specification process unless RH/S were added as stocks in the fishery in which case SSC would be involved in ABC setting for RH/S).

One way to assign mortality caps for river herring would be to base it on the range of estimated river herring mortality conducted by the science center/FMAT to support Am14. Mid-Atlantic small mesh bottom trawl accounted for 5% of total river herring mortality. While Mid-Atlantic small mesh bottom trawl encompasses a variety of fisheries besides longfin squid (including Atlantic herring), some of the New England small mesh bottom trawl mortality is probably related to longfin squid fishing so using the full Mid-Atlantic value is probably reasonable. The table below describes total ocean and 2.5% of total mortalities in the leftmost columns.

Table 3. Example River Herring Caps For Longfin Squid

	Total Estimated Ocean Fishing Mortality (mt)	Mid-Atlantic Small Mesh Bottom Trawl mortality (mt) (5% of total) = Mortality Cap Possibility	Longfin squid would close at these landings (mt) with high ratio, 0.17%	Longfin squid would close at these landings (mt) with mean ratio, 0.06%
2006	245	12	7,233	20,424
2007	664	33	19,534	55,346
2008	672	34	19,754	55,968
2009	361	18	10,608	30,057
2010	244	12	7,162	20,293

Using the separate ratio method described in Wigley et al., 2007 (modified by adding kept in the numerator in addition to discards) developed for the butterfish cap and applying it to observer trips and regular trips that landed at least 2,500 pounds longfin squid (encompasses almost all landings) results in annual river herring mortality ratios from almost zero in 2007 to .17% in 2009 with a mean of 0.06%. If these values were used with the above range of mortality caps, the amount of total fish (the ratio is based on all fish retained) that could be harvested by trips as defined above before the longfin squid fishery was shut down by the river herring mortality cap is illustrated on the rightmost 2 columns depending of the ratio of river herring. The main point is that whether longfin squid would close because of a cap would depend on how much the Council set the cap at in a given year, what the realized incidental catch of river herring was, and what the longfin squid availability was. In the above table the range of caps is just a percentage of the observed catch over the years 2006-2010. Since the realized ratio can vary substantially from year to year, it is not possible to predict impacts other than to acknowledge that in some years a closure could come very early and in some years a closure could not happen at all.

Summary of Biological Impact Analysis

If a cap was set low enough to shut the directed fishery down, there would be some benefits to RH/S. However, since the linkage between incidental catch of RH/S and RH/S stock status and productivity is not known, the impacts are not quantifiable. Smaller caps and earlier closures should lead to relatively higher benefits.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

If a low cap is chosen and a high ratio is observed, the directed fishery would close due to the cap before it reached the directed fishery quota. This would result in revenue losses to fishery participants that would be dependent on the exact level of the cap and bycatch ratio, and prices for the directed species that "is left in the water" because of the cap closure. The ranges described in the above table would suggest potentially forgone revenue as high as about $35 million or as low as zero dollars at 2010 ex-vessel prices depending on the above factors and based on the proposed 2012 quota.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

6e. Implement a mortality cap for shads for the longfin squid fishery whereby the longfin squid fishery would close once it is determined that it created a certain level of shad mortality (that level would be determined annually by Council in specification process unless RH/S were added as stocks in the fishery in which case SSC would be involved in ABC setting for RH/S).

One way to assign mortality caps for shad would be to base it on the range of estimated shad mortality conducted by the science center/FMAT to support Am14. Mid-Atlantic small mesh bottom trawl accounted for 11.5% of total shad mortality. While Mid-Atlantic small mesh bottom trawl encompasses a variety of fisheries besides longfin squid (including Atlantic herring), some of the New England small mesh bottom trawl mortality is probably related to longfin squid fishing so using the full Mid-Atlantic value is probably reasonable. The table below describes total ocean and 11.5% of total mortalities in the leftmost columns.

Table 4. Example Shad Caps For Longfin Squid

	Total Estimated Ocean Fishing Mortality (mt)	Mid-Atlantic Small Mesh Bottom Trawl mortality (mt) (11.5% of total) = Mortality Cap Possibility	Longfin squid would close at these landings (mt) with high ratio, 0.21%	Longfin squid would close at these landings (mt) with mean ratio, 0.10%	Longfin squid would close at these landings (mt) with low ratio, 0.03%
2006	47	5	2,587	5,433	18,109
2007	60	7	3,278	6,883	22,943
2008	60	7	3,297	6,924	23,081
2009	70	8	3,857	8,099	26,998
2010	47	5	2,587	5,433	18,109

Using the separate ratio method described in Wigley et al., 2007 (modified by adding kept in the numerator in addition to discards) developed for the butterfish cap and applying it to observer trips and regular trips that landed at least 2,500 pounds longfin squid (encompasses almost all landings) results in annual shad mortality ratios from almost 0.03% in 2009 to 0.21% in 2010 with a mean of 0.10%. If these values were used with the above range of mortality caps, the amount of total fish (the ratio is based on all fish retained) that could be harvested by trips as defined above before the longfin squid fishery was shut down by the shad mortality cap is illustrated in the rightmost 2 columns depending of the ratio of shad. The main point is that whether longfin squid would close because of a cap would depend on how much the Council set the cap at in a given year, what the realized incidental catch of shad was, and what the longfin squid availability was. In the above table the range of caps is just a percentage of the observed catch over the years 2006-2010. Since the realized ratio can vary substantially from year to year, it is not possible to predict impacts other than to acknowledge that in some years a closure could come very early and in some years a closure could not happen at all.

Summary of Biological Impact Analysis

If a cap was set low enough to shut the directed fishery down, there would be some benefits to RH/S. However, since the linkage between incidental catch of RH/S and RH/S stock status and productivity is not known, the impacts are not quantifiable. Smaller caps and earlier closures should lead to relatively higher benefits.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

If a low cap is chosen and a high ratio is observed, the directed fishery would close due to the cap before it reached the directed fishery quota. This would result in revenue losses to fishery participants that would be dependent on the exact level of the cap and bycatch ratio, and prices for the directed species that "is left in the water" because of the cap closure. The ranges described in the above table would suggest potentially forgone revenue as high as about $45 million or as low as zero dollars at 2010 ex-vessel prices depending on the above factors and based on the proposed 2012 quota.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

6f. Add mortality caps to list of measures that can be frameworked.

Summary of Biological Impact Analysis

Allowing a cap to be considered via a framework should not have any impacts other than allowing more rapid management responses in the future.

Summary of Socio-Economic Impact Analysis

Allowing a cap to be considered via a framework should not have any impacts other than allowing more rapid management responses in the future.

2.1.7 Alternative Set 7 – Restrictions in areas of high RH/S catch

Background/Statement of Problem/Need for Action:

There are currently no limits on incidental catch of RH/S in the mackerel and/or longfin squid fisheries other than state landing requirements

The Council originally hoped to include some alternatives that would restrict fishing in relatively small areas that appeared to be "hotspots" for RH/S catch. The Amendment's Fishery Management Action Team's found that small-area management is unlikely to be successful (see Appendices 1 & 2). Because the Council instructed the FMAT to generate area-based alternatives that would be likely to provide protection to RH/S, the FMAT generated several alternatives that are area based but the FMAT also acknowledged that such large-scale closures would effectively close the fisheries for many participants.

Council staff attempted to perform additional smaller-scale examinations of the data (for example around Hudson canyon) and while at such small scales there were too few observations to draw conclusions, even at small scales incidental catch events usually exhibited strong spatial-temporal variability.

The FMAT analysis suggests that because of the spatial and temporal variability of observed (Northeast Fishery Observer Program or "NEFOP") RH/S catch, the same kind of variability in mackerel and longfin squid effort and catch, and the same kind of variability in RH/S NEFSC trawl survey catches, that very large areas would be required to ensure that management was not just redistributing effort, possibly in a way that even increased RH/S catch. For this reason Council staff used the FMAT GIS analysis (See appendices 1 and 2) to construct areas for mackerel and longfin squid based on the mid-water and small-mesh bottom trawl fleet effort data and RH/S catch data. The table below is designed to help illustrate how even if you reduce catch rates of one species, for example blueback, but reduce catch rates of the directed species (for example mackerel) even more, it can be possible to do more harm than good if the fleet increases effort to maintain the same amount of harvest. Larger areas would not allow such redistribution of effort however. A summary of the key biological and human community impacts (detailed in section 7) follows for each alternative.

Table 5. Direct-Incidental Impact Schematic

Effects on RH catch of moving effort assuming effort changes to maintain constant mackerel catch if CPUE changes

		Mackerel		
	CPUE Changes	neutral	a little lower	a lot lower
Blueback	neutral	0	bad	bad
	a little lower	good	0	bad
	a lot lower	good	good	0

NOTE ON COMBINATIONS: 7bMack and 7cMack are mutually exclusive – the Council could close the area to directed fishing (7bMack) or require observers (7cMack) but not both. Likewise 7bLong and 7cLong are mutually exclusive – the Council could close the area to directed fishing (7bLong) or require observers (7cLong) but not both. One of the mackerel alternatives (either 7bMack or 7cMack) could be combined with one of the longfin squid alternatives (either 7bLong or 7cLong) however. 7d could be added to any 7b or 7c alternative to make those provisions only applicable after a cap-based trigger was reached. The Council would have to specify in this case that the Alternative Set 6 cap trigger was only a trigger for Alternative Set 7 rather than a stand-alone cap measure. 7e could be chosen in addition to any other alternative in this Alternative Set.

Given the overlapping nature of Alternative Sets 7 and 8, it is not expected that alternatives would be chosen from both Alternative Sets 7 and 8 for one fishery. One could select an alternative for the longfin squid fishery from one set and for the mackerel fishery from another set, but not from both sets for one fishery.

The enforceability of area-based management alternatives could be facilitated by the selection of the vessel monitoring system (VMS) requirement in Alternative Set 1 (alternatives 1eMack or 1eLong).

The selection of alternatives that include observer coverage requirements (7cMack and 7cLong) would require the selection of observer program notification alternatives for limited access mackerel permits in Alternative Set 1(1d48 and 1d72).

7a. No-action

If this alternative is selected, then no measures from Alternative Set 7 would be implemented and the existing state management measures (as described in section 5.9) would remain in place. Thus there would be no incremental impacts compared to the status quo, but there are relative impacts compared to the action alternatives, as described below.

7bMack. Closed Area - Prohibit retention of more than 20,000 pounds of mackerel in RH/S Mackerel Management Area (applies in quarter 1 only – see map below) for vessels with federal mackerel permits.

Summary of Biological Impact Analysis

Given the RH/S Mackerel Management Area encompasses most quarter-one mid-water trawl effort as well as most quarter-one observer data observations of RH/S catch, which are estimated to account for 35% of total RH/S catch, it is likely that effectively closing this area to mackerel fishing would create some positive impacts for mackerel as well as RH/S and other non-target species, but it is not possible to quantify the effect (if any) on RH/S stocks of catching one amount of RH/S versus some other amount due to the paucity of assessment information.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

As described in the table below, about 85% of mackerel revenues with an assigned area (2/3 to ¾ of total landings) from 2006-2010 came from within the RH/S Mackerel Management Area. While vessels would compensate as best they could so impacts are difficult to further quantify, vessels that typically rely on mackerel would likely suffer economically.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

Table 6. Distribution of Mackerel Revenues in and out of RH/S Area

	Outside Mackerel Value ($)	Inside Mackerel Value ($)
2006	3,149,111	17,323,851
2007	946,926	2,666,001
2008	553,705	3,200,344
2009	681,665	6,655,122
2010	471,663	2,920,919
Total	5,803,070	32,766,237
%	15%	85%

Source: Unpublished VTR Data

<u>7bLong</u>. Closed Area - Prohibit retention of more than 2,500 pounds longfin squid in RH/S Longfin Squid Management Area (applies year-round – see maps below) for vessels with federal longfin squid moratorium permits.

<u>Summary of Biological Impact Analysis</u>

Given the RH/S Longfin Squid Management Area encompasses most small mesh bottom trawl effort, which is responsible for 24% of RH/S catch, it is likely that effectively closing this area to longfin squid fishing would create some positive impacts for longfin squid as well as non-target species such as RH/S, but it is not possible to quantify the effect (if any) on RH/S stocks of catching one amount of RH/S versus some other amount due to the paucity of assessment information. However, examination of targeting information in the observer data suggests that RH/S encounters in SMBT fisheries are more associated with targeting of Alt Herring so impacts may not be large from restrictions only on SMBT longfin squid fishing.

<u>Summary of Socio-Economic Impact Analysis</u>

Impacts are mixed with an uncertain net impact.

As described in the table below, about 71% of longfin squid kept catch (VTR data) from 2006-2010 came from within the RH/S longfin squid Management Area. While vessels would compensate as best they could so impacts are difficult to further quantify, vessels that typically rely on longfin squid would likely suffer economically.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

Table 7. Distribution of longfin squid VTR catches in and out of RH/S Area.

	Outside Loligo Pounds	Inside Loligo Pounds
2006	7,139,722	30,323,237
2007	16,516,551	12,991,085
2008	6,692,942	20,772,623
2009	4,352,451	17,991,543
2010	4,050,619	12,510,747
Total	38,752,285	94,589,235
%	29%	71%

Source: Unpublished VTR Data

7cMack. Require observers in RH/S Mackerel Management Area (applies in quarter 1 only – see map below) for vessels with federal mackerel permits to retain 20,000 pounds or more of mackerel. Vessels would have to pay for observers to meet any observer coverage goals adopted by the Council that are greater than existing sea day allocations assigned through the sea day allocation process (already implemented in other fisheries). NEFSC would accredit observers and vessels would have to contract and pay observers.

Summary of Biological Impact Analysis

To the degree that better data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. To the degree that fishermen did not fish because of the requirement there could be benefits to the managed species as well as non-target species and protected resources. To the extent that fishermen transferred effort there could be unknown impacts on other managed species, non-target species, habitat, and protected resources.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

The cost of observers relative to vessel revenues and existing costs is described in Alternative Set 5.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

7cLong. Require observers in RH/S longfin squid Management Area (applies year round) for vessels with federal longfin squid permits to possess 2,500 pounds or more of longfin squid. Vessels would have to pay for observers to meet any observer coverage goals adopted by the Council that are greater than existing sea day allocations assigned through the sea day allocation process (already implemented in other fisheries). NEFSC would accredit observers and vessels would have to contract and pay observers.

Summary of Biological Impact Analysis

To the degree that better data is used to better minimize non-target interactions, there could be positive impacts to non-target species, including RH/S. To the degree that fishermen did not fish because of the requirement there could be benefits to the managed species as well as non-target species, habitat, and protected resources. To the extent that fishermen transferred effort there could be unknown impacts on other managed species, non-target species, habitat, and protected resources.

Summary of Socio-Economic Impact Analysis

Impacts are mixed with an uncertain net impact.

The cost of observers relative to vessel revenues and existing costs is described in Alternative Set 5.

While there are human community costs associated with this alternative, there also could be human community benefits as described in Section 2.1.

7d. Make above requirement(s) in effect only when a mortality cap "trigger" is reached. Operation of a "trigger" would be identical to the operation of a mortality cap (see Alternative Set 6 above) but the consequence of hitting the cap would be implementing 7b and/or 7c above if this alternative is selected in conjunction with 7b and/or 7c above. Trigger levels would be specified annually via specifications.

This option would use a mortality cap but instead of shutting down the fishery either the closed area or 100% observer coverage requirements in this Alternative Set would go into force. This alternative could only be selected in conjunction with 7b and/or 7c above.

Summary of Biological Impact Analysis

To the degree that a mortality cap gave fishermen incentive to avoid RH/S there could be positive impacts to RH/S. Once a cap was reached, then the same impacts as discussed above with 7b and/or 7c would be applicable but to a lesser degree since they would not be in force for the full year.

Summary of Socio-Economic Impact Analysis

To the degree that a mortality cap gave fishermen the opportunity to avoid RH/S and avoid more onerous requirements such as 7b or 7c above, a mortality cap trigger could have a positive impact compared to 7b or 7c alone. Once a cap was reached, then the same impacts as discussed above with 7b and/or 7c would be applicable but to a lesser degree since they would not be in force for the full year.

7e. Stipulate that any areas designated in Amendment 14 would be considered for updating every other year in specifications considering the most recent data available when specifications are developed.

Summary of Biological Impact Analysis

7e should not have any impacts other than facilitating future management responses.

Summary of Socio-Economic Impact Analysis

7e should not have any impacts other than facilitating future management responses.

THIS SPACE INTENTIONALLY LEFT BLANK

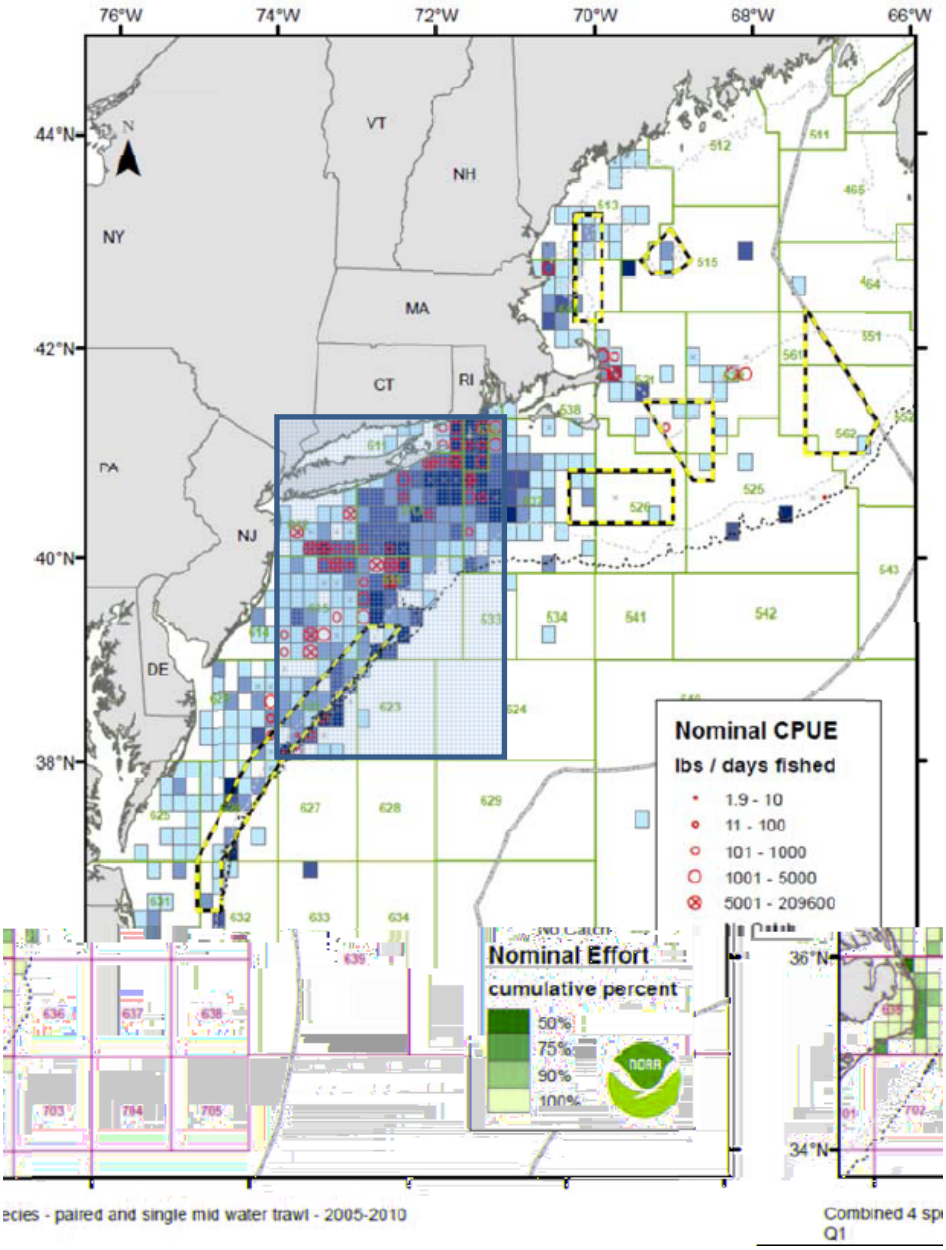
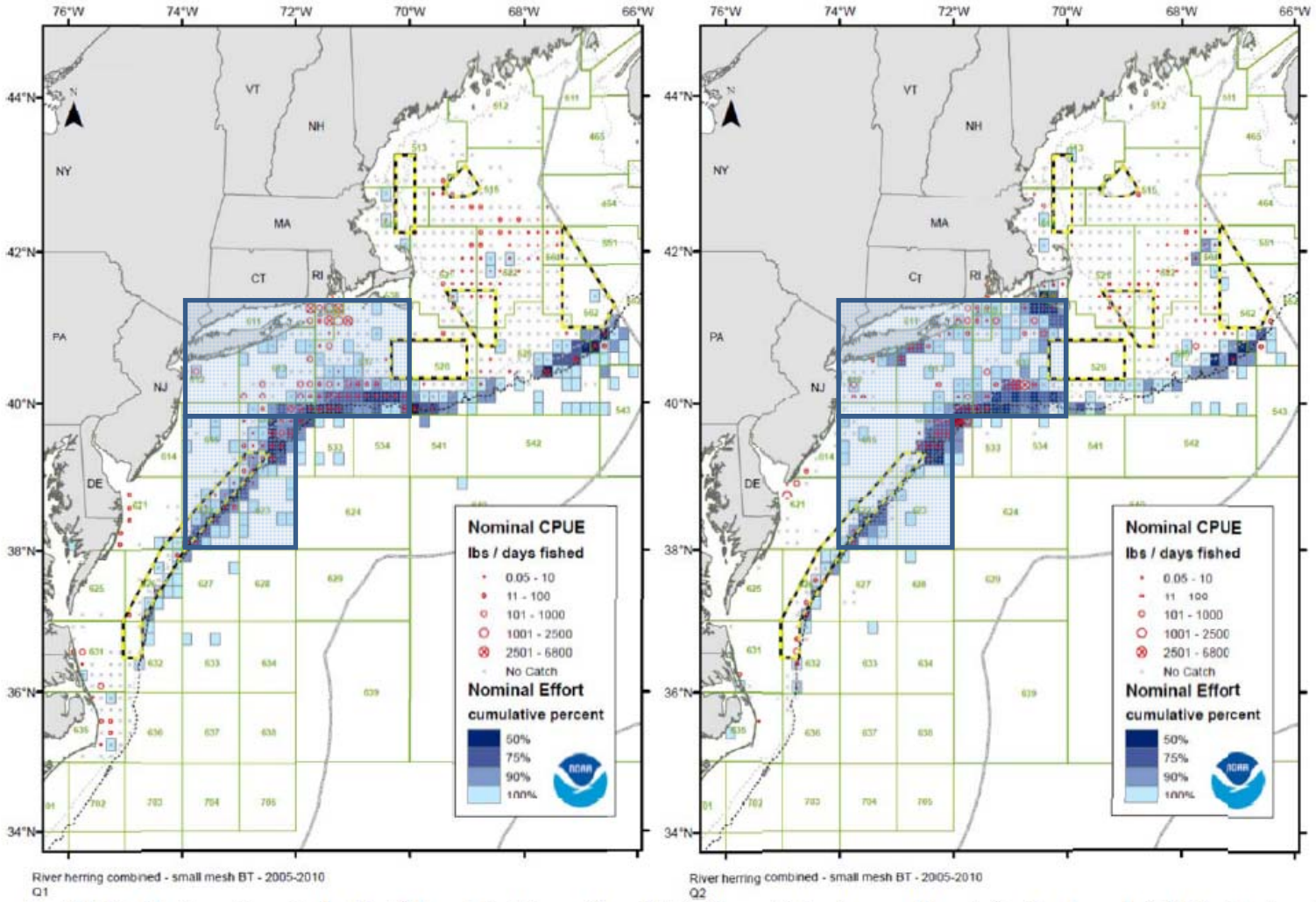
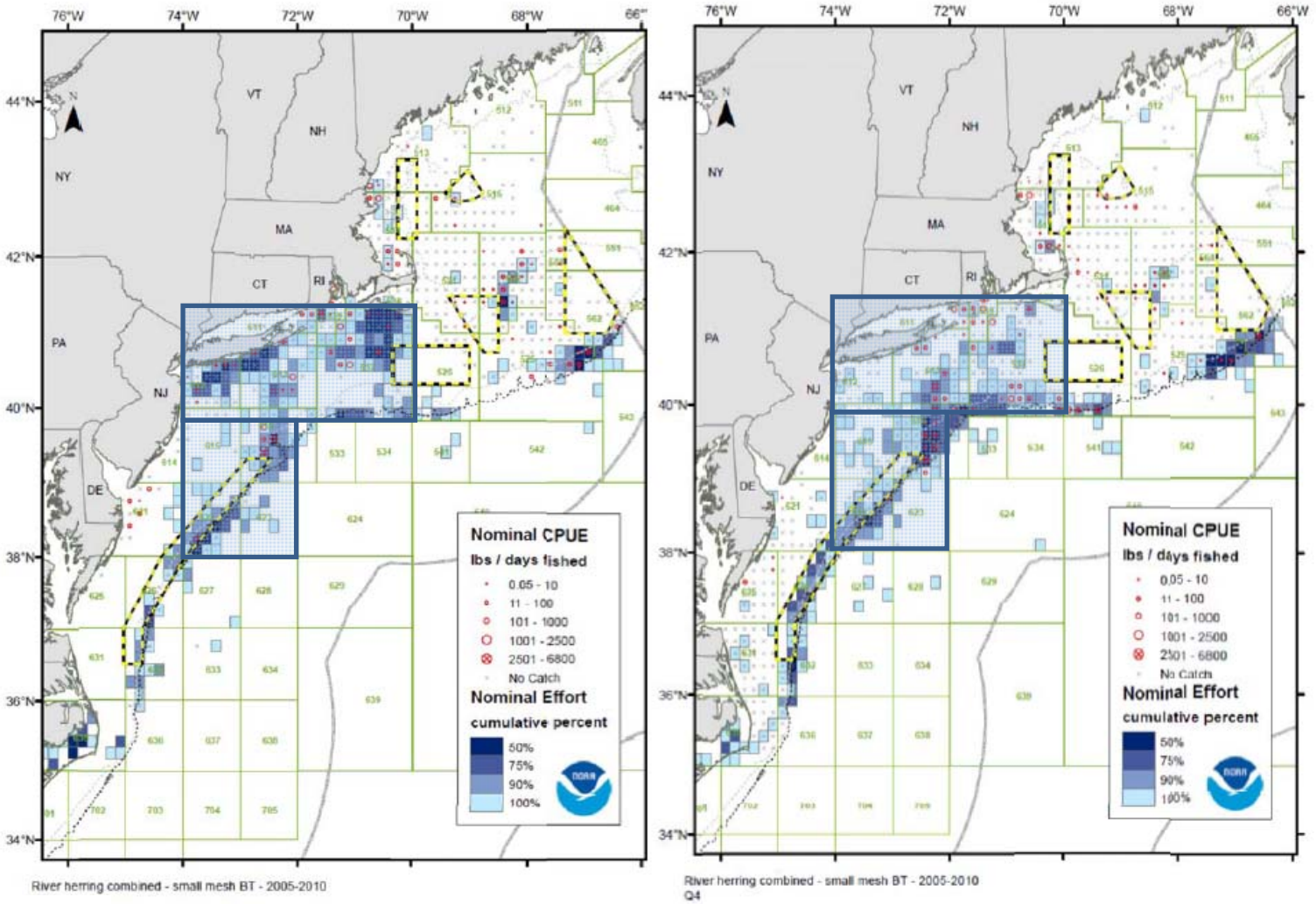


Figure 1. RH/S Mackerel Management Area (would apply in Quarter 1 only) over Quarter 1 MWT effort and RH/S Catch



Spatial distribution of nominal effort (days fished from Vessel Trip Reports) for the small mesh (codend mesh ≤ 3.5 in.) bottom trawl fleet and the fleet's incidental catch rates (kept+discarded weight/days fished from observed NEFOP trips) of alewife, blueback herring, hickory shad, and American shad combined, by ten-minute square, during Quarter 1 (left) and 2 (right) for 2005-2010.

Figure 2. RH/S Longfin squid Management Area over small mesh bottom effort and RH/S Catch (Quarters 1 and 2)



Spatial distribution of nominal effort (days fished from Vessel Trip Reports) for the small mesh (codend mesh ≤ 3.5 in.) bottom trawl fleet and the fleet's incidental catch rates (kept+discarded weight/days fished from observed NEFOP trips) of alewife, blueback herring, hickory shad, and American shad combined, by ten-minute square, during Quarter 3 (left) and 4 (right) for 2005-2010.

Figure 3. RH/S Longfin squid Management Area over small mesh bottom effort and RH/S Catch (Quarters 3 and 4)

2.1.8 Alternative Set 8 – Hotspot Restrictions

Background/Statement of Problem/Need for Action:

There are currently no limits on incidental catch of RH/S in the mackerel and/or longfin squid fisheries other than state landing requirements

The Council originally hoped to include some alternatives that would restrict fishing in relatively small areas that appeared to be "hotspots" for RH/S catch. The Amendment's Fishery Management Action Team's found that small-area management is unlikely to be successful (see Appendices 1 & 2). However, the New England Fishery Management Council's Amendment 5 to the Atlantic Herring FMP is considering small area "hotspot" alternatives. While Amendment 5 concluded that low positive impacts would result from the hotspot alternatives, it also noted that bycatch rates could increase outside of the hotspot areas which would seem to mirror the conclusions of the FMAT for Amendment 14 regarding the problems with small area management.

Regardless, to allow for potential coordination between this Amendment and Amendment 5 to the Atl. Herring FMP, the hotspot alternatives have been included as alternatives that would apply to mackerel and/or longfin squid fishing. Also, Since Atlantic herring and mackerel are often targeted by the same vessels and are sometimes targeted together at the same time, it makes sense to consider these alternatives even though they were based on observer data from "herring trips" as defined below.

The smallest areas are termed "River Herring Protection Areas." These Protection Areas were identified bimonthly as the quarter degree squares with at least one observed tow of river herring catch greater than 1,233 pounds, using 2005-2009 Northeast Fisheries Observer Program data from trips with greater than 2,000 pounds of kept Atlantic herring during the respective 2-month period. The protection areas include just the portion of the monitoring/avoidance areas (described below) that have the highest river herring catches on Atlantic herring trips as defined above. Since the raw observer data were pooled across years, the threshold was only one tow, and the results are only from Herring Trips, they do not reflect how much total river herring was caught in the Protection Area versus other areas in a given year.

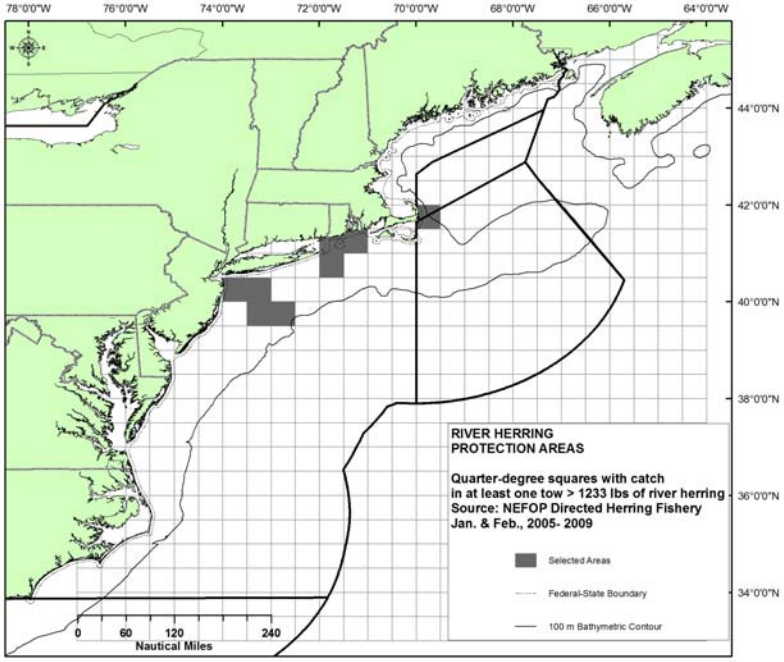
Slightly larger areas are termed "River Herring Monitoring/Avoidance Areas." These Monitoring/Avoidance Areas were identified bimonthly as the quarter degree squares with at least one observed tow of river herring catch greater than 40 pounds, using 2005-2009 Northeast Fisheries Observer Program data from trips with greater than 2,000 pounds of kept Atlantic herring during the respective 2-month period. They include all of the area identified in the protection areas as well is areas where a more modest amount of river herring was caught. Since the raw observer data were pooled across years, the threshold was only one tow, and the results are only from Herring Trips, they do not reflect how much total river herring was caught in the Monitoring/Avoidance Areas versus other areas in a given year.

These protection and monitoring/avoidance areas are mapped below by their respective bi-monthly periods. Since seeing them on the same page clarifies the differences among the areas,

they are illustrated together below (where applicable). Management measures that could apply to these areas follow the maps.

Figure 4. <u>January – February Herring Areas</u>

<u>Protection Area (highest catch records from Monitoring/Avoidance Area)</u>



<u>Monitoring/Avoidance Area</u>

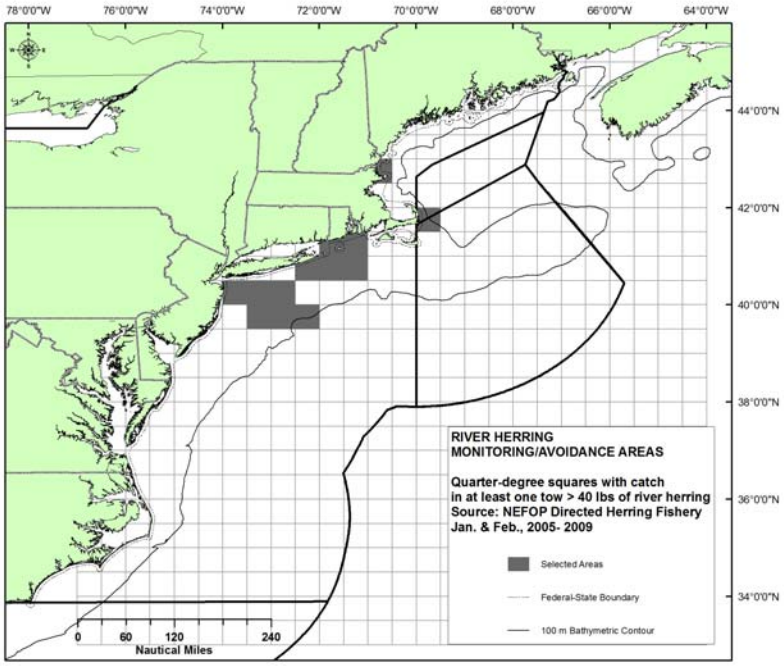
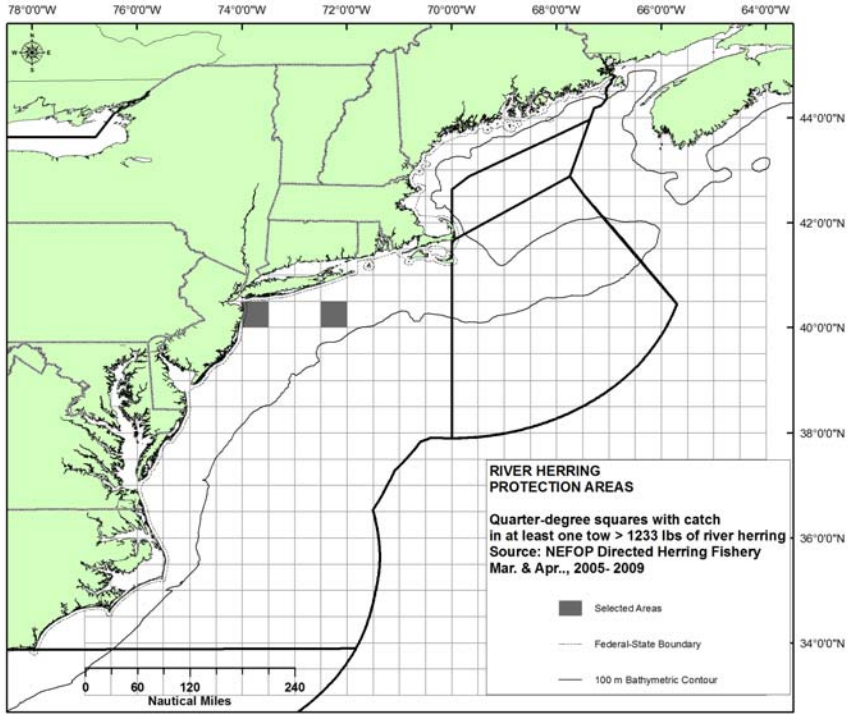


Figure 5. **March – April** Herring Areas

Protection Area (highest catch records from Monitoring/Avoidance Area)



Monitoring/Avoidance Area

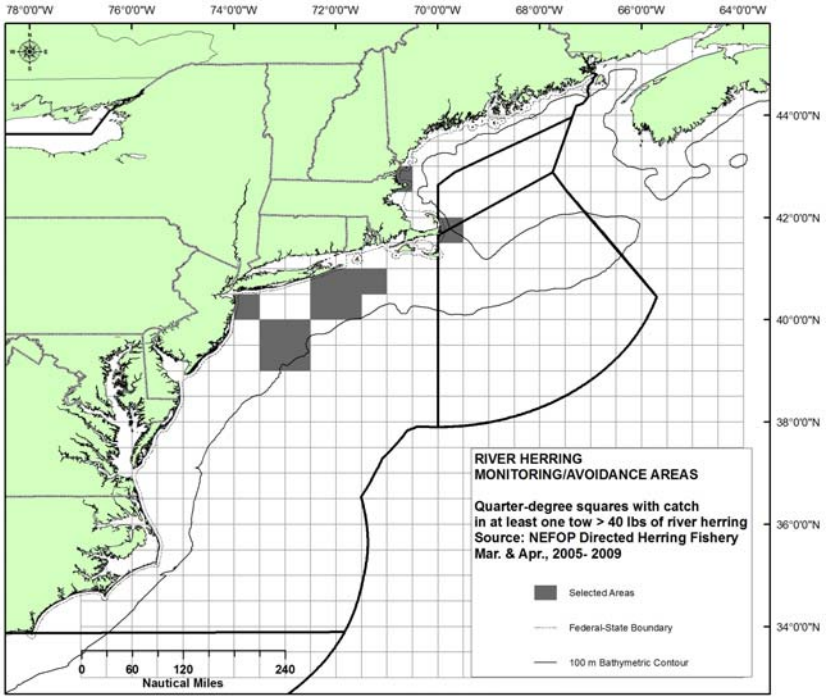


Figure 6.**May – June** Herring Areas

Protection Area

None proposed – there were no qualifying observer records (quarter degree squares with at least one observed tow of river herring catch greater than 1,233 pounds, using 2005-2009 Northeast Fisheries Observer Program data from trips with greater than 2,000 pounds of kept Atlantic herring).

THIS SPACE INTENTIONALLY LEFT BLANK

Monitoring/Avoidance Area

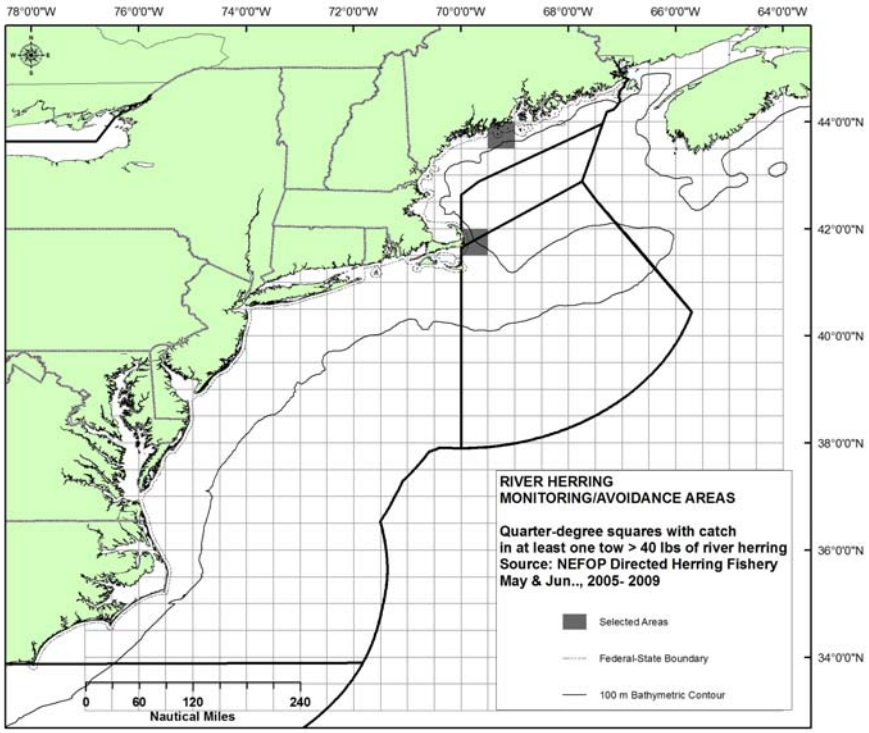


Figure 7. July – August **Herring Areas**

Protection Area

None proposed – there were no qualifying observer records (quarter degree squares with at least one observed tow of river herring catch greater than 1,233 pounds, using 2005-2009 Northeast Fisheries Observer Program data from trips with greater than 2,000 pounds of kept Atlantic herring).

THIS SPACE INTENTIONALLY LEFT BLANK

Monitoring/Avoidance Area

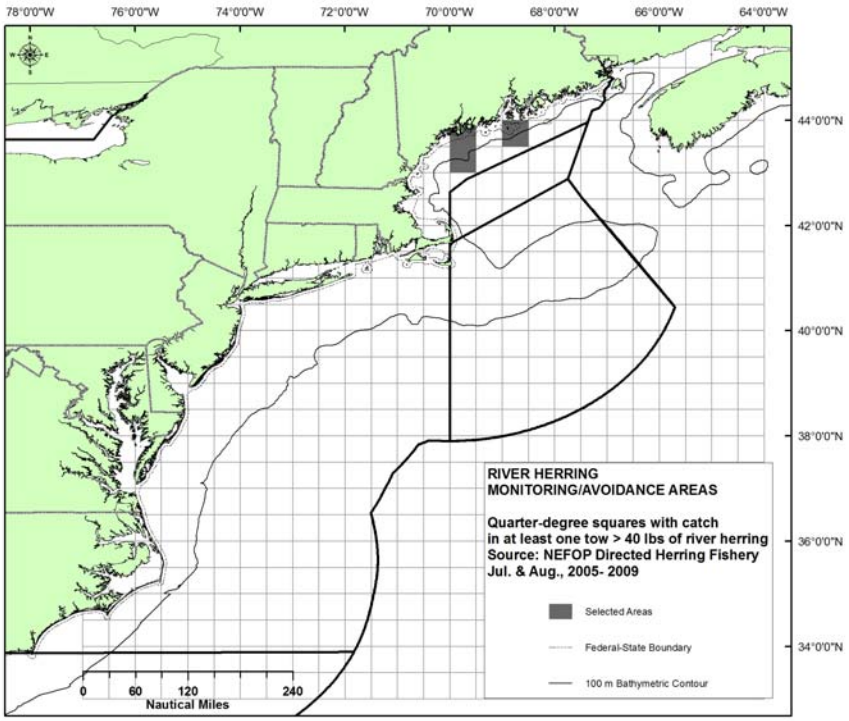
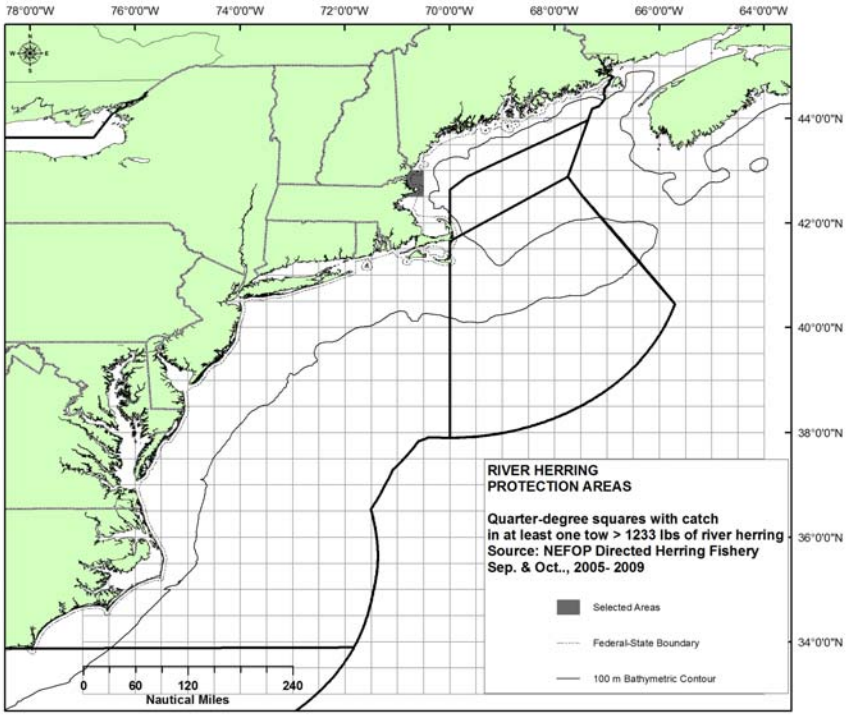


Figure 8. September – October **Herring Areas**

Protection Area (highest catch records from Monitoring/Avoidance Area)



Monitoring/Avoidance Area

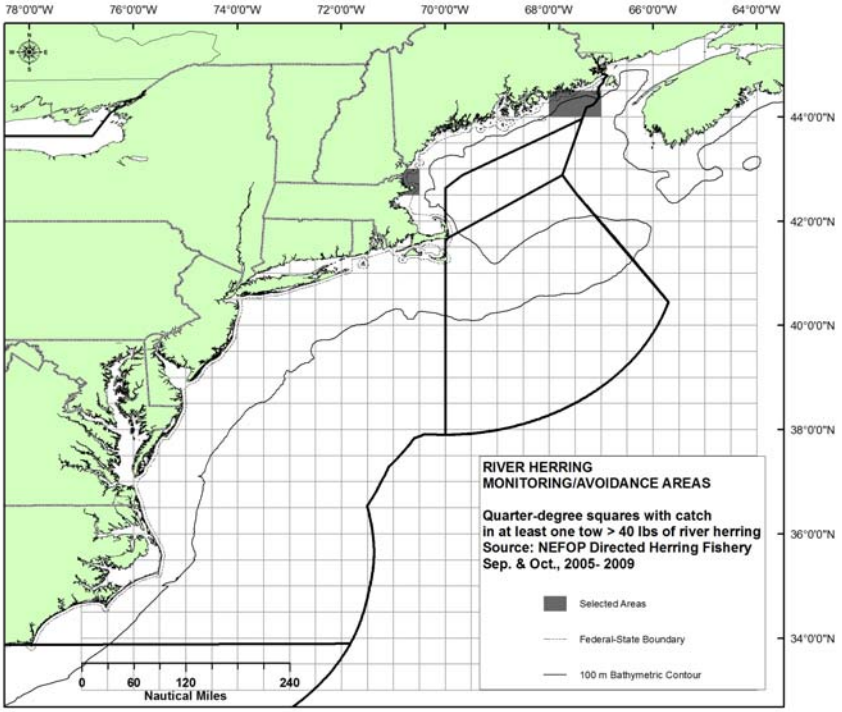
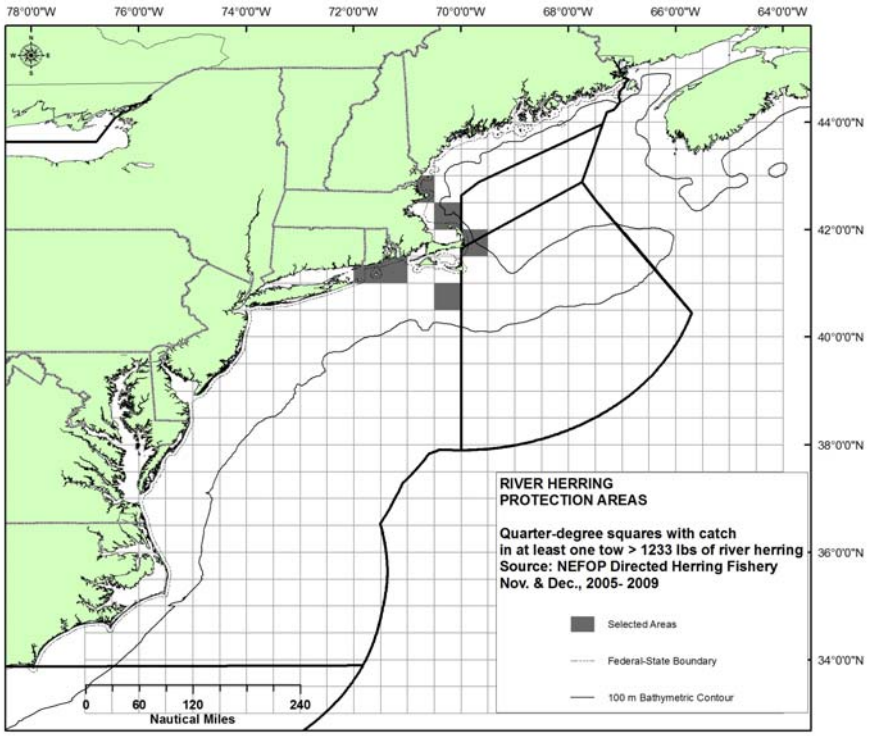
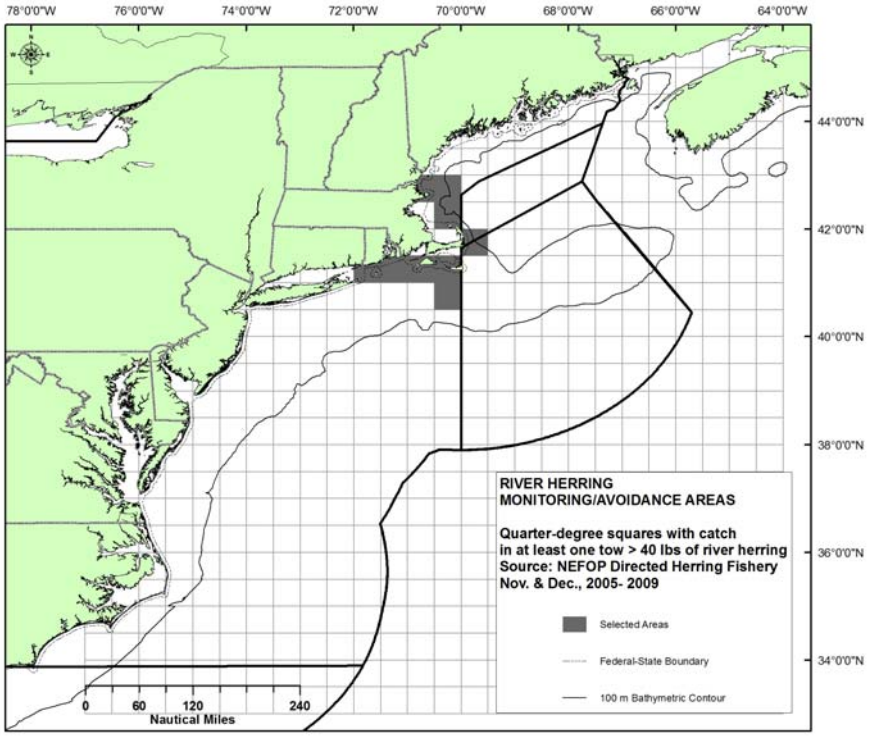


Figure 9. November – December **Herring Areas**

Protection Area (highest catch records from Monitoring/Avoidance Area)



Monitoring/Avoidance Area



Management Measures

For the areas described above a variety of management measures are being considered. A summary of the key biological and human community impacts (detailed in section 7) follows. Related to the FMAT findings that small, inter-annually fixed "hotspot" closures are unlikely to be effective, the impacts for all of the alternatives are the same and are described after all of the potential alternatives are described.

NOTE ON COMBINATIONS: All of the action alternatives in the set could be adopted individually or together. 8f, which would make any of the requirements selected in this Alternative Set only applicable when the same measures were in effect for the Atlantic Herring fishery, would only be chosen if at least one alternative among 8cMack, 8cLong, 8dMack, 8dLong, 8eMack, or 8eLong was also chosen.

Given the overlapping nature of Alternative Sets 7 and 8, it is not expected that alternatives would be chosen from both Alternative Sets 7 and 8 for one fishery. One could select an alternative for the longfin squid fishery from one set and for the mackerel fishery from another set, but not from both sets for one fishery.

The enforceability of area-based management alternatives could be facilitated by the selection of the vessel monitoring system (VMS) requirement in Alternative Set 1 (alternatives 1eMack or 1eLong).

The selection of alternatives that include observer coverage requirements (8cMack and 8cLong) would require the selection of observer program notification alternatives for limited access mackerel permits in Alternative Set 1(1d48 and 1d72).

If an overall observer coverage requirement in Alternative Set 5 was selected but did not result in a trip covered by an alternative in this Alternative Set having an observer, this Alternative Set would effectively require additional coverage.

8a. No-action

If this alternative is selected, then no measures from Alternative Set 8 would be implemented and the existing state management measures (as described in section 5.9) would remain in place. Thus there would be no incremental impacts compared to the status quo, but there are relative impacts compared to the action alternatives, as described below.

NOTE: Due to their similar likely impacts, all impacts for the action alternatives in this Alternative Set are summarized below 8f.

<u>8b</u>. Make implementing the hotspot requirements of NEFMC's Amendment 5 to the Atlantic Herring Plan for Mackerel/longfin squid vessels frameworkable.

The Council would make the hotspot requirements considered below frameworkable under a subsequent action. Biological and Socioeconomic considerations would be reevaluated when the framework was developed.

<u>8cMack</u>. For Atlantic mackerel permitted vessels, more than an incidental level of fish (20,000 pounds mackerel) may not be retained/transferred/ possessed if any fishing occurs in a River Herring Monitoring/Avoidance Area without a NMFS-approved observer at any point during the trip. Vessels would have to pay for observers to meet any observer coverage goals adopted by the Council that are greater than existing sea day allocations assigned through the sea day allocation process (already implemented in other fisheries).

<u>8cLong</u>. For longfin squid permitted vessels, more than an incidental level of fish (2,500 pounds longfin squid) may not be retained/transferred/ possessed if any fishing occurs in a River Herring Monitoring/Avoidance Area without a NMFS-approved observer at any point during the trip. Vessels would have to pay for observers to meet any observer coverage goals adopted by the Council that are greater than existing sea day allocations assigned through the sea day allocation process (already implemented in other fisheries).

<u>8dMack</u>. If a mackerel-permitted vessel is fishing in any River Herring <u>Monitoring/Avoidance</u> Areas identified in this alternative with an observer onboard, vessels would be required to pump/haul aboard all fish from the net for inspection and sampling by the observer. Vessels that do not pump fish would be required to bring all fish aboard the vessel for inspection and sampling by the observer. Unless specific conditions are met (see below), vessels would be prohibited from releasing fish from the net, transferring fish to another vessel that is not carrying a NMFS-approved observer, or otherwise discarding fish at sea, unless the fish have first been brought aboard the vessel and made available for sampling and inspection by the NMFS-approved observer.

• Vessels may make short test tows in the area to check the abundance of target and incidental catch species without pumping the fish on board if the net is reset without releasing the contents of the test tow. In this circumstance, catch from the test tow would remain in the net and would be available to the observer to sample when the subsequent tow is pumped out.

• Fish that have not been pumped aboard may be released if the vessel operator finds that:
1. pumping the catch could compromise the safety of the vessel;
2. mechanical failure precludes bringing some or all of the catch aboard the vessel; or
3. spiny dogfish have clogged the pump and consequently prevent pumping of the rest of the catch.

• If the net is released for any of the reasons stated above, the vessel operator would be required to complete and sign a Released Catch Affidavit providing information about where, when, and why the net was released, as well as a good-faith estimate of the total weight of fish caught on

the tow and weight of fish released. The Released Catch Affidavit must be submitted within 48 hours of completion of the fishing trip.

• Following the release of the net for one of the three exemptions specified above, the vessel would be required to exit the River Herring Monitoring/Avoidance Area. The vessel may continue to fish but may not fish in the River Herring Monitoring/Avoidance Areas for the remainder of the trip.

8dLong. If a longfin squid-permitted vessel is fishing in a River Herring Monitoring/Avoidance Areas identified in this alternative with an observer onboard, vessels would be required to pump/haul aboard all fish from the net for inspection and sampling by the observer. Vessels that do not pump fish would be required to bring all fish aboard the vessel for inspection and sampling by the observer. Unless specific conditions are met (see below), vessels would be prohibited from releasing fish from the net, transferring fish to another vessel that is not carrying a NMFS-approved observer, or otherwise discarding fish at sea, unless the fish have first been brought aboard the vessel and made available for sampling and inspection by the NMFS-approved observer.

• Vessels may make short test tows in the area to check the abundance of target and incidental catch species without pumping the fish on board if the net is reset without releasing the contents of the test tow. In this circumstance, catch from the test tow would remain in the net and would be available to the observer to sample when the subsequent tow is pumped out.

• Fish that have not been pumped aboard may be released if the vessel operator finds that:
1. pumping the catch could compromise the safety of the vessel;
2. mechanical failure precludes bringing some or all of the catch aboard the vessel; or
3. spiny dogfish have clogged the pump and consequently prevent pumping of the rest of the catch.

• If the net is released for any of the reasons stated above, the vessel operator would be required to complete and sign a Released Catch Affidavit providing information about where, when, and why the net was released, as well as a good-faith estimate of the total weight of fish caught on the tow and weight of fish released. The Released Catch Affidavit must be submitted within 48 hours of completion of the fishing trip.

• Following the release of the net for one of the three exemptions specified above, the vessel would be required to exit the River Herring Monitoring/Avoidance Area. The vessel may continue to fish but may not fish in the River Herring Monitoring/Avoidance Areas for the remainder of the trip.

8eMack. Vessels possessing a federal mackerel permit would not be able to retain, possess or transfer more than an incidental level of fish (20,000 pounds mackerel) while in a River Herring Protection Area unless no mesh smaller than 5.5 inches is onboard the vessel.

8eLong. Vessels possessing a federal moratorium longfin squid permit would not be able to retain, possess or transfer more than an incidental level of fish (2,500 pounds longfin squid) while in a River Herring Protection Area unless no mesh smaller than 5.5 inches is onboard the vessel.

8f. Make the above measures 8cMack, 8cLong, 8dMack, 8dLong, 8eMack, or 8eLong only effective if/when they are effective for Atlantic Herring vessels, including if they become effective in the middle of a season because a catch-cap based trigger is reached by the Atlantic Herring fleet under a trigger established by Amendment 5 to the Atlantic Herring FMP.

Summary of Biological Impact Analysis

A neutral or minimal impact would be expected compared to the no-action alternative. Vessels may fish elsewhere with the action alternatives but since the areas are relatively small, while there may be some redirection or displacement of fishing effort due to these alternatives, it would not be expected that over time the new areas would be substantially different than the old areas in terms of non-target impacts (including RH/S) given the wide and variable distribution of most non-target species including RH/S. RH/S catch may decreased inside the hotspot but increased outside the hotspot. This is consistent with the findings of the FMAT analyses detailed in Appendices 1 and 2.

Summary of Socio-Economic Impact Analysis

A low negative impact would be expected compared to the no-action alternative. Given the complexity of fishermen's responses to regulations and given the protection areas are relatively small, the effects may not be substantial for most fishermen in most years compared to the no-action alternative (they will fish other areas around the hotspots). However, near-shore fishermen near the closed areas may be disproportionately impacted by closures around their home port.

2.1.9 Alternative Set 9 – Addition of RH/S as "Stocks in the Fishery" in the MSB FMP

Background/Statement of Problem/Need for Action:

The current overall framework for RH/S management may be insufficient to address the management needs of RH/S.

The Magnuson Stevens Act describes various "National Standards" for fishery management plans. National Standard One (NS1) states: "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." NMFS has published detailed guidance for NS1, available at: http://www.nmfs.noaa.gov/msa2007/catchlimits.htm. While Council's are provided considerable flexibility, the guidance describes which stocks should be "in the Fishery" and describes the requirements for those stocks deemed by a Council to be "in the Fishery." The NS1 guidance is described in more detail in Section 5.

The impacts for all of the RH/S species are essentially the same so they are discussed together. While there may be differences of degrees, since these fish occupy similar habitats and trophic niches, and face similar challenges, the differences do not warrant a discussion for each species separately. Thus, when RH/S is used it means one, several, or all four of the relevant species. A summary of the key biological and human community impacts (detailed in section 7) follows for each alternative.

NOTE ON COMBINATIONS: All of the action alternatives in the set could be adopted individually or together.

9a. No-action

Under the no-action alternative, primary RH/S management would continue to rest with the states as coordinated through the ASMFC as described in section 5.9. The states would continue to address catch in state waters and address habitat improvements through collaborative work with NOAA, U.S. F&W Service, and private partners. From the Council perspective, RH/S would continue to be managed as a bycatch species, with bycatch to be minimized to the extent practicable. The Council could also continue to consider discretionary measures designed to reduce retained incidental catch (bycatch is defined as discards in the MSA) as it is doing in Amendment 14.

If this alternative is selected, then no measures from Alternative Set 9 would be implemented and the existing state management measures (as described in section 5.9) would remain in place. Thus there would be no incremental impacts compared to the status quo, but there are relative impacts compared to the action alternatives, as described below.

9b. Add blueback herring as a stock in the MSB FMP.

9c. Add alewife as a stock in the MSB FMP.

9d. Add American shad as a stock in the MSB FMP.

9e. Add hickory shad as a stock in the MSB FMP.

The Council could add none, one, or any combination of these species as "stocks" in the fishery. Selecting any of the action alternatives would result in the Council immediately beginning another amendment to add all of the provisions 1-15 above to the FMP for any species that is added. Such a process would likely take another 1-2 years to complete, with the development of ACLs/AMs (or ACL alternatives) and essential fish habitat designations taking the most time and being the most substantive of those provisions.

If an assessment was available and if it contained accepted reference points, any need for rebuilding that was indicated by those reference points could also lead to major actions.

Since RH/S are already managed by the ASMFC, and since substantial catches of RH/S take place in state waters, the plan would likely have to be a joint plan with the ASMFC. It is possible that the Council could attempt to defer primary management of catches (ACLs) to the ASMFC as discussed below.

Once the species were added through the follow-up amendment, NMFS would begin conducting habitat consultations for any identified EFH for federal and/or federally permitted actions (i.e. non-fishing impacts). An evaluation of fishing activities impacts on RH/S habitat and consideration of measures to minimize such impacts would also take place, possibly in the follow-up amendment or possibly afterward through another action.

In the amendment to implement the MSA provisions for a "stock in the fishery," the Council would have to decide whether to implement standard ACLs with accountability measures or make the case that an alternative equivalent could function as an ACL (this applies to any RH/S species that were added). In the first case, the Council's SSC would have to provide an Acceptable Biological Catch (ABC) (regardless of whether information was available on sustainable catch levels), which would be the ACL, and then all sources of mortality would have to be accounted for and controlled to ensure that the ACL was not exceeded. Such controls could involve RH/S retention limits, retention prohibitions, and or measures to reduce discards from relevant gear types such that ACLs would not be exceeded.

In the second case, the Council would have to make the case that alternative management measures are taking the place of an ACL, in the way that the North Pacific Fishery Management Council has made the case that Salmon moratoria in certain federal waters plus Alaska's escapement-based management measures effectively create a justifiable alternative approach to Council-derived ACLs/AMs. Their argument hinges on the fact that the State of Alaska monitors catch in all of the salmon fisheries and manages salmon holistically by incorporating all

the sources of fishing mortality on a particular stock or stock complex in calculating the escapement goal range. As explained above, overfishing is prevented by in-season monitoring and data collection that indicates when an escapement goal is not being met. When the data indicate low run strength due to natural fluctuations in salmon abundance, Alaska Department of Fish & Game closes the fishery to ensure the escapement goal range is reached. Biological escapement goal (BEG) means the escapement that provides the greatest potential for maximum sustained yield. BEG is the primary management objective for escapement (NPFMC 2011).

In order to pursue a similar path a be consistent with the MSA, it would appear that the Council would have to make that argument that the States were pursuing management based on biologically-based escapement goals and that those goals had taken all sources of mortality into account, including ocean-intercept fishing mortality. This may be problematic especially in states with moratoriums because they do not know the status of their runs (most) – if they do not know the status of their runs it would seem to be difficult to make the case that whatever at-sea mortality occurs has been accounted for and that taking everything into consideration a sustainable outcome would result.

The two ACL/AM approaches described above would be options for the Council to explore if it decided to move forward with adding any RH/S species as stocks in the MSB FMP.

Note: Due to the difficulty in identifying the two river herrings and the two shads in landings data it is assumed that for ACL/AM purposes that they could be addressed together (i.e. a river herring ACL and a shad ACL).

Summary of Biological Impact Analysis (9b-9e)

Impacts to RH/S would be expected to be positive for all relevant RH/S species and in approximately the same fashion. It is not possible to develop all of the measures (especially EFH and ACLs) that would be necessary for the FMP not to be deficient if any RH/S species were officially added as stocks in the fishery in this document. Instead, selection of an Alternative Set 9 action alternative would "kick off" another Amendment to fully add stocks to the MSB FMP in a manner that would keep the plan in compliance with the Magnuson Stevens Act. The only substantial negative impact would be costs for management and whether those costs could be justified by the potential benefits. Accordingly, the focus here is on the potential benefits so that managers can weigh the trade-offs between potential benefits and the additional costs of adding stocks as managed resources in the MSB FMP.

Impacts Specific for RH/S if They Were Added as Stocks in the Fishery, Compared to the No-Action Alternative

Impacts to RH/S would be expected to be positive for all relevant RH/S species and in approximately the same fashion given their similar life histories and place in the ecosystem. However, quantification is very difficult given the myriad challenges facing RH/S stocks. The only substantial negative impact would be costs for management and whether those costs could be justified by the potential benefits. Accordingly, the focus here is on the potential benefits so

that managers can weigh the trade-offs between potential benefits and the additional costs of adding stocks as managed resources in the MSB FMP.

1. There would be additional federal support of RH/S management (assessments, FMP and specifications review, etc.) and additional coordination of conservation activities.

Right now there is some federal involvement by U.S. Fish and Wildlife Service, NMFS Northeast Region Protected Resource Branch staff, NMFS Northeast Fisheries Science Center staff, and Council staff (quasi-federal) in RH/S management. However, these staffers do not have RH/S as a primary responsibility or focus. For example, there is no RH/S coordinator at the NMFS Northeast Regional Office or a fishery management council RH/S coordinator, as there is for directly managed resources. There is direct involvement by a lead Atlantic States Marine Fisheries Commission (ASMFC) staffer but without dedicated leads at other agencies coordination can be difficult (and the ASMFC staffer also coordinates American Eel, Atlantic Striped Bass, and Sturgeon). If RH/S were added as managed species into the MSB FMP, it may add staff with RH/S responsibilities (at NMFS or at the Council) or at the least existing staff would have RH/S responsibilities added to their primary activities. So for example, there would be a NMFS Northeast Region plan coordinator for RH/S, a Council plan coordinator for RH/S, a NMFS Northeast Fisheries Science Center assessment lead, etc., even if it primarily involves a reassignment of duties among current staff. As part of coordination responsibilities the Council coordinator and NMFS coordinator would each likely become more involved in a wide range of RH/S conservation activities especially in terms of how fishing interacts with the variety of challenges facing RH/S stocks.

These staffers would also become responsible for several annual/cyclic activities. First, they would conduct annual fishery descriptions and fishery reviews as part of specifications. Second, they would become more directly involved in assessments since NMFS strives to complete successful assessments for managed species in order to improve is Fish Stock Sustainability Index score, the primary measure of how well NMFS is performing it's duties (http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm). Adding these stocks into the FMP would not guarantee that reference points/stock determination criteria would be available (reference points are generally not available for even the existing species in this plan due to high levels of scientific uncertainty) but at least additional resources would likely be expended on RH/S assessment (though they may just be diverted from other species due to the current budget environment). If an assessment successfully generated reference points and status determination criteria then rebuilding requirements would be instituted if a stock was found to be overfished.

As part of specifications the Council's SSC would also review RH/S status and make Acceptable Biological Catch recommendations. If ACLs were instituted (see below) they would provide ACL recommendations but even if ACLs were not instituted (see additional discussion below) the Council would need a functional equivalent for incidental catch in its other managed fisheries and the SSC would likely provide relevant recommendations. Related to incidental catch management, another annual activity would be integrating RH/S considerations into bycatch reporting and observer prioritization. While NMFS has been diverting resources from other small mesh fisheries to mackerel in the last year to better characterize RH/S interactions, as a stock in the fishery NMFS would have to directly describe its plans for RH/S bycatch

monitoring, and the Council would presumably have a stronger case arguing for more coverage for a managed species than it currently can make in terms of making a case for more resources about a non-target species.

Adding RH/S as stocks in the fishery would also change the nature of management actions that are available to the Council. Currently the Council is limited to addressing catch in its other managed fisheries. If RH/S were stocks in the fishery, as managed stocks the Council could implement restrictions on other fisheries that interact with RH/S. As an example, currently the Summer Flounder-Scup-Black Sea Bass FMP restricts all bottom trawling in areas where survey data has shown scup to aggregate. If RH/S were managed species the Council could implement broader restrictions on fishing activities beyond its other managed species if necessary and/or appropriate to conserve RH/S.

2. EFH would be designated for RH/S.

Designating EFH for RH/S would increase NMFS's ability to conserve habitats used by these anadromous species, especially freshwater habitats used for spawning and as juvenile nursery areas that are most affected by a wide range of human activities.

Currently, acting under the authority of the MSA, there is a mandatory requirement that NMFS must issue EFH conservation recommendations to federal agencies for activities proposed, funded, permitted, or undertaken by those agencies. Designation of EFH for RH/S would greatly expand the geographic boundaries where mandatory consultations would be required including most coastal rivers and their watersheds on the Atlantic coast. With such designation comes the authority to more aggressively regulate the adverse impacts of non-fishing activities on riverine and estuarine habitats for these species. However, the agency may lack the resources to effectively implement the necessary actions, similar to the Agency's funding issues with Atlantic salmon (see below).

Since A) states are already independently acting to improve riverine habitats B) NOAA has ongoing consultations with upstream dam removal/riverine habitat improvement projects, and C) NMFS has already been successful mitigating impacts to some habitats (tidal riverine waters) used by RH/S because they are forage species for other federally-managed fish species (e.g., bluefish), and are, therefore, considered a component of EFH for these predatory species, it is unclear exactly what the marginal added function of NOAA EFH efforts would be.

NMFS also already prescribes mandatory measures necessary to provide safe, timely and effective passage around hydropower facilities (upstream and downstream) under Section 18 of the Federal Power Act. However, this authority is only applicable to those hydropower facilities licensed by the Federal Energy Regulatory Commission and most FERC licenses are issued for a period of 30 + years.

Freshwater habitats used by RH/S also already benefit indirectly from EFH conservation measures that are proposed for Atlantic salmon because salmon and RH/S share many of the same habitats. However, the indirect benefits of Atlantic salmon EFH conservation are limited to those areas within New England where Atlantic salmon EFH rivers are located and are greatly

constrained by funding limitations. The U.S. Fish and Wildlife Service is also engaged in riverine habitat issues but their focus is primarily on dam passage issues.

In summary, designation of EFH for RH/S would greatly expand the geographic boundaries where mandatory consultations would be required for activities that may impact RH/S habitat but it is unclear what tangible benefits would accrue beyond those already being pursued by the states, NMFS, and other federal agencies.

3. ACLs and AMs would likely be implemented.

Compared to the no-action alternative, if ACLs/AMs were established there would be better accounting of RH/S catch. If overfishing limits are identified (none exist now) then high quality catch data can be used to prevent overfishing, which would be a positive impact for any RH/S species that had ACLs/AMs. Adding ACLs/AMs also has some costs, primarily the costs of reporting and monitoring. However, regardless of the ACL/AM question additional reporting and monitoring provisions are being considered for RH/S.

One question that has surfaced repeatedly has been "Could the Council add river herring or shad as stocks in the fishery but use the ACL/AM flexibility provisions of the NS1 guidance to defer to ASMFC for primary management?" The NPFMC is considering such a path for salmon and deferring to Alaska. This could theoretically allow the designation of EFH and result in greater federal resources without having to deal with ACLs for the currently data-poor RH/S stocks. There are several key issues however, which become evident when reviewing analysis for updating the NPFMC's salmon plan (http://www.fakr.noaa.gov/npfmc/), where Alaska has primary authority even though it is a federally managed species. First, Alaska has a long history of well-documented successful/sustainable management with salmon. Second, the salmon situation is different in that RH/S landings, and certainly discards, appear not nearly as well documented (especially at the species level) as salmon landings and discards. Existing or pending ASMFC moratoriums will likely address most of the landings control but not discards and some states may still allow relatively uncontrolled landings of RH/S that are caught incidentally in federal waters. For these reasons it currently seems likely that ACLs and AMs would be needed, i.e. it would be difficult to argue that the state management would effectively account for all catch. This is at least the viewpoint of the Amendment 14 FMAT and NOAA GC, though the Council looks forward to getting additional perspectives on this topic during the public input process.

The ACL flexibility guidelines also still require consistency with Magnuson (alternatives to ACLs/AMs would have to essentially achieve the same results). So even if primary management could be ceded to the ASMFC, the Council's suite of management measures would still have to function as ACLs/AMs. Thus the Council would still have to implement hard caps on its other managed species to control overall catch (this is the case with Salmon in the North Pacific's groundfish fishery).

Also if ASMFC had primary responsibility, the Council would have to limit incidental catch in its directed fisheries based on the best available science about what catch level is consistent with sustainability and/or rebuilding as well as accounting upfront for whatever catch (landings and/or

discards) occurs in state waters. Thus while there might not be ACLs/AMs on paper, the caps on incidental catch in Council-managed fisheries would need to have the same function as ACLs/AMs in order to be consistent with the Magnuson Act and the National Standard One final rule guidelines. Again however, this is the viewpoint of the Amendment 14 FMAT and NOAA GC and the Council looks forward to getting additional perspectives on this topic during the public input process.

If the Council added RH/S as a stock in the fishery and just the provisions deferring primary management to the ASMFC were disapproved by NMFS or struck down in subsequent legal action then the standard ACL provisions would presumably apply. If such events took place, or if the Council decided to just outright add one or more RH/S stocks into the fishery then ACLs and AMs would be required, along with all the other requirements of fishery management plans (EFH, rebuilding when appropriate, etc.) as detailed in section 5.9.

While ASMFC/Council coordination for RH/S issues has been extensive in the last 2 years the ramifications of ACLs would likely lead to additional collaboration. The Council would either have a joint or complementary plan with the Commission and ACLs or other catch quotas for federal management would be based on ABCs provided by its SSC and would have to account for any state fishing mortality beyond the control of the Council. While the Council would not be able to totally control all mortality because of state fisheries and discards in state waters, mortality in federal waters would be limited. If an Acceptable Biological Catch (ABC) provided by the Council's SSC was greater than anticipated state mortality then the difference could be utilized as federal water mortality.

Alternative Set 9 Summary and Conclusion

The two key questions that will have to be answered by the Council are: 1) Is the current management framework is sufficient to conserve RH/S stocks; **and** 2) Can federal management by the Council improve management of RH/S enough to justify the management cost burden. It is not clear that Council involvement would be sufficient to conserve RH/S stocks given the varied challenges faced by RH/S stocks. It also may be true that the Council could achieve much of what it would do for RH/S informally outside of federal FMP management. However, adding RH/S stocks into an FMP would likely bring additional resources to bear and at least result in additional efforts and coordination between ASMFC, NMFS, the Council, the states, and other management partners for whichever stocks were chosen if any. The future efforts of these organizations are difficult to predict, but it is reasonable to conclude that there would be some gains for RH/S species through future actions if they are listed as stocks in the MSB fishery, as described above. However, the uncertainty regarding the current factors causing RH/S populations to remain in a depressed state means that it is difficult to identify specific causes and link remedies to specific outcomes. Given this, the extent of benefits from adding RH/S as stocks in the fishery is very difficult to quantify even though impacts are likely to be positive.

Given RH/S share similar life histories each would benefit to some degree if any were chosen, but each species would benefit most if it itself was chosen due to the catch control, EFH conservation, and general management coordination that would result.

Summary of Socio-Economic Impact Analysis (9b-9e)

Impacts are mixed with an uncertain net impact.

On one hand, if additional incidental catch reduction was required as a result of adding this species as a stock in the fishery there could be negative economic impacts to the MSB or other fisheries. Such actions and their impacts would be analyzed separately in other specifications, frameworks, or amendments. This document considers a number of different measures to reduce incidental catch of RH/S, and the reader can look to Sections 7.6-7.8 for analyses of how some types of RH/S catch reduction measures can impact human communities. Revenue losses (or potentially forgone revenue) from such measures range from very low in the case of a cap that does not constrain the fishery to near elimination of the mackerel and longfin squid fisheries in the case of the broadest area closures (they have had a combined value in the $18-$36 million dollar range in the last 5 years). It is also possible that the Council could select some of these measures to reduce incidental catch in mackerel/longfin squid fisheries, but may still have to implement further measures to reduce RH/S catch through this or its other FMPs for other fisheries.

On the other hand, it is also possible that benefits could accrue in the future if adding these species as federally managed species assisted in conserving these stocks and potentially redeveloping directed fisheries (which is uncertain). While historical high levels of landings may have been unsustainably high , RH/S fisheries had combined landings in the 20,000 mt to 30,000 mt range throughout the 1950s and 1960s ranging from Maine to South Carolina. While there are some issues (climate, stream flow, non-point run-off, etc.) that the Council may have minimal impact upon, to the degree that enhanced conservation efforts can assist recovery, then positive human community impacts are possible in terms of both additional commercial and additional recreational fishing opportunities that could result from rebuilt RH/S stocks. Recreational benefits could be direct (catching RH/S) or indirect in that RH/S are forage species for higher trophic level predators such as striped bass so higher RH/S populations could indirectly help striped bass populations.

River Herring and Shad runs also are or have been important culturally for communities (just Google “Shad Festival” or “Herring Festival”) and even recently have supported some subsistence fishing (e.g. Mashpee Wampanoag Indian Tribe on Cape Cod, Massachusetts (ASMFC 2011). There also are other non-market existence values (i.e. value gained by the public related to the knowledge that these species are being conserved successfully) that could increase in value from successful management. Public interest in this amendment demonstrates that that the general public holds a certain value for the knowledge that these fisheries are being sustainably managed, and even if each individual's value is small the total public value may be quite large.

If limiting RH/S catch, EFH designation and protection, and increased federal-state cooperation through this alternative set led to rebuilding then the benefits of the action alternatives would be large. If limiting RH/S catch through this alternative set did not substantially lead to rebuilding

(i.e. other factors are primarily to cause for RH/S declines - see sections 6.2.5 and 6.2.6) then the benefits of the action alternatives would be minor. Future research may provide information on what factors are primarily responsible to RH/S declines but currently that information is not available.

2.2 Summary Tables

Overview of Measures Table: Table 8 provides a concise general summary of the measures and their anticipated effects. An initial cumulative effects assessment (CEA) was conducted for this draft document in Section 8. Once final preferred measures are selected a table will be added to this executive summary with a cumulative effects summary.

For all Alternative Sets (1-9) and all valued ecosystem components (VECs), the first alternative ("a") equals no-action, which is what is predicted to happen with the status quo management measures. Subsequent alternatives are the action alternatives and diverge from the status quo management measures as described in Section 5. The impact analysis focuses on the valued ecosystem components (VECs) that were identified for Amendment 14 and described in detail in Section 6.0 of this document. These VECs include:

1. Managed Resources
   - Atlantic mackerel stock
   - *Illex* stock
   - Longfin squid stock
   - Atlantic butterfish stock
2. Non-target species
   - -Non-Target species include river herrings (blueback and alewife) and shads (American and hickory), collectively referred to as RH/S. Given the lack of information on how these species travel and mix in the ocean, different impacts are generally not discernible between these species but are noted where appropriate (for example in caps that are placed on particular species)
3. Habitat including EFH for the managed resources and non-target species
4. Endangered and other protected resources
5. Human Communities

While in previous MSB FMP EISs the impacts from all alternatives are grouped together for each VEC, with the large number of alternatives in this amendment (more than 80), the result would that one would start with managed resources, have 80+ associated impacts, then have 80+ impacts for non-target species, and so on with the other VECs. This format seemed to lead to a disconnect in evaluating each alternative in terms of its overall positive and negative impacts across different VECs. As a result, the impact analysis in this EIS proceeds alternative by alternative with impacts for each VEC described for a given alternative before moving on to the next alternative's impacts.

Subsequently summarizing impacts by VEC was stymied by the number of possible action alternative combinations that could result from final Council action (more than millions). Any summary would hinge on the particular combination of alternatives selected by the Council, and no preferred alternatives have been identified by the Council at this point. The Final EIS will have that information however and will detail the combined effects of the Council's preferred alternatives. This will also facilitate creation of a summary by VEC for the preferred alternatives chosen by the Council.

In these tables, a variety of terms (e.g. positive or negative) have specific meanings for each VEC and are described below. These are the same as are used in the impact analysis section, Section 7.

Managed Species, Non-Target Species, Protected Species:

Note: Often impacts are indirect in that an action may change overall effort, which would decrease impacts if effort goes down or increase impacts if effort goes up.

Neutral/minimal: actions that are expected to have no discernible impact on stock/population size. The table below uses just "minimal" to save space.
Positive: actions that increase stock/population size
Negative: actions that decrease stock/population size

Habitat:

Note: Often impacts are indirect in that an action may change overall effort, which would decrease impacts if effort goes down or increase impacts if effort goes up.

Neutral/minimal: actions that are expected to have no discernible impact on habitat. The table below uses just "minimal" to save space.
Positive: actions that improve the quality or reduce disturbance of habitat
Negative: actions that degrade the quality or increase disturbance of habitat

Human Communities:

Neutral/minimal: actions that are expected to have no discernible impact on human communities. The table below uses just "minimal" to save space.
Positive: actions that increase revenue and well-being of fishermen and/or associated businesses
Negative: actions that decrease revenue and well-being of fishermen, associated businesses, or other interested parties.
Mixed: The action would create benefits for some and costs for others. Generally there are costs to MSB fishery participants but potential benefits to other fishermen (commercial or recreational) or other interested parties who value MSB or RH/S resources. Since the linkages between catches in MSB fisheries and RH/S resources is not known, it is generally uncertain regarding which would be greater, costs to current MSB participants or benefits to other interested parties.

Impact Qualifiers:

The following qualifiers are also used in the impact analysis:

Low (as in *low* positive or *low* negative): to a lesser or small degree
High (as in *high* positive or *high* negative) to a greater or large degree
Potentially: A relatively higher degree of uncertainty is associated with the impact. Often this qualifier is used when an action may lead to better data, but future actions would have to actually use that data in decision making in order for there to be a concrete benefit.

If impacts are expected to be isolated to a particular species, usually either mackerel, longfin squid, *Illex* squid, butterfish, or river herrings and shads (RH/S) then this fact will be noted as well.

To some the extent the operation of the MSB fisheries may currently be negatively affecting the directed fisheries, RH/S stocks, other non-target species, habitat, and protected resources compared to if there was no fishery. However the fisheries exist currently, so their continued operation under "no-action" would result in similar impacts as occur presently. As such, all comparisons in Table 8 are in reference to changes from the no-action alternative but Section 7 also discusses how the no-action alternative may compare to the action alternatives.

THIS SPACE INTENTIONALLY LEFT BLANK

Table 8. Alternative Impact Summary Table

Management Measures	Valued Ecosystem Component (VEC) Impacts				
	Managed resource	Non-target species Esp. RH/S	Habitat including EFH	Protected Resources	Human Communities
1a No Action	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo
1bMack mackerel weekly VTRs	Potentially Low Positive - better monitoring	Potentially Low Positive - better monitoring	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
1bLong longfin weekly VTRs	Potentially Low Positive - better monitoring	Potentially Low Positive - better monitoring	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
1c MSB weekly VTRs	Potentially Low Positive - better monitoring	Potentially Low Positive - better monitoring	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
1d48 48hr notice for mackerel trips	Potentially Low Positive - better observer placement	Positive - better observer placement	Minimal - no substantial change in effort expected	Potentially Positive - better observer placement	Mixed (positive and negative impacts for different interests)
1d72 72hr notice for mackerel trips	Potentially Low Positive - better observer placement	Positive - better observer placement	Minimal - no substantial change in effort expected	Potentially Positive - better observer placement	Mixed (positive and negative impacts for different interests)
1eMack VMS for mackerel vessels	Potentially Low Positive - better monitoring	Potentially Positive - better monitoring	Minimal - no substantial change in effort expected	Potentially Positive - supports area closures	Mixed (positive and negative impacts for different interests)
1eLong VMS for longfin vessels	Potentially Low Positive - better monitoring	Potentially Positive - better monitoring	Minimal - no substantial change in effort expected	Potentially Positive - supports area closures	Mixed (positive and negative impacts for different interests)
1fMack VMS reporting for mackerel	Potentially Low Positive - better monitoring	Potentially Low Positive - better monitoring	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
1fLong VMS reporting for longfin	Potentially Low Positive - better monitoring	Potentially Low Positive - better monitoring	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
1gMack 6hr pre-land VMS for mackerel	Potentially Low Positive - better monitoring	Potentially Positive - better monitoring	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
1gLong 6hr pre-land VMS for longfin	Potentially Low Positive - better monitoring	Potentially Positive - better monitoring	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)

(continued)

Management Measures	Valued Ecosystem Component (VEC) Impacts				
	Managed resource	Non-target species Esp. RH/S	Habitat including EFH	Protected Resources	Human Communities
2a No Action	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo
2b Vessel SAFIS Confirmation	Low positive - better record keeping	Low positive - better record keeping	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Potentially Low Positive - better record keeping
2c mackerel catch weighing with annual sorting documentation	Low positive - better monitoring	Low positive - better monitoring	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
2d mackerel catch weighing with sort doc for each transaction	Low positive - better monitoring	Low positive - better monitoring	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
2e longfin catch weighing with annual sort doc	Low positive - better monitoring	Low positive - better monitoring	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
2f longfin catch weighing with sort doc for each transaction	Low positive - better monitoring	Low positive - better monitoring	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
2g Allow volume to weight conversions	Neutral - equivalent to status quo	Neutral - equivalent to status quo	Neutral - equivalent to status quo	Neutral - equivalent to status quo	Neutral - equivalent to status quo

(continued)

Management Measures	Valued Ecosystem Component (VEC) Impacts				
	Managed resource	Non-target species Esp. RH/S	Habitat including EFH	Protected Resources	Human Communities
3a No action	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo
3B reasonable assistance	Low Positive - improves observer data	Low Positive - improves observer data	Minimal - no substantial change in effort expected	Low Positive - improves observer data	Minimal
3c pump/haul notice	Low Positive - improves observer data	Low Positive - improves observer data	Minimal - no substantial change in effort expected	Low Positive - improves observer data	Minimal
3d paired observers	Low Positive - improves observer data	Low Positive - improves observer data	Minimal - no substantial change in effort expected	Low Positive - improves observer data	Minimal
3e slippage reports	Low Positive - improves observer data	Low Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Minimal
3f no discards before sampling mackerel	Low Positive - improves observer data	Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
3g no discards before sampling longfin	Positive - improves observer data	Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
3h 1 slip termination	Positive - improves observer data	Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
3i 2 slip termination	Positive - improves observer data	Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
3j Closed Area 1 Rules	Positive - improves observer data	Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
3k 5 annual mackerel slips then trip termination for if more	Low Positive - improves observer data	Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
3l 10 annual mackerel slips then trip termination for if more	Low Positive - improves observer data	Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)

(continued)

Management Measures	Valued Ecosystem Component (VEC) Impacts (cont)				
	Managed resource	Non-target species Esp. RH/S	Habitat including EFH	Protected Resources	Human Communities
3m 5 trimester longfin slips then trip termination for if more	Positive - improves observer data	Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
3n 10 trimester longfin slips then trip termination for if more	Positive - improves observer data	Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
3o repeat observers for canceled trips	Low Positive - improves observer data	Low Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
3p individual vessel slippage quota	Potential Positive - improves observer data	Potential Positive - improves observer data	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)

(continued)

Management Measures	Valued Ecosystem Component (VEC) Impacts				
	Managed resource	Non-target species Esp. RH/S	Habitat including EFH	Protected Resources	Human Communities
4a No Action	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo
4b port-side sampling for mackerel landings	Minimal - landings already well monitored	Positive - better landings data for non-targets	Minimal - fishery mostly uses MWT	Potentially positive - may lower effort.	Mixed (positive and negative impacts for different interests)
4c portside sampling for longfin landings	Minimal - landings already well monitored	Minimal - much non-target catch is discarded at set	Potentially positive - may lower effort.	Potentially positive - may lower effort.	Mixed (positive and negative impacts for different interests)
4d Tier 3 mackerel hold certification	Minimal - landings already well monitored	Potentially low Positive - better data for non-targets	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
4e longfin hold certification	Minimal - landings already well monitored	Potentially positive - better data for non-targets	Minimal - no substantial change in effort expected	Minimal - no substantial change in effort expected	Mixed (positive and negative impacts for different interests)
4f Sust. Fish. Coalition frameworkable	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action

(continued)

Management Measures	Valued Ecosystem Component (VEC) Impacts				
	Managed resource	Non-target species Esp. RH/S	Habitat including EFH	Protected Resources	Human Communities
5a No action	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo
5b Observer coverage for mackerel MWT	Potentially low positive - better discard data	Positive - better incidental catch data	Minimal - fishery mostly uses MWT	Minimal (positive if industry has to pay which would decrease effort)	Mixed (positive and negative impacts for different interests)
5c Observer coverage for mackerel SMBT	Potentially low positive - better discard data	Positive - better incidental catch data	Minimal (positive if industry has to pay which would decrease effort)	Minimal (positive if industry has to pay which would decrease effort)	Mixed (positive and negative impacts for different interests)
5d Observer coverage for longfin SMBT	Positive - better discard catch data	Positive - better incidental catch data	Minimal (positive if industry has to pay which would decrease effort)	Minimal (positive if industry has to pay which would decrease effort)	Mixed (positive and negative impacts for different interests)
5e Strata-Fleet-Based Alternatives	Positive - better discard catch data	Positive - better incidental catch data	Minimal (positive if industry has to pay which would decrease effort)	Minimal (positive if industry has to pay which would decrease effort)	Mixed (positive and negative impacts for different interests)
5f Industry Funding	Minimal but tied to 5b-5e above.	Minimal but tied to 5b-5e above.	Minimal but tied to 5b-5e above.	Minimal but tied to 5b-5e above.	Mixed (positive and negative impacts for different interests)
5g phased industry funding	Minimal but tied to 5b-5e above.	Minimal but tied to 5b-5e above.	Minimal but tied to 5b-5e above.	Minimal but tied to 5b-5e above.	Mixed (positive and negative impacts for different interests)
5h 2-year coverage re-evaluation	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action

(continued)

Management Measures	Valued Ecosystem Component (VEC) Impacts				
	Managed resource	Non-target species Esp. RH/S	Habitat including EFH	Protected Resources	Human Communities
6a No Action	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo
6b Mackerel River Herring Cap	Potentially low positive - lower catch	Potentially positive - lower catch depending on cap amount	Minimal - fishery mostly uses MWT	Potentially positive - lower effort depending on cap amount	Mixed (positive and negative impacts for different interests)
6c Mackerel Shad Cap	Potentially low positive - lower catch	Potentially positive - lower catch depending on cap amount	Minimal - fishery mostly uses MWT	Potentially positive - lower effort depending on cap amount	Mixed (positive and negative impacts for different interests)
6d Longfin River Herring Cap	Potentially positive - lower catch (butterfish)	Potentially positive - lower catch depending on cap amount	Potentially positive - lower effort depending on cap amount	Potentially positive - lower effort depending on cap amount	Mixed (positive and negative impacts for different interests)
6e longfin shad cap	Potentially positive - lower catch (butterfish)	Potentially positive - lower catch depending on cap amount	Potentially positive - lower effort depending on cap amount	Potentially positive - lower effort depending on cap amount	Mixed (positive and negative impacts for different interests)
6f Make Caps Frame-workable	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action

(continued)

Management Measures	Valued Ecosystem Component (VEC) Impacts				
	Managed resource	Non-target species Esp. RH/S	Habitat including EFH	Protected Resources	Human Communities
7a No Action	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo
7bMack Closed Area Mackerel	Potentially low positive - lower catch	Positive - lower effort/catch	Minimal - fishery mostly uses MWT	Positive - would reduce effort	Mixed (positive and negative impacts for different interests)
7bLong Closed Area Longfin	Potentially low positive - lower catch	Low Positive - lower effort/catch	Positive - would reduce effort	Positive - would reduce effort	Mixed (positive and negative impacts for different interests)
7cMack observer area mackerel	Potentially low positive - lower catch	Potentially positive (better observer data and/or lower effort)	Minimal - fishery mostly uses MWT	Positive - would reduce effort	Mixed (positive and negative impacts for different interests)
7cLong observer area longfin	Potentially low positive - lower catch	Potentially low positive (better observer data and/or lower effort)	Positive - would reduce effort	Positive - would reduce effort	Mixed (positive and negative impacts for different interests)
7d trigger option	Tied to 7b-7c. Would reduce impacts (positive or negative) because those measures would only be in place for part of year after trigger was reached.	Tied to 7b-7c. Would reduce impacts (positive or negative) because those measures would only be in place for part of year after trigger was reached.	Tied to 7b-7c. Would reduce impacts (positive or negative) because those measures would only be in place for part of year after trigger was reached.	Tied to 7b-7c. Would reduce impacts (positive or negative) because those measures would only be in place for part of year after trigger was reached.	Tied to 7b-7c. Would reduce impacts (positive or negative) because those measures would only be in place for part of year after trigger was reached.
7e Area Updating	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action

(continued)

Management Measures	Valued Ecosystem Component (VEC) Impacts				
	Managed resource	Non-target species Esp. RH/S	Habitat including EFH	Protected Resources	Human Communities
8a No action	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo
8b make hotspots frame- workable	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action	Minimal - allows future action
8cMack Observers in Monitoring/ Avoidance Area	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Low negative - possible costs to fishery without any conservation benefits
8cLong Observers in Monitoring/ Avoidance Area	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Low negative - possible costs to fishery without any conservation benefits
8dMack Closed Area 1 rules w/exit for slipping	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Low negative - possible costs to fishery without any conservation benefits
8dLong Closed Area 1 rules w/exit for slipping	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Low negative - possible costs to fishery without any conservation benefits
8eMack closure in protection area	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Low negative - possible costs to fishery without any conservation benefits
8eLong closure in protection area	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Low negative - possible costs to fishery without any conservation benefits
8f Tie alternative implemen-tation to Atl Herring	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Minimal - hotspots are too small given geo-temporal variability of fish and fishing	Low negative - possible costs to fishery without any conservation benefits

Note: The FMAT analysis (see Appendices 1 & 2) found that the small-area based "hotspot" alternatives considered in this Alternative Set are likely to just redistribute effort and that given the widespread distribution of RH/S the end result could be to increase impacts on RH/S just as easily as reducing impacts on RH/S and that one would not be able to predict the actual outcome.

(continued)

Management Measures	Valued Ecosystem Component (VEC) Impacts					
	Currently Managed resources	RH/S	Other non-target species	Habitat including EFH	Other (non-RH) Protected Resources	Human Communities
9a No Action	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo	Neutral - Status Quo
9b Add blueback herring as a managed stock in the MSB FMP	Minimal	Positive related to a variety of related conservation measures	Minimal but if future effort reductions were needed related to RH/S closures could be positive	Positive because EFH would be designated and conserved.	Minimal but if future effort reductions were needed related to RH/S closures could be positive	Mixed (positive and negative impacts for different interests)
9c Add alewife as a managed stock in the MSB FMP	Minimal	Positive related to a variety of related conservation measures	Minimal but if future effort reductions were needed related to RH/S closures could be positive	Positive because EFH would be designated and conserved.	Minimal but if future effort reductions were needed related to RH/S closures could be positive	Mixed (positive and negative impacts for different interests)
9d Add American Shad as a managed stock in the MSB FMP	Minimal	Positive related to a variety of related conservation measures	Minimal but if future effort reductions were needed related to RH/S closures could be positive	Positive because EFH would be designated and conserved.	Minimal but if future effort reductions were needed related to RH/S closures could be positive	Mixed (positive and negative impacts for different interests)
9e Add hickory shad as a managed stock in the MSB FMP	Minimal	Positive related to a variety of related conservation measures	Minimal but if future effort reductions were needed related to RH/S closures could be positive	Positive because EFH would be designated and conserved.	Minimal but if future effort reductions were needed related to RH/S closures could be positive	Mixed (positive and negative impacts for different interests)

2.3 Initial Areas of Controversy

Many measures considered in this document have been controversial at least at some point in the development of the Amendment. The controversy generally hinges on three primary factors. They are: 1) the relatively high potential cost of some of the alternatives (especially industry-funded observer coverage [Set 5], mortality caps [Set 6] and large-scale area-based restrictions [Set 7]); 2) the concern by some segments of the public about the impacts of large scale trawling on river herring and shad populations; and 3) the lack of firm science (i.e. high uncertainty) about either the coast-wide populations of river herring and shad or about the impact on those populations from at-sea trawling versus other sources of mortality (natural or human-caused).

2.4 Considered but Rejected Management Actions

1. The Council decided not to add a provision for annual forage set-asides for mackerel, squids, and butterfish. Instead, the Council noted that the recent Omnibus Annual Catch Limit Amendment already allows harvest reductions due to forage concerns and concluded that formal set-asides would be better considered after the Council develops ecosystem level goals and objectives that are informed by the ongoing work of the ecosystem subcommittee of the Scientific and Statistical Committee.

2. The Council considered including consideration of catch shares for the squid fisheries during the scoping process but concluded that it would be more effective to focus Amendment 14 on river herring and shad issues. Also, there was strong public comment against including squid catch shares at the current time.

3. The Council considered requiring 6 hour pre-landing notification via phone to land more than 20,000 pounds of mackerel so as to facilitate quota monitoring. This was removed because NMFS is trying to phase out phone notifications of this kind.

4. The Council considered requiring 6 hour pre-landing notification via phone to land more than 2,500 pounds of longfin squid so as to facilitate quota monitoring. This was removed because NMFS is trying to phase out phone notifications of this kind.

5. The Council considered requiring daily electronic reporting by MSB-permitted dealers so as to facilitate quota monitoring (directed and/or incidental catch) and cross checking with other data sources. This was removed because other options seemed equally effective and the infrastructure for 24hr reporting is burdensome for both NMFS and dealers.

6. The Council considered requiring 48 hour electronic reporting by MSB-permitted dealers so as to facilitate quota monitoring (directed and/or incidental catch) and cross checking with other data sources. This was removed because other options seemed equally effective and the infrastructure for 48hr reporting is burdensome for both NMFS and dealers.

7. The Council considered requiring 72 hour electronic reporting by MSB-permitted dealers so as to facilitate quota monitoring (directed and/or incidental catch) and cross checking with other data sources. This was removed because other options seemed equally effective and the infrastructure for 42hr reporting is burdensome for both NMFS and dealers.

8. The Council considered requiring trip termination following 3 slipped hauls on an observed trip so as to minimize slippage events. The goal is to minimize slippage events. This was removed because other options seemed equally effective (termination after 1 or 2 hauls) and having 3 slipped hauls on one trip would be a rare event.

9. The Council considered using mesh changes to reduce the incidental catch of river herrings and shads but concluded such measures were not feasible due to the lack of trawl mesh selectivity for mackerel, river herrings, and shads. Selectivity information would be necessary to evaluate both potential benefits to river herrings and shads and potential costs to the relevant directed fisheries.

10. Some measures under consideration address slippage where the contents of a net on an observed haul on an observed trip are released in the water. In these cases the observer cannot sample the released catch. Some alternatives considered requiring ¼ of the catch to be pumped on board but these were rejected because a) catch may be patchy and only sampling ¼ of the net

11. To obtain information on fish that may remain in the net, the Council conserved alternatives that would require nets to be periodically brought aboard after pumping for sampling. These alternatives were rejected because the observer program had already begun such sampling at higher rates than those considered in the document. An alternative was also added to prohibit any discarding of un-sampled fish, even operational discards.

THIS SPACE INTENTIONALLY LEFT BLANK

2.5 Regulatory Basis for the Amendment

Amendment 14 was developed in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA) 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). The MSA requires Councils to minimize bycatch to the extent practicable (Section 301 – National Standard 9) and provides discretionary authority to "include management measures in the plan to conserve…non-target species…considering the variety of ecological factors affecting fishery populations" (Section 303(b)(12). How these provisions apply to RH/S catch in the mackerel and Longfin Squid fisheries is the primary concern of Am14 (see purposes A and B above). The MSA also provides for Councils to submit new fishery management plans for fish stocks, including anadromous species (see purpose C above).

NEPA requires federal agencies to incorporate environmental considerations in their planning and decision-making through a systematic interdisciplinary approach. Specifically, all federal agencies are to prepare detailed statements assessing the environmental impact of and alternatives to major federal actions significantly affecting the environment. These statements are commonly referred to as environmental impact statements (EISs). This document constitutes the EIS for the management measures currently under consideration and was prepared by the Council in consultation with the National Marine Fisheries Service (NMFS).

This document also addresses the requirements of the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Regulatory Flexibility Act (RFA), the Administrative Procedure Act (APA), the Paperwork Reduction Act (PRA), the Coastal Zone Management Act (CZMA), the Information Quality Act (IQA), and Executive Orders 13132 (Federalism), 12898 (Environmental Justice), 12866 (Regulatory Planning), and 13158 (Marine Protected Areas). These other applicable laws and Executive Orders help ensure that in developing an FMP and/or FMP amendment, the Council considers the full range of alternatives and their expected impacts on the marine environment, living marine resources, and the affected human environment. This integrated document contains all required elements for these laws and executive orders including MSA and NEPA, and the information to ensure consistency with the applicable laws and executive orders.

3.0 LIST OF ACRONYMS AND ABBREVIATIONS

AA	Assistant Administrator
ABC	Allowable Biological Catch
ACFCMA	Atlantic Coastal Fisheries Cooperative Management Act
ACL	Annual Catch Limit
ACT	Annual Catch Target
AFS	American Fisheries Society
AM	Accountability Measure
APA	Administrative Procedures Act
AR	auto-regressive
ASMFC	Atlantic States Marine Fisheries Commission or Commission
ATGTRP	Atlantic Trawl Gear Take Reduction Plan
ATGTRT	Atlantic Trawl Gear Take Reduction Team
B	Biomass
BMSY	Biomass Associated with Maximum Sustainable Yield
BRP	Biological reference points
CAFSAC	Canadian Atlantic Fisheries Scientific Advisory Committee
CD	Confidential data
CDP	Census Designated Place
CEA	Cumulative Effects Assessment
CEQ	Council on Environmental Quality
CETAP	Cetacean and Turtle Assessment Program
CFR	Code of Federal Regulations
CI	Confidential Information
CPR	Cardiopulmonary Resuscitation
CPUE	Catch Per Unit Effort
C.V.	coefficient of variation
CZMA	Coastal Zone Management Act
DAH	Domestic Annual Harvest
DAP	Domestic Annual Processing
DMF	Department of Maine Fisheries
DOC	Department of Commerce
DOL	Department of Labor
DPS	Distinct Population Segment
DEIS	Draft Environmental Impact Statement
DSEIS	Draft Supplementary Environmental Impact Statement
DWF	Department of Wildlife and Fisheries
EA	Environmental Assessment
EAP	Emergency Action Plan
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ELMR	Estuarine Living Marine Resources
EO	Executive Order

EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
F	Fishing Mortality Rate
FAO	U.N. Food and Agriculture Organization
FDEP	Florida Department of Environmental Protection
FLSA	Fair Labor Standards Act
FMAT	Fishery Management Action Team
FMAX	Threshold Fishing Mortality Rate
FMP	Fishery Management Plan
FMSY	Fishing Mortality Associated with MSY
FR	Federal Register
FEIS	Final Environmental Impact Statement
FSEIS	Final Supplementary Environmental Impact Statement
FTARGET	Target Fishing Mortality Rate
FWS	U.S. Fish and Wildlife Service
GAMS	general additive models
GB	George's Bank
GC	General Counsel or General Category (Scallop)
GOM	Gulf of Maine
GRA	Gear Restricted Area
GTE	Greater than or equal to
HAPC	Habitat Area of Particular Concern
HPTRP	Harbor Porpoise Take Reduction Plan
IAEA	International Atomic Energy Agency
ICES	International Council for the Exploration of the Sea
ICNAF	International Convention of the Northwest Atlantic Fisheries
IMPLAN	IMpact Analysis for PLANning
IRFA	Initial Regulatory Flexibility Analysis
IOY	Initial Optimum Yield
IQA	Information Quality Act
IRFA	Initial Regulatory Flexibility Analysis
ITQ	Individual Transferrable Quota
IUCN	International Union for Conservation of Nature
JV	Joint Venture
LNG	Liquefied Natural Gas
LOF	List of Fisheries
LTPC	Long-term Potential Catch
LWTRP	Large Whale Take Reduction Plan
M	Natural Mortality Rate
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MRFSS	Marine Recreational Fisheries Statistical Survey
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSB	Mackerel, Squid, and Butterfish
MSY	Maximum Sustainable Yield
MT (or mt)	metric tons

MWT	Mid Water Trawl
NAFO	Northwest Atlantic Fisheries Organization
NAO	National Oceanic and Atmospheric Administration Order
NASUS	National Academy of Sciences of the United States
NE	New England
NEFMC	New England Fishery Management Council
NEFOP	Northeast Fishery Observer Program
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NIOZ	Royal Netherlands Institute for Sea Research
NK	Not classified
NLDC	New London Development Corporation
NMFS	National Marine Fisheries Service (NOAA Fisheries)
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOS	National Ocean Service
NSF	National Science Foundation
OBSCON	Observer Contract
OSP	optimum sustainable population
OTA	Office of Technology Assessment
OY	Optimal Yield
PBR	Potential Biological Removal
PRA	Paperwork Reduction Act
PREE	Preliminary Regulatory Economic Evaluation
RFA	Regulatory Flexibility Act
RFF	reasonably foreseeable future
RFFA	Reasonably Foreseeable Future Actions
RH/S	River Herring and Shad
RIR	Regulatory Impact Review
ROV	Remotely Operated Vehicle
RSA	Research Set-Aside
RV	Research Vessel
SA	South Atlantic
SAFE	Stock Assessment and Fishery Evaluation
SAFIS	Standard Atlantic Fisheries Information System
SAFMC	South Atlantic Fishery Management Council
SAR	Stock Assessment Report
SARC	Stock Assessment Review Committee
SAV	Submerged Aquatic Vegetation
SAW	Stock Assessment Workshop
SBA	Small Business Administration
SBRM	Standardized Bycatch Reporting Methodology
SD	Standard Deviation
SEFSC	Southeast Fisheries Science Center
SDEIS	Supplement to the Draft Environmental Impact Statement
SF	Sustainable Fisheries

SMB	Squid, Mackerel, and Butterfish (used when referring to Committee)
SMBT	Small Mesh Bottom Trawl
SP	Species
SSB	Spawning Stock Biomass
SSC	Scientific and Statistical Committee
STACRES	Standing Committee on Research and Statistics
STAT	Statistical
TAL	Total Allowable Landings
TALFF	Total allowable level of foreign fishing
TEWG	Turtle Expert Working Group
TL	Total Length
TRP	Take Reduction Plan
TRT	Take Reduction Team
URI	University of Rhode Island
US	United States
USA	United States of America
USCG	United States Coast Guard
USDC	U.S. Department of Commerce
USDI	U.S. Department of the Interior
USGS	Untied Stated Geological Survey
USSR	Union of Soviet Socialist Republics
VEC	Valued Ecosystem Component
VMS	Vessel Monitoring System
VPA	Virtual Population Analysis
VTR	Vessel Trip Report
WNA	Western North Atlantic
WP	Working Paper
WWF	World Wildlife Federation
ZMRG	Zero Mortality Rate Goal

Note: This appendix from the full draft environmental impact statement is included to facilitate comparison with Amendment 5 to the Atlantic Herring FMP, which also addresses river herring and shad issues.

Appendix 4 Overlap Between Amendment 14 to the Squid/Mackerel/Butterfish FMP (MAFMC) and Amendment 5 to the Herring FMP (NEFMC)

RESTRICTIONS IN AREAS OF HIGH RH/S CATCH

Measure	MSB Amendment 14 (alternative number and description)	Herring Amendment 5 (alternative and description)	Consistency Issues
Closed area alternatives	• 7bMack: Q1 prohibition on retention of more than 20,000 lb mackerel in management area • 7bLong: Full year prohibition on retention of more than 2,500 lb longfin in management area • 8eMack: Possession over 20,000 lb mackerel prohibited in Am5 Protection Areas (bimonthly closures) • 8eLong: Possession over 2,500 lb longfin prohibited in Am5 Protection Areas (bimonthly closures)	• Section 3.3.3.2.1, bimonthly closure areas	• Confusing for industry if different action alternatives are selected in each plan • If different approaches are selected, benefits to river herring may be diminished
Observers required in management areas	• 7cMack: required to possesses over 20,000 lb mackerel; industry funded • 7cLong: required to possess over 2,500 lb longfin; industry funded • 8cMack: Same monitoring/avoidance areas as Am 5; required to possess over 20,000 lb mackerel • 8cLong: Same monitoring/avoidance areas as Am 5; required to possess over 2,400 lb longfin	• Section 3.3.2.2.1, with sub-options to apply this provision either to just limited access permits (A) or all permits (B)	
Closed Area I Provisions	• 8dMack: in Am 5 monitoring/avoidance areas • 8dLong: in Am 5 monitoring/avoidance areas	• Section 3.3.2.2.2, with sub-options to apply this provision either to just limited access permits (A) or all permits (B)	
Above requirements with mortality trigger	• 7d for Alt Set 7 • 8f for Alt Set 8	• Section 3.3.2.2.3 for observer coverage or Closed Area I provisions • Section 3.3.3.2.2 for closed areas	
Formally review results of SFC bycatch avoidance program, and possibly incorporate by framework	• 4f	• Section 3.3.2.2.4	
Mechanism to adjust areas (specifications)	• 7e: bi-annually	• Section 3.3.4: every 3 years or during interim years through a revised specs package	

VESSEL REPORTING MEASURES

Measure	MSB Amendment 14	Herring Amendment 5 (*existing requirements in italics*)	Consistency Issues
Weekly VTR	• 1bMack: All mackerel permits • 1bLong: Longfin/butterfish moratorium permit • 1c: all MSB permits	• *Existing: Weekly VTR requirement for all herring permits recently implemented by NMFS (76 FR 54385; September 1, 2011)*	NONE
Pre-trip notification to observer program	• 1d48: 48 hr prior to trip for mackerel permits • 1d72: 72 hr prior to trip for mackerel permits	• *Existing: 72-hr requirement for Cat A/B permits on declared herring trip with midwater trawl /purse seine gear* • *Existing: 72-hr requirement for Cat C/D permits using midwater trawl gear in Areas 1A, 1B, or 3 (NE Multispecies FW 46)* • Section 3.1.4.2: 48-hr requirement for all limited access herring permits and herring carrier LOAs	• Need to ensure that third-party providers could handle a 48 hr notification (could just be one of requirements to apply • Should have the same pre-trip notification times within an FMP --For Herring, Am 5 – the option for a 48 hr requirement is different than that put in place in FW 46 --For MSB, there is a 72 hr notification for longfin already; may be good to be consistent • Vessels often target mackerel and herring on the same trip, best for industry and enforcement if requirements are the same
VMS requirement	• 1eMack: Limited access mackerel permits • 1eLong: Longfin/butterfish moratorium permits	• *Existing: VMS already required for limited access herring permits* • *Existing: VMS trip declaration required for limited access herring permits* • Section 3.1.4.2: Gear declaration for all limited access herring permits	
VMS catch reporting	• 1fMack: Daily for limited access mackerel vessels • 1fLong: Daily for Longfin/butterfish moratorium permits	• *Existing: Daily VMS requirement for all limited access herring permits recently implemented by NMFS (76 FR 54385; September 1, 2011)*	
Pre-landing notification	• 1gMack: 6-hr pre-land via VMS to land over 20,000 lb mackerel • 1gLong: 6-hr pre-land via VMS to land over 2,500 lb longfin	• *Existing: 6-hr pre-landing requirement for Cat A/B permits on declared herring trip with midwater trawl /purse seine gear* • *Existing: 6-hr requirement for Cat C permits using midwater trawl gear in Areas 1A, 1B, or 3 (NE Multispecies FW 46)* • Section 3.1.4.3: 6-hr requirement for all limited access herring permits and herring carrier LOAs	

DEALER REPORTING MEASURES

Measure	MSB Amendment 14 (alternative number and description)	Herring Amendment 5 (alternative number and description)	Consistency Issues
SAFIS dealer and vessel counter- signature	• 2b: Landings over 20,000 lb mackerel; 2,500 lb longfin; or 10,000 lb *Illex*	• Section 3.1.5.2, Sub-Option 2C: All herring landings	If action alternatives are selected, it is probably most convenient for mackerel/herring vessels and dealers if the requirements are the same for all 3 species.
Dealers must weigh all fish, and document estimation of relative composition annually on dealer application if not sorted	• 2c: over 20,000 lb mackerel • 2e: over 2,500 lb longfin	• Section 3.1.5.2, Sub-Option 2A: All herring landings	
Dealers must weigh all fish, and document estimation of relative composition at each transaction if not sorted	• 2d: over 20,000 lb mackerel • 2f: over 2,500 lb longfin	• Section 3.1.5.2, Sub-Option 2B: All herring landings	
Allow volume to weight conversions	• 2g: allow volume to weight conversions if dealers cannot weigh catch	• Section 3.1.5.2, Sub-Options 2A and 2B: Neither of these alternatives exclude the use of volume to weight conversions	

AT-SEA OBSERVER OPTIMIZATION MEASURES

Measure	MSB Amendment 14 (alternative number and description)	Herring Amendment 5 (alternative number and description)	Consistency Issues
Safe Sampling Station	• 3b	• Section 3.2.2.2, Sub-Option 2A	Most convenient for observers in high volume fisheries if the same action items are selected in both plans
Reasonable Assistance	• 3b	• Section 3.2.2.2, Sub-Option 2B	
Haul back notice to observers	• 3c	• Section 3.2.2.2, Sub-Option 2C	
Observers on any vessel taking on fish whenever and wherever possible	• 3d	• Section 3.2.2.2, Sub-Option 2D	
Pair Trawl Communication	NONE	• Section 3.2.2.2, Sub-Option 2E	
Visual Access to Codend	• Included in 3f and 3g	• Section 3.2.2.2, Sub-Option 2F	

AT-SEA OBSERVER OPTIMIZATION MEASURES

Measure	MSB Amendment 14 (alternative number and description)	Herring Amendment 5 (alternative number and description)	Consistency Issues
Slippage reports/affidavit from vessel operator	• 3e	• Section 3.2.3.2	If plans select incompatible measures from this range, vessels targeting both mackerel and herring could end up with a complicated layering of rules that could apply on the same trip.
Vessels with observers prohibited from releasing discards before they a brought aboard for sampling	• 3f: mackerel vessels • 3g: longfin vessels	NONE	
Trip termination following slippage on observed trip	• 3h: after 1 slipped haul • 3i: after 2 slipped hauls	• Section 3.2.3.4, Option4A	
Closed Area I Provisions	• 3j: No trip termination	• Section 3.2.3.3	
Closed Area I Provisions with Trip Termination	• 3k: mackerel vessels, may be selected with 3j; trip termination for every observed slippage event after 5 events • 3l: mackerel vessels, same as 3k but after 10 events • 3m: Same as 3k but for longfin vessels • 3n: Same as 3l but for longfin vessels	• Section 3.2.3.4, Option 4C; after 10 events • Section 3.2.3.4, Option 4D; after 5 events	
Closed Area I Provisions with Trip Termination and Catch Deduction	NONE	• Section 3.2.3.4, Option 4B; assumed that 100,000 lb herring caught in each slipped haul, catch deducted from area sub-ACL	
Annual slippage quota for individual vessels	• 3p: mackerel/longfin vessels assigned annual slippage quota; trip termination on every slippage event after quota attained.	NONE	

AT-SEA OBSERVER COVERAGE REQUIREMENTS

Measure	MSB Amendment 14 (alternative number and description)	Herring Amendment 5	Consistency Issues
Percentage based	• 5b: Mackerel MWT; 25%, 50%, 75%, and 100% options • 5c: Mackerel SMBT; 25%, 50%, 75%, and 100% options • 5d: Longfin SMBT; 25%, 50%, 75%, and 100% options	• Section 3.2.1.2, only 100%	• If the preferred coverage rates are different for mackerel and herring, there may be difficulties for the observer program • Administration for industry funding for mixed mackerel/herring trips will need to be developed
Coverage levels to achieve target CVs	• 5e1: CV below 0.3 for RH species for MWT • 5e2: CV below 0.2 for RH species for MWT • 5e3: CV below 0.3 for RH species for SMBT • 5e4: CV below 0.2 for RH species for SMBT	• Section 3.2.1.4: CV below 0.2 for river herring, and below 0.3 for Atlantic herring and haddock	
Modified SBRM	NONE	• Section 3.2.1.3	
Funding alternatives	• 5f: Vessels pay for observers greater than existing sea day allocation • 5g: Phase-in industry funding over 4 yrs., NMFS would pay for 100%, then 75%, 50%, 25%	• Funding options (Federal or Federal and Industry) are specified within above alternatives	

MEASURES TO ADDRESS PORTSIDE SAMPLING

Measure	MSB Amendment 14 (alternative number and description)	Herring Amendment 5 (alternative number and description)	Consistency Issues
Industry-funded 3rd party port-side sampling program	• 4b: landings over 20,000 lb mackerel • 4c: Landings over 2,500 lb longfin	NONE	NONE
Vessel hold volume certification	• 4d: Tier 3 mackerel • 4e: Longfin/Butterfish moratorium	NONE	NONE

RIVER HERRING CATCH CAPS

Measure	MSB Amendment 14 (alternative number and description)	Herring Amendment 5 (alternative number and description)	Consistency Issues
Mortality Caps	• 6b: River herring for the mackerel fishery • 6c: Shads for the mackerel fishery • 6d: River herring for the longfin fishery • 6e: Shads for the longfin fishery	• Section 3.3.5: Mechanism to establish River herring catch caps through Framework adjustment or specifications package in the future after a RH stock assessment is completed	If Atlantic herring fishing continues during a mackerel closure, the fleet could continue to catch river herring in the same location while discarding mackerel. Benefits to river herring may be diminished.
Caps added through a future framework	• 6f	• Section 3.3.5: River herring (same as above)	None

ADD RH/S AS STOCKS IN THE FISHERY

Measure	MSB Amendment 14 (alternative number and description)	Herring Amendment 5 (alternative and description)	Consistency Issues
Add as stock in MSB fishery, would confer full Magnuson-Stevens benefits, i.e. ACLs/AMs and EFH	• 9a: blueback • 9b: alewife • 9c: American shad • 9d: hickory shad	NONE	NONE