Framework Adjustment 4

to the

Atlantic Herring Fishery Management Plan (FMP)

(Draft)

Prepared by the
New England Fishery Management Council

DATE: **April 2014 Herring Committee Meeting**
April 2014 Council Meeting (Final Action)

Intentionally Blank

LIST OF ACRONYMS

ACL	Annual Catch Limit
ACCSP	Atlantic Coastal Cooperative Statistics Program
AM	Accountability Measure
ASMFC	Atlantic States Marine Fisheries Commission or Commission
B	Biomass
BT	Bottom Trawl
CZMA	Coastal Zone Management Act
DMF	Division of Marine Fisheries
DMR	Department of Marine Resources
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
E.O.	Executive Order
ESA	Endangered Species Act
F	Fishing Mortality Rate
FEIS	Final Environmental Impact Statement
FMP	Fishery Management Plan
FW	Framework
FY	Fishing Year
GARFO	Greater Atlantic Fisheries Office
GB	Georges Bank
GMRI	Gulf of Maine Research Institute
GOM	Gulf of Maine
IRFA	Initial Regulatory Flexibility Analysis
IVR	Interactive Voice Response
M	Natural Mortality Rate
MA DMF	Massachusetts Division of Marine Fisheries
MAFMC	Mid-Atlantic Fishery Management Council
ME DMR	Maine Department of Marine Resources
MMPA	Marine Mammal Protection Act
MRFSS	Marine Recreational Fisheries Statistical Survey
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSB	Mackerel, Squid, Butterfish
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act

MSY	Maximum Sustainable Yield
mt	Metric Tons
MWT	Midwater Trawl
NB	New Brunswick
NEFMC	New England Fishery Management Council
NEFOP	Northeast Fisheries Observer Program
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NSGs	National Standard Guidelines
OFL	Overfishing Limit
OY	Optimum Yield
PDT	Plan Development Team
PS/FG	Purse Seine/Fixed Gear
PT	Pair Trawl
RFA	Regulatory Flexibility Act
RFFA	Reasonably Foreseeable Future Action
RIR	Regulatory Impact Review
RH/S	River Herring/Shad
RSA	Research Set-Aside
SARC	Stock Assessment Review Committee
SAW	Stock Assessment Workshop
SSB	Spawning Stock Biomass
SSC	Scientific and Statistical Committee
SFA	Sustainable Fisheries Act
SFC	Sustainable Fisheries Coalition
SMAST	UMASS Dartmouth School of Marine Science and Technology
SMBT	Small Mesh Bottom Trawl
TC	Technical Committee
TRAC	Transboundary Resource Assessment Committee
TRT	Take Reduction Team
VMS	Vessel Monitoring System
VTR	Vessel Trip Report

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION AND BACKGROUND

This document contains the New England Fishery Management Council's (Council's) recommendations for management measures to be included in Framework Adjustment 4 to the Atlantic Herring Fishery Management Plan (FMP).

Framework Adjustment 4 considers management alternatives to implement dealer weighing/reporting requirements and measures to address net slippage for vessels participating in the Atlantic herring fishery. The alternatives considered by the Council in Framework 4 are described Section 2.0 of this document. The basis for consideration of these measures is provided in Amendment 5 to the Atlantic Herring FMP. This document updates related background information (Affected Environment, Section 3.0) and impact analyses (Section 4.0); the Amendment 5 Final Environmental Impact Statement (FEIS) should be referenced for additional information. A summary of the relationship between the measures proposed in this framework adjustment and Amendment 5 to the Herring FMP is provided below.

1.1 AMENDMENT 5 TO THE ATLANTIC HERRING FMP

Amendment 5 was developed by the New England Fishery Management Council to improve the catch monitoring program for the Atlantic herring fishery and addresses bycatch issues through responsible management. Amendment 5 was adopted by the Council on June 20, 2012. On July 18, 2013, Amendment 5 was partially approved by NMFS. The approved measures in Amendment 5, effective on March 17, 2014, include:

- Revisions to fishery management program provisions (permitting provisions, dealer and vessel reporting requirements, operational provisions for carrier vessels and transfers at-sea, requirements for vessel monitoring systems);
- Revisions to vessel requirements to improve at-sea sampling by observers;
- Management measures to minimize the discarding of catch before it has been sampled by observers;
- Establishment of River Herring Monitoring/Avoidance Areas; and
- Expansion of sea sampling requirements on midwater trawl vessels fishing in the year-round groundfish closed areas.

Disapproved measures in Amendment 5 relate to requirements for 100% observer coverage on limited access Category A and B herring vessels, industry-funded monitoring, dealer weighing provisions, and measures to address net slippage. In November 2013, the NEFMC voted to initiate Framework 4 to the Atlantic Herring FMP, which will address disapproved elements of Amendment 5 relating to dealer weighing requirements and measures to address net slippage. The first Framework 4 meeting occurred at the January 2014 NEFMC meeting. This action will move forward as soon as possible. The NEFMC and MAFMC are also working with NMFS to develop an omnibus amendment to implement provisions for industry-funded monitoring across all fisheries. The omnibus industry-funded monitoring amendment will also include provisions for observer coverage in the Atlantic herring and mackerel fisheries. The target implementation date for the omnibus amendment is the 2015 fishing year.

Dealer Weighing/Reporting Provisions

In Amendment 5, the Council considered measures to address reporting requirements for Federally-permitted Atlantic herring dealers. The ***Preferred Alternative*** to address dealer weighing requirements was not approved by NMFS and is being reconsidered/revised in this framework adjustment:

Amendment 5 Preferred Alternative (Disapproved): This alternative would require federally permitted Atlantic herring dealers to accurately weigh all fish. If dealers do not sort by species, they would be required to document (annually in dealer applications) how they estimate the relative composition of a mixed catch, to facilitate quota monitoring and cross-checking with other data sources.

In its July 19, 2013 letter notifying the Council of the disapproval of this measure in Amendment 5, NMFS noted that dealers currently report the weight of fish, obtained by scale weights and/or volumetric estimates. Because the measure proposed by the Council does not specify the methods dealers must use to determine weight and allows volumetric estimates, it is not expected to change dealer behavior and, therefore, is not expected to improve the accuracy of catch weights reported by dealers. Additionally, a qualitative description of how relative species composition is estimated cannot be incorporated into catch monitoring because NMFS must use the weights reported by the dealers, regardless of the methods used to determine weights. Without standards for estimating species composition, the Agency felt that it would be unable to evaluate the sufficiency of the information submitted. If this measure became a requirement, and dealers did not document how they estimated relative species composition, it would become a compliance issue and may affect future permit issuance. NMFS therefore concluded that this measure does not comply with National Standard 7's requirement to minimize costs and avoid unnecessary duplication, and the Paperwork Reduction Act's requirement for the utility of the measure to outweigh the additional reporting and administrative burden on the dealers.

In its September 20, 2013 letter to the Council regarding potential approaches to addressing the Amendment 5 disapproved measures, NMFS provided the following guidance:

Revisions to the dealer reporting requirement would need to address our concerns with the accuracy and utility of the information reported and could be addressed in several ways.

The Council could select Sub-Option 2C in Amendment 5 (requiring vessel owners to review and validate data for their vessels in Fish-on-Line). This measure would be a change from status quo, and it has some utility as it helps identify, and possibly reduce, discrepancies between dealer and vessel reports. This option has an accompanying recommendation for daily vessel trip and dealer reports. Changing reporting frequency would increase the timeliness of reports and would provide data to NMFS for validation sooner than they are currently available.

Another way for the Council to revise the dealer reporting requirement would be to clarify and standardize the methods used to accurately weigh all fish. Does the measure require fish to be weighed using a scale? Does the measure require a volumetric estimate based on a certified fish hold or standardized totes? If the methods to accurately weigh all fish were specified, it would likely change dealer behavior from status quo, and may, depending on the methods, improve the

accuracy of dealer reports. Alternatively, the Council could take this opportunity to revisit the original concern that sparked the development of the dealer reporting requirement, that landings data were not verified by a third-party, and revise the measure to better address that concern.

The Council is considering alternatives in Framework 4 to address NMFS' concerns and implement weighing/reporting requirements for Atlantic herring dealers that will improve the accuracy of catch information generated for the fishery. Based on guidance from NMFS, the Council is reconsidering Sub-Option 2C from Amendment 5 (now part of Dealer Alternative 2, Section 2.1.2, p. 7) and is considering other management measures to address dealer weighing/reporting provisions in Framework 4, many of which were discussed during the development of Amendment 5. The alternatives under consideration are described in Section 2.1 of this document (p. 6).

Management Measures to Address Net Slippage

For the purposes of the Atlantic herring fishery, net slippage is defined in Amendment 5 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 slippage. 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 were implemented in Amendment 5 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.

In Amendment 5, the Council adopted management measures to address net slippage on Category A, B, and C Atlantic herring vessels. However, the Amendment 5 ***Preferred Alternative*** to address net slippage was not fully approved by NMFS. The element of the ***Preferred Alternative*** which was disapproved by NMFS was part of Option 4C in Amendment 5 and would have implemented a requirement for trip termination after ten slippage events by a gear type in a management area:

- *Disapproved:* Under this option (4C), NMFS would track the number of slippage events by gear type (midwater trawl, purse seine, bottom trawl) observed in each management area. Once ten (10) slippage events occur in any management area by one of the three gear types, each additional slippage event observed by a herring vessel using that gear will result in trip termination and the vessel will be required to return to port. Slippage events that are caused by spiny dogfish (#3 above) would not be counted towards the trip termination thresholds.

In its July 19, 2013 letter notifying the Council of the disapproval of this measure, NMFS expressed concern about the rationale for, and legality of, the slippage caps proposed in Amendment 5. NMFS noted that the proposed threshold for triggering a slippage cap (10 slippage events by area and gear type) does not have a strong supporting analysis in the EIS. Observer data indicate that the number of slippage events is variable across years. During 2008-2011, the number of slippage events per year ranged between 35 and 166. The annual average number of slippage events by gear type during 2008, 2009, and 2011 are as follows: four (4) by bottom trawl; 36 by purse seine; and 34 by midwater trawl (single and paired). Because the frequency of slippage was not consistently analyzed by gear type and management area, NMFS concluded that it is difficult to use the analysis in the Amendment 5 EIS to support the selection of trigger for the slippage caps. Additionally, recent observer data (2008-2011) indicate that the estimated amount of slipped catch is relatively low compared to total catch by limited access Atlantic herring vessels.

Once a proposed slippage cap has been met, vessels that slip catch, even if the reason for slipping was safety or mechanical failure, would be required to return to port. This aspect of the measure has the characteristic of a sanction, inconsistently applied. Vessels may continue fishing following slippage events 1 through 10, but must return to port following the 11th slippage event, regardless of the vessel's role in the first 10 slippage events, Additionally, this measure may result in a vessel operator having to choose between trip termination and bringing catch aboard despite a safety concern. For these reasons, the Agency believes the proposed slippage caps are inconsistent with the Administrative Procedure Act and National Standards 2 and 10, and had to be disapproved.

In its September 20, 2013 letter to the Council regarding potential approaches to addressing the Amendment 5 disapproved measures, NMFS provided the following guidance:

If the Council wants to revise the slippage cap, the revisions would need to address issues concerning safety, the biological/administrative justification for the cap's trigger, and equity.

The slippage cap could be revised to be more similar to the sampling requirements in Closed Area I, such that all vessels that slip catch have a consequence. This revision would alleviate the concern NMFS had with the equitable application of the slippage cap among those who contribute to reaching the cap, as well as the concern we had with the basis for triggering the cap. The consequence of slipped catch could be a requirement to leave the area where the slippage event occurred; the area could be a herring management area or a statistical area. But the consequence should not be so severe as to create a safety issue. To alleviate safety concerns, slippage for safety, mechanical, or excess spiny dogfish catch reasons could be exempt from any consequence, except that the vessel would still be required to complete a Released Catch Affidavit.

The Council is considering alternatives in Framework 4 to address NMFS' concerns and implement additional management measures for slippage events observed on limited access herring vessels. Based on guidance from NMFS, the Council is considering measures to require a move-along rule for allowable slippage events and trip termination for non-allowable slippage events. The Council is also considering options to clarify provisions related to operational discards and other catch that may not be brought aboard a herring vessel during fishing

operations. The alternatives under consideration in Framework 4 to address these issues are described in Section 2.2 (p. 12).

1.2 PURPOSE AND NEED

TBD

1.3 GOALS AND OBJECTIVES

The goal of Framework Adjustment 4 is to implement management measures to address the disapproved elements of Amendment 5 related to dealer weighing/reporting and net slippage, consistent with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The management measures in Framework 4 are intended to enhance the catch monitoring program for the Atlantic herring fishery, developed by the Council in Amendment 5 to the Herring FMP.

The goals (bold) and objectives (bullets) of the Amendment 5 catch monitoring program are:

1. **To create a cost effective and administratively feasible program for provision of accurate and timely records of catch of all species caught in the herring fishery;**
    - Review federal notification and reporting requirements for the herring fishery to clarify, streamline, and simplify protocols;
2. **Develop a program providing catch of herring and bycatch species that will foster support by the herring industry and others concerned about accurate accounts of catch and bycatch, i.e., a well-designed, credible program;**
    - Avoid prohibitive and unrealistic demands and requirements for those involved in the fishery, i.e., processors and fishermen using single and paired midwater trawls, bottom trawls, purse seines, weirs, stop seines, and any other gear capable of directing on herring;
    - Improve communication and collaboration with herring vessels and processors to promote constructive dialogue, trust, better understanding of bycatch issues, and ways to reduce discards;
    - Eliminate reliance on self-reported catch estimates;
3. **Design a robust program for adaptive management decisions;**
4. **Determine if at-sea sampling provides bycatch estimates similar to dockside monitoring estimates;**
    - Assure at-sea sampling of at-sea processors' catches is at least equal to shoreside sampling;
    - Reconcile differences in federal and states' protocols for dockside sampling, and implement consistent dockside protocols to increase sample size and enhance trip sampling resolution.

2.0 ALTERNATIVES UNDER CONSIDERATION

Framework Adjustment 4 considers management alternatives to implement dealer weighing/reporting requirements and measures to address net slippage for vessels participating in the Atlantic herring fishery. The alternatives under consideration are described in the following subsections. Background information regarding the development (and disapproval) of these measures in Amendment 5 and reconsideration of them in this framework adjustment is also provided in Section 1.1 of this document (p. 1).

2.1 REPORTING/WEIGHING REQUIREMENTS FOR FEDERALLY-PERMITTED ATLANTIC HERRING DEALERS

2.1.1 Dealer Alternative 1: No Action

Existing management measures that address dealer weighing/reporting requirements would remain effective under the no action alternative and are described below.

Under the no action alternative, Federally-permitted Atlantic herring dealers, including at-sea processors, must submit, for each transaction, an electronic dealer report each week. Reports are due by midnight (Eastern Time) each Tuesday for the week that ended the previous Saturday at midnight. Reports must include the correct vessel name and Federal permit number of each vessel that harvested any fish received along with the correct weight units for purchased fish. Dealers must also report the VTR serial number used by each vessel that harvested fish. Dealers are required to submit a report even if there is no activity during a week.

- *Reporting Atlantic Herring Landed by a Carrier Vessel*: Dealers must attribute catch to the vessel that harvested the herring, which may not necessarily be the vessel that landed the herring. Dealers must report the name, permit number, and VTR serial number of the catcher vessel that harvested the fish, not the carrier vessel. Dealers should not attribute landings to a carrier vessel, as it may lead to double counting landings and could lead to premature management area closures.
- *Reporting Haddock Landed from Herring Vessels:* Dealers, including at-sea processors, that cull or separate all other fish from the herring catch must separate and retain all haddock offloaded from vessels that have a Category A or B permit fishing on a declared herring trip and from vessels that have a Category C or D permit fishing with midwater trawl gear in Areas 1A, 1B, and/or 3. Any haddock may not be sold, purchased, received, traded, bartered, or transferred, and must be retained, after it has been separated from the herring, for at least 12 hours for dealers and processors on land, and for 12 hours after landing on shore by at-sea processors for inspection by law enforcement officials. The dealer or at-sea processor must report all such haddock on the weekly electronic dealer report and must use the appropriate disposition code for the haddock. The weekly dealer report must clearly indicate the vessel name and permit number of the vessels that caught the retained haddock.

- *Amendment 5 At-Sea Herring Dealer Permit:* With the implementation of Amendment 5 on March 17, 2014, a new Federal At-Sea Herring Dealer permit is required for carrier vessels that sell herring, rather than deliver those fish on behalf of a harvesting vessel to a dealer for purchase. Possession of this At-Sea Herring Dealer permit requires compliance with federal dealer reporting requirements (Section 648.7). A "dealer identifier" has been developed for at-sea for the purposes of reporting. Vessels in possession of both the At-Sea Herring Dealer Permit and a herring fishing permit are required to fulfill the reporting requirements of both permits.

2.1.2 Dealer Alternative 2

Under this alternative, the Council may select one or more of the following options:

(A.) This option would require Federally-permitted Atlantic herring dealers to obtain vessel representative confirmation of SAFIS transaction records to minimize data entry errors at the first point of sale. Vessel owners/operators would be required to review and validate all catch information reported for their vessels in Fish-on-Line (FOL) on a weekly basis, including VMS, VTR, and dealer data. If data issues are noted by the vessel owner/operator, they would indicate a data issue and provide comments describing the issue; this would create an issue report to NMFS in FOL. NMFS would follow up on all issue reports to resolve discrepancies by working with vessel operators and dealers to correct data submissions. If no data issues are noted, the vessel's owner/operator would indicate such.

(B.) This option would increase the frequency of VTRs and dealer reports for Federally-permitted limited access herring vessels and herring dealers. VTRs would be required to be submitted within 24 hours of the end of a trip, and dealer reports would be required to be submitted within 24 hours of receipt or purchase.

(C.) This option would require that fish holds on limited access herring vessels are empty before leaving the dock on any trip when declared into the Atlantic herring fishery.

Discussion

- Options A and B are both elements of Non-Preferred Sub-Option 2C from Amendment 5.
- Option C has been included because the Atlantic States Marine Fisheries Commission (ASMFC) recently initiated an addendum (similar to an amendment) to its Interstate FMP for Herring and is considering a measure that would require all herring vessel fish holds to be empty before leaving the dock. This measure was also briefly discussed during the development of Amendment 5. To promote coordination between Federal and State management programs for Atlantic herring and to ensure that the Council considers a wide range of alternatives in this framework adjustment, Council staff is including this provision as an option under this alternative for the Herring Advisory Panel to discuss, and for the Herring Committee and Council to consider.
- See the March 6, 2014 Herring PDT Report for a summary of Herring PDT discussion related to this alternative.

2.1.3 Dealer Alternative 3 – Third-Party Catch Verification (Vessel-Based)

This alternative would require Federally-permitted Atlantic herring dealers to accurately weigh all fish. To better ensure the accuracy of catch information, this alternative would require third-party catch verification at the first point of landing on trips by limited access herring vessels carrying a NMFS-approved observer. Additional opportunities for third-party catch verification may be provided if the vessel is met by a portside sampler at the first point of landing. Under this alternative:

(A.) Vessels with limited access herring permits would be required to certify the capacity of their fish holds and mark the tank at regular intervals to facilitate third-party catch verification. The fish hold capacity measurement must be certified by one of the following qualified individuals or entities: an individual credentialed as a Certified Marine Surveyor with a fishing specialty by the National Association of Marine Surveyors (NAMS); an individual credentialed as an Accredited Marine Surveyor with a fishing specialty by the Society of Accredited Marine Surveyors (SAMS); employees or agents of a classification society approved by the Coast Guard pursuant to 46 U.S.C. 3316(c); the Maine State Sealer of Weights and Measures; a professionally-licensed and/or registered Marine Engineer; or a Naval Architect with a professional engineer license. Vessel owners would be required to submit a certified fish hold capacity measurement to NMFS with a signed certification by the individual or entity that completed the measurement, specifying how they meet the definition of a qualified individual or entity.

(B.) Each vessel would retain on board a customized measuring stick for the fish hold to utilize to estimate the total weight of fish on board at the first point of landing (NMFS-approved observer).

(C.) At the first point of landing, the observer/sampler would dip the measuring stick in the fish hold(s) to estimate the total weight of fish on board, prior to beginning the offload process. The total weight of fish on board would be estimated by the observer/sampler based on the following conversions:

1 cubic foot = 56.2 pounds

1.244 cubic feet = 1 bushel herring = 70 pounds

1 hogshead = 17.5 bushels = 1,225 pounds

(A complete table of volume/weight conversions that apply to this alternative can be found on p. 49 and 50 of Appendix I.)

Once the total weight is estimated, 5% would be deducted to account for water.

(D.) The estimate of total weight of fish on board provided by the observer/sampler would be transmitted to NMFS for the purposes of cross-checking dealer and vessel trip reports.

Discussion

- This alternative was developed based on guidance from the Herring Committee and Council at the initial Framework 4 meetings, as well as suggestions from Herring Advisory Panel members at the February 13, 2014 AP meeting (no quorum – see the summary of the February 13, 2014 Herring AP discussion for more information).
- Appendix I (*Potential Applicability of Flow Scales, Hopper Scales, Truck Scales, and Volumetric Measurement in the Atlantic Herring Fishery*) provides comprehensive information related to vessel capacity certification, volumetric weight conversions, and other elements of this alternative.
- NEFOP personnel raised significant concerns about adding responsibilities for observers on Atlantic herring vessels under this alternative. Currently, observers are not required to stay with the vessel upon landing, and contracts for observers do not include sampling responsibilities when the vessel is at the first point of landing. Implementing third-party catch verification using observers under this alternative would necessitate a change to the NEFOP observer contract. It would also require additions/adjustments to observer training and could potentially increase related costs. If this alternative does not meet the purpose and need for the action, then the Herring PDT recommends that the Council include this measure as "considered but rejected" in the Framework 4 document. See the March 6, 2014 Herring PDT Report for a summary of Herring PDT discussion related to this alternative.

2.1.4 Dealer Alternative 4 – Volumetric Standardization (Dealer-Based)

This alternative would require Federally-permitted Atlantic herring dealers to accurately weigh all fish. If dealers do not use scales, they would be required to estimate weight of Atlantic herring purchases through standardized conversions based on the volumetric capacity of storage containers and/or transport vehicles used for Atlantic herring transactions.

To better ensure the accuracy of catch information, the Council may select one or more of the following options under this alternative.

(A.) **Standardized Weight for "Herring Box":** Dealers who purchase Atlantic herring in 35 cubic ft. totes (Xactics or "herring boxes," see specifications on the following page) would be required to report 1,869 pounds of Atlantic herring per tote. This is on the volume-to-weight conversions provided on p. 49 and 50 of Appendix I (1,967 pounds), with a 5% deduction to account for water. Dealers who transport Atlantic herring for sale using flatbed trucks with standard storage containers would report pounds of Atlantic herring by counting **1,869 pounds of herring per container**.

Specifications for Common Atlantic Herring Box (RIFT 35 – Fishtotes.com)

NILKAMAL **INSULATED FISH TOTES** *Atlantic Style*: **(Commercial Grade)** *All Tare Weights & Dimensions are approximate*								
All Nilkamal Fish Totes have solid PUR "Foam Core Insulation" and mix & stack with or without a lid with the competition. *Some stack variations occur; check with HADCO*								
Model #	**Size**	**US Gallons**	**Capacity Full**	**Out Dimensions** *includes lid*	**In Dimensions**	**Tare Weight**	**TL**	**COMMENTS**
RIFT310	**10.5 Cube**	**80 Gal.**	**600 lbs / 270 kg**	**36" X 28" X 28"**	**34" x 26" x 23"**	**70 lbs. with lid**	117 / 40'HC	Atlantic day boat size
RIFT25	**25 Cube**	**198 Gal.**	**1500 lbs / 680 kg**	**48" X 43" X 38"**	**44" x 38" x 27"**	**175 lbs. with lid**	57 / 40'HC	Atlantic standard
RIFT35	**35 Cube**	**260 Gal.**	**2200 lbs / 1015 kg**	**48" X 43" X 50"**	**44" x 38" x 40"**	**229 lbs. with lid**	40 / 40'HC	Atlantic tall box
RIFT1000	**35 Cube**	**260 Gal.**	**2000+ lbs / 908 kg**	**58.5" X 46.5" X 38"**	**55" x 43" x 29"**	**218 lbs / 100 kgs**	47 / 40'HC	Pacific long box

RIFT35 STACKED

(B.) Standardized Method for Estimating Weight (All Storage Containers Used for Atlantic Herring Purchases): Under this option, Federally-permitted Atlantic herring dealers that do not use scales but purchase Atlantic herring in storage containers or vats would be required to estimate weight of Atlantic herring through standardized conversions based on the volumetric capacity of the storage containers. Dealers would be required to annually submit to NMFS a list of the storage containers that may be used for Atlantic herring transactions, including the volumetric capacity (and measurements, if applicable) of the storage containers.

When purchasing Atlantic herring, the dealer would report the total weight of Atlantic herring purchased by converting the volume of herring in the storage containers. The weight of Atlantic herring would be reported by the dealer based on the following standard conversions:

1 cubic foot = 56.2 pounds

1.244 cubic feet = 1 bushel herring = 70 pounds

1 hogshead = 17.5 bushels = 1,225 pounds

(A complete table of volume/weight conversions that apply to this alternative can be found on p. 49 and 50 of Appendix I.)

Once the total weight of the purchase is determined, 5% will be deducted to account for water, and the remaining amount would be reported.

(C.) Standardized Method for Estimating Weight of Transport Vehicles:

Federally-permitted Atlantic herring dealers that do not use scales but purchase herring in trucks would be required to certify the capacity of their transport trucks and estimate the weight of Atlantic herring through standardized conversions based on the volumetric capacity of the transport vehicle. The capacity measurement must be certified by one of the following qualified individuals or entities: Department of Transportation; Department of Weights and Measures (details TBD). The transport vehicles should be clearly marked at regular intervals to facilitate volumetric estimation. Dealers must submit these measurements to NMFS with a signed certification by the individual or entity that completed the measurement, specifying how they meet the definition of a qualified individual or entity.

When purchasing Atlantic herring, the dealer would report the total weight of Atlantic herring purchased by converting the volume of herring in transport and storage containers. The weight of Atlantic herring would be reported by the dealer based on the following standard conversions:

1 cubic foot = 56.2 pounds

1.244 cubic feet = 1 bushel herring = 70 pounds

1 hogshead = 17.5 bushels = 1,225 pounds

(A complete table of volume/weight conversions that apply to this alternative can be found on p. 49 and 50 of Appendix I.)

Once the total weight of the purchase is determined, 5% will be deducted to account for water, and the remaining amount would be reported.

Discussion

- This alternative was developed based on guidance from the Herring Committee and Council at the initial Framework 4 meetings, as well as suggestions from Herring Advisory Panel members at the February 13, 2014 AP meeting (no quorum – see the summary of the February 13, 2014 Herring AP discussion for more information).
- Appendix I (*Potential Applicability of Flow Scales, Hopper Scales, Truck Scales, and Volumetric Measurement in the Atlantic Herring Fishery*) provides comprehensive information related to dealer weighing/handling procedures, storage containers and transport vehicles, volumetric weight conversions, and other elements of this alternative.
- See the March 6, 2014 Herring PDT Report for a summary of Herring PDT discussion related to this alternative.

2.2 MEASURES TO ADDRESS NET SLIPPAGE

2.2.1 Clarification of Amendment 5 Management Measures to Address Net Slippage and Options to Address Operational Discards

For all trips by limited access herring vessels carrying a NMFS-approved observer, Amendment 5 (effective March 17, 2014) requires that *all fish be pumped aboard the vessel and made available for sampling by an observer prior to being discarded*. Exceptions to this requirement are allowed (slippage) if the vessel operator finds that (1) pumping the catch or bringing all fish aboard 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. Amendment 5 defines slippage specifically to not include operational discards, but the Amendment 5 regulations also prohibit operational discards on midwater trawl vessels fishing in year-round groundfish closed areas. The implementation of these provisions has generated some confusion regarding the treatment of catch not brought on board Atlantic herring vessels. **In Framework 4, the Council is clarifying the management measures to address net slippage and provisions related to catch not brought on board Atlantic herring vessels during normal fishing operations.**

Table 1 lists the disposition codes used by NEFOP observers for catch not brought on board Atlantic herring vessels. As shown in the table, there are occasions when some catch may not be brought on board the vessel but also is not slipped. Table 1 also includes the options under consideration in Framework 4 to clarify regulations pertaining to catch that is observed to be not brought on board. These clarifications address the treatment of operational discards as well as catch not brought on board the fishing vessel for reasons other than slippage (gear damage, falling from gear). The intent of these clarifications is to enhance the effectiveness of current management measures and reduce confusion for vessel operators and enforcement agents regarding the classification and treatment of instances when catch is not brought on board a limited access Atlantic herring vessel.

Table 1 Options to Clarify Catch Not Brought On Board and Management Measures to Address Net Slippage

SLIPPAGE DISPOSITION CODES Subject to Measures to Address Net Slippage	
041: Other	
044: No Market Value	
045: Safety Reason	
046: Mechanical Failure	
047: Spiny Dogfish Clogging Pump	
048: Vessel Capacity Filled	
049: Not Enough Fish to Pump	
070: Quality of Fish	
071: Clogged, Other	
ADDITIONAL DISPOSITION CODES (NOT BROUGHT ON BOARD) Proposed Clarifications (See Below)	
040: Operational Discards Small amount of fish that may remain in the codend after pumping is complete	• **Option A (No Action)** Operational discards allowed on midwater trawl vessels when not fishing in the groundfish year-round closed areas (not subject to slippage measures/consequences) • **Option B** Operational discards prohibited on midwater trawl vessels throughout the fishery (subject to slippage measures/consequences)
042: Gear Damage Prevented Capture Due to gear damage, such as a large tear, the catch was not brought onboard the vessel; Used when the vessel would have otherwise brought the catch onboard	• **Option A** Catch not brought on board due to gear damage would be considered a slippage event under the "mechanical failure" exemption (subject to rules that apply to mechanical failure) • **Option B** Catch not brought on board due to gear damage would not be considered under "mechanical failure" (subject to slippage measures/consequences)
043: Fell Out/Off of Gear Ex: fish that may fall out of the net as it's being reeled up on the net reel	• Fish that fall from the gear during pumping operations; cannot be retrieved or brought on board; confirmed by observers to be very small amounts of fish, well-documented **Fw4 Clarification:** Catch not brought on board due to falling out of gear would not be subject to slippage measures/consequences

Discussion

Amendment 5 Regulations (March 17, 2014)

CFR 648.11 (m)(4) Measures to address slippage.

(i) No vessel issued a limited access Atlantic herring permit and carrying a NMFS-approved observer may release fish from the net, transfer fish to another vessel that is not carrying a NMFS approved observer, or otherwise discard fish at sea, unless the fish has first been brought on board the vessel and made available for sampling and inspection by the observer, except in the following circumstances:

(A.) The vessel operator has determined, and the preponderance of available evidence indicates that, there is a compelling safety reason; or

(B.) A mechanical failure precludes bringing some or all of the catch on board the vessel for inspection; or,

(C.) The vessel operator determines that pumping becomes impossible as a result of spiny dogfish clogging the pump intake. The vessel operator shall take reasonable measures, such as strapping and splitting the net, to remove all fish which can be pumped from the net prior to release.

(ii) Vessels may make test tows without pumping catch on board if the net is re-set without releasing its contents provided that all catch from test tows is available to the observer to sample when the next tow is brought on board for sampling.

(iii) If fish are released prior to being brought on board the vessel due to any of the above exceptions, the vessel operator must complete and sign a Released Catch Affidavit detailing the vessel name and permit number; the VTR serial number; where, when, and for what reason the catch was released; the estimated weight of each species brought on board or released on that tow. A completed affidavit must be submitted to NMFS within 48 hrs. of the end of the trip.

1. **Does the Council intend for the regulations above to apply to operational discards on midwater trawl vessels?**

Option A: No. (Status quo, no action)

Operational discards would not be prohibited on midwater trawl vessels outside of the groundfish year-round closed areas.

Option B: Yes.

Operational discards would be prohibited on midwater trawl vessels in all areas when carrying a NMFS-approved observer.

- If fish remain in the net at the conclusion of pumping operations, those fish would be required to come aboard the vessel and made available for sampling and inspection by the observer, unless one of the slippage allowances applies (safety, mechanical, dogfish).

- Could similar regulatory language apply to operational discards as test tows? *(Draft, for example) Small amounts of fish may remain in the net at the end of pumping operations if the net is re-set without releasing its contents, provided that all catch from the net is available to the observer to sample when the next tow is brought on board for sampling.*

2. Does the Council intend for the regulations above to apply to instances of gear damage?

Option A: No.

Catch not brought on board due to gear damage would fall under the "mechanical failure" exemption.

Option B: Yes.

Catch not brought on board due to gear damage would not be considered an allowable slippage event under the "mechanical failure" exemption and would be subject to additional slippage measures/consequences.

3. Does the Council intend for the regulations above to apply to fish that fall out/off gear?

Proposed Clarification (Council staff): Catch not brought on board due to falling out of gear would not be subject to additional slippage measures/consequences.

2.2.2 Additional Alternatives Under Consideration

In addition to clarifying the treatment of catch not brought on board, the Council is considering alternatives in Framework 4 to implement additional management measures and further discourage slippage by limited access herring vessels for any reason, to the extent possible. The alternatives under consideration to further address net slippage are described in the following subsections.

Note that the following provisions would apply under Alternatives 2-5:

- All management measures described in the no action alternative (Alternative 1, Section 2.2.2.1 below) would continue to apply.
- A Released Catch Affidavit would be required for all observed slippage events.
- Clarifications to management measures that address net slippage and the treatment of catch not brought on board, discussed in Section 2.2.1 above, would apply.

2.2.2.1 Slippage Alternative 1: No Action

Management measures related to observer sampling and measures to address net slippage that were approved by NMFS in Amendment 5 (effective March 17, 2014) are described below. These measures represent the no action alternative with respect to sampling provisions and measures to address net slippage in the Atlantic herring fishery.

Full Sampling Provisions for All Management Areas (All Limited Access Herring Vessels)

Under the no action alternative, the following provisions apply to limited access herring vessels (all gear types) carrying a NMFS-approved observer on board (any trip with an observer):

- Vessels will be required to **pump aboard all fish** from the net for inspection and sampling by the observer. Vessels that do not pump fish will be required to bring all fish aboard the vessel for inspection and sampling by the observer. Unless specific conditions are met (see below), vessels will 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 observer.
- Vessels may make short **test tows** in the area to check the abundance of target and non-target species without pumping or bringing 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 will remain in the net and would be available to the observer to sample when the subsequent tow is pumped out or all fish are brought aboard.
- Fish that have not been pumped or brought aboard may be released (**slippage**) if the vessel operator finds that:
  - (1.) Pumping the catch or bringing all fish aboard 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 will be required to complete and sign a **Released Catch Affidavit Form** (available from NMFS) 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 Affidavit Forms will be required for all slippage events and must be submitted within 48 hours of completion of the fishing trip.

Full Sampling Provisions for Midwater Trawl Vessels in Year-Round Groundfish Closed Areas

In addition to the full sampling provisions described above, Amendment 5 requires herring midwater trawl vessels to carry an observer on 100% of trips in the groundfish year-round closed areas. Midwater trawl vessels are required to leave a groundfish closed area for the remainder of the fishing trip if a slippage event occurs in the closed area for any of the three reasons (1) safety; (2) mechanical failure; or (3) spiny dogfish. In addition, operational discards are prohibited on observed midwater trawl trips in the year-round groundfish closed areas. If fish remain in the net at the conclusion of pumping operations, those fish must be brought on board the vessel and made available for sampling and inspection by the observer, unless one of the other three slippage exemptions applies. According to Amendment 5, if the groundfish year-round closed areas are modified and/or eliminated in the future, access by midwater trawl vessels will be considered accordingly in the related groundfish action.

Measures to Improve/Maximize Sampling At-Sea (All Limited Access Herring Vessels)

Under the no action alternative, the following additional provisions are required for limited access herring vessels (Categories A/B/C) to improve sampling by NMFS-approved observers at-sea:

(1) When vessels issued limited access herring permits are working cooperatively in the Atlantic herring fishery, including pair trawling, purse seining, and transferring herring at-sea, each vessel must provide to observers, when requested, the estimated weight of each species brought on board or released on each tow.

(2) In addition to the requirements at §648.11 (d)(1)-(7), an owner or operator of a vessel issued a limited access herring permit on which a NMFS-approved observers is embarked must provide observers:

- A safe sampling station adjacent to the fish deck, including: a safety harness, if footing is compromised and grating systems are high above the deck; a safe method to obtain samples; and a storage space for baskets and sampling gear.
- Reasonable assistance to enable observers to carry out their duties, including but not limited to assistance with: obtaining and sorting samples; measuring decks, codends, and holding bins; collecting bycatch when requested by the observers; and collecting and carrying baskets of fish when requested by the observers.
- Advance notice when pumping will be starting; when sampling of the catch may begin; and when pumping is coming to an end.
- Visual access to net/codend or purse seine bunt and any of its contents after pumping has ended and before the pump is removed from the net. On trawl vessels, the codend including any remaining contents should be brought on board. If bringing the codend on board is not possible, the vessel operator must ensure that the observer can see the codend and its contents as clearly as possible before releasing its contents.

2.2.2.2 Slippage Alternative 2 (Move-Along Statistical Area)

Under this alternative, vessels would be required to **vacate a statistical area** in which a slippage event occurs, unless exempted (see below). Northeast Region statistical areas are shown in Figure 1.

The following provisions would apply to ***either*** Category A/B herring vessels ***or*** all limited access herring vessels (Category A/B/C) when on a declared herring trip carrying a NMFS-approved observer on board:

- ***Move-Along Rule:*** If a slippage event occurs, vessels would be required to vacate the statistical area in which the slippage event occurred for the remainder of the trip.

  Options for Exemptions to Move-Along Rule

  The Council is considering the following exemptions to the move-along rule proposed in this alternative (any combination of the following exemptions may be selected, including none):

  (1.) **Safety.** There would be no additional consequences for slippage due to safety reasons.

  (2.) **Mechanical Failure.** There would be no additional consequences for slippage due to mechanical failure.

  (3.) **Spiny Dogfish.** There would be no additional consequences for slippage due to spiny dogfish clogging the pump.

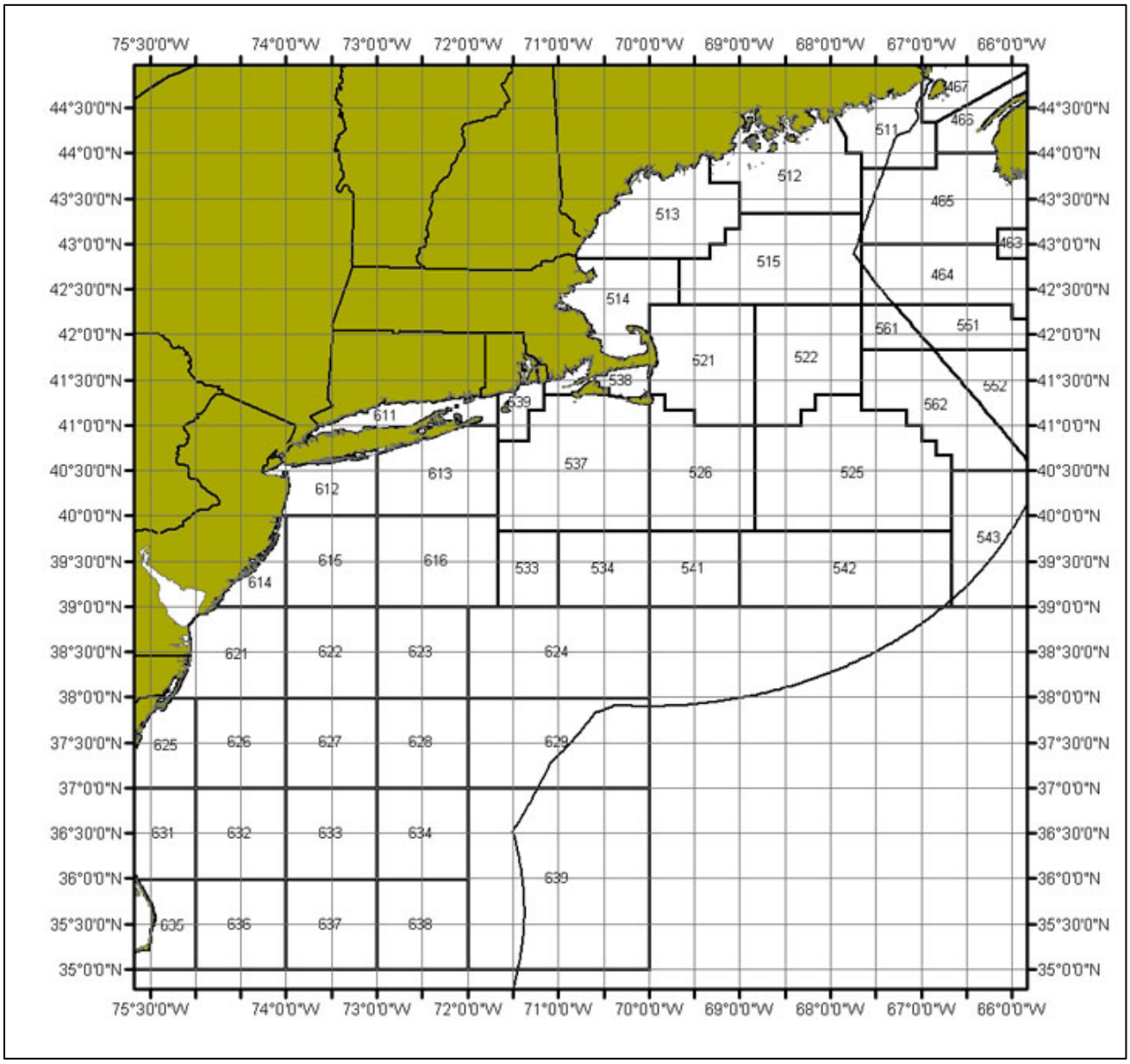
- ***Options for Trip Termination***

  Trip Termination Option A: Status quo; no trip termination requirements.

  Trip Termination Option B: Trip termination would be required for other, non-allowable slippage events. If slippage occurs for any reason other than (1) safety; (2) mechanical failure, or (3) spiny dogfish, the vessel would be required to terminate the trip and return to port.

Notification of slippage events via VMS would be required to facilitate enforcement.

Figure 1 Northeast Region Statistical Areas



Discussion

- Appendix II includes a comprehensive summary of information about slippage collected by NEFOP observers from 2010-2013.
- See the March 6, 2014 Herring PDT Report for a summary of Herring PDT discussion related to this alternative.

2.2.2.3 Slippage Alternative 3 (Move-Along Management Area)

Under this alternative, vessels would be required to **vacate a herring management area** in which a slippage event occurs, unless exempted (see below). Atlantic herring management areas are shown in Figure 2.

Because purse seine vessels only fish in Area 1A, this alternative would apply only to midwater trawl and small mesh bottom trawl vessels.

The following provisions would apply to ***either*** Category A/B herring vessels ***or*** all limited access herring vessels (Category A/B/C) using midwater trawl or bottom trawl gear, when on a declared herring trip carrying a NMFS-approved observer on board:

- ***Move-Along Rule:*** If a slippage event occurs, vessels would be required to vacate the herring management area in which the slippage event occurred for the remainder of the trip.

  Options for Exemptions to Move-Along Rule

  The Council is considering the following exemptions to the move-along rule proposed in this alternative (any combination of the following exemptions may be selected, including none):

  (1.) **Safety.** There would be no additional consequences for slippage due to safety reasons.

  (2.) **Mechanical Failure.** There would be no additional consequences for slippage due to mechanical failure.

  (3.) **Spiny Dogfish.** There would be no additional consequences for slippage due to spiny dogfish clogging the pump.

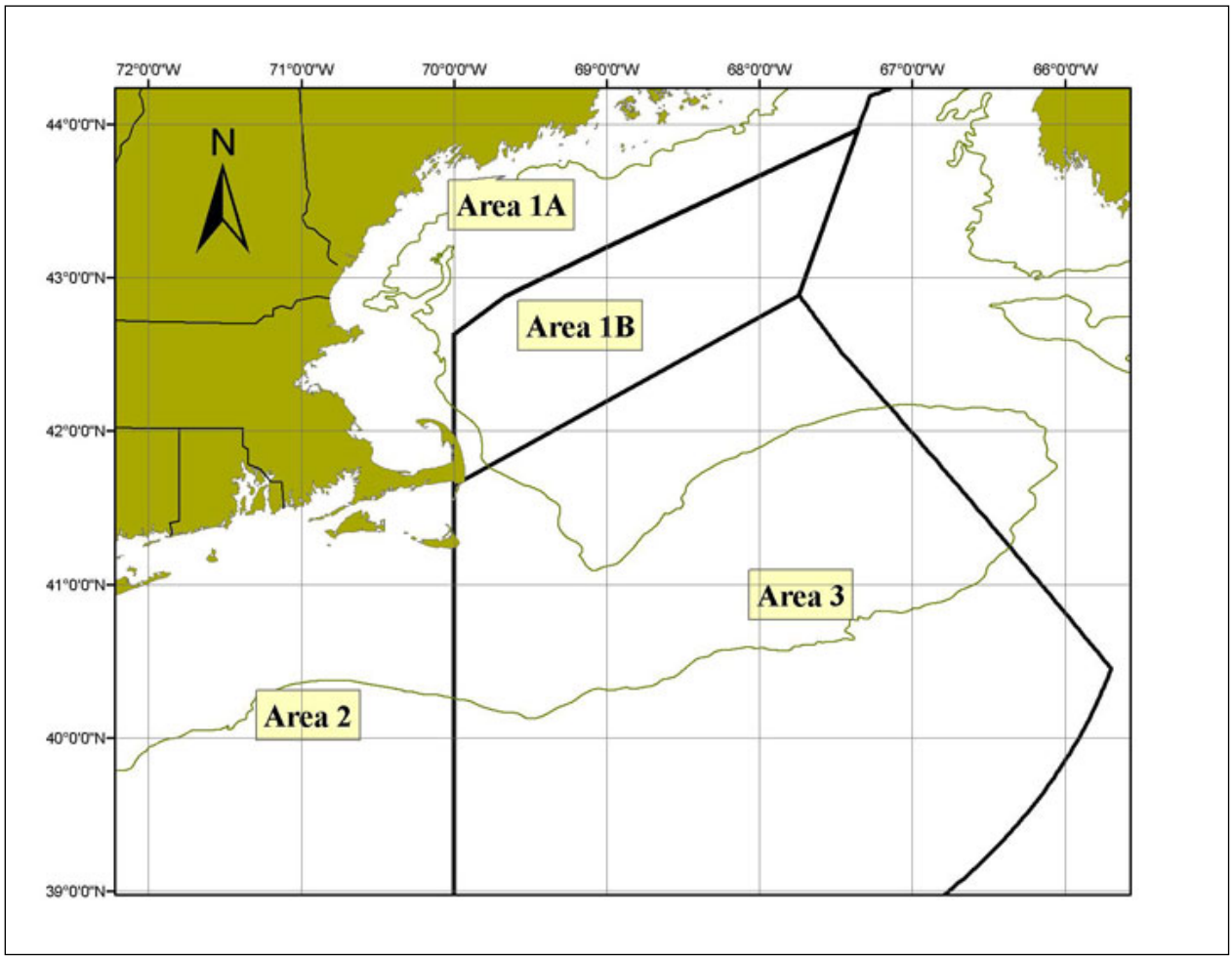
- ***Options for Trip Termination***

  Trip Termination Option A: Status quo; no trip termination requirements.

  Trip Termination Option B: Trip termination would be required for other, non-allowable slippage events. If slippage occurs for any reason other than (1) safety; (2) mechanical failure, or (3) spiny dogfish, the vessel would be required to terminate the trip and return to port.

Notification of slippage events via VMS would be required to facilitate enforcement.

Figure 2 Atlantic Herring Management Areas



Discussion

- Appendix II includes a comprehensive summary of information about slippage collected by NEFOP observers from 2010-2013.
- See the March 6, 2014 Herring PDT Report for a summary of Herring PDT discussion related to this alternative.

2.2.2.4 Slippage Alternative 4 (Move-Along X Miles Away)

Under this alternative, vessels would be required to **move X nautical miles** (see options below) when an observed slippage event occurs, unless exempted (see below).

The following provisions would apply to ***either*** Category A/B herring vessels ***or*** all limited access herring vessels (Category A/B/C) when on a declared herring trip carrying a NMFS-approved observer on board:

- ***Move-Along Rule:*** If a slippage event occurs, vessels would be required to move **X** nautical miles before fishing again.

  Options for Move-Along Nautical Miles

  The Council is considering the following options to require vessels to move when a slippage event is observed:

  A. **10 nm.** If a slippage event occurs, vessels would be required to move 10 nm from where the slippage event occurred before fishing again and would be required to remain out of the slippage area (10 nm radius) for the remainder of the trip.

  B. **15 nm.** If a slippage event occurs, vessels would be required to move 15 nm from where the slippage event occurred before fishing again and would be required to remain out of the slippage area (15 nm radius) for the remainder of the trip.

  C. **20 nm.** If a slippage event occurs, vessels would be required to move 20 nm from where the slippage event occurred before fishing again and would be required to remain out of the slippage area (20 nm radius) for the remainder of the trip.

  Options for Exemptions to Move-Along Rule

  The Council is considering the following exemptions to the move-along rule proposed in this alternative (any combination of the following exemptions may be selected, including none):

  (1.) **Safety.** There would be no additional consequences for slippage due to safety reasons.

  (2.) **Mechanical Failure.** There would be no additional consequences for slippage due to mechanical failure.

  (3.) **Spiny Dogfish.** There would be no additional consequences for slippage due to spiny dogfish clogging the pump.

- ***Options for Trip Termination***

  Trip Termination Option A: Status quo; no trip termination requirements.

  Trip Termination Option B: Trip termination would be required for other, non-allowable slippage events. If slippage occurs for any reason other than (1) safety; (2) mechanical failure, or (3) spiny dogfish, the vessel would be required to terminate the trip and return to port.

Notification of slippage events via VMS would be required to facilitate enforcement.

Discussion

- Appendix II includes a comprehensive summary of information about slippage collected by NEFOP observers from 2010-2013.
- See the March 6, 2014 Herring PDT Report for a summary of Herring PDT discussion related to this alternative.

2.2.2.5 Slippage Alternative 5 (No Move-Along)

Under this alternative, the following provisions would apply to ***either*** Category A/B herring vessels ***or*** all limited access herring vessels (Category A/B/C) on a declared herring trip when carrying a NMFS-approved observer on board:

- There would be no additional consequences for slippage under reasons (1) safety; (2) mechanical failure, or (3) spiny dogfish.
- If slippage occurs for any reason other than (1) safety; (2) mechanical failure, or (3) spiny dogfish, the vessel would be required to terminate the trip and return to port.

Notification of slippage events via VMS would be required to facilitate enforcement.

This alternative is most consistent with the Mid-Atlantic Fishery Management Council's recommendations for Framework 9 to the MSB FMP (slippage provisions for vessels in the Atlantic mackerel fishery), selected at its February 2014 meeting.

Discussion

- Appendix II includes a comprehensive summary of information about slippage collected by NEFOP observers from 2010-2013.
- See the March 6, 2014 Herring PDT Report for a summary of Herring PDT discussion related to this alternative.

3.0 AFFECTED ENVIRONMENT

The Affected Environment is described in this document based on valued ecosystem components (VECs). VECs represent the resources, areas, and human communities that may be affected by the management measures under consideration in this amendment. VECs are the focus since they are the "place" where the impacts of management actions are exhibited. For the purposes of this framework adjustment, the VECs identified for the Affected Environment are consistent with those described in the Final EIS for Amendment 5 to the Atlantic Herring FMP. The VECs in Framework 4 include: Atlantic Herring; Non-Target Species and Other Fisheries; Physical Environment and Essential Fish Habitat (EFH); Protected Resources; and Fishery-Related Businesses and Communities.

A complete description of these VECs can be found in Section 5.0 of the Final EIS for Amendment 5 to the Herring FMP. Summary information is provided below, and pertinent data are updated where possible.

3.1 ATLANTIC HERRING RESOURCE

3.1.1 Background

The NEFMC manages the Atlantic herring fishery under the Atlantic Herring FMP. This document serves as a framework adjustment to the Herring FMP. A complete description of the Atlantic herring resource can be found in Section 7.1 of the FEIS for Amendment 1 to the Herring FMP. Updated information to supplement that presented in Amendment 1 can be found in the Amendment 5 EIS and Framework 2 to the Herring FMP (which includes the 2013-2015 herring fishery specifications). The following subsections update information through 2012 where possible and summarize the stock status and recent biological information for Atlantic herring. Based on the best available scientific information, the Atlantic herring resource is not overfished at this time and overfishing is not occurring (the stock is considered rebuilt).

The Atlantic herring (*Clupea harengus*), is widely distributed in continental shelf waters of the Northeast Atlantic, from Labrador to Cape Hatteras. Herring can be found in every major estuary from the northern Gulf of Maine to the Chesapeake Bay. They are most abundant north of Cape Cod and become increasingly scarce south of New Jersey (Kelly and Moring 1986) with the largest and oldest fish found in the southern most portion of the range (Munro 2002). Spawning occurs in the summer and fall, starting earlier along the eastern Maine coast and southwest Nova Scotia (August – September) than in the southwestern GOM (early to mid-October in the Jeffreys Ledge area) and GB (as late as November – December; Reid et al. 1999). In general, GOM herring migrate from summer feeding grounds along the Maine coast and on GB to SNE/MA areas during winter, with larger individuals tending to migrate farther distances. Presently, herring from the GOM (inshore) and GB (offshore) stock components are combined for assessment purposes into a single coastal stock complex.

3.1.2 Stock Assessment/Resource Condition (SAW 54, June 2012)

The Stock Assessment Review Committee (SARC) of the 54th Northeast Regional Stock Assessment Workshop (SAW 54) met in June 2012 to review the Northeast regional benchmark stock assessment of Atlantic herring in Woods Hole, MA. A statistical catch-at-age model (Age Structured Assessment Program, ASAP; Legault and Restrepo 1999) was proposed as the best scientific information for determining Atlantic herring stock status. The SARC 54 Panel recognized natural mortality (M), the 2008 year class, and Biological Reference Points (BRPs) as scientific uncertainties. The spawning stock biomass (SSB) was estimated at 517,930 mt in 2011, and fishing mortality rate at age 5 (F) was estimated to be 0.14. More detailed information about the stock assessment can be found in the 2013-2015 Atlantic herring fishery specifications package. Summary information is provided below.

Biological Reference Points (BRPs)

The BRPs from SAW/SARC 54 seen in Table 2 differ due to (1) differences in natural mortality assumptions between assessments (i.e., SAW/SARC 54 used age-and time-varying M with a 50% increase beginning in 1996 and TRAC 2009 used 0.2 for all ages and years), and (2) the methods used to estimate the BRPs (Fox model was used in TRAC 2009 and the Beverton-Holt (BH) stock-recruitment curve estimated within ASAP for SAW/SARC 54).

Table 2 Atlantic Herring Biological Reference Points

Reference Points	TRAC 2009	SAW/SARC 54 (June 2012)
F_{MSY}	0.27	0.27
B_{MSY}	670,000 mt (1/2 SSB_{MSY} = 335,300)	157,000 mt (1/2 SSB_{MSY} = 78,500)
MSY	178,000 mt	53,000 mt

Spawning Stock Biomass (SSB)

The herring total and spawning stock biomass increased after 2009, mostly due to the large 2008 year class. The estimated 2011 January 1 total biomass of Atlantic herring was 1,322,446 mt. Based on the ASAP model, SSB was 517,930 mt in 2011. SSB declined during 1997-2010, and ranged from 180,527 mt in 1982 to a max of 1,936,769 mt in 2009. Total biomass and SSB showed similar trends over time, but 1-2 year lags caused by total biomass being reflected immature recruits rather than SSB.

Fishing Mortality (F)

Fishing mortality (F) rates in 2010 and 2011 were relatively low due to the presence of the strong 2008 year class, which increased the stock biomass. Fishing mortality in 2011 equaled 0.14, but is not representative of fishing mortality rates in recent years which averaged 0.23 during 2000-2009.

Stock Status – Overfishing Definition

The current overfishing definition (Atlantic Herring FMP, 1999) for Atlantic herring is provided below.

> *If stock biomass is equal or greater than B_{MSY} , overfishing occurs when fishing mortality exceeds F_{MSY}. If stock biomass is below B_{MSY} , overfishing occurs when fishing mortality exceeds the level that has a 50 percent probability to rebuild stock biomass to B_{MSY} in 5 years ($F_{Threshold}$). The stock is in an overfished condition when stock biomass is below ½ B_{MSY} and overfishing occurs when fishing mortality exceeds $F_{Threshold}$. These reference points are thresholds and form the basis for the control rule.*
>
> *The control rule also specifies risk-averse fishing mortality targets, accounting for the uncertainty in the estimate of F_{MSY}. If stock biomass is equal to or greater than 1/2B_{MSY} , the target fishing mortality will be the lower level of the 80 percent confidence interval about F_{MSY}. When biomass is below B_{MSY} , the target fishing mortality will be reduced consistent with the five-year rebuilding schedule used to determine $F_{Threshold}$.*

*The Herring PDT notes there may be an error or inconsistency in the language related to the rebuilding schedule and recommends that this overfishing definition be reviewed at the next appropriate discussion.

The 2012 SAW 54 benchmark assessment results estimated that Atlantic herring SSB in 2011 was 517,930 mt, which is well above B_{MSY} (157,000 mt). Estimated fishing mortality in 2011 was 0.14, which is below F_{MSY} (0.27). Therefore, the stock is not overfished and overfishing is not occurring. In fact, the Atlantic herring resource is considered to be rebuilt.

3.2 NON-TARGET SPECIES

Non-target species refers to species other than Atlantic herring which are caught/landed by federally permitted vessels while fishing for herring. These non-target species may be caught by the same gear while fishing for Atlantic herring, and may be sold assuming the vessel has proper authorization or permit(s). River herring and shad are non-target species of particular concern in the Atlantic herring fishery.

3.2.1 Summary Information

Non-target species are generally identified through sea sampling (observer) data collected by the Northeast Fisheries Observer Program (NEFOP). Observer coverage on midwater trawl vessels (single and paired) has been relatively high in recent years because midwater trawl vessels have been required to have 100% observer coverage when fishing in Groundfish Closed Area I (CAI). This requirement includes a pre-trip notification and has significantly increased observer coverage in the Area 3 herring fishery (Georges Bank), which is prosecuted only by midwater trawl vessels. Table 3 summarizes NEFOP observer coverage rates by gear type and herring management area during the 2012 fishing year for trips taken by the primary gears involved in the Atlantic herring fishery. Coverage rates in this table are calculated based on NEFOP observed herring pounds caught/VTR-reported herring pounds landed.

Table 3 2012 NEFOP Coverage Rates by Gear Type and Herring Management Area (Pounds Observed/Pounds Landed)

Gear Type	Atlantic Herring Management Area			
	1A	1B	2	3
Midwater Trawl (Single)	6.4%	0%	2.6%	71.2%
Pair Trawl	17.6%	36.5%	23.8%	75%
Purse Seine	16.3%	N/A	N/A	0%
Small Mesh Bottom Trawl	4.9%	0%	24.30%	0%

Note: 2012 NEFOP observer data are final; VTR data were preliminary when these estimates were generated.

Table 4 summarizes 2013 observer coverage rates on midwater trawl trips (single and paired) by month. As of November 2013, the Northeast Fisheries Observer Program (NEFOP) had achieved 526 midwater trawl sea days during the 2013 fishing year (360 sea days were tasked to this fishery for the entire 2013 year). By the end of the fishing year, NEFOP observers sampled a total of 127 midwater trawl trips (see Table 4). Observer coverage on midwater trawl vessels was relatively high during September and October 2013, but not as high as 2012. The average observer coverage rate for midwater trawl vessels (% of trips) in 2013 was 26%.

The percent of midwater trawl trips observed in 2013 is lower than in 2012 primarily because there were significantly less pre-trip notifications for CAI, which requires 100% coverage. In 2012, there were 158 trips that notified for CAI and were covered, thereby increasing the overall coverage on midwater trawl vessels. In 2013, there were far fewer trip notifications to CAI, and the Area 3 (Georges Bank) herring fishery closed in October. NEFOP personnel noted that call-in compliance was 100% over the 2013 summer season.

Table 4 2013 NEFOP Observer Coverage on Midwater Trawl Trips

	# Declared Trips	# Observed Trips	% Trips Covered
January	78	9	**12**
February	59	7	**12**
March	40	13	**33**
April	16	2	**13**
May	19	11	**58**
June	34	16	**47**
July	44	6	**14**
August	47	9	**19**
September	41	23	**56**
October	33	19	**58**
November	5	2	**40**
December	75	10	**13**

SUMMARY DATA TBD

3.2.2 River Herring and Shad (RH/S)

River herring and shad are non-target species of particular concern in the Atlantic herring fishery. For the purposes of this document, the term "river herring" refers to the species of alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*), and the term "shad" refers to the species of American shad (*Alosa sapidissima*) and hickory shad (*Alosa mediocris*). Collectively, these four species are referred to throughout this document as "RH/S." This section provides summary information about the river herring and shad. A comprehensive description of the RH/S resources can be found in Section 3.2 of Framework 3 to the Atlantic Herring FMP (2014).

Shad and river herring are anadromous fish that spend the majority of their adult lives at sea, only returning to freshwater in the spring to spawn. Historically, shad and river herring spawned in virtually every river and tributary along the coast. The oceanic ranges of all four species extend beyond the northern and southern latitudinal range of the NEFSC spring and fall surveys, which occur from the Gulf of Maine to Cape Hatteras, NC (35° 30' to 44° 30' N). The geographic range of blueback herring in the northwest Atlantic extends from Cape Breton, Nova Scotia, to the St. Johns River in FL and the range of American shad extends from the Sand Hill River in Labrador to the St. John's River in FL (Page and Burr 1991). The geographic range of

alewife extends from Red Bay, Labrador, to SC. Hickory shad have a narrower geographic range than these three species and is most abundant between Cape Cod, MA and the St. John's River in FL, but is also infrequently found in the Gulf of Maine (Munroe 2002).

RH/S Stock Status

A stock assessment for American shad was completed in 1997 and submitted for peer review in early 1998 based on new information and the Board recommended terms of reference. The 1998 assessment estimated fishing mortality rates for nine shad stocks and general trends in abundance for 13 shad stocks. A coastwide American shad stock assessment was completed and accepted in 2007 and found that American shad stocks are currently at all-time lows and do not appear to be recovering. Recent declines of American shad were reported for Maine, New Hampshire, Rhode Island, and Georgia stocks, and for the Hudson (NY), Susquehanna (PA), James (VA), and Edisto (SC) rivers. Low and stable stock abundance was indicated for Massachusetts, Connecticut, Delaware, the Chesapeake Bay, the Rappahannock River (VA), and some South Carolina and Florida stocks. Stocks in the Potomac and York Rivers (VA) have shown some signs of recovery in recent years. There are no coastwide reference points for American shad. There is currently no stock assessment available for hickory shad.

The 2007 assessment of American shad identified primary causes for stock decline as a combination of overfishing, pollution, and habitat loss due to dam construction. In recent years, coastwide harvests have been on the order of 500-900 mt, nearly two orders of magnitude lower than in the late 19th century. Given these findings, the peer review panel recommended that current restoration actions need to be reviewed and new ones need to be identified and applied. The peer review panel suggested considering multiple approaches including a reduction in fishing mortality, enhancement of dam passage, mitigation of dam-related fish mortality, stocking, and habitat restoration.

The ASMFC completed the river herring benchmark stock assessment and peer review in 2012, examining 52 stocks of alewife and blueback herring with available data in US waters. The stock assessment technical team examined indices from fishery-dependent (directed river herring landings and bycatch estimates in ocean fisheries) and fishery-independent (young-of-year indices, adult net and electrofishing indices, coastal waters trawl surveys, and run count indices) datasets. From this information, the status of 23 stocks was determined to be *depleted* relative to historic levels, and one stock was increasing. Statuses of the remaining 28 stocks could not be determined, citing times-series of available data being too short. "*Depleted*" was used, rather than "*overfished* and "*overfishing*," due to many factors (i.e., directed fishing, incidental fishing/bycatch, habitat loss, predation, and climate change) contributing to the decline of river herring populations. Furthermore, the stock assessment did not determine estimates of river herring abundance and fishing mortality due to lack of adequate data. For many of these reasons, the stock assessment team suggested reducing the full range of impacts on river herring populations.

State Management of RH/S

Targeting river herring and shad occurs almost exclusively in State waters, and river herring and shad are managed under the Atlantic States Marine Fisheries Commission's (ASMFC) Shad and River Herring Fishery Management Plan (FMP), which was developed in 1985. A more detailed description of the ASMFC Interstate Management Program for RH/S can be found in Amendment 5 and Framework 3 to the Atlantic Herring FMP.

Federal Management (NEFMC and MAFMC)

In Federal waters, the Atlantic herring fishery is managed by the New England Fishery Management Council (NEFMC) through the Atlantic Herring FMP and its associated amendments and framework adjustments. Most recently, Amendment 5 to the Herring FMP established the authority to develop catch caps for RH/S through a framework adjustment to the Atlantic Herring FMP. Amendment 5 was developed by the New England Council to improve the catch monitoring program for the Atlantic herring fishery and addresses bycatch issues through responsible management. Amendment 5 was adopted by the Council on June 20, 2012. On July 18, 2013, Amendment 5 was partially approved by NMFS. The approved measures in Amendment 5, effective March 17, 2014, include:

- Revisions to fishery management program provisions (permitting provisions, dealer and vessel reporting requirements, operational provisions for carrier vessels and transfers at-sea, requirements for vessel monitoring systems);
- Revisions to vessel requirements to improve at-sea sampling by observers;
- Management measures to discourage the discarding of catch before it has been sampled by observers;
- Establishment of River Herring Monitoring/Avoidance Areas; and
- Expansion of sea sampling requirements on midwater trawl vessels fishing in the year-round groundfish closed areas.

Quickly following the completion of Amendment 5, the Council developed Framework 3 to the Atlantic Herring FMP (under review), which will establish annual catch caps for RH/S in the directed Atlantic herring fishery. The measures adopted by the Council in Framework 3 are expected to become effective during the 2014 fishing year.

On August 2, 2012, the United States District Court for the District of Columbia issued a remedial order in the civil action Flaherty, et al. v. Blank, et al. to address deficiencies with respect to Amendment 4 to the Atlantic Herring FMP. A letter from NOAA Fisheries Service was provided to the New England Fishery Management Council on August 31, 2012, describing the legal deficiencies identified by the Court:

1. NMFS did not satisfy its obligation to independently determine whether the NEFMC's designation of "stocks in the fishery" complied with the Magnuson-Stevens Fisheries Conservation and Management Act (MSA);

2. NMFS did not adequately consider whether Amendment 4 complied with National Standard 9's requirement to minimize bycatch to the extent practicable; and
3. NMFS failed to consider the environmental impacts of alternatives to the acceptable biological catch (ABC) control rule and accountability measures (AMs).

The letter from NMFS also described the Amendment 4 Court Order. The Council responded to the letter from NMFS by including consideration of RH/S as stocks in the Atlantic herring fishery on the list of management priorities for 2013. NMFS submitted to the court a consideration of the stocks in the fishery decision along with a determination that Amendment 4, including Amendment 5 bycatch provisions as included in the Amendment 5 EIS, complied with National Standard 9. In addition to these submissions, several other elements of the Amendment 4 Court Order were addressed by the Council through the development of the 2013-2015 Atlantic herring fishery specifications package and Framework 2 to the Herring FMP, and additional information about these issues can be found in the 2013-2015 Atlantic herring fishery specifications package. With the completion of the 2013-2015 specifications package and this framework adjustment (to establish RH/S catch caps), the Council continues to address important management priorities in the Atlantic herring fishery, which still include consideration of adding RH/S as stocks in the fishery. This issue will continue to be explored by the Council through cooperation and continue discussion with the Mid-Atlantic Fishery Management Council (see additional discussion below). On February 19, 2014, the Court issued an opinion ruling that NMFS complied with the Court's remedial order.

At this time, Mid-Atlantic Fishery Management Council (MAFMC) addresses RH/S bycatch issues primarily through its Mackerel, Squid, and Butterfish (MSB) FMP. Recently, Amendment 14 to the Mackerel Squid Butterfish (MSB) FMP was developed in coordination with Amendment 5 to the Herring FMP and proposes a comprehensive catch monitoring system for the mackerel, squid, and butterfish (MSB) fishery. Many of the actions contained with both amendments have been developed to compliment and/or replicate each other to avoid conflicting overlaps of restrictions on vessels that participate in both the herring and mackerel fisheries. The timelines for Amendment 5 and Amendment 14 were designed to complement each other and allow public comment sessions to occur simultaneously. Amendment 14 to the MSB FMP considered adding river herring and shad as "stocks in the fishery" but deferred further action on this issue to Amendment 15 (see below).

Amendment 15 was initiated by the Mid-Atlantic Fishery Management Council in 2013 to consider measures for direct river herring and shad management. Preliminary development of the amendment specifically considered whether the current management framework for river herring and shad is sufficient for conservation and management of these species and whether Federal management under the MSA would address any deficiencies and/or inefficiencies. In August 2013, Mid-Atlantic Fishery Management Council staff presented a discussion document to the Mid-Atlantic Council outlining management issues related to incorporating RH/S as stocks in the Atlantic mackerel fishery. The Mid-Atlantic Council determined additional conservation and management of river herring and shad in the Squid, Mackerel, Butterfish FMP was not warranted at this time. The Mid-Atlantic Council also agreed to form an oversight Committee to specifically monitor and evaluate the effectiveness of the catch caps and continue to work to

reduce Federal fisheries' impacts on the RH/S stocks. Additionally, the Mid-Atlantic Council agreed to reconsider Federal management of river herring and shad in 3 years. The New England Fishery Management Council intends to remain actively engaged in this process and all RH/S conservation and restoration efforts. At its November 2013 meeting, the New England Council approved 2014 management priorities for Atlantic herring, including development of a NE Council staff white paper to more explicitly consider/explore issues related to adding RH/S as stocks in the Atlantic herring fishery.

River Herring ESA Petition and Determination

On August 5, 2011, the National Marine Fisheries Service (NMFS) received a petition from the Natural Resources Defense Council (NRDC), requesting that alewife and blueback herring be listed each as threatened throughout all or a significant portion of their range under the Endangered Species Act (ESA). Based on the best scientific and commercial information available, NMFS determined that listing alewife and blueback herring as threatened or endangered under the ESA is not warranted at this time. The determination was published in the *Federal Register* on August 12, 2013.

While neither species of river herring is currently considered endangered or threatened, both species are at low abundance compared to historical levels, and NMFS indicated that monitoring both species is warranted. Given the uncertainties and data deficiencies for both species, NMFS committed to revisiting both species of river herring in 3 – 5 years. During this 3- to 5-year period, NMFS intended to coordinate with ASMFC, the MAFMC, and the NEFMC on a strategy to develop a long-term and dynamic conservation plan (e.g., priority activities and areas) for river herring considering the full range of both species and with the goal of addressing many of the high priority data gaps for river herring.

The Council acknowledged concerns about the river herring and shad stocks in Amendment 5 when it developed a comprehensive catch monitoring program and long-term measures to address river herring bycatch (discussed above). Information presented to the Council during the development of Amendment 5 suggests that little is known about the impact of river herring bycatch in the herring fishery on the river herring resource. In turn, the Council determined that the most effective measures implemented in Amendment 5 to address river herring bycatch would be those that increase catch monitoring and bycatch accounting, and promote cooperative efforts with the industry to minimize bycatch to the extent practicable. Framework 3 furthers the objectives by implementing RH/S catch caps to minimize bycatch and further support river herring and shad conservation and restoration efforts.

3.3 PHYSICAL ENVIRONMENT AND EFH

TBD for Final Framework 3 Document

3.4 PROTECTED RESOURCES

TBD for Final Framework 3 Document

3.5 FISHERY-RELATED BUSINESSES AND COMMUNITIES

The U.S. Atlantic herring fishery occurs over the Mid-Atlantic shelf region from Cape Hatteras to Maine, including an active fishery in the inshore GOM and seasonally on GB. The herring resource is managed as one stock complex, but this stock is thought to be comprised of inshore and offshore components that segregate during spawning. In recognition of the spatial structure of the herring resource, the herring annual catch limit (ACL) is divided into sub-ACLs and assigned to four herring management areas. Area 1 is the Gulf of Maine (GOM) divided into an inshore (Area 1A) and offshore section (Area 1B); Area 2 is located in the coastal waters between MA and NC, and Area 3 is on Georges Bank (GB) (see Figure 2 on p. 21).

The Atlantic herring fishery is generally prosecuted south of New England in Area 2 during the winter (January-April), and oftentimes as part of the directed mackerel fishery. There is overlap between the herring and mackerel fisheries in Area 2 and in Area 3 during the winter months, although catches in Area 3 tend to be relatively low. The herring summer fishery (May-August) is generally prosecuted throughout the GOM in Areas 1A, 1B and in Area 3 (GB) as fish are available. Restrictions in Area 1A have pushed the fishery in the inshore GOM to later months (late summer). The midwater trawl (single and paired) fleet is restricted from fishing in Area 1A in the months of January through September because of the Area 1A sub-ACL split (0% January-May) and the purse seine-fixed gear only area (all of Area 1A) that is effective June-September. A sub-ACL split for Area 1B (0% January – April, 100% May – December) may be effective for all vessels during the 2014 and 2015 fishing years (pending approval by NMFS).

Fall fishing (September-December) tends to be more variable and dependent on fish availability; the Area 1A sub-ACL is always fully utilized, and the inshore Gulf of Maine fishery usually closes sometime around November. As the 1A and 1B quotas are taken, larger vessels become increasingly dependent on offshore fishing opportunities (Georges Bank, Area 3) when fish may be available.

Businesses related to the Atlantic herring fishery include fishing vessel owners and employees (captains/crew) and herring dealers and processors. Refer to the Amendment 5 FEIS (Section 4.5) for information in addition to that provided in the following subsections.

The 2013-2015 Atlantic herring fishery specifications were approved by NMFS concurrently with Framework 2 to the Herring FMP, which allows the Council to split sub-ACLs seasonally (by month) and establishes provisions for the carryover of some un-utilized sub-ACL during the specifications process. The specifications summarized below in Table 5 are effective for the 2013-2015 fishing years (initial allocations, not including overage deductions, carryovers, or set-aside deductions). Updated 2014 Atlantic herring fishery specifications, based on 2012 overage deductions, are provided in Section 3.5.1 (Table 8, p. 38).

Table 5 2013-2015 Atlantic Herring Fishery Specifications (Initial Allocations)

SPECIFICATION	2013-2015 ALLOCATION (MT)
Overfishing Limit (OFL)	169,000 – 2013 136,000 – 2014 114,000 – 2015
Acceptable Biological Catch (ABC)	114,000
U.S. Optimum Yield (OY)/Annual Catch Limit (ACL)	107,800
Domestic Annual Harvesting (DAH)	107,800
Domestic Annual Processing (DAP)	103,800
U.S. At-Sea Processing (USAP)	N/A
Border Transfer (BT)	4,000
Sub-ACL Area 1A	31,200
Sub-ACL Area 1B	4,600
Sub-ACL Area 2	30,000
Sub-ACL Area 3	42,000
Research Set-Aside (RSA)	3% of each sub-ACL
Fixed Gear Set-Aside (1A)	295

**Sub-ACL numbers do not include overage deductions, carryovers, or RSA deductions.*

Seasonal Splits for 2014 and 2015

- Area 1A: 0% January-May; 100% June-December
- Area 1B: 0% January-April; 100% May-December

3.5.1 Atlantic Herring Catch 2003-2013

The Atlantic herring ACL and management area sub-ACLs are tracked/ monitored based on the total catch – landings and discards – which are provided and required by herring permitted vessels through daily vessel monitoring system (VMS) catch reports and weekly vessel trip reports (VTRs) as well as through Federal/state dealer data. Herring harvesters are required to report discards in addition to landed catch through these independent methods.

NMFS' catch estimation methods for the Atlantic herring fishery are described in detail in both Framework Adjustment 2 and Framework Adjustment 3 to the Atlantic Herring FMP.

Table 6 summarizes recent Atlantic herring catch estimates by year and management area from 2004-2013. The following bullets describe how these estimates were derived:

- 2004-2006 herring catch estimates are provided from quota management implemented by NMFS through the Atlantic Herring FMP and are based on interactive voice reporting (IVR) data from the call-in system used to monitor TACs. Reported herring discards are included in the totals.
- 2007-2009 herring catch estimates are based on IVR data supplemented with dealer data. Reported discards are included in the totals.
- 2010-2013 Atlantic herring catch estimates are based on a comprehensive methodology developed by NMFS in response to Amendment 4 provisions and the need to better monitor sub-ACLs. The methodology for estimating catch is based on landings data obtained from dealer reports (Federal and State) supplemented with VTRs (Federal and State of Maine) with the addition of discard data from extrapolated observer data.

Table 6 Atlantic Herring Catch by Year and Management Area, 2004-2013

YEAR	AREA (sub-ACL)	CATCH (MT)	QUOTA (MT)	PERCENT of QUOTA CAUGHT
2004	1A	60,095	60,000	100%
2004	1B	9,044	10,000	90%
2004	2	12,992	50,000	26%
2004	3	11,074	60,000	18%
2005	1A	61,102	60,000	102%
2005	1B	7,873	10,000	79%
2005	2	14,203	30,000	47%
2005	3	12,938	50,000	26%
2006	1A	59,989	60,000	100%
2006	1B	13,010	10,000	130%
2006	2	21,270	30,000	71%
2006	3	4,445	50,000	9%
2007	1A	49,992	50,000	100%
2007	1B	7,323	10,000	73%
2007	2	17,268	30,000	58%
2007	3	11,236	55,000	20%
2008	1A	42,257	43,650	97%
2008	1B	8,671	9,700	89%
2008	2	20,881	30,000	70%
2008	3	11,431	60,000	19%
2009	1A	44,088	43,650	101%
2009	1B	1,799	9,700	19%
2009	2	28,032	30,000	93%
2009	3	30,024	60,000	50%
2010	1A	28,424	26,546	107%
2010	1B	6,001	4,362	138%
2010	2	20,831	22,146	94%
2010	3	17,596	38,146	46%
2011	1A	30,676	29,251	105%
2011	1B	3,530	4,362	81%
2011	2	15,001	22,146	68%
2011	3	37,038	38,146	97%
2012	1A	24,302	27,668	88%
2012	1B	4,307	2,723	158%
2012	2	22,482	22,146	102%
2012	3	39,471	38,146	103%
2013	1A	29,820	29,775	100%
2013	1B	2,458	4,600	53%
2013	2	27,569	30,000	92%
2013	3	37,833	42,000	90%

Source: NMFS.
Note the shaded rows indicate overages.
2013 catch estimates are from the NMFS Quota Monitoring Report 1/6/2014.

Table 7 summarizes total Atlantic herring catch as a percentage of the total available catch in each year from 2003-2012 based on NMFS year-end catch estimation methods (2013 year-end catch estimates not yet available). Atlantic herring catch has been somewhat consistent over the time period (and in previous years), averaging about 91,500 mt, with the highest catch of the time series observed in 2009 and lowest in 2008. However, the quota allocated to the fishery (stockwide ACL/OY) has decreased 50% over the ten-year period. The herring fishery has therefore become more fully utilized in recent years and utilized 100% of the total ACL in 2012.

Table 7 Total Annual Atlantic Herring Catch 2003-2012

YEAR	TOTAL HERRING CATCH (MT)	TOTAL QUOTA ALLOCATED (MT)	PERCENT OF TOTAL QUOTA CAUGHT
2003	101,607	180,000	57%
2004	93,205	180,000	52%
2005	96,116	150,000	64%
2006	98,714	150,000	66%
2007	85,819	145,000	59%
2008	83,240	143,350	58%
2009	103,943	143,350	73%
2010	72,852	91,200	80%
2011	86,245	93,905	92%
2012	90,561	90,683	100%

Source: NMFS.

Due to the of the high volume and seasonal nature of the Atlantic herring fishery and restrictions on fishing times, recent sub-ACL overages have tended to occur primarily in the most active areas of the fishery and in years when substantial reductions in the quota have been implemented. Since the implementation of herring quota management in 2001, there have been no stockwide herring ACL overages from through 2012, and sub-ACL quota overages (shaded rows in the tables) have been relatively infrequent and minor in scale. Table 8 provides the year-end Atlantic herring catch estimates from 2011 and 2012 and resulting sub-ACL specifications for 2013 and 2014. To account for the 2010 overages in Areas 1A and 1B, NMFS reduced the 2012 sub-ACLs in Areas 1A and 1B. The resulting 2012 sub-ACL for Area 1A was 24,668 mt (reduced from 26,546 mt), and the sub-ACL for Area 1B was 2,723 mt (reduced from 4,362 mt, see Table 8). Due to the under harvest of the New Brunswick weir fishery in 2012, an additional 3,000 mt was allocated to Area 1A on November 1, 2012. An additional 295 mt was also allocated to Area 1A on November 1, 2012 due to the under harvest of the fixed gear fisheries west of Cutler, Maine. The total Area 1A sub-ACL for the 2012 fishing year was therefore 27,668 mt.

Because of Atlantic herring stock status (rebuilt, overfishing not occurring), acceptable biological catch (ABC) and the stockwide herring ACL were increased from 2010-2012 levels, and additional catch is available to the fishery for 2013-2015. When the 2013 specifications were implemented by NMFS (applied retroactively for the 2013 fishing year), the 2011 Area 1A overage was deducted from the final 2013 Area 1A sub-ACL and the stockwide herring ACL. With the overage deduction, the resulting 2013 sub-ACL for Area 1A is slightly higher than the 2012 Area 1A sub-ACL. The 2013-2015 herring specifications package also includes a 295 mt fixed gear set-aside in Area 1A and a 3% research set-aside (RSA) for all management areas (set-asides are not reflected in the numbers provided in Table 8). Year-end catch totals for 2012 indicate that there were sub-ACL overages for Areas 1B, 2, and 3, and an underage in Area 1A. As a result, 2012 overage deductions and carryovers are reflected in the 2014 sub-ACLs. The 2014 adjustments were published by NMFS in a Final Rule on March 19, 2014 and are shown below in Table 8.

Table 8 2011 and 2012 Atlantic Herring Catch – Overages, Underages, and Resulting 2013 and 2014 Sub-ACLs

YEAR	AREA	CATCH (MT)	SUB-ACL (MT)	% SUB-ACL CAUGHT	2013 SUB-ACL (MT)
2011	1A	30,676	29,251	105%	29,775
2011	1B	3,530	4,362	81%	4,600
2011	2	15,001	22,146	68%	30,000
2011	3	37,038	38,146	97%	42,000
TOTAL		**86,245**	**93,905**	**92%**	**106,375**
YEAR	**AREA**	**CATCH (MT)**	**SUB-ACL (MT)**	**% SUB-ACL CAUGHT**	**2014 SUB-ACL (MT)**
2012	1A	24,302	27,668	87.8%	33,967
2012	1B	4,307	2,723	158%	3,016
2012	2	22,482	22,146	102%	29,664
2012	3	39,471	38,146	104%	40,675
TOTAL		**90,561**	**90,683**	**99.9%**	**107,322**

Source: NMFS.
Note the shaded rows indicate overages and underages.
Sub-ACLs presented in the table for 2013 and 2014 do not reflect any set-asides for research and/or fixed gear fishing.

Table 9 reports 2014 Atlantic herring catch by management area, year to date, based on NMFS' in-season quota monitoring methods as of March 27, 2014.

Table 9 2014 Atlantic Herring Sub-ACLs and Catch YTD

AREA	2014 CATCH (MT)	SUB-ACL (MT)	% SUB-ACL CAUGHT
1A	0	33,967	0
1B	1,270	3,016	0
2	10,691	29,664	36%
3	11,407	40,675	28%
TOTAL	**23,368**	**107,322**	**33%**

Source: NMFS Quota Monitoring Report 3/27/2014.

3.5.2 Atlantic Herring Vessels

This section provides information regarding the vessels participating in the Atlantic herring fishery from 2008-2013. Additional information can be found in the FEIS for Amendment 5 to the Herring FMP. In this section, a herring trip is defined liberally as any trip in which at least one pound of Atlantic herring is retained.

3.5.2.1 Atlantic Herring Permits

Atlantic herring vessel permit categories are: Category A limited access all management areas; Category B limited access Areas 2 and 3 only; Category C limited access incidental catch of 25 mt per trip; Category D open access incidental catch of 3 mt per trip; and Category E limited access mackerel vessels that did not qualify for a limited access herring permit with a 20,000 pound herring possession limit in Areas 2/3. At this time, Category A and B vessels comprise the majority of the directed herring fishery. Many of the Category A, B, and C (limited access) vessels are also active in the Atlantic mackerel fishery (managed by the MAFMC). It is expected that only a few vessels will obtain a Category E permit.

Since 2008, the number of vessels with either a limited access or an open access Atlantic herring permit has decreased annually (Table 10). This includes an annual decrease in limited access directed fishery vessels (Categories A and B), with 42 permitted in 2011. One cause could have been the substantial cuts in herring catch limits in the 2010-2012 specifications from prior levels.

In 2011, 29 of the 42 (69%) Category A and B vessels were active (defined broadly as landing at least one pound of Atlantic herring during the fishing year). For the Category C vessels, 9 of 44 (20%) were active. Just 89 of the 1,991 (4.5%) Category D vessels were active. Although there have been far fewer active limited access versus open access vessels, data presented in the remainder of this section show that the limited access fishery comprises over 99% of the fishery in terms of revenues.

Table 10 Fishing Vessels with Federal Atlantic Herring Permits, 2008-2013

Permit Category	2008		2009		2010		2011		2012		2013	
	All	Active	All	Active	All	Active	All	Active	All	Active	All	Active
A	44	28	44	29	42	29	38	29	36	24	36	n.d.
B, C	5	2	4	3	4	3	4	2	4	3	4	n.d.
C	53	12	51	15	49	19	44	10	41	13	43	n.d.
Total LA	**102**	**42**	**99**	**47**	**95**	**51**	**86**	**41**	**81**	**40**	**82**	n.d.
D	2,390	78	2,373	78	2,277	99	1,991	84	1,869	80	1,791	n.d.

Source: NMFS Permit database (http://www.nero.noaa.gov/permits/permit.html) and VTR database.

Notes: Active vessels are defined as having landed at least one pound of Atlantic herring. This includes pair trawl vessels whose partner vessel landed the catch. Permit data for 2008-2011 are as of November 2012. Permit data for 2012-2013 are as of August 23, 2013.

Amendment 5 established a new permit category (E), effective in the2014 fishing year and beyond.

3.5.2.2 Fishing Gear

Atlantic herring vessels primarily use purse seines, single midwater trawls or midwater pair trawls for fishing gear, with the midwater pair trawl fleet harvesting the majority of landings from 2008 to 2012 (63%; Table 11). Some vessels use multiple fishing areas. The midwater pair trawl fleet uses all management areas, while the purse seine fishery focuses in Area 1A and the midwater trawl (single) is most active in Area 3. Small mesh otter trawls for bottom fish comprise 5% of the fishery, and other gear types (e.g. pots, traps, shrimp trawls, handlines) comprise less than 1% of the herring fishery.

Table 11 and Table 12 show the distribution of Atlantic herring landings by gear type, permit category, and management area. The data indicate that the vast majority of midwater trawl vessels are Category A permit holders. All pair trawl vessels possess Category A permits, and a small number of single midwater trawl vessels have both Category B and C herring permits.

Table 11 Fishing Gear Distribution of Total Herring Landings (mt) from Atlantic Herring Management Areas (2008-2012)

Gear Type	Area 1A (mt)	Area 1B (mt)	Area 2 (mt)	Area 3 (mt)	Total
Midwater Trawl	6,713 (4.1%)	3,527 (15.1%)	7,803 (7.7%)	20,389 (15.3%)	**38,431** **(9.1%)**
Midwater Pair Trawl	64,476 (39.5%)	15,562 (66.8%)	74,955 (73.8%)	112,858 (84.6%)	**267,851** **(63.6%)**
Purse Seine	90,445 (55.4%)	4,199 (18.0%)	0 (0.0%)	0 (0.0%)	**94,643** **(22.5%)**
Small Mesh Bottom Trawl	639 (0.4%)	2 (0.0%)	18,768 (18.5%)	121 (0.1%)	**19,530** **(4.6%)**
Other	996 (0.6%)	0 (0.0%)	15 (0.0%)	0 (0.0%)	**1,011** **(0.2%)**
Total	**163,269** **(100%)**	**23,289** **(100%)**	**101,542** **(100%)**	**133,368** **(100%)**	**421,467** **(100%)**

Source: VTR database. Data are updated as of August 23, 2013.

Table 12 Fishing Gear Distribution of Herring Landings (mt) by Permit Category (2008-2011)

Gear Type	Category A	Category B/C	Category C	Category D	Total
Midwater Trawl	26,915 8%	383 9%	0 0%	5 0%	**27,302** 8%
Midwater Pair Trawl	216,235 66%	0 0%	0 0%	0 0%	**216,235** 65%
Purse Seine	73,261 22%	0 0%	1,350 62%	514 41%	**74,991** 22%
Small Mesh Bottom Trawl	9,922 3%	3,990 91%	538 25%	418 34%	**14,869** 4%
Other	249 0%	0 0%	278 13%	307 25%	**834** 0%
Total	**326,583** **100%**	**4,373** **100%**	**2,166** **100%**	**1,244** **100%**	**334,365** **100%**

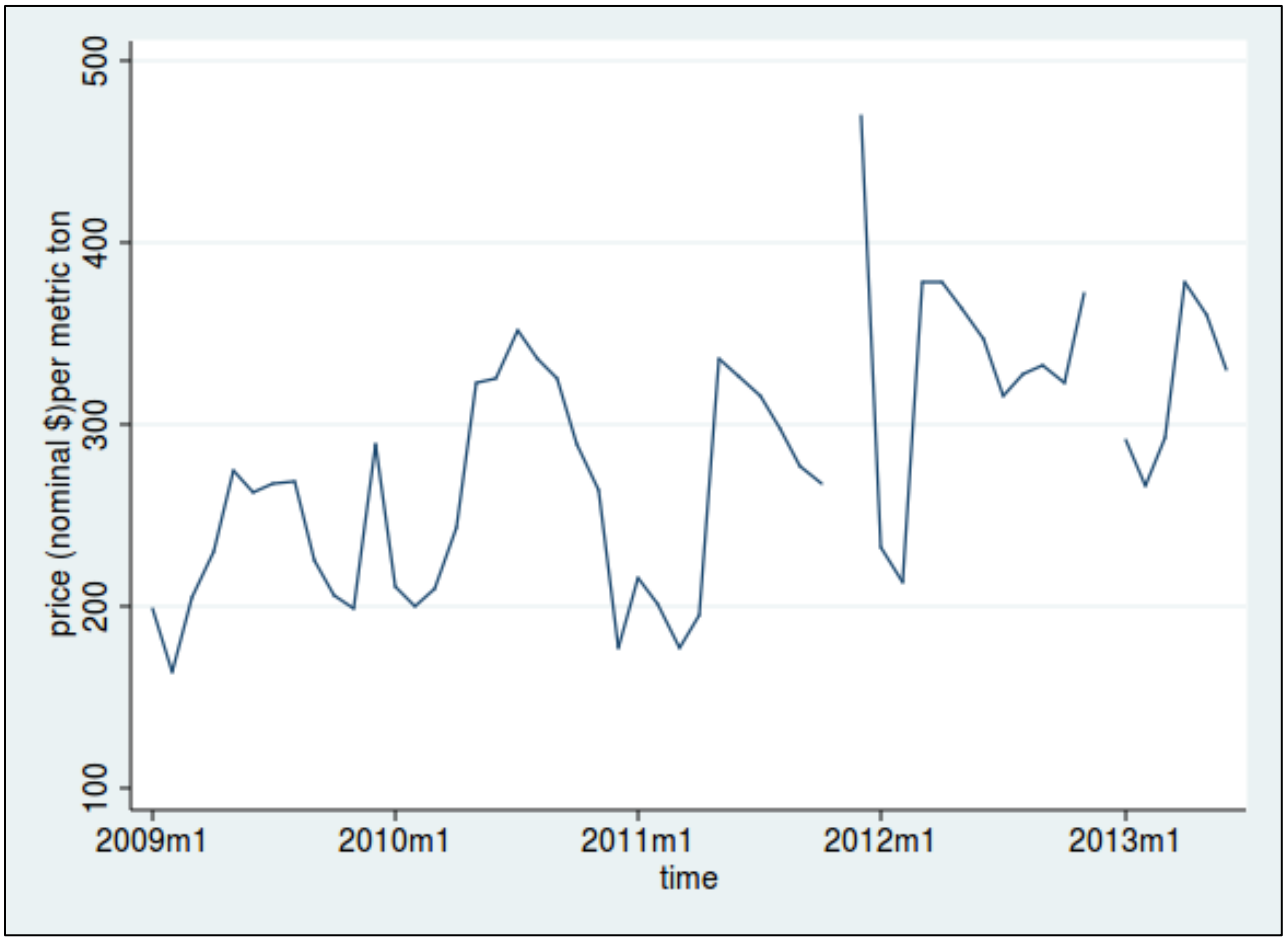
Source: VTR database. September 2012.

3.5.2.3 Economic Factors

Atlantic Herring Prices

Average Atlantic herring prices have increased from approximately $221/mt in 2009 to approximately $300/mt in 2012. For January-June 2013, herring prices averaged $306/mt. Figure 3 plots the monthly average prices for Atlantic herring, omitting December of 2011 and 2012 (prices were quite high during these months, but quantities were very low, and these months are not representative of normal operating conditions for the directed herring fishery).

Figure 3 Average Monthly Price of Atlantic Herring, 2009-2013



3.5.3 Atlantic Herring Dealers and Processors

A complete description of Atlantic herring dealers and processors can be found in Sections 5.5.1.4 and 5.5.1.5 of the FEIS for Amendment 5 to the Atlantic Herring FMP.

Appendix I to this document (*Potential Applicability of Flow Scales, Hopper Scales, Truck Scales, and Volumetric Measurement in the Atlantic Herring Fishery*) provides comprehensive information related to current fish handling, weighing, processing, storage, and transporting practices utilized by dealers and processors participating in the Atlantic herring fishery.

3.5.3.1 Atlantic Herring Dealers

Federally-permitted dealers obtain permits to sell different species of fish by selecting that species in their dealer permit application form; there is no cost to select any or all species in this application. Table 13 summarizes the number of Federally-permitted dealers and shows the number of dealers that did and did not purchase Atlantic herring between 2007 and 2013. During this time, the number of registered Atlantic herring dealers increased from 230 to 288. The number of permitted dealers that purchased Atlantic herring has remained relatively constant around 95 and increased slightly to 100 in 2013. Approximately one half of the active dealers (those who purchased Atlantic herring) are located in the State of Maine (Table 14).

Table 13 Number of Federally-Permitted Dealers Registered as Atlantic Herring Dealers, by Purchase Status, 2007-2013

Year	Total Dealers	Active	Inactive
2007	230	92	138
2008	246	85	161
2009	249	96	153
2010	273	94	179
2011	275	94	181
2012	283	94	189
2013	288	100	188

Table 14 Number of Active Federal Atlantic Herring Dealers, by State, 2007-2013

	ME	NY	MA	RI	NJ	NH	Other	Total
2007	48	10	12	8	5	2	7	92
2008	43	15	9	7	4	2	5	85
2009	52	14	13	8	3	2	4	96
2010	49	15	10	7	4	3	6	94
2011	47	16	11	7	4	3	6	94
2012	46	15	11	8	4	3	7	94
2013	48	19	12	9	3	2	7	100

3.5.3.2 Atlantic Herring Processors

Processors involved in the Atlantic herring fishery include Cape Seafoods (Gloucester, MA), NORPEL (New Bedford, MA), Seafreeze, Ltd. (North Kingston, RI), and Lund's Fisheries (Cape May, NJ). Detailed information about these processing plants is provided in Amendment 5 to the Atlantic Herring FMP.

3.5.4 Fishing Communities

In this document, for the purposes of gaining a better perspective on the nature of the Atlantic herring fishery and the character of the affected human environment, a broader interpretation of fishing community has been applied to include almost all communities with a substantial involvement in or dependence on the Atlantic herring fishery. In terms of National Standard 8 (NS 8), some of the communities identified in this section may not fit the strict interpretation of the criteria for substantial dependence on fishing. The fishing communities that meet the legal definition (as promulgated through NS 8) are likely to be considered a subset of the broader group of communities of interest that are engaged in the herring fishery and identified in this document. A description concerning NS 8 is seen below.

In the 1996 amendments to the MSA, Congress added provisions directly related to social and economic factors for consideration by Councils and NMFS. NS 8 of the MSA states that:

Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

NS 8 requires the consideration of impacts on fishing communities. Section 316 of MSA defines a fishing community as:

"A community which is substantially dependent on or substantially engaged in the harvesting or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community."

Because herring is widely used as bait for the lobster fishery, especially in Maine, it is not practical to identify every community with substantial involvement in the lobster fishery (and consequently some level of dependence on the herring fishery) for assessment in this document. Instead, some of the communities of interest were selected, in part, because of their involvement in or dependence on the lobster fishery; assessment of the impacts of the Amendment 1 measures on these communities should provide enough context to understand the potential impacts on any community with substantial involvement in the lobster fishery. Parallels can be drawn between the communities that are identified in this section and other similar communities engaged in the lobster fishery.

NS 8 requires the Council to consider the importance of fishery resources to affected communities and provide those communities with continuing access to fishery resources, but it does not allow the Council to compromise the conservation objectives of the management measures. "Sustained participation" is interpreted as continued access to the fishery within the constraints of the condition of the resource.

Communities of Interest

The following five criteria were used in Amendments 1 and 5 to the Herring FMP to define *Communities of Interest* for the Atlantic herring fishery, which must meet at least one criterion:

1. Atlantic herring landings of at least 10M pounds (4,536 mt) per year from 1997-2008, or anticipated landings above this level based on interviews and documented fishery-related developments.
2. Infrastructure dependent in part or whole on Atlantic herring.
3. Dependence on herring as lobster and/or tuna bait.
4. Geographic isolation in combination with some level of dependence on the Atlantic herring fishery.
5. Utilization of Atlantic herring for value-added production.

Based on the above criteria, there are 11 *Communities of Interest* for the Atlantic herring fishery, identified below and further evaluated in Amendment 5 to the FMP for Atlantic Herring (Section 4.5.3), Also, community profiles of each are available from the NEFSC Social Sciences Branch website(Clay et al. 2007). Since Amendment 1, this list has changed slightly with changes in harvesting and processing sectors.

1. Portland, Maine
2. Rockland, Maine
3. Stonington/Deer Isle, Maine
4. Vinalhaven, Maine
5. Lubec/Eastport, Maine
6. Sebasco Estates, Maine
7. NH Seacoast (Newington, Portsmouth, Hampton/Seabrook)
8. Gloucester, Massachusetts
9. New Bedford, Massachusetts
10. Southern Rhode Island (Point Judith, Newport, North Kingstown)
11. Cape May, New Jersey

3.5.4.1 Home Ports

Of the Atlantic herring *Communities of Interest*, Gloucester and New Bedford, Southern RI, and Cape May are homeports with largest concentrations of vessels that have Atlantic Herring limited access directed fishery permits, Categories A and B (Table 15). Mid-Coast ME, Portland and Seacoast NH also are home to a few of these permit holders. Beyond the communities of interest, a few Category A and B permit holders have homeports in Bath, Cundys Harbor, Hampden, Owls Head, and West Rockport ME; Boston and Woods Hole MA; and Wanchese NC. For the most part, these vessels use a community of interest as a landing port (NMFS 2012).

The communities of interest also reflect concentrated locations of other stakeholders such as the lobster fishing industry members who use herring as bait. Another community of interest that is more dispersed and thus may not be reflected in this listing is that comprised of the stakeholders who rely on herring as forage to attract their target species (e.g., tuna fishermen, recreational fishermen and whale watch companies).

Table 15 Distribution of Atlantic Herring Permit Holders in 2012 which have an Atlantic Herring Community of Interest as a Homeport

Homeport		Permit Category				
		A	B,C	C	D	Total
Maine	Portland	2	0	1	36	**39**
	Rockland	1	0	0	3	**4**
	Stonington/Deer Isle	1	0	0	0	**1**
	Vinalhaven	0	0	0	2	**2**
	Lubec/Eastport	0	0	0	2	**2**
	Sebasco Estates	0	0	0	3	**3**
	Maine, other	5	0	5	180	**190**
New Hampshire	Seacoast	2	0	4	90	**96**
Massachusetts	Gloucester	5	0	2	155	**162**
	New Bedford	5	0	2	195	**202**
	Massachusetts, other	5	1	1	356	**363**
Rhode Island	Southern	3	3	7	115	**128**
New Jersey	Cape May	6	0	8	85	**99**
	New Jersey, other	0	0	0	184	**184**
Other States*		1	0	11	463	**475**

Source: NMFS permit databases. http://www.nero.noaa.gov/permits/permit.html. Data are updated as of July 2013.

**Includes Alabama, Connecticut, Delaware, Florida, Georgia, Maryland, North Carolina, New York, New York, Pennsylvania, Texas, and Virginia*

3.5.4.2 Landing Ports

Atlantic herring harvested from Areas 1A and 1B are landed in fishing communities in Maine, New Hampshire, and Massachusetts, whereas herring from Areas 2 and 3 are landed in a wider range of ports (Table 16). Communities in Rhode Island and New Jersey fish in Area 2 for herring almost exclusively. Portland, Rockland, Gloucester, and New Bedford are ports with the most herring landings in recent years. Within New Jersey, Cape May is the most active landing port.

Table 16 Landing Port Distribution of Atlantic Herring Landings from Management Areas (2008-2012)

Landing Port		Area 1A (mt)	Area 1B (mt)	Area 2 (mt)	Area 3 (mt)
Maine	Portland	25%	20%	0.0%	26%
	Rockland	27%	14%	0.0%	11%
	Stonington/Deer Isle	8.0%	12%	0.0%	0.0%
	Vinalhaven	1.7%	3.9%	0.0%	2.3%
	Lubec/Eastport	0.0%	0.0%	0.0%	0.0%
	Sebasco Estates	0.0%	0.0%	0.0%	0.0%
	Maine, other	6.1%	1.1%	0.0%	4.0%
New Hampshire	Seacoast	2.5%	0.7%	0.1%	0.9%
Massachusetts	Gloucester	22%	45%	10%	44%
	New Bedford	6.9%	4.4%	53%	12%
	Massachusetts, other	1.1%	0.1%	3.6%	0.0%
Rhode Island	Southern	0.0%	0.0%	22%	0.1%
New Jersey	Cape May	0.0%	0.0%	12%	0.0%
	New Jersey, other	0.0%	0.0%	0.0%	0.0%
Other States		0.0%	0.0%	0.1%	0.0%
Total		**163,269 (100%)**	**23,289 (100%)**	**101,542 (100%)**	**133,368 (100%)**

Source: NMFS VTR database. Data are updated as of August 23, 2013.

3.5.4.3 Community Descriptions

TBD

3.5.5 Canadian Herring Fisheries

Catch of the Gulf of Maine/Georges Bank Atlantic herring stock complex in Canadian waters consists primarily of fish caught in the New Brunswick (NB) weir fishery (the SARC 54 Panel noted that the Atlantic herring stock on the Scotian Shelf region is unknown). The NB weir fishery is described in detail in Framework 2 to the Herring FMP and the 2013-2015 herring fishery specifications package.

- The NB weir fishery catch is quite variable and dropped to just under 6,500 mt in 2008. The NB weir fishery landings totaled about 30,944 mt in 2007 and 6,448 mt in 2008.
- The most recent five-year average of NB weir landings (2007–2011) is 11,218 mt, and the most recent ten-year average (2002-2011) is 12,358 mt.
- Extremely low landings during the 2008 fishing year decreased these moving averages, especially the ten-year average.
- The 2010 fishing year had NB weir landings of 10,958 mt and decreased in 2011 to 3,711 mt.

4.0 IMPACTS OF THE FRAMEWORK 4 ALTERNATIVES

4.1 IMPACTS ON THE ATLANTIC HERRING RESOURCE

Anticipating the impacts that the alternatives under consideration in this framework adjustment may have on the Atlantic herring resource is challenging. For the most part, none of the alternatives under consideration will have a direct biological impact on the herring resource. The Atlantic herring resource is not overfished, and overfishing is not occurring. No matter which alternative is selected to address dealer weighing/reporting and net slippage, catch in the Atlantic herring fishery would continue to be managed under sub-ACLs that are designed to prevent overfishing on the resource and/or any of its individual spawning components.

There may be indirect long-term benefits to the resource that would likely result from improvements to catch sampling, increased sampling, a reduction in unobserved catch (i.e., fish not brought on board), and an increase in the accuracy of catch and bycatch estimates for the fishery. These benefits are difficult to quantify with respect to each of the alternatives under consideration in this framework adjustment. The impacts relate to the potential for the measures to achieve those outcomes over the long-term. As catch information improves, discard estimates can be incorporated into future stock assessments for Atlantic herring, thereby potentially reducing some uncertainties associated with the assessment data/models, improving biomass and fishing mortality estimates, and enhancing the Council's ability to successfully manage the herring resource at long-term sustainable levels. These impacts apply to all alternatives under consideration.

Additional discussion TBD

4.2 IMPACTS ON NON-TARGET SPECIES

If the measures under consideration in this framework adjustment are effective at improving the accuracy of catch and bycatch information in the Atlantic herring fishery, providing documentation of previously unrecorded catch of non-target species may improve catch statistics and subsequent assessment and management of those species over the long-term. However, it is difficult to predict the impacts of the alternatives in Framework 4 on non-target species, particularly the measures to address net slippage, because the impacts depend on how the fishery adapts/responds to the measures in terms of both avoiding/minimizing slippage events and/or relocating/redistributing fishing effort if a move-along provision is required in the event that slippage occurs. While the impacts on non-target species may be positive if vessels cannot fish in an area with high encounters of non-target species, the extent of the impacts will be determined by how fishing effort shifts and whether or not the fleet moves into an area(s) with a higher potential of encountering these species.

Additional discussion TBD

4.3 IMPACTS ON THE PHYSICAL ENVIRONMENT AND EFH

Discussion TBD

4.4 IMPACTS ON PROTECTED RESOURCES

Discussion TBD

4.5 IMPACTS ON FISHERY-RELATED BUSINESSES AND COMMUNITIES

The analysis of impacts to the "Fishery-Related Businesses and Communities" VEC characterizes the magnitude and extent of the economic and social impacts likely to result from the alternatives considered in this framework adjustment as compared to the no action alternative. Fishery-Related Businesses and Communities are described in Section 3.5 of this document (p. 33). More comprehensive information can be found in the FEIS for Amendment 5 to the Atlantic Herring FMP.

The current interpretation of National Standard 8 (NS8) requires the Council to consider the importance of fishery resources to affected communities and provide those communities with continuing access to fishery resources, but it does not allow the Council to compromise the conservation objectives of the management measures. Thus, continued overall access to fishery resources is a consideration, but not a guarantee that fishermen will be able to use a particular gear type, harvest a particular species of fish, fish in a particular area, or fish during a certain time of the year.

A fundamental difficulty exists in forecasting economic and social change relative to fishery management alternatives, since communities or other societal groups are constantly evolving in response to numerous external factors, such as market conditions, technology, alternate uses of waterfront, and tourism. Certainly, management regulations influence the direction and magnitude of economic and social change, but attribution is difficult with the tools and data available. While this analysis focuses generally on the economic and social impacts of the proposed fishing regulations, external factors may also influence change, both positive and negative, in the affected communities. In addition, the external factors may lead to unanticipated consequences of a regulation, due, for example, to cumulative impacts. In many cases, these factors contribute to a community's vulnerability, its ability to adapt to new or different fishing regulations.

When examining potential economic and social impacts of management measures, it is important to consider impacts on the following: the fishing fleet (vessels grouped by fishery, primary gear type, and/or size); vessel owners and employees (captains and crew); herring dealers and processors; final users of herring; community cooperatives; fishing industry associations; cultural components of the community; and fishing families. Furthermore, there are other stakeholders who may be affected, such as those with businesses that rely on herring as forage (e.g., the whale watch industry). While some management measures may have a short-term negative impact on some communities, these should be weighed against potential long-term benefits to all communities which can be derived from a sustainable herring fishery.

The social impact factors outlined below can be used to describe the Atlantic herring fishery, its sociocultural and community context and its participants. These factors or variables are considered relative to the management alternatives and used as a basis for comparison between alternatives. Use of these kinds of factors in social impact assessment is based on NMFS guidance (NMFS 2007) and other texts (e.g., Burdge 1998). Longitudinal data describing these social factors region-wide and in comparable terms is limited. While this analysis does not quantify the impacts of the management alternatives relative to the social impact factors, qualitative discussion of the potential changes to the factors characterizes the likely direction and magnitude of the impacts.

The social impact factors fit into five categories:

1. *Size and Demographic Characteristics* of the fishery-related workforce residing in the area; these determine demographic, income, and employment effects in relation to the workforce as a whole, by community and region.
2. The *Attitudes, Beliefs, and Values* of fishermen, fishery-related workers, other stakeholders and their communities; these are central to understanding the behavior of fishermen on the fishing grounds and in their communities.
3. The effects of the proposed action on *Social Structure and Organization*; that is, changes in the fishery's ability to provide necessary social support and services to families and communities, as well as effects on the community's social structure, politics, etc.
4. The *Non-Economic Social Aspects* of the proposed action; these include lifestyle, health, and safety issues, and the non-consumptive and recreational uses of living marine resources and their habitats.
5. The *Historical Dependence on and Participation in* the fishery by fishermen and communities, reflected in the structure of fishing practices, income distribution, and rights (NMFS 2007).

In general, the economic effects of regulations can be categorized into regulations that change costs (including transactions costs such as search, information, bargaining, and enforcement costs) or change revenues (by changing market prices or by changing the quantities supplied). These economic effects may be felt by the directly regulated entities. They may also be felt by related industries. For the herring fishery, this might include, for example, participants in the lobster fishery, zoos, and purchasers of herring for food.

4.5.1 Impacts of Dealer Reporting/Weighing Requirements on Fishery-Related Businesses and Communities

4.5.1.1 Impacts of Dealer Alternative 1 (No Action) on Fishery-Related Businesses and Communities

Under Alternative 1 (no action), the Council would not revise dealer weighing/reporting requirements. The status quo would be maintained, resulting in no additional economic or social impacts on fishery-related businesses and communities. The *Size and Demographic Characteristics* of the fishery-related workforce would likely be unchanged, as would the *Historical Dependence on and Participation in* the fishery.

Appendix I to this document (*Potential Applicability of Flow Scales, Hopper Scales, Truck Scales, and Volumetric Measurement in the Atlantic Herring Fishery*) provides comprehensive information related to current fish handling, weighing, processing, storage, and transporting practices utilized by dealers and processors participating in the Atlantic herring fishery. Additional discussion related to the no action alternative will be developed for the final Framework 3 document.

4.5.1.2 Impacts of Dealer Alternative 2 on Fishery-Related Businesses and Communities

Alternative 2 proposes three options to revise dealer weighing/reporting requirements. To the extent that these options lead to improved catch monitoring and better real-time monitoring of ACLs and sub-ACLs over the long-term, premature fishery closures may be avoided, reducing negative impacts on the fishery. Additionally, Atlantic herring stock assessments may become more precise, potentially reducing scientific and/or management uncertainty and the associated "buffers." These benefits could not only lead to a positive impact on the formation of *Attitudes and Beliefs* (to the extent that stakeholders believe the data is more accurate), but also increase opportunities for participants in the fishery. Any short-term negative economic impacts on herring fishery participants will likely be through increased administrative and regulatory burdens associated with the proposed measures in this alternative.

Option A. This option would require vessel owners and operators to review and validate all catch information reported for their vessels by dealers in Fish-on-Line (FOL) on a weekly basis, including VMS, VTR, and dealer data. NMFS would work with vessel operators and dealers to correct any discrepancies.

Option A was considered in Amendment 5 to the Herring FMP (Sub-Option 2C, Non-Preferred). This measure could have a negative impact on vessel owners, operators, and dealers by increasing the time spent on administrative/reporting functions, thus increasing compliance costs. The non-pecuniary compliance costs may increase by a small amount.

There may be positive and negative impacts on fishery participants associated with Option A. This option could have a low negative impact as a result of the extra time and effort involved in obtaining vessel representative confirmation of dealer reports. This would likely be the most burdensome of the options proposed within Dealer Alternative 2; if records were to be disputed by the vessel owner/operator, then the time and effort involved with correcting these numbers with NMFS could be larger, depending on the composition of the dispute. For example, a missing "0" in a dealer may be easily disputed and corrected among the three parties (dealer, vessel owner/operator, and NMFS) but if the numbers were disputed for other reasons, such as the dealer wanting to pay less money for the quantity of fish purchased, then the debate could be lengthy. These requirements may also foster negative attitudes toward management by increasing the reporting burden felt by dealers and vessel owners.

Conversely, if erroneous data discrepancies between the vessel and dealer reports resulted in a management area to be closed to directed fishing prematurely, there would be a potential loss in revenue associated with those data errors. If data discrepancies resulted in a management area being closed to directed fishing too late, and the management area sub-ACL was exceeded, there would a potential future loss in revenue associated with the FMP's overage payback provision. This option could therefore provide a tool to help identify and resolve erroneous data discrepancies between vessel and dealer reports. Having discrepancies between these data sets resolved quickly would likely improve the quality of data used to monitor against area sub-ACLs and could ultimately be an economic benefit to industry participants. Improved catch data quality could have positive impacts for those individuals and the wider industry. This could improve the *Attitudes and Beliefs* of stakeholders regarding the management of the Atlantic herring resource. However, this option would likely not increase the quality of catch composition data for trips which landed multiple species, because vessel owners and operators are not likely to know the exact composition of fish.

Overall, relative to no action, this option may have a low positive impact on industry participants, despite an increased regulatory burden, if it helps minimize any loss of revenue due to erroneous data discrepancies in the vessel and dealer reports used to track herring landings against management area sub-ACLs.

Option B. This option would increase the submission frequency of VTRs and dealer reports for Federally-permitted limited access herring vessels and herring dealers from weekly to within 24 hours of the end of a trip of receipt of purchase. Option B was considered in Amendment 5 to the Herring FMP (Sub-Option 2C, Non-Preferred). This measure could have a low negative impact on vessel owners and operators and dealers by reducing the amount of time dealers and vessels have to complete and submit reports.

As noted above, improved catch data quality could have positive impacts for those individuals and the wider industry. This could improve the *Attitudes and Beliefs* of stakeholders regarding the management of the Atlantic herring resource. However, this option would likely not increase the quality of catch composition data for trips which landed multiple species, because vessel owners/operators are not likely to know the exact composition of fish. Moreover, during Framework 4 discussions, a few herring dealers have indicated that 24 hours is not sufficient time to complete and submit the required catch reports; some vessels have not even fully offloaded within 24 hours of their first point of landing.

Option C. This option would require that fish holds on limited access herring vessels be empty before leaving the dock on any trip when declared into the Atlantic herring fishery. Currently, if a vessel does not sell all its catch to a dealer, it may leave the dock on a subsequent trip and discard the unsold catch from a prior trip at sea or retain the catch to sell at a later date. This would be prohibited under this alternative.

Option C may improve catch reporting since all catch from the previous trip would be accounted for prior to the start of the next fishing trip. Although it is not known to occur frequently, it is currently unclear how often unwanted catch from a previous trip is disposed of at sea during the next fishing trip, nor how this catch is reported. This catch should be reported as discards on the previous trip, but there may be uncertainty among fishery participants regarding this. To the extent that catch handling and reporting provisions can be clarified by this measure, data quality may improve, and the monitoring system may better ensure that fish are not double-counted and that all fish on-board at a given time are attributed to the current trip. Improved catch data quality could have positive impacts for fishery participants and the wider industry. This could improve the *Attitudes and Beliefs* of some stakeholders regarding the management of the Atlantic herring resource, although if the catch has to be sold or disposed of at an unfavorable price, the Attitudes and Beliefs could be negatively affected. However, this option would likely not increase the quality of catch composition data for trips that landed multiple species, because vessel owners and operators are not likely to know the exact composition of fish.

In addition, Option C implies that the unsold catch must be disposed of on-land, but does not provide any guidance or provisions for land-based disposal. Option C could have a negative impact on vessel owner/operators, if it is more expensive to pay for disposal of unsold catch on land. Furthermore, an argument could be made that the return of the fish to the marine ecosystem provides food for some marine species whereas land disposal may be problematic.

4.5.1.3 Impacts of Dealer Alternative 3 on Fishery-Related Businesses and Communities

Alternative 3 would require Federally-permitted Atlantic herring dealers to accurately weigh all fish. To better ensure the accuracy of catch information, this alternative would require third-party catch verification at the first point of landing on trips by limited access herring vessels carrying a NMFS-approved observer. Additional opportunities for third-party catch verification may be provided if the vessel is met by a portside sampler at the first point of landing.

This alternative is intended to enhance catch and bycatch estimates for the Atlantic herring fishery. In general, improved catch data quality could have positive impacts for those individuals and the wider industry. This could improve the *Attitudes and Beliefs* of stakeholders regarding the management of the Atlantic herring resource. The provisions proposed in this alternative are likely to result in compliance and administrative costs, which are discussed further below.

Part A. Part A would require certification of fish hold capacity. Fish holds already come in fairly standard sizes that are certified, but requiring submission of certification documents would impose a small administrative burden on fishing businesses.

Regulations in the State of Maine already require that herring vessels have their fish holds measured and "sealed" by the State Sealer of Weights and Measures, so many vessels in the herring fishery already have the information necessary to determine the capacity of the fish holds. The State of Maine charges each boat based on the size and a rental fee. The cost is approximately $3 a hogshead up to 100 hogsheads, and is $1 a hogshead thereafter. There is also a cost of around $50 a day to rent the meter required to do the work. For a 100 hogshead boat, this means the cost would be around $350.

In order to determine the volume, seawater is pumped into the hold using a 3 inch trash pump (a pump which is not hindered by objects in the water) to pump water through a mass flow meter. When the meter shows that 5 hogshead worth of water has been pumped into the hold, the process is stopped and a mark is made on the hold's wall to indicate where 5 hogshead is. This process is repeated over and over until the hold is full, then the water is drained and the marks made permanent. This allows anyone to lean into the hold, look at the side, and determine how much volume of fish exists. The process can take a full day and more, depending on how large the hold is, and requires two men. Because the mass flow meter is very accurate, based on measurements of oscillations through a tube, and due to the difficulty in finding them, the cost of the mass flow meter is estimated to be between $20,000 and $25,000. Departments of weights and measures in other states may benefit from having this meter in their office, as it can pump many forms of solids and liquids, however, between the cost of the meter and the cost of labor, this option would be expensive for the states if implemented. None of the states between New Jersey and New Hampshire had a flow meter available for use, and all recommended that the process be done by either the State of Maine or a Federally-qualified weigh-master (Steve Giguere, Maine Dept. of Agriculture, Weights and Measures Inspections).

An alternative to using the State of Maine for certification would be to use a Marine Surveyor. Most Marine Surveyors cost around $100 dollars an hour, plus travel and expenses. For a simple volumetric measurement and certification, using the dimensions of the hold, the cost could be estimated between $300 and $600, depending on the person employed.

Part B. Part B would require vessels to retain on-board a measuring stick for the observers or port-side samplers to estimate the total catch. There may be minor compliance costs to the vessel associated with this requirement.

Part C. Part C would require the observer or sampler to use the measuring stick to estimate the total catch on-board prior to off-loading. Once the holds have been marked, the concept is to take a heavy object that is lowered into the hold on a tape or pole and does not displace the water to the extent possible. The height of the water and fish is measured against the tape or pole, which can then be expanded to the entire volume using a table or graph. If the hold already has demarcation of the volume, then the volume can be checked visually.

This requirement could increase compliance and monitoring costs for the fishery. Part C may slightly increase offloading time. It is not clear whether a NMFS observer would be able to fulfill this obligation. Non-pecuniary compliance costs would increase by a small amount. Part C would not increase quality of catch data for trips which landed multiple species because only an estimate of total catch on board would be derived from the process of sticking the tank and converting the volume of fish to weight.

Part D. Part D would require that the observer transmit to NMFS the estimate of total weight of fish on board as a cross-check of dealer and Vessel Trip Reports. Any additional actions required by Part D would be taken by an observer/sampler. Administrative costs associated with collecting and processing the data would likely result.

4.5.1.4 Impacts of Dealer Alternative 4 on Fishery-Related Businesses and Communities

Alternative 4 would require Federally-permitted Atlantic herring dealers to accurately weigh all fish. If dealers do not use scales, they would be required to estimate weight of Atlantic herring purchases through standardized conversions based on the volumetric capacity of storage containers and/or transport vehicles used for Atlantic herring transactions. Alternative 4 proposes three options to accomplish this. The Council may select one or more of these options.

Option A. Option A would standardize the weight of a herring box (Xactics) using a standard volume-to-weight conversion factor. Option A could pose minimal negative impact on dealer costs and operations if they do not currently use this conversion factor as they adjust to a new system. There may be benefits to fishery participants from standardizing the amount of herring in a box, as this introduces an element of consistency into the bait market.

Although Option A may create more standardization and potentially benefit some fishery participants, improving fairness within the industry, the quality of catch data for fish which are not sorted would likely not improve. There could even be a detriment if there is additional error introduced by the volume-weight conversions applied in this alternative. The conversions are based on herring only (from other regions) and do not account for either differences in sizes and weights of fish (herring and other species) or differences in water. There is an element of consistency (in the size, weight, and density of the catch) assumed by using a conversion factor (see March 6, 2014 Herring PDT Report for additional discussion). There can be substantial variability in the catch composition of this fishery, depending on area and season, and since the volume-to-weight ratios are not constant between different batches of landed fish, Option A may not improve the accuracy of weight reports. For these reasons, the overall impact of Option A on fishery-related businesses and communities is uncertain.

Option B. Option B would require dealers that do not use scales to estimate weights of herring based on volume for all storage containers that may be used. Dealers would be required to annually submit to NMFS a list of the storage containers that may be used for Atlantic herring transactions, including the volumetric capacity (and measurements, if applicable) of the storage containers.

The impacts of this option on fishery-related businesses and communities are similar to those discussed under Option A. In general, Option B could pose minimal negative impact on dealer costs and operations if they do not currently use this conversion factor as they adjust to a new system. Non-pecuniary compliance costs would increase by a small amount, because dealers would be required to report a list of storage containers to NMFS. Option B would not increase catch composition data quality for fish which are not sorted. Also, as noted above, since the volume-to-weight ratios are not constant between different batches of landed fish, Option B may not improve the accuracy of weight reports. Thus, the overall impact of Option B on fishery-related businesses and communities is uncertain.

Option C. Option C would require dealers who buy fish stored in trucks to certify the capacity of trucks and estimate weights based on standardized conversion factors. Under this alternative, dealers would be required to certify the capacity of all transport vehicles used in the fishery and submit these measurements to NMFS with a signed certification by the individual or entity that completed the measurement. This requirement is more complicated than the requirement to certify vessel fish holds under Dealer Alternative 3. The costs of certification are unknown at this time, as well as whether those costs would be borne by the transport company or the dealer. There are also more administrative costs under this alternative to process and document all transport vehicle certifications.

Option C would not increase catch composition data quality for fish which are not sorted. There is additional uncertainty introduced under this option because of the variable amount of water that may be contained as herring are loaded in transport vehicles. Also, as previously noted, since the volume-to-weight ratios are not constant between different batches of landed fish, Option A may not improve the accuracy of weight reports. Thus, the overall impact of Option C on fishery-related businesses and communities is uncertain.

4.5.2 Impacts of Measures to Address Net Slippage on Fishery-Related Businesses and Communities

In general, the alternatives to address net slippage in Framework 4 are designed to create a further disincentive for limited access herring vessels to slip catch. When choosing to slip a net or bring all fish onboard, vessel operators will compare the costs of bringing those fish aboard to the penalties associated with that slippage event. The impacts of the alternatives under consideration in this framework adjustment are discussed in the following subsections.

4.5.2.1 Impacts of Options to Address Operational Discards

In Framework 4, the Council is considering measures to address operational discards on midwater trawl vessels when fishing with a NMFS-approved observer on board. Operational discards are currently prohibited in the year-round groundfish closed areas (Amendment 5, March 17, 2014).

Option A (No Action). Option A would allow operational discards on midwater trawl vessels when not fishing in the groundfish year-round closed areas. The status quo would be maintained, resulting in no additional economic or social impacts on fishery-related businesses and communities. The *Size and Demographic Characteristics* of the fishery-related workforce would likely be unchanged, as would the *Historical Dependence on and Participation in* the fishery.

Option B. Option B would prohibit operational discards on midwater trawl vessels throughout the fishery, though they may be subject to potential slippage measures/consequences through this framework. Option B could improve the *Attitudes and Beliefs* of some stakeholders regarding the management of the Atlantic herring resource, if all of the catch is brought on board for documentation by an observer.

Information collected by NEFOP observers about operational discards on midwater trawl vessels is provided in Appendix II of this document. Operational discards have been confirmed by observers to be relatively small amounts of fish that may remain in the net following a successful haul/pump; these fish are usually caught in the net and/or cannot be pumped on board. Information collected by observers about operational discards has improved, and hauls with operational discards are considered to be "observed" hauls; the operational discards are estimated by the observers. From 2010-2013, operational discards were observed on about 30% of all observed midwater trawl trips and averaged 240 pounds per event (see Appendix II).

Option B may result in negative impacts for Atlantic herring vessel owners and operators by increasing the compliance costs associated with adjusting standard fishing practices to ensure that all catch is brought on-board. While many of these vessels may already bring the net and all fish across the deck, accommodations and adjustments to operations may be necessary for some vessels. Some midwater trawl vessel operators have indicated that bringing the small amounts of fish that remain in the net on board may be extremely challenging given the nature of the fishing operations, particularly larger operations that fish offshore, and especially during inclement

weather. Some industry members and Herring Advisory Panel members discussed these concerns during the development of the Framework 4 alternatives (see summary of February 13, 2014 Herring AP discussion).

Any economic impacts to the herring fishery as a result of this measure would be due to increased time spent pumping fish aboard the vessel to be sampled and inspected by a NMFS-approved observer. The pecuniary impacts on the participants in herring fishery are expected to be potentially low negative when compared to Option 1 (no action). Option B may improve the accuracy of estimates of discarded fish, as the observers may have more opportunity to fully sample all fish that are caught.

Option B proposes to adopt this provision for limited access midwater trawl vessels on any trip with an observer on board. The Council is considering applying this provision to either Category A/B only midwater trawl vessels or all limited access vessels using midwater trawl gear (A/B/C). Information provided in Section 3.5.2 of this document (p. 39) indicates that the vast majority of midwater trawl vessels are Category A permit holders. All pair trawl vessels possess Category A permits, and a small number of single midwater trawl vessels have both Category B and C herring permits. There do not appear to be any Category C only herring vessels operating in the fishery with midwater trawls. Therefore, there may not be a need to apply this measure to Category C permit holders.

4.5.2.2 General Impacts of Additional Alternatives Under Consideration to Address Net Slippage

It is difficult to quantify the social and economic effects of Slippage Alternatives 2– 5 (Section 2.2.2, p. 15) on fishery-related businesses and communities. The Amendment 5 management measures to address net slippage just became effective on March 17, 2014, and it is unclear how these measures will affect the type and number of slippage events in the fishery. It is therefore difficult to predict when a slippage event may occur in the future. The Amendment 5 measures are, however, expected to reduce the occurrence of slippage events. Under the Amendment 5 provisions as well as any additional measures implemented in this framework adjustment, a vessel operator would likely weigh the expected costs and benefits associated with slipping a net in each particular instance. When the benefits outweigh the costs, the vessel operator would likely slip the net.

Table 17 summarizes the recent regulatory incentives associated with net slippage for limited access herring vessels. Management measures adopted in Amendment 5, including full sampling provisions and measures to address net slippage across the entire limited access herring fishery, were just recently implemented on March 17, 2014. Prior to Jan 31, 2011, there were no regulatory incentives to address or reduce net slippage. On Jan 31, 2011, incentives related to net slippage changed for midwater trawl vessels fishing in Closed Area I. These vessels are required to carry an observer on every trip and make all catch available for inspection by the observer prior to discarding. Slippage for safety, mechanical failure, or spiny dogfish reasons are allowed but require exiting Closed Area I for the remainder of the fishing trip as well as the completion of a Released Catch Affidavit Form. Releasing catch for any other reasons in Closed

Area I, including operational discards, is prohibited and considered a fishery violation with expected costs equal to the probability of detection multiplied by the expected fine or penalty associated with that violation.

Table 17 History of Slippage Costs and Benefits for Vessels Fishing with Observers

	Time Period		
	Before Jan 31, 2011	**Jan 31, 2011 - March 17, 2014**	**March 17, 2014 - Present (Amendment 5)**
Expected Costs of Slipping a Net			
Midwater Trawlers in Closed Area I			
Safety	None	Leave CA I, fill out Affidavit	Leave CAI, fill out Affidavit
Mechanical Failure	None	Leave CA I, fill out Affidavit	Leave CAI, fill out Affidavit
Spiny Dogfish	None	Leave CA I, fill out Affidavit	Leave CAI, fill out Affidavit
Other reasons	None	Expected penalty associated with a violation	Expected penalty associated with a violation
All Gears and Locations			
Safety	None	None	Released Catch Affidavit
Mechanical Failure	None	None	Released Catch Affidavit
Spiny Dogfish	None	None	Released Catch Affidavit
Other reasons	None	None	Expected penalty associated with a violation
Benefits of Slipping a net			
	Prior to Jan 31,2011	**Jan 31, 2011 to March 17, 2014**	**March 17, 2014 to Present (Amendment 5)**
All Gears and Locations	Time saved hauling fish	Time saved hauling fish	Time saved hauling fish
	Resume fishing quickly	Resume fishing quickly	Resume fishing quickly

4.5.2.3 Impacts of Slippage Alternative 1 (No Action) on Fishery-Related Businesses and Communities

Under Slippage Alternative 1 (no action), the Council would not implement additional measures to address net slippage in Framework 4, and the measures that have been implemented through Amendment 5 (effective March 17, 2014) would remain in place. The status quo would be maintained, resulting in no additional economic or social impacts on fishery-related businesses and communities. The *Size and Demographic Characteristics* of the fishery-related workforce would likely be unchanged, as would the *Historical Dependence on and Participation in* the fishery. Some of the other alternatives under consideration to address net slippage in this framework adjustment are expected to negatively impact fishery participants and fishery-related businesses and communities. These negative impacts would not be experienced under the no action alternative.

4.5.2.4 Impacts of Slippage Alternative 2 on Fishery-Related Businesses and Communities

Under Slippage Alternative 2, vessels would be required to vacate a statistical area in which a slippage event occurs, unless an exemption applies. Exemptions from this move-along rule are being considered for slippage events associated with safety, mechanical failure, and/or spiny dogfish.

Information presented in Appendix II of this document (*Summary of Slippage Data, Observed Trips on Atlantic Herring Vessels 2010-2013*) indicates that limited access midwater trawl and purse seine vessels participating in the herring fishery would be most affected by the measures proposed in this alternative (small mesh bottom trawl vessels have been documented to almost never slip catch). The Amendment 5 management measures to address net slippage recently became effective on March 17, 2014; it is unclear how these measures will affect the type and number of slippage events in the fishery. It is therefore difficult to predict what type of slippage events may occur in the future. The Amendment 5 measures are, however, expected to reduce the occurrence of slippage events throughout the fishery. The impacts of the additional consequences under consideration for slipping catch in this alternative are discussed below.

Slippage Alternative 2 could have a negative impact on fishing vessel owners and operators participating in the directed herring fishery on trips with observers on board, due to the operational costs associated with moving to a different statistical area if catch is slipped for safety, mechanical, and/or dogfish reasons. A figure depicting the Northeast region statistical areas can be found on p. 19 of this document (Figure 1). The specific impacts of this alternative on affected vessels would depend on the proximity of statistical area boundaries to the vessel in each instance. In some cases, the impact may be small, as the vessel may only need to move a few miles. In other cases, the impact may be relatively large, as the vessel may need to move a large distance to access another statistical area. The vessel would then be prohibited from fishing in the other statistical area for the remainder of the trip. Smaller vessels may have more difficulty with shifting operations to a different statistical area. In some cases, it may not be possible to effectively move areas and continue fishing.

Purse Seine Vessels Fishing in Area 1A: Area 1A includes Statistical Areas 511, 512, 513, and 514. Purse seine vessels fish exclusively in Area 1A and would be limited to these statistical areas under the move-along rule proposed in this alternative. The 2013-2015 Atlantic herring fishery specifications prohibit herring landings from Area 1A from January-May (this has been the case for many years), so this alternative would affect trips by purse seine vessels in Area 1A from June-September.

Midwater Trawl Vessels Fishing in Area 1A/1B: Area 1A includes Statistical Areas 511, 512, 513, and 514. Area 1B includes Statistical Area 515 and 521. The 2013-2015 Atlantic herring fishery specifications prohibit herring landings from Area 1A January-May (this has been the case for many years) and prohibit herring landings from Area 1B January – April (more recently implemented). Midwater trawl vessels are also prohibited from fishing in Area 1A June – September of each year. Under this alternative, midwater trawl vessels that slip catch in Area 1B

from May – September would be prohibited from moving into any statistical areas within Area 1A during this time. The costs of the move-along rule under this alternative, therefore, may be higher because many of the closest statistical areas may be closed at the time the vessel would be required to move. Additionally, any area closure associated with reaching a river herring/shad catch cap (under Framework 3) would further limit the available statistical areas to which midwater trawl vessels could move.

Midwater Trawl Vessels Fishing in Area 2: Area 2 includes statistical areas south of Cape Cod, MA, through southern New England and the Mid-Atlantic. Under this alternative, midwater trawl vessels that slip catch in Area 2 would be able to move to any adjacent statistical areas or any statistical areas in other management areas that may be open at that time (see discussion above for current seasonal restrictions on fishing in Area 1A). However, any area closure associated with reaching either the haddock catch cap or a river herring/shad catch cap (under Framework 3) would limit the available statistical areas to which midwater trawl vessels could move. The status of the directed Atlantic herring fishery and utilization of the herring sub-ACL in the various management areas may affect vessels' ability to switch areas under this alternative as well.

Midwater Trawl Vessels Fishing in Area 3: Area 3 includes statistical areas in the offshore region of the fishery (Georges Bank). Under this alternative, midwater trawl vessels that slip catch in Area 3 would be able to move to any adjacent statistical areas or any statistical areas in other management areas that may be open at that time (see discussion above for current seasonal restrictions on fishing in Area 1A). However, any area closure associated with reaching either the haddock catch cap or a river herring/shad catch cap (under Framework 3) would limit the available statistical areas to which midwater trawl vessels could move. The status of the directed Atlantic herring fishery and utilization of the herring sub-ACL in the various management areas may affect vessels' ability to switch areas under this alternative as well.

Trip Termination Option: Trip termination is proposed as an option under this alternative for slippage that may occur for reasons other than safety, mechanical failure, or dogfish. Trip termination would essentially be an additional penalty for any prohibited net slippage event. These penalties would result in higher costs for fishing vessels that slip catch for other reasons (no market, not enough fish to pump, etc. – see Appendix II of this document for detailed information about reasons for slippage). These costs will be highest for vessels which are fishing in the offshore areas, essentially requiring vessels to make a round-trip steam from their fishing location to port (see FEIS for Amendment 5 for more information about operating costs). The proposed trip termination requirement is not likely to change the number of slippage events that occur because vessel capacity is full. Vessels that release catch due to full hold capacity are very likely to be finished with their trips and would not be impacted by a trip termination requirement.

Trip termination requirements could have negative economic and social consequences for individual businesses and communities. Costs associated with herring fishing trips are high, particularly with the current cost of fuel. Trips terminated prematurely could result in an unprofitable or even "broker" trip leaving not only the owners with debt, but crewmembers without income. The consequences of income loss could reverberate through the community, diminishing other businesses that supply the vessel as well as those who provide goods and

services for the families of fishing industry participants. Considering that fishing participants are interested in landing their catch to pay for their costs and obtain a profit rather than dumping it at sea, the measures to address net slippage may be perceived as punitive and may compound the negative (social) impact of incidents that arise naturally from fishing operations.

Category A/B Only vs. Category A/B/C: The Council is considering applying this alternative to either Category A/B only vessels or all limited access herring vessels (A/B/C). Appendix II (*Summary of Slippage Data, Observed Trips on Atlantic Herring Vessels 2010-2013)* indicates that the majority of observed slippage events have occurred on vessels using purse seine and midwater trawl gear, with almost no slippage events observed on vessels using small mesh bottom trawl gear.

Applying this alternative only to Category A and B permit holders would address the vast majority of slippage events known to occur in the directed herring fishery. Information provided in Section 3.5.2 of this document (p. 39) shows that almost all midwater trawl vessels are Category A permit holders. A small number of single midwater trawl vessels have both Category B and C herring permits. All pair trawl vessels possess Category A permits. There are a few Category A and B permit holders that fish with small mesh bottom trawls; these vessels would be subject to the provisions in this alternative under either approach, but they would likely be generally unaffected since they are not expected to slip catch. There do not appear to be any Category C only herring vessels operating in the fishery using midwater trawl gear. However, there are a number of Category C permit holders that fish with small mesh bottom trawl gear.

4.5.2.5 Impacts of Slippage Alternative 3 on Fishery-Related Businesses and Communities

Under Slippage Alternative 3, vessels would be required to vacate a management area in which a slippage event occurs, unless an exemption applies. Exemptions from this move-along rule are being considered for slippage events associated with safety, mechanical failure, and/or spiny dogfish. Because purse seine vessels only fish in Area 1A, this alternative would apply only to midwater trawl and small mesh bottom trawl vessels.

Information presented in Appendix II of this document (*Summary of Slippage Data, Observed Trips on Atlantic Herring Vessels 2010-2013*) indicates that limited access midwater trawl vessels participating in the herring fishery would be most affected by the measures proposed in this alternative (small mesh bottom trawl vessels have been documented to almost never slip catch). The Amendment 5 management measures to address net slippage recently became effective on March 17, 2014; it is unclear how these measures will affect the type and number of slippage events in the fishery. It is therefore difficult to predict what type of slippage events may occur in the future. The Amendment 5 measures are, however, expected to reduce the occurrence of slippage events throughout the fishery. The impacts of the additional consequences under consideration for slipping catch in this alternative are discussed below.

Slippage Alternative 3 could have a negative impact on midwater trawl vessel owners and operators participating in the directed herring fishery on trips with observers on board due to the operational costs associated with moving to a different management area if catch is slipped for safety, mechanical, and/or dogfish reasons. A figure depicting the Atlantic herring management areas is provided on p.21 of this document (Figure 2). The specific impacts of this alternative would depend on the proximity of management area boundaries to the vessel in each instance. Smaller vessels may have more difficulty with shifting operations to a different management area. As discussed below, this may be particularly challenging some midwater trawl vessels during some times of the year, given restrictions on fishing for herring in other management areas.

The 2013-2015 Atlantic herring fishery specifications prohibit herring landings from Area 1A January-May (this has been the case for many years) and prohibit herring landings from Area 1B January – April (more recently implemented). Midwater trawl vessels are also prohibited from fishing in Area 1A June – September of each year. Under this alternative, midwater trawl vessels that slip catch from January – September would be prohibited from moving into Area 1A during this time and would be prohibited from moving into Area 1B January – April. Additionally, any area closure associated with reaching either the haddock catch cap or a river herring/shad catch cap (under Framework 3) would limit the available statistical areas to which midwater trawl vessels could move.

The status of the directed Atlantic herring fishery and utilization of the herring sub-ACL in the various management areas may affect vessels' ability to switch areas under this alternative. As each management area has its own sub-ACL, this alternative may in effect give the vessel no alternative but to cancel the trip if other management areas are unreachable or already closed to fishing. Due to the seasonality of the fishery, it is quite possible that a move-along rule would be a *de-facto* trip termination for many slippage events because there would be no feasible alternative fishing location. This may be more likely for:

- Smaller vessels participating in the winter fishery in Area 2; and
- Midwater trawl vessels fishing in Area 1B and Area 3 in the summer, since they are prohibited from fishing in Area 1A June-September and/or when the 1A sub-ACL has been reached.

The result of this alternative is that the requirement to move to another management area for the remainder of the fishing trip is, in fact, trip termination in many cases.

The Atlantic herring sub-ACLs are typically not reached in Areas 2 and 3, so in the near future, slippage events in Areas 2 and 3 are would likely not reduce aggregate revenues. However, if the harvest of herring approaches those sub-ACLs, aggregate revenues would decline. This would have negative consequences on the ability of the fishery to achieve optimum yield, and may reduce the *Size and Demographic Characteristics* of the fishery-related workforce. Since management areas are larger than statistical areas, Slippage Alternative 3 could have more negative impacts than Slippage Alternative 2.

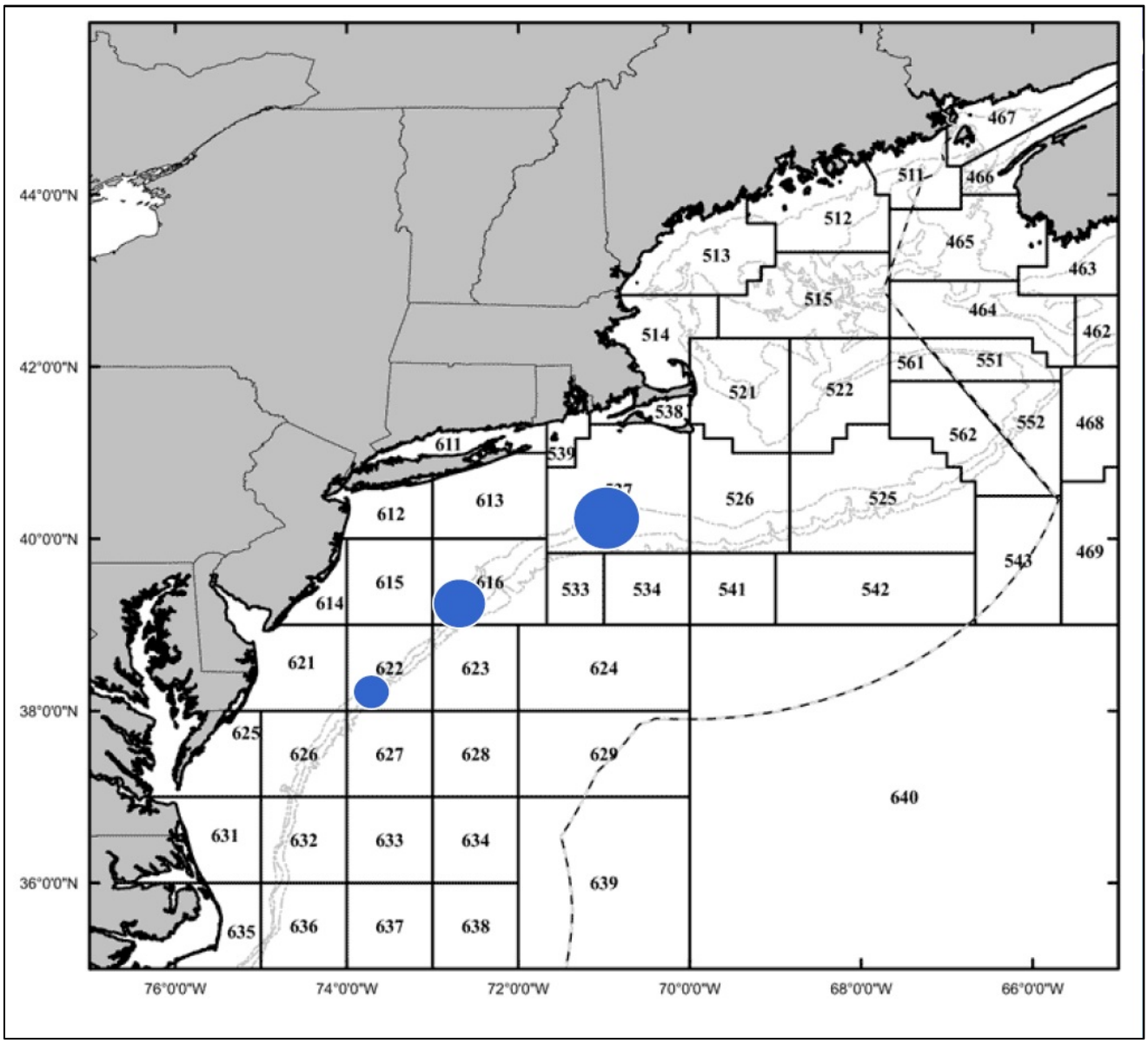
Trip termination is proposed as an option under this alternative for slippage that may occur for reasons other than safety, mechanical failure, or dogfish. The potential impacts of the trip termination provisions on fishery-related businesses and communities are discussed above under Slippage Alternative 2 (Section 4.5.2.4).

Category A/B Only vs. Category A/B/C: The Council is considering applying this alternative to either Category A/B only vessels or all limited access herring vessels (A/B/C). As discussed above (Section 4.5.2.4), applying this alternative only to Category A and B permit holders would address the vast majority of slippage events known to occur in the directed herring fishery.

4.5.2.6 Impacts of Slippage Alternative 4 on Fishery-Related Businesses and Communities

Under Slippage Alternative 4, vessels would be required to move 10, 15, or 20 nautical miles when an observed slippage event occurs (depending on the option selected by the Council), unless an exemption applies. Exemptions from this move-along rule are being considered for slippage events associated with safety, mechanical failure, and/or spiny dogfish. The move-along options of 10, 15, and 20 nm are based on the Mid-Atlantic Fishery Management Council's options considered in Framework 9 for similar measures to address net slippage in the Atlantic mackerel fishery. The interpretation of this provision is that a circle with a 10, 15, or 20 nm radius would be drawn around the location of an observed slippage event; this circle would become a closed area for that vessel for the remainder of the trip. The area that would become closed to the vessel for the remainder of the fishing trip would be approximately 314 nm^2 for a 10 nm move-along, 707 nm^2 for a 15-nm move-along, and 1,257 nm^2 for a 20-nm move-along (see Figure 4).

Figure 4 Size of Area Closed to Affected Vessels Under 10, 15, and 20-nm Move-Along Options



Information presented in Appendix II of this document (*Summary of Slippage Data, Observed Trips on Atlantic Herring Vessels 2010-2013*) indicates that limited access midwater trawl and purse seine vessels participating in the herring fishery would be most affected by the measures proposed in this alternative (small mesh bottom trawl vessels have been documented to almost never slip catch). The Amendment 5 management measures to address net slippage recently became effective on March 17, 2014; it is unclear how these measures will affect the type and number of slippage events in the fishery. It is therefore difficult to predict what type of slippage events may occur in the future. The Amendment 5 measures are, however, expected to reduce the occurrence of slippage events throughout the fishery. The impacts of the additional consequences under consideration for slipping catch in this alternative are discussed below.

Slippage Alternative 4 would have a negative impact on fishing vessel owners and operators participating in the directed herring fishery on trips with observers on board, due to the operational costs associated with moving locations, though the impacts would depend on the radius selected. Unlike the other alternatives, the additional consequences under this alternative are the same under each scenario; i.e., the vessel is required to move the same distance (10, 15, or 20 nm), versus leaving a statistical area or a management area (which may result in a move of a few miles or many miles). Affected vessels may have more options to move fishing operations under this alternative, however, when compared to Alternatives 2 and 3, if the vessel can move a shorter distance to an area that is still open to herring fishing. Figure 4 shows that the move-along requirement under this alternative would be less than under Alternatives 2 and 3 in many cases, reducing the relative impact of this alternative when compared to the others.

Purse Seine Vessels Fishing in Area 1A: Purse seine vessels fish exclusively in Area 1A. Under this alternative, purse seine vessels would be required to move 10, 15, or 20 nm within Area 1A. In cases where movement out of the statistical area would be greater than 10/15/20 nm, the impacts of this alternative on purse seine vessels would likely be less than under Slippage Alternative 2.

Midwater Trawl Vessels: Under this alternative, midwater trawl vessels that slip catch from January – September would be prohibited from moving into Area 1A during this time and would be prohibited from moving into Area 1B January – April. Additionally, any area closure associated with reaching either the haddock catch cap or a river herring/shad catch cap (under Framework 3) would limit the available areas to which midwater trawl vessels could move. The status of the directed Atlantic herring fishery and utilization of the herring sub-ACL in the various management areas may affect vessels' ability to switch areas under this alternative as well. However, in cases where a move-along requirement of 10/15/20 nm would be less than a requirement to vacate a statistical area or management area (Figure 4), the impacts of this alternative on midwater trawl vessels would relatively less than under Slippage Alternative 2 or Slippage Alternative 3.

Trip termination is proposed as an option under this alternative for slippage that may occur for reasons other than safety, mechanical failure, or dogfish. The potential impacts of the trip termination provisions on fishery-related businesses and communities are discussed above under Slippage Alternative 2 (Section 4.5.2.4).

Category A/B Only vs. Category A/B/C: The Council is considering applying this alternative to either Category A/B only vessels or all limited access herring vessels (A/B/C). As discussed above (Section 4.5.2.4), applying this alternative only to Category A and B permit holders would address the vast majority of slippage events known to occur in the directed herring fishery.

4.5.2.7 Impacts of Slippage Alternative 5 on Fishery-Related Businesses and Communities

Under Slippage Alternative 5, vessels would be required to terminate the trip when an observed slippage event occurs, unless an exemption applies. No additional consequences would be implemented for slippage events (safety, mechanical failure, dogfish) allowed under the Amendment 5 provisions. Trip termination is proposed as an option under this alternative for slippage that may occur for reasons other than safety, mechanical failure, or dogfish. The potential impacts of the trip termination provisions on fishery-related businesses and communities are discussed above under Slippage Alternative 2 (Section 4.5.2.4) but are reiterated below, since this alternative proposes only trip termination as an additional consequence.

Slippage Alternative 5 could have a negative impact on fishing vessel owners and operators participating in the directed herring fishery on trips with observers on board, due to the operational costs associated with terminating a trip. These costs will be highest for vessels which are fishing in the offshore areas, essentially requiring vessels to make a round-trip steam from their fishing location to port. The impacts would depend on the distance the vessel is from shore and the level of lost potential to catch additional harvest. This would decrease efficiency and have negative consequences on the ability of the fishery to achieve optimum yield, and may reduce the *Size and Demographic Characteristics* of the fishery-related workforce.

As previously noted, trip termination requirements would not impact vessels that slip catch because capacity is full, as that is likely to be the end of the trip. For purse seine vessels in 2012 and 2013, vessel capacity filled was the reason cited for 7% of the slippage events, though this reason caused 39% of the fish to be slipped (133,100 lbs). For the midwater trawl vessels, this reason was cited for 3% of the slippage events, accounting for 9% of the slipped catch (see Appendix II for detailed information about reasons for slippage).

Trip termination could have negative economic and social consequences for individual businesses and communities out of proportion to the original intent for the measure. Costs associated with herring fishing trips are high, particularly with the current cost of fuel. Trips terminated prematurely could result in an unprofitable or even "broker" trip leaving not only the owners with debt, but crewmembers without income. The consequences of income loss could reverberate through the community, diminishing other businesses that supply the vessel as well as those who provide goods and services for the families of fishing industry participants. Considering that fishing participants are interested in landing their catch to pay for their costs and obtain a profit rather than dumping it at sea, the measures for slippage, particularly when it has been driven by safety or gear-related considerations are perceived as punitive and may compound the negative (social) impact of incidents that arise naturally from any fishing operation.

Category A/B Only vs. Category A/B/C: The Council is considering applying this alternative to either Category A/B only vessels or all limited access herring vessels (A/B/C). As discussed above (Section 4.5.2.4), applying this alternative only to Category A and B permit holders would address the vast majority of slippage events known to occur in the directed herring fishery.