Framework Adjustment 4

to the

Atlantic Herring Fishery Management Plan (FMP)

Prepared by the
New England Fishery Management Council

in consultation with
Mid-Atlantic Fishery Management Council
National Marine Fisheries Service
Atlantic States Marine Fisheries Commission

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EXECUTIVE SUMMARY

This document contains the New England Fishery Management Council's (Council) recommendations for Framework Adjustment 4 to the Atlantic Herring Fishery Management Plan (FMP), consistent with the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Atlantic Herring FMP approved by the National Marine Fisheries Service (NMFS) on October 27, 1999. This document also contains information and supporting analyses required under other applicable law, including the National Environmental Policy Act (NEPA), Regulatory Flexibility Act (RFA), and Executive Order 12866.

Framework Adjustment 4 builds on measures implemented in Amendment 5 to the Atlantic Herring FMP (effective March 17, 2014) and proposes management measures to further enhance catch monitoring and address net slippage on vessels participating in the Atlantic herring fishery. More specifically, the ***Preferred Alternatives*** proposed in Framework 4 would implement a third-party catch verification program for limited access herring vessels, a requirement that herring vessel fish holds be empty of fish before leaving the dock, and measures to further address net slippage in the herring fishery.

The proposed management action as well as other alternatives considered by the Council in Framework 4 are described in detail in Section 2.0 of this document (p. 7).

The Council's *Preferred Alternatives* for Framework 4 to address both dealer weighing/reporting and net slippage include:

- **Dealer Alternative 2, Option C** (Section 2.1.2, p. 9), which 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;
- **Dealer Alternative 3** (Section 2.1.3, p. 10), which would require third-party catch verification at the first point of landing on trips by limited access herring vessels carrying a NMFS-approved observer;
- **Operational Discard Option A** (Section 2.2.1, p. 18), which maintains the status quo with respect to operational discards on observed midwater trawl trips (prohibited in year-round groundfish closed areas);
- **Gear Damage Option A** (Section 2.2.1, p. 18), which clarifies that observed catch not brought on board due to gear damage would be considered the same as a slippage event under the "mechanical failure" allowance;
- **Option B for Fish that Fall Out/Off of Gear** (Section 2.2.1.3, p. 23), which clarifies that observed catch not brought on board due to **falling out/off of gear** would not be subject to management measures to address net slippage; and
- **Slippage Alternative 4, 15-nm move-along rule** (Section 2.2.2.4, p. 30), which would require Category A/B herring vessels to move 15 nm before fishing again when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish; the move-along rule would create a closed area for the vessel for the remainder of the trip; any observed slippage

events for reasons other than safety, mechanical failure, or spiny dogfish would require trip termination.

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

In Framework 4, the Council is proposing clarifications to the current management measures (implemented in Amendment 5) as well as additional management measures to address net slippage on limited access herring vessels carrying an observer on board (described in the following subsections). If all of the Council's ***Preferred Alternatives*** to address net slippage (Section 2.2) in Framework 4 are implemented, the following rules would apply to limited access Atlantic herring vessels:

- Observed slippage events (*catch not brought on board*) due to *safety, mechanical failure, or spiny dogfish* would be considered "allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as the proposed 15-nm move along rule described in Section 2.2.2.4 of this document.
- Observed slippage events (catch *not brought on board* for reasons other than safety, mechanical failure, and spiny dogfish) would be considered "non-allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as trip termination described in Section 2.2.2.4 of this document.
- Operational discards reported by observers would *not* be prohibited outside the groundfish closed areas (status quo); although operational discards represent catch that is not brought on board, they would *not* be treated like slippage events (no additional consequences, Section 2.2.1.1 of this document).
- Catch reported by observers as "*not brought on board due to gear damage"* would be considered the same as "*not brought on board due to mechanical failure"* for the purposes of complying with and enforcing the regulations to address net slippage. In other words, when catch is released due to gear damage, this would be an "allowable" slippage event, and vessels would be subject to current requirements for a Released Catch Affidavit as well as the 15-mile move along requirement described in Section 2.2.2.4 (versus trip termination).
- Fish that are documented by observers to fall out of gear (and therefore are not brought on board the vessel) would *not* be treated like slippage events (no additional consequences, Section 2.2.1.3 of this document).

Affected Environment

The descriptive and analytic components of this framework document are constructed in a consistent manner. During the development of this action, a series of valued ecosystem components, or VECs were identified. VECs represent the resources, areas, and human communities that may be affected by a proposed management action or alternative(s), and by other actions that have occurred or will occur outside the action proposed in this framework adjustment. VECs are the focus of an EA since they are the "place" where the impacts of management actions are exhibited. The Affected Environment section (Section 3.0, p. 36) is designed to enhance the readers' understanding of the historical, current, and near-future conditions (baselines and trends) relative to each VEC in order to fully understand the

anticipated environmental impacts of the management alternatives that were considered in this document. For the purposes of the Atlantic herring management program, the VECs described and considered in the analyses are: the Atlantic herring resource (Section 3.1, p. 36); Non-Target Species (Section 3.2, p. 39); Physical Environment and Essential Fish Habitat (EFH) (Section 3.3, p. 45); Protected Resources (Section 3.4, p. 54); and Fishery-Related Businesses and Communities (Section 3.5, p. 67).

Impacts of Framework 4 Alternatives

The Affected Environment section is designed to enhance the readers' understanding of the baseline conditions and recent trends in order to fully understand the anticipated environmental impacts of the management measures under consideration in this framework adjustment. The impacts of these measures are assessed using a similar structure to that found in the Affected Environment and are summarized below and in the following table.

Impacts on the Atlantic Herring Resource (Section 4.1, p. 90)

Atlantic herring catch (fishing mortality) is managed primarily through the overall herring annual catch limit (ACL, reduced from the overfishing limit and acceptable biological catch to address scientific uncertainty and management uncertainty) and sub-ACLs that are intended to minimize risk to individual herring stock components while maximizing opportunities for participants in the herring fishery to achieve optimum yield (OY). Based on the best available scientific information (SAW 54, June 2012), the Atlantic herring resource is not overfished (the stock complex is considered to be rebuilt, above its biomass target), and overfishing is not occurring (fishing mortality is below the threshold level). None of the alternatives considered by the Council in this framework adjustment are expected to change or affect the biological status of the Atlantic herring resource.

The potential impacts of the measures to address dealer weighing/reporting on the Atlantic herring resource are variable. To the extent the measures reduce waste in the fishery and enhance the Atlantic herring catch monitoring program, there may be some long-term positive benefits for the Atlantic herring resource. If Atlantic herring catch statistics ultimately improve by implementing these measures, then management uncertainty in the fishery may be reduced (uncertainty about catch estimates is a component of management uncertainty). Over the long-term, improving catch monitoring results in better catch data for stock assessments and may also reduce scientific uncertainty. This would likely lead to more effective management of the Atlantic herring resource and provide the additional benefits that result from a sustainable fishery. Relative to taking no action, the impacts of the Council's ***Preferred Alternatives*** in Framework 4 for dealer weighing/reporting measures on the Atlantic herring resource are expected to be *negligible*/*low positive*.

The proposed clarifications to existing management measures to address net slippage (operational discards, gear damage, fish falling out of gear) would not affect the documentation of a significant component of Atlantic herring catch, nor would they affect the way that observers are sampling catch. Therefore, the impacts of these clarifications on the Atlantic herring resource are expected to be *negligible*. The additional management measures considered by the Council in this framework adjustment to address net slippage are intended to further reduce the occurrence of slippage on vessels participating in the Atlantic herring fishery by

establishing additional consequences (move-along rules, trip termination) for slipping catch when observers are on board. Overall, minimizing slippage events and better documenting slipped catch may improve estimates of catch and bycatch in the fishery. To the extent that the amount and species composition of slipped catch can be sampled and/or estimated, catch monitoring in the fishery will be enhanced. Additionally, to the extent that slippage events can be reduced/eliminated, bycatch can be further minimized. Relative to taking no action, therefore, the management measures under consideration in Framework 4 to address net slippage are likely to have a *low positive* impact on the Atlantic herring resource. The degree of the positive impact will depend on the level of sampling/monitoring on limited access herring vessels, but overall, the measures are elements of a comprehensive program designed to minimize bycatch and enhance catch monitoring in the Atlantic herring fishery.

The proposed requirement for herring vessel captains to notify NMFS of a slippage event through vessel monitoring systems (VMS) on any trips with observers on board is included in all of the slippage alternatives considered in this framework adjustment. This requirement is intended to facilitate enforcement of the Amendment 5 measures to address net slippage and is supported by the Council's Herring PDT, Advisory Panel, Committee, and Enforcement Committee. While the requirement itself may have negligible impacts on the Atlantic herring resource, any resulting improvements to the effectiveness of the Amendment 5 catch monitoring program would have positive impacts.

Impacts on Non-Target Species (Section 4.2, p. 103)

If the management measures proposed in this framework adjustment are effective at enhancing the catch monitoring program for the directed Atlantic herring fishery and reducing the occurrence of slippage/unobserved catch on Atlantic herring vessels, then there may be improvements to the accuracy of catch/bycatch information regarding non-target species in the fishery. Providing documentation of previously unrecorded catch of non-target species may improve catch statistics and, consequently, assessment and management of these species over the long-term. Non-target species that are subject to catch caps like haddock and river herring/shad (RH/S) may benefit most from management measures that enhance catch monitoring.

Most of the dealer weighing/reporting alternatives considered in this framework adjustment are expected to have *negligible* impacts on non-target species because they address reporting of Atlantic herring and not provide new information or enhance existing information about the catch of non-target species in the herring fishery. Dealer Alternative 2, Option B, part of the ***Preferred Alternative***, is intended to discourage wasteful fishing practices and provide some incentive to harvest the Atlantic herring resource more efficiently. It is also intended to enhance the effectiveness of the Atlantic herring catch monitoring program by reducing the potential to mix fish landed from multiple trips. To the extent that this option reduces waste and enhances the catch monitoring program for the target species (Atlantic herring) there may be some *low positive* benefits for non-target species.

The proposed clarifications to existing measures to address net slippage (operational discards, gear damage, fish falling out of gear) would not affect the documentation of interactions with protected resources, so the impacts on protected resources are expected to be *negligible*. The additional measures considered by the Council in this framework adjustment to address net

slippage are intended to further reduce the occurrence of slippage on vessels participating in the Atlantic herring fishery by establishing additional consequences (move-along rules, trip termination) for slipping catch when observers are on board. Overall, minimizing slippage events and better documenting slipped catch may improve estimates of catch and bycatch in the herring fishery. To the extent that the amount and species composition of slipped catch can be sampled and/or estimated, the Amendment 5 catch monitoring program may be enhanced. As slippage events are further reduced/eliminated, bycatch can be minimized to the extent practicable. Additionally, providing documentation of previously unrecorded catch of non-target species may improve catch statistics and, consequently, assessment and management of these species over the long-term. Non-target species that are subject to catch caps like haddock and RH/S may benefit most from reductions in bycatch and improvements to catch monitoring in the Atlantic herring fishery. When compared to the no action alternative, the impacts of Slippage Alternative 4 (***Preferred Alternative***) on non-target species are *potentially low positive* to the extent that the measures may further minimize the occurrence of net slippage in the directed Atlantic herring fishery. These determinations are not affected by which Atlantic herring permit option is selected (Category A/B only versus Category A/B/C).

Impacts on the Physical Environment and EFH (Section 4.3, p. 113)

Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), the management alternatives considered in Framework 4 to address dealer weighing/reporting and net slippage are not expected to have a measurable influence on the total magnitude of adverse effects across the fishery. Thus, as far as EFH impacts are concerned, there is no measureable difference between any of the alternatives/options considered by the Council in this framework adjustment. The impacts on the Physical Environment and EFH are determined to be *negligible*.

Impacts on Protected Resources (Section 4.4, p. 118)

If the management measures proposed in this framework adjustment are effective at enhancing catch monitoring in the directed Atlantic herring fishery and reducing the occurrence of unobserved catch on Atlantic herring vessels, then there may be improvements to information regarding interactions with protected resources in the fishery. Providing documentation of previously unrecorded interactions may improve assessment and management of the fishery as well as protected resources over the long-term. None of the management measures considered by the Council in this framework adjustment are likely to substantially impact interactions with protected resources in the directed Atlantic herring fishery and/or influence the biological status of any protected resources. The ongoing management protected resources interactions in the Atlantic herring fishery will continue to address fishing mortality and the conservation of protected resources. To the extent that the measures adopted in this framework adjustment enhance catch monitoring and discourage net slippage, improvements in catch monitoring and documentation of interactions with protected resources could produce a *low positive* impact.

The dealer weighing/reporting alternatives considered in this framework adjustment address the treatment and reporting of catch by participants in the Atlantic herring fishery and is not expected to affect interactions with protected resources. Interactions with protected resources in the Atlantic herring fishery would continue to be managed under current avoidance/reduction strategies as well as conservation efforts directed towards protected resources no matter which

alternative/option is selected. The dealer weighing/reporting alternatives are therefore expected to have a *negligible* impact on protected resources.

Slippage has the potential to contain protected species, so management measures intended to better document slippage events has the potential to increase the sampling of protected species that may be encountered by the herring fishery. This information could, in turn, help with the better understanding of protected resources. The proposed clarifications to existing measures to address net slippage would not affect the documentation of interactions with protected resources, so the impacts on protected resources are expected to be *negligible*.

Impacts on Fishery-Related Businesses and Communities (Section 4.5, p. 126)

To the extent that the alternatives to address dealer weighing/reporting lead to improved catch monitoring and better real-time monitoring of Atlantic herring ACLs and sub-ACLs over the long-term, premature herring fishery closures may be avoided. If so, this may result in positive impacts on Atlantic herring fishery participant relative to taking no action, as the allowable herring catch could be more fully harvested. Additionally, Atlantic herring stock assessments may become more precise, potentially reducing scientific and/or management uncertainty and the associated "buffers" that reduce the annual yield available to the fishery. Any short-term negative social and economic impacts on herring fishery participants will likely be through increased administrative and regulatory burdens associated with the measures proposed in this framework adjustment.

The ***Preferred Alternatives*** to address dealer weighing/reporting are expected to be *neutral* because both positive and negative impacts could be experienced by fishery participants. There could be benefits realized from improved catch monitoring/reporting, but these benefits could be offset by increased burden on participants in the fishery. For example, there are potential costs associated with disposing of unwanted catch and/or obtaining a waiver to dispose of the catch at-sea on the next fishing trip associated with Dealer Alternative 2, Option C (part of the ***Preferred Alternative***). However, this option 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, if it improves area sub-ACL monitoring.

Similarly, Dealer Alternative 3 (***Preferred Alternative***) appears to address perceptions of mis-reporting in the Atlantic herring fishery by providing a mechanism to cross-check one element of catch reporting on a subset of fishing trips. Therefore, this alternative could improve the *Attitudes and Beliefs* of some stakeholders regarding the management of the Atlantic herring resource. In the long run, this may have a positive impact on fishery-related businesses and communities. However, provisions proposed in this alternative are likely to result in compliance and administrative costs, which may produce some minor negative impacts on participants in the herring fishery.

In general, the alternatives in Framework 4 to address net slippage are designed to clarify existing regulations pertaining to catch that is observed but not brought on board and to create additional disincentives for limited access herring vessels to slip catch. When choosing whether to slip a net or bring all fish onboard, vessel operators weigh the benefits of bringing those fish

aboard with the costs associated with slippage. Bringing fish aboard which would otherwise be slipped has costs associated with it, such as the extra time spent in this activity and, possibly, decreases in vessel safety during poor operating conditions.

The clarifications that the Council considered address operational discards on midwater trawl vessels, fish that are not brought on board due to gear damage, and fish that fall out/off of gear during normal fishing operations. The impacts of prohibiting operational discards on observed midwater trawl trips under Option B are expected to be *low negative* relative to the ***Preferred Alternative*** (no action). Though catch data for a subset of trips in one component of the fishery may improve, the operational challenges and compliance costs associated with bringing all catch on board may be substantial for some affected vessels Catch reported by observers as "not brought on board due to gear damage" would be considered the same as "not brought on board due to mechanical failure" and vessels would be subject to current requirements for a Released Catch Affidavit as well as the recommended 15-mile move along requirement. The impacts of this proposed clarification are therefore expected to be *low negative* for fishery-related businesses and communities. The clarification that fish falling off/out of gear is not considered a slippage event and, therefore, not subject to any slippage consequences may reduce confusion among vessel operators, observers, and other interested stakeholders, a *positive* impact for fishery-related businesses and communities.

With insufficient fishery data under the current regulatory scenario, the potential impacts of Slippage Alternatives 2-5 relative to the no action alternative are difficult to predict. Under the Amendment 5 provisions as well as any additional measures implemented through Framework 4, 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.

Trip termination would be an additional penalty for any prohibited net slippage event under the slippage alternatives considered by the Council. This provision could have negative impacts on fishery-related businesses and communities, in terms of the *Size and Demographic Characteristics* of the fishery-related workforce and the *Historical Dependence on and Participation in* the fishery. Costs associated with herring fishing trips are high, particularly with the current cost of fuel. 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. Trips terminated prematurely could result in an unprofitable or break-even trips, leaving not only the owners with debt, but crewmembers without income.

Overall, the impacts of Slippage Alternative 4 (***Preferred Alternative***) are expected to be *low negative* for fishing-related businesses and communities. The required travel distances under the move-along rule proposed in this alternative would generally be less than those required under Alternatives 2 and 3, so Alternatives 2 and 3 would likely result in more substantial negative impacts on fishery-related businesses and communities.

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Summary of Impacts of Framework 4 Alternatives on VECs (Preferred Alternatives are shaded)

VEC →	Atlantic Herring Resource	Non-Target Species	Physical Environment/EFH	Protected Resources	Fishery-Related Businesses
Dealer Weighing/Reporting Requirements					
Dealer Alternative 1 – No Action					
No Action Alt	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*
Dealer Alternative 2 – Three Options					
Option A	*Negligible* Duplicates existing data quality control and would not provide new information	*Negligible*	*Negligible*	*Negligible* Does not address PR interactions	*Low Negative* Increased regulatory/compliance burden
Option B	*Negligible* Duplicates daily VMS reporting; unnecessary to improve ACL monitoring	*Negligible*	*Negligible*	*Negligible* Does not address PR interactions	*Low Negative* Increased burden with uncertain benefits
Option C (*Preferred*)	*Low Positive* Potential to enhance catch monitoring and reduce wasteful fishing practices	*Low Positive* Potential to enhance catch monitoring	*Negligible*	*Negligible* Does not address PR interactions	*Neutral* Potential for both positive and negative impacts
Dealer Alternative 3 – Third-Party Catch Verification (Vessel-Based)					
Preferred Alternative	*Negligible* May provide cross-check for some trips, but does not provide Atlantic herring catch estimates	*Negligible* Does not provide information about catch of non-target species	*Negligible*	*Negligible* Does not provide information about catch of protected resources	*Neutral* Potential for both positive and negative impacts
Dealer Alternative 4 (Volumetric Standardization) –Options A, B, and C					
Option A **Option B** **Option C**	*Uncertain but not likely significant* Could have beneficial or detrimental effect on catch estimates	*Negligible* Options address reporting of Atlantic herring only	*Negligible*	*Negligible* Options address reporting of Atlantic herring only	*Neutral* Standardizing methods for estimating weight could have beneficial and/or detrimental effect; most potential for negative impact under Option C

VEC →	Atlantic Herring Resource	Non-Target Species	Physical Environment/EFH	Protected Resources	Fishery-Related Businesses
Measures to Address Net Slippage					
Clarification of Current Measures to Address Net Slippage					
Op Discard Option A (*Preferred*)	*Negligible* Continued documentation of operational discards by observers	*Negligible* Continued documentation of operational discards by observers	*Negligible*	*Negligible* Does not address PR interactions	*Negligible* No additional economic or social impacts
Op Discard Option B	*Negligible* Not likely to enhance catch information	*Potentially Low Positive* May enhance monitoring of caps	*Negligible*	*Negligible* Does not address PR interactions	*Low Negative* Compliance costs for some vessels
Gear Damage; Fish That Fall Out of Gear	*Negligible* Represents insignificant amount of observed catch	*Negligible* Represents insignificant amount of observed catch	*Negligible*	*Negligible* Represents insignificant amount of observed catch	*Low Negative* Compliance costs for some vessels
Additional Alternatives to Address Net Slippage					
Slippage Alt 1 (No Action)	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible* No additional impacts
Slippage Alt 2	*Low Positive* Benefits from improved sampling, reduced slippage; may reduce catch	*Potentially Low Positive*	*Negligible*	*Potentially Low Positive*	*Negative* Costs associated with move-along rule
Slippage Alt 3	*Low Positive* See Alternative 2	*Potentially Low Positive*	*Negligible*	*Potentially Low Positive*	*Negative* Costs associated with move-along rule
Slippage Alt 4 (*Preferred*)	*Low Positive* Benefits from improved sampling, reduced slippage	*Potentially Low Positive*	*Negligible*	*Potentially Low Positive*	*Low Negative* Less restrictive move-along than other alternatives
Slippage Alt 5	*Low Positive* Less positive than other alternatives	*Potentially Low Positive* Less positive than other alternatives	*Negligible*	*Potentially Low Positive* Less positive than other alternatives	*Low Negative* Less negative than other alternatives

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

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1.0 INTRODUCTION AND BACKGROUND

This document contains the New England Fishery Management Council's recommendations for Framework Adjustment 4 to the Atlantic Herring Fishery Management Plan (FMP), consistent with the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Atlantic Herring FMP approved by the National Marine Fisheries Service (NMFS) on October 27, 1999. This document also contains information and supporting analyses required under other applicable law, including the National Environmental Policy Act (NEPA), Regulatory Flexibility Act (RFA), and Executive Order 12866.

Framework Adjustment 4 builds on measures implemented in Amendment 5 to the Atlantic Herring FMP (effective March 17, 2014) and proposes management measures to further enhance catch monitoring and address net slippage on vessels participating in the Atlantic herring fishery. More specifically, the ***Preferred Alternatives*** proposed in Framework 4 would implement a third-party catch verification program for limited access herring vessels, a requirement that herring vessel fish holds be empty of fish before leaving the dock, and measures to further address net slippage in the herring fishery, including a 15-nm move-along rule for some observed slippage events, and trip termination for others.. Framework 4 also proposes a requirement for herring vessel captains to notify NMFS of a slippage event through vessel monitoring systems (VMS) on any trips with observers on board.

The proposed management action as well as other alternatives considered by the Council in Framework 4 are described Section 2.0 of this document (p. 7). This framework document builds on the information and analyses provided in the Final Environmental Impact Statement (FEIS) for Amendment 5 and updates related background information (Affected Environment, Section 3.0, p. 36) and impact analyses (Section 4.0, p. 88) wherever possible; the Amendment 5 FEIS document should be referenced for more comprehensive 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 to the Atlantic Herring FMP is a comprehensive management action that forms the basis of the management measures proposed in this framework adjustment. 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. Final management measures for Amendment 5 were selected by the Council on June 20, 2012. On July 18, 2013, Amendment 5 was partially approved by NMFS. The approved measures in Amendment 5, which became 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 this framework adjustment, which addresses the 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. The Council selected final measures for inclusion in Framework 4 at its April 2014 meeting. 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 during 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 was reconsidered 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.

In this framework adjustment, the Council considered several alternatives to address NMFS' concerns and establish weighing/reporting provisions for Atlantic herring dealers that will improve the accuracy of catch information and better address the goals/objectives of the Amendment 5 catch monitoring program. Based on guidance from NMFS, the Council reconsidered Sub-Option 2C from Amendment 5 (Dealer Alternative 2, Section 2.1.2, p. 9) and considered other alternatives to address dealer weighing/reporting provisions. The alternatives that the Council considered, including the ***Preferred Alternative***, are described in Section 2.1 of this document (p. 8).

Management Measures to Address Net Slippage

For the purposes of the Atlantic herring fishery management program, net slippage is defined as:

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

- Fish that cannot be pumped and that remain in the net at the end of pumping operations are considered to be *operational discards* and not 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: 4 by bottom trawl; 36 by purse seine; and 34 by midwater trawl. 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 (approximately 1.25 percent) 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.

In this framework adjustment, the Council developed and evaluated a range of alternatives to address NMFS' concerns regarding the disapproved slippage measures in Amendment 5. The Council considered measures to require a move-along rule for allowable slippage events and trip termination for non-allowable slippage events, as well as 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 that the Council considered, including the ***Preferred Alternative***, are described in Section 2.2 (p. 17).

1.2 PURPOSE AND NEED

The primary purpose of this framework adjustment is to implement management measures to address the disapproved elements of Amendment 5 related to dealer weighing/reporting and management measures to address net slippage (see discussion in previous subsection). The purpose of this action is therefore to improve catch monitoring in the Atlantic herring fishery and ensure compliance with the MSA. This action is needed to further promote long-term sustainable management of the Atlantic herring fishery and better meet the goals and objectives of the Atlantic herring management program, particularly the goals and objectives of the catch monitoring program outlined in Section 2.0 of Amendment 5 to the Atlantic Herring FMP (also provided in the following subsection of this document).

The measures proposed in Framework 4 to address dealer weighing/reporting are intended to help enhance catch monitoring in the Atlantic herring fishery by discouraging wasteful fishing practices and reducing the potential for reporting errors that may result if fish are landed from multiple fishing trips (see ***Preferred Alternative*** in Section 2.1.2 of this document). This seeks to address the second goal of the Amendment 5 catch monitoring program, specifically the objective of eliminating reliance on self-reported catch, by establishing an independent, third-party cross check for estimates of total catch (see ***Preferred Alternative*** in Section 2.1.3).

The purpose of the management measures proposed in Framework 4 to address net slippage is to establish additional consequences for fishing vessels when catch is slipped, i.e. when all fish are not brought on board for sampling by an observer. The proposed measures to address net slippage are intended to help further prevent slippage, to ensure that observers are able to sample more catch on observed herring trips, providing more accurate data to estimate and monitor the catch of all species in the directed Atlantic herring fishery. The goal is to further minimize

bycatch in the Atlantic herring fishery to the extent practicable by creating an incentive to minimize slippage through the establishment of the proposed consequences (see ***Preferred Alternative*** in Section 2.2.2.4 of this document).

1.3 GOALS AND OBJECTIVES

The goal of Framework Adjustment 4 is to implement management measures 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 PROPOSED MANAGEMENT ACTION AND OTHER ALTERNATIVES CONSIDERED

The management alternatives/options considered in Framework Adjustment 4 address dealer weighing/reporting requirements and net slippage on observed trips for vessels participating in the Atlantic herring fishery.

The Council's *Preferred Alternatives* for Framework 4 include:

- **Dealer Alternative 2, Option C** (Section 2.1.2, p. 9), which 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;
- **Dealer Alternative 3** (Section 2.1.3, p. 10), which would require third-party catch verification at the first point of landing on trips by limited access herring vessels carrying a NMFS-approved observer;
- **Operational Discard Option A** (Section 2.2.1, p. 18), which maintains the status quo with respect to operational discards on observed midwater trawl trips (prohibited in year-round groundfish closed areas);
- **Gear Damage Option A** (Section 2.2.1, p. 18), which clarifies that observed catch not brought on board due to gear damage would be considered the same as a slippage event under the "mechanical failure" allowance;
- **Option B for Fish that Fall Out/Off of Gear** (Section 2.2.1.3, p. 23), which clarifies that observed catch not brought on board due to **falling out/off of gear** would not be subject to any management measures to address net slippage; and
- **Slippage Alternative 4, 15-nm move-along rule** (Section 2.2.2.4, p. 30), which would require Category A/B herring vessels to move 15 nm before fishing again when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish; the move-along rule would create a closed area for the vessel for the remainder of the trip; any observed slippage events for reasons other than safety, mechanical failure, or spiny dogfish would require trip termination.

Additionally, notification of slippage events on observed trips via VMS would be required to facilitate enforcement.

All of the alternatives/options that the Council considered during the development of Framework 4 are described in the following subsections.

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

2.1.1 Dealer Alternative 1: No Action (Non-Preferred)

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 (Option C, *Preferred Alternative*)

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

(A.) ***Non-Preferred:*** 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.) ***Non-Preferred:*** 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.) ***Preferred:*** This option would require that fish holds on Category A/B Atlantic herring vessels are empty of fish before leaving the dock on any trip when declared into the Atlantic herring fishery. A waiver may be issued for instances when there are fish in the hold after inspection by an appropriate law enforcement officer (the intent is for waivers to be issued for refrigeration failure and non-marketable fish that have been reported by the vessel).

Rationale for the Preferred Alternative (Option C): The Council is proposing Alternative 2 Option C as part of the ***Preferred Alternative*** to discourage wasteful fishing practices, including the dumping of unsold herring that may occur for a variety of reasons. It is intended to enhance the effectiveness of the Atlantic herring catch monitoring program and avoid mixing fish landed from multiple trips. Documenting mixed fish from multiple trips has the potential to compromise landings data used to inform harvest control measures and bycatch avoidance programs. In addition, leaving fish in the vessel's hold could preclude a portside sampler from observing the entirety of a trip. The measures proposed in Option C promote responsible fishing, enhance catch monitoring, and are supported by many stakeholders, including the fishing industry. Additionally, the proposed requirement to empty vessel holds of fish may be an incentive for vessels to harvest more efficiently to meet market demands.

While leaving fish in the vessel's hold after offloading is not known to be a common occurrence in the herring fishery, this measure provides a mechanism to better document the nature and extent to which it may be occurring, thereby providing information to enhance catch monitoring for Atlantic herring vessels. This directly addresses the goals and objectives of the Amendment 5 catch monitoring program and this framework adjustment (see Section 1.3 of this document, p. 6). This provision not only provides a mechanism to document and track this practice, but it also reduces the likelihood that it will occur because the requirements to obtain a waiver will likely discourage vessels from leaving fish in their holds unless it is absolutely necessary to do so.

Option C was originally discussed during the development of Amendment 5 (although not explicitly considered in the Draft EIS). Additionally, the Atlantic States Marine Fisheries Commission (ASMFC) initiated Amendment 3 to its Interstate FMP for Atlantic Herring and is considering a provision that would require all vessel fish holds to be empty before leaving the dock. To promote coordination between Federal and State management measures and ensure that the Council implements comprehensive measures to enhance catch monitoring across the herring fishery, the Council supports Option C as part of the ***Preferred Alternative*** in this framework adjustment.

This measure was discussed and supported by the Council's Enforcement Committee at its April 2014 meeting when it reviewed the Framework 4 alternatives under consideration. As part of this option, the Council is proposing that waivers be granted in instances where fish cannot be disposed of shoreside. The waiver was proposed by the Council after lengthy discussion regarding enforceability and compliance with the proposed requirement. The Council recognizes that there may be unforeseen events that make it impossible to sell fish (for example, refrigeration failure, lack of market); additionally, there are vessels in the herring fishery that land at multiple ports. The waiver is intended to mitigate some of the potential costs associated with disposing of unwanted catch while also providing a mechanism to better enforce the proposed requirement.

The proposed provisions to allow waivers are also consistent with comments provided by NMFS in April 2014, in correspondence from the Regional Administrator, which states *We are not opposed to the provision requiring vessels to leave port with empty fish holds, but urge the Council to carefully consider the industry's concerns about poor markets or lack of buyers that make offloading difficult or impossible sometimes.* The allowance for waivers is intended to address the concerns expressed by NMFS during the development of this measure in this framework adjustment.

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

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 that store herring catch in fish holds 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.

Rationale for the Preferred Alternative

This framework adjustment builds on the management measures that were recently implemented in Amendment 5 to the Atlantic Herring FMP (March 2014). The ***Preferred Alternative*** supports the overall goal of Amendment 5 to improve catch monitoring and ensure compliance with the MSA, as well as the first objective of the amendment to implement measures to improve the long-term monitoring of catch (landings and bycatch) in the herring fishery. In addition, the ***Preferred Alternative*** specifically addresses the following goal/objectives of the Amendment 5 catch monitoring program:

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;

This alternative should enhance catch monitoring by fostering support by others concerned about accurate accounts of catch in the herring fishery, and it is supported by the herring fishing industry for this reason. It also specifically addresses the third objective under the goal identified above. The Council selected this alternative as the ***Preferred Alternative*** because it establishes a mechanism to cross-check vessel and dealer-reported estimates of total catch on observed trips in the directed herring fishery using an independent third-party (i.e., the observer or other sampler). This represents an important first step to reducing reliance on self-reporting and should enhance the Atlantic herring fishery catch monitoring program. Because of the diversity associated with the fishery, the ***Preferred Alternative*** does not specifically require all fish to be weighed on a scale, but does provide a source for independently checking catch estimates reported by participants in the directed herring fishery.

During the development of Framework 4, this alternative was supported by the Herring Advisory Panel and Herring Committee, as well as several stakeholders and members of the general public as a way to enhance catch monitoring and reduce reliance on self-reported catch. The herring industry participants expressed support for this alternative for several reasons. Many vessels in the directed herring fishery have already measured and certified their fish holds. . 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. Additionally, regulations at CFR 648.4 (a)(5)(iii)(H)(*1*) require that Tier 1 and Tier 2 limited access Atlantic mackerel vessels certify the capacity of their fish holds and submit this information to NMFS, so many vessels that would be subject to this requirement under this alternative may already have addressed this to comply with regulations in the Atlantic mackerel fishery.

Moreover, the methods for estimating catch under this alternative are based on existing methods used in other countries (Europe) to estimate catch of herring-bodied fish (see Appendix I for more information). This should reduce the challenges that may be associated with developing protocols for sampling fish holds, estimating total catch, and reporting this information. Sampling protocols can be developed based on these existing programs (see Appendix I for more information).

While the data generated under this alternative is not likely to immediately replace existing data utilized for stock assessments and/or quota monitoring, it could serve as an important indicator of the effectiveness of the current catch monitoring program for the Atlantic herring fishery and may provide a mechanism to identify any related problems/concerns in the future. Generally, dealer data are utilized by NMFS for the purposes of Atlantic herring ACL/sub-ACL monitoring. Vessel trip report (VTR) data are the only data that are utilized for Atlantic herring stock assessment purposes at this time. During the last herring stock assessment (SAW 54, June 2012), assessment scientists compared VTR and dealer data to identify any discrepancies and determine whether it is appropriate to move forward with only VTR data to inform the assessment. Since 2003, the two sources of catch data have become more consistent with one another in terms of total Atlantic herring landings (Table 1). Prior to 2003, much larger discrepancies existed between the two data sets. From 2003-2010, the average annual difference between VTR and dealer reports is about 1,000 mt of Atlantic herring, which represents around 1% of the annual catch. However, discrepancies between the data sets have been variable and

substantial in some years, with as much as 16% difference more recently in 2006 and 11% in 2007 (see Table 1 below, from SAW 54). In order to enhance the accuracy of catch monitoring in the Atlantic herring fishery, discrepancies between vessel-reported and dealer-reported data must be resolved to the extent possible. The Council believes that the measures proposed in the ***Preferred Alternative*** will contribute to this effort, in addition to moving towards a reduced reliance on self-reported catch.

Table 1 Comparison of Atlantic Herring Landings (MT) from Dealer and VTR Data, 1994-2010

Year	Atlantic Herring Dealer Data (mt)	Atlantic Herring VTR Data (mt)	Difference Between Datasets (mt and %)
1994	45,337	63,701	18,364 (41%)
1995	68,918	106,185	37,267 (54%)
1996	87,902	117,275	29,373 (33%)
1997	97,149	123,845	26,697 (27%)
1998	82,474	108,428	25,955 (31%)
1999	79,532	110,800	31,268 (39%)
2000	75,591	108,818	33,227 (44%)
2001	97,914	120,025	22,111 (23%)
2002	68,533	93,181	24,648 (36%)
2003	97,350	102,442	5,092 (5%)
2004	85,176	94,239	9,063 (11%)
2005	96,992	93,436	-3,556 (-4%)
2006	123,673	103,801	-19,872 (-16%)
2007	73,163	81,463	8,300 (11%)
2008	78,597	84,152	5,555 (7%)
2009	101,380	103,094	1,714 (2%)
2010	65,285	68,192	2,907 (4%)

**2010 data were incomplete when this table was generated.*
Source: Saw 54, June 2010

The information generated under this alternative would be used by the Council to inform future management decisions in the Atlantic herring fishery and may provide a mechanism for NMFS to resolve some data discrepancies more quickly. In the Proposed Rule for the 2014 Atlantic herring ACL adjustments (published in the Federal Register November 22, 2013), NMFS stated that during the review of 2012 catch data, the following common dealer reporting issues were identified: missing dealer reports, incorrect or missing VTR serial numbers, incorrect or missing vessel permit numbers, and incorrect dates. NMFS noted that VTRs had similar errors. Common VTR reporting issues were: Missing VTRs, missing or incorrect dealer information, incorrect amounts of landed herring, incorrect dates, and missing or incorrect statistical area.

NMFS noted that the quality of herring landings data is affected by unresolved data errors. While the Amendment 5 catch monitoring measures are expected to improve the quality of catch data for the Atlantic herring fishery, the Council believes that the cross-checking mechanism provided by the ***Preferred Alternative*** may allow NMFS to more quickly and easily identify and resolve data discrepancies.

Currently, observers in the Greater Atlantic Region 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. The Council believes that the benefits of this measure for enhancing catch monitoring in the Atlantic herring fishery outweigh the costs of adding this responsibility to the observer sampling duties. To maximize the effectiveness of this measure, the Council supports inclusion/addition of other third-parties (in addition to observers) to estimate total catch at the first point of landing. Portside samplers, for example, could provide a mechanism for third-party catch verification (on trips without observers that are sampled at the dock), if waiting for a sampler does not affect the vessels' ability to begin offloading the catch in a timely manner. In the future, this measure could be incorporated into a portside sampling program or other third-party catch monitoring program for the Atlantic herring fishery.

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

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 below) 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.

2.2 MANAGEMENT MEASURES TO ADDRESS NET SLIPPAGE

In Framework 4, the Council is proposing clarifications to the current measures (implemented in Amendment 5) as well as additional management measures to address slippage on limited access herring vessels carrying an observer on board (described in the following subsections). **If all of the Council's *Preferred Alternatives* to address net slippage (Section 2.2) in Framework 4 are implemented, the following rules would apply to limited access Atlantic herring vessels:**

- Observed slippage events (*catch not brought on board*) due to *safety, mechanical failure, or spiny dogfish* would be considered "allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as the proposed 15-nm move along rule described in Section 2.2.2.4 of this document.
- Observed slippage events (catch *not brought on board* for reasons other than safety, mechanical failure, and spiny dogfish) would be considered "non-allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as trip termination described in Section 2.2.2.4 of this document.
- Operational discards reported by observers would *not* be prohibited outside the groundfish closed areas (status quo); although operational discards represent catch that is not brought on board, they would *not* be treated like slippage events (no additional consequences, Section 2.2.1.1 of this document).
- Catch reported by observers as "*not brought on board due to gear damage*" would be considered the same as "*not brought on board due to mechanical failure*" for the purposes of complying with and enforcing the regulations to address net slippage. In other words, when catch is released due to gear damage, this would be an "allowable" slippage event, and vessels would be subject to current requirements for a Released Catch Affidavit as well as the 15-mile move along requirement described in Section 2.2.2.4 (versus trip termination).
- Fish that are documented by observers to fall out of gear (and therefore are not brought on board the vessel) would *not* be treated like slippage events (no additional consequences, Section 2.2.1.3 of this document).

The management alternatives that the Council considered to address net slippage in Framework 4 are described in the following subsections.

2.2.1 Clarification of Current Management Measures to Address Net Slippage

The Council is taking the opportunity in Framework 4 to clarify the Amendment 5 full sampling provisions in the herring fishery, management measures to address net slippage, and provisions related to catch not brought on board Atlantic herring vessels during normal fishing operations. This section addresses clarifications related to operational discards observed on midwater trawl vessels, fish that are documented by observers as *not brought on board due to gear damage*, and fish that are documented by observers to fall out/off of gear during normal fishing operations. The intent of these clarifications is to make it more clear (for compliance and enforcement purposes) in which instances the management measures to address net slippage would apply. These clarifications would also apply to any management measures to address net slippage that may be implemented in Framework 4.

For all trips by limited access herring vessels carrying a NMFS-approved observer, Amendment 5 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 (i.e., 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 regulations also prohibit operational discards on midwater trawl vessels fishing in year-round groundfish closed areas.

Table 2 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 catch (and therefore should not be subject to management measures to address net slippage). It should be clarified which observed reports of *catch not brought on board* are subject to measures to address net slippage (Released Catch Affidavit, proposed move-along rules). Table 2 summarizes the options that the Council considered in this framework adjustment to clarify existing regulations regarding catch that is observed to be *not brought on board*. The intent of the proposed 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. Each of the clarifications proposed in Framework 4 are discussed in more detail on the pages following Table 2.

Table 2 Options to Clarify Observed *Catch Not Brought On Board* and Management Measures to Address Net Slippage

Catch Not Brought On Board 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) **Options for Clarifications (See Below)**	
040: Operational Discards Small amount of fish that may remain in the codend after pumping is complete	• **Option A (No Action, *Preferred Alternative*)** Operational discards allowed on midwater trawl vessels when not fishing in the groundfish year-round closed areas • **Option B (Non-Preferred)** Operational discards prohibited on midwater trawl vessels throughout the fishery
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 (*Preferred Alternative*)** Observed catch not brought on board due to gear damage would be considered an "allowable" slippage event under the mechanical failure allowance (subject to measures that apply to slippage due to mechanical failure) • **Option B (No Action, Non-Preferred)** Observed catch not brought on board due to gear damage would not be considered an "allowable" slippage event under mechanical failure and would be subject to trip termination if Fw 4 measures are implemented
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	• **Option A (No Action, Non-Preferred)** Management measures to address net slippage on herring vessels with observers on board would remain ambiguous with respect to the treatment of fish that fall out of gear. • **Option B *(Preferred Alternative)*** Observed catch *not brought on board due to falling out/off of gear* would not be subject to any slippage measures/consequences

Discussion

As previously noted, the clarifications to observed *catch not brought on board* proposed in this section relate to management measures to address net slippage in the Atlantic herring fishery, implemented through Amendment 5 to the Herring FMP as well as the additional measures proposed in Section 2.2.2 of this framework adjustment.

The current Amendment 5 regulations (March 17, 2014) state:

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.

The Council's proposed clarifications to these regulations are discussed individually in the following subsections.

2.2.1.1 Clarification 1: Operational Discards on Midwater Trawl Vessels

Option A (No Action, Preferred Alternative):

Status quo (Amendment 5) – Operational discards would continue to be allowed on midwater trawl vessels when not fishing in the groundfish year-round closed areas. Operational discards would continue to be documented by observers on all trips.

Option B (Non-Preferred):

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).
- *Draft regulatory text: 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.*

Rationale: When sampling catch at-sea, observers document all catch not brought on board and classify the catch based on a number of disposition codes, some of which are later evaluated to determine if they were slippage events. Consistent with the recommendations of the Herring PDT, the Council believes that clarifying the treatment of catch not brought on board should enhance the effectiveness and enforceability of the sampling provisions for the herring fishery and management measures to address net slippage. This applies to all of the clarifications to catch *not brought on board* proposed in this framework adjustment.

The Council proposes to maintain status quo requirements with respect to operational discards on midwater trawl vessels because operational discards are relatively small in amount and are well-documented by observers. Information about operational discards on midwater trawl vessels is provided in Appendix II of this document (*Summary of NEFOP Slippage Data (Observed Trips on Atlantic Herring Vessels 2010-2013*). The impacts of these options on participants in the herring fishery are discussed in Section 4.5.2.1 of this document (p. 137). NEFOP 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. 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.

During normal fishing operations on a herring midwater trawl vessel, operational discards represent the fish that do not sink and cannot be pumped, or those that are left in the meshes of the net, under the chains, and in the loops, and simply do not make it aboard the vessel. The

Council is concerned about vessels' ability to comply with a prohibition on all operational discards and questions the benefit of such a prohibition. The information presented during the development of this framework adjustment suggests that the costs to the industry of prohibiting operational discards on midwater trawl vessels under Option B would likely outweigh any benefits to the catch monitoring program (and to the herring resource). Option B would only address a subset of operational discards known to occur in the directed Atlantic herring fishery, reducing the likelihood that it would result in substantial benefits to the catch monitoring program. For these reasons, the Council supports maintaining the status quo with respect to the treatment of catch that is not brought on board midwater trawl vessels due to operational discarding. Documentation of operational discards by observers will continue under this option.

2.2.1.2 Clarification 2: Gear Damage

Option A (Preferred Alternative):

Observed catch *not brought on board due to gear damage* would be considered the same as "*not brought on board due to mechanical failure"* for the purposes of complying with and enforcing the management measures to address net slippage. Under this option, when catch is released due to gear damage, this would be an "allowable" slippage event and subject to the same rules as slippage due to mechanical failure. If the move-along rule proposed in Framework 4 is implemented (Section 2.2.2.4), limited access herring vessels that release catch due to gear damage would be subject to the 15-mile move along requirement (not trip termination) on trips with observers on board..

Option B (Non-Preferred):

Observed catch *not brought on board due to gear damage* would not be considered an "allowable" slippage event under the *mechanical failure* allowance. If the move-along rule proposed in Framework 4 is implemented (Section 2.2.2.4), vessels that release catch due to gear damage would be subject to trip termination on trips with observers on board.

Rationale: Although gear damage (i.e., net tear) does not usually involve the active release of fish from the net by the captain/crew, an event due to gear damage is similar to an event due to mechanical failure. A failure or breakdown of the fishing equipment that results in a partial or full loss of catch is most often out of the control of the captain and crew. The Council believes that events related to gear damage should be treated similar to those related to mechanical failure . Under the preferred clarification in this framework adjustment, slippage events due to gear damage would continue to be documented by observers, and a Released Catch Affidavit form would be required to be completed by the vessel captain, as is the case with all observed slippage events. Additionally, if the move-along rule proposed in Framework 4 is implemented (Section 2.2.2.4), vessels that release catch due to gear damage would be subject to the 15-mile move along requirement.

2.2.1.3 Clarification 3: Fish that Fall Out/Off of Gear

Option A (No Action, Non-Preferred):

Under the no action option, management measures to address net slippage on herring vessels with observers on board would remain ambiguous with respect to the treatment of observed catch that is not brought on board due to *falling out/off of gear*. This issue would not be clarified for the purposes of complying with and enforcing the sampling provisions and management measures to address net slippage in the herring fishery.

Option B (Preferred Alternative):

Under this option, observed catch *not brought on board due to falling out/off of gear* would not be considered slippage and would not be subject to additional slippage measures/consequences.

Rationale: This is a relatively straightforward clarification to ensure that fish not brought on board due to falling out/off gear (as documented by the observer) are not considered slippage events for the purposes of complying with or enforcing slippage measures implemented through either Amendment 5 or this framework adjustment. This clarification was recommended by Council staff during the development of Framework 4 and is supported by the Herring PDT, Herring Advisory Panel, Herring Committee, and Enforcement Committee.

2.2.2 Additional Management Measures to Address Net Slippage

In addition to clarifying the treatment of catch not brought on board under current management measures, the Council considered alternatives in Framework 4 to implement additional measures and further discourage slippage by limited access herring vessels for any reason, to the extent possible. The Council's ***Preferred Alternative*** to address net slippage is Slippage Alternative 4 (Section 2.2.2.4, p. 30), which would establish a 15-nm move-along rule when allowable slippage events are observed on Category A/B herring vessels, as well as a requirement for trip termination for all other observed slippage events on these vessels. All of the alternatives/options that the Council considered in Framework 4 to further address net slippage are described in the following subsections.

Note that the following provisions would apply under Alternatives 2-5 (including the Preferred Alternative):

- 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 Form would be required for all observed slippage events.
- Clarifications to management measures that address net slippage and the treatment of observed catch *not brought on board*, discussed in Section 2.2.1 above, would apply.

2.2.2.1 Slippage Alternative 1: No Action (Non-Preferred)

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.

Under the no action alternative in this section, the clarifications to sampling provisions management measures that address net slippage in the herring fishery, described in Section 2.2.1 of this document (p. 18), would apply.

2.2.2.2 Slippage Alternative 2 (Move-Along Statistical Area) (Non-Preferred)

Under this alternative, vessels would be required to **vacate a statistical area** in which an observed 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.

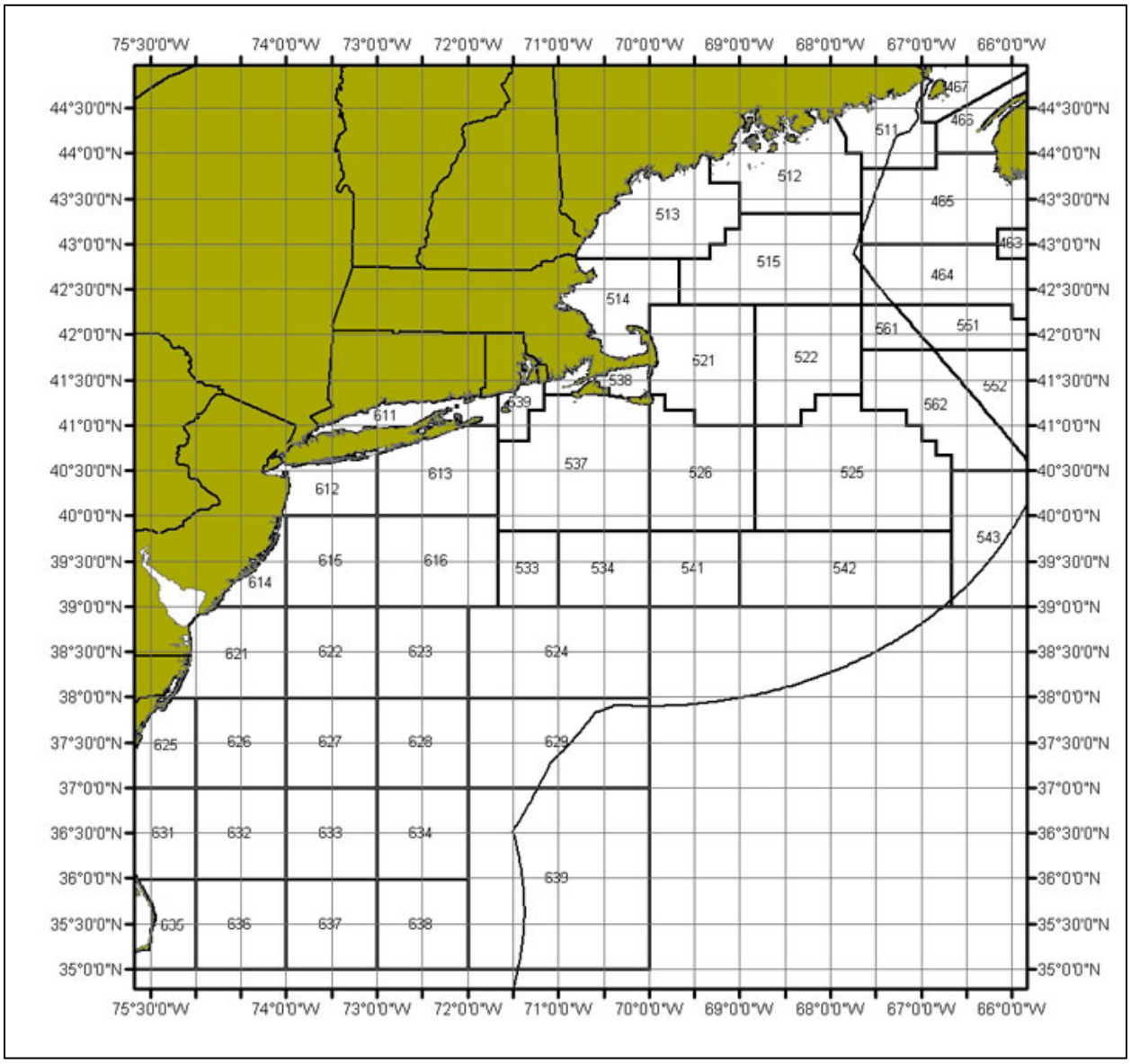
- ***Options for Trip Termination***

  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



2.2.2.3 Slippage Alternative 3 (Move-Along Management Area) (Non-Preferred)

Under this alternative, vessels would be required to **vacate a herring management area** in which an observed 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.

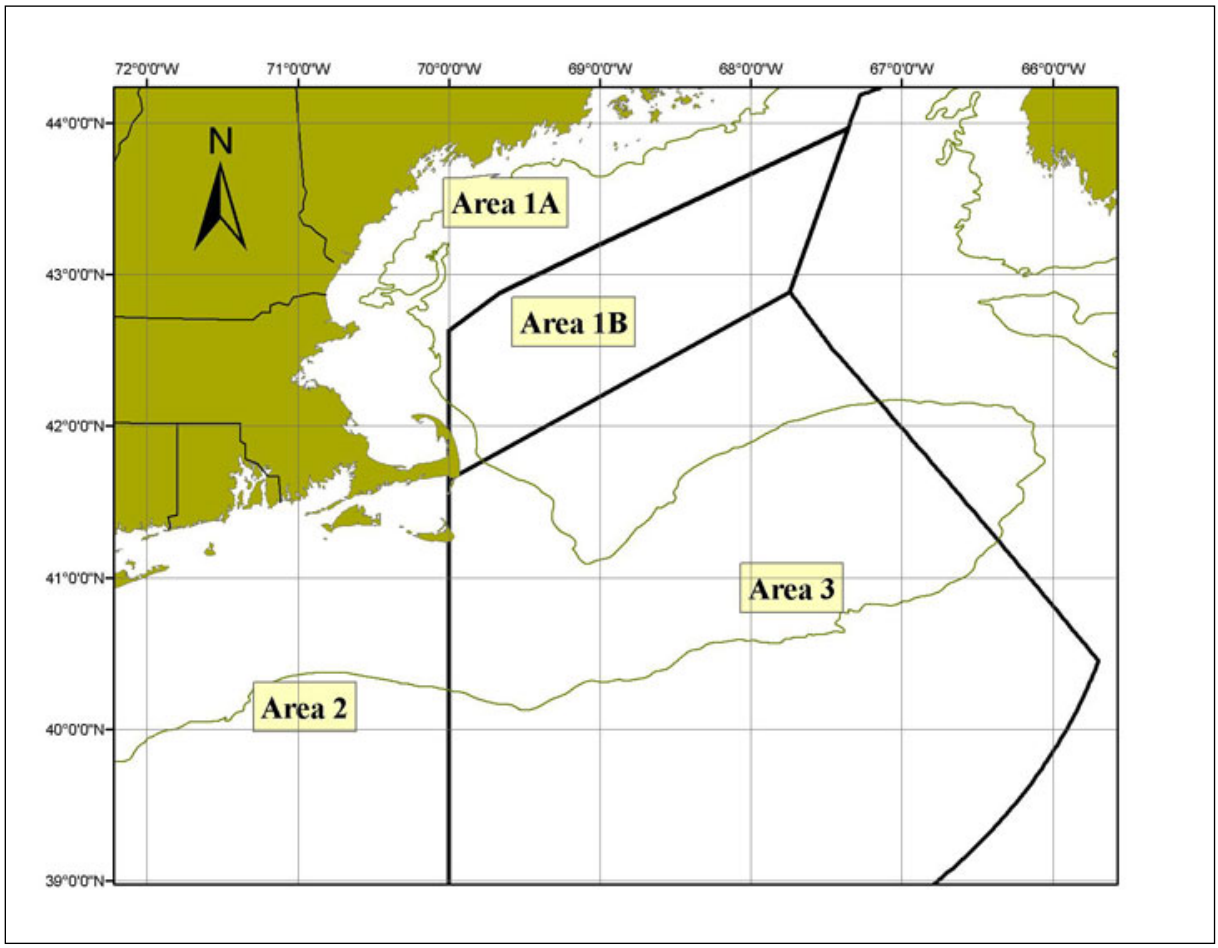
- ***Options for Trip Termination***

  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



2.2.2.4 Slippage Alternative 4 (Move-Along 15 Nautical Miles Away) (*Preferred Alternative*)

Under this alternative, vessels would be required to **move 15 nautical miles** (see options that were considered by the Council below) when an observed "allowable" slippage event occurs. Observed "non-allowable" slippage events would be subject to trip termination. This represents the Council's ***Preferred Alternative***, as noted 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 (***Preferred Alternative*** Category A/B vessels):

- ***Move-Along Rule:*** If a slippage event occurs, vessels would be required to move **15** nautical miles before fishing again.

  Options Considered for Move-Along Nautical Miles (15 nm Preferred Alternative)

  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 (*Preferred Alternative*).** 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 (Preferred Alternative – no exemptions)

  The Council considered 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.

  Under the ***Preferred Alternative***, none of the above exemptions would be authorized. Vessels that release catch due to safety, mechanical failure, and spiny dogfish would be subject to the 15 nm move-along rule on trips with an observer on board.

- ***Options for Trip Termination***

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

  Trip Termination Option B (*Preferred Alternative*): 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 under this alternative to facilitate enforcement.

Rationale for the Preferred Alternative

The Council believes that additional consequences for both allowable and non-allowable slippage events included in the ***Preferred Alternative*** will further discourage net slippage in the Atlantic herring fishery and will enhance the catch monitoring program established through Amendment 5 to the Atlantic Herring FMP. The measures proposed to address slippage, including the ***Preferred Alternative***, directly relate to the first objective of Amendment 5: to implement measures to improve the long-term monitoring of catch (landings and bycatch) in the herring fishery.

Since the Atlantic herring fishery is a relatively high-volume fishery that can catch large quantities of fish in a single tow (as frequently documented in observer data), even a few slipped hauls could have the potential to substantially affect any analysis of the data or extrapolations of incidental catch made from the data. Minimizing slippage events and better documenting slipped catch may improve estimates of bycatch in the fishery. To the extent that the amount and species composition of slipped catch can be sampled and/or estimated, catch monitoring will be enhanced. To the extent that slippage events can continue to be reduced/eliminated, bycatch can be further minimized. The measures proposed in this framework adjustment to address net slippage also relate to the first two goals of the Amendment 5 catch monitoring program (and some of the related objectives, identified below):

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;
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;

This measure also specifically addresses National Standard 9 of the MSA (minimize bycatch and bycatch mortality, to the extent practicable – see Section 5.1 for more discussion).

Net slippage was identified during the development of Amendment 5 as a significant concern by many stakeholders with respect to maximizing sampling in the directed herring fishery and generating accurate/precise estimates of the catch of herring as well as other species. Many stakeholders expressed support for measures to address net slippage in Amendment 5, suggesting that implementing these measures would further ensure that there is accountability for all catch in the fishery. The Council considered many approaches to addressing and discouraging net slippage in Amendment 5 and ultimately recommended a suite of measures that included additional consequences for some allowable slippage events (slippage caps, see Section 1.1 of this document for additional discussion of the Amendment 5 slippage measures). In its July 19, 2013 letter notifying the Council of the disapproval of the proposed consequences for slippage in Amendment 5, NMFS expressed concern about the rationale for, and legality of, the proposed slippage caps. 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 Amendment 5 EIS. In its September 20, 2013 letter to the Council regarding potential approaches to addressing the Amendment 5 disapproved measures in this framework adjustment, NMFS provided the following guidance:

The proposed slippage cap in Amendment 5 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 NMFS 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 Form.

The Framework 4 ***Preferred Alternative*** therefore builds on the Amendment 5 provisions while specifically addressing NMFS' concerns about additional consequences for observed slippage events and incorporating the guidance provided above.

NMFS' disapproval of these measures in Amendment 5 related to the structure of and justification for the consequence measures (trip termination after ten slippage events per gear type and management area). To address NMFS's concerns, the proposed consequence measures apply to all observed "allowable" slippage events (safety, mechanical failure, and spiny dogfish). Slippage would be prohibited unless under the three exceptions identified above, and trip termination would be required in all other cases ("non-allowable" slippage events); the additional consequence measures would be intended to minimize the use of the exceptions allowed under the current (Amendment 5) provisions for full sampling.

The 15 nm move-along rule was chosen by the Council instead of a statistical area-based or management area-based move-along rule because it should provide sufficient incentive for herring vessels to minimize slippage while still maximizing opportunities for participants in the

fishery to fully utilize yield available in each management area as well as the total Atlantic herring annual catch limit. Unlike the other alternatives considered in this framework adjustment, the additional consequences under Alternative 4 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). basing the move on statistical areas would mean that moves would be inconsistent distances since a vessel's particular location within a statistical area and the varying sizes and shapes of statistical areas would determine how far it had to move – some slippages could theoretically require moving less than 1 nm across a statistical area boundary, while some could require de-facto trip termination, depending on where the vessel (and fish) are located. Under the ***Preferred Alternative***, affected vessels may have more options to move fishing operations, unless the vessel can move a shorter distance to an area that is still open to herring fishing.

This alternative includes an additional consequence (trip termination) for "non-allowable" slippage events (for reasons other than safety, mechanical problems, or dogfish). The Council included this provision in as part of the ***Preferred Alternative*** to reinforce the importance of minimizing slippage. Another reason that this alternative was selected by the Council is that it would make the management measures to address net slippage in the Atlantic herring fishery consistent with those for the Atlantic mackerel fishery, proposed by the Mid-Atlantic Fishery Management Council in Framework 9. Many vessels participate in both fisheries, and implementing consistent rules is useful for enhancing compliance and enforcement.

The Mid-Atlantic Council analysis in Framework 9 to the MSB FMP showed that, 3 nm is about the median distance from the end of one haul to the beginning of another haul on observed trips that caught at least 20,000 pounds of mackerel and 500 pounds of RH/S between 2009-2013 (approx. 85 hauls on 20 trips). A range of options for move-along rules including 10nm, 15nm, and 20 nm was then considered by the Mid-Atlantic Council. To promote coordination and consistency between the Atlantic herring and mackerel FMPs, the New England Council agreed to consider the same options for move-along rules as the Mid-Atlantic Council in this framework adjustment. Ultimately, both Councils adopted the 15 nm move-along rule as the ***Preferred Alternative***.

The measure proposed in the ***Preferred Alternative*** (and in all slippage alternatives in Framework 4) to require notification of slippage events through VMS would be appropriate to provide a real-time identifier to trips on which slippage events have occurred. This would inform NMFS that a particular fishing trip may warrant further investigation. This requirement may be beneficial to better ensuring the effectiveness and enforceability of the current (Amendment 5) management measures.

2.2.2.5 Slippage Alternative 5 (No Move-Along) (Non-Preferred)

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.

2.3 ALTERNATIVES CONSIDERED BUT REJECTED

The Framework 4 alternatives were developed over the course of several meetings of the Council, Herring Committee, Herring Advisory Panel, and PDT during 2014. The Council approved the final measures for this action at its April 22-24, 2014 meeting in Mystic CT. The alternatives that were eliminated from further consideration were deemed by the Council not to meet the purpose and need for this action. The alternatives considered but rejected are discussed below, along with the Council's rationale for eliminating them. If appropriate and/or necessary, the Council may reconsider any of these alternatives in a future action related to the Atlantic Herring FMP (framework adjustment, amendment, fishery specifications package).

Framework 4 was specifically developed to address the disapproved elements of Amendment 5 related to dealer weighing/reporting and management measures to address net slippage. Many of the alternatives that were considered in Framework 4 were either non-preferred alternatives in Amendment 5 or alternatives that were considered but rejected during the development of Amendment 5 and reconsidered in this action.

During the development of this framework adjustment, the Herring Committee and Council reconsidered alternatives from Amendment 5 that would have addressed the accuracy of self-reporting in the fishery using scales. A few of the options in Amendment 5 would have required the weighing of dealer trucks and/or transport vehicles as a condition of possessing a Federal dealer permit for Atlantic herring. The trucks would have been weighed either annually or before being loaded with herring as a baseline weight, and again after being loaded. The total weight of herring would have been calculated as the difference of the two weights and reported to the NMFS. The option would have required that all weights be taken by a Licensed Weighmaster, that the scale be inspected regularly, that any trucks utilizing containers on flatbed trucks have the containers present at the initial weighing, and that the required paperwork be present when needed at the weighing. These measures were rejected during the development of Amendment 5 for several reasons, including objections from the Regional Office regarding the feasibility of the measures and similar objections from the Herring Advisory Panel regarding the cost and complications to the herring offloading and transport process. While again deemed

unfeasible during the development of this framework adjustment, these alternatives ultimately led the Council to consider Dealer Alternative 4 (Section 2.1.4, p. 14), which proposes standardization of weight estimates provided by herring dealers and processors. Also in Amendment 5, the Council rejected an alternative for third-party catch verification, which was reconsidered in this framework adjustment and forms the basis of the ***Preferred Alternative*** (Section 2.1.3, p. 10).

The details of the other alternatives that the Council considered but rejected in both Amendment 5 and this framework adjustment are discussed in Appendix I of this document (*Potential Applicability of Flow Scales, Hopper Scales, Truck Scales and Volumetric Measurement in the Atlantic Herring Fishery*). Although the Council again determined that some of these measures are not feasible at this time and/or do not meet the purpose/need and goals/objectives, the Council may reconsider any of them in a future action related to the Atlantic Herring FMP.

During the development of the alternatives to address net slippage, the Herring Committee and Council considered several approaches to implement additional consequences for allowable slippage events. The alternatives that were ultimately considered represent an adequate range that both address the purpose and need for this framework adjustment as well as the concerns expressed by NMFS about the disapproved slippage measures in Amendment 5. Other options that were discussed by the Herring PDT and considered but rejected by the Council are summarized below. In general, these options were determined to be more complicated than necessary to address the purpose and need of this action.

- *RH/S Catch Cap Area Move-Along Option.* An option could be developed that would require vessels to exit a RH/S Catch Cap Area if an observed slippage event occurs.
- *Combination Move-Along Option.* The Council considered developing options that would apply different consequence measures (trip termination, move-along rule) depending on the type of slippage event (safety, mechanical failure, spiny dogfish, other).

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 3 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 3 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 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. The Atlantic herring resource is considered to be rebuilt at this time.

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. The MSA defines *bycatch* as fish that are harvested in a fishery, but are not retained (sold, transferred, or kept for personal use), including economic discards and regulatory discards. 16 U.S.C. § 1802(2). The MSA mandates the reduction of *bycatch*, as defined, to the extent practicable. 16 U.S.C.§ 1851(a)(9). Incidental catch, on the other hand, is typically considered to be non-targeted species that are harvested while fishing for a target species and is retained and/or sold. In contrast to bycatch, there is no statutory mandate to reduce incidental catch. When non-target species are encountered in the Atlantic herring fishery, they are either discarded (bycatch) or they are retained and sold as part of the catch (incidental catch). The majority of catch by herring vessels on directed trips is Atlantic herring, with extremely low percentages of bycatch (discards). Atlantic mackerel is targeted in combination with Atlantic herring during some times of the year in the southern New England and Mid-Atlantic area and is therefore not considered a non-target species.

Summary Information

The primary non-target species in the directed Atlantic herring fishery are groundfish (particularly haddock) and the river herring/shad (RH/S) species. Dogfish, squid, butterfish, Atlantic mackerel are also common non-target species in the directed herring fishery (mackerel and some other non-target species catch is often landed and sold). Comprehensive information about these species can be found in Section 5.2 of the FEIS for Amendment 5 and Sections 3.2 (River Herring/Shad) and 3.3 (Other Non-Target Species) of Framework 3 to the Atlantic Herring FMP. Summary information is provided below and updated where possible.

Due to the high-volume nature of the Atlantic herring fishery, non-target species, including river herring (blueback herring and alewives), shad (hickory shad and American shad), and some groundfish species (particularly haddock), are often retained once the fish are brought on board (see Amendment 5 FEIS at 173). The catch of non-target species in the directed Atlantic herring fishery can be identified through sea sampling (observer) data collected by the Northeast Fisheries Observer Program (NEFOP). Portside sampling data collected by MA DMF and ME DMR can be utilized to estimate catch of any non-target species that are landed. Dealer and VTR data can be used to identify/cross-check incidental landings of some non-target species that may be separated from Atlantic herring.

Table 4 summarizes NEFOP observer coverage rates by gear type and herring management area during the 2012 fishing year. Coverage rates in this table are calculated based on NEFOP observed herring pounds caught/VTR-reported herring pounds landed. NEFOP coverage rates on Atlantic herring vessels during 2013 were similar to those during 2012.

Table 4 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)	6.40%	0%	2.60%	71.20%
Pair Trawl	17.60%	36.50%	23.80%	75%
Purse Seine	16.30%	N/A	N/A	0%
Small Mesh Bottom Trawl	4.90%	0%	24.30%	0%

Management measures in Framework 3 to the Herring FMP apply a RH/S catch cap to vessels/trips landing more than 6,600 pounds of Atlantic herring. Table 19 in the Framework 3 document (Section 3.3) summarizes NEFOP observer coverage rates by RH/S Catch Cap Area and gear type for 2008-2012. For this time period, coverage rates were generally 14% (purse seine), 20-54% (midwater trawl/pair trawl), and 3%-10% (bottom trawl) on trips that landed more than 6,600 pounds of herring. Coverage was particularly high (>50%) on midwater trawl trips in the Cape Cod and Georges Bank Catch Cap Areas. Complete coverage/sampling levels, including portside sampling, are provided in Appendix II of the Framework 3 document and should be referenced for additional information.

3.2.1 Northeast Multispecies (Groundfish/Haddock)

The overlap between Northeast multispecies (groundfish) and the herring fishery is diverse; herring vessel operation overlaps in similar areas and times as multispecies vessel operation. As such, herring vessels encounter and some may land various groundfish species. With respect to incidental catch and bycatch, haddock in particular are occasionally caught higher in the water column and encountered more frequently by herring vessels than other groundfish species. Haddock catch by midwater trawl vessels in the Atlantic herring fishery is managed through a catch cap established in 2006 though Framework 43 to the Multispecies (Groundfish) Fishery Management Plan (FMP) and modified in 2011 through Framework 46. Currently, under the provisions established through Framework 46, the herring midwater trawl fleet (including both single and paired midwater trawl vessels) is subject to a stock-specific cap on haddock catch that is equal to 1% of the GB haddock ABC and 1% of the GOM haddock ABC. Haddock catch estimates are calculated and counted against the catch caps by expanding NEFOP sea sampling data to the entire midwater trawl fleet by haddock stock area.

Table 5 summarizes GOM and GB haddock catch by Atlantic herring midwater trawl vessels subject to the Framework 46 catch caps from FY 2011-2014 year to date. During the 2012 groundfish fishing year, the haddock catch cap was fully utilized in the GB area. The GB haddock catch cap for the 2013 groundfish fishing year (May 1, 2013 – April 30, 2014) was 273 mt (601,862 pounds), and the GOM haddock catch cap was 3 mt (6,613 pounds). The FY 2013 GB catch cap was exceeded by approximately 12 mt, which suggests that the FY 2014 catch cap may be decreased from 179 mt to 167 mt. The FY 2014 catch caps will apply to the herring midwater trawl fishery from May 1, 2014 – April 30, 2015. There remains very little catch of GOM haddock by midwater trawl vessels.

Table 5 GOM and GB Haddock Catch by Midwater Trawl Vessels Subject to Framework 46 Haddock Catch Caps (FY2011-2014 YTD)

FY	2011		2012		2013		2014	
Areas	**GB**	**GOM**	**GB**	**GOM**	**GB**	**GOM**	**GB**	**GOM**
Haddock Catch Cap in Lbs.	701,063 (318 mt)	24,251 (11mt)	630,516 (286 mt)	19,841 (9 mt)	601,862 (273 mt)	6,613 (3 mt)	394,627 (179 mt)	6,613 (3 mt)
Haddock Catch in Lbs.	223,546 (102 mt)	419 (0 mt)	636,188 (289 mt)	110 (0 mt)	629,133 (285 mt)	141 (0 mt)	18,761 (9 mt)	0 (0 mt)
% of Catch Cap	**32%**	**2%**	**101%**	**1%**	**105%**	**2%**	**5%**	**0%**

Catch Caps are based on groundfish fishing year (May 1 – April 30).
Catch caps and caps are rounded to the nearest mt.
Source: NOAA/NMFS (http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm); data reported through June 4, 2014.

Additional information about the incidental catch of groundfish in the Atlantic herring fishery can be found in the FEIS for Amendment 5 as well as Framework 2 to the Herring FMP.

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." The following section provides summary information about RH/S as non-target species in the Atlantic herring fishery; a comprehensive description of the RH/S resources can be found in Section 3.2 of Framework 3 to the Atlantic Herring FMP (NEFMC, 2014). RH/S catch by Atlantic herring vessels is summarized in Section 3.2.4.4 of the Framework 3 document.

River herring and shad are anadromous fish that spend the majority of their adult lives at sea, only returning to freshwater in the spring to spawn. Historically, RH/S 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).

Targeting RH/S 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 Section 3.2.3 of the Framework Adjustment 3 document (NEFMC 2014).

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.

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.

When NOAA Fisheries published the ESA listing decision for river herring, NMFS indicated that it would partner with ASMFC to form a technical expert working group (TEWG). The TEWG will be focused on developing a dynamic conservation plan to help restore river herring throughout their range from Canada to Florida, identifying and implementing important conservation efforts, and conducting research to fill in some of the critical data gaps for these species. NOAA Fisheries and ASMFC have formed the TEWG, and the working group has met to begin its work. NOAA Fisheries plans to continue to coordinate with all of management partners including the Mid-Atlantic and the New England Fishery Management Councils to maximize resources and identify ways to complement ongoing efforts to promote river herring restoration.

RH/S Catch Management and Bycatch Minimization

In Federal waters, the New England Council manages and minimizes RH/S interactions through the Atlantic Herring FMP and its associated amendments and framework adjustments. Most recently, Amendment 5 to the Herring FMP adopted a long-term monitoring/avoidance strategy to minimize RH/S catch and established the authority to develop catch caps for RH/S through a framework adjustment to the Atlantic Herring FMP. The approved measures in Amendment 5, effective March 17, 2014, are listed in Section 1.1 of this document (p. 1). Quickly following the completion of Amendment 5, the Council developed Framework 3 to the Atlantic Herring FMP (under review), which established catch caps for RH/S and related provisions to manage and minimize interactions with these species in the directed Atlantic herring fishery. The Proposed Rule for Framework 3 was published on June 13, 2014, and the RH/S catch caps and related provisions are expected to become effective during the 2014 fishing year.

The proposed 2014/2015 RH/S catch caps for the midwater trawl fishery and bottom trawl Atlantic herring fisheries are summarized in Table 6. The proposed RH/S catch caps for 2014-2015 would not affect trips/vessels landing less than 6,600 pounds of Atlantic herring or herring vessels using other gear types, including purse seines. The analysis presented in Section 4.2 of the Framework 3 document states that by encouraging the directed herring fleet to avoid RH/S, or by shutting down the directed herring fishery if the RH/S cap is reached, these caps should reduce RH/S catch and limit RH/S catch by the Atlantic herring fishery when compared to the status quo. This should produce a positive impact to RH/S stocks in 2014 and 2015, but the extent is unknown because there are no absolute abundance estimates for RH/S stocks, and there is no way to link the RH/S catch cap amount (or RH/S catch under a cap) to RH/S stock status or fishing mortality at this time.

Table 6 Preferred Options for 2014-2015 RH/S Catch Caps

RH/S Catch Cap Area	Preferred Option: 2014-2015 RH/S Catch Cap (mt)
GOM	85.5
CC	13.3
SNE/MA	MWT – 123.7 BT – 88.9
GB	N/A

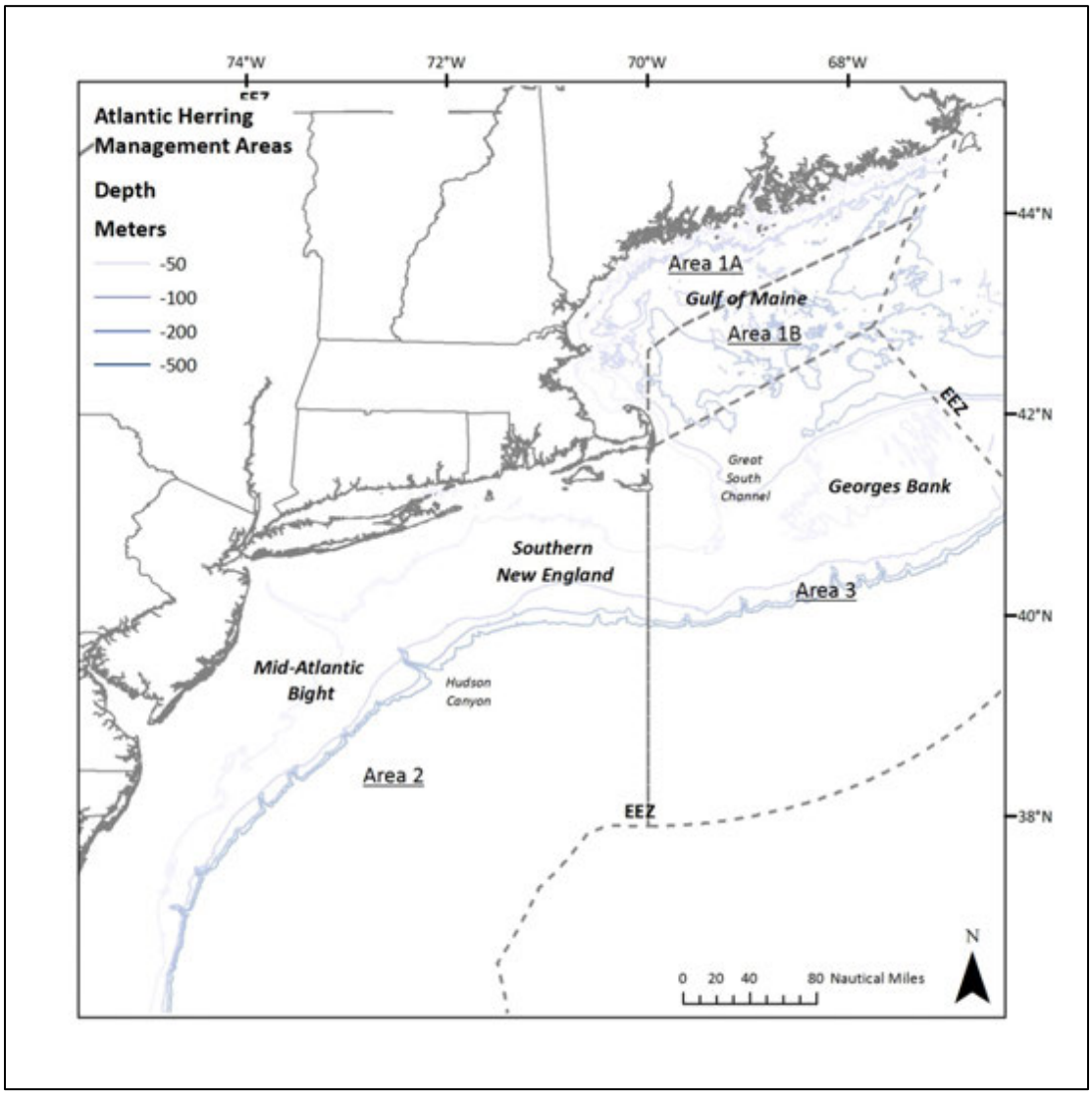
The Mid-Atlantic Fishery Management Council (MAFMC) manages RH/S bycatch issues in the Atlantic mackerel fishery primarily through its Mackerel, Squid, and Butterfish (MSB) FMP. Recently, Amendment 14 to the Mackerel Squid Butterfish (MSB) FMP was developed in coordination with Amendment 5 to the Herring FMP and implemented a comprehensive catch monitoring system for the mackerel, squid, and butterfish (MSB) fishery. Many of the actions contained with both amendments were 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. Similarly, the Mid-Atlantic Council recently implemented a RH/S catch cap for the directed mackerel fishery through its specifications process. The 2014 RH/S catch cap for the Atlantic mackerel fishery is 236 mt. During the MSB specifications process (June 2014), the MAFMC voted to recommend a catch cap of 89-155 mt for the directed mackerel fishery for the 2015 fishing year (the amount will be scaled based on mackerel catch in the directed mackerel fishery during the fishing year). There will be opportunity for the two Councils to better align the catch caps in the overlapping southern New England/Mid-Atlantic area for the 2016 fishing year and beyond. The New England Council built flexibility into the RH/S catch cap process in Framework 3 to allow development of a joint herring/mackerel fishery RH/S catch cap for the southern New England/Mid-Atlantic area with the MAFMC.

3.3 PHYSICAL ENVIRONMENT AND EFH

3.3.1 Physical Environment

The Atlantic herring fishery is prosecuted in four areas defined as 1A, 1B, 2, and 3 (Figure 3). These areas collectively cover the entire northeast U.S. shelf ecosystem, which has been defined as the Gulf of Maine south to Cape Hatteras, North Carolina, extending from the coast seaward to the edge of the continental shelf, including offshore to the Gulf Stream (Sherman et al. 1996). Three distinct sub-regions, the Gulf of Maine, Georges Bank, and the southern New England/Mid-Atlantic region, were described in the Affected Environment section of Amendment 5 to the Atlantic Herring FMP, based on a summary compiled for the gear effects technical memo authored by Stevenson et al. (2004). Roughly, Areas 1A and 1B cover the Gulf of Maine, Area 2 covers southern the New England/Mid-Atlantic region, and Area 3 covers Georges Bank.

Figure 3 Atlantic Herring Management Areas and the Northeast U.S. Shelf Ecosystem



3.3.2 Essential Fish Habitat (EFH)

Since 1996, the MSA has included a requirement to evaluate the potential adverse effects of the Atlantic herring fishery on Atlantic herring EFH and on the EFH of other species. The EFH final rule specifies that measures to minimize impacts should be enacted when adverse effects that are 'more than minimal' and 'not temporary in nature' are anticipated.

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

Bearing in mind that both the direction and magnitude of changes are difficult to predict, because changes in fishing behavior in response to management actions can be difficult to predict, potential shifts in adverse effects are discussed for each of the alternatives proposed in this action. However, changes in the magnitude of fishing effort as a result of individual measures should be viewed in the context of the overall impacts that the herring fishery is estimated to have on seabed habitats. *Specifically, previous analyses have concluded that adverse effect to EFH that result from operation of the herring fishery do not exceed the more than minimal or more than temporary thresholds.*

An assessment of the potential effects of the directed Atlantic herring commercial fishery on EFH for Atlantic herring and other federally-managed species in the Northeast region of the U.S. was conducted as part of an EIS that evaluated impacts of the Atlantic herring fishery on EFH (NMFS 2005). This analysis was included in Appendix VI, Volume II of the FEIS for Amendment 1 to the Atlantic Herring FMP. It found that midwater trawls and purse seines do occasionally contact the seafloor and may adversely impact benthic habitats utilized by a number of federally-managed species, including EFH for Atlantic herring eggs. However, after reviewing all the available information, the conclusion was reached that if the quality of EFH is reduced as a result of this contact, the impacts are minimal and/or temporary and, pursuant to MSA, do not need to be minimized, i.e., that there was no need to take specific action at that time to minimize the adverse effects of the herring fishery on benthic EFH. This conclusion also applied to pelagic EFH for Atlantic herring larvae, juveniles, and adults, and to pelagic EFH for any other federally-managed species in the region.

EFH for Atlantic Herring

The EFH designation for Atlantic herring was developed as part of EFH Omnibus Amendment 1 in 1998. EFH Omnibus Amendment 2, which includes updates to the EFH designation for herring, as well as for other NEFMC-managed species, is currently in development. Based on the 1998 designation, which is currently in effect, EFH for Atlantic herring is described in as those areas of the coastal and offshore waters (out to the offshore U.S. boundary of the exclusive economic zone) that are designated in Figure 4 through Figure 7 and in Table 7 and meet the following conditions:

Eggs: Bottom habitats with a substrate of gravel, sand, cobble and shell fragments, but also on aquatic macrophytes, in the Gulf of Maine and Georges Bank as depicted in Figure 4. Eggs adhere to the bottom, forming extensive egg beds which may be many layers deep. Generally, the following conditions exist where Atlantic herring eggs are found: water temperatures below 15° C, depths from 20 - 80 meters, and a salinity range from 32 - 33‰. Herring eggs are most often found in areas of well-mixed water, with tidal currents between 1.5 and 3.0 knots. Atlantic herring eggs are most often observed during the months from July through November.

Larvae: Pelagic waters in the Gulf of Maine, Georges Bank, and southern New England that comprise 90% of the observed range of Atlantic herring larvae as depicted in Figure 5. Generally, the following conditions exist where Atlantic herring larvae are found: sea surface temperatures below 16° C, water depths from 50 – 90 meters, and salinities around 32‰. Atlantic herring larvae are observed between August and April, with peaks from September through November.

Juveniles: Pelagic waters and bottom habitats in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Cape Hatteras as depicted in Figure 6. Generally, the following conditions exist where Atlantic herring juveniles are found: water temperatures below 10° C, water depths from 15 – 135 meters, and a salinity range from 26 – 32‰.

Adults: Pelagic waters and bottom habitats in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Cape Hatteras as depicted in Figure 7. Generally, the following conditions exist where Atlantic herring adults are found: water temperatures below 10° C, water depths from 20 – 130 meters, and salinities above 28‰.

Spawning Adults: Bottom habitats with a substrate of gravel, sand, cobble and shell fragments, but also on aquatic macrophytes, in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Delaware Bay as depicted in Figure 7. Generally, the following conditions exist where spawning Atlantic herring adults are found: water temperatures below 15° C, depths from 20 - 80 meters, and a salinity range from 32 - 33‰. Herring eggs are spawned in areas of well-mixed water, with tidal currents between 1.5 and 3.0 knots. Atlantic herring are most often observed spawning during the months from July through November.

All of the above EFH descriptions include those bays and estuaries listed in Table 7, according to life history stage. The Council acknowledges potential seasonal and spatial variability of the conditions generally associated with this species.

Table 7 EFH Designation of Estuaries and Embayments for Atlantic Herring

Estuaries and Embayments	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Passamaquoddy Bay		m,s	m,s	m,s	
Englishman/Machias Bay	s	m,s	m,s	m,s	s
Narraguagus Bay		m,s	m,s	m,s	
Blue Hill Bay		m,s	m,s	m,s	
Penobscot Bay		m,s	m,s	m,s	
Muscongus Bay		m,s	m,s	m,s	
Damariscotta River		m,s	m,s	m,s	
Sheepscot River		m,s	m,s	m,s	
Kennebec / Androscoggin Rivers		m,s	m,s	m,s	
Casco Bay	s	m,s	m,s	s	
Saco Bay		m,s	m,s	s	
Wells Harbor		m,s	m,s	s	
Great Bay		m,s	m,s	s	
Merrimack River		M	m		
Massachusetts Bay		s	s	s	
Boston Harbor		s	m,s	m,s	
Cape Cod Bay	s	s	m,s	m,s	
Waquoit Bay					
Buzzards Bay			m,s	m,s	
Narragansett Bay		s	m,s	m,s	
Long Island Sound			m,s	m,s	
Connecticut River					
Gardiners Bay			s	s	
Great South Bay			s	s	
Hudson River / Raritan Bay		m,s	m,s	m,s	
Barnegat Bay			m,s	m,s	
Delaware Bay			m,s	s	
Chincoteague Bay					
Chesapeake Bay				s	

S ≡ The EFH designation for this species includes the seawater salinity zone of this bay or estuary (salinity > 25.0‰).
M ≡ The EFH designation for this species includes the mixing water / brackish salinity zone of this bay or estuary (0.5 < salinity < 25.0‰).
F ≡ The EFH designation for this species includes the tidal freshwater salinity zone of this bay or estuary (0.0 < salinity < 0.5‰).
These EFH designations of estuaries and embayments are based on the NOAA Estuarine Living Marine Resources (ELMR) program (Jury et al. 1994; Stone et al. 1994).

Figure 4 EFH Designation for Atlantic Herring Eggs

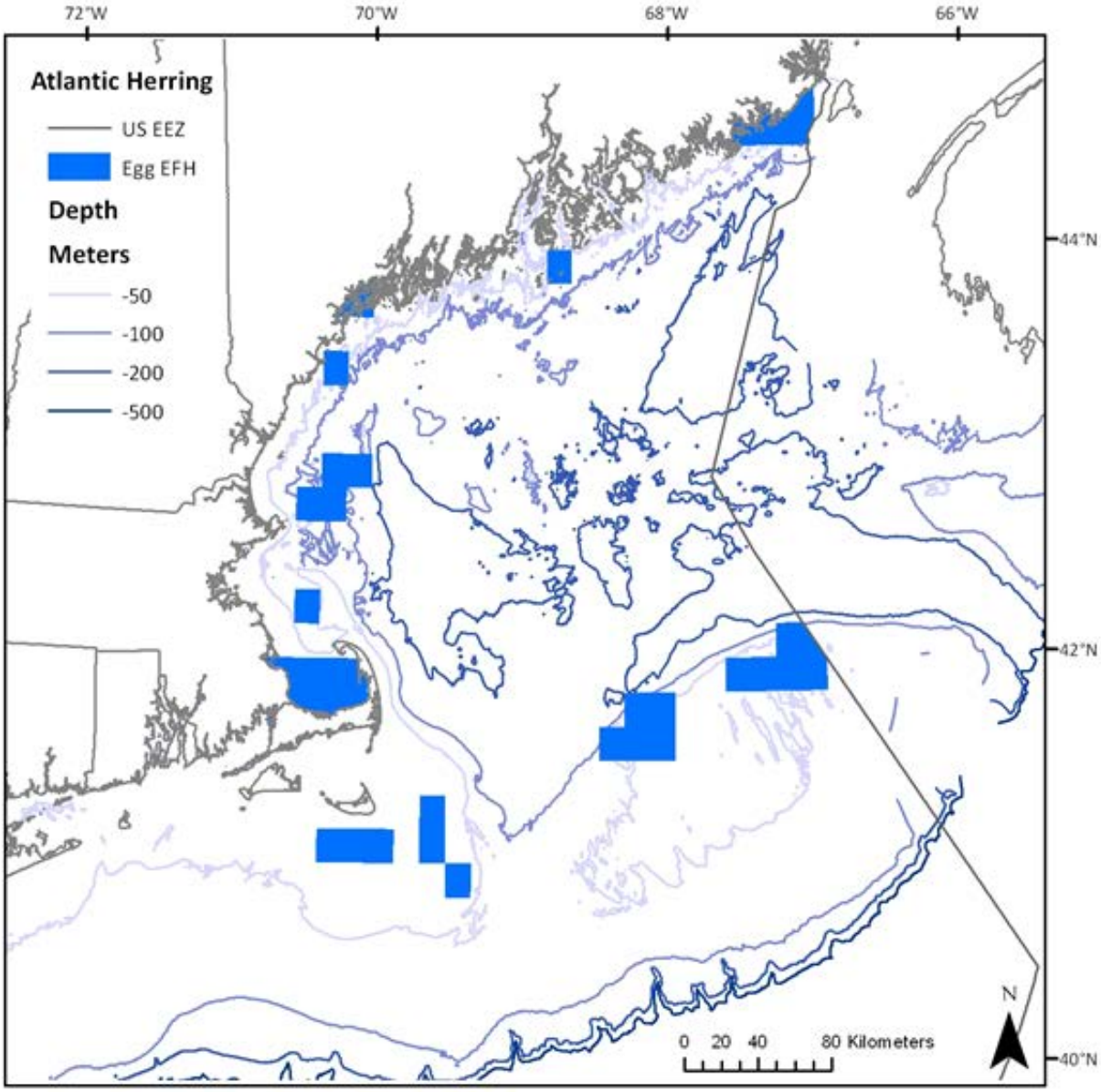


Figure 5 EFH Designation for Atlantic Herring Larvae

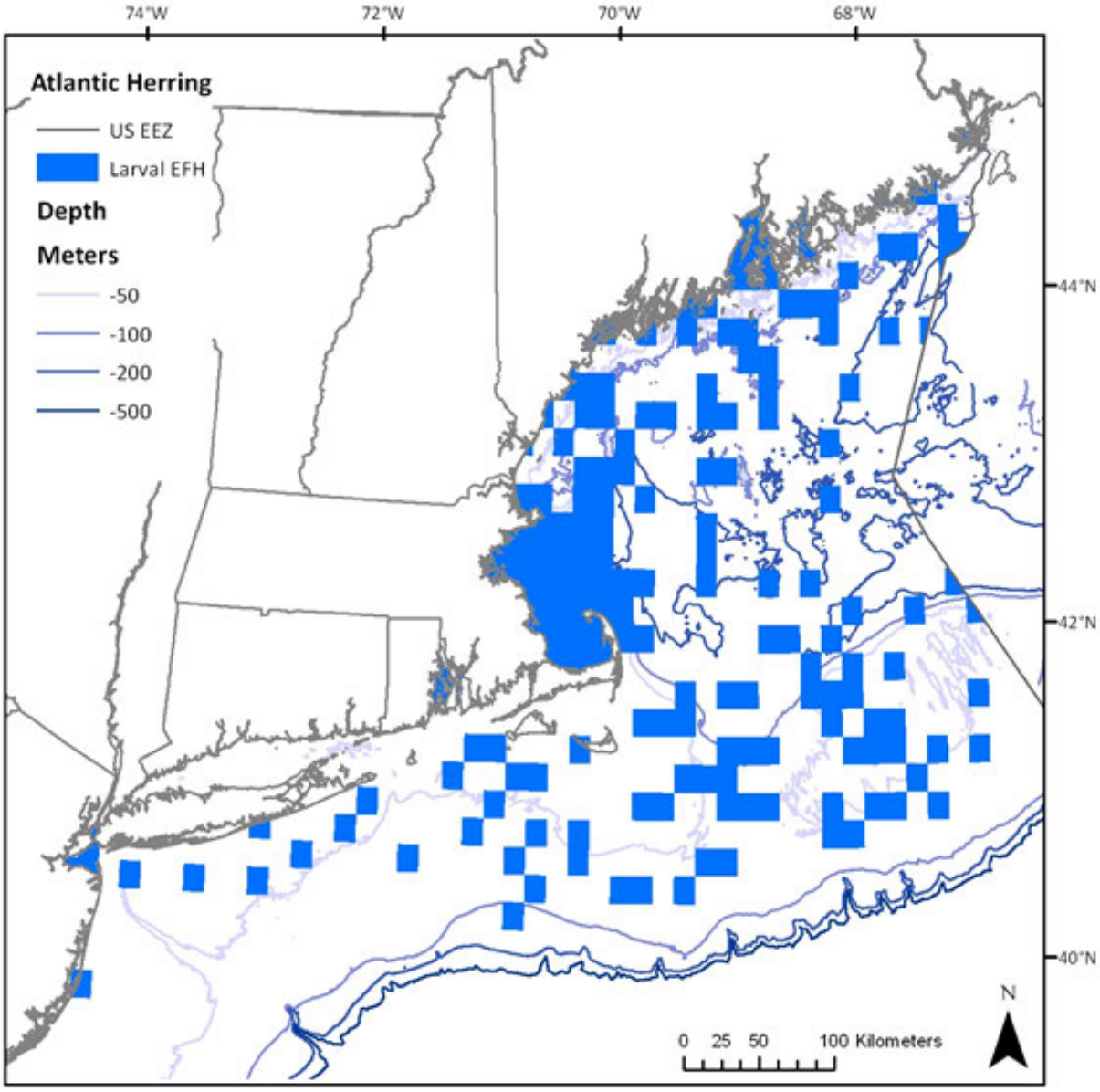


Figure 6 EFH Designation for Atlantic Herring Juveniles

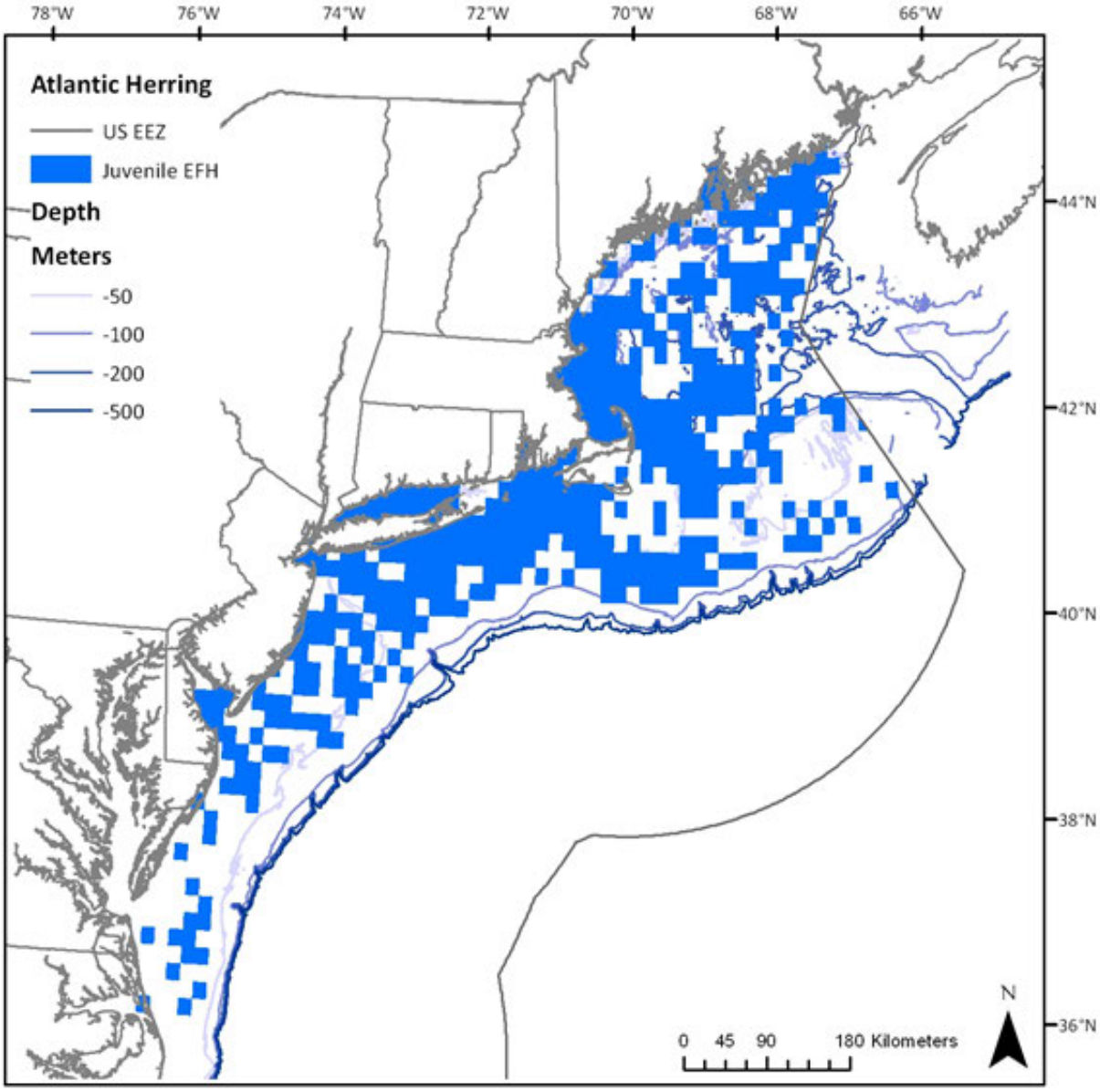
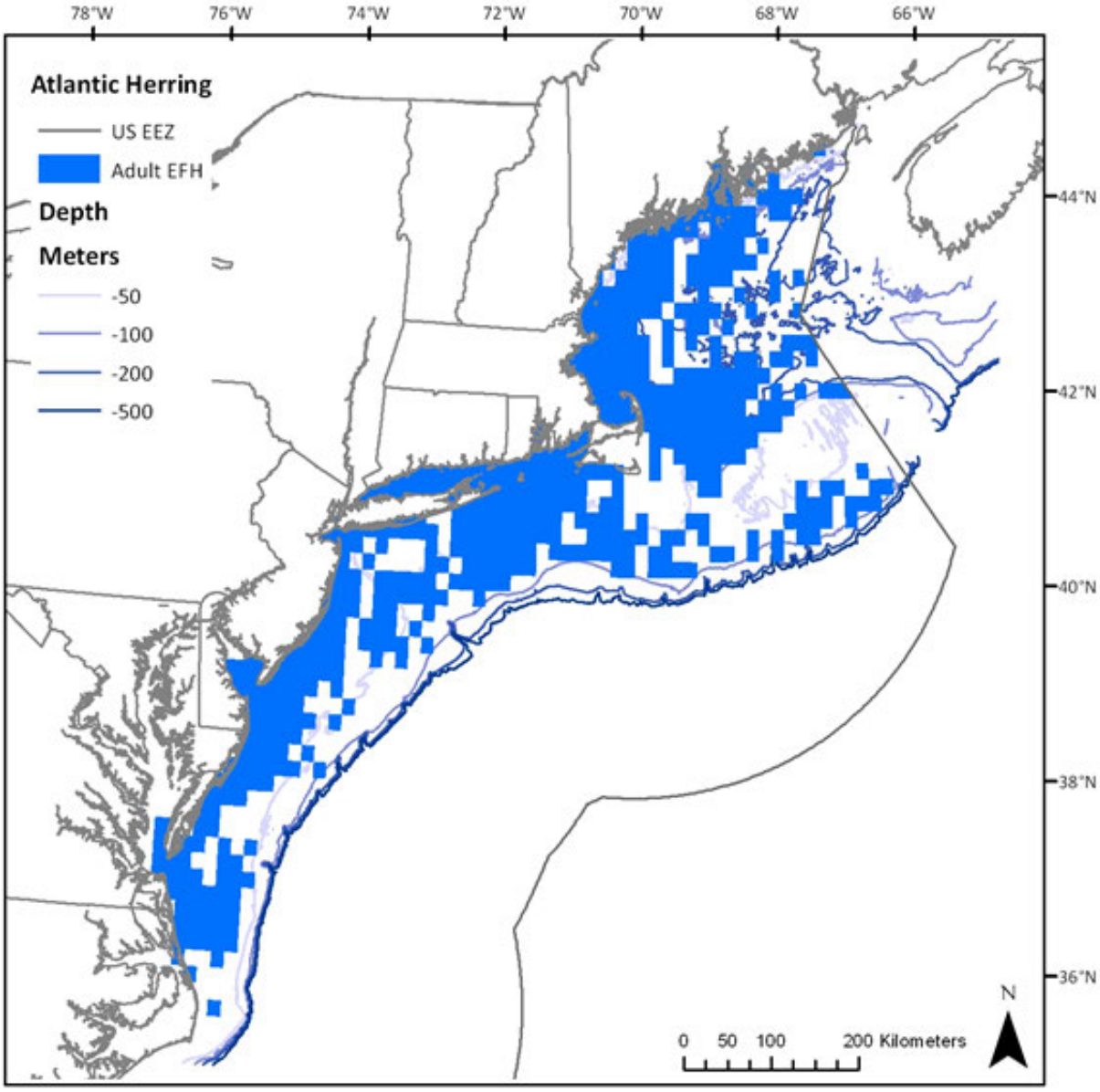


Figure 7 EFH Designation for Atlantic Herring Adults



EFH for Other Species

The environment that could potentially be affected by the Proposed Action has been identified as EFH for the benthic life stages of the species listed in Table 8. Additional information can be found in the FMP document that most recently updated each species' EFH designation (last column in Table 8). NOAA's EFH Mapper is also a good source of information and is a useful way to visualize the designations in a particular location: http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html.

Table 8 Listing of Sources for Current EFH Designation Information

Species	Management Authority	Plan Managed Under	Action where EFH designation was last updated
Monkfish	NEFMC, MAFMC	Monkfish	Amendment 1
Atlantic herring	NEFMC	Atlantic Herring	Original FMP
Atlantic salmon	NEFMC	Atlantic salmon	Original FMP
Atlantic sea scallop	NEFMC	Atlantic Sea Scallop	Amendment 9
American plaice	NEFMC	NE Multispecies	Amendment 11
Atlantic cod	NEFMC	NE Multispecies	Amendment 11
Atlantic halibut	NEFMC	NE Multispecies	Amendment 11
Atlantic wolffish	NEFMC	NE Multispecies	Amendment 16
Haddock	NEFMC	NE Multispecies	Amendment 11
Ocean pout	NEFMC	NE Multispecies	Amendment 11
Offshore hake	NEFMC	NE Multispecies	Amendment 12
Pollock	NEFMC	NE Multispecies	Amendment 11
Red hake	NEFMC	NE Multispecies	Amendment 12
Redfish	NEFMC	NE Multispecies	Amendment 11
Silver hake	NEFMC	NE Multispecies	Amendment 12
White hake	NEFMC	NE Multispecies	Amendment 11
Windowpane flounder	NEFMC	NE Multispecies	Amendment 11
Winter flounder	NEFMC	NE Multispecies	Amendment 11
Witch flounder	NEFMC	NE Multispecies	Amendment 11
Yellowtail flounder	NEFMC	NE Multispecies	Amendment 11
Barndoor skate	NEFMC	NE Skate Complex	Original FMP
Clearnose skate	NEFMC	NE Skate Complex	Original FMP
Little skate	NEFMC	NE Skate Complex	Original FMP
Rosette skate	NEFMC	NE Skate Complex	Original FMP
Smooth skate	NEFMC	NE Skate Complex	Original FMP
Thorny skate	NEFMC	NE Skate Complex	Original FMP
Winter skate	NEFMC	NE Skate Complex	Original FMP
Red crab	NEFMC	Red Crab	Original FMP
Spiny dogfish	MAFMC/NEFMC	Spiny Dogfish	Original FMP
Atlantic surfclam	MAFMC	Atlantic Surfclam Ocean Quahog	Amendment 12
Ocean quahog	MAFMC	Atlantic Surfclam Ocean Quahog	Amendment 12
Bluefish	MAFMC	Bluefish FMP	Amendment 1
Atlantic mackerel	MAFMC	Squid, Mackerel, Butterfish	Amendment 11
Butterfish	MAFMC	Squid, Mackerel, Butterfish	Amendment 11
Longfin squid	MAFMC	Squid, Mackerel, Butterfish	Amendment 11
Shortfin squid	MAFMC	Squid, Mackerel, Butterfish	Amendment 11

Note: Longfin squid egg EFH designation was in Amendment 9 to the Squid, Mackerel, Butterfish FMP.

Table 8 continued.

Black sea bass	MAFMC	Summer Flounder, Scup, and Black Sea Bass	Amendment 12
Scup	MAFMC	Summer Flounder, Scup, and Black Sea Bass	Amendment 12
Summer flounder	MAFMC	Summer Flounder, Scup, and Black Sea Bass	Amendment 12
Tilefish	MAFMC	Tilefish	Amendment 1

Note: Longfin squid egg EFH designation was in Amendment 9 to the Squid, Mackerel, Butterfish FMP.

3.4 PROTECTED RESOURCES

There are numerous protected species that inhabit the environment within the Atlantic Herring FMP management unit that are afforded protection under the Endangered Species Act of 1973 (ESA; i.e., for those designated as threatened or endangered) and/or the Marine Mammal Protection Act of 1972 (MMPA), and are under NMFS' jurisdiction. As listed in Table 9, 18 marine mammal, sea turtle, and fish species are classified as endangered or threatened under the ESA; the remaining species in Table 9 are protected by the MMPA and are known to interact with the Atlantic herring fishery. Non ESA-listed species protected by the MMPA that utilize this environment and have no documented interaction with the herring fishery will not be discussed in this document.

3.4.1 Species Present in the Area

Table 9 lists the species, protected either by the ESA, the MMPA, or both, that may be found in the environment that would be utilized by the Atlantic herring fishery. Table 9 also includes one candidate fish species (species being considered for listing as an endangered or threatened species), as identified under the ESA.

Candidate species are those petitioned species that are actively being considered for listing as endangered or threatened under the ESA, as well as those species for which NMFS has initiated an ESA status review that it has announced in the Federal Register. Cusk is known to occur within the action area of the herring fishery. Candidate species receive no substantive or procedural protection under the ESA; however, NMFS recommends considering conservation actions to limit the potential for adverse effects on candidate species. The Protected Resources Division of the NMFS Northeast Regional Office has initiated review of recent stock assessments, bycatch information, and other information for these candidate species which will be incorporated in the status review reports. The results of those efforts are needed to accurately characterize recent interactions between fisheries and the candidate species in the context of stock sizes. Any conservation measures deemed appropriate for these species will follow the information from these reviews. Please note that the conference provisions apply only if a candidate species is proposed for listing (and thus becomes a proposed species, see 50 CFR 402.10).

Table 9 Species Protected Under the ESA and MMPA That May Occur in the Operations Area for the Atlantic Herring Fishery

Species	Status
Cetaceans	
North Atlantic right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sperm whale (*Physeter macrocephalus*	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Pilot whale (*Globicephala spp*.)	Protected
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected
Common dolphin (*Delphinus delphis*)	Protected
Bottlenose dolphin (*Tursiops truncatus*)[b]	Protected
Sea Turtles	
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered[c]
Loggerhead sea turtle (*Caretta caretta*)	
NWA DPS	Threatened
Hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered
Fish	
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Atlantic salmon (*Salmo salar*)	Endangered
Cusk *(Brosme brosme)*	Candidate
Atlantic sturgeon *(Acipenser oxyrinchus)*	
GOM DPS	Threatened
NYB DPS	Endangered
CB DPS	Endangered
SA DPS	Endangered
CAR DPS	Endangered
Pinnipeds	
Harbor seal (*Phoca vitulina*)	Protected
Gray seal (*Halichoerus grypus*)	Protected
Harp seal (*Phoca groenlandicus*)	Protected
Hooded seal (*Cystophora cristata*)	Protected

Notes:

[a] MMPA-listed species occurring on this list are only those species that have a history of interaction with similar gear types within the action area of the Atlantic Herring Fishery, as defined in the 2010 List of Fisheries.

[b] Bottlenose dolphin (*Tursiops truncatus*), Western North Atlantic coastal stock is listed as depleted.

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

3.4.2 Species Potentially Affected

It is expected that the sea turtle, cetacean, and pinniped species discussed below have the potential to be affected by the operation of the herring fishery. Background information on the range-wide status of sea turtle and marine mammal species that occur in the area and are known or suspected of interacting with fishing gear (demersal gear including trawls, gillnets, and longline types) can be found in a number of published documents. These include sea turtle status reviews and biological reports (NMFS and USFWS 1995; Marine Turtle Expert Working Group (TEWG) 1998, 2000; NMFS and USFWS 2007a, 2007b; Leatherback TEWG 2007), recovery plans for ESA-listed cetaceans and sea turtles (NMFS 1991, 2005, 2010, and 2011; NMFS and USFWS 1991a, 1991b; NMFS and USFWS 1992), the marine mammal stock assessment reports (e.g., Waring et al. 2006; 2007; 2009, 2010, 2011, and 2013), and other publications (e.g., Clapham et al. 1999, Perry et al. 1999, Best et al. 2001, Perrin et al. 2002).

Additional ESA background information on the range-wide status of these species and a description of critical habitat can be found in a number of published documents including recent sea turtle (NMFS and USFWS 1995, TEWG 2000, NMFS SEFSC 2001, NMFS and USFWS 2007), loggerhead recovery team report (NMFS and USFWS 2008), status reviews and stock assessments, Recovery Plans for the humpback whale (NMFS 1991), right whale (NMFS 1991a, NMFS 2005), right whale EIS (August 2007), and the marine mammal stock assessment report (Waring et al. 2013) and other publications (e.g., Perry et al. 1999; Clapham et al. 1999; IWC 2001 a). A recovery plan for fin and sei whales is also available and may be found at the following web site http://www.NOAAFisheries.noaa.gov/prot_res/PR3/recovery.html (NOAA Fisheries unpublished).

3.4.2.1 Sea Turtles

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

A final listing determination was published on September 22, 2011 (76 FR 58867that designates four DPSs (Northwest Atlantic, South Atlantic, Southeast Indo-Pacific, Southwest Indian) as threatened, and five DPSs (Northeast Atlantic, Mediterranean, North Indian, North Pacific, South Pacific) as endangered.

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

3.4.2.2 Large Cetaceans

The most recent Marine Mammal Stock Assessment Report (SAR) (Waring et al. 2013) reviewed the current population trend for each of these cetacean species within U.S. EEZ waters, as well as providing information on the estimated annual human-caused mortality and serious injury, and a description of the commercial fisheries that interact with each stock in the U.S. Atlantic. Information from the SAR is summarized below.

The western North Atlantic baleen whale species (North Atlantic right, humpback, fin, sei, and minke) follow a general annual pattern of migration from high latitude summer foraging grounds, including the Gulf and Maine and Georges Bank, to low latitude winter calving grounds (Perry et al. 1999, Kenney 2002). However, this is an oversimplification of species movements, and the complete winter distribution of most species is unclear (Perry et al. 1999, Waring et al. 2013). Studies of some of the large baleen whales (right, humpback, and fin) have demonstrated the presence of each species in higher latitude waters even in the winter (Swingle et al. 1993, Wiley et al. 1995, Perry et al. 1999, Brown et al. 2002, Patrician et al. 2009). Blue whales are most often sighted on the east coast of Canada, particularly in the Gulf of St. Lawrence, and occurs only infrequently within the U.S. EEZ (Waring et al. 2010).

For North Atlantic right whales, the available information suggests that the population is increasing at a rate of 2.6 percent per year during 1990-2009, and the total number of North Atlantic right whales is estimated to be at least 444 animals in 2009 (Waring et al. 2013). The minimum rate of annual human-caused mortality and serious injury to right whales averaged 3.0 per year during 2006 to 2010 (Waring et al. 2013). Of these, 1.8 per year resulted from fishery interactions.

The North Atlantic population of humpback whales is estimated to be 11,570, although the estimate is considered to be negatively biased (Waring et al. 2013). The best estimate for the Gulf of Maine stock of humpback whales is 823 whales (Waring et al. 2013). The population trend was considered positive for the Gulf of Maine population, but there are insufficient data to estimate the trend for the larger North Atlantic population. Based on data available for selected areas and time periods, the minimum population estimates for other western North Atlantic whale stocks are 3,269 fin whales, 208 sei whales, 440 blue whales, 3,539 sperm whales, and 6,909 minke whales (Waring et al. 2010). Insufficient data exist to determine trends for any other large whale species.

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

On October 5, 2010, NOAA's Fisheries Service (NMFS) published a notice of a 90-day petition finding and notice of 12-month determination for North Atlantic right whale critical habitat in the Federal Register. NMFS was already conducting an ongoing analysis and evaluation of new information not available at the time of the original 1994 critical habitat designation prior to the receipt of this petition. Three critical habitat areas currently exist, established in 1994, two of which occur in the northeast region: feeding grounds in Cape Cod Bay and the Great South Channel.

3.4.2.3 Small Cetaceans

Numerous small cetacean species (dolphins; pygmy and dwarf sperm whales; pilot and beaked, whales; and the harbor porpoise) occur within [the area from Cape Hatteras through the Gulf of Maine]. Seasonal abundance and distribution of each species in [Mid-Atlantic, Georges Bank, and/or Gulf of Maine] waters varies with respect to life history characteristics. Some species primarily occupy continental shelf waters (e.g., white sided dolphins, harbor porpoise), while others are found primarily in continental shelf edge and slope waters (e.g., Risso's dolphin, pilot whales), and still others occupy all three habitats (e.g., common dolphin, spotted dolphins, striped dolphins). Information on the western North Atlantic stocks of each species is summarized in Waring et al. (2011). Some additional updated information about small cetaceans can be found at http://www.nmfs.noaa.gov/pr/sars/species.htm.

With respect to harbor porpoise, the most recent Stock Assessment Reports show that the number of harbor porpoise takes (927 animals/year from 2005-2009) exceed this stocks Potential Biological Removal (PBR) level calculated for this species (701 animals) and is therefore a strategic stock. The most recent amendment to the Harbor Porpoise Take Reduction Plan (HPTRP) occurred in 2010. Observer information collected from 1999 through 2007 indicated an increase in porpoise bycatch throughout the geographic area covered by the HPTRP in both New England and Mid-Atlantic waters in commercial sink gillnet gear. The Harbor Porpoise Take Reduction Team developed measures to reduce takes, and NMFS published a proposed rule on July 21, 2009 (74 Federal Register 36058) with five alternatives including no action. The comment period on this rule ended on August 20, 2009 and the final rule was published on February 19, 2010 (75 Federal Register 7383).

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

New England

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

Mid-Atlantic

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

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

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

3.4.2.4 Pinnipeds

Of the four species of seals expected to occur in the area, harbor seals have the most extensive distribution with sightings occurring as far south as 30° N (Katona et al. 1993, Waring et al. 2011). Gray seals are the second most common seal species in U.S. EEZ waters, occurring primarily in New England (Katona et al. 1993; Waring et al. 2011). Pupping for both species occurs in both U.S. and Canadian waters of the western north Atlantic with the majority of harbor seal pupping likely occurring in U.S. waters and the majority of gray seal pupping in Canadian waters, although there are at least three gray seal pupping colonies in U.S. waters as well. Harp and hooded seals are less commonly observed in U.S. EEZ waters. Both species form aggregations for pupping and breeding off eastern Canada in the late winter/early spring, and then travel to more northern latitudes for molting and summer feeding (Waring et al. 2011). Both species have a seasonal presence in U.S. waters from Maine to New Jersey, based on sightings, stranding, and fishery bycatch (Waring et al. 2011). Some additional updated information about pinnipeds can be found at http://www.nmfs.noaa.gov/pr/sars/species.htm.

3.4.2.5 Atlantic Sturgeon DPSs

Atlantic sturgeon is an anadromous species that spawns in relatively low salinity, river environments, but spends most of its life in the marine and estuarine environments from Labrador, Canada to the Saint Johns River, Florida (Holland and Yelverton 1973, Dovel and Berggen 1983, Waldman et al. 1996, Kynard and Horgan 2002, Dadswell 2006, ASSRT 2007). Tracking and tagging studies have shown that subadult and adult Atlantic sturgeon that originate from different rivers mix within the marine environment, utilizing ocean and estuarine waters for life functions such as foraging and overwintering (Stein et al. 2004a, Dadswell 2006, ASSRT 2007, Laney et al. 2007, Dunton et al. 2010). Fishery-dependent data as well as fishery-independent data demonstrate that Atlantic sturgeon use relatively shallow inshore areas of the continental shelf; primarily waters less than 50 m (Stein et al. 2004b, ASMFC TC 2007, Dunton et al. 2010). The data also suggest regional differences in Atlantic sturgeon depth distribution with sturgeon observed in waters primarily less than 20 m in the Mid-Atlantic Bight and in deeper waters in the Gulf of Maine (Stein et al. 2004b, ASMFC TC 2007, Dunton et al. 2010). Available information on population sizes for each Atlantic sturgeon DPS is very limited. Based on the best available information, NMFS has concluded that bycatch, vessel strikes, water quality and water availability, dams, lack of regulatory mechanisms for protecting the fish, and dredging are the most significant threats to Atlantic sturgeon.

Comprehensive information on current abundance of Atlantic sturgeon is lacking for all of the spawning rivers (ASSRT 2007). There are no total population size estimates for any of the five Atlantic sturgeon DPSs at this time. However, there are two estimates of spawning adults per year for two river systems (e.g., 870 spawning adults per year for the Hudson River, and 343 spawning adults per year for the Altamaha River). These estimates represent only a fraction of the total population size as Atlantic sturgeon do not appear to spawn every year and additionally, these estimates do not include sub-adults or early life stages. Detailed life history information may be found in the 2007 Atlantic Sturgeon Status Review, available at: http://sero.nmfs.noaa.gov/pr/esa/Sturgeon/Atl%20Sturgeon/atlanticsturgeon2007.pdf.

There is no documented bycatch of Atlantic sturgeon in midwater trawls and herring purse-seine gear, which makes up the majority of the herring fishing effort. Otter trawl gear is known to capture Atlantic sturgeon and has been known to be used in the herring fishery. However, otter trawl gear make up a very small percentage of the herring fishery effort and it is highly unlikely that this gear would interact with any Atlantic sturgeon.

3.4.3 Species Not Likely to be Affected

The action being considered in this EA is not likely to adversely affect shortnose sturgeon, the Gulf of Maine distinct population segment (DPS) of Atlantic salmon, hawksbill sea turtles, blue whales, or sperm whales, all of which are listed as endangered species under the ESA. Shortnose sturgeon and salmon belonging to the Gulf of Maine DPS of Atlantic salmon occur within the general geographical areas fished by the herring fishery, but they are unlikely to occur in the area where the fishery operates given their numbers and distribution. Therefore, none of these species are likely to be affected by the herring fishery. The following discussion provides the rationale for these determinations. Although there are additional species that may occur in the operations area that are not known to interact with the specific gear types that would be used by the herring fleet, impacts to these species are still considered due to their range and similarity of behaviors to species that have been adversely affected.

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

The wild populations of Atlantic salmon found in rivers and streams from the lower Kennebec River north to the U.S. - Canada border are listed as endangered under the ESA. These populations include those in the Dennys, East Machias, Machias, Pleasant, Narraguagus, Ducktrap, and Sheepscot Rivers and Cove Brook. Juvenile salmon in New England rivers typically migrate to sea in May after a 2- to 3-year period of development in freshwater streams, and remain at sea for two winters before returning to their U.S. natal rivers to spawn. Results from a 2001 post-smolt trawl survey in Penobscot Bay and the nearshore waters of the Gulf of Maine indicate that Atlantic salmon post-smolts are prevalent in the upper water column throughout this area in mid- to late May. Therefore, commercial fisheries deploying small-mesh active gear (pelagic trawls and purse seines within 10 m of the surface) in nearshore waters of the Gulf of Maine may have the potential to incidentally take smolts. However, it is highly unlikely that the approval of this EA would affect the Gulf of Maine DPS of Atlantic salmon given that operation of the herring fishery would not occur in or near the rivers where concentrations of Atlantic salmon are likely to be found and herring fishing gear used by the fleet operates in the ocean at or near the bottom rather than near the water surface. Thus, this species is not considered further in this EA.

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

Blue whales do not regularly occur in waters of the U.S. EEZ (Waring et al. 2010). In the North Atlantic, blue whales are most frequently sighted in the St. Lawrence from April to January (Sears 2002). No blue whales were observed during the Cetacean and Turtle Assessment Program (CeTAP) surveys of the mid- and north Atlantic areas of the outer continental shelf (CeTAP 1982). Calving for the species occurs in low latitude waters outside of the area where the herring fishery operates. Blue whales feed on euphausiids (krill) that are too small to be captured in fishing gear. Given that the species is unlikely to occur in areas where the herring fishery operates, and given that the operation of the fishery would not affect the availability of blue whale prey or areas where calving and nursing of young occurs, the Proposed Action would not be likely to adversely affect blue whales.

Sperm whales occur in waters of the EEZ. However, the distribution of the sperm whales in the EEZ occurs on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring et al. 2007). In contrast, the herring fishery would operate in continental shelf waters. The average depth of sperm whale sightings observed during the CeTAP surveys was 1792 m (CeTAP 1982). Female sperm whales and young males almost always inhabit open ocean, deep water habitat with bottom depths greater than 1000 m and at latitudes less than 40° N (Whitehead 2002). Sperm whales feed on large squid and fish that inhabit the deeper ocean regions (Perrin et al. 2002). Given that sperm whales are unlikely to occur in areas (based on water depth) where the herring fishery would operate, and given that the operation of the fishery would not affect the availability of sperm whale prey or areas where calving and nursing of young occurs, the Proposed Action would not be likely to adversely affect sperm whales. Although large whales and marine turtles may be potentially affected through interactions with fishing gear, it is likely that the continued authorization of the herring fishery should not have any adverse effects on the availability of prey for these species. Right whales and sei whales feed on copepods (Horwood 2002, Kenney 2002). The herring fishery would not affect the availability of copepods for foraging right and sei whales because copepods are very small organisms that would pass through herring fishing gear rather than being captured in it. Humpback whales and fin whales also feed on krill as well as small schooling fish (e.g., sand lance, herring, mackerel) (Aguilar 2002, Clapham 2002). The TRAC Status Report of 2006 suggests that although predator consumption estimates have increased since the mid-1980s, the productive potential of the herring stock complex has improved in recent years. The proposed management measures may provide a benefit to the protected resources by providing a greater quantity of food available. Moreover, none of the turtle species are known to feed upon herring.

3.4.4 Interactions Between Gear and Protected Resources

Commercial fisheries are categorized by NMFS based on a two-tiered, stock-specific fishery classification system that addresses both the total impact of all fisheries on each marine mammal stock as well as the impact of individual fisheries on each stock. The system is based on the numbers of animals per year that incur incidental mortality or serious injury due to commercial fishing operations relative to a stock's Potential Biological Removal (PBR) level (the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population). Tier 1 takes into account the cumulative mortality and serious injury to marine mammals caused by commercial fisheries while Tier 2 considers marine mammal mortality caused by the individual fisheries; Tier 2 classifications are used in this EA to indicate how each type of gear proposed for use in the Proposed Action may affect marine mammals. Table 10 identifies the classifications used in the List of Fisheries (LOF) for FY 2012 (76 FR 73912; November 29, 2011), which are broken down into Tier 2 Categories I, II, and III.

Table 10 Descriptions of the Tier 2 Fishery Classification Categories

Category	Category Description
Tier 2, Category I	A commercial fishery that has frequent incidental mortality and serious injury of marine mammals This classification indicates that a commercial fishery is, by itself, responsible for the annual removal of 50 percent or more of any stock's potential biological removal (PBR) level.
Tier 2, Category II	A commercial fishery that has occasional incidental mortality and serious injury of marine mammals. This classification indicates that a commercial fishery is one that, collectively with other fisheries, is responsible for the annual removal of more than 10 percent of any marine mammal stock's PBR level and that is by itself responsible for the annual removal of between 1 percent and 50 percent, exclusive of any stock's PBR.
Tier 2, Category III	A commercial fishery that has a remote likelihood of, or no known incidental mortality and serious injury of marine mammals. This classification indicates that a commercial fishery is one that collectively with other fisheries is responsible for the annual removal of: a. Less than 50 percent of any marine mammal stock's PBR level, or b. More than 1 percent of any marine mammal stock's PBR level, yet that fishery by itself is responsible for the annual removal of 1 percent or less of that stock's PBR level. In the absence of reliable information indicating the frequency of incidental mortality and serious injury of marine mammals by a commercial fishery, the Assistant Administrator would determine whether the incidental serious injury or mortality is "remote" by evaluating other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, qualitative data from logbooks or fisher reports, stranding data, and the species and distribution of marine mammals in the area or at the discretion of the Assistant Administrator.

Interactions between gear and a given species occur when fishing gear overlaps both spatially and trophically with the species' niche. Spatial interactions are more "passive" and involve unintentional interactions with fishing gear. Trophic interactions are more "active" and occur when protected species attempt to consume prey caught in fishing gear and become entangled in the process. Spatial and trophic interactions can occur with various types of fishing gear used by herring fishery through the year. Large and small cetaceans and sea turtles are more prevalent within the operations area during the spring and summer, although they are also relatively abundant during the fall and would have a higher potential for interaction with herring vessels during these seasons. Although harbor seals may be more likely to occur in the operations area between fall and spring, harbor and gray seals are year-round residents; therefore, interactions could occur year-round. The uncommon occurrences of hooded and harp seals in the operations area are more likely to occur during the winter and spring, allowing for an increased potential for interactions during the winter.

Although interactions between deployed gear and protected species would vary, all the species identified in Table 11 have the potential to be affected by the operation of the Atlantic herring fishery. The herring fishery is prosecuted by midwater trawl gear (single), paired midwater trawls, purse seines, stop seines and weirs. A full description of the gear used in the herring fishery is provided in the Amendment 1 FEIS. Only the first three are considered to be primary gears in the Atlantic herring fishery. Weirs and stop seines are responsible for a only a small fraction of herring landings, operate exclusively within State waters, and are not regulated by the Federal FMP, and therefore will not be discussed further in this document relative to protected species. It should be noted, however, that both gear types have accounted for interactions with protected species, notably minke whales and harbor porpoise, as well as harbor and gray seals. Animals, particularly pinnipeds, may be released alive.

Table 11 Marine Mammals Impacts Based on Herring Gear (Based on 2012 List of Fisheries)

Fishery		Estimated Number of Vessels/Persons	Marine Mammal Species and Stocks Incidentally Killed or Injured
Category	**Type**		
Tier 2, Category II	Mid-Atlantic midwater trawl (including pair trawl)	669	Bottlenose dolphin, WNA offshore Common dolphin, WNA Long-finned pilot whale, WNA Risso's dolphin, WNA Short-finned pilot whale, WNA White-sided dolphin, WNA
Tier 2, Category II	Northeast midwater trawl (including pair trawl)	887	Harbor seal, WNA Long-finned pilot whale, WNA Short-finned pilot whale, WNA White-sided dolphin, WNA
Tier 2 Category II	Gulf of Maine Atlantic herring purse seine	>6	Harbor seal, WNA Gray Seal, WNA
Tier 2, Category III	Gulf of Maine herring and Atlantic mackerel stop seine/weir	Unknown	Gray seal, Northwest North Atlantic Harbor porpoise, GME/BF Harbor seal, WNA Minke whale, Canadian East Coast White-sided dolphin, WNA

Due to the remote likelihood of interactions denoted by the List of Fisheries designations for the purse seine fishery and stop seines and weirs, discussion of these fisheries will only be where necessary. This discussion will instead focus on the proposed measures and associated midwater trawl activities.

Given the target species of this fishery and because herring is a primary prey species for seals, porpoises and some whales, levels of protected species interactions with the fishery are likely for the midwater and pair trawl. The NOAA Fisheries Northeast Fisheries Science Center incidental take reports are published on the Northeast Fisheries Science Center website - http://www.nefsc.noaa.gov/femad/fishsamp/fsb/. A number of takes have occurred in the past four years by the midwater trawl fishery, as indicated in Table 12.

Table 12 Number of MWT Incidental Takes Recorded by Fisheries Observers

Protected Species Encountered	2011 (To August)	2010	2009	Total
Grey Seal	10	5	1	6
Harbor Seal	3	4	1	5
Common Dolphin		1		1
Dolphin Unk.		1		1
Mammal Unk.		1		1
Seal Unk.	8	1		1

Although the incidents are isolated to observed herring trips, the table indicates that grey seals and harbor seals are the most likely to be taken in the herring fishery. Both gray and harbor seals are distributed inshore during the period of highest activity in the herring fishery, from May through October. Interactions are most likely to occur in Area 1A. Although these species have had documented interactions with the herring purse seine/fixed gear fishery, the animals, if observed, are often released alive.

3.4.5 Actions to Minimize Interactions with Protected Resources

To minimize potential impacts to certain cetaceans, herring vessels would be required to adhere to measures in the ALWTRP, although the gear regulated are seldom used in the directed herring fishery. This was developed to reduce the incidental take of large whales, specifically the right, humpback, fin, and minke whales in certain Category I or II commercial fishing efforts that utilize traps/pots and gillnets. The ALWTRP calls for the use of gear markings, area restrictions, and use of weak links, and neutrally buoyant groundline. Fishing vessels would be required to implement the ALWTRP in all areas where gillnets were used. In addition, the HPTRP would be implemented in the Gulf of Maine to reduce interactions between the harbor porpoise and gillnets; the HPTRP implements gear specifications, seasonal area closures, and in some cases, the use of pingers (acoustic devices that emit a loud sound) to deter harbor porpoises and other marine mammals from approaching the nets. Gillnets are not used in the herring fishery, however.

3.5 FISHERY-RELATED BUSINESSES AND COMMUNITIES

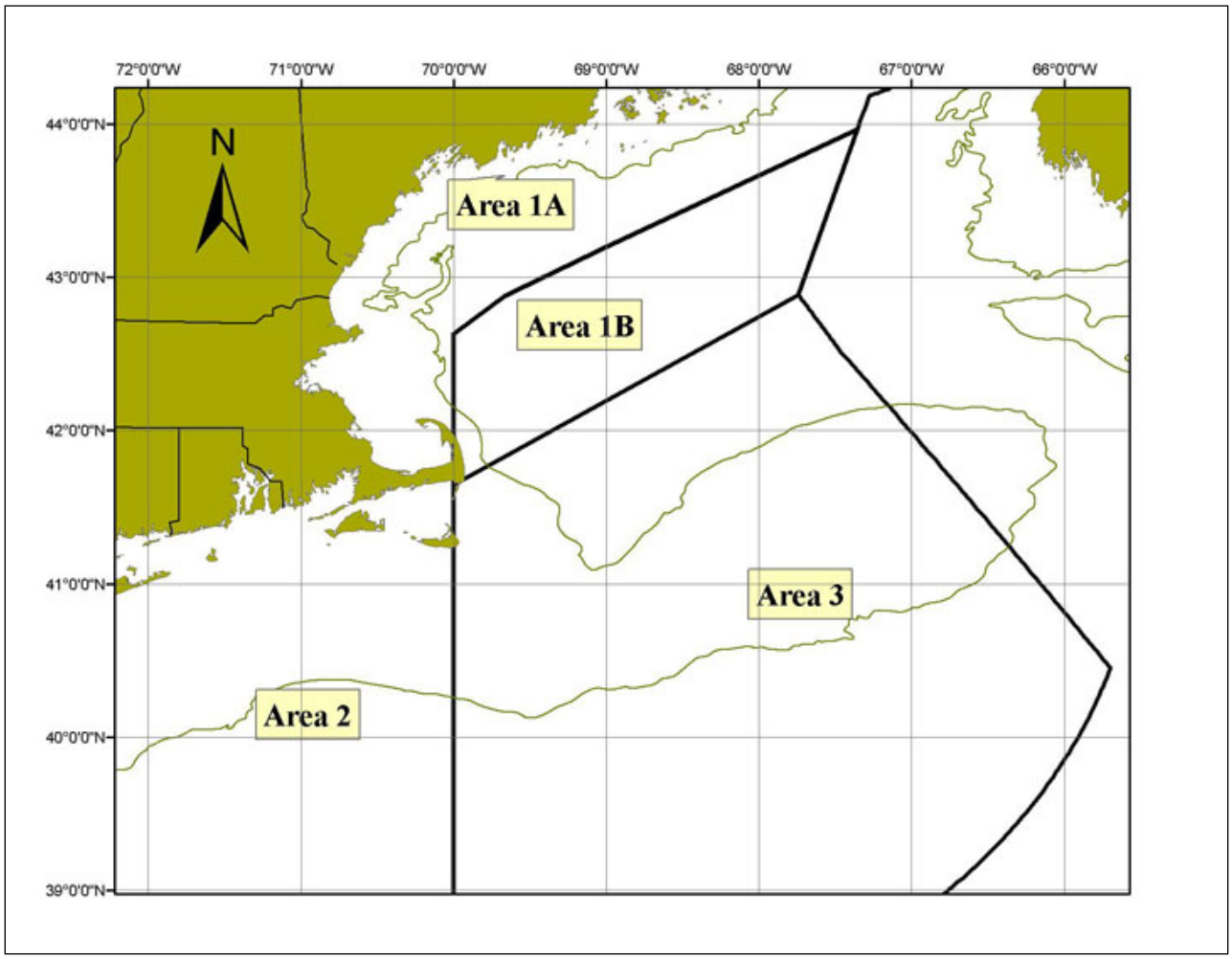
The U.S. Atlantic herring fishery occurs over the Mid-Atlantic shelf region from Cape Hatteras to Maine, including an active fishery in the inshore GOM and seasonally on GB. The herring resource is managed as one stock complex, but this stock is thought to be comprised of inshore and offshore components 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) (Figure 8).

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) is effective for all vessels during the 2014 and 2015 fishing years.

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.

Figure 8 Atlantic Herring Management Areas



The 2013-2015 Atlantic herring fishery specifications were recently 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 13 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 13 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

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 (see Section 3.6.1 of Framework 3, NEFMC 2014).

Table 14 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 14 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 15 summarizes total Atlantic herring catch as a percentage of the total available catch in each year from 2003-2013 based on NMFS catch estimation methods. 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. The 2013-2015 Atlantic herring fishery specifications increased the stockwide Atlantic herring ACL available to the fishery by more than 15,000 mt; an additional 7,000 mt was caught under the higher quota in 2013, and overall, the fishery utilized 92% of the stockwide herring ACL.

Table 15 Total Annual Atlantic Herring Catch 2003-2013

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%
2013	97,680	106,375	92%

Source: NMFS.

Table 16 summarizes 2014 Atlantic herring catch (year to date) by management area, year to date, based on NMFS' catch monitoring methods, for data reported through June 25, 2014. Framework 2 to the Atlantic Herring FMP implemented seasonal restrictions on directed fishing for Atlantic herring in Areas 1A and 1B. As a result, Area 1A opened on June 1, 2014, and Area 1B opened on May 1, 2014. The low sub-ACL in Area 1B was quickly over-harvested by 1,855 mt (64% overage), and Area 1B closed to the directed fishery on May 24, 2014. The overage in Area 1B will be deducted from the 2016 Area 1B sub-ACL.

Table 16 2014 Atlantic Herring Sub-ACLs and Catch (mt)

AREA	2014 CATCH (MT)	2014 SUB-ACL (MT)	% SUB-ACL CAUGHT
1A	1,696	33,031	5%
1B	4,733	2,878	164%
2	10,403	28,764	36%
3	16,600	39,415	42%
TOTAL	**33,432**	**104,088**	**32%**

Source: NMFS Quota Monitoring Report June 26, 2014.

3.5.2 Atlantic Herring Vessels

This section provides summary 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 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 17). 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 17 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 18). 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 18 and Table 19 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 18 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 19 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%**

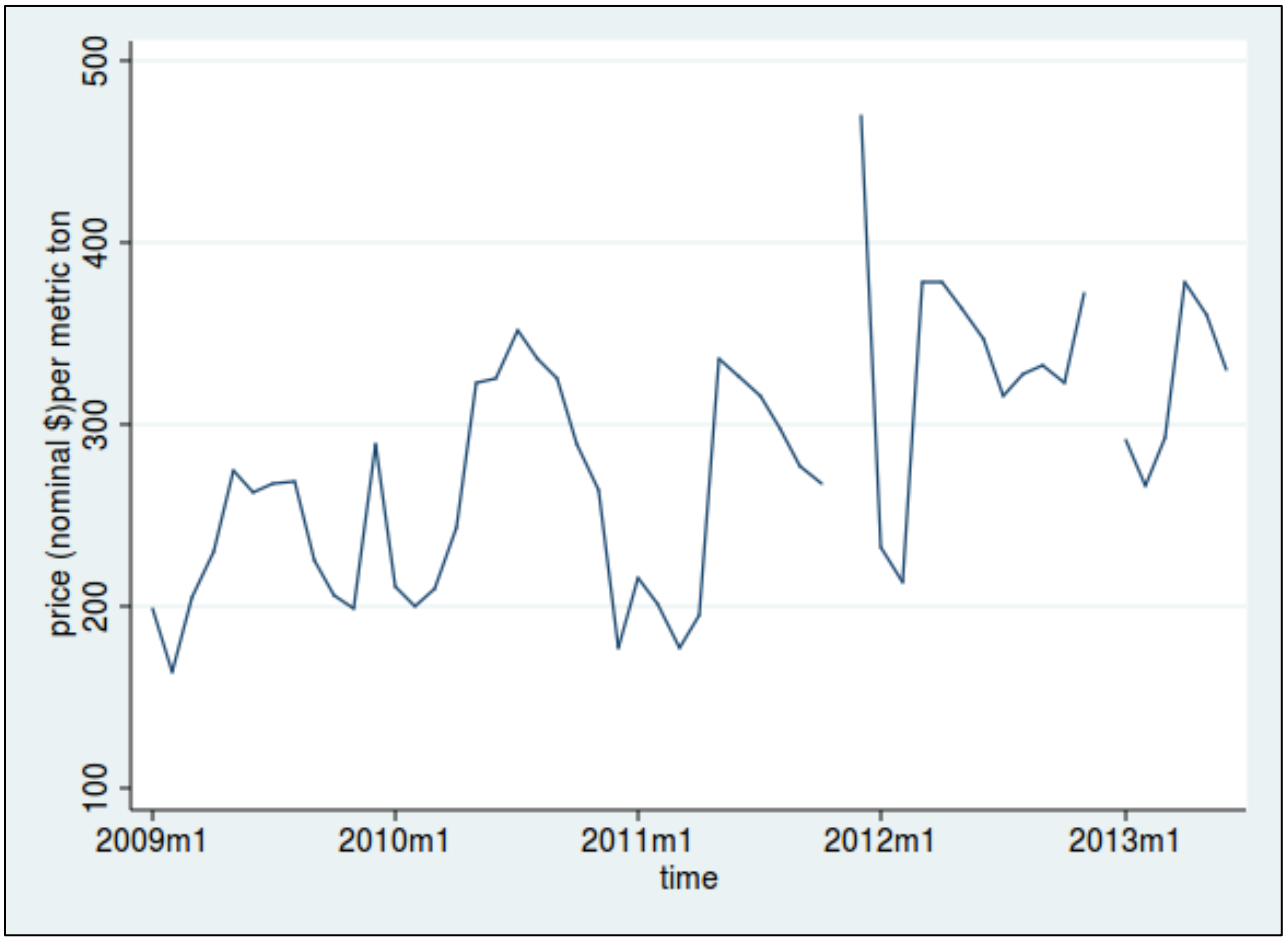
Source: VTR database. September 2012.

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 9 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 9 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 20 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 21).

Table 20 Number of Federally-Permitted Dealers Registered as Atlantic Herring Dealers, by Purchase Status, 2007-2013

Year	Total Atlantic Herring Dealers	Active Dealers	Inactive Dealers
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 21 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 22). 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 22 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 23). 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 23 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

1. Portland, Maine

Portland is the largest city in Maine, with a population of 66,194 (Bureau 2010). Of the civilian employed population 16 years and older, 0.3% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (29.3%) is the largest industry sector (Bureau 2011). Portland's waterfront provides most of the community's fishing industry infrastructure (e.g., Portland Fish Exchange) alongside other industries including recreation, tourism, light industry, transportation, cargo, and marine-related research. Portland's landings come primarily from the large mesh groundfish species and from lobster. Herring brings in about 8.6% of the dollar value of landings in Portland. Portland ranked third in herring landings in the region, taking a six-year (2005-2010) average (13.5K mt) Taking a four-year average (2007-2010), Portland ranked fourth among ports with herring revenue ($3.1M) (Dealer and VTR data).

2. Rockland, Maine

Rockland has a total population of 7,297 (Bureau 2010). Of the civilian employed population 16 years and older, 3.1% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (18.3%) is the largest industry sector (Bureau 2011). Other than fishing and boat building/repair, other stabilizing businesses include furniture and playground equipment manufacturing, biotechnology industries, wholesale distribution, marine-related businesses, seaweed processing, metal fabricating, and food related industries. Rockland's landings come primarily from lobster and herring. Herring brings in about 36% of the dollar value of landings in Rockland. Rockland ranked fourth in herring landings in the region, taking a six-year (2005-2010) average (12.5K mt) Taking a four-year average (2007-2010), Rockland ranked second among ports with herring revenue ($3.4M), though 2009 and 2010 revenues were noticeably lower (Dealer and VTR data).

3. Stonington/Deer Isle, Maine

Stonington and Deer Isle have a total population of 3,018 (Bureau 2010). Of the civilian employed population 16 years and older, 29% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). This is the largest industry sector (Bureau 2011). Deer Isle is home to the Commercial Fisheries News, the widely-read monthly fishing industry newspaper for the Atlantic coast. Stonington is one of the few Maine fishing communities that have secured waterfront access for commercial fishing, because property values have remained stable relative to other coastal cities. Stonington's landings come primarily from lobster. Herring brings in about 0.10% of the dollar value of landings in Stonington and Deer Isle. Stonington and Deer Isle landed 3.9K mt of herring on average over six years (2005-2010). Taking a four-year average (2007-2010), Stonington ranked fifth among ports with herring revenue ($1.0M), though 2009 and 2010 revenues were noticeably lower (Dealer and VTR data). Stonington and Deer Isle are involved in the Atlantic herring fishery primarily through their dependence on herring for lobster bait.

4. Vinalhaven, Maine

The island town of Vinalhaven has a total population of 1,165 (Bureau 2010). Of the civilian employed population 16 years and older, 32.4% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). This is the largest industry sector (Bureau 2011). Vinalhaven is intimately involved with the Atlantic herring fishery because of its dependence on lobster bait. Many of the year-round residents are participants in the lobster fishery. Several lobster bait dealers, including floating stations and a co-op, are located in Vinalhaven. Vinalhaven has several packaging and wholesale companies, including Vinalhaven Lobster Co., Vinalhaven Fishermen's Co-op, Inland Seafood and Alfred Osgood, that ship lobster to Portland and other mainland locations for processing and distribution. Bait dealers on Vinalhaven pay a higher price for bait than dealers on the mainland, as there is limited bait storage capacity on the island and insufficient space on the ferry that transports goods and people from the mainland to make regular bait transshipments during the height of the lobster season. Herring brings in about 2.7% of the dollar value of landings in Vinalhaven. Vinalhaven ranked ninth in herring landings in 2004 (2,674 mt) and tenth cumulatively from 1995-2004 (24,779 mt).

5. Lubec/Eastport, Maine

Lubec and Eastport have a total population of 2,690 (Bureau 2010). Of the civilian employed population 16 years and older, 5.4% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (31%) is the largest industry sector (Bureau 2011). Lubec and Eastport has a diversity of employment, including medical centers, schools, an apparel company, and an Atlantic salmon aquaculture facility. Eastport also has the only Nori seaweed processing plant in the US. Eastport and Lubec are involved in a diversity of fisheries, including lobster, scallops, urchin, clams, and sea cucumbers. No herring landings were reported in Lubec/Eastport in 2004. Lubec and Eastport are representative of geographically isolated small ports that depend on herring for lobster bait.

6. Sebasco Estates, Maine

Sebasco Estates is a small village within the town of Phippsburg, which has a total population of 2,216 (Bureau 2010). Of the civilian employed population of Phippsburg 16 years and older, 5.2% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (22.6%) is the largest industry sector (Bureau 2011). Herring brings in about 0.076% of the dollar value of landings in Sebasco Estates. Several lobster bait dealers, large and small, are located in this area. Sebasco Estates is involved in the Atlantic herring fishery primarily due to its dependence on herring for lobster bait, and is representative of small ports that depend on herring for lobster bait.

7. NH Seacoast – Newington, Portsmouth, Hampton/Seabrook

Newington has a total population of 753 (Bureau 2010). Of the civilian employed population of Newington 16 years and older, 1.0% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (15.8%) is the largest industry sector (Bureau 2011). Major employers in Newington include Fox Run Mall (retail) and Neslab (light manufacturing lab equipment). Herring brings in

about 4.8% of the dollar value of landings in Newington. Newington ranked fifth in herring landings in 2004 (5,660 mt) and 12th cumulatively from 1995-2004 (16,805 mt), with herring landings increasing in more recent years. Newington is primarily dependent on the herring fishery because of the bait it provides for lobster operations based in Great Bay estuary. Commercial fisheries in the Great Bay estuary include herring, alewives, mummichogs (*Fundulus sp.*) and tomcod, eels, and smelt. Newington has several large and small herring bait dealers, and freezer facilities to store lobster bait. The Little Bay Lobster Company and the Shafmaster Fleet Services both harvest and deliver lobster nationally and internationally. The Newington fishing industry also competes with other water-dependent industries, including tallow, steel scrap and wood chip export industries.

Portsmouth has a total population of 20,779 (Bureau 2010). Of the civilian employed population of Portsmouth 16 years and older, 0.7% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (25.5%) is the largest industry sector (Bureau 2011). Portsmouth is somewhat involved in the herring fishery, primarily through its dependence on herring for lobster and tuna bait. Herring brings in about 1.2% of the dollar value of landings in Portsmouth. The port is centrally-located with good transportation infrastructure and provides other fishing related services. Portsmouth ranked 13th in herring landings in 2004 (800 mt) and 11th cumulatively from 1995-2004 (18,060 mt).

Hampton and Seabrook have a total population of 24,123 (Bureau 2010). Of the civilian employed population 16 years and older, 0.5% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (21.5%) and retail trade (21.8%) are the largest industry sector, in Hampton and Seabrook, respectively (Bureau 2011). Hampton and Seabrook are somewhat involved in the herring fishery through their dependence on herring for lobster and tuna bait. Herring brings in about 0.2% of the dollar value of landings in Hampton and Seabrook. Only 2 mt of herring were reported to have been landed in Hampton in 2004. Seabrook ranked 17th in herring landings in 2004 (96 mt).

8. Gloucester, Massachusetts

Gloucester has a total population of 28,789 (Bureau 2010). Of the civilian employed population of Gloucester 16 years and older, 2.2% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (25.5%) is the largest industry sector (Bureau 2011). Herring brings in about 11% of the dollar value of landings in Gloucester. Gloucester was the top-ranked port for herring landings in 2004 (26,891 mt) and cumulatively from 1995-2004 (227,579 mt). Taking a four-year average (2007-2010), Gloucester ranked first among ports with herring revenue ($6.4M) (Dealer and VTR data). Gloucester lobster fishermen depend on the harvested herring as bait for their traps and tuna fishermen use herring as bait for their lines. Several lobster bait dealers and a pumping station for offloading herring are located in Gloucester. In addition, Cape Seafoods, one of the largest processors of herring for frozen export, is located at the State Pier and owns several dedicated pelagic fishing vessels.

9. New Bedford, Massachusetts

New Bedford has a total population of 95,072 (Bureau 2010). Of the civilian employed population of New Bedford 16 years and older, 1.2% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (26.1%) is the largest industry sector (Bureau 2011). New Bedford contains approximately 44 fish wholesale companies, 75 seafood processors and some 200 shore side industries (Hall-Arber et. al. 2001). Maritime International, which has one of the largest U.S. Department of Agriculture-approved cold treatment centers on the East Coast, is also located in New Bedford. Herring brings in about 0.7% of the dollar value of landings in New Bedford. New Bedford ranked fourth in herring landings in 2004 (7,791 mt) and seventh cumulatively from 1995-2004 (31,089 mt). Taking a four-year average (2007-2010), New Bedford ranked third among ports with herring revenue ($6.4M) (Dealer and VTR data).

10. Southern Rhode Island – Point Judith, Newport, North Kingstown

Census data are not available for Point Judith itself, but are available for the county subdivision "Narragansett Pier CDP" which includes Point Judith. Narragansett Pier CDP has a total population of 3,409 (Bureau 2010). Of the civilian employed population of Narragansett Pier CDP 16 years and older, 0.5% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (27.7%) is the largest industry sector (Bureau 2011). Several lobster bait dealers are located in Point Judith, and some herring is trucked to Maine from Point Judith for processing. Landings of herring in Point Judith were much higher in the early 1990s, possibly due to increased participation in the Atlantic mackerel fishery. Today, herring brings in about 1.2% of the dollar value of landings in Point Judith. Point Judith ranked 10th in herring landings in 2004 (2,129 mt) and fourth cumulatively from 1995-2004 (71,289 mt). Taking a four-year average (2007-2010), Point Judith ranked seventh among ports with herring revenue ($469K) (Dealer and VTR data).

Newport has a total population of 24,672 (Bureau 2010). Of the civilian employed population of Newport 16 years and older, less than 0.01% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (25.1%) is the largest industry sector (Bureau 2011). Herring brings in less than 0.01% of the dollar value of landings in Newport. Newport is marginally involved in the Atlantic herring fishery, and ranked 15th in herring landings in 2004 (313 mt) and 17th cumulatively from 1995-2004 (3,757 mt). Aquidneck Lobster Co., Dry Dock Seafood, International Marine Industries Inc., Long Wharf Seafood, Neptune Trading Group Ltd., Parascandolo and Sons Inc., and Omega Sea are wholesalers and retailers of seafood in Newport.

North Kingstown has a total population of 26,486 (Bureau 2010). Of the civilian employed population of North Kingstown 16 years and older, 1.1% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Educational services and health care and social assistance (25.4%) is the largest industry sector (Bureau 2011). Herring brings in about 6.9% of the dollar value of landings in North Kingstown, which is involved in the herring fishery primarily through its involvement in the bait market. North Kingstown ranked 12th in herring landings in 2004 (1,065 mt) and fifth cumulatively from 1995-2004 (69,094 mt). Several lobster bait dealers and freezer facilities are located in North Kingstown, and some herring is trucked to Maine from North Kingstown for processing. North Kingston's Sea Freeze,

Ltd. is the largest producer of sea-frozen fish on the U.S. east coast. It supplies sea-frozen and land-frozen fish to domestic and international markets including bait products to long-line fleets. Sea Freeze owns two freezer trawlers that provide *Illex* and *Loligo* squid, mackerel and herring to the Sea Freeze facilities. Although herring is among the least financially valuable species that Sea Freeze harvests and processes, it is nevertheless important to the business due to its year round availability.

11. Cape May, New Jersey

Cape May has a total population of 3,607 (Bureau 2010). Of the civilian employed population of Cape May 16 years and older, less than 0.01% are employed in the agriculture, forestry, fishing, hunting, or mining sectors (2007-2011 average). Arts, entertainment, recreation, accommodation and food services (19.3%) is the largest industry sector (Bureau 2011). Herring brings in about 0.6% of the dollar value of landings in Cape May. Only 8 mt of herring were reported to have been landed in Cape May in 2004. A pumping station for offloading herring and Lund's Fisheries, a processor of herring and mackerel, are located in Cape May. Lunds' also owns a number of dedicated pelagic fishing vessels, and is a member of the Garden State Seafood Association. There are also two other exporters of seafood in Cape May: the Atlantic Cape Fisheries Inc., which exports marine fish and shellfish, oysters, scallops, clams and squids; and the Axelsson and Johnson Fish Company Inc., which exports shad, marine fish, conch, American lobster, lobster tails, scallops and whole squid.

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

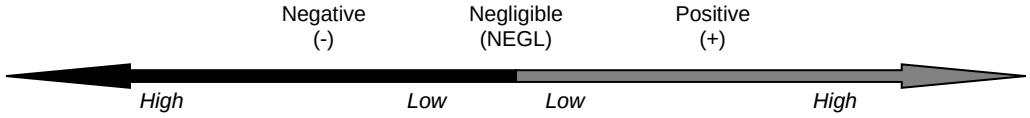
This section addresses the potential impacts of the action proposed in Framework 4 as well as other alternatives/options considered by the Council. The impacts of the Framework 4 alternatives on each VEC identified in Section 3.0 of this document are discussed in the following subsections. Background and supporting documents are included in the appendices and are summarized/referenced throughout the following discussion.

In general, the descriptive and analytic components of this document are constructed in a consistent manner. The Affected Environment (Section 3.0, p. 36) updates information related to each VEC since the implementation of Amendment 5 to the Herring FMP (March 2014) and addresses the impacts of all related management actions. The Affected Environment section is designed to enhance the readers' understanding of the baseline conditions and recent trends in order to fully understand the anticipated environmental impacts of the management measures under consideration in this framework adjustment. The impacts of these measures are assessed in the following sub-sections of this document using a similar structure to that found in the Affected Environment.

To enhance clarity and maintain consistency, the terms described in Table 24 are used to summarize the impacts of each alternative/option on the VECs in this document. If impacts are determined to be uncertain, unknown, or neutral, the reasons for making such a determination are provided in the discussion. The impacts of all of the options/alternatives that the Council considered in this framework adjustment are also presented in a comparative manner in a summary table on p. 177 of this document (Table 29). Overall, as discussed in the following sub-sections, the impacts of the alternatives considered/proposed in Framework 4 on all of the VECs (whether positive or negative) are expected to be negligible or minor.

Table 24 Terms Used to Summarize Impacts of Framework 4 Alternatives on VECs

Impact Definition			
	Direction		
VEC	**Positive (+)**	**Negative (-)**	**Negligible (Negl)**
Atlantic Herring; Non-Target Species, and Protected Resources	Actions that increase stock/population size	Actions that decrease stock/population size	Actions that have little or no positive or negative impacts to stocks/populations
Physical Environment/ Habitat/EFH	Actions that improve the quality or reduce disturbance of habitat	Actions that degrade the quality or increase disturbance of habitat	Actions that have no positive or negative impact on habitat quality
Human Communities	Actions that increase revenue and social well-being of fishermen and/or associated businesses	Actions that decrease revenue and social well-being of fishermen and/or associated businesses	Actions that have no positive or negative impact on revenue and social well-being of fishermen and/or associated businesses
Impact Qualifiers:			
Low **(L, as in low positive or low negative)**	To a lesser degree		
High **(H; as in high positive or high negative)**	To a substantial degree (not significant)		
Likely	Some degree of uncertainty associated with the impact		



General Management Context

The Atlantic herring fishery is administered in accordance with the Atlantic Herring FMP, as modified by applicable amendments and framework adjustments. The Herring FMP was developed by the Council and implemented by NMFS in 2000. The Atlantic herring fishery has been managed by catch quotas (now called ACLs) since the Herring FMP was implemented. The specification-setting process is the primary management tool used to administer the Atlantic herring fishery and was modified in Amendment 1 (from annual to every three years) and Amendment 4 for consistency with the new ACL/AM provisions in the reauthorized MSA. Amendment 4 (76 FR 11373, March 2, 2011) established a trigger for closing the directed herring fishery in a management area and the provision that any overages would be deducted from future harvest levels (AMs). The 2013-2015 Atlantic herring fishery specifications (see Table 13 on p. 69) established annual Atlantic herring harvest levels for each of four management areas (Figure 8, p. 68), established a 95% total herring ACL trigger, and modified the suite of existing AMs to reduce the sub-ACL trigger to 92%. Framework 2 was implemented

concurrently with the 2013-2015 fishery specifications and modifies the specifications process to allow for seasonal sub-ACL splitting (by month) and un-utilized sub-ACL carryovers (up to 10% per management area). The AMs were adopted by the Council to further prevent the stockwide Atlantic herring ACL and management area sub-ACLs from being exceeded during the fishing year, as well as improve the likelihood that the total ACL (OY) can be caught on a continuing basis while preventing overfishing. Framework 3 to the Herring FMP proposes to establish gear-specific and area-specific RH/S catch caps on participants in the Atlantic herring fishery.

4.1 IMPACTS ON THE ATLANTIC HERRING RESOURCE

A description of the Atlantic herring resource is provided in Section 3.0 of this document (p. 36); more detailed information can be found in the FEIS for Amendment 5 to the Herring FMP. As previously noted, Atlantic herring catch (fishing mortality) is managed primarily through the overall herring ACL (reduced from the overfishing limit and acceptable biological catch to address scientific uncertainty and management uncertainty) and sub-ACLs that are intended to minimize risk to individual herring stock components while maximizing opportunities for participants in the herring fishery to achieve OY. Based on the best available scientific information (SAW 54, June 2012), the Atlantic herring resource is not overfished (the stock complex is considered to be rebuilt, above its biomass target), and overfishing is not occurring (fishing mortality is below the threshold level). None of the alternatives under consideration in this framework adjustment are expected to impact the biological status of the Atlantic herring resource (see below). Under all of the Framework 4 alternatives, catch of the Atlantic herring resource will continue to be controlled by the stockwide ACL and area-based sub-ACLs established through the herring fishery specifications. None of the measures in Framework 4 impact the Atlantic herring ACL. The next stock assessment update for the Atlantic herring resource is anticipated to occur during 2015. Following the assessment, the Council will develop the 2016-2018 Atlantic herring fishery specifications package, which will specify ABC, a stockwide ACL, management area sub-ACLs, and RH/S catch caps, among other specifications.

The impacts of the individual alternatives considered by the Council in Framework 4 on the Atlantic herring resource are discussed separately in the following subsections.

4.1.1 Impacts of Dealer Reporting/Weighing Requirements on the Atlantic Herring Resource

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 in Section 2.1.1 of this document (p. 8). Without taking action in this framework adjustment, the status quo would be maintained with respect to dealer weighing/reporting requirements. Atlantic herring fishing mortality and catch would continue to be managed by catch limits set through the 2013-2015 fishery specifications, and future mortality/catch would be assessed and managed through future specifications packages.

Due to the continuing management of the Atlantic herring fishery through the Herring FMP and fishery specifications, selection of the no action alternative in this framework adjustment would not be expected to affect the status of the Atlantic herring resource, and the no action alternative is therefore expected to have a *negligible* impact on the Atlantic herring resource. However, some of the potential positive impacts on the Atlantic herring resource that may result from the management measures proposed in this framework adjustment (discussed below), although minor, may not be realized under the no action alternative.

Dealer Alternative 2 (Section 2.1.2, Option C Preferred Alternative): This alternative includes any combination of the following three options. The Council recommends Option C as part of the ***Preferred Alternative*** in this framework adjustment.

(A.) **Option A** 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.

This measure was originally considered in Amendment 5 as a way to enhance identification of erroneous data discrepancies between dealer and vessels reports. However, since the development of the Amendment 5 catch monitoring program, NMFS has taken additional steps to improve its quality control program for cross-checking Atlantic herring landings information. In correspondence dated April 17, 2014, NMFS informed the Council of the updates to the quality control program in its Analysis and Program Support Division (APS) and stated that this option duplicates effort to crosscheck landings information (see April 17, 2014 correspondence from John Bullard to Tom Nies). NMFS indicated that this option would no longer provide any additional information, but it would add a burden to the vessel operator, dealer, and agency. Because improvements to NMFS' data quality control programs already address discrepancies between dealer and vessel reports, this option is not expected to enhance the Atlantic herring catch monitoring program. The impacts of this option on the Atlantic herring resource, therefore, are *negligible*.

(B.) **Option B** would increase the frequency of VTRs and dealer reports for Federally-permitted limited access herring vessels and herring dealers to 24 hours.

This measure was also considered in Amendment 5 to improve the Atlantic herring catch monitoring program. However, since the development of Amendment 5, NMFS has taken additional steps to resolve discrepancies between dealer and VTR data and enhance real-time monitoring of ACLs/sub-ACLs in the Atlantic herring fishery. In correspondence dated April 17, 2014, NMFS informed the Council of the updates to the quality control program in its APS Division and general improvements to real-time ACL/sub-ACL monitoring. NMFS stated that this option duplicates current daily catch submissions through vessel monitoring systems (VMS) and would not provide additional information (see April 17, 2014 correspondence from John Bullard to Tom Nies). NMFS also indicated that for the 2013 fishing year, landings information between vessels and dealers is almost 100% matched. During the development of Framework 4, the APS Division commented that increasing the frequency of reports would have no impact on ACL/sub-ACL monitoring because quality control checks are run on a weekly basis. Because increasing the frequency of catch reports would duplicate daily VMS catch reports and is not necessary to further resolve data discrepancies, this option is not expected to enhance the Atlantic herring catch monitoring program. The impacts of this option on the Atlantic herring resource, therefore, are *negligible*.

(C.) ***Preferred Alternative*. Option C** would require that fish holds on Category A/B herring vessels are empty of fish before leaving the dock on any trip when declared into the Atlantic herring fishery. A waiver may be issued for instances when there are fish in the hold after inspection by an appropriate law enforcement officer (the intent is for waivers to be issued for refrigeration failure and non-marketable fish that have been reported by the vessel).

This option is proposed to discourage wasteful fishing practices and provide some incentive to harvest the resource more efficiently. It is also intended to enhance the effectiveness of the Atlantic herring catch monitoring program by reducing the potential to mix fish landed from multiple trips and providing a mechanism to document the extent to which this may currently occur. Mixing fish from multiple trips confuses catch monitoring and reporting; it could compromise catch data used to inform harvest control measures and bycatch avoidance programs. Moreover, leaving fish in the vessel's hold after offloading could preclude a portside sampler from sampling an entire trip. This measure reduces the likelihood that this will occur and provides a mechanism to better document the nature and extent to which it may be occurring, thereby providing information to enhance catch monitoring and inform the long-term management of the Atlantic herring fishery.

To the extent that this option reduces waste in the fishery and enhances the Atlantic herring catch monitoring program, there may be some long-term positive benefits for the Atlantic herring resource. The benefits of an effective catch monitoring program are discussed in detail in the FEIS for Amendment 5. If Atlantic herring catch statistics ultimately improve by implementing this requirement, then management uncertainty in the fishery may be reduced (uncertainty about catch estimates is a component of management uncertainty). Over the long-term, improving catch monitoring results in better catch data for stock assessments and may also reduce scientific uncertainty. This would likely lead to more effective management of the Atlantic herring

resource and provide the additional benefits that result from a sustainable fishery. Because the practice of disposing unmarketable catch at-sea on a subsequent fishing trip is not known to occur widely in the Atlantic herring fishery, the impacts of this option on the herring resource, although positive, are not likely to be large. Relative to taking no action, however, the impacts of this option on the Atlantic herring resource are expected to be *low positive*.

Dealer Alternative 3 (Section 2.1.3, Preferred Alternative): 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. Vessels with limited access herring permits that store herring catch in fish holds would be required to certify the capacity of their fish holds and mark the tank at regular intervals to facilitate third-party catch verification. At the first point of landing, the observer would dip a 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 and reported by the observer based on volumetric conversions provided in Appendix I. This estimate would provide a cross-check for self-reported estimates of total catch on board for trips by limited access vessels carrying an observer.

This alternative would provide an independent estimate of *total catch* on board a herring vessel at the first point of landing, which would be derived in a standardized manner from a herring-derived volumetric conversion. The estimate provided by a third party under this alternative would be based on a volume-to-weight conversion for herring and would *not* provide useful information to estimate Atlantic herring catch on trips that land a mixed catch (i.e., mixed herring and mackerel, about 1/3 of the trips in Area 2). The volumetric conversions utilized in this alternative 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 water that may be in the tank. The 5% deduction from total weight on board to account for water in the tanks, which is included as part of this alternative, is based on best known practices among the industry but has not been evaluated on a technical basis. There is an element of consistency (in the size, weight, and density of the catch) assumed by using a conversion factor, but there can be substantial variability in the catch composition of this fishery, depending on the area and season. Converting a volume of total fish on board to pounds based on a herring-based conversion could therefore produce less accurate catch estimates if this approach was used to derive Atlantic herring catch estimates at this time. Because of these uncertainties, the catch estimates derived under this alternative will not be utilized to provide an estimate of Atlantic herring catch. Therefore, the impacts of this measure are not directly related to the Atlantic herring resource. Because of this, the impact of this measure on the Atlantic herring resource is likely to be *negligible*.

Over the long-term, there may be some benefits to other VECs by addressing perceptions and providing a cross-check for self-reported catch. One of the goals of the Amendment 5 catch monitoring program is to *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*, with a related objective to *eliminate reliance on self-reported catch estimates*. There could be a marginal advancement towards this goal/objective from standardizing estimation methods and/or third-party catch verification, but

this appears to be more of a social impact than a biological impact. The impacts of this alternative on the Atlantic herring resource, therefore, remain *negligible*.

Dealer Alternative 4 (Section 2.1.4, Non-Preferred): This alternative would require Federally-permitted Atlantic herring dealers 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. This alternative includes any combination of the following three options.

(A.) **Option A** would standardize the weight of Atlantic herring reported for herring boxes (1,869 pounds).

(B.) **Option B** would require Federally-permitted Atlantic herring dealers to estimate weight of Atlantic herring through standardized conversions based on the volumetric capacity of the storage containers.

(C.) **Option C** would require Federally-permitted Atlantic herring dealers 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.

All three options considered under this alternative would standardize methods used by Federally-permitted herring dealers to estimate the weight of reported Atlantic herring purchases.

Unlike Alternative 2 (above), this alternative would change the way that Atlantic herring catch is estimated by dealers and could therefore impact catch estimates and the information used to assess and manage the Atlantic herring resource. The impacts of these measures on the Atlantic herring resource, however, cannot be predicted because of the uncertainties introduced by applying these volumetric standardizations to Atlantic herring catch estimates. The conversions proposed in these options have not been technically evaluated for their potential impacts to Atlantic herring catch estimates. There is an element of consistency (in the size, weight, and density of the catch) assumed by using a conversion factor, but there can be substantial variability in the catch composition of this fishery, depending on the area and season. Converting a volume of total fish on board to pounds based on a herring-based conversion could therefore produce less accurate catch estimates. These issues are discussed under Alternative 2 above, but relate more to the options proposed in this alternative because these options would modify Atlantic herring catch estimates.

For the reasons discussed above (as well as under Alternative 2), the impacts of this alternative (all options) on the Atlantic herring resource are *uncertain*. However, based on available information, it is unlikely that the volumetric conversions proposed in the options in Alternative 4 would result in changes to catch estimates that would significantly impact the Atlantic herring resource, either positively or negatively. The volumetric conversions are based on other similar species and well-known practices within the fishery and should not produce widely-disparate weight estimates for Atlantic herring. The impacts of this alternative on the Atlantic herring resource are therefore *uncertain but not likely significant*.

4.1.2 Impacts of Measures to Address Net Slippage on the Atlantic Herring Resource

In Framework 4, the Council is proposing clarifications to the current measures requiring full sampling (implemented in Amendment 5) as well as additional management measures to address net slippage on limited access herring vessels carrying an observer on board (described in the following subsections). If all of the Council's ***Preferred Alternatives*** to address net slippage (Section 2.2) in Framework 4 are implemented, the following rules would apply to limited access Atlantic herring vessels:

- Observed slippage events (*catch not brought on board*) due to *safety, mechanical failure, or spiny dogfish* would be considered "allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as the proposed 15-nm move along rule described in Section 2.2.2.4 of this document.
- Observed slippage events (catch *not brought on board* for reasons other than safety, mechanical failure, and spiny dogfish) would be considered "non-allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as trip termination described in Section 2.2.2.4 of this document.
- Operational discards reported by observers would *not* be prohibited outside the groundfish closed areas (status quo); although operational discards represent catch that is not brought on board, they would *not* be treated like slippage events (no additional consequences, Section 2.2.1.1 of this document).
- Catch reported by observers as "*not brought on board due to gear damage"* would be considered the same as "*not brought on board due to mechanical failure"* for the purposes of complying with and enforcing the regulations to address net slippage. In other words, when catch is released due to gear damage, this would be an "allowable" slippage event, and vessels would be subject to current requirements for a Released Catch Affidavit as well as the 15-mile move along requirement described in Section 2.2.2.4 (versus trip termination).
- Fish that are documented by observers to fall out of gear (and therefore are not brought on board the vessel) would *not* be treated like slippage events (no additional consequences, Section 2.2.1.3 of this document).

This section addresses the impacts of these measures, as well the non-preferred Alternatives considered by the Council, on the Atlantic herring resource.

General Impacts

The management measures to address slippage directly relate to the first objective of Amendment 5: to implement measures to improve the long-term monitoring of catch (landings and bycatch in the Atlantic herring fishery. Overall, minimizing slippage events and better documenting slipped catch may improve estimates of catch and bycatch in the fishery. To the extent that the amount and species composition of slipped catch can be sampled and/or estimated, catch monitoring in the fishery will be enhanced. To the extent that slippage events can be reduced/eliminated, bycatch can be further minimized.

None of the alternatives considered to address net slippage in Framework 4 are expected to have a significant biological impact on the Atlantic herring resource. The Atlantic herring resource is not overfished, and overfishing is not occurring. No matter which alternative is selected, catch in the Atlantic herring fishery and fishing mortality would continue to be managed under sub-ACLs that are designed to prevent overfishing on the Atlantic herring resource and/or any of its individual spawning components. None of the alternatives in Framework 4 are expected to change or affect the rebuilt status of the Atlantic herring resource.

However, there are long-term benefits to the Atlantic herring resource that may result from improvements to catch monitoring, increased sampling, a reduction in net slippage and unobserved catch, and an increase in the accuracy of catch/bycatch estimates that result from observer sampling. These benefits are difficult to quantify with respect to each of the alternatives under consideration in this framework adjustment, but important to acknowledge and were discussed in-depth in Amendment 5. The impacts relate to the potential for the measure to achieve those outcomes over the long-term, as long as sampling remains at levels sufficient to generate accurate and precise catch estimates that are representative of the fishery. 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 Atlantic herring resource at long-term sustainable levels. These benefits apply to all alternatives under consideration in Framework 4 that would increase the observer's ability to sample catch and minimize the occurrence of slippage in the Atlantic herring fishery. Relative to taking no action, therefore, the management measures under consideration in Framework 4 to address net slippage are likely to have a *low positive* impact on the Atlantic herring resource. The degree of the positive impact will depend on the level of sampling/monitoring on limited access herring vessels, but overall, the measures are elements of a comprehensive program designed to minimize bycatch and enhance catch monitoring in the Atlantic herring fishery. The impacts of specific alternatives/options on the Atlantic herring resource are addressed below.

4.1.2.1 Impacts of Clarification of Amendment 5 Measures to Address Net Slippage on the Atlantic Herring Resource

In Framework 4, the Council is clarifying the current (Amendment 5) management measures to address net slippage and provisions related to catch not brought on board Atlantic herring vessels during normal fishing operations. The clarifications that the Council considered address operational discards on midwater trawl vessels, catch not brought on board due to gear damage, and catch that falls out/off of gear during normal fishing operations (Section 2.2.1, p. 18). The Council's ***Preferred Alternatives*** would maintain the status quo with respect to operational discards on observed midwater trawl trips (prohibited in year-round groundfish closed areas), clarify that catch not brought on board due to gear damage would be considered an "allowable" slippage event under *mechanical failure*, and clarify that observed catch not brought on board due to falling out/off of gear would not be subject to management measures to address net slippage.

Clarification 1. Operational Discards on Midwater Trawl Vessels (Section 2.2.1.1)

Information about operational discards on midwater trawl vessels is provided in Appendix II of this document (*Summary of NEFOP Slippage Data (Observed Trips on Atlantic Herring Vessels 2010-2013*). NEFOP 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. 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. Operational discards are observed on a greater proportion of trips (about 1/3 of trips, based on the information provided in Appendix II). Observed operational discards have averaged about 240 pounds per event from 2010-2013. Observers document operational discards as *Herring NK* if they are able to see the fish that are not pumped and confirm that the discards are all herring-bodied fish. Otherwise, the discards are documented as *Fish NK*.

Because operational discards represent a very small fraction of the catch by directed herring vessels and because current NEFOP observer protocols document operational discards, it is not likely that either of the options to address operational discards considered in Framework 4 would measurably impact the Atlantic herring resource. Option A, the ***Preferred Alternative***, maintains the status quo and is expected to have a *negligible* impact on the Atlantic herring resource. Operational discards would continue to be prohibited on observed trips by midwater trawl vessels in groundfish closed areas, and these discards would continue to be documented by observers on all midwater trawl trips. There would also be no impact on operational discards occurring on purse seine vessels under this alternative.

Option B would prohibit operational discards on observed trips by midwater trawl vessels when not fishing in a groundfish closed area. This option would only address a subset of operational discards known to occur in the directed Atlantic herring fishery, reducing the likelihood that it would result in a substantial benefit for the Atlantic herring resource. Moreover, information provided in Appendix II of this document indicates that purse seine vessels experience operational discards similar to midwater trawl vessels during normal fishing operations. This option does not address operational discards on purse seine vessels. Prohibiting operational discards on observed midwater trawl trips under Option B (Non-Preferred) is consequently not expected to change/affect the catch of Atlantic herring and/or the biological status of the Atlantic herring resource. Similar to Option A, therefore, the impacts of Option B on the Atlantic herring resource, are also *negligible*.

Clarifications 2 and 3. Gear Damage and Fish that Fall Out/Off of Gear (Section 2.2.1.2 and 2.2.1.3)

The ***Preferred Alternatives*** regarding clarifications to observed catch *not brought on board* due to gear damage and falling out/off of gear enhance the effectiveness of existing management measures and facilitate enforcement of the Amendment 5 measures to address net slippage, but the clarifications themselves do not change the way that Atlantic herring are caught and/or sampled by observers. They also would not affect the amount of Atlantic herring caught by these vessels. Similar to the no action options, these proposed clarifications, therefore, are expected to have a *negligible* impact on the Atlantic herring resource.

4.1.2.2 Impacts of Additional Measures to Address Net Slippage on the Atlantic Herring Resource

Slippage Alternative 1 (No Action): Existing management measures that address net slippage in the Atlantic herring fishery would remain effective under the no action alternative and are described in Section 2.2.2.1 of this document (p. 24). If no action is taken to implement additional measures to address net slippage in Framework 4, the Atlantic herring fishery would continue to operate under the Amendment 5 catch monitoring program, which includes a suite of measures to address net slippage; moreover, the catch of Atlantic herring would continue to be managed under the 2013-2015 fishery specifications, and future catch would be managed through future specifications packages. During the development of Framework 4, the Herring PDT determined that the Closed Area I provisions and the additional management measures implemented in Amendment 5 (effective March 17, 2014) enhance at-sea monitoring, discourage net slippage on Atlantic herring vessels, and are expected to minimize the occurrence of slippage events to the extent possible (see March 6, 2014 Herring PDT Report).

Due to the continuing management of the Atlantic herring fishery through the Atlantic Herring FMP (recently modified through Amendment 5) and the Atlantic herring fishery specifications, selection of the no action alternative in this framework adjustment would not be expected to affect the status of the Atlantic herring resource, and the no action alternative is therefore expected to have a *negligible* impact on the Atlantic herring resource. However, some of the benefits to the Atlantic herring resource that may result from the alternatives proposed in this framework adjustment to address net slippage (discussed below), however minor, may not be realized under the no action alternative.

Slippage Alternative 2 (Section 2.2.2.2, Non-Preferred): Under this alternative, vessels would be required to vacate a statistical area in which an observed slippage event occurs, unless exempted. The vessel would then be prohibited from fishing in the original statistical area for the remainder of the trip. Options were considered for exemptions to the move-along rule (safety, mechanical failure, spiny dogfish), trip termination for other observed slippage events, and Atlantic herring permit categories to which this alternative would apply (Category A/B only versus A/B/C).

This alternative is intended to reduce the occurrence of net slippage on vessels participating in the Atlantic herring fishery by establishing additional consequences for slipping catch when observers are on board. The impacts of this alternative on the Atlantic herring resource are consistent with those discussed under ***General Impacts*** at the beginning of this subsection (p. 95). This alternative is not expected to affect the amount of Atlantic herring available to the fishery in any given year, which is specified based on Atlantic herring stock status and analyzed through the fishery specifications process. Because the catch of Atlantic herring will continue to be managed by the ACLs/sub-ACLs established through the fishery specifications process, any impacts resulting from this alternative are not likely to affect or change the biological status of the Atlantic herring resource (rebuilt, overfishing not occurring).

The consequences for slipping catch proposed in this alternative (move-along rule and trip termination) are intended to provide backstops and discourage slippage events by directed herring vessels. Trip termination in itself is not likely to impact the Atlantic herring resource but may provide additional incentive for vessel operators to ensure that observers are able to document all catch. If this alternative improves the observer's ability to document catch not brought on board and reduces the occurrence of net slippage in the directed Atlantic herring fishery, then long-term benefits to the Atlantic herring resource could result. 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 Atlantic herring resource at long-term sustainable levels. Specific improvements to catch sampling, reductions in unobserved catch (i.e., fish not brought on board), and an increase in the accuracy of observer catch/bycatch estimates are difficult to quantify and predict, but are important to acknowledge.

Additionally, there may be shifts in fishing effort by directed herring vessels that result from the move-along rule proposed in this alternative (statistical area move-along rule), which suggests that there may be a potential to reduce Atlantic herring catch (and fishing mortality) during the fishing year under this alternative. A specific change in Atlantic herring catch resulting from the measures proposed in this alternative is difficult to predict, and any resulting impact on the Atlantic herring resource cannot be quantified. In general, if Atlantic herring catch is less than expected, there could be a positive impact on the Atlantic herring resource.

Each of the four herring management areas is comprised of multiple statistical areas (Figure 10), so theoretically, a statistical area move-along requirement should maintain opportunities for vessels to target Atlantic herring within the same management area and fully utilize the sub-ACL available to the fishery in each of the management areas. However, it may be challenging for some vessels to find additional opportunities on the same fishing trip under a statistical area move-along rule, especially in the inshore GOM (Area 1A and 1B) where the statistical areas are relatively large. Some smaller vessels fishing in Area 1A (especially purse seine vessels) may be limited by their ability to relocate on the same trip. In the offshore GOM, the majority of Area 1B is comprised of Statistical Area 515. There may be instances where the move-along rule under this alternative precludes continuation of a directed fishing trip. Similarly, statistical areas in southern New England and Mid-Atlantic area are approximately 50-80 nautical miles (nm) wide. Depending on where in a statistical area a vessel was located, moving to another may be

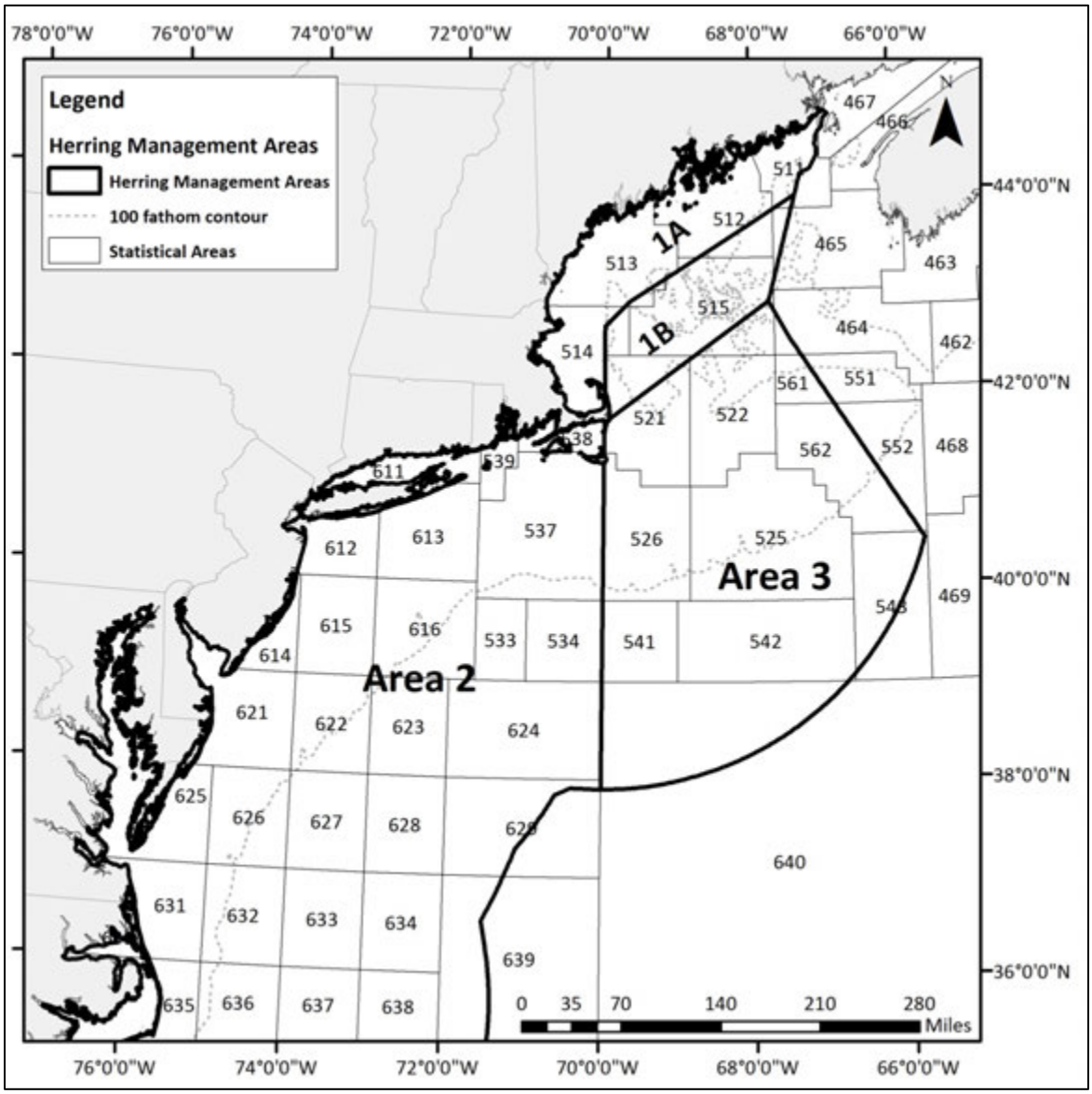
easy or may be far enough to cause a de-facto trip termination for vessels fishing in Area 2, depending on fish availability.

Depending on the time of year, market conditions, and other related fishery conditions (catch cap area closures, other management area closures), there could be a change or reduction in Atlantic herring catch that results from this alternative. As noted above, reductions in catch can generally be assumed to result in positive impacts for the herring resource. When compared to Alternative 1 (no action), the potential for positive impacts on the Atlantic herring resource is greater under this alternative than under Alternative 4 or Alternative 5 because of the larger scope of the proposed move-along rule. As discussed below, the greatest potential for a positive impact on the Atlantic herring resource is under Alternative 3, which includes a management area-based move-along rule (largest in scope) and has the highest likelihood of reducing Atlantic herring catch.

The proposed requirement for herring vessel captains to notify NMFS of a slippage event through vessel monitoring systems (VMS) on any trips with observers on board is included in all of the slippage alternatives considered in this framework adjustment. This requirement is intended to facilitate enforcement of the Amendment 5 measures to address net slippage and is supported by the Council's Herring PDT, Advisory Panel, Committee, and Enforcement Committee. While the requirement itself may have negligible impacts on the Atlantic herring resource, any resulting improvements to the effectiveness of the Amendment 5 catch monitoring program would have positive impacts.

For the reasons discussed above, when compared to the no action alternative, the impacts of this alternative on the Atlantic herring resource are expected to be *low positive*. The difference between options considered to apply this alternative to all limited access herring vessels versus Category A/B vessels only would not affect this determination. Information about Atlantic herring vessels provided in Section 3.5.2 of this document (p. 73) indicates that 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 Atlantic herring fishery.

Figure 10 Atlantic Herring Management Areas and Northeast Region Statistical Areas



Slippage Alternative 3 (Section 2.2.2.3, Non-Preferred): Under this alternative, vessels would be required to vacate a herring management area in which an observed slippage event occurs, unless exempted. The vessel would then be prohibited from fishing in the original management area for the remainder of the trip. Options were considered for exemptions to the move-along rule (safety, mechanical failure, spiny dogfish), trip termination for other observed slippage events, and permit categories to which this alternative would apply (A/B only versus A/B/C). Because purse seine vessels only fish in Area 1A, this alternative would apply only to midwater trawl and small mesh bottom trawl vessels. Purse seine vessels that slip catch on observed trips would only be subject to the existing (Amendment 5) management measures to address net slippage under this alternative.

In general, the *low positive* impacts on the Atlantic herring resource that would be expected under this alternative are the same as those discussed previously under Slippage Alternative 2. Because this alternative proposes a management area-based move-along rule, it may have the greatest potential to reduce Atlantic herring catch, as many vessels may be too limited (by size, regulations, or other factors) to move to another management area to continue the fishing trip. As effort is re-directed to other management areas (or reduced/eliminated), the potential to fully utilize the Atlantic herring sub-ACL may be reduced in one or more management areas.

Slippage Alternative 4 (Section 2.2.2.4, Preferred Alternative): The ***Preferred Alternative*** would require Category A/B herring vessels to move 15 nm before fishing again when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish; the move-along rule would create a closed area for the vessel for the remainder of the trip; any observed slippage events for reasons other than safety, mechanical failure, or spiny dogfish would require trip termination. Options were considered for 10 nm and 20 nm move-along rules, but the ***Preferred Alternative*** proposes a 15 nm move-along rule because 15 nm is the median value between 10 nm and 20 nm. Additionally, notification of slippage events on observed trips via VMS would be required to facilitate enforcement (this measure was proposed in all of the slippage alternatives considered by the Council in this framework).

In general, the impacts on the Atlantic herring resource that would be expected under this alternative are the same as those discussed previously under Slippage Alternative 2. Because of the scope/size of the move-along rule (15 nm), this alternative is less likely than Alternative 3 (management area move-along) and more likely than Alternative 5 (no move-along) to result in positive impacts on the Atlantic herring resource. The differential impacts on the Atlantic herring resource between this alternative and Alternative 2 (statistical area move-along) cannot be determined because the move-along rule in Alternative 2 may be more or less than 15 nm in any given situation. Therefore, it cannot be determined which of these alternatives is more likely to affect/reduce Atlantic herring catch. Overall, though, the impacts from reductions in slippage and improvements in catch monitoring are expected to be *low positive*.

Slippage Alternative 5 (Section 2.2.2.5, Non-Preferred): Under this alternative, no move-along rule would be required when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish. Trip termination would be required for other observed slippage events, and options were considered for permit categories to which this alternative would apply (A/B only versus A/B/C).

The additional consequence for slipping catch proposed in this alternative (trip termination for non-allowable slippage events) is intended to further discourage slippage events on directed Atlantic herring trips. Trip termination in itself is not likely to impact the Atlantic herring resource but may provide additional incentive for vessel operators to ensure that observers are able to document all catch. If this alternative improves the observer's ability to document catch not brought on board and reduces the occurrence of net slippage in the directed Atlantic herring fishery, then long-term benefits to the Atlantic herring resource could result. This alternative, therefore, is expected to have a *low positive* impact on the Atlantic herring resource when compared to the no action alternative. Relative to the other alternatives considered in this framework adjustment, positive impacts on the Atlantic herring resource that may result from

this alternative may be lesser in degree because this alternative does not include a move-along rule for allowable slippage events.

4.2 IMPACTS ON NON-TARGET SPECIES

General Impacts

The FEIS for Amendment 5 to the Atlantic Herring FMP includes comprehensive information about non-target species encountered in the Atlantic herring fishery. A summary is provided in Section 3.2 of this document (p. 39). Interactions between the Atlantic herring fishery and non-target species are managed through provisions required to minimize bycatch/bycatch mortality to the extent practicable (National Standard 9) as well as other required and discretionary provisions of the MSA. Available data indicate that the majority of catch by Atlantic herring vessels on directed trips is Atlantic herring, with low percentages of bycatch. The impacts of the management measures proposed in Framework 4 on non-target species are discussed in the following subsections. Overall, any impacts on non-target species associated with the alternatives considered/proposed in Framework 4 are expected to be minor. Under all of the alternatives, the following applies:

- Haddock catch by midwater trawl vessels in the Atlantic herring fishery will continue to be managed through a catch cap established in 2006 though Framework 43 to the Multispecies (Groundfish) Fishery Management Plan (FMP) and modified in 2011 through Framework 46. Currently, under the provisions established through Framework 46, the herring midwater trawl fleet (including both single and paired midwater trawl vessels) is subject to a stock-specific cap on haddock catch that is equal to 1% of the GB haddock ABC and 1% of the GOM haddock ABC.
- River herring and shad (RH/S) are non-target species of particular concern that may be caught/landed incidentally by vessels in the directed Atlantic herring fishery. The catch of RH/S in the directed Atlantic herring fishery will continue to be managed by area-based and gear-based catch caps, established recently through Framework 3 to the Atlantic Herring FMP. A comprehensive description of the RH/S species is provided in Section 3.2 of Framework 3 (NEFMC, 2014).

If the management measures proposed in this framework adjustment are effective at enhancing catch monitoring in the directed Atlantic herring fishery and reducing the occurrence of unobserved catch on Atlantic herring vessels, then there may be improvements to the accuracy of catch/bycatch information regarding non-target species in the fishery. Providing documentation of previously unrecorded catch of non-target species may improve catch statistics and, consequently, assessment and management of these species over the long-term. Species that are subject to catch caps like haddock and RH/S may benefit most from improvements to catch monitoring. The positive impacts on non-target species that may result from improving catch monitoring in the Atlantic herring fishery are discussed in more detail in the FEIS for Amendment 5 to the Atlantic Herring FMP as well as Framework 3, which established RH/S catch caps in the herring fishery.

It is difficult to predict the specific impacts of the alternatives in Framework 4 on non-target species, particularly the measures to address net slippage, because the impacts depend on how participants in the fishery adapt/respond to the measures in terms of both avoiding/minimizing slippage events and/or relocating/redistributing fishing effort under a move-along rule, or terminating a trip. Moreover, regardless of which management measures are selected in this framework adjustment, directed catch of non-target species and other sources of mortality will continue to be managed through their respective FMPs (Northeast Multispecies FMP and ASMFC Interstate Management Plans for River Herring and Shad) as well as other conservation/restoration efforts. To the extent that the measures adopted in this framework adjustment enhance catch monitoring and discourage net slippage, however, improvements in the documentation of non-targeted catch should ultimately produce a *low positive* impact on these species. The impacts of each of the alternatives considered in Framework 4 on non-target species are discussed in more detail below.

4.2.1 Impacts of Dealer Reporting/Weighing Requirements on Non-Target Species

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 in Section 2.1.1 of this document (p. 8). If the no action alternative is selected, the catch of non-target species in the Atlantic herring fishery would not be affected. Participants in the Atlantic herring fishery – vessels and dealers – would be required to report incidental catch of non-target species under current (Amendment 5 regulations). The catch of haddock and RH/S would continue to be managed through catch caps and related provisions established in Framework 46 to the Multispecies FMP and Framework 3 to the Atlantic Herring FMP. The directed catch of non-target species would continue to be managed through their respective FMPs (State and Federal), and reporting requirements would remain as they currently are until further modified.

Due to the continuing management and reporting of catch of other non-target species catch in the herring fishery through the Atlantic Herring FMP, selection of the no action alternative in this framework adjustment would not be expected to affect the status of any non-target species, and the no action alternative is therefore expected to have a *negligible* impact on non-target species. While the impact of the no action alternative on non-target species is expected to be negligible, any minor positive impact on non-target species that may occur under Dealer Alternative 2, Option C, or Dealer Alternative 3, both included in the Council's ***Preferred Alternative*** (see below), would not occur if no action is taken in this framework adjustment.

Dealer Alternative 2 (Section 2.1.2, Option C Preferred Alternative): This alternative includes any combination of the following three options. The Council recommends only Option C as part of the ***Preferred Alternative*** in this framework adjustment.

(A.) **Option A** 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. This measure was also considered in Amendment 5.

Because improvements to NMFS' data quality control programs already address discrepancies between dealer and vessel reports (see discussion in Section 4.1.1 for more information), this option is not expected to enhance the Atlantic herring catch monitoring program. The impacts of this option on non-target species, therefore, are *negligible*.

(B.) **Option B** would increase the frequency of VTRs and dealer reports for Federally-permitted limited access herring vessels and herring dealers to 24 hours. This measure was also considered in Amendment 5.

Because increasing the frequency of catch reports would duplicate daily VMS catch reports and is not necessary to further resolve data discrepancies (see discussion in Section 4.1.1 for more information), this option is not expected to enhance the Atlantic herring catch monitoring program. The impacts of this option on non-target species, therefore, are *negligible*.

(C.) ***Preferred Alternative*****. Option C** would require that fish holds on Category A/B herring vessels are empty of fish before leaving the dock on any trip when declared into the Atlantic herring fishery. A waiver may be issued for instances when there are fish in the hold after inspection by an appropriate law enforcement officer (the intent is for waivers to be issued for refrigeration failure and non-marketable fish that have been reported by the vessel).

This option is proposed to discourage wasteful fishing practices and provide some incentive to harvest the Atlantic herring resource more efficiently. It is also intended to enhance the effectiveness of the Atlantic herring catch monitoring program by reducing the potential to mix fish landed from multiple trips. Although not known to be a common occurrence in the fishery, mixing fish from multiple trips confuses catch monitoring and reporting; it could compromise catch data used to inform harvest control measures and bycatch avoidance programs. Moreover, leaving fish in the vessel's hold after offloading could preclude a portside sampler from sampling an entire trip. To the extent that this option reduces waste and enhances the catch monitoring program for the target species (Atlantic herring) there may be some *low positive* benefits for non-target species.

Dealer Alternative 3 (Section 2.1.3, Preferred Alternative): 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. Vessels with limited access herring permits that store herring catch in fish holds would be required to certify the capacity of their fish holds and mark the tank at regular intervals to facilitate third-party catch verification. At the first point of landing, the observer would dip a 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 and reported by the observer based on volumetric conversions provided in

Appendix I. This estimate would provide a cross-check for self-reported estimates of total catch on board for trips by limited access vessels carrying an observer.

This alternative would provide a cross-check for the estimation of total catch on board a herring vessel at the first point of landing. It would not provide species-specific information or enhance existing information about the catch of non-target species by limited access herring vessels. This information would not be utilized to estimate catch of non-target species or monitor the river herring/shad and haddock catch caps in the herring fishery. This alternative is therefore expected to have a *negligible* impact on non-target species.

Dealer Alternative 4 (Section 2.1.4, Non-Preferred): This alternative would require Federally-permitted Atlantic herring dealers 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. This alternative includes any combination of the following three options.

(A.) **Option A** would standardize the weight of Atlantic herring reported for herring boxes (1,869 pounds).

(B.) **Option B** would require Federally-permitted Atlantic herring dealers to estimate weight of Atlantic herring through standardized conversions based on the volumetric capacity of the storage containers.

(C.) **Option C** would require Federally-permitted Atlantic herring dealers 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.

All of the options proposed in Alternative 4 address the reporting of Atlantic herring purchases by Federally-permitted dealers. None of these options are expected to impact non-target species, as the measures address Atlantic herring only; the impacts of this alternative on non-target species are therefore *negligible*.

4.2.2 Impacts of Management Measures to Address Net Slippage on Non-Target Species

A comprehensive summary of information collected by NEFOP observers about slippage in the Atlantic herring fishery is presented in Appendix II of this document (*Summary of Slippage Data, Observed Trips on Atlantic Herring Vessels 2010-2013*). Over the long-term, if the measures in this framework adjustment are effective at improving the accuracy of catch/bycatch information in the Atlantic herring fishery, providing documentation of previously unrecorded catch of non-target species may improve catch statistics and, consequently, assessment and management of these non-target species. As previously noted (General Impacts, Section 4.2), this benefit is likely to be small for most non-target species, but species subject to catch caps like RH/S and haddock may benefit most. The impacts of each alternative considered in Framework 4 on non-target species are discussed separately below.

In Framework 4, the Council is proposing clarifications to the current measures requiring full sampling (implemented in Amendment 5) as well as additional management measures to address net slippage on limited access herring vessels carrying an observer on board (described in the following subsections). If all of the Council's ***Preferred Alternatives*** to address net slippage (Section 2.2) in Framework 4 are implemented, the following rules would apply to limited access Atlantic herring vessels:

- Observed slippage events (*catch not brought on board*) due to *safety, mechanical failure, or spiny dogfish* would be considered "allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as the proposed 15-nm move along rule described in Section 2.2.2.4 of this document.
- Observed slippage events (catch *not brought on board* for reasons other than safety, mechanical failure, and spiny dogfish) would be considered "non-allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as trip termination described in Section 2.2.2.4 of this document.
- Operational discards reported by observers would *not* be prohibited outside the groundfish closed areas (status quo); although operational discards represent catch that is not brought on board, they would *not* be treated like slippage events (no additional consequences, Section 2.2.1.1 of this document).
- Catch reported by observers as "*not brought on board due to gear damage"* would be considered the same as "*not brought on board due to mechanical failure"* for the purposes of complying with and enforcing the regulations to address net slippage. In other words, when catch is released due to gear damage, this would be an "allowable" slippage event, and vessels would be subject to current requirements for a Released Catch Affidavit as well as the 15-mile move along requirement described in Section 2.2.2.4 (versus trip termination).
- Fish that are documented by observers to fall out of gear (and therefore are not brought on board the vessel) would *not* be treated like slippage events (no additional consequences, Section 2.2.1.3 of this document).

This section addresses the impacts of these measures, as well the non-preferred alternatives considered by the Council, on non-target species.

4.2.2.1 Impacts of Clarification of Amendment 5 Measures to Address Net Slippage on Non-Target Species

In Framework 4, the Council is clarifying the current (Amendment 5) management measures to address net slippage and provisions related to catch not brought on board Atlantic herring vessels during normal fishing operations. The clarifications that the Council considered address operational discards on midwater trawl vessels, fish that are not brought on board due to gear damage, and fish that fall out/off of gear during normal fishing operations (Section 2.2.1, p. 18). The Council's ***Preferred Alternatives*** would maintain the status quo with respect to operational discards on observed midwater trawl trips (prohibited in year-round groundfish closed areas), clarify that catch not brought on board due to gear damage would be considered an "allowable" slippage event under *mechanical failure* and clarify that observed catch not brought on board due to falling out/off of gear would not be subject to management measures to address net slippage.

Clarification 1. Operational Discards on Midwater Trawl Vessels (Section 2.2.1.1)

NEFOP 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. Data summarizing operational discards on midwater trawl vessels is provided in Appendix II of this document (*Summary of NEFOP Slippage Data (Observed Trips on Atlantic Herring Vessels 2010-2013*). 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. Operational discards are observed on a greater proportion of trips (about 1/3 of trips, based on the information provided in Appendix II). Observed operational discards have averaged about 240 pounds per event from 2010-2013. Observers document operational discards as *Herring NK* if they are able to see the fish that are not pumped and confirm that the discards are all herring-bodied fish. Otherwise, the discards are documented as *Fish NK*. More detailed information about the Herring NK and Fish NK categories can be found in Section 6.3.2.1.5 of the Amendment 5 FEIS (*Analysis of Available Slippage Data – Use of "Herring NK" and "Fish NK"*).

Option A (Preferred): Because operational discards represent a very small fraction of the catch by directed herring vessels and because current NEFOP observer protocols document operational discards, Option A, the ***Preferred Alternative***, maintains the status quo and is likely to have a *negligible* impact on non-target species. Operational discards would continue to be prohibited on observed trips by midwater trawl vessels in groundfish closed areas, and these discards would continue to be documented by observers on all other midwater trawl trips as well as all purse seine trips. While the impact of the no action option is expected to be negligible, any potential positive benefit to non-target stocks under Option B, especially those managed by catch caps, although minor, may not be realized (see below).

Option B (Non-Preferred): Option B would prohibit operational discards on all observed trips by midwater trawl vessels (all areas). If this option enhances the observers ability to document catch at-sea and reduces the occurrence of unobserved catch on Atlantic herring vessels, then there may be improvements to the accuracy of catch/bycatch information regarding non-target species in the fishery. As previously discussed, non-target species that are subject to catch caps like haddock and RH/S may benefit most from improvements to catch monitoring and reductions in unobserved catch at-sea, since sea sampling data are used to monitor catch against the haddock and RH/S catch caps. To the extent that data used to specify and monitor catch caps can be improved, mortality of non-target species can be better controlled, and long-term strategies to avoid and minimize bycatch in the directed Atlantic herring fishery will be more successful.

However, this option would only prohibit a subset of operational discards known to occur in the directed Atlantic herring fishery. This option does not address operational discards on unobserved midwater trawl trips and trips by purse seine vessels. Data provided in Appendix II of this document indicates that purse seine vessels experience operational discards similar to midwater trawl vessels during normal fishing operations. Applying this option only to midwater trawl vessels reduces the likelihood that it would result in extensive positive impacts on non-target species.

Overall, the impacts of Option B on non-target species, are *potentially low positive* because reductions in operational discards could enhance catch monitoring, particularly for species subject to catch caps. However, operational discards represent a small fraction of total catch, observers already document operational discards in detail, and this option only prohibits operational discards on a subset of trips in the directed Atlantic herring fishery. This option is not expected to affect the biological status of any non-target species encountered in the Atlantic herring fishery.

Clarifications 2 and 3. Gear Damage and Fish that Fall Out/Off of Gear (Section 2.2.1.2 and 2.2.1.3)

The ***Preferred Alternatives*** regarding the treatment of observed catch not brought on board due to gear damage and falling out/off of gear enhance the effectiveness of existing management measures and facilitate enforcement of the Amendment 5 measures to address net slippage, but the clarifications themselves do not change the way that the Atlantic herring fishery operates and/or the way the catch of target and non-target species are sampled and documented by observers. Observed catch documented as not brought on board for either of these reasons represents an insignificant amount of the total observed catch on Atlantic herring vessels. There would be no measurable impact on non-target species from any of the options for these clarifications. Similar to the no action options, therefore, the ***Preferred Alternatives*** to address observed catch not brought on board due to gear damage and fish that fall out/off of gear, therefore, are expected to have a *negligible* impact on non-target species.

4.2.2.2 Impacts of Additional Measures to Address Net Slippage on Non-Target Species

Slippage Alternative 1 (No Action): Existing management measures that address net slippage in the Atlantic herring fishery would remain effective under the no action alternative and are described in Section 2.2.2.1 of this document (p. 24). If the no action alternative is selected, the catch of non-target multispecies (groundfish) in the Atlantic herring fishery would continue to be addressed through current management measures (Framework 46 to the Multispecies FMP, which establishes provisions for the haddock catch cap and incidental catch of other multispecies in the Atlantic herring fishery). The catch of RH/S in the directed Atlantic herring fishery would continue to be managed through catch caps and related provisions established in Framework 3 to the Atlantic Herring FMP. The catch of other non-target species in the Atlantic herring fishery would continue to be addressed and minimized to the extent practicable by the provisions in the Atlantic Herring FMP. Directed catch of non-target species would continue to be managed through their respective FMPs (State and Federal).

Due to the continuing management of non-target species catch in the Atlantic herring fishery and ongoing efforts to avoid/minimize bycatch, selection of the no action alternative in this framework adjustment would not be expected to affect the status of any non-target species, and the no action alternative is therefore expected to have a *negligible* impact on non-target species. While the impact of the no action option is expected to be negligible, any potential positive benefit to non-target species (especially those under catch caps) that may result from the alternatives that implement additional consequences for slippage events, although minor, may not be realized if no action is taken in this framework adjustment (see discussion below).

Slippage Alternative 2 (Section 2.2.2.2, Non-Preferred): Under this alternative, vessels would be required to vacate a statistical area in which an observed slippage event occurs, unless exempted. Options were considered for exemptions to the statistical area move-along rule (safety, mechanical failure, spiny dogfish), trip termination for other observed slippage events, and limited access permit categories to which this alternative would apply (Category A/B only versus A/B/C).

The alternatives considered by the Council in this framework adjustment to address net slippage are intended to further reduce the occurrence of slippage on vessels participating in the Atlantic herring fishery by establishing additional consequences (move-along rules, trip termination) for slipping catch when observers are on board. Overall, minimizing slippage events and better documenting slipped catch may improve estimates of catch and bycatch in the herring fishery. To the extent that the amount and species composition of slipped catch can be sampled and/or estimated, the Amendment 5 catch monitoring program may be enhanced. As slippage events are further reduced/eliminated, bycatch can be minimized to the extent practicable. Additionally, providing documentation of previously unrecorded catch of non-target species may improve catch statistics and, consequently, assessment and management of these species over the long-term. Non-target species that are subject to catch caps like haddock and RH/S may benefit most from reductions in bycatch and improvements to catch monitoring in the Atlantic herring fishery. The positive impacts on non-target species that may result from improving catch monitoring are discussed in more detail in the FEIS for Amendment 5 to the Atlantic Herring FMP.

However, it is difficult to predict the specific impacts of the Framework 4 alternatives on non-target species because the impacts depend on how participants in the Atlantic herring fishery respond/adapt to the additional consequences in terms of both avoiding/minimizing slippage events and/or relocating/redistributing fishing effort under a move-along rule, or terminating a fishing trip. There are many factors that may affect how fishing effort may change as a result of a move-along rule, including weather, market conditions, fishery conditions, other economic factors, and the vessel's ability to target Atlantic herring in other areas. Opportunities to fish in other areas under a move-along rule may be limited by Atlantic herring ACL/sub-ACL management area closures and/or area closures from reaching a catch cap (haddock, RH/S). Quite often, at least one, if not more, of the herring management areas is closed before the end of the fishing year once the sub-ACL is fully utilized. Additionally, seasonal restrictions established through the Atlantic herring fishery specifications do not allow fishing in some management areas for multiple months (Areas 1A and 1B in 2014 and 2015, for example). Vessels may therefore be quite limited in terms of options to relocate under a move-along rule; the changes to fishing effort that may result cannot be predicted.

The nature and extent of the overall impacts of this alternative on non-target species will be determined not only by the amount of sampling (observer coverage) on herring vessels, but also by the spatial and temporal distribution of each non-target species, how directed fishing effort on Atlantic herring shifts, and whether or not the affected vessels move into an area(s) with a higher potential of encountering the non-target species. This is the case for all of the alternatives that establish additional consequences for slippage events (Slippage Alternatives 2-5). Under all of the alternatives, however, the catch of haddock and RH/S in the directed Atlantic herring fishery will continue to be managed by area-based and gear-based catch caps established through Framework 46 to the Multispecies FMP and Framework 3 to the Herring FMP, respectively.

The proposed requirement for herring vessel captains to notify NMFS of a slippage event through vessel monitoring systems (VMS) on any trips with observers on board is included in all of the slippage alternatives. This requirement is intended to facilitate enforcement of the Amendment 5 measures to address net slippage and is supported by the Council's Herring PDT, Advisory Panel, Committee, and Enforcement Committee. While the requirement itself may have negligible impacts on non-target species, any resulting improvements to the effectiveness of the Amendment 5 catch monitoring program would have positive impacts.

When compared to the no action alternative, the impacts of Slippage Alternative 2 on non-target species are *potentially low positive* to the extent that the measures may further minimize the occurrence of net slippage and enhance catch monitoring at-sea in the directed Atlantic herring fishery. This determination is not affected by which herring permit option is selected (Category A/B only versus Category A/B/C). Because impacts on non-target species may be quite variable, differences between the impacts of Slippage Alternatives 2-5 on non-target species cannot be quantified, but all maybe expected to have a low positive impact relative to taking no action. Slippage Alternatives 2-4 are likely to have more positive impacts than Slippage Alternative 5 because they include move-along rules for allowable slippage events, which may provide additional incentive to reduce slippage and minimize bycatch (Slippage Alternative 5 only includes the trip termination requirement for non-allowable slippage events).

Slippage Alternative 3 (Section 2.2.2.3, Non-Preferred): Under this alternative, vessels would be required to vacate a herring management area in which an observed slippage event occurs, unless exempted. Options were considered for exemptions to the move-along rule (safety, mechanical failure, spiny dogfish), trip termination for other observed slippage events, and permit categories to which this alternative would apply (A/B only versus A/B/C). Because purse seine vessels only fish in Area 1A, this alternative would apply only to midwater trawl and small mesh bottom trawl vessels.

The impacts of Slippage Alternative 3 on non-target species are similar to those expected under Slippage Alternative 2 (see above discussion). When compared to the no action alternative, the impacts of Alternative 3 on non-target species are *potentially low positive* to the extent that the measures may further minimize the occurrence of net slippage in the directed Atlantic herring fishery. This determination is not affected by which herring permit option is selected (Category A/B only versus Category A/B/C). Because impacts on non-target species may be quite variable, differences between the impacts of Slippage Alternatives 2-5 on non-target species cannot be measured, but all maybe expected to have a low positive impact relative to taking no action. Slippage Alternatives 2-4 are likely to have more positive impacts than Slippage Alternative 5 because they include move-along rules for allowable slippage events, which may provide additional incentive to reduce slippage and minimize bycatch (Slippage Alternative 5 only includes the trip termination requirement for non-allowable slippage events).

Slippage Alternative 4 (Section 2.2.2.4, Preferred Alternative): The ***Preferred Alternative*** would require Category A/B herring vessels to move 15 nm before fishing again when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish; the move-along rule would create a closed area for the vessel for the remainder of the trip; any observed slippage events for reasons other than safety, mechanical failure, or spiny dogfish would require trip termination. Options were considered for 10 nm and 20 nm move-along rules, but the ***Preferred Alternative*** proposes a 15 nm move-along rule. Additionally, notification of slippage events on observed trips via VMS would be required to facilitate enforcement (this measure was proposed in all of the slippage alternatives considered by the Council in this framework).

The impacts of Slippage Alternative 4 (***Preferred Alternative***) on non-target species are similar to those expected under Slippage Alternative 2 (see previous discussion). When compared to the no action alternative, the impacts of Alternative 4 on non-target species are *potentially low positive* to the extent that the measures may further minimize the occurrence of net slippage in the directed Atlantic herring fishery. This determination is not affected by which herring permit option is selected (Category A/B only versus Category A/B/C). Because impacts on non-target species may be quite variable, differences between the impacts of Slippage Alternatives 2-5 on non-target species cannot be quantified, but all maybe expected to have a low positive impact relative to taking no action. Slippage Alternatives 2-4 are likely to have more positive impacts than Slippage Alternative 5 because they include move-along rules for allowable slippage events, which may provide additional incentive to reduce slippage and minimize bycatch (Slippage Alternative 5 only includes the trip termination requirement for non-allowable slippage events).

Slippage Alternative 5 (Section 2.2.2.5, Non-Preferred): Under this alternative, no move-along rule would be required when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish. Trip termination would be required for other observed slippage events, and options were considered for permit categories to which this alternative would apply (A/B only versus A/B/C).

The impacts of Slippage Alternative 5 on non-target species are similar to those expected under Slippage Alternative 2 (see previous discussion). When compared to the no action alternative, the impacts of Alternative 5 on non-target species are *potentially low positive* to the extent that the measures may further minimize the occurrence of net slippage in the directed Atlantic herring fishery. This determination is not affected by which herring permit option is selected (Category A/B only versus Category A/B/C). Because Slippage Alternative 5 only includes a trip termination consequence for non-allowable slippage events (no move-along requirement for allowable slippage events), this alternative is less likely to have positive impacts on non-target species than Alternatives 2-4, which also include move-along rules.

4.3 IMPACTS ON THE PHYSICAL ENVIRONMENT AND EFH

A general description of the physical environment and EFH is provided in Section 3.3 of this document (p. 45). An assessment of the potential effects of the directed Atlantic herring commercial fishery on EFH for Atlantic herring and other federally-managed species in the Northeast region of the U.S. was conducted as part of an EIS that evaluated impacts of the Atlantic herring fishery on EFH (NMFS 2005). This analysis was included in Appendix VI, Volume II of the FEIS for Amendment 1 to the Atlantic Herring FMP. It found that midwater trawls and purse seines do occasionally contact the seafloor and may adversely impact benthic habitats utilized by a number of federally-managed species, including EFH for Atlantic herring eggs. However, after reviewing all the available information, the conclusion was reached that if the quality of EFH is reduced as a result of this contact, the impacts are minimal and/or temporary and, pursuant to MSA, do not need to be minimized, i.e., that there was no need to take specific action at that time to minimize the adverse effects of the herring fishery on benthic EFH. This conclusion also applied to pelagic EFH for Atlantic herring larvae, juveniles, and adults, and to pelagic EFH for any other federally-managed species in the region. Additional information can be found in the FEIS for Amendment 1 to the Atlantic Herring FMP, which was updated in the FEIS for Amendment 5 to the Atlantic Herring FMP.

The impacts of each of the alternatives considered by the Council in Framework 4 on the Physical Environment and EFH are discussed in the following subsections. Overall, given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery, the alternatives under consideration are expected to have a *negligible* impact on the physical environment and EFH.

4.3.1 Impacts of Dealer Reporting/Weighing Requirements on the Physical Environment and EFH

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 in Section 2.1.1 of this document (p. 8). Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), maintaining the status quo for the Atlantic herring fishery is not expected to impact the physical environment and EFH. Selecting the no action alternative in this case would therefore result in a *negligible* impact.

Dealer Alternative 2 (Section 2.1.2, Option C Preferred Alternative): This alternative includes any combination of the following three options. The Council recommends only Option C as part of the ***Preferred Alternative*** in this framework adjustment.

(A.) **Option A** 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. This measure was also considered in Amendment 5.

(B.) **Option B** would increase the frequency of VTRs and dealer reports for Federally-permitted limited access herring vessels and herring dealers to 24 hours. This measure was also considered in Amendment 5.

(C.) ***Preferred Alternative*****. Option C** would require that fish holds on Category A/B herring vessels are empty of fish before leaving the dock on any trip when declared into the Atlantic herring fishery. A waiver may be issued for instances when there are fish in the hold after inspection by an appropriate law enforcement officer (the intent is for waivers to be issued for refrigeration failure and non-marketable fish that have been reported by the vessel).

Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), the options described above are not expected to have a measurable influence on the total magnitude of adverse effects across the fishery. Thus, as far as EFH impacts are concerned, there is no measureable difference between any of the alternatives/options considered by the Council in this framework adjustment. The ***Preferred Alternative***, therefore, would not have any adverse effects on EFH as compared to the no action alternative. The impacts on the Physical Environment and EFH are determined to be *negligible*.

Dealer Alternative 3 (Section 2.1.3, Preferred Alternative): 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. Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), the ***Preferred Alternative*** is not expected to have a measurable influence on the total magnitude of adverse effects across the fishery. Thus, as far as EFH impacts are concerned, this alternative would not have any adverse effects on EFH as compared to the no action alternative. The impacts of the ***Preferred Alternative*** on the Physical Environment and EFH are therefore determined to be *negligible*.

Dealer Alternative 4 (Section 2.1.4, Non-Preferred): This alternative would require Federally-permitted Atlantic herring dealers 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. This alternative includes any combination of the following three options.

(A.) **Option A** would standardize the weight of Atlantic herring reported for herring boxes (1,869 pounds).

(B.) **Option B** would require Federally-permitted Atlantic herring dealers to estimate weight of Atlantic herring through standardized conversions based on the volumetric capacity of the storage containers.

(C.) **Option C** would require Federally-permitted Atlantic herring dealers 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.

Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), the options described above are not expected to have a measurable influence on the total magnitude of adverse effects across the fishery. Thus, as far as EFH impacts are concerned, there is no measureable difference between any of the alternatives/options considered by the Council in this framework adjustment. This alternative, therefore, would not have any adverse effects on EFH as compared to the no action alternative. The impacts on the Physical Environment and EFH are determined to be *negligible*.

4.3.2 Impacts of Management Measures to Address Net Slippage on the Physical Environment and EFH

In Framework 4, the Council is proposing clarifications to the current measures requiring full sampling (implemented in Amendment 5) as well as additional management measures to address net slippage on limited access herring vessels carrying an observer on board (described in the following subsections). If all of the Council's Preferred Alternatives to address net slippage in Framework 4 are implemented, the following rules would apply to limited access Atlantic herring vessels:

- Observed slippage events (*catch not brought on board*) due to safety, mechanical failure, or spiny dogfish would be considered "allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as the 15-nm move along rule described in Section 2.2.2.4.
- Observed slippage events (*catch not brought on board* for reasons other than safety, mechanical failure, and spiny dogfish) would be considered "non-allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as trip termination described in Section 2.2.2.4.
- Operational discards reported by observers would *not* be prohibited outside the groundfish closed areas (status quo); although operational discards represent catch that is not brought on board, they would *not* be treated like slippage events (no additional consequences, Section 2.2.1.1).

- Catch reported by observers as "*not brought on board due to gear damage*" would be considered the same as "*not brought on board due to mechanical failure*" for the purposes of complying with and enforcing the regulations to address net slippage. In other words, when catch is released due to gear damage, this would be an "allowable" slippage event, and vessels would be subject to current requirements for a Released Catch Affidavit as well as the 15-mile move along requirement described in Section 2.2.2.4(not trip termination).
- Fish that are documented by observers to fall out of gear (and therefore are not brought on board the vessel) would *not* be treated like slippage events and would not be subject to any additional consequences (Section 2.2.1.3).

This section addresses the impacts of these measures, as well the non-preferred alternatives considered by the Council, on the physical environment and EFH.

Clarification of Amendment 5 Measures to Address Net Slippage: In Framework 4, the Council is clarifying the current (Amendment 5) management measures to address net slippage and provisions related to observed catch *not brought on board* Atlantic herring vessels during normal fishing operations. The clarifications that the Council considered address operational discards on midwater trawl vessels, catch that is not brought on board due to gear damage, and fish that are documented by observers to fall out/off of gear during normal fishing operations (Section 2.2.1, p. 18). The Council's ***Preferred Alternatives*** would maintain the status quo with respect to operational discards on observed midwater trawl trips (prohibited in year-round groundfish closed areas), clarify that observed catch not brought on board due to gear damage would be considered an "allowable" slippage event under *mechanical failure*, and clarify that observed catch not brought on board due to falling out/off of gear would not be subject to management measures to address net slippage.

Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), these clarifications and options for operational discards are not expected to have a measurable influence on the total magnitude of adverse effects across the fishery. Thus, as far as EFH impacts are concerned, these measures would not have any adverse effects on EFH as compared to taking no action. The impacts of these clarifications/options on the Physical Environment and EFH are therefore determined to be *negligible*.

Slippage Alternative 1 (No Action): Existing management measures that address net slippage in the Atlantic herring fishery would remain effective under the no action alternative and are described in Section 2.2.2.1 of this document (p. 24). Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), maintaining the status quo for the Atlantic herring fishery is not expected to impact the physical environment and EFH. Selecting the no action alternative in this case would therefore result in a *negligible* impact.

Slippage Alternative 2 (Section 2.2.2.2, Non-Preferred): Under this alternative, vessels would be required to vacate a statistical area in which an observed slippage event occurs, unless exempted. Options were considered for exemptions to the move-along rule (safety, mechanical failure, spiny dogfish), trip termination for other observed slippage events, and permit categories to which this alternative would apply (A/B only versus A/B/C). Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), this alternative is not expected to have a measurable influence on the total magnitude of adverse effects across the fishery. Thus, as far as EFH impacts are concerned, this alternative would not have any adverse effects on EFH as compared to the no action alternative. The impacts of this alternative on the Physical Environment and EFH are therefore determined to be *negligible*.

Slippage Alternative 3 (Section 2.2.2.3, Non-Preferred): Under this alternative, vessels would be required to vacate a herring management area in which an observed slippage event occurs, unless exempted. Options were considered for exemptions to the move-along rule (safety, mechanical failure, spiny dogfish), trip termination for other observed slippage events, and permit categories to which this alternative would apply (A/B only versus A/B/C). Because purse seine vessels only fish in Area 1A, this alternative would apply only to midwater trawl and small mesh bottom trawl vessels. Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), this alternative is not expected to have a measurable influence on the total magnitude of adverse effects across the fishery. Thus, as far as EFH impacts are concerned, this alternative would not have any adverse effects on EFH as compared to the no action alternative. The impacts of this alternative on the Physical Environment and EFH are therefore determined to be *negligible*.

Slippage Alternative 4 (Section 2.2.2.4, Preferred Alternative): The ***Preferred Alternative*** would require Category A/B herring vessels to move 15 nm before fishing again when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish; the move-along rule would create a closed area for the vessel for the remainder of the trip; any observed slippage events for reasons other than safety, mechanical failure, or spiny dogfish would require trip termination. Options were considered for 10 nm and 20 nm move-along rules, but the ***Preferred Alternative*** proposes a 15 nm move-along rule. Additionally, notification of slippage events on observed trips via VMS would be required to facilitate enforcement (this measure was proposed in all of the slippage alternatives considered by the Council in this framework). Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), the ***Preferred Alternative*** is not expected to have a measurable influence on the total magnitude of adverse effects across the fishery. Thus, as far as EFH impacts are concerned, this alternative would not have any adverse effects on EFH as compared to the no action alternative. The impacts of the ***Preferred Alternative*** on the Physical Environment and EFH are therefore determined to be *negligible*.

Slippage Alternative 5 (Section 2.2.2.5, Non-Preferred): Under this alternative, no move-along rule would be required when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish. Trip termination would be required for other observed slippage events, and options were considered for permit categories to which this alternative would apply (A/B only versus A/B/C). Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), this alternative is not expected to have a measurable

influence on the total magnitude of adverse effects across the fishery. Thus, as far as EFH impacts are concerned, this alternative would not have any adverse effects on EFH as compared to the no action alternative. The impacts of this alternative on the Physical Environment and EFH are therefore determined to be *negligible*.

4.4 IMPACTS ON PROTECTED RESOURCES

A description of protected resources is provided in Section 3.4 of this document (p. 54). The Atlantic herring fishery operates using midwater trawl and paired midwater trawl gear, purse seines, stop seines, and weirs. A component of the directed Atlantic herring fishery, particularly in the southern New England/Mid-Atlantic area, also uses small mesh bottom trawl gear. Currently, there is a NMFS List of Fisheries for 2012 that places the herring purse seines, midwater trawl fishery, including pair trawls, in Category II, denoting a fishery that has been determined to have occasional serious injury and mortality of marine mammals (Table 11). The stop seine and weir fishery is considered to have a remote likelihood of interactions and is listed in Category III. This gear type has the ability to release entrapped animals alive and, as reported in the NMFS sea sampling database, has considerable success with pinnipeds. Purse seines operating in the Atlantic herring fishery are known to take several species of seals and harbor porpoise, while midwater trawl gear (including paired midwater trawls) has had documented interactions with pilot whales, white-sided dolphins and seals. Lack of observer coverage has hampered quantitative discussions of impacts, but in recent years observer coverage has increased in an effort to minimize interactions with protected species, thus providing better documentation (Table 12). The impacts of the alternatives considered in Framework 4 on protected resources is discussed in the following subsections.

General Impacts

If the management measures proposed in this framework adjustment are effective at enhancing catch monitoring in the directed Atlantic herring fishery and reducing the occurrence of unobserved catch on Atlantic herring vessels, then there may be improvements to information regarding interactions with protected resources in the fishery. Providing documentation of previously unrecorded interactions may improve assessment and management of the fishery as well as protected resources over the long-term. However, it is difficult to predict the specific impacts of the alternatives in Framework 4 on protected resources, particularly the measures to address net slippage, because the impacts depend on how participants in the fishery adapt/respond to the measures in terms of both avoiding/minimizing slippage events and/or relocating/redistributing fishing effort under a move-along rule.

None of the management measures considered by the Council in this framework adjustment are likely to substantially impact interactions with protected resources in the directed Atlantic herring fishery and/or influence the biological status of any protected resources. The ongoing management protected resources interactions in the Atlantic herring fishery will continue to address fishing mortality and the conservation of protected resources. To the extent that the measures adopted in this framework adjustment enhance catch monitoring and discourage net slippage, however, improvements in catch monitoring and documentation of interactions with protected resources could produce a *low positive* impact. The impacts of each of the alternatives considered in Framework 4 on protected resources are discussed in the following subsections.

4.4.1 Impacts of Dealer Reporting/Weighing Requirements on Protected Resources

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 in Section 2.1.1 of this document (p. 8). The management alternatives proposed in this section of Framework 4, including the no action alternative, address the reporting of catch by participants in the Atlantic herring fishery and are not expected to affect interactions with protected resources. Interactions with protected resources in the Atlantic herring fishery would continue to be managed under current avoidance/reduction strategies as well as conservation efforts directed towards protected resources. The no action alternative is therefore expected to have a *negligible* impact on protected resources.

Dealer Alternative 2 (Section 2.1.2, Option C Preferred Alternative): This alternative includes any combination of the following three options. The Council recommends only Option C as part of the ***Preferred Alternative*** in this framework adjustment.

(A.) **Option A** 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. This measure was also considered in Amendment 5.

This option addresses the reporting of catch by participants in the Atlantic herring fishery and is not expected to affect interactions with protected resources. Interactions with protected resources in the Atlantic herring fishery would continue to be managed under current avoidance/reduction strategies as well as conservation efforts directed towards protected resources. This option is therefore expected to have a *negligible* impact on protected resources.

(B.) **Option B** would increase the frequency of VTRs and dealer reports for Federally-permitted limited access herring vessels and herring dealers to 24 hours. This measure was also considered in Amendment 5.

This option addresses the reporting of catch by participants in the Atlantic herring fishery and is not expected to affect interactions with protected resources. Interactions with protected resources in the Atlantic herring fishery would continue to be managed under current avoidance/reduction strategies as well as conservation efforts directed towards protected resources. This option is therefore expected to have a *negligible* impact on protected resources.

(C.) ***Preferred Alternative*****. Option C** would require that fish holds on Category A/B herring vessels are empty of fish before leaving the dock on any trip when declared into the Atlantic herring fishery. A waiver may be issued for instances when there are fish in the hold after inspection by an appropriate law enforcement officer (the intent is for waivers to be issued for refrigeration failure and non-marketable fish that have been reported by the vessel).

This option is proposed to discourage wasteful fishing practices and provide some incentive to harvest the Atlantic herring resource more efficiently. It is also intended to enhance the effectiveness of the Atlantic herring catch monitoring program by reducing the potential to mix fish landed from multiple trips. This option addresses the treatment and reporting of catch by participants in the Atlantic herring fishery and is not expected to affect interactions with protected resources. Interactions with protected resources in the Atlantic herring fishery would continue to be managed under current avoidance/reduction strategies as well as conservation efforts directed towards protected resources. This option is therefore expected to have a *negligible* impact on protected resources.

Dealer Alternative 3 (Section 2.1.3, Preferred Alternative): 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. This alternative addresses the estimation of total catch on board a herring vessel at the first point of landing. It does not provide new information or enhance existing information about interactions with protected resources in the directed Atlantic herring fishery. Interactions with protected resources in the Atlantic herring fishery would continue to be managed under current avoidance/reduction strategies as well as conservation efforts directed towards protected resources. This option is therefore expected to have a *negligible* impact on protected resources.

Dealer Alternative 4 (Section 2.1.4, Non-Preferred): This alternative would require Federally-permitted Atlantic herring dealers 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. This alternative includes any combination of the following three options.

(A.) **Option A** would standardize the weight of Atlantic herring reported for herring boxes (1,869 pounds).

(B.) **Option B** would require Federally-permitted Atlantic herring dealers to estimate weight of Atlantic herring through standardized conversions based on the volumetric capacity of the storage containers.

(C.) **Option C** would require Federally-permitted Atlantic herring dealers 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.

All of the options proposed in Alternative 4 address the reporting of Atlantic herring purchases by Federally-permitted dealers. None of these options are expected to impact protected resources, as the measures address Atlantic herring only; the impacts of this alternative on protected resources are therefore *negligible*.

4.4.2 Impacts of Management Measures to Address Net Slippage on Protected Resources

In Framework 4, the Council is proposing clarifications to the current measures requiring full sampling (implemented in Amendment 5) as well as additional management measures to address net slippage on limited access herring vessels carrying an observer on board (described in the following subsections). If all of the Council's ***Preferred Alternatives*** to address net slippage (Section 2.2) in Framework 4 are implemented, the following rules would apply to limited access Atlantic herring vessels:

- Observed slippage events (*catch not brought on board*) due to *safety, mechanical failure, or spiny dogfish* would be considered "allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as the proposed 15-nm move along rule described in Section 2.2.2.4 of this document.
- Observed slippage events (catch *not brought on board* for reasons other than safety, mechanical failure, and spiny dogfish) would be considered "non-allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as trip termination described in Section 2.2.2.4 of this document.
- Operational discards reported by observers would *not* be prohibited outside the groundfish closed areas (status quo); although operational discards represent catch that is not brought on board, they would *not* be treated like slippage events (no additional consequences, Section 2.2.1.1 of this document).
- Catch reported by observers as "*not brought on board due to gear damage"* would be considered the same as "*not brought on board due to mechanical failure"* for the purposes of complying with and enforcing the regulations to address net slippage. In other words, when catch is released due to gear damage, this would be an "allowable" slippage event, and vessels would be subject to current requirements for a Released Catch Affidavit as well as the 15-mile move along requirement described in Section 2.2.2.4 (versus trip termination).
- Fish that are documented by observers to fall out of gear (and therefore are not brought on board the vessel) would *not* be treated like slippage events (no additional consequences, Section 2.2.1.3 of this document).

This section addresses the impacts of these measures, as well the non-preferred alternatives considered by the Council, on protected resources.

Slippage has the potential to contain protected species, so management measures intended to better document slippage events has the potential to increase the sampling of protected species that may be encountered by the herring fishery. This information could, in turn, help with the better understanding of protected resources. A comprehensive summary of information collected by NEFOP observers about slippage in the Atlantic herring fishery is presented in Appendix II of this document (*Summary of Slippage Data, Observed Trips on Atlantic Herring Vessels 2010-2013*). Over the long-term, if the measures in this framework adjustment are effective at improving the accuracy of catch/bycatch information in the Atlantic herring fishery, providing

documentation of previously unrecorded interactions with protected resources may improve catch statistics and, consequently, assessment and management of the fishery. The impacts of each alternative to address net slippage considered in Framework 4 on protected resources are discussed separately below.

4.4.2.1 Impacts of Clarification of Amendment 5 Measures to Address Net Slippage on Protected Resources

In Framework 4, the Council is clarifying the current (Amendment 5) management measures to address net slippage and provisions related to catch not brought on board Atlantic herring vessels during normal fishing operations. The clarifications that the Council considered address operational discards on midwater trawl vessels, fish that are not brought on board due to gear damage, and fish that fall out/off of gear during normal fishing operations (Section 2.2.1, p. 18). The Council's ***Preferred Alternatives*** would maintain the status quo with respect to operational discards on observed midwater trawl trips (prohibited in year-round groundfish closed areas), clarify that catch not brought on board due to gear damage would be considered a slippage event under the "mechanical failure" exemption, and clarify that observed catch not brought on board due to falling out/off of gear would not be subject to management measures to address net slippage.

Clarification 1. Operational Discards on Midwater Trawl Vessels (Section 2.2.1.1)

NEFOP 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. Data summarizing operational discards on midwater trawl vessels is provided in Appendix II of this document (*Summary of NEFOP Slippage Data (Observed Trips on Atlantic Herring Vessels 2010-2013*). 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. *Interactions with protected resources are not documented by observers as operational discards.* The options under consideration to address operational discards on midwater trawl vessels would therefore not affect the observation and documentation of interactions with protected species.

Option A, the ***Preferred Alternative***, maintains the status quo and would have a *negligible* impact on protected resources. Option B would prohibit operational discards on all observed trips by midwater trawl vessels (all areas). Because this option would not affect the documentation of interactions with protected resources, the impacts on protected resources are also expected to be *negligible*.

Clarifications 2 and 3. Gear Damage and Fish that Fall Out/Off of Gear (Section 2.2.1.2 and 2.2.1.3)

The ***Preferred Alternatives*** regarding the treatment of observed catch not brought on board due to gear damage and falling out/off of gear enhance the effectiveness of existing management measures and facilitate enforcement of the measures to address net slippage, but the clarifications themselves do not change the way that the Atlantic herring fishery operates and/or the way interactions with protected resources are documented by observers. There would be no impact on protected resources from any of the options for these clarifications. Similar to the no action options, the ***Preferred Alternatives*** to address observed catch not brought on board due to gear damage and fish that fall out/off of gear, therefore, are expected to have a *negligible* impact on protected resources.

4.4.2.2 Impacts of Additional Measures to Address Net Slippage on Protected Resources

Slippage Alternative 1 (No Action): Existing management measures that address net slippage in the Atlantic herring fishery would remain effective under the no action alternative and are described in Section 2.2.2.1 of this document (p. 24). Due to the ongoing management of interactions with protected resources in the Atlantic herring fishery, as well as conservation efforts directed towards protected resources, selection of the no action alternative in this framework adjustment would not be expected to affect the status of any protected resources, and the no action alternative is therefore expected to have a *negligible* impact on protected resources. While the impact of the no action option is expected to be negligible, any potential positive benefit to protected resources that may result from the alternatives that implement additional consequences for slippage events, although minor, may not be realized if no action is taken in this framework adjustment (see discussion below).

Slippage Alternative 2 (Section 2.2.2.2, Non-Preferred): Under this alternative, vessels would be required to vacate a statistical area in which an observed slippage event occurs, unless exempted. Options were considered for exemptions to the move-along rule (safety, mechanical failure, spiny dogfish), trip termination for other observed slippage events, and permit categories to which this alternative would apply (A/B only versus A/B/C).

The alternatives considered by the Council in this framework adjustment to address net slippage are intended to further reduce the occurrence of slippage on vessels participating in the Atlantic herring fishery by establishing additional consequences (move-along rules, trip termination) for slipping catch when observers are on board. Overall, minimizing slippage events and better documenting slipped catch may improve estimates of catch and bycatch in the herring fishery. Slippage has the potential to contain protected resources, so management measures intended to better document slippage events has the potential to increase the sampling of protected species that may be encountered by the Atlantic herring fishery. This information could, in turn, help with the better understanding of protected resources. The positive impacts on protected resources that may result from improving catch monitoring are discussed in the FEIS for Amendment 5 to the Atlantic Herring FMP.

However, it is difficult to predict the specific impacts of these alternatives on protected species because the impacts depend on how participants in the Atlantic herring fishery respond/adapt to the additional consequences in terms of both avoiding/minimizing slippage events and/or relocating/redistributing fishing effort under a move-along rule, or terminating a fishing trip. There are many factors that may affect how fishing effort may change as a result of a move-along rule, including weather, market conditions, fishery conditions, other economic factors, and the vessel's ability to target Atlantic herring in other areas. Opportunities to fish in other areas under a move-along rule may be limited by Atlantic herring ACL/sub-ACL management area closures and/or area closures from reaching a catch cap (haddock, RH/S). Quite often, at least one, if not more, of the herring management areas is closed before the end of the fishing year once the sub-ACL is fully utilized. Additionally, seasonal restrictions established through the Atlantic herring fishery specifications do not allow fishing in some management areas for multiple months (Areas 1A and 1B in 2014 and 2015, for example). Vessels may therefore be quite limited in terms of options to relocate under a move-along rule; the changes to fishing effort that may result cannot be predicted.

The nature and extent of the overall impacts of this alternative on protected resources will be determined not only by the amount of sampling (observer coverage) on herring vessels, but also by the spatial and temporal distribution of the protected resources that are known to interact with the herring fishery, how directed fishing effort on Atlantic herring shifts, and whether or not the affected vessels move into an area(s) with a higher potential of encountering these species. This is the case for all of the alternatives that establish additional consequences for slippage events (Slippage Alternatives 2-5). Under all of the alternatives, however, interactions with protected resources would continue to be managed and minimized through existing regulations implemented in accordance with applicable laws.

The proposed requirement for herring vessel captains to notify NMFS of a slippage event through vessel monitoring systems (VMS) on any trips with observers on board is included in all of the slippage alternatives considered in this framework adjustment. This requirement is intended to facilitate enforcement of the Amendment 5 measures to address net slippage and is supported by the Council's Herring PDT, Advisory Panel, Committee, and Enforcement Committee. While the requirement itself may have negligible impacts on protected resources, any resulting improvements to the effectiveness of the Amendment 5 catch monitoring program would have positive impacts.

When compared to the no action alternative, the impacts of Alternative 2 on protected resources are *potentially low positive* to the extent that the measures may further minimize the occurrence of net slippage, enhance catch monitoring at-sea, and improve information collected about encounters with protected resources in the directed Atlantic herring fishery. This determination is not affected by which herring permit option is selected (Category A/B only versus Category A/B/C). Alternatives 2-4 are likely to have more positive impacts on protected resources than Alternative 5 because these alternatives include move-along rules for allowable slippage events, which may provide additional incentive to reduce slippage (Alternative 5 only includes the trip termination requirement for non-allowable slippage events).

Slippage Alternative 3 (Section 2.2.2.3, Non-Preferred): Under this alternative, vessels would be required to vacate a herring management area in which an observed slippage event occurs, unless exempted. Options were considered for exemptions to the move-along rule (safety, mechanical failure, spiny dogfish), trip termination for other observed slippage events, and permit categories to which this alternative would apply (A/B only versus A/B/C). Because purse seine vessels only fish in Area 1A, this alternative would apply only to midwater trawl and small mesh bottom trawl vessels.

The impacts of Alternative 3 on protected resources are similar to those expected under Alternative 2 (see above discussion). When compared to the no action alternative, the impacts of Alternative 3 on protected resources are *potentially low positive* to the extent that the measures may further minimize the occurrence of net slippage, enhance catch monitoring at-sea, and improve information collected about encounters with protected resources in the directed Atlantic herring fishery. This determination is not affected by which herring permit option is selected (Category A/B only versus Category A/B/C). Alternatives 2-4 are likely to have more positive impacts on protected resources than Alternative 5 because these alternatives include move-along rules for observed allowable slippage events, which may provide additional incentive to reduce slippage (Alternative 5 only includes the trip termination requirement for non-allowable slippage events).

Slippage Alternative 4 (Section 2.2.2.4, Preferred Alternative): The ***Preferred Alternative*** would require Category A/B herring vessels to move 15 nm before fishing again when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish; the move-along rule would create a closed area for the vessel for the remainder of the trip; any observed slippage events for reasons other than safety, mechanical failure, or spiny dogfish would require trip termination. Options were considered for 10 nm and 20 nm move-along rules, but the ***Preferred Alternative*** proposes a 15 nm move-along rule. Additionally, notification of slippage events on observed trips via VMS would be required to facilitate enforcement (this measure was proposed in all of the slippage alternatives considered by the Council in this framework).

The impacts of Alternative 4 (***Preferred Alternative***) on protected resources are similar to those expected under Alternative 2 (see previous discussion). When compared to the no action alternative, the impacts of Alternative 4 on protected resources are *potentially low positive* to the extent that the measures may further minimize the occurrence of net slippage, enhance catch monitoring at-sea, and improve information collected about encounters with protected resources in the directed Atlantic herring fishery. This determination is not affected by which herring permit option is selected (Category A/B only versus Category A/B/C). Alternatives 2-4 are likely to have more positive impacts on protected resources than Alternative 5 because these alternatives include move-along rules for observed allowable slippage events, which may provide additional incentive to reduce slippage (Alternative 5 only includes the trip termination requirement for non-allowable slippage events). Alternatives 2-4 are likely to have more positive impacts than Alternative 5 because they include move-along rules for allowable slippage events, which may provide additional incentive to reduce slippage (Alternative 5 only includes the trip termination requirement for non-allowable slippage events).

Slippage Alternative 5 (Section 2.2.2.5, Non-Preferred): Under this alternative, no move-along rule would be required when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish. Trip termination would be required for other observed slippage events, and options were considered for permit categories to which this alternative would apply (A/B only versus A/B/C).

The impacts of Alternative 5 on protected resources are similar to those expected under Alternative 2 (see previous discussion). When compared to the no action alternative, the impacts of Alternative 5 on protected resources are *potentially low positive* to the extent that the measures may further minimize the occurrence of net slippage, enhance catch monitoring at-sea, and improve information collected about encounters with protected resources in the directed Atlantic herring fishery. This determination is not affected by which herring permit option is selected (Category A/B only versus Category A/B/C). Alternatives 2-4 are likely to have more positive impacts on protected resources than Alternative 5 because these alternatives include move-along rules for observed allowable slippage events, which may provide additional incentive to reduce slippage (Alternative 5 only includes the trip termination requirement for non-allowable slippage events).

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. 67). More comprehensive information can be found in the FEIS for Amendment 5 to the Atlantic Herring FMP.

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 Atlantic 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 Atlantic 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

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 in Section 2.1.1 of this document (p. 8). The status quo would be maintained, with respect to dealer weighing/reporting requirements. Atlantic herring fishing mortality would continue to be managed by catch limits set through the 2013-2015 fishery specifications, and the impacts of future catch controls on fishery-related businesses and communities would be assessed and managed through future specifications packages. Selecting the no action alternative in Framework 4 would therefore not result in 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 from the status quo, 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. These practices are unlikely to change as a result of the no action alternative. The impacts of the Dealer Alternative 1 on fishery-related businesses and communities, therefore, are *negligible*.

Dealer Alternative 2 (Section 2.1.2, Option C Preferred Alternative): This alternative includes any combination of the following three options. The Council recommends Option C as part of the ***Preferred Alternative*** in this framework adjustment.

To the extent that the options in this alternative lead to improved catch monitoring and better real-time monitoring of Atlantic herring ACLs and sub-ACLs over the long-term, premature fishery closures may be avoided. If so, this may result in positive impacts on herring fishery participant relative to taking no action, as the allowable herring catch could be more fully harvested. Additionally, Atlantic herring stock assessments may become more precise, potentially reducing scientific and/or management uncertainty and the associated "buffers" that reduce the annual yield available to the fishery. 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 social and economic impacts on herring fishery participants will likely be through increased administrative and regulatory burdens associated with the measures proposed in this alternative.

(A.) Option A 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.

Option A could have a low negative impact on herring vessel owners, operators, and dealers by increasing the time and effort spent on administrative/reporting functions in obtaining vessel representative confirmation of dealer reports. The non-pecuniary compliance costs may increase by a small amount. Option A 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 nature of the dispute. For example, a missing "0" in a dealer report may be easily corrected by the three parties (dealer, vessel owner/operator, and NMFS). 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 foster negative *Attitudes and Beliefs* between members of the fishing industry as well as towards management due to an increased reporting burden felt by dealers and vessel owners.

In theory, Option A could provide a tool to help identify and resolve erroneous data discrepancies between vessel and dealer reports at the first point of entry, which could positively affect the *Size and Demographic Characteristics* of the fishery-related businesses and communities. If data discrepancies between the vessel and dealer reports resulted in an erroneous and premature closure of a management area to directed fishing, there would be a potential loss in fishery revenue. 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. Having discrepancies between data sets resolved quickly could 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, in correspondence dated April 17, 2014, NMFS informed the Council of the updates to the quality control program in its Analysis and Program Support Division (APS) and stated that this option duplicates effort to crosscheck landings information (see April 17, 2014 correspondence from John Bullard to Tom Nies). NMFS indicated that this option would no longer provide any additional information, but it would add a burden to the vessel operator, dealer, and agency. NMFS also indicated that for the 2013 fishing year, landings information between vessels and dealers is almost 100% matched. Because improvements to NMFS' data quality control programs already address discrepancies between dealer and vessel reports, this option is not expected to enhance the Atlantic herring catch monitoring program. Moreover, 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, Option A may have a *low negative* impact on fishery-related businesses and communities due to the increased burdens associated with the requirements for dealers and vessel representatives. This measure was also considered in Amendment 5 (Sub-Option 2C, Non-Preferred, see Amendment 5 FEIS), which contains additional discussion of the potential impacts on fishery-related businesses and communities.

(B.) Option B would increase the frequency of VTRs and dealer reports for Federally-permitted limited access herring vessels and herring dealers to 24 hours.

Option B could have a low negative impact on vessel owners and operators and herring dealers by reducing the amount of time dealers and vessels have to complete and submit reports, from a weekly to a daily basis. This could increase the time and effort spent on administrative/reporting functions in completing and submitting reports. The non-pecuniary compliance costs may increase by a small amount.

Having catch data submitted in a more timely manner could improve the quality of data used to monitor against area sub-ACLs and could ultimately be an economic benefit to Atlantic herring fishery participants, a positive impact for those individuals and the wider industry. This could also improve the *Attitudes and Beliefs* of stakeholders regarding the management of the Atlantic herring resource. However, Option B 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 Atlantic herring dealers indicated that 24 hours is not sufficient time to complete and submit the required catch reports; some vessels take longer than 24 hours to offload at their first point of landing.

NMFS has also indicated that moving to a daily reporting system would not necessarily improve the timeliness of data processing due to human resources constraints. In correspondence dated April 17, 2014, NMFS stated that this option duplicates current daily catch submissions through VMS and would not provide additional information (see April 17, 2014 correspondence from John Bullard to Tom Nies). During the development of this framework adjustment, the APS Division commented that increasing the frequency of reports would have no impact on ACL/sub-ACL monitoring because quality control checks are run on a weekly basis.

Overall, relative to taking no action, Option B may have a *low negative* impact on fishery-related businesses and communities. There would be increased reporting burden by the industry with uncertain benefits. This measure was also considered in Amendment 5 (Sub-Option 2C, Non-Preferred, see Amendment 5 FEIS), which contains additional discussion of the potential impacts on fishery-related businesses and communities.

(C.) ***Preferred Alternative*. Option C would require that fish holds on Category A and B herring vessels be empty of fish before leaving the dock on any trip when declared into the Atlantic herring fishery.** A waiver may be issued for instances when there are fish in the hold after inspection by an appropriate law enforcement officer (the intent is for waivers to be issued for refrigeration failure and non-marketable fish that have been reported by the vessel).

Currently, if an Atlantic herring vessel does not sell all of its catch to a dealer, the vessel 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 option without a waiver.

This option is proposed to discourage wasteful fishing practices and provide additional incentive to harvest the Atlantic herring resource more efficiently. It is also intended to enhance the effectiveness of the Atlantic herring catch monitoring program by reducing the potential to mix fish landed from multiple trips. Option C may improve catch monitoring/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. The magnitude of the impact of Option C relative to no action is therefore difficult to characterize. 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. Option C 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, if it improves area sub-ACL monitoring. This could improve the *Attitudes and Beliefs* of some stakeholders regarding the management of the Atlantic herring resource. If the catch has to be sold at an unfavorable price or disposed of, the *Attitudes and Beliefs* could be negatively affected. Option C 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.

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 the time and cost spent in disposing of unwanted catch increases. It may be expensive to pay for disposal of unsold catch on land. During Framework 4 discussions, some industry members indicated that their local landfills do not except fish. 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. The waiver that is included as part of this option was proposed by the Council after lengthy discussion regarding enforceability and compliance with the proposed requirement. The Council recognizes that there may be unforeseen events that make it impossible to sell fish; additionally, there are vessels in the herring fishery that land at multiple ports. The waiver is intended to mitigate some of the potential costs associated with disposing of unwanted catch while also providing a mechanism to better enforce the proposed requirement.

Overall, relative to no action, Option C may have a *neutral* impact on fishery-related businesses and communities. There could be benefits realized from improved catch reporting, but these benefits could be offset by increased burden on participants in the fishery and potential costs associated with disposing of unwanted catch and/or obtaining a waiver to dispose of the catch at-sea on the next fishing trip.

Dealer Alternative 3 (Section 2.1.3, Preferred Alternative): 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. If Alternative 3 enhances catch and bycatch estimates for the Atlantic herring fishery, improved catch data quality used in monitoring area sub-ACLs could have positive impacts for fishery-related businesses and communities. For the most part, however, this alternative appears to address perceptions of mis-reporting in the Atlantic herring fishery by providing a mechanism to cross-check one element of catch reporting on a subset of fishing trips. Therefore, this alternative could improve the *Attitudes and Beliefs* of some stakeholders regarding the management of the Atlantic herring resource. In the long run, this would be a positive impact on fishery-related businesses and communities. The provisions proposed in this alternative are likely to result in compliance and administrative costs, which may produce some minor negative impacts on participants in the fishery. These impacts are discussed further below.

Part A. Part A would require certification of fish hold capacity for vessels that store herring below deck and marking the tank at regular intervals to facilitate third-party catch verification. 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. The time and costs involved with marking currently unmarked tanks are difficult to estimate.

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. Additionally, regulations at CFR 648.4 (a)(5)(iii)(H)(*1*) require that Tier 1 and Tier 2 limited access mackerel vessels certify the capacity of their fish holds and submit this information to NMFS, so many vessels that would be subject to this requirement under this alternative may already have addressed this to comply with regulations in the mackerel fishery.

For vessels that would need to certify fish holds, the State of Maine charges each boat based on the fish hold size, approximately $3 a hogshead up to 100 hogsheads, and $1 a hogshead thereafter. There is also a cost of around $50 a day to rent the meter required to do measure capacity. For a 100 hogshead boat, 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 the volume of its contents.

The process can take a full day and more, depending on how large the hold is, and requires two people.

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 to a State 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 have a flow meter available for use, and all recommend 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, personal communication). If only one flow meter is available, it may be more difficult for the entire herring fleet to mark their tanks when this requirement is first implemented. 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 portside samplers to estimate the total catch. There may be minor compliance costs to the vessel associated with obtaining and storing the measuring stick, which could be a tape or pole.

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, then the entire volume can be calculated. With hold volume demarcation lines (required in Part A), the volume can be checked visually.

Part C could increase compliance and monitoring costs for participants in the herring fishery, as it 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 composition 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.

Overall, relative to the no action alternative for dealer weighing/reporting requirements, the impacts of Alternative 3 may be *neutral* for fishery-related businesses and communities. There could be benefits realized from improved perceptions about catch monitoring and reporting, but these could be offset by increased time and effort involved in marking tanks, submitting certification documentation, and having observers measure the volume of fish in the holds and estimate the weight of total catch prior to beginning to offload.

Dealer Alternative 4 (Section 2.1.4, Non-Preferred): This alternative would require Federally-permitted Atlantic herring dealers 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. The Council could have selected one or more of the options proposed in Alternative 4. None of the options are included in the ***Preferred Alternative*** for this framework adjustment.

(A.) Option A would standardize the weight of Atlantic herring reported for herring boxes (1,869 pounds).

Option A could pose a 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. Creating more standardization could improve perceptions of fairness within the industry, a positive impact on the *Attitudes, Beliefs, and Values* as well as the *Non-Economic Social Aspects* of the industry.

Under Option A, the quality of catch composition 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 quality (e.g. particulate matter). A key assumption with using a conversion factor, that there is consistency in the size, weight, and density of the catch may not hold true (see March 6, 2014 Herring PDT Report for additional discussion). Since the volume-to-weight ratios are not constant between different batches of landed fish, Option A may not improve the accuracy of catch reports provided by Federally-permitted herring dealers.

Overall, relative to the no action alternative for dealer weighing/reporting requirements in this framework adjustment, the impacts of Option A on fishery-related businesses and communities are expected to be *neutral*. The requirement to report 1,869 pounds per box is not likely to impact participants in the fishery in and of itself, but the impacts of this change on Atlantic herring catch data, and the long-term impacts on the fishery, could be both positive or negative and remain somewhat uncertain. There could be benefits realized from more standardized catch reporting, but these could be offset by error introduced from standardizing catch estimates due to the variability in the catch composition of this fishery.

(B.) Option B would require Federally-permitted Atlantic herring dealers to estimate weight of Atlantic herring through standardized conversions based on the volumetric capacity of the storage containers.

Under this option, federally-permitted Atlantic herring 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 improve 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 catch reports submitted by herring dealers.

Overall, relative to the no action alternative for dealer weighing/reporting requirements in this framework adjustment, the impacts of Option B on fishery-related businesses and communities are expected to be *neutral*. The reasons for this determination are the same as those under Option A (see above).

(C.) Option C would require Federally-permitted Atlantic herring dealers 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.

Under this option, Atlantic herring 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. Transportation safety regulations already require certification of the volume of transport trucks containers. Option C would likely pose administrative costs on the herring dealers and the trucking companies they do business with, in providing proof of current certification to the dealers, who then would submit the certifications to NMFS. In general, dealers do not currently obtain this information from the transport companies. It is uncertain whether the costs to provide this certification would be borne by the transport company or the dealer. There are likely to be more administrative costs under Option C than Options A or B to process and document all transport vehicle certifications.

Option C would not improve 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 retained 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 C may not improve the accuracy of weight reports.

Overall, relative to the no action alternative for dealer weighing/reporting requirements in this framework adjustment, the impacts of Option C on fishery-related businesses and communities are expected to be *neutral*. There could be benefits realized from more standardized catch reporting, but these could be offset by the substantial variability in the catch composition of this fishery, depending on area and season.

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

In Framework 4, the Council is proposing clarifications to the current measures requiring full sampling (implemented in Amendment 5) as well as additional management measures to address net slippage on limited access herring vessels carrying an observer on board (described in the following subsections). If all of the Council's ***Preferred Alternatives*** to address net slippage (Section 2.2) in Framework 4 are implemented, the following rules would apply to limited access Atlantic herring vessels:

- Observed slippage events (*catch not brought on board*) due to *safety, mechanical failure, or spiny dogfish* would be considered "allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as the proposed 15-nm move along rule described in Section 2.2.2.4 of this document.
- Observed slippage events (catch *not brought on board* for reasons other than safety, mechanical failure, and spiny dogfish) would be considered "non-allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as trip termination described in Section 2.2.2.4 of this document.
- Operational discards reported by observers would *not* be prohibited outside the groundfish closed areas (status quo); although operational discards represent catch that is not brought on board, they would *not* be treated like slippage events (no additional consequences, Section 2.2.1.1 of this document).
- Catch reported by observers as "*not brought on board due to gear damage"* would be considered the same as "*not brought on board due to mechanical failure"* for the purposes of complying with and enforcing the regulations to address net slippage. In other words, when catch is released due to gear damage, this would be an "allowable" slippage event, and vessels would be subject to current requirements for a Released Catch Affidavit as well as the 15-mile move along requirement described in Section 2.2.2.4 (versus trip termination).
- Fish that are documented by observers to fall out of gear (and therefore are not brought on board the vessel) would *not* be treated like slippage events (no additional consequences, Section 2.2.1.3 of this document).

This section addresses the impacts of these measures, as well the non-preferred alternatives considered by the Council, on fishery-related businesses and communities.

In general, the alternatives in Framework 4 to address net slippage are designed to clarify existing regulations pertaining to catch that is observed but not brought on board and to create additional disincentives for limited access herring vessels to slip catch. When choosing whether to slip a net or bring all fish onboard, vessel operators weigh the benefits of bringing those fish aboard with the costs associated with slippage. Bringing fish aboard which would otherwise be slipped has costs associated with it, such as the extra time spent in this activity and, possibly, decreases in vessel safety during poor operating conditions. The impacts of all alternatives and options considered by the Council to address net slippage in Framework 4 are discussed in the following subsections.

4.5.2.1 Impacts of Clarification of Amendment 5 Measures to Address Net Slippage on Fishery-Related Businesses and Communities

In Framework 4, the Council is clarifying the current (Amendment 5) management measures to address net slippage and provisions related to catch not brought on board Atlantic herring vessels during normal fishing operations. The clarifications that the Council considered address operational discards on midwater trawl vessels, fish that are not brought on board due to gear damage, and fish that fall out/off of gear during normal fishing operations (Section 2.2.1, p. 18). The Council's ***Preferred Alternative*** would maintain the status quo with respect to operational discards on observed midwater trawl trips (prohibited in year-round groundfish closed areas), clarify that catch not brought on board due to gear damage would be considered an "allowable" slippage event under "mechanical failure", and clarify that observed catch not brought on board due to falling out/off of gear would not be subject to management measures to address net slippage.

Clarification 1. Operational Discards on Midwater Trawl Vessels (Section 2.2.1.1)

Option A (No Action, Preferred Alternative). Option A would maintain the status quo with respect to operational discards on observed midwater trawl trips (prohibited in year-round groundfish closed areas). Maintaining the status quo would result 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. The impacts of Option A on fishery-related businesses and communities are therefore expected to be *negligible*.

Option B (Non-Preferred). Option B would prohibit operational discards on all observed midwater trawl trips throughout all areas in the Atlantic herring fishery, though they may be subject to potential slippage measures/consequences through this framework adjustment. All fish that remain in the net after pumping would have to come on board and made available to the observer for inspection, unless one of the slippage allowances applies (safety, mechanical, dogfish).

To characterize the degree to which operational discards have occurred in the directed herring fishery recently, NEFOP observer data summarizing operational discards on midwater trawl, purse seine, and bottom trawl vessels are provided in Appendix II. Operational discards have been confirmed by observers to be relatively small amounts of fish that remain in the net following a successful haul/pump; these fish are usually trapped in the netting and/or cannot be pumped on board. Operational discard data 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 proposes to adopt this provision for limited access midwater trawl vessels on any trip with an observer on board. The Council considered 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 in Section 3.5.2 (p. 73) indicates that the vast majority of midwater trawl vessels are Category A permit holders. All pair trawl vessels possess Category A herring 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 herring fishery with midwater trawls. Therefore, there may not be a need to apply this measure to Category C herring permit holders.

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, the accuracy of herring catch and bycatch estimates may improve. The observers may have more opportunity to fully sample all fish that are caught. However, this option would only prohibit operational discards on midwater trawl vessels; information in Appendix II suggests that purse seine vessels experience operational discards similar to midwater trawl vessels during normal fishing operations. This option, therefore, could generate perceptions of inequity among participants in the fishery, negatively affecting *Attitudes and Beliefs*.

Option B may also 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. This may pose safety risks, a negative impact to the *Non-Economic Social Aspects* of this option. 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). 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 an observer. Given that operational discards have occurred on about 30% of the observed midwater trawl trips in recent years (Appendix II), the pecuniary impacts on the participants in herring fishery could potentially be low negative when compared to Option A (no

action). Option B may incentivize the fleet to minimize catch that would be considered operational discards as much as possible.

Overall, the impacts of Option B are expected to be *low negative* relative to the no action alternative. Though catch data for a subset of trips in one component of the fishery may improve, the operational challenges and compliance costs associated with bringing all catch on board may be substantial for some affected vessels.

Clarification 2. Gear Damage (Section 2.2.1.2, p. 22)

Option A (Preferred). The ***Preferred Alternative*** would attribute observed catch that is not brought on board due to *gear damage* as *mechanical failure* for the purposes of complying with the Amendment 5 management measures to address net slippage. Catch reported by observers as "not brought on board due to gear damage" would be considered the same as "not brought on board due to mechanical failure" and vessels would be subject to current requirements for a Released Catch Affidavit as well as the recommended 15-mile move along requirement. This clarification may reduce confusion among vessel operators, observers, and other interested stakeholders, a positive impact in terms of the *Attitudes, Beliefs, and Values* of stakeholders. . Overall, the impacts of Option A are expected to be *low negative* for fishery-related businesses and communities because of the compliance costs associated with the Released Catch Affidavit and the 15-mile move along requirement.

Option B (Non-Preferred). This option would not attribute catch that is observed to be not brought on board due to gear damage as "mechanical failure" for the purposes of complying with the Amendment 5 management measures to address net slippage. Under this option catch not brought on board due to gear damage would be subject to additional slippage measures/consequences. In general, this option is administrative in nature and is expected to have minimal impacts on fishery-related businesses and communities. This clarification may reduce confusion among vessel operators, observers, and other interested stakeholders, a positive impact in terms of the *Attitudes, Beliefs, and Values* of stakeholders. Disallowing an exemption for gear damage could have negative impacts to fishing operations, as the vessel operator may be concerned for the potential consequences of slippage due to the mechanical failure if there is catch in the net at the time of the failure. The impacts of Option B are therefore expected to be *neutral* for fishery-related businesses and communities.

Clarification 3. Fish that Fall Out/Off of Gear (Section 2.2.1.3, p. 23)

Option A (No Action, Non-Preferred). Under this option, management measures to address net slippage on herring vessels with observers on board would remain ambiguous with respect to the treatment of observed catch that is *not brought on board due to falling out/off of gear*. This issue would not be clarified for the purposes of complying with and enforcing the measures to address net slippage in the herring fishery, including those proposed in Framework 4 (Section 2.2.2). The *low positive* impacts on fishery-related businesses and communities that may result from clarifying this provision under the ***Preferred Alternative*** (see below) would not be realized if the no action option is selected. Because very small amounts of fish do fall out/of off herring fishing gear often during normal fishing operations, the no action option could therefore result in *low*

negative impacts on fishery-related businesses and communities due to confusion about the treatment of observed catch not brought on board due to falling out/off of gear.

Option B (Preferred). The ***Preferred Alternative*** proposes that catch observed to be *not brought on board due to falling out of the gear* would not be subject to any of the slippage measures/consequences implemented through Amendment 5 (Released Catch Affidavit) or the additional measures proposed in this framework adjustment. This option is administrative in nature and is expected to have minor impacts on fishery-related businesses and communities. However, very small amounts of fish do fall out/of off herring fishing gear very often during normal fishing operations. This clarification may therefore reduce confusion among vessel operators, observers, and other interested stakeholders, regarding compliance with and enforcement of the measures to address net slippage, which would be a positive impact in terms of the *Attitudes, Beliefs, and Values* of stakeholders. The impacts of this clarification are expected to be *low positive* for fishery-related businesses and communities.

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

Framework 4 includes alternatives that may further discourage slippage by limited access herring vessels (Section 2.2.2, p. 23). The Amendment 5 management measures to address net slippage just recently became effective on March 17, 2014. Thus, it is unclear how the existing regulations (no action alternative) will affect the type and number of slippage events in the fishery, though they are expected to reduce the occurrence of slippage events. With insufficient fishery data under the current regulatory scenario, the potential impacts of Slippage Alternatives 2-5 relative to the no action alternative are difficult to predict. Under the Amendment 5 provisions as well as any additional measures implemented through Framework 4, 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 25 summarizes the recent regulatory incentives associated with net slippage for limited access herring vessels. 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. Management measures implemented on March 17, 2014 (Amendment 5), include full sampling provisions and measures to address net slippage across the entire limited access herring fishery.

Table 25 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
Expected Benefits of Slipping a Net			
	Before Jan 31,2011	**Jan 31, 2011 - March 17, 2014**	**March 17, 2014 - 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

Slippage Alternative 1 (No Action): Existing management measures that address net slippage in the Atlantic herring fishery would remain effective under the no action alternative and are described in Section 2.2.2.1 of this document (p. 24). 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. The impacts of Slippage Alternative 1 (no action alternative) on fishery-related businesses and communities are therefore expected to be *negligible.*

Slippage Alternative 2 (Section 2.2.2.2, Non-Preferred): Under this alternative, vessels would be required to vacate a statistical area in which an observed slippage event occurs, unless exempted. The vessel would then be prohibited from fishing in the original statistical area for the remainder of the trip. Options were considered for exemptions to the move-along rule (safety, mechanical failure, spiny dogfish), trip termination for non-exempted slippage events, and permit categories to which this alternative would apply (Category A/B only versus A/B/C).

Under Alternative 2, limited access midwater trawl and purse seine vessels participating in the herring fishery would be most affected by the measures proposed in this alternative, according to observer data (Appendix II). Small mesh bottom trawl vessels have been documented to almost never slip catch. This alternative could have a negative impact on participants in the directed herring fishery on trips with observers on board, due to the operational costs associated with moving to a different statistical area (Figure 1; p. 27) if catch is slipped for safety, mechanical, and/or dogfish reasons. The degree of impact 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. Smaller vessels may have more difficulty with shifting operations to a different statistical area. It may not be possible to effectively move areas and continue fishing, depending on the timing of management area closures and the presence of herring. The *Size and Demographic Characteristics* of the fishery-related workforce may decrease, as would the *Historical Dependence on and Participation in* the fishery.

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 an option under this alternative for slippage that may occur for reasons other than safety, mechanical failure, or dogfish. Trip termination would be an additional penalty for any prohibited net slippage event and could have negative impacts on fishery-related businesses and communities, in terms of the *Size and Demographic Characteristics* of the fishery-related workforce and the *Historical Dependence on and Participation in* the fishery. Costs associated with herring fishing trips are high, particularly with the current cost of fuel. The costs would be higher for fishing vessels that slip catch for other reasons (no market, not enough fish to pump, etc. – Appendix II describes reasons for slippage). 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). Trips terminated prematurely could result in an unprofitable or break-even trips, 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, potentially impacting the *Social Structure and Organization* of the communities that depend on the herring fishery. 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, this alternative may be perceived as punitive and have a negative impact on the *Attitudes, Beliefs, and Values* of fishermen and stakeholders. 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 this option.

Category A/B Only vs. Category A/B/C Options: The Council considered applying this alternative to either just Category A/B vessels or all limited access herring vessels (Categories A/B/C). Considering the data in Appendix II and Section 3.5.2 (p. 73), 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. Almost all midwater trawl vessels hold Category A permits. 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 Alternative 2 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.

Overall, the impacts of Alternative 2 are expected to be *negative* for fishing-related businesses and communities.

Slippage Alternative 3 (Section 2.2.2.3, Non-Preferred): Under this alternative, vessels would be required to vacate a herring management area in which an observed slippage event occurs, unless exempted. The vessel would then be prohibited from fishing in the original management area for the remainder of the trip. Options were considered for exemptions to the move-along rule (safety, mechanical failure, spiny dogfish), trip termination for non-exempted slippage events, and permit categories to which this alternative would apply (A/B only versus A/B/C). Because purse seine vessels only fish in Area 1A, this alternative would apply only to midwater trawl and small mesh bottom trawl vessels.

Under Alternative 3, limited access midwater trawl vessels participating in the herring fishery would be most affected by the measures proposed in this alternative, according to observer data (Appendix II). Small mesh bottom trawl vessels have been documented to almost never slip catch. Slippage Alternative 3 could have a negative impact on midwater trawl participants in the directed herring fishery on trips with observers on board due to the operational costs associated with moving to a different management area (Figure 2; p. 29) if catch is slipped for safety, mechanical, and/or dogfish reasons. 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. As a result of this alternative, the *Size and Demographic Characteristics* of the fishery-related workforce may decrease, as would the *Historical Dependence on and Participation in* the fishery.

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 options 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 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, unless the travel time required to reach a different management area reduces the overall catch. 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. *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 similar to those discussed under Slippage Alternative 2.

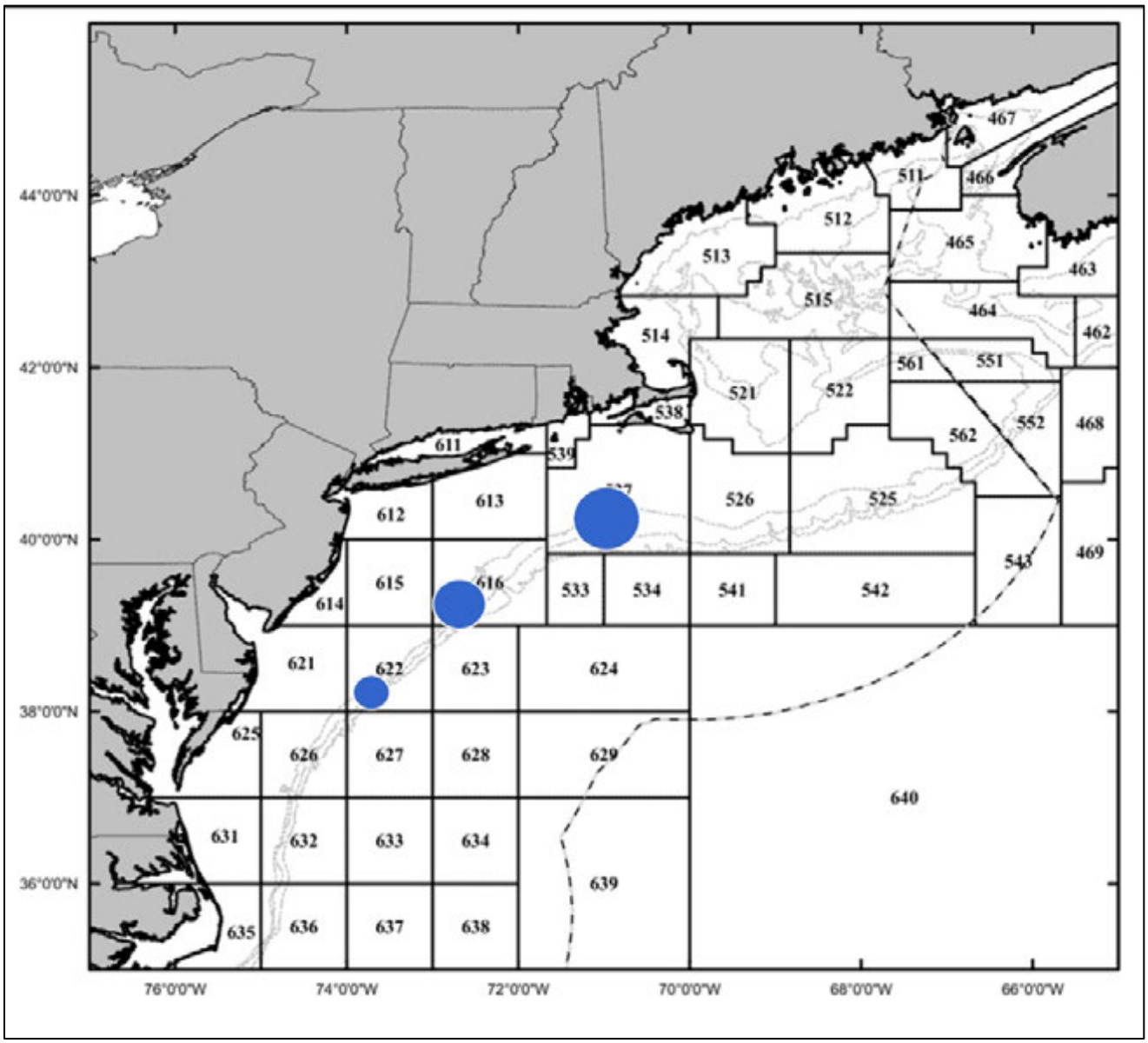
Category A/B Only vs. Category A/B/C: The Council considered applying this alternative to either Category A/B only vessels or all limited access herring vessels (A/B/C). As discussed above, applying this alternative only to Category A and B permit holders would address the vast majority of slippage events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

Overall, the impacts of Alternative 3 are expected to be *negative* for fishing-related businesses and communities. Since management areas are larger than statistical areas, Slippage Alternative 3 could have more negative impacts than Slippage Alternative 2. The move-along requirements for affected vessels are largest under this alternative, so the negative impacts on fishery-related businesses and communities are likely to be greatest when compared to the other alternatives considered in Framework 4.

Slippage Alternative 4 (Section 2.2.2.4, Preferred Alternative): The ***Preferred Alternative*** would require Category A/B herring vessels to move at least 15 nm before fishing again when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish. There would then be a closed area for the vessel for the remainder of the trip. Any observed slippage events for reasons other than safety, mechanical failure, or spiny dogfish would require trip termination. Options were also considered for 10 nm and 20 nm move-along rules but the 15-nm option was selected because 15 nm is the median value between 10 nm and 20 nm. Additionally, notification of slippage events on observed trips via VMS would be required to facilitate enforcement (this measure was proposed in all of the slippage alternatives considered by the Council in this framework).

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. This area 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 11).

Figure 11 Example Size of Area Closed to Affected Vessels Under the 10, 15, and 20-nm Move-Along Options in Slippage Alternative 4



**The middle-sized circle represents the Council's Preferred Alternative (15 nm move-along).*

Under Alternative 4, limited access midwater trawl and purse seine vessels participating in the herring fishery would be most affected by the measures proposed in this alternative, according to observer data (Appendix II). Small mesh bottom trawl vessels have been documented to almost never slip catch. Slippage Alternative 4 would have a negative impact on participants of 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 Alternative 4 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). Since the move-along distances under Alternative 4 would often be smaller relative to Alternatives 2 and 3 (Figure 11), affected vessels may have more options to move fishing operations, unless the vessel can move a shorter distance to an area that is still open to herring fishing.

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 11), 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 similar to those discussed under Slippage Alternative 2.

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, 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.

Overall, the impacts of Alternative 4 are expected to be *low negative* for fishing-related businesses and communities. The required travel distances under the move-along rule proposed in this alternative would generally be less than those required under Alternatives 2 and 3.

Slippage Alternative 5 (Section 2.2.2.5, Non-Preferred): Under this alternative, no move-along rule would be required when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish. Trip termination would be required for other observed slippage events, and options were considered for permit categories to which this alternative would apply (A/B only versus A/B/C). The potential impacts of the trip termination provisions on fishery-related businesses and communities would be similar to those discussed under Slippage Alternative 2 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, full vessel capacity 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 (Appendix II).

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 break even 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, potentially impacting the *Social Structure and Organization* of the communities that depend on the herring fishery. 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 may be perceived as punitive and have a negative impact on the *Attitudes, Beliefs, and Values* of fishermen and stakeholders.

Category A/B Only vs. Category A/B/C: The Council considered applying this alternative to either Category A/B only vessels or all limited access herring vessels (A/B/C). As discussed above, 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.

Overall, the impacts of Slippage Alternative 5 are expected to be *low negative* for fishing-related businesses and communities. Because there is no move-along rule for allowable slippage events included in this alternative, the impacts are expected to be less negative than under Alternatives 2, 3, or 4, but more negative than under Alternative 1 (no action) because of the trip termination requirement for non-allowable slippage events.

4.6 CUMULATIVE EFFECTS ASSESSMENT

A cumulative effects assessment (CEA) is a required part of an EIS or EA according to the Council on Environmental Quality (CEQ) (40 CFR part 1508.7) and NOAA's policy and procedures for NEPA, found in NOAA Administrative Order 216-6. The purpose of the CEA is to integrate into the impact analyses the combined effects of many actions over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective but, rather, the intent is to focus on those effects that are truly meaningful. This section serves to examine the potential direct and indirect effects of the measures proposed in Framework 4 together with past, present, and reasonably foreseeable future actions that affect the environment related to the Atlantic herring fishery.

The regulatory atmosphere within which Federal fishery management operates requires that management actions be taken in a manner that will optimize the conditions of resources, habitat, and human communities. Consistent with NEPA, the MSA requires that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. Given this regulatory environment, and because fishery management actions must strive to create and maintain sustainable resources, impacts on all VECs (except short-term impacts to human communities) from past, present and reasonably foreseeable future actions, when combined with baseline conditions, have generally been positive and are expected to continue in that manner for the foreseeable future. This is not to say that some aspects of the various VECs are not experiencing negative impacts, but rather that when taken as a whole and compared to the level of unsustainable effort that existed prior to and just after the fishery came under management control, the overall long-term trend is positive.

The following analysis will identify and characterize the impact on the environment from Framework 4 when analyzed in the context of other past, present, and reasonably foreseeable future actions. It should be noted that the predictions of potential synergistic effects from multiple actions, past, present and/or future will generally be qualitative in nature.

4.6.1 Valued Ecosystem Components (VECs)

Consistent with the guidelines for CEA, cumulative effects can be more easily identified by analyzing the impacts of the Proposed Action on valued ecosystem components (VECs). The affected environment is described in this document based on VECs that were identified for consideration relative to the proposed specifications. VECs represent the resources, areas, and human communities that may be affected by a Proposed Action or alternatives and by other actions that have occurred or will occur outside the Proposed Action. VECs are generally the "place" where the impacts of management actions are exhibited. An analysis of impacts is performed on each VEC to assess whether the direct/indirect effects of an alternative adds to or subtracts from the effects that are already affecting the VEC from past, present and future actions outside of the Proposed Action (i.e., cumulative effects).

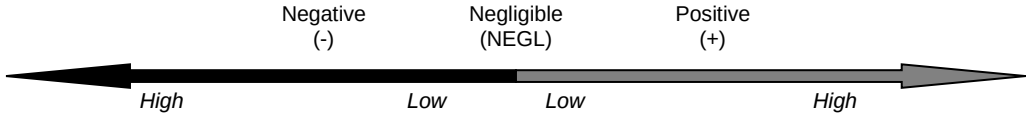
The Affected Environment is described in this document (Section 3.0) based on VECs that were identified specifically for Framework 4. The VECs for consideration in this assessment include:

1. Atlantic Herring (Section 3.1);
2. Non-Target Species (Section 3.2);
3. Physical Environment and Essential Fish Habitat (EFH) (Section 3.3);
4. Protected Resources (Section 3.4); and
5. Fishery-Related Businesses and Communities (Section 3.5).

The descriptive and analytic components of this document are constructed in a consistent manner. The Affected Environment for Framework 4 traces the history of each VEC since the implementation of Amendment 1 to the Herring FMP (in 2006) through Amendment 5 (finalized by the Council in 2013) and consequently addresses the impacts of past actions. The Affected Environment section is designed to enhance the readers' understanding of the historical, current, and near-future conditions (baselines and trends) in order to fully understand the anticipated environmental impacts of the management alternatives and independent measures under consideration in this amendment. The direct/indirect and cumulative impacts of these alternatives and measures are assessed in Section 4.6.7 of this document using a similar structure to that found in the Affected Environment. To enhance clarity and maintain consistency, the following terms in Table 26 are used to summarize impacts:

Table 26 Terms Used in Tables to Summarize Cumulative Impacts on Framework 4 VECs

Impact Definition			
	Direction		
VEC	**Positive (+)**	**Negative (-)**	**Negligible (Negl)**
Atlantic Herring; Non-Target Species, and Protected Resources	Actions that increase stock/population size	Actions that decrease stock/population size	Actions that have little or no positive or negative impacts to stocks/populations
Physical Environment/ Habitat/EFH	Actions that improve the quality or reduce disturbance of habitat	Actions that degrade the quality or increase disturbance of habitat	Actions that have no positive or negative impact on habitat quality
Human Communities	Actions that increase revenue and social well-being of fishermen and/or associated businesses	Actions that decrease revenue and social well-being of fishermen and/or associated businesses	Actions that have no positive or negative impact on revenue and social well-being of fishermen and/or associated businesses
Impact Qualifiers:			
Low (L, as in low positive or low negative)	To a lesser degree		
High (H; as in high positive or high negative)	To a substantial degree		
Likely	Some degree of uncertainty associated with the impact		



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

4.6.2 Spatial and Temporal Boundaries

The geographic area that encompasses the physical, biological and human communities impacts to be considered in the cumulative effects analysis are described in detail in Section 3.0 of this document (Affected Environment). The geographic range for impacts to fish species is the range of each fish species in the western Atlantic Ocean. The physical environment, including habitat and EFH, is bounded by the range of the Atlantic herring fishery, from the Gulf of Maine through the Mid-Atlantic Bight, and includes adjacent upland areas (from which non-fishing impacts may originate). For protected species, the geographic range is the total range of Atlantic herring. The geographic range for fishery-related businesses and communities is defined in the Affected Environment as well.

Overall, while the effects of the historical herring fishery are important and are considered in the analysis, the temporal scope of past and present actions for Atlantic herring, non-target species, the physical environment and EFH, protected species, fishery-related businesses and communities is focused principally on actions that have occurred since 1996, when the MSA was amended and implemented new fisheries management and EFH requirements. The temporal scope for marine mammals begins in the mid-1990s, when NMFS was required to generate stock assessments for marine mammals that inhabit waters of the U.S. EEZ that create the baseline against which current stock assessments are evaluated. For turtle species, the temporal scope begins in the 1970s, when populations were noticed to be in decline. The temporal scope for Atlantic herring is focused more on the time since the Council's original Herring FMP was implemented at the beginning of the 2001 fishing year. The Atlantic Herring FMP serves as the primary management action for the Atlantic herring fishery and has helped to shape the current condition of the herring resource.

The temporal scope of the management measures proposed in this document generally extends five years into the future for all VECs. This period was chosen because of the dynamic nature of resource management and lack of specific information on projects that may occur in the future, which make it difficult to predict impacts beyond this time frame with any certainty. This is also the rebuilding time frame for the Atlantic herring resource, as defined in the Atlantic Herring FMP, should the resource become overfished and subject to a rebuilding program in the future.

4.6.3 Analysis of Total Cumulative Effects

A cumulative effects assessment ideally makes effect determinations based on the culmination of the following: (1) impacts from past, present and reasonably foreseeable future actions; plus (2) the baseline condition for resources and human communities (note – the baseline condition consists of the present condition of the VECs plus the combined effects of past, present and reasonably foreseeable future actions); plus (3) impacts from the Proposed Action and alternatives.

A description of past, present and reasonably foreseeable future actions is presented in Table 27. The baseline conditions of the resources and human community are subsequently summarized in Section 4.6.5 although it is important to note that beyond the stock managed under this FMP and protected species, quantitative metrics for the baseline conditions are not available. Finally, a brief summary of the impacts from the alternatives contained in this specifications is included. The culmination of all these factors is considered when making the cumulative effects assessment.

4.6.4 Past, Present, and Reasonably Foreseeable Future Actions

Table 27 (p. 169) summarizes the combined effects of other past, present and reasonably foreseeable future actions that affect the VECs, i.e., actions other than those alternatives under development in this document.

Note that most of the actions affecting the VECs related to this action and considered in Table 27 come from fishery-related activities (e.g., Federal fishery management actions). As expected, these activities have fairly straightforward effects on environmental conditions, and were, are, or will be taken, in large part, to improve those conditions. The reason for this is the statutory basis for Federal fisheries management – the reauthorized Magnuson-Stevens Act (MSA). That legislation was enacted to promote long-term positive impacts on the environment in the context of fisheries activities. More specifically, the MSA stipulates that management comply with a set of National Standards that collectively serve to optimize the conditions of the human environment. Under this regulatory regime, the cumulative impacts of past, present, and future Federal fishery management actions on the VECs should be expected to result in positive long-term outcomes. Nevertheless, these actions are often associated with offsetting impacts. For example, constraining fishing effort frequently results in negative short-term socio-economic impacts for fishery participants. However, these impacts are usually necessary to bring about the long-term sustainability of a given resource and as such should, in the long-term, promote positive effects on human communities, especially those that are economically dependent upon the managed resource.

Non-fishing activities are also considered when determining the combined effects from past, present and reasonably foreseeable future actions. Activities that have meaningful effects on the VECs include the introduction of chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment. These activities pose a risk to the all of the identified VECs in the long term. Human induced non-fishing activities that affect the VECs under consideration in this document are those that tend to be concentrated in near shore areas. Examples of these activities include, but are not limited to agriculture, port maintenance, beach nourishment, coastal development, marine transportation, marine mining, dredging and the disposal of dredged material. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and, as such, may indirectly constrain the sustainability of the managed resources, non-target species, and protected resources. Decreased habitat suitability would tend to reduce the tolerance of these VECs to the impacts of fishing effort. Mitigation of this outcome through regulations that would reduce fishing effort could then negatively impact human communities.

4.6.4.1 Atlantic Herring Resource

Past and Present Actions: Atlantic herring management measures were implemented in two related, but separate FMPs in 1999 – one by the Federal government (NEFMC 1999, amended in 2006) and one by the states (ASMFC 1999, amended in 2006). The status of the Atlantic herring resource is updated in Section 3.1.2 of this document, and the Atlantic herring fishery is summarized in Section 3.5 of this document. The offshore stock has recovered from its collapse in the early 1970s and, overall, the coastal Atlantic herring resource is not overfished, and overfishing is not occurring. There is more concern for the inshore stock since it receives more fishing pressure, but the most recent benchmark assessment (SAW 54, July 2012) indicates that the herring resource is in a "rebuilt" condition (above the biomass target) and that fishing mortality is well below the overfishing threshold. Additional past and present actions that affect the herring resource are discussed in the other VEC sections.

Amendment 4 to the Atlantic Herring FMP, as enacted by the NEFMC in 2010, established provisions for ACLs by first defining terms to bring the FMP into compliance with the new requirements of the MSA, setting an interim ABC control rule, eliminating JVP, IWP, TALFF and reserve specifications, establishing provisions for sub-ACLs, and modifying the specifications process to utilize these elements. Three Accountability Measures (AMs) were also established in Amendment 4: an in-season AM that closes the directed herring fishery in a management area when there is a projection that 95% of the sub-ACL is reached, an AM for overage deductions, which subtracts the amount of an ACL or sub-ACL overage from subsequent ACLs/sub-ACLs, and another AM which established provisions for closing the directed herring fishery if the haddock catch cap (Framework 43 and 46 to the Multispecies FMP, see below) is reached.

In 2006, Framework 43 to the Northeast Multispecies FMP was enacted, which modified the restrictions for herring vessels so that herring fishing could continue on Georges Bank, but prohibited certain herring vessels from discarding haddock and limited possession of other groundfish to small amounts. It also adopted a cap on the amount of haddock that could be caught by certain herring vessels. In 2011, Framework 46 changed these catch cap provisions so that they would apply only to midwater trawl vessels with a herring permit, because these vessels caught nearly all of the haddock caught by the herring fishery. Catches of haddock by midwater trawl vessels fishing in Herring Management Areas 1A, 1B, and 3 that are documented by at-sea observers are now extrapolated to an estimate of the total catch of haddock. Individual estimates are then developed for each haddock stock (GOM and GB haddock). The cap is then applied based on the multispecies fishing year (May 1 through April 30), and is 1 percent of the Acceptable Biological Catch (ABC) of each stock. If the haddock catch estimate extrapolated from observer reports exceeds a stock-specific cap, midwater trawl vessels are limited to catching 2,000 pounds of Atlantic herring in a relevant area. If there is an overage of the cap, the cap for the following year is reduced by the amount of the overage. In order to monitor the cap, midwater trawl vessels fishing in Herring Management Areas 1A, 1B, and 3 are also required to report total kept catch by haddock stock area and gear used.

The Atlantic States Marine Fisheries Commission (ASMFC) manages the Atlantic herring fishery in State waters. The ASMFC adopted Amendment 2 in March of 2006, which revised management area boundaries, biological reference points, the specification process, research set-asides, internal waters processing operations, and measures to address fixed gear fisheries and required fixed gear fishermen to report herring catches through the IVR program. Further discussion can be found in the 2013-2015 Atlantic Herring specifications package.

The ASMFC also adopted an Addendum in 2010 which modified Amendment 1 (Amendment 1) and Amendment 2 (Amendment 2) to the Interstate Fisheries Management Plan for Atlantic Sea Herring by changing the specification setting process and associated definitions. Based on the difficulty of having two sets of acronyms, one for the NEFMC plan and one for the ASMFC plan, for one cooperatively managed species the addendum was developed to establish an identical set of definitions and acronyms as those that the NEFMC is required to use under MSA. The addendum also established a new specification setting process that is more in line with the ASMFC Sea Herring Section's usual process for setting specifications while taking into account the new process that was enacted by the NEFMC. To date, ASMFC management remains generally consistent with Federal management through the Herring FMP.

The ASMFC is currently developing Draft Amendment 3 to the Interstate Fishery Management Plan for Atlantic Herring. The Commission is considering adjustments to the default closing dates and boundaries of the three inshore spawning areas to better protect spawning sea herring. In addition, the draft amendment considers industry needs by reconsidering the rollover provision for the fixed gear set-aside. To better inform management of fishing effort, the draft amendment considers a requirement for vessel owners to declare their intended gear before the start of a season. Consistent with the ***Preferred Alternative*** in this framework adjustment, the ASMFC amendment also proposes a requirement for fish holds must be empty of fish prior to leaving the docks for a fishing trip. Stakeholders are given an opportunity to propose additional issues for the draft amendment. The ASMFC announced its intent for Draft Amendment 3 by publishing a public information document in May 2014 and holding a public comment period through July 2014. The ASMFC Atlantic Herring Section will consider the development of draft Amendment 3 in August 2014. The earliest implementation date for Amendment 3 is expected to be February 2015.

The Atlantic herring fishery specifications for the 2013-2015 fishing years are currently effective and are summarized in Table 13 (p. 69). Framework 2 to the Atlantic Herring FMP was implemented by NMFS concurrently with the 2013-2015 herring fishery specifications on September 30, 2013. Framework 2 authorizes the Council to split sub-ACLs in all herring management areas seasonally (by month) during the specifications process. It also establishes a general policy for authorizing annual carryover of unutilized sub-ACL (up to 10%) under specific conditions. Seasonal (monthly) splits of sub-ACLs in Areas 1A and 1B are effective for the 2014 and 2015 fishing years, and carryover provisions apply as well.

The Council also implemented additional accountability measures for the herring fishery in the 2013-2015 specifications package; the AMs will remain effective beyond the 2015 fishing year. Under the new AMs (effective September 30, 2013), the trigger for closing the directed herring fishery in a management area is reduced to 92% of the sub-ACL (not including RSAs). When 92% of a management area sub-ACL is projected to be reached, the directed herring fishery in that area will close, and all herring permit holders will be limited to 2,000 pounds of herring per trip in that area for the remainder of the fishing year. In addition, the new AMs establish a trigger for closing the directed herring fishery in all management areas. The trigger for closing the directed herring fishery in all management areas will be 95% of the stockwide Atlantic herring ACL. When 95% of the stockwide ACL for herring is projected to be reached, the directed herring fishery in all management areas would close, and all herring permit holders would be limited to 2,000 pounds of herring per trip for the remainder of the fishing year. These AMs were adopted by the Council to further prevent the stockwide Atlantic herring ACL and management area sub-ACLs from being exceeded during the fishing year, as well as improve the likelihood that the total ACL (OY) can be caught on a continuing basis while preventing overfishing.

Amendment 5 to the Atlantic Herring FMP was approved by NEFMC in June 2012. After review and revision, the final submission for Amendment 5 was presented to NMFS on March 25, 2013. The focus of Amendment 5 is to establish a comprehensive catch monitoring program for the Atlantic herring fishery, address river herring bycatch, establish criteria for midwater trawl vessel access to groundfish closed areas, and adjust other aspects of the fishery management program to keep the Herring FMP in compliance with the MSA. On July 18, 2013, Amendment 5 was partially approved by NMFS. The approved measures in Amendment 5, which became 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.

The impacts of Amendment 5 on the Atlantic herring resource are expected to be positive; the action proposed in this framework adjustment builds on the catch monitoring program for the limited access herring fishery established in Amendment 5.

Reasonably Foreseeable Future Actions: Quickly following the completion of Amendment 5 in 2013, the NEFMC developed Framework 3 to the Atlantic Herring FMP, which also expanded on the management measures in Amendment 5 and established catch caps for RH/S as well as related provisions to manage and minimize interactions with these species in the directed Atlantic herring fishery. The Proposed Rule for Framework 3 was published on June 13, 2014, and the RH/S catch caps are expected to become effective during the 2014 fishing year. The

measures implemented in Framework 3 are expected to have a low positive impact on the Atlantic herring resource.

The Mid-Atlantic Fishery Management Council recently selected final measures for inclusion in Framework 9 to the MSB FMP. This action will address the disapproved elements of MSB Amendment 14 related to management measures to address net slippage in the Atlantic mackerel fishery. At its June 2014 meeting, the Mid-Atlantic Council selected measures that are consistent with the New England Council's ***Preferred Alternative*** to address net slippage in this framework adjustment (Slippage Alternative 4, Section 2.2.2.4, p. 30). This improves consistency between the herring and mackerel fishery regulations, reduces complexity, and should enhance the overall effectiveness of both fishery management programs. Implementation of Framework 9 is expected at the start of the 2015 fishing year.

NMFS is also leading the development of an omnibus amendment to address the Standardized Bycatch Reporting Methodology (Amendment 6 to the Atlantic Herring FMP). This amendment will establish a process and provisions for allocating observer coverage across all Federally-managed fisheries. The proposed measures include bycatch reporting and monitoring mechanisms; analytical techniques and allocation of at-sea fisheries observers; a standardized bycatch reporting methodology performance standard; a review and reporting process; framework adjustment and annual specifications provisions; a prioritization process; and provisions for industry-funded observers and observer set-aside programs The Proposed Rule for the SBRM amendment was published on December 15, 2014, and the SBRM amendment measures are expected to become effective in 2015.

NMFS is currently leading the development of an omnibus amendment to establish provisions for industry-funded monitoring across all New England and Mid-Atlantic Council-managed FMPs (Amendment 7 to the Herring FMP). The omnibus industry-funded monitoring amendment will also include provisions for observer coverage in the Atlantic herring and mackerel fisheries, which were disapproved in Amendment 5 (herring) and Amendment 14 (mackerel). The target implementation date for the omnibus amendment is during the 2015 fishing year. The long-term impacts of this action on the Atlantic herring resource are likely to be positive.

An Omnibus EFH Amendment is likely to be implemented in foreseeable future (Amendment 3 to the Atlantic Herring FMP). This amendment could positively affect Atlantic herring via increased protection of benthic habitats used by the species from the adverse effects of various regional fisheries. It may also modify the boundaries and access provisions (including those for midwater trawl gear) related to the year-round groundfish closed areas. Further, NMFS is currently in a rule-making process to propose changes to the Harbor Porpoise Take Reduction Plan which are intended to reduce harbor porpoise mortalities (75 FR 7383, February 19, 2010 and 75 FR 12698, March 17, 2010). This action would likely result in vessels facing additional restrictions, possibly resulting in positive impacts to herring and other species taken incidentally.

The sea turtle strategy is a gear-based approach to addressing sea turtle bycatch. NMFS is proposed and made final changes to the regulatory requirements for trawl fisheries to protect sea turtles. As described in the turtle Strategy Final EIS (77 FR 29905 May 21, 2012), NMFS allowed the use of new materials and modified existing approved TED designs to other trawl fisheries and also modified the geographic scope of the TED requirements. This measure is likely to be neutral for the herring resource as it will not affect herring directly.

During 2015, Atlantic herring stock information will be reviewed, and the Council will develop the Atlantic herring fishery specifications for the 2016-2018 fishing years. The 2016-2018 fishery specifications package will include the specification of ACLs and sub-ACLs for the Atlantic herring fishery, as well as RH/S catch caps for 2016-2018 if the action proposed in this framework adjustment is approved/implemented.

4.6.4.2 Non-Target Species

Past and Present Actions: Updated information about non-target species affected by the Atlantic herring fishery is provided in Section 3.2 of this document. River herring and shad (RH/S) are non-target species of particular concern in the Atlantic herring fishery. In addition to RH/S, haddock is another important non-target species encountered by midwater trawl herring vessels. The catch of haddock in the Atlantic herring fishery was addressed through Framework 43 and Framework 46 to the Northeast Multispecies FMP, as well as the Atlantic herring fishery specifications and Amendment 5 to the Atlantic Herring FMP.

The Northeast Multispecies FMP has a multitude of management measures, a full summary of which has been provided in the most recent Framework to the FMP, Framework 46 (which can be found in Appendix III). Groundfish was considered as its own VEC in that Framework, however groundfish is a portion of the non-target species VEC being considered herein, and as such, the summary of the effects of past, present, and reasonably foreseeable future actions that was used in that Framework will be considered here. In summary, past actions to the regulated groundfish stocks have created mixed effects, as the combined effects of past actions have decreased effort, improved habitat protection, and implemented rebuilding plans when necessary, but some stocks remain overfished. Present actions created a positive effect, as sustainable stocks were the purpose of the regulations, as was the case for foreseeable future actions as well. Overall, the combined effects had a short-term negative, but long-term positive effect.

In 2006, Framework 43 to the Northeast Multispecies FMP was enacted, which modified the restrictions for herring vessels so that herring fishing could continue on Georges Bank, but prohibited certain herring vessels from discarding haddock and limited possession of other groundfish to small amounts. It also adopted a cap on the amount of haddock that could be caught by certain herring vessels. In 2011, Framework 46 changed these catch cap provisions so that they would apply only to midwater trawl vessels with a herring permit, because these vessels caught nearly all of the haddock caught by the herring fishery. Catches of haddock by midwater trawl vessels fishing in Herring Management Areas 1A, 1B, and 3 that are documented by at-sea observers are now extrapolated to an estimate of the total catch of haddock. Individual estimates are then developed for each haddock stock (GOM and GB haddock). The cap is then applied based on the multispecies fishing year (May 1 through April 30), and is 1 percent of the

Acceptable Biological Catch (ABC) of each stock. If the haddock catch estimate extrapolated from observer reports exceeds a stock-specific cap, midwater trawl vessels are limited to catching 2,000 pounds of Atlantic herring in a relevant area. If there is an overage of the cap, the cap for the following year is reduced by the amount of the overage. In order to monitor the cap, midwater trawl vessels fishing in Herring Management Areas 1A, 1B, and 3 are also required to report total kept catch by haddock stock area and gear used.

The ASMFC Fishery Management Plan for Shad & River Herring, approved in 1985, was one of the very first FMPs developed by the ASMFC. Amendment 1 was adopted in 1998 and focuses on American shad regulations as well as and monitoring programs to improve data collection and stock assessment capabilities. Amendment 2 to the ASMFC Interstate Fisheries Management Plan for Shad and River Herring was approved in 2009 and implemented a precautionary approach to river herring management. Amendment 2 requires states or jurisdictions to close all state fisheries by January 1, 2012, with exceptions for systems with a sustainable fishery. A sustainable fishery is defined as one that demonstrates that the river herring stock can support a commercial and/or recreational fishery without diminishing future stock reproduction and recruitment. Under Amendment 2, river herring from any state waters fishery may not be landed without an approved plan requesting State fishery proposals must contain 'sustainability targets' that are subject to Shad and River Herring Technical Committee (TC) review and Shad & River Herring Management Board (Board) approval. States with approved plans are required to submit annual updates of the achievement and maintenance of sustainability targets. The TC has reviewed proposals from Maine, New Hampshire, North Carolina and South Carolina and the Board approved all plans. The 2012 sustainability plan deadline was implemented in order to allow states with a lengthy legislative process adequate time to develop and implement proposals.

In 2010, the Board approved Amendment 3, which revises American shad regulatory and monitoring programs in place under Amendment 1. The amendment was developed in response to the 2007 American shad stock assessment, which found that most American shad stocks were at all-time lows and did not appear to be recovering. Amendment 3 is similar to the management program required for river herring. The amendment prohibits state waters commercial and recreational fisheries beginning January 1, 2013, unless a state or jurisdiction has a sustainable management reviewed by the TC and approved by the Board. The amendment defines a sustainable fishery as "a commercial and/or recreational fishery that will not diminish the potential future stock reproduction and recruitment." Submitted plans must clearly demonstrate that the state's or jurisdiction's American shad fisheries meet this new definition of sustainability through the development of sustainability targets which must be achieved and maintained. The amendment allows any river systems to maintain a catch and release recreational fishery. States and jurisdictions are also required to identify local significant threats to American shad critical habitat and develop a plan for mitigation and restoration.

Amendment 5 to the Atlantic Herring FMP was approved by NEFMC in June 2012. After review and revision, the final submission for Amendment 5 was presented to NMFS on March 25, 2013, and measures approved in Amendment 5 just recently became effective (March 17, 2014). The focus of Amendment 5 is to establish a comprehensive catch monitoring program for the Atlantic herring fishery, address river herring bycatch, establish criteria for midwater trawl

vessel access to groundfish closed areas, and adjust other aspects of the fishery management program to keep the Herring FMP in compliance with the MSA. The amendment also establishes a long-term strategy for river herring bycatch avoidance/minimization through industry-based avoidance and, presumably, a catch cap for river herring. The impacts of Amendment 5 on non-target species is expected to be positive.

Amendment 14 to the Mackerel Squid Butterfish (MSB) FMP was developed concurrently to Amendment 5 by the Mid-Atlantic Fishery Management Council. Many of the actions contained in both amendments have been developed to compliment and/or replicate each other so as to avoid conflicting overlaps of restrictions on vessels that participate in both the herring and mackerel fisheries. In some cases, however, the actions contained in both amendments present some conflict with each other. Actions included in Amendment 14 include: vessel reporting measures, dealer reporting measures, at-sea observation optimization measures, other sampling and monitoring measures such as port-side monitoring, at-sea observer coverage requirements, mortality caps on river herring, restrictions in areas of high river herring catch, mesh requirements, and the potential addition of river herring as a stock in the fishery. The ways in which these actions overlap can be seen in Table 196 of the Amendment 5 (FEIS). The implementation of Amendment 14 also recently occurred (March 26, 2014) and is expected to have positive impacts on non-target species. The Mid-Atlantic Council also recently implemented a RH/S catch cap for the directed mackerel fishery through its specifications process. The 2014 RH/S catch cap for the Atlantic mackerel fishery is 236 mt. These measures are expected to have positive impacts on the RH/S resources.

Reasonably Foreseeable Future Actions: Quickly following the completion of Amendment 5 in 2013, the NEFMC developed Framework 3 to the Atlantic Herring FMP, which also expanded on the management measures in Amendment 5 and established catch caps for RH/S as well as related provisions to manage and minimize interactions with these species in the directed Atlantic herring fishery. The Proposed Rule for Framework 3 was published on June 13, 2014, and the RH/S catch caps are expected to become effective during the 2014 fishing year. The measures implemented in Framework 3 are expected to have a positive impact on the river herring and shad species, which are non-target species of particular concern in the Atlantic herring fishery.

The proposed 2014/2015 RH/S catch caps for the midwater trawl fishery and bottom trawl Atlantic herring fisheries are summarized in Table 6 of this document (p. 44). The proposed RH/S catch caps for 2014-2015 would not affect trips/vessels landing less than 6,600 pounds of Atlantic herring or herring vessels using other gear types, including purse seines. The analysis presented in Section 4.2 of the Framework 3 document states that by encouraging the directed herring fleet to avoid RH/S, or by shutting down the directed herring fishery if the RH/S cap is reached, these caps should reduce RH/S catch and limit RH/S catch by the Atlantic herring fishery when compared to the status quo. This should produce a positive impact to RH/S stocks in 2014 and 2015, but the extent is unknown because there are no absolute abundance estimates for RH/S stocks, and there is no way to link the RH/S catch cap amount (or RH/S catch under a cap) to RH/S stock status or fishing mortality at this time.

During the MSB specifications process (June 2014), the MAFMC voted to recommend a catch cap of 89-155 mt for the directed mackerel fishery for the 2015 fishing year (the amount will be scaled based on mackerel catch in the directed mackerel fishery during the fishing year). There is opportunity for the two Councils to better align the catch caps in the overlapping southern New England/Mid-Atlantic area for the 2016 fishing year and beyond. The New England Council built flexibility into the RH/S catch cap process in Framework 3 to allow development of a joint herring/mackerel fishery RH/S catch cap for the southern New England/Mid-Atlantic area with the MAFMC.

In addition, the Mid-Atlantic Fishery Management Council recently selected final measures for inclusion in Framework 9 to the MSB FMP. This action will address the disapproved elements of MSB Amendment 14 related to management measures to address net slippage in the Atlantic mackerel fishery. At its June 2014 meeting, the Mid-Atlantic Council selected measures that are consistent with the Council's Preferred Alternative to address net slippage in this framework adjustment (Slippage Alternative 4, Section 2.2.2.4, p. 30). This improves consistency between the herring and mackerel fishery regulations, reduces complexity, and should enhance the overall effectiveness of both fishery management programs. Implementation of Framework 9 is expected at the start of the 2015 fishing year.

A foreseeable future action that will likely affect non-target species is the development of observer coverage requirements for the limited access herring fishery (disapproved in Amendment 5), as well as the funding options that pertain to this measure. An FMAT is developing alternatives to address this issue, and both the New England and Mid-Atlantic Fishery Management Councils are working with NMFS to develop an omnibus amendment to all Northeast Region FMPs to implement mechanism for cost-sharing between the industry and the government. Implementation of the omnibus industry-funded monitoring amendment is anticipated during 2015.

In early August 2013, when NOAA Fisheries published the ESA listing decision for river herring, NMFS indicated that it would partner with ASMFC to form a technical expert working group (TEWG). The TEWG will be focused on developing a dynamic conservation plan to help restore river herring throughout their range from Canada to Florida, identifying and implementing important conservation efforts, and conducting research to fill in some of the critical data gaps for these species. NOAA Fisheries and ASMFC have formed the TEWG, and the working group has met to begin its work. NOAA Fisheries plans to continue to coordinate with all of management partners including the Mid-Atlantic and the New England Fishery Management Councils to maximize resources and identify ways to complement ongoing efforts to promote river herring restoration.

During 2015, Atlantic herring stock information will be reviewed, and the Council will develop the Atlantic herring fishery specifications for the 2016-2018 fishing years. The 2016-2018 fishery specifications package will include the specification of ACLs and sub-ACLs for the Atlantic herring fishery, as well as RH/S catch caps for 2016-2018 if the action proposed in this framework adjustment is approved/implemented.

Implementation of the Omnibus EFH Amendment may also result in additional habitat protections for which there is an indirect positive effect to bycatch/incidental catch species and other fisheries, as they would also receive protection. It may also modify the boundaries and access provisions (including those for midwater trawl gear) related to the year-round groundfish closed areas. As with Allocated Target Species, if revisions are made to the Harbor Porpoise Take Reduction Plan, vessels could face additional restrictions, possibly resulting in positive impacts to bycatch through effort reductions.

The sea turtle Strategy is a gear-based approach to addressing sea turtle bycatch. NMFS is currently considering proposing changes to the regulatory requirements for trawl fisheries to protect sea turtles. As described in a NOI to prepare an EIS (74 FR 88 May 8, 2009), NMFS is considering expanding the use of TEDs to other trawl fisheries and modifying the geographic scope of the TED requirements. TED requirements would likely have a positive effect on bycatch and discards as they would likely exclude some of these species from capture in the cod-end.

4.6.4.3 Physical Environment and EFH

Past and Present Actions: The Atlantic herring EFH designation, which was developed as part of an EFH Omnibus Amendment prepared by NEFMC for its entire managed species, is provided in Section 3.3 of this document. The EFH Omnibus Amendment was approved for Atlantic herring by the Secretary of Commerce on October 27, 1999. The final rule implementing the Atlantic Herring FMP to allow for the development of a sustainable Atlantic herring fishery was published on December 11, 2000 (65 FR 77450).

Because the gears used in the Atlantic herring fishery have only occasional bottom contact with the primary substrates used by herring for egg deposition, and because the noises produced by herring fishing operations only temporarily disperse schools of juvenile and adult herring, EFH impacts assessments for the fishery have concluded that it does not have an adverse effect on herring EFH. In addition, these assessments have concluded that the herring fishery does not have an adverse impact on EFH designated for non-herring species.

Various measures have been implemented in the Northeast Region to protect the EFH of NEFMC-managed species. In particular, all bottom-tending mobile gear is prohibited from the level 3 Habitat Closed Areas (HCAs) established in 2004 under Amendment 13 to the Northeast Multispecies FMP and Amendment 10 to the Atlantic Sea Scallop FMP. In large part, these HCAs overlap with areas established in 1994 and 1998 to protect overfished stocks of cod, haddock and other groundfish species. As mobile bottom-tending gear is largely prohibited from the groundfish closures, they have incidental EFH protection benefits. Other measures to protect EFH include spatially-specific roller gear restrictions in the Multispecies and Monkfish fisheries.

Reasonably Foreseeable Future Actions: Reasonably foreseeable future actions that will likely affect habitat include the Omnibus EFH Amendment, currently under development. This action reviews and updates EFH designations, identifies Habitat Areas of Particular Concerns (HAPCs), reviews prey information for all managed species, reviews non-fishery impacts to EFH, and reviews the current science on fishing impacts to habitat. It will also include coordinated and integrated measures intended to minimize the adverse impact of NEFMC-managed fishing on EFH. It may also modify the boundaries and access provisions (including those for midwater trawl gear) related to the year-round groundfish closed areas. The net effect of new EFH and HAPC designations and more targeted habitat management measures should be positive for the physical environment and EFH.

The Strategy for Sea Turtle Conservation and Recovery in Relation to Atlantic Ocean and Gulf of Mexico ("Strategy") is a gear-based approach to addressing sea turtle bycatch. NMFS is currently considering proposing changes to the regulatory requirements for trawl fisheries to protect sea turtles. As described in a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for Sea Turtle Conservation and Recovery in Relation to the Atlantic Ocean and Gulf of Mexico Trawl Fisheries (74 FR 88 May 8, 2009), NMFS is considering expanding the use of TEDs in trawl fisheries and modifying the geographic scope of the TED requirements. Since TED requirements may decrease the catch retention of some target species, vessels may tow longer to offset this loss of catch, likely resulting in negative impacts to habitat and EFH.

4.6.4.4 Protected Resources

Past and Present Actions: A general description of protected species that may be affected by the proposed action is provided in Section 3.4 of this document and in more detail in Amendment 5 to the Herring FMP.

Large whales may be adversely affected by habitat degradation, habitat exclusion, acoustic trauma, harassment, or reduction in prey resources due to trophic effects resulting from a variety of activities including the operation of commercial fisheries. Ship strikes and fishing gear entanglement continue to be the most likely sources of human-related injury or mortality for right, humpback, fin and minke whales. Sei, blue and sperm whales are also vulnerable, but fewer ship strikes or entanglements have been recorded. Mobile bottom trawls, as well as midwater trawl gear, appear to be less of a concern for the large whale species. Other marine mammals, however, such as harbor porpoise, dolphins and to a greater degree seals, are vulnerable to entanglement in net gear, including midwater trawl gear and purse seines.

In addition to these actions, NMFS has implemented specific regulatory actions to reduce injuries and mortalities from gear interactions. The ALWTRP, implemented in 1999 with subsequent rule modifications, restrictions, and extensions, includes time and area closures for trap/pot fisheries (e.g., lobster and black sea bass) and gillnet fisheries (e.g., anchored gillnet and shark gillnet fisheries); gear requirements, including a general prohibition on having line floating at the surface in these fisheries; a prohibition on storing inactive gear at sea; and restrictions on setting shark gillnets off the coasts of Georgia and Florida and drift gillnets in the Mid-Atlantic. This plan also contains non-regulatory aspects, including gear research, public outreach, scientific research, a network to inform mariners when right whales are in an area, and increasing

efforts to disentangle whales caught in fishing gear. The intent of the ALWTRP is to positively affect large whales by reducing injuries and deaths of large whales (North-Atlantic right, humpback, and fin) in waters off the United States East Coast due to incidental entanglement in fishing gear.

Turtles in general have documented entanglements in shrimp trawls, pound nets, bottom trawls and sink gillnets. Shrimp trawls are required to use turtle excluder devices (TEDs). The diversity of the sea turtle life history also leaves them susceptible to many other human impacts, including impacts on land, in the benthic environment, and in the pelagic environment. Anthropogenic factors that impact the success of nesting and hatching include: beach erosion, beach armoring and nourishment; artificial lighting; beach cleaning; increased human presence; recreational beach equipment; beach driving; coastal construction and fishing piers; exotic dune and beach vegetation; and poaching. An increased human presence at some nesting beaches or close to nesting beaches has led to secondary threats such as the introduction of exotic fire ants, and an increased presence of native species (e.g., raccoons, armadillos, and opossums) which raid and feed on turtle eggs. Entanglement(s) in debris or ingestion of marine debris are also seen as possible threats.

The final submission for Amendment 5 to the Atlantic Herring FMP was presented to NMFS on Dec 21, 2012 and approved by NEFMC in June 2012. Measures that were approved in Amendment 5 just recently became effective on March 17, 2014. The focus of Amendment 5 is to establish a comprehensive catch monitoring program for the limited access herring fishery, address river herring bycatch, establish criteria for midwater trawl vessel access to groundfish closed areas, and adjust other aspects of the fishery management program to keep the Herring FMP in compliance with the MSA.

Reasonably Foreseeable Future Actions: The likely impacts of the Omnibus EFH Amendment on protected resources cannot be determined at this time. The Harbor Porpoise Take Reduction Plan for the GOM and Mid-Atlantic Coasts was originally implemented in 1998, and NMFS published a proposed rule in July 2009 indicating additional management restrictions for gillnetters. Future measures of this plan may be implemented if take reduction goals are not met, which could further reduce fishing effort and may have a positive effect on the population of this species.

The sea turtle Strategy is a gear-based approach to addressing sea turtle bycatch. Under the Strategy, NMFS has identified trawl gear as a priority for reducing sea turtle bycatch and is considering proposing changes to the TED requirements in the trawl fisheries. TED requirements are designed to have a positive effect on protected resources, specifically turtles by allowing for most turtles caught in trawl nets to escape. NMFS is working to develop and implement bycatch reduction measures in all trawl fisheries in the Atlantic and Gulf of Mexico when and where sea turtle takes have occurred or where gear, time, location, fishing method, and other similarities exist between a particular trawl fishery and sea turtle takes have occurred by trawls (72 FR 7382, February 15, 2007). On February 15, 2007, NMFS issued an advance notice of proposed rulemaking to announce that it is considering amendments to the regulatory requirements for TEDs (72 FR 7382). On May 8, 2009, NMFS issued a NOI to prepare an EIS (74 FR 88 May 8, 2009), and held public scoping meetings throughout the East coast.

4.6.4.5 Fishery-Related Businesses and Communities

Past and Present Actions: A general description of fishery-related businesses and communities that may be affected by the proposed action is provided in Section 3.5 of this document and in more detail in Amendment 5 to the Herring FMP. Past and present actions described in Section 4.6.4.1 affecting the Atlantic herring resource have also affected fishery-related businesses and communities.

In 2010, the ASMFC adopted an Addendum which modified Amendment 1 and Amendment 2 to the Interstate Fisheries Management Plan for Atlantic Sea Herring by changing the specification setting process and associated definitions. Based on the difficulty of having two sets of acronyms, one for the NEFMC plan and one for the ASMFC plan, for one cooperatively managed species the addendum was developed to establish an identical set of definitions and acronyms as those that the NEFMC is required to use under MSA. The addendum also established a new specification setting process that is more in line with the ASMFC Sea Herring Section's usual process for setting specifications while taking into account the new process that was enacted by the NEFMC in Amendment 4 to the Atlantic Herring FMP.

Amendment 4 to the Atlantic Herring FMP, as enacted by the NEFMC in 2010, primarily responded to the requirements of the MSA and NEPA. The amendment established provisions for ACLs by first defining terms to bring the FMP into compliance with the new requirements of the MSA, setting an interim ABC control rule, eliminating JVP, IWP, TALFF and reserve specifications, establishing provisions for sub-ACLs, and modifying the specifications process to utilize these elements. Three Accountability Measures (AMs) were also established in Amendment 4: an in-season AM that closes the directed herring fishery in a management area when there is a projection that 95% of the sub-ACL is reached, an AM for overage deductions, which subtracts the amount of an ACL or sub-ACL overage from subsequent ACLs/sub-ACLs, and another AM which established provisions for closing the directed herring fishery if the haddock catch cap (Framework 43 and 46 to the Multispecies FMP, see below) is reached. Currently, Amendment 4 is under court order and pending further action as of August 2012.

In 2006, Framework 43 to the Northeast Multispecies FMP was enacted, which modified the restrictions for herring vessels so that herring fishing could continue on Georges Bank, but prohibited certain herring vessels from discarding haddock and limited possession of other groundfish to small amounts. It also adopted a cap on the amount of haddock that could be caught by certain herring vessels. In 2011, Framework 46 changed these catch cap provisions so that they would apply only to midwater trawl vessels with a herring permit, because these vessels caught nearly all of the haddock caught by the herring fishery. Catches of haddock by midwater trawl vessels fishing in Herring Management Areas 1A, 1B, and 3 that are documented by at-sea observers are now extrapolated to an estimate of the total catch of haddock. Individual estimates are then developed for each haddock stock (GOM and GB haddock). The cap is then applied based on the multispecies fishing year (May 1 through April 30), and is 1 percent of the Acceptable Biological Catch (ABC) of each stock. If the haddock catch estimate extrapolated from observer reports exceeds a stock-specific cap, midwater trawl vessels are limited to catching 2,000 pounds of Atlantic herring in a relevant area. If there is an overage of the cap, the

cap for the following year is reduced by the amount of the overage. In order to monitor the cap, midwater trawl vessels fishing in Herring Management Areas 1A, 1B, and 3 are also required to report total kept catch by haddock stock area and gear used.

Framework 2 to the Atlantic Herring FMP was implemented by NMFS concurrently with the 2013-2015 Atlantic herring fishery specifications on September 30, 2013. Framework 2 authorizes the Council to split sub-ACLs in all herring management areas seasonally (by month) during the specifications process. It also establishes a general policy for authorizing annual carryover of unutilized sub-ACL (up to 10%) under specific conditions. Seasonal (monthly) splits of sub-ACLs in Areas 1A and 1B are effective for the 2014 and 2015 fishing years, and carryover provisions apply as well. The 2013-2015 Atlantic herring fishery specifications are summarized in Table 13 on p. 69 of this document.

The Council also implemented additional accountability measures for the herring fishery in the 2013-2015 specifications package; the AMs will remain effective beyond the 2015 fishing year. Under the new AMs (effective September 30, 2013), the trigger for closing the directed herring fishery in a management area is reduced to 92% of the sub-ACL (not including RSAs). When 92% of a management area sub-ACL is projected to be reached, the directed herring fishery in that area will close, and all herring permit holders will be limited to 2,000 pounds of herring per trip in that area for the remainder of the fishing year. In addition, the new AMs establish a trigger for closing the directed herring fishery in all management areas. The trigger for closing the directed herring fishery in all management areas will be 95% of the stockwide Atlantic herring ACL. When 95% of the stockwide ACL for herring is projected to be reached, the directed herring fishery in all management areas would close, and all herring permit holders would be limited to 2,000 pounds of herring per trip for the remainder of the fishing year. These AMs were adopted by the Council to further prevent the stockwide Atlantic herring ACL and management area sub-ACLs from being exceeded during the fishing year, as well as improve the likelihood that the total ACL (OY) can be caught on a continuing basis while preventing overfishing.

Amendment 5 to the Atlantic Herring FMP was approved by NEFMC in June 2012. After review and revision, the final submission for Amendment 5 was presented to NMFS on March 25, 2013, and measures approved in Amendment 5 just recently became effective (March 17, 2014). The focus of Amendment 5 is to establish a comprehensive catch monitoring program for the Atlantic herring fishery, address river herring bycatch, establish criteria for midwater trawl vessel access to groundfish closed areas, and adjust other aspects of the fishery management program to keep the Herring FMP in compliance with the MSA. The amendment also establishes a long-term strategy for river herring bycatch avoidance/minimization through industry-based avoidance and, presumably, a catch cap for river herring.

Amendment 14 to the Mackerel Squid Butterfish (MSB) FMP was developed concurrently to Amendment 5 by the Mid-Atlantic Fishery Management Council. Many of the actions contained with both Amendments have been developed to compliment and/or replicate each other so as to avoid conflicting overlaps of restrictions on vessels that participate in both fisheries. In some cases, however, the actions contained in both Amendments present some conflict with each other. Actions proposed in Amendment 14 include: vessel reporting measures, dealer reporting

measures, at-sea observation optimization measures, other sampling and monitoring measures such as port-side monitoring, at-sea observer coverage requirements, mortality caps on river herring, restrictions in areas of high river herring catch, mesh requirements, and the potential addition of river herring as a stock in the fishery. The ways in which these actions overlap can be seen in Table 196 of the Amendment 5 FEIS. The Mid-Atlantic Council also implemented a RH/S catch cap for the directed mackerel fishery through its specifications process. The 2014 RH/S catch cap for the Atlantic mackerel fishery is 236 mt. During the MSB specifications process (June 2014), the MAFMC voted to recommend a catch cap of 89-155 mt for the directed mackerel fishery for the 2015 fishing year (the amount will be scaled based on mackerel catch in the directed mackerel fishery during the fishing year). These measures are expected to have positive impacts on the RH/S resources.

Reasonably Foreseeable Future Actions: Quickly following the completion of Amendment 5 in 2013, the NEFMC developed Framework 3 to the Atlantic Herring FMP, which also expanded on the management measures in Amendment 5 and established catch caps for RH/S as well as related provisions to manage and minimize interactions with these species in the directed Atlantic herring fishery. The Proposed Rule for Framework 3 was published on June 13, 2014, and the RH/S catch caps are expected to become effective during the 2014 fishing year. The long-term impact of the catch cap process/provisions on fishery-related businesses and communities is expected to be *low positive*. Framework 3 enhances industry-based bycatch reduction initiatives and builds on the approach adopted by the Council in Amendment 5 to the Herring FMP. It reduces the likelihood that more restrictive limits will be imposed in the future if the industry can continue to reduce and avoid RH/S interactions. The RH/S catch caps proposed for the 2014 and 2015 fishing years are expected to have a *low negative* impact on fishery-related businesses and communities, but the catch caps are not likely to preclude directed Atlantic herring fishing in all areas and provide midwater trawl vessels an opportunity to fish in Area 3 (Georges Bank) without a RH/S catch cap, thereby potentially mitigating some of the negative impacts.

The Mid-Atlantic Fishery Management Council recently selected final measures for inclusion in Framework 9 to the MSB FMP. This action will address the disapproved elements of MSB Amendment 14 related to management measures to address net slippage in the Atlantic mackerel fishery. At its June 2014 meeting, the Mid-Atlantic Council selected measures that are consistent with the Council's Preferred Alternative to address net slippage in this framework adjustment (Slippage Alternative 4, Section 2.2.2.4, p. 30). This improves consistency between the herring and mackerel fishery regulations, reduces complexity, and should enhance the overall effectiveness of both fishery management programs. Implementation of Framework 9 is expected at the start of the 2015 fishing year.

NMFS is also leading the development of an omnibus amendment to address the Standardized Bycatch Reporting Methodology (Amendment 6 to the Atlantic Herring FMP). This amendment will establish a process and provisions for allocating observer coverage across all Federally-managed fisheries. The proposed measures include bycatch reporting and monitoring mechanisms; analytical techniques and allocation of at-sea fisheries observers; a standardized bycatch reporting methodology performance standard; a review and reporting process; framework adjustment and annual specifications provisions; a prioritization process; and

provisions for industry-funded observers and observer set-aside programs The Proposed Rule for the SBRM amendment was published on December 15, 2014, and the SBRM amendment measures are expected to become effective in 2015.

The NEFMC and MAFMC are working with NMFS to develop an omnibus amendment to implement provisions for industry-funded monitoring across all fisheries. This 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. The NEFMC also agreed, as part of its management priorities for 2014, to continue to explore issues related to adding RH/S as stocks in the Atlantic herring fishery, and to participate in coordinated RH/S conservation efforts with NMFS and the Mid-Atlantic Council.

Implementation of the Omnibus EFH Amendment may result in additional habitat protections, which may or may not affect fishery-related businesses and communities depending on what the protection does to vessel effort. Similarly, if revisions are made to the Harbor Porpoise Take Reduction Plan, vessels could face additional restrictions, possibly resulting in positive impacts to bycatch through effort reductions. This amendment may also modify the boundaries and access provisions (including those for midwater trawl gear) related to the year-round groundfish closed areas.

NMFS is currently considering proposing changes to the regulatory requirements for trawl fisheries to protect sea turtles. As described in a NOI to prepare an EIS (74 FR 88 May 8, 2009), NMFS is considering expanding the use of TEDs to other trawl fisheries and modifying the geographic scope of the TED requirements. TED requirements may have a negative effect on fishery-related businesses and communities, as they may increase the cost of fishing, however the extent of the measures is unknown at this time.

During 2015, Atlantic herring stock information will be reviewed, and the Council will develop the Atlantic herring fishery specifications for the 2016-2018 fishing years. The 2016-2018 fishery specifications package will include the specification of ACLs and sub-ACLs for the Atlantic herring fishery, as well as RH/S catch caps for 2016-2018 if the action proposed in this framework adjustment is approved/implemented.

Table 27 Summary of Effects of Past, Present, and Reasonably Foreseeable Future Actions on the VECs Identified for Framework 4

VEC	Past Actions	Present Actions	Reasonably Foreseeable Future Actions	Combined Effects of Past, Present, Future Actions
Atlantic Herring	**Positive** Combined effects of past actions have controlled effort and provided a sustainable fishery with a rebuilt resource	**Positive** Current regulations continue to manage for a sustainable stock	**Positive** Future actions are anticipated to strive to maintain a sustainable stock	**Positive** Stock are being managed for sustainability
Non-Target Species	**Positive** Combined effects of past actions have decreased effort and reduced bycatch	**Positive** Current regulations continue to decrease effort and reduced bycatch	**Positive** Future regulations are being developed to improve monitoring and further address bycatch issues	**Low Positive** Decreased effort and reduced bycatch continue
Physical Environment and Essential Fish Habitat (EFH)	**Positive** Combined effects of past actions have decreased effort and improved habitat protection	**Positive** Effort reductions and better control of non-fishing activities have been positive but fishing activities and non-fishing activities continue to reduce habitat quality	**Positive** Future actions are anticipated to continue rebuilding a healthy environment and increase habitat quality	**Positive** Continued management of Physical environment and EFH for an increased quality of habitat
Protected Resources	**Positive** Combined effects of past fishery actions have reduced effort and thus interactions with protected resources	**Positive** Current regulations continue to control effort, thus reducing opportunities for interactions	**Mixed** Future regulations will likely control effort and thus protected species interactions, but as stocks improve, effort will likely increase, possibly increasing interactions	**Positive** Continued effort controls along with past regulations will likely help stabilize protected species interactions
Fishery-Related Businesses and Communities	**Mixed** Combined effects of effort reductions and better control of non-fishing activities have been positive but fishing activities and non-fishing activities continue to reduce fishing industry and thus businesses	**Mixed** Current regulations continue to manage for a sustainable stock, thus controlling effort on the herring resource provides additional yield for fishery and non-fishery activities	**Mixed** Future regulations will likely control effort and but as stocks improve, effort will likely increase for fishery and non-fishing activities	**Mixed** Continued fisheries management will likely control effort for a sustainable fishery and thus fishery and non-fishery related activities will continue

4.6.5 Baseline Conditions

For the purposes of a cumulative effects assessment, the baseline conditions for resources and human communities are considered the present condition of the VECs plus the combined effects of the past, present, and reasonably foreseeable future actions. Table 28 summarizes the added effects of the condition of the VECs (i.e., status/trends from Section 3.0) and the sum effect of the past, present and reasonably foreseeable future actions (from Section 4.6.4 above). The resulting CEA baseline for each VEC is exhibited in the last column (shaded). In general, straightforward quantitative metrics of the baseline conditions are only available for the managed resources, non-target species, and protected resources. The conditions of the habitat and human communities VECS are complex and varied. As such, the reader should refer to the characterizations provided in Section 3.0 of this document (Affected Environment).

Table 28 Cumulative Effects Assessment Baseline Conditions of the VECs

VEC	Status/Trends	Combined Effects of Past, Present Reasonably Foreseeable Future Actions (Table 27)	Combined CEA Baseline Conditions
Atlantic Herring Resource	Not overfished and overfishing is not occurring.	**Positive -** Stocks are being managed to meet sustainable fishing levels	**Positive -** Stocks are being managed to meet sustainable fishing levels
Non-Target Species	*Mixed* Status of other non-target species varies	**Low Positive –** combined effect of reduced effort and measures to address bycatch	**Low Positive –** combined effects of FMP management reduced effort and reduced bycatch
Habitat and EFH	Fishing impacts are complex and variable and typically adverse; Non-fishing activities had historically negative but site-specific effects on habitat quality.	**Mixed** – Future regulations will likely control effort and thus habitat impacts but as stocks improve, effort will likely increase along with additional non-fishing activities.	**Mixed** - reduced habitat disturbance by fishing gear but impacts from non-fishing actions, such as global warming, could increase and have a negative impact.

Table 28 continued. **Cumulative Effects Assessment Baseline Conditions of the VECs**

Protected Resources	**Sea Turtles**	Leatherback, Kemp's ridley and green sea turtles are classified as endangered under the ESA and NWA DPS loggerhead sea turtles are classified as threatened.	**Positive** – reduced gear encounters through effort reductions and management actions taken under the ESA and MMPA have had a positive impact	**Positive** – reduced gear encounters through effort reductions and additional management actions taken under the ESA and MMPA.
	Large Cetaceans	Of the baleen whales (right, humpback, fin, blue, sei and minke whales) and sperm whales, all are protected under the MMPA and with the exception of minke whales, all are listed as endangered under the ESA.		
	Small Cetaceans	Pilot whales, dolphins and harbor porpoise are all protected under the MMPA. The most recent stock assessment for harbor porpoise shows that takes are increasing and nearing PBR.		
	Pinnipeds	Harbor, Grey, Harp and Hooded seals are all protected under the MMPA.		
	Fish	Atlantic sturgeon		
Human Communities		Complex and variable. In general, herring catch for New England states since 1996 has declined, but catch year to year has been variable. Revenues have also generally been variable.	**Negative** – Although future sustainable resources should support viable communities and economies, continued effort reductions over the past few years have had negative impacts on communities	**Negative –** short term: lower revenues would continue until stocks are sustainable **Positive** – long term: sustainable resources should support viable communities and economies

4.6.6 Summary of Framework 4 Impacts

The impacts of the Framework 4 measures relative to the no action alternative are summarized below as well as in Table 29.

Impacts on the Atlantic Herring Resource (Section 4.1, p. 90)

Atlantic herring catch (fishing mortality) is managed primarily through the overall herring annual catch limit (ACL, reduced from the overfishing limit and acceptable biological catch to address scientific uncertainty and management uncertainty) and sub-ACLs that are intended to minimize risk to individual herring stock components while maximizing opportunities for participants in the herring fishery to achieve optimum yield (OY). Based on the best available scientific information (SAW 54, June 2012), the Atlantic herring resource is not overfished (the stock complex is considered to be rebuilt, above its biomass target), and overfishing is not occurring (fishing mortality is below the threshold level). None of the alternatives considered by the Council in this framework adjustment are expected to change or affect the biological status of the Atlantic herring resource.

The potential impacts of the measures to address dealer weighing/reporting on the Atlantic herring resource are variable. To the extent the measures reduce waste in the fishery and enhance the Atlantic herring catch monitoring program, there may be some long-term positive benefits for the Atlantic herring resource. If Atlantic herring catch statistics ultimately improve by implementing these measures, then management uncertainty in the fishery may be reduced (uncertainty about catch estimates is a component of management uncertainty). Over the long-term, improving catch monitoring results in better catch data for stock assessments and may also reduce scientific uncertainty. This would likely lead to more effective management of the Atlantic herring resource and provide the additional benefits that result from a sustainable fishery. Relative to taking no action, the impacts of the Council's ***Preferred Alternatives*** in Framework 4 for dealer weighing/reporting measures on the Atlantic herring resource are expected to be *negligible*/*low positive*.

The proposed clarifications to existing management measures to address net slippage (operational discards, gear damage, fish falling out of gear) would not affect the documentation of a significant component of Atlantic herring catch, nor would they affect the way that observers are sampling catch. Therefore, the impacts of these clarifications on the Atlantic herring resource are expected to be *negligible*. The additional management measures considered by the Council in this framework adjustment to address net slippage are intended to further reduce the occurrence of slippage on vessels participating in the Atlantic herring fishery by establishing additional consequences (move-along rules, trip termination) for slipping catch when observers are on board. Overall, minimizing slippage events and better documenting slipped catch may improve estimates of catch and bycatch in the fishery. To the extent that the amount and species composition of slipped catch can be sampled and/or estimated, catch monitoring in the fishery will be enhanced. Additionally, to the extent that slippage events can be reduced/eliminated, bycatch can be further minimized. Relative to taking no action, therefore, the management measures under consideration in Framework 4 to address net slippage are likely to have a *low positive* impact on the Atlantic herring resource. The degree of the positive impact

will depend on the level of sampling/monitoring on limited access herring vessels, but overall, the measures are elements of a comprehensive program designed to minimize bycatch and enhance catch monitoring in the Atlantic herring fishery.

The proposed requirement for herring vessel captains to notify NMFS of a slippage event through vessel monitoring systems (VMS) on any trips with observers on board is included in all of the slippage alternatives considered in this framework adjustment. This requirement is intended to facilitate enforcement of the Amendment 5 measures to address net slippage and is supported by the Council's Herring PDT, Advisory Panel, Committee, and Enforcement Committee. While the requirement itself may have negligible impacts on the Atlantic herring resource, any resulting improvements to the effectiveness of the Amendment 5 catch monitoring program would have positive impacts.

Impacts on Non-Target Species (Section 4.2, p. 103)

If the management measures proposed in this framework adjustment are effective at enhancing the catch monitoring program for the directed Atlantic herring fishery and reducing the occurrence of slippage/unobserved catch on Atlantic herring vessels, then there may be improvements to the accuracy of catch/bycatch information regarding non-target species in the fishery. Providing documentation of previously unrecorded catch of non-target species may improve catch statistics and, consequently, assessment and management of these species over the long-term. Non-target species that are subject to catch caps like haddock and river herring/shad (RH/S) may benefit most from management measures that enhance catch monitoring.

Most of the dealer weighing/reporting alternatives considered in this framework adjustment are expected to have *negligible* impacts on non-target species because they address reporting of Atlantic herring and not provide new information or enhance existing information about the catch of non-target species in the herring fishery. Dealer Alternative 2, Option B, part of the ***Preferred Alternative***, is intended to discourage wasteful fishing practices and provide some incentive to harvest the Atlantic herring resource more efficiently. It is also intended to enhance the effectiveness of the Atlantic herring catch monitoring program by reducing the potential to mix fish landed from multiple trips. To the extent that this option reduces waste and enhances the catch monitoring program for the target species (Atlantic herring) there may be some *low positive* benefits for non-target species.

The proposed clarifications to existing measures to address net slippage (operational discards, gear damage, fish falling out of gear) would not affect the documentation of interactions with protected resources, so the impacts on protected resources are expected to be *negligible*. The additional measures considered by the Council in this framework adjustment to address net slippage are intended to further reduce the occurrence of slippage on vessels participating in the Atlantic herring fishery by establishing additional consequences (move-along rules, trip termination) for slipping catch when observers are on board. Overall, minimizing slippage events and better documenting slipped catch may improve estimates of catch and bycatch in the herring fishery. To the extent that the amount and species composition of slipped catch can be sampled and/or estimated, the Amendment 5 catch monitoring program may be enhanced. As slippage events are further reduced/eliminated, bycatch can be minimized to the extent practicable. Additionally, providing documentation of previously unrecorded catch of non-target

species may improve catch statistics and, consequently, assessment and management of these species over the long-term. Non-target species that are subject to catch caps like haddock and RH/S may benefit most from reductions in bycatch and improvements to catch monitoring in the Atlantic herring fishery. When compared to the no action alternative, the impacts of Slippage Alternative 4 (***Preferred Alternative***) on non-target species are *potentially low positive* to the extent that the measures may further minimize the occurrence of net slippage in the directed Atlantic herring fishery. These determinations are not affected by which Atlantic herring permit option is selected (Category A/B only versus Category A/B/C).

Impacts on the Physical Environment and EFH (Section 4.3, p. 113)

Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), the management alternatives considered in Framework 4 to address dealer weighing/reporting and net slippage are not expected to have a measurable influence on the total magnitude of adverse effects across the fishery. Thus, as far as EFH impacts are concerned, there is no measureable difference between any of the alternatives/options considered by the Council in this framework adjustment. The impacts on the Physical Environment and EFH are determined to be *negligible*.

Impacts on Protected Resources (Section 4.4, p. 118)

If the management measures proposed in this framework adjustment are effective at enhancing catch monitoring in the directed Atlantic herring fishery and reducing the occurrence of unobserved catch on Atlantic herring vessels, then there may be improvements to information regarding interactions with protected resources in the fishery. Providing documentation of previously unrecorded interactions may improve assessment and management of the fishery as well as protected resources over the long-term. None of the management measures considered by the Council in this framework adjustment are likely to substantially impact interactions with protected resources in the directed Atlantic herring fishery and/or influence the biological status of any protected resources. The ongoing management protected resources interactions in the Atlantic herring fishery will continue to address fishing mortality and the conservation of protected resources. To the extent that the measures adopted in this framework adjustment enhance catch monitoring and discourage net slippage, improvements in catch monitoring and documentation of interactions with protected resources could produce a *low positive* impact.

The dealer weighing/reporting alternatives considered in this framework adjustment address the treatment and reporting of catch by participants in the Atlantic herring fishery and is not expected to affect interactions with protected resources. Interactions with protected resources in the Atlantic herring fishery would continue to be managed under current avoidance/reduction strategies as well as conservation efforts directed towards protected resources no matter which alternative/option is selected. The dealer weighing/reporting alternatives are therefore expected to have a *negligible* impact on protected resources.

Slippage has the potential to contain protected species, so management measures intended to better document slippage events has the potential to increase the sampling of protected species that may be encountered by the herring fishery. This information could, in turn, help with the better understanding of protected resources. The proposed clarifications to existing measures to

address net slippage would not affect the documentation of interactions with protected resources, so the impacts on protected resources are expected to be *negligible*.

Impacts on Fishery-Related Businesses and Communities (Section 4.5, p. 126)

To the extent that the alternatives to address dealer weighing/reporting lead to improved catch monitoring and better real-time monitoring of Atlantic herring ACLs and sub-ACLs over the long-term, premature herring fishery closures may be avoided. If so, this may result in positive impacts on Atlantic herring fishery participant relative to taking no action, as the allowable herring catch could be more fully harvested. Additionally, Atlantic herring stock assessments may become more precise, potentially reducing scientific and/or management uncertainty and the associated "buffers" that reduce the annual yield available to the fishery. Any short-term negative social and economic impacts on herring fishery participants will likely be through increased administrative and regulatory burdens associated with the measures proposed in this framework adjustment.

The ***Preferred Alternatives*** to address dealer weighing/reporting are expected to be *neutral* because both positive and negative impacts could be experienced by fishery participants. There could be benefits realized from improved catch monitoring/reporting, but these benefits could be offset by increased burden on participants in the fishery. For example, there are potential costs associated with disposing of unwanted catch and/or obtaining a waiver to dispose of the catch at-sea on the next fishing trip associated with Dealer Alternative 2, Option C (part of the ***Preferred Alternative***). However, this option 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, if it improves area sub-ACL monitoring.

Similarly, Dealer Alternative 3 (***Preferred Alternative***) appears to address perceptions of mis-reporting in the Atlantic herring fishery by providing a mechanism to cross-check one element of catch reporting on a subset of fishing trips. Therefore, this alternative could improve the *Attitudes and Beliefs* of some stakeholders regarding the management of the Atlantic herring resource. In the long run, this may have a positive impact on fishery-related businesses and communities. However, provisions proposed in this alternative are likely to result in compliance and administrative costs, which may produce some minor negative impacts on participants in the herring fishery.

In general, the alternatives in Framework 4 to address net slippage are designed to clarify existing regulations pertaining to catch that is observed but not brought on board and to create additional disincentives for limited access herring vessels to slip catch. When choosing whether to slip a net or bring all fish onboard, vessel operators weigh the benefits of bringing those fish aboard with the costs associated with slippage. Bringing fish aboard which would otherwise be slipped has costs associated with it, such as the extra time spent in this activity and, possibly, decreases in vessel safety during poor operating conditions.

The clarifications that the Council considered address operational discards on midwater trawl vessels, fish that are not brought on board due to gear damage, and fish that fall out/off of gear during normal fishing operations. The impacts of prohibiting operational discards on observed

midwater trawl trips under Option B are expected to be *low negative* relative to the ***Preferred Alternative*** (no action). Though catch data for a subset of trips in one component of the fishery may improve, the operational challenges and compliance costs associated with bringing all catch on board may be substantial for some affected vessels. Catch reported by observers as "not brought on board due to gear damage" would be considered the same as "not brought on board due to mechanical failure" and vessels would be subject to current requirements for a Released Catch Affidavit as well as the recommended 15-mile move along requirement. This clarification may reduce confusion among vessel operators, observers, and other interested stakeholders, a positive impact in terms of the *Attitudes, Beliefs, and Values* of stakeholders. Overall, the impacts of Option A are expected to be *low negative* for fishery-related businesses and communities because of the compliance costs associated with the Released Catch Affidavit and the 15-mile move along requirement.

The clarification regarding fish falling off/out of gear may reduce confusion among vessel operators, observers, and other interested stakeholders, a *positive* impact for fishery-related businesses and communities.

With insufficient fishery data under the current regulatory scenario, the potential impacts of Slippage Alternatives 2-5 relative to the no action alternative are difficult to predict. Under the Amendment 5 provisions as well as any additional measures implemented through Framework 4, 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.

Trip termination would be an additional penalty for any prohibited net slippage event under the slippage alternatives considered by the Council. This provision could have negative impacts on fishery-related businesses and communities, in terms of the *Size and Demographic Characteristics* of the fishery-related workforce and the *Historical Dependence on and Participation in* the fishery. Costs associated with herring fishing trips are high, particularly with the current cost of fuel. 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. Trips terminated prematurely could result in an unprofitable or break-even trips, leaving not only the owners with debt, but crewmembers without income.

Overall, the impacts of Slippage Alternative 4 (***Preferred Alternative***) are expected to be *low negative* for fishing-related businesses and communities. The required travel distances under the move-along rule proposed in this alternative would generally be less than those required under Alternatives 2 and 3, so Alternatives 2 and 3 would likely result in more substantial negative impacts on fishery-related businesses and communities.

Table 29 Summary of Impacts of Framework 4 Alternatives on VECs (*Preferred Alternatives* are shaded)

VEC →	Atlantic Herring Resource	Non-Target Species	Physical Environment/EFH	Protected Resources	Fishery-Related Businesses
Dealer Weighing/Reporting Requirements					
Dealer Alternative 1 – No Action					
No Action Alt	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*
Dealer Alternative 2 – Three Options					
Option A	*Negligible* Duplicates existing data quality control and would not provide new information	*Negligible*	*Negligible*	*Negligible* Does not address PR interactions	*Low Negative* Increased regulatory/compliance burden
Option B	*Negligible* Duplicates daily VMS reporting; unnecessary to improve ACL monitoring	*Negligible*	*Negligible*	*Negligible* Does not address PR interactions	*Low Negative* Increased burden with uncertain benefits
Option C (*Preferred*)	*Low Positive* Potential to enhance catch monitoring and reduce wasteful fishing practices	*Low Positive* Potential to enhance catch monitoring	*Negligible*	*Negligible* Does not address PR interactions	*Neutral* Potential for both positive and negative impacts
Dealer Alternative 3 – Third-Party Catch Verification (Vessel-Based)					
Preferred Alternative	*Negligible* May provide cross-check for some trips, but does not provide Atlantic herring catch estimates	*Negligible* Does not provide information about catch of non-target species	*Negligible*	*Negligible* Does not provide information about catch of protected resources	*Neutral* Potential for both positive and negative impacts
Dealer Alternative 4 (Volumetric Standardization) –Options A, B, and C					
Option A **Option B** **Option C**	*Uncertain but not likely significant* Could have beneficial or detrimental effect on catch estimates	*Negligible* Options address reporting of Atlantic herring only	*Negligible*	*Negligible* Options address reporting of Atlantic herring only	*Neutral* Standardizing methods for estimating weight could have beneficial and/or detrimental effect; most potential for negative impact under Option C

Table 29 continued. Summary of Impacts of Framework 4 Alternatives on VECs (*Preferred Alternatives* are shaded)

VEC →	Atlantic Herring Resource	Non-Target Species	Physical Environment/EFH	Protected Resources	Fishery-Related Businesses
Measures to Address Net Slippage					
Clarification of Current Measures to Address Net Slippage					
Op Discard Option A (*Preferred*)	*Negligible* Continued documentation of operational discards by observers	*Negligible* Continued documentation of operational discards by observers	*Negligible*	*Negligible* Does not address PR interactions	*Negligible* No additional economic or social impacts
Op Discard Option B	*Negligible* Not likely to enhance catch information	*Potentially Low Positive* May enhance monitoring of caps	*Negligible*	*Negligible* Does not address PR interactions	*Low Negative* Compliance costs for some vessels
Gear Damage; Fish That Fall Out of Gear	*Negligible* Represents insignificant amount of observed catch	*Negligible* Represents insignificant amount of observed catch	*Negligible*	*Negligible* Represents insignificant amount of observed catch	*Low Negative* Compliance costs for some vessels
Additional Alternatives to Address Net Slippage					
Slippage Alt 1 (No Action)	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible* No additional impacts
Slippage Alt 2	*Low Positive* Benefits from improved sampling, reduced slippage; may reduce catch	*Potentially Low Positive*	*Negligible*	*Potentially Low Positive*	*Negative* Costs associated with move-along rule
Slippage Alt 3	*Low Positive* See Alternative 2	*Potentially Low Positive*	*Negligible*	*Potentially Low Positive*	*Negative* Costs associated with move-along rule
Slippage Alt 4 (*Preferred*)	*Low Positive* Benefits from improved sampling, reduced slippage	*Potentially Low Positive*	*Negligible*	*Potentially Low Positive*	*Low Negative* Less restrictive move-along than other alternatives
Slippage Alt 5	*Low Positive* Less positive than other alternatives	*Potentially Low Positive* Less positive than other alternatives	*Negligible*	*Potentially Low Positive* Less positive than other alternatives	*Low Negative* Less negative than other alternatives

4.6.7 Cumulative Effects Summary

The table in the previous subsection provides a summary of likely impacts found in the management alternatives contained in Framework Adjustment 4. Impacts are listed as no impact/neutral, positive, negative, or unknown. Impacts listed as no impact/neutral include those alternatives that have no impact or have a neutral impact (neither positive nor negative). Impacts listed as mixed contain both positive and negative impacts. The cumulative effect is the sum of: the CEA baseline, as described in Table 28, which represents the sum of the past, present, and reasonably foreseeable future (identified hereafter as "other") actions and present conditions of each VEC, plus the impacts from the Proposed Action. When an alternative has a positive effect on a VEC, for example, reduced fishing mortality on a managed species, it has a positive cumulative effect on the stock size of the species when combined with the "other" actions that were also designed to increase stock size. In contrast, when an alternative has a negative effect on a VEC, such as increased mortality, the cumulative effect on the VEC would be negative and tend to reduce the positive effects of the "other" actions. The resultant positive and negative cumulative effects are described below for each VEC.

Atlantic Herring Resource

Section 4.1 of this document address the impacts of the measures proposed in Framework 4 on the Atlantic herring resource. Analysis of the measures proposed in Framework 4 considered the potential impacts of the proposed action and other alternatives on the Atlantic herring resource, in combination with relevant past, present, and reasonably foreseeable future actions as well as applicable non-fishing impacts. The incremental benefits from the proposed action are not likely to result in significant cumulative effects on the Atlantic herring resource. The significance criteria that applies to the herring resource requires the consideration of whether or not the proposed action is reasonably expected to jeopardize the sustainability of any target species (herring) and whether or not the proposed action is expected to result in cumulative adverse impacts with a substantial effect on Atlantic erring.

The biological analyses provided in this document suggest that the impacts of the proposed action on the Atlantic herring resource are likely to be low positive. Overall, past and present impacts, combined with the impacts of the ***Preferred Alternative*** and future actions on the Atlantic herring resource should yield a positive impact.

Non-Target Species

Section 4.2 of this document address the impacts of the measures proposed in Framework 4 on non-target species. The impacts on non-target species are likely to be low positive. Overall, past and present impacts, combined with the ***Preferred Alternative*** and future actions, are expected to continue reducing bycatch and striving to maintain sustainable stocks, should yield positive impacts on non-target species.

Physical Environment and EFH

Section 4.3 of this document address the impacts of the measures proposed in Framework 4 on habitat and EFH. Because fishing with midwater trawls and purse seines, the gears used in the directed herring fishery, does not impact EFH in a manner that is more than minimal or more than temporary in nature, the impacts to EFH of these alternatives are negligible, regardless of how much fishing takes place in any particular area. It is likely that fishing and non-fishing activities will continue to degrade habitat quality. Overall, the ***Preferred Alternative*** would not have any adverse effects on EFH as compared to the no action alternatives. The combination of past, present, and future actions is expected to reduce fishing effort and hence reduce damage to habitat and have a positive impact on habitat and EFH**.**

Protected Resources

Section 4.4 of this document address the impacts of the measures proposed in Framework 4 on protected species and supports the conclusion that the impacts on protected species are expected to be potentially low positive. Overall, past and present impacts, combined with the impacts of the ***Preferred Alternative*** and future actions on protected resources should yield a positive impact.

Fishery-Related Businesses and Communities

Section 4.5 of this document address the impacts of the measures proposed in Framework 4 on fishery-related businesses and communities. The impacts of the proposed action on fishery-related businesses and communities is expected to be low negative. Over the long-term, however, the combination of past, present, and future actions, including the proposed action, is expected to enable a sustainable harvest of Atlantic herring, and should lead to positive impacts on fishery-related businesses and communities.

5.0 RELATIONSHIP TO APPLICABLE LAW

5.1 CONSISTENCY WITH THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (MSFCMA)

5.1.1 National Standards

Section 301 of the Magnuson-Stevens Fishery Conservation and Management Act requires that fishery management plans (FMPs) contain conservation and management measures that are consistent with ten National Standards:

In General. – Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the…national standards for fishery conservation and management.

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

Fishing mortality on Atlantic herring is managed primarily through the overall herring ACL (reduced from the overfishing limit and acceptable biological catch to address scientific uncertainty and management uncertainty) and sub-ACLs that are intended to minimize risk to individual stock components while maximizing opportunities for participants in the herring fishery to achieve OY. Based on the best available scientific information (SAW 54, June 2012), the Atlantic herring resource is not overfished (the stock complex is considered to be rebuilt, above its biomass target), and overfishing is not occurring (fishing mortality is below the threshold level). The 2013-2015 Atlantic herring fishery specifications (see Table 13 on p. 69) established annual Atlantic herring harvest levels for each of four management areas (Figure 8, p. 68), established a 95% total herring ACL trigger, and modified the suite of existing accountability measures (AMs) to reduce the sub-ACL trigger to 92%. The annual catch limits set through the fishery specifications process, combined with AMs, are the primary management measures in the Atlantic Herring FMP that prevent overfishing while allowing the fishery to achieve optimum yield on a continuing basis.

Impacts of the Framework 4 measures on the Atlantic herring resource are addressed in Section 4.1 of this document. The focus of the measures proposed in this framework adjustment is catch monitoring in the Atlantic herring fishery. The conservation and management measures proposed in Framework 4 are not expected to have substantial impacts on the Atlantic herring resource or fishery; the proposed measures should not affect fishing mortality on Atlantic herring, nor the ability of the fishery to achieve OY on a continuing basis. The measures are intended to enhance catch monitoring/reporting, maximize sampling by observers, and minimize bycatch in the directed herring fishery. While some of the measures proposed in this action are expected to have a low positive impact on the Atlantic herring resource, the impacts are expected to be minor and would not affect fishing mortality.

(2) Conservation and management measures shall be based upon the best scientific information available.

The action proposed in this framework adjustment builds on the management measures implemented through Amendment 5 to the Atlantic Herring FMP. The measures in Amendment 5 were determined to be consistent with the MSA and the National Standards (see Section 7.1 of the Amendment 5 FEIS for more information). The analyses provided in this document are based primarily on landings, revenue, and effort information collected through the NMFS data collection systems used for the Atlantic herring fishery. Although there are some limitations to the data used in the analyses, these data have been thoroughly reviewed and are considered to be the best available. Information about catch/bycatch provided in this document and in Appendix II is based on reports collected by the NEFSC Sea Sampling (Observer) Branch and incorporated into the NOAA Fisheries observer database. The observer data are collected using an approved, scientifically-valid sampling process. Furthermore, the analyses were prepared by and reviewed by the Council's Herring Plan Development Team and complies with the Information Quality Act (IQA, see Section 5.6 of this document for more discussion related to the IQA).

(3) To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The Atlantic Herring FMP and all related management actions address the long-term management of the Atlantic herring fishery throughout the range of the Atlantic herring resource in U.S. waters, in accordance with the jurisdiction of U.S. law. While most Atlantic herring are landed in Maine, Massachusetts, and Rhode Island, herring landings have been reported in every state from Maine through Virginia. Most Atlantic herring are caught in the Exclusive Economic Zone (EEZ). In order to address the portion of the resource that is harvested in State waters, the FMP and other related actions were developed in close coordination with the Atlantic States Marine Fisheries Commission. The development of Framework 4 was coordinated with the Mid-Atlantic Fishery Management Council, due to the overlap and interaction between the Atlantic herring and mackerel fisheries.

(4) Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

Fishery-related businesses and communities that participate in/depend on the Atlantic herring fishery are described in detail in Section 3.5 of this document (p. 67). The management measures proposed in Framework Adjustment 4 do not discriminate between residents of different States. This action does not allocate or assign fishing privileges among various fishermen. The action proposed in this framework adjustment builds on the management measures implemented through Amendment 5 to the Atlantic Herring FMP. The measures in Amendment 5 were determined to be consistent with the MSA and the National Standards (see Section 7.1 of the Amendment 5 FEIS for more information). While the measures do not

discriminate between permit holders from different States, they may result in variable impacts across permit holders/fishery participants. The impacts of the proposed Framework 4 measures on fishing-related businesses and communities are discussed in various sections throughout Section 4.5 of this document; differential impacts are identified and evaluated to the extent possible in the analyses.

(5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The action proposed in this framework adjustment builds on the management measures implemented through Amendment 5 to the Atlantic Herring FMP. The measures in Amendment 5 were determined to be consistent with the MSA and the National Standards (see Section 7.1 of the Amendment 5 FEIS for more information). The management measures proposed in this document should promote efficiency in the utilization of fishery resources through appropriate conservation action intended to ensure the accuracy of catch information and minimize bycatch in the herring fishery to the extent practicable. Economic allocation is not the purpose of Framework Adjustment 4. The goals and objectives of the conservation and management measures proposed in Framework 4 are identified in Section 1.3 of this document (p. 6).

(6) Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

Changes in fisheries occur continuously, both as the result of human activity (for example, new technologies or shifting market demand) and natural variation (for example, oceanographic perturbations). There are a number of factors which could introduce variations into the Atlantic herring fishery; these are discussed in the Herring FMP and recent amendments/framework adjustments. The action proposed in this framework adjustment builds on the management measures implemented through Amendment 5 to the Atlantic Herring FMP. The measures in Amendment 5 were determined to be consistent with the MSA and the National Standards (see Section 7.1 of the Amendment 5 FEIS for more information). The conservation and management measures proposed in Framework 4 account for variations among and contingencies in the Atlantic herring fishery in a manner that is consistent with Amendment 5 and the Atlantic herring management program. None of the measures proposed in this framework adjustment affect this determination.

(7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The measures proposed in Framework Adjustment 4 are intended to minimize costs and avoid unnecessary duplication, to the extent possible. As always, the Council considered the costs and benefits when developing the proposed action. Any costs incurred as a result of the measures proposed in this action are deemed to be necessary in order to achieve the goals and objectives of the herring management program and are viewed to be outweighed by the benefits of taking the management action. The management measures proposed in this document are not duplicative

and were developed in close coordination with NMFS, the MAFMC, and other interested entities and agencies to minimize duplicity.

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

Summary information about fishery-related businesses and communities is provided in Section 3.5 of this document, detailed information can be found in the FEIS for Amendment 5 to the Atlantic Herring FMP. Impacts of the management measures proposed in Framework 4 on fishery-related businesses and communities are thoroughly discussed in Section 4.5 of this document (p. 126). The conservation and management measures proposed in Framework Adjustment 4 build on the management measures implemented through Amendment 5 to the Atlantic Herring FMP. The measures in Amendment 5 were determined to be consistent with the MSA and the National Standards (see Section 7.1 of the Amendment 5 FEIS for more information regarding consistency with this National Standard).

The Council carefully considered the importance of the herring resource to affected fishery-related businesses and communities when developing the management measures proposed in this framework adjustment. During final decision-making, the long-term positive impacts of improving catch monitoring were weighed against the negative impacts of implementing the proposed management measures on fishery-related businesses and communities. Some of the measures proposed in this framework adjustment are likely to impose a cost on the industry, and the impacts on fishery-related businesses and communities are therefore likely to be low negative in some cases (see Section 4.5 of this document for more thorough discussion of the impacts of the proposed measures on fishery-related businesses and communities).

To the extent that the alternatives to address dealer weighing/reporting and net slippage lead to improved catch monitoring and better real-time monitoring of Atlantic herring ACLs and sub-ACLs over the long-term, premature herring fishery closures may be avoided. If so, this may result in positive impacts on Atlantic herring fishery participant relative to taking no action, as the allowable herring catch could be more fully harvested. Additionally, Atlantic herring stock assessments may become more precise, potentially reducing scientific and/or management uncertainty and the associated “buffers” that reduce the annual yield available to the fishery. Any short-term negative social and economic impacts on herring fishery participants will likely be through increased administrative and regulatory burdens associated with the measures proposed in this framework adjustment. In the long run, improved catch monitoring and reductions in unobserved catch and bycatch should have a positive impact on fishery-related businesses and communities.

(9) Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

The action proposed in this framework adjustment builds on the management measures implemented through Amendment 5 to the Atlantic Herring FMP. The measures in Amendment 5 were determined to be consistent with the MSA and the National Standards (see Section 7.1 of the Amendment 5 FEIS for more information). The MSA defines "bycatch" as fish that are harvested in a fishery, but are not retained (sold, transferred, or kept for personal use), including economic discards and regulatory discards. The MSA mandates the reduction of "bycatch," as defined, to the extent practicable. Incidental catch, on the other hand, is typically considered to be non-targeted species that are harvested while fishing for a target species and is retained and/or sold. In contrast to bycatch, there is no statutory mandate to reduce incidental catch. When non-target species are encountered in the Atlantic herring fishery, they are either discarded (bycatch) or they are retained and sold as part of the catch (incidental catch). The majority of catch by herring vessels on directed trips is Atlantic herring, with extremely low percentages of bycatch (discards).

The National Standard Guidelines for National Standard 9 (NS9) state that, to the extent practicable, the priority under National Standard 9 is to avoid catching bycatch species or to return unavoidable bycatch to the sea alive. The NS9 Guidelines advise taking into account the net benefits to the nation of any proposed conservation and management measure, including negative impacts on affected stocks; incomes to fishery participants in directed fisheries; incomes accruing to those targeting the bycatch species; environmental consequences; non-market values of bycatch species (e.g., recreational values); and impacts on other marine organisms. The Guidelines recognize the need for improvement of data collection methods for each fishery to allow the Councils and NMFS to determine the amount, type, disposition, and characteristics of bycatch and bycatch mortality in order to weigh the benefits of bycatch minimizing measures against the costs. In selecting conservation and management measures, the Councils and NMFS are guided to consider biological, protected species, social, and economic impacts. The Council may propose conservation and management measures that do not give priority to avoiding bycatch, but any such measures must be supported by appropriate analyses.

Catch monitoring is comprehensive in nature and relates to improving the collection of information regarding at-sea (including bycatch/discards and slippage/unsampled catch) and shoreside catch (landings of herring and other species), as well as improving vessel/dealer reporting. The development of the measures proposed in this framework adjustment occurred through a public process that focused on developing feasible solutions that can meet the overall goals and objectives of the Atlantic herring management program. The proposed management action includes measures to further minimize bycatch and enhance monitoring in the directed herring fishery. Since the Atlantic herring fishery is a relatively high-volume fishery that can catch large quantities of fish in a single tow (as frequently documented in observer data), even a few slipped hauls could have the potential to substantially affect any analysis of the data or extrapolations of incidental catch made from the data. Minimizing slippage events and better documenting slipped catch may improve estimates of bycatch in the fishery. To the extent that the amount and species composition of slipped catch can be sampled and/or estimated, catch

monitoring will be enhanced. To the extent that slippage events can continue to be reduced/eliminated, bycatch can be further minimized.

The amount and quality of the information collected with these measures could help managers and the industry to better assess conditions that may lead to higher levels of bycatch, thereby improving the ability of fishermen to avoid it. Moreover, the ability to document slippage events and determine the quantity and species composition of slipped catch has been a significant concern of the Council and many interested stakeholders during and since the development of Amendment 5. The ***Preferred Alternative*** in this framework adjustment addresses this concern by implementing provisions to better document slippage events and discourage the occurrence of slippage throughout the fishery, while continuing to promote safe and efficient fishing practices. This also is consistent with the goals/objectives of the Amendment 5 catch monitoring program and general strategy to minimize bycatch in the Atlantic herring fishery.

(10) Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

Fishing is a dangerous occupation; participants must constantly balance the risks imposed by weather against the economic benefits. A management plan should be designed so that it does not encourage dangerous behavior by the participants. According to the National Standard guidelines, the safety of the fishing vessel and the protection from injury of persons aboard the vessel are considered the same as *safety of human life at sea*. The safety of a vessel and the people aboard is ultimately the responsibility of the master of that vessel. Each master makes many decisions about vessel maintenance and loading and about the capabilities of the vessel and crew to operate safely in a variety of weather and sea conditions. This National Standard does not replace the judgment or relieve the responsibility of the vessel master related to vessel safety. The Councils, the USCG, and NMFS, through the consultation process of paragraph (d) of the National Standard Guidelines, will "review all FMPs, amendments, and regulations during their development to ensure they recognize any impact on the safety of human life at sea and minimize or mitigate that impact where practicable."

The Council is aware of the safety implications of its management decisions, both through extensive public comment and the practical experience of many of its members. The action proposed in this framework adjustment builds on the management measures implemented through Amendment 5 to the Atlantic Herring FMP. The measures in Amendment 5 were determined to be consistent with the MSA and the National Standards (see Section 7.1 of the Amendment 5 FEIS for more information). Safety was evaluated relative to all of the alternatives considered in Amendment 5 during the Council/Committee/PDT discussions, and throughout the discussion of impacts on fishery-related businesses and communities. None of the management measures proposed in this framework adjustment are expected to negatively affect the safety of human life at sea. The information and analyses provided in this document illustrate that the ***Preferred Alternatives*** address concerns about bycatch and slippage by implementing provisions to better document slippage events and discourage the occurrence of slippage throughout the fishery, while continuing to promote safe and efficient fishing practices on vessels participating in the Atlantic herring fishery.

5.1.2 Other Required Provisions of MSFCMA

Section 303(a) of the Magnuson-Stevens Fishery Conservation and Management Act contains 15 additional required provisions for Fishery Management Plans. Such provisions are detailed in the Environmental Impact Statement for Amendment 5 to the Atlantic Herring FMP, which is available at: http://www.nero.noaa.gov/regs/. In general, these provisions detail the measures and monitoring required for federally-managed species in order to ensure successful conservation. Given the scope of the action proposed in this framework adjustment, impacts related to such requirements are expected to be consistent with those discussed in the FEIS for Amendment 5 to the Atlantic Herring FMP.

5.1.3 Discretionary Provisions of MSFCMA

Section 303b of the Magnuson-Stevens Act contains 14 additional discretionary provisions for FMPs. They are found on pp. 59-60 of NMFS' redline version of the Magnuson-Stevens Fishery Conservation and Management Act at:
http://www.nmfs.noaa.gov/msa2007/MSA_Amended%20by%20Magnuson-Stevens%20Reauthorization%20Act%20%281-31-07%20draft%29.pdf.
Given the limited scope of this action, there are no significant impacts related to the discretionary provisions of the MSA.

5.2 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

NEPA provides a mechanism for identifying and evaluating the full spectrum of environmental issues associated with federal actions, and for considering a reasonable range of alternatives to avoid or minimize adverse environmental impacts. This document is designed to meet the requirements of both the MSA and NEPA. The Council on Environmental Quality (CEQ) has issued regulations specifying the requirements for NEPA documents (40 CFR 1500 – 1508). All of those requirements are addressed in this document, as referenced below. This integrated document also contains the elements required under NEPA for Framework Adjustment 4 to the Herring FMP.

To prepare Framework Adjustment 4, the Council held meetings of its Herring Plan Development Team, Herring Oversight Committee, and Herring Advisory Panel, in addition to Council meetings. All of these meetings were open to the public. Final selection of management alternatives for inclusion in this document occurred at the April 22-24, 2014 New England Fishery Management Council meeting.

5.2.1 Environmental Assessment

The required elements of an Environmental Assessment (EA) are specified in 40 CFR 1508.9(b). They are included in this document, in addition to other relevant sections, as follows:

- An Executive Summary (beginning of the document);
- A Table of Contents (beginning of the document);
- The need for this action is described in Section 1.2 (p. 5);
- The alternatives that were considered are described in Section 2.0 (p. 7);
- A description of the Affected Environment is found in Section 3.0 (p. 36);
- The environmental impacts of the Proposed Action are described in Section 4.0 (p. 88);
- Cumulative impacts of the Proposed Action are discussed in Section 4.6 (p. 149);
- A finding of no significant impact is provided in Section 5.2.2 (below);
- The list of preparers and agencies consulted on this action is provided in Section 7.0 (p. 219).

5.2.2 Finding of No Significant Impact (FONSI)

National Oceanic and Atmospheric Administration Order (NAO) 216-6 (revised May 20, 1999) provides sixteen criteria for determining the significance of the impacts of a final fishery management action. These criteria are discussed below:

1. Can the Proposed Action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?

Response: The proposed action is not expected to jeopardize the sustainability of the target species affected by this action – Atlantic herring (see Section 3.1 of this document for a description of the Atlantic herring resource). Based on the best available scientific information (SAW 54, June 2012), the Atlantic herring resource is not overfished (the stock complex is considered to be rebuilt, above its biomass target), and overfishing is not occurring (fishing mortality is below the threshold level). The impacts of the proposed action on the Atlantic herring resource are discussed in detail in Section 4.1 of this document (p. 90). For the most part, any impacts on the Atlantic herring resource resulting from the proposed action should be positive, although minor. None of the alternatives considered by the Council in this framework adjustment are expected to change or affect the biological status of the Atlantic herring resource.

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. Over the long-term, improving catch monitoring results in better catch data for stock assessments and may also reduce scientific uncertainty. This would likely lead to more effective management of the Atlantic herring resource and provide the additional benefits that result from a sustainable fishery.

2. Can the Proposed Action reasonably be expected to jeopardize the sustainability of any non-target species?

Response: The action proposed in Framework Adjustment 4 is not expected to jeopardize the sustainability of any non-target species affected by this action. Non-target species are described in Section 3.2 of this document (p. 39), and impacts of the Framework 4 alternatives on non-target species are discussed in Section 4.2 (p. 103). For the most part, any impacts on non-target species resulting from the proposed action should be positive, although minor. None of the alternatives considered by the Council in this framework adjustment are expected to change or affect the biological status of any non-target species caught in the Atlantic herring fishery.

- Haddock catch by midwater trawl vessels in the Atlantic herring fishery will continue to be managed through a catch cap established in 2006 though Framework 43 to the Multispecies (Groundfish) Fishery Management Plan (FMP) and modified in 2011 through Framework 46. Currently, under the provisions established through Framework 46, the herring midwater trawl fleet (including both single and paired midwater trawl vessels) is subject to a stock-specific cap on haddock catch that is equal to 1% of the GB haddock ABC and 1% of the GOM haddock ABC.

- River herring and shad (RH/S) are non-target species of particular concern that may be caught/landed incidentally by vessels in the directed Atlantic herring fishery. The catch of RH/S in the directed Atlantic herring fishery will continue to be managed by area-based and gear-based catch caps, established recently through Framework 3 to the Atlantic Herring FMP. A comprehensive description of the RH/S species is provided in Section 3.2 of Framework 3 (NEFMC, 2014).

If the management measures proposed in this framework adjustment are effective at enhancing the catch monitoring program for the directed Atlantic herring fishery and reducing the occurrence of slippage/unobserved catch on Atlantic herring vessels, then there may be improvements to the accuracy of catch/bycatch information regarding non-target species in the fishery. Providing documentation of previously unrecorded catch of non-target species may improve catch statistics and, consequently, assessment and management of these species over the long-term. Non-target species that are subject to catch caps like haddock and river herring/shad (RH/S) may benefit most from management measures that enhance catch monitoring and further advance the goals/objectives of the Amendment 5 catch monitoring program.

3. Can the Proposed Action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?

Response: The physical environment and EFH are described in Section 3.3 of this document (p. 45). The action proposed in Framework Adjustment 4 is not expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs. Given the minimal and temporary nature of adverse effects on EFH in the Atlantic herring fishery (see Amendment 5), the measures proposed in this framework adjustment are not expected to have a measurable influence on the total magnitude of adverse effects across the fishery. Thus, the proposed action would not have any adverse effects on EFH as compared to the no action alternative. Impacts of the proposed action on the Physical Environment and EFH are determined to be *negligible*.

4. Can the Proposed Action be reasonably expected to have a substantial adverse impact on public health or safety?

Response: The action proposed in Framework Adjustment 4 is not expected to cause substantial adverse impact on public health or safety. When developing management measures, the Council usually receives extensive comments from affected members of the public regarding the safety implications of measures under consideration. Safety considerations were particularly important with respect to the management measures proposed in this framework adjustment to address net slippage. The measures proposed in this framework adjustment to address net slippage build on those that were recently implemented through Amendment 5 to the Atlantic Herring FMP (March 2014).

The Amendment 5 management measures were evaluated twice by the Council's Enforcement Committee, and safety was a significant focus of discussion related to the measures to address net slippage. In Amendment 5, the Council specifically included a net slippage allowance in instances when vessel/crew safety is a concern. Each master makes many decisions about vessel maintenance and loading and about the capabilities of the vessel and crew to operate safely in a variety of weather and sea conditions. Consistent with the Enforcement Committee's recommendations, decisions regarding safety must always be left to the vessel captain. The measures proposed in this framework adjustment maintain the ability of the vessel captain to make decisions regarding the safety of the vessel and crew.

The safety of human life at sea is discussed further in Section 5.1.1 of this document (National Standard 10).

5. Can the Proposed Action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

Response: Protected resources affected by the proposed action are described in Section 3.4 of this document; impacts of the proposed action on protected resources are discussed in Section 4.4 (p. 118). The action proposed in Framework Adjustment 4 is not expected to cause substantial adverse impact on endangered or threatened species, marine mammals, or critical habitat of these species. If the management measures proposed in this framework adjustment are effective at enhancing catch monitoring in the directed Atlantic herring fishery and reducing the occurrence of unobserved catch on Atlantic herring vessels, then there may be improvements to information regarding interactions with protected resources in the fishery. Providing documentation of previously unrecorded interactions may improve assessment and management of the fishery as well as protected resources over the long-term. None of the management measures considered by the Council in this framework adjustment are likely to substantially impact interactions with protected resources in the directed Atlantic herring fishery and/or influence the biological status of any protected resources. The ongoing management protected resources interactions in the Atlantic herring fishery will continue to address fishing mortality and the conservation of protected resources. To the extent that the measures adopted in this framework adjustment enhance catch monitoring and discourage net slippage, improvements in catch monitoring and documentation of interactions with protected resources could produce a *low positive* impact.

6. Can the Proposed Action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

Response: The action proposed in Framework Adjustment 4 is not expected to cause substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.). While Atlantic herring is recognized as one of many important forage fish for marine mammals, other fish, and birds throughout the region, the resource appears to be large enough at this time to accommodate all predators including Atlantic bluefish, Atlantic striped bass, and several other pelagic species such as shark and tuna. The Atlantic herring itself is not known to prey on other species of fish but prefers chaetognaths and euphausiids. Consumption of Atlantic herring by predator species was factored into the most recent benchmark stock assessment (SAW 54, July 2012) and affects current biological reference points including MSY, as well as yield that may be available to the fishery. The management program adopted in Amendment 5 and the 2013-2015 Atlantic herring fishery specifications account for these important issues. Conclusions regarding the impacts of the proposed action on biodiversity and/or ecosystem function are consistent with those in the FEIS for Amendment 5 to the Atlantic Herring FMP.

7. Are significant social or economic impacts interrelated with natural or physical environmental effects?

Response: The action proposed in Framework Adjustment 4 is not expected to result in significant social or economic impacts that are interrelated with natural or physical environmental effects. A complete discussion of the potential impacts of the proposed action is provided in Section 4.0 of this document. The environmental assessment concludes that no significant natural or physical effects will result from the implementation of the management measures proposed in Framework 4. The proposed action is designed to enhance catch monitoring and promote long-term sustainable management of the Atlantic herring resource and fishery. Moreover, the proposed action cannot be reasonably expected to have a substantial impact on habitat or protected species, as the impacts are expected to fall within the range of those resulting from previous actions addressing the management of this fishery.

This action builds on the catch monitoring program implemented through Amendment 5 to the Atlantic Herring FMP. It is consistent with the management program for the Atlantic herring fishery, and the measures were developed and adopted by the Council through a standard public process for framework adjustments. Conclusions regarding the impacts of the proposed action are generally consistent with those in the FEIS for Amendment 5 to the Atlantic Herring FMP. NMFS has determined that despite the potential socio-economic impacts resulting from this action, there is no need to prepare an EIS. The purpose of NEPA is to protect the environment by requiring Federal agencies to consider the impacts of their proposed actions on the human environment, defined as "the natural and physical environment and the relationship of the people with that environment." The EA for Framework Adjustment 4 describes and analyzes the proposed measures and alternatives and concludes there will be no significant impacts to the natural and physical environment. While some fishermen, shore-side businesses and others may experience impacts to their livelihood, these impacts in and of themselves do not require the preparation of an EIS, as supported by NEPA's implementing regulations at 40 C.F.R. 1508.14.

Most of the impacts are expected to be positive over the long-term, and they are not anticipated to be significant. Consequently, because the EA demonstrates that the action's potential natural and physical impacts are not significant, the execution of a FONSI remains appropriate under criteria 7.

8. Are the effects on the quality of the human environment likely to be highly controversial?

Response: The action proposed in Framework Adjustment 4 is not expected to result in significant effects on the quality of the human environment that are likely to be highly controversial. The need to maintain a sustainable Atlantic herring resource is grounded in Federal fisheries law and forms the basis of the goals and objectives of the herring management program, as described in the Herring FMP. This action builds on the catch monitoring program implemented through Amendment 5 to the Atlantic Herring FMP (effective March 17, 2014). The proposed management measures are consistent with the management program for the Atlantic herring fishery, and the measures were developed and adopted by the Council through a standard public process for framework adjustments. Conclusions regarding the impacts of the proposed action are consistent with those in the FEIS for Amendment 5 to the Atlantic Herring FMP. The FEIS for Amendment 5 to the Atlantic Herring FMP should be referenced for additional information and related discussion.

Impacts of the proposed action on fishery-related businesses and communities are discussed in Section 4.5 of this document (p. 126). The measures proposed in this framework adjustment related to dealer weighing/reporting (Section 2.1) are intended, in part, to address perceptions that some stakeholders have about mis-reporting in the Atlantic herring fishery. Therefore, these measures, if effective, could improve the *Attitudes and Beliefs* of some stakeholders regarding the management of the Atlantic herring resource.

To the extent that the alternatives to address dealer weighing/reporting and net slippage lead to improved catch monitoring and better real-time monitoring of Atlantic herring ACLs and sub-ACLs over the long-term, premature herring fishery closures may be avoided. If so, this may result in positive impacts on Atlantic herring fishery participant relative to taking no action, as the allowable herring catch could be more fully harvested. Additionally, Atlantic herring stock assessments may become more precise, potentially reducing scientific and/or management uncertainty and the associated "buffers" that reduce the annual yield available to the fishery. Any short-term negative social and economic impacts on herring fishery participants will likely be through increased administrative and regulatory burdens associated with the measures proposed in this framework adjustment. In the long run, improved catch monitoring and reductions in unobserved catch and bycatch should have a positive impact on fishery-related businesses and communities.

9. Can the Proposed Action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?

Response: The action proposed in Framework Adjustment 4 is not expected to have substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas. The proposed action affects fishing for Atlantic herring in the U.S. Exclusive Economic Zone and is not expected to have any impacts on shoreside historical and/or cultural resources. In addition, the proposed action is not expected to substantially affect fishing and other vessel operations around the unique historical and cultural resources encompassed by the Stellwagen Bank National Marine Sanctuary. Other types of commercial fishing already occur in the area affected by the proposed action, and although it is possible that historic or cultural resources such as shipwrecks could be present, vessels try to avoid fishing too close to wrecks due to the possible loss or entanglement of fishing gear.

10. Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Response: The information and analyses in this document indicate that the action proposed in Framework Adjustment 4 is not expected to have substantial impacts on the human environment that are highly uncertain or involve unique or unknown risks. Impacts of the proposed action on the human environment (fishery-related businesses and communities) are discussed in Section 3.5 of this document (p. 67). While it is difficult to specifically quantify some impacts from the proposed action on the human environment, the impacts on fishery-related businesses and communities are not largely unique or unknown; the Council has determined that the long-term positive impacts of the proposed action on fishery-related businesses and communities will outweigh any short-term negative impacts.

The ***Preferred Alternatives*** to address dealer weighing/reporting (Section 2.1, p. 8) are expected to be *neutral* because both positive and negative impacts could be experienced by fishery participants. There could be benefits realized from improved catch monitoring/reporting, but these benefits could be offset by increased burden on participants in the fishery. For example, there are potential costs associated with disposing of unwanted catch and/or obtaining a waiver to dispose of the catch at-sea on the next fishing trip associated with Dealer Alternative 2, Option C (part of the ***Preferred Alternative***). However, this option 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. Dealer Alternative 3 (***Preferred Alternative***) appears to address perceptions of mis-reporting in the Atlantic herring fishery by providing a mechanism to cross-check one element of catch reporting on a subset of fishing trips. Improved catch data quality could have positive impacts for fishery participants and the wider industry, if it improves area sub-ACL monitoring. The impacts of Slippage Alternative 4 (***Preferred Alternative***, Section 2.2.2.4, p. 30) are expected to be *low negative* for fishing-related businesses and communities. The required travel distances under the move-along rule proposed in this alternative would generally be less than those required under Alternatives 2 and 3, so Alternatives 2 and 3 would likely result in more substantial negative impacts on fishery-related businesses and communities.

To the extent that the alternatives to address dealer weighing/reporting lead to improved catch monitoring and better real-time monitoring of Atlantic herring ACLs and sub-ACLs over the long-term, premature herring fishery closures may be avoided. If so, this may result in positive impacts on Atlantic herring fishery participant relative to taking no action, as the allowable herring catch could be more fully harvested. Additionally, Atlantic herring stock assessments may become more precise, potentially reducing scientific and/or management uncertainty and the associated "buffers" that reduce the annual yield available to the fishery. Any short-term negative social and economic impacts on herring fishery participants will likely be through increased administrative and regulatory burdens associated with the measures proposed in this framework adjustment.

11. Is the Proposed Action related to other actions with individually insignificant, but cumulatively significant impacts?

Response: The action proposed in Framework Adjustment 4 is not related to other actions with individually insignificant, but cumulatively significant impacts. The cumulative effects assessment for the proposed action can be found in Section 4.6 of this document (p. 149). This assessment considers the impacts of the proposed action in combination with relevant past, present, and reasonably foreseeable future actions and concludes that no additional significant cumulative impacts are expected from the measures proposed in Framework 4.

12. Is the Proposed Action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

Response: The action proposed in Framework Adjustment 4 will not likely adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources. The proposed action is specific to activities in the directed Atlantic herring fishery, which occurs almost exclusively in the U.S. EEZ.

13. Can the Proposed Action reasonably be expected to result in the introduction or spread of a non-indigenous species?

Response: The action proposed in Framework Adjustment 4 will not likely be expected to result in the introduction or spread of a non-indigenous species because it is a resource that is removed and likely utilized as bait thus limiting the spread of possible non-indigenous species. The proposed action relates specifically to fishing for Atlantic herring in the Northeast Region using traditional fishing practices. Vessels affected by the proposed action are those currently engaged in the Atlantic herring fishery. The fishing-related activity of these vessels is anticipated to occur solely within the Northeast Region and should not result in the introduction or spread of non-indigenous species.

14. Is the Proposed Action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

Response: The action proposed in Framework Adjustment 4 will not likely establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration. This action builds on the catch monitoring program implemented through Amendment 5 to the Atlantic Herring FMP. It is consistent with the management program for the Atlantic herring fishery, and the measures were developed and adopted by the Council through a standard public process for framework adjustments. Conclusions regarding the impacts of the proposed action are generally consistent with those in the FEIS for Amendment 5 to the Atlantic Herring FMP. Future actions and decisions for modifying the Atlantic herring management program in the future are expected to occur through a similar process. The proposed management measures are designed to specifically address current stock and fishery conditions and are not intended to represent a decision about future management actions that may include other measures.

15. Can the Proposed Action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

Response: The action proposed in Framework Adjustment 4 will not be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment. The relationship of the proposed action to other applicable law is discussed in Section 5.0 of this document (starting on p. 181). NMFS will determine whether this action is consistent with the Coastal Zone Management Act (CZMA) requirements of the affected States.

16. Can the Proposed Action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

Response: The action proposed in Framework Adjustment 4 is not be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species. The cumulative effects assessment for the proposed action can be found in Section 4.6 of this document (p. 149). This assessment considers the impacts of the proposed action in combination with relevant past, present, and reasonably foreseeable future actions and concludes that no additional significant cumulative impacts are expected from the measures proposed in Framework 4.

In view of the analysis presented in this document, the establishment of the measures proposed in Framework Adjustment 4 to the Atlantic Herring FMP will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. In addition, all beneficial and adverse impacts of the Proposed Action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not required.

_____ _____

Regional Administrator, NOAA *Date*

5.3 MARINE MAMMAL PROTECTION ACT (MMPA)

The New England Fishery Management Council has reviewed the impacts of the measures proposed in Framework 4 on marine mammals and has concluded that the management actions proposed are consistent with the provisions of the MMPA. Although they are likely to affect species inhabiting the management unit, the measures will not alter the effectiveness of existing MMPA measures, such as take reduction plans, to protect those species based on overall reductions in fishing effort that have been implemented through the FMP.

5.4 ENDANGERED SPECIES ACT (ESA)

Section 7 of the Endangered Species Act requires federal agencies conducting, authorizing or funding activities that affect threatened or endangered species to ensure that those effects do not jeopardize the continued existence of listed species. A description of the protected resources potentially affected by the action proposed in this framework adjustment is provided in Section 3.4 of this document. For further information on the potential impacts of the fishery as well as the ***Preferred Alternative*** and other alternatives considered by the Council on listed species, see Section 4.4 of this document.

5.5 PAPERWORK REDUCTION ACT (PRA)

The purpose of the PRA is to control and, to the extent possible, minimize the paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the collection of information by or for the Federal Government. The authority to manage information and recordkeeping requirements is vested with the Director of the Office of Management and Budget (OMB). This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications.

The measures proposed in Framework Adjustment 4 to the Herring FMP may contain new or additional collection-of-information requirements, which will be evaluated through a PRA analysis by NMFS as part of the review and implementation of this action.

5.6 INFORMATION QUALITY ACT (IQA)

Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554, also known as the Data Quality Act or Information Quality Act) directed the Office of Management and Budget (OMB) to issue government-wide guidelines that "provide policy and procedural guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by federal agencies." OMB directed each federal agency to issue its own guidelines, establish administrative mechanisms allowing affected persons to seek and obtain correction of information that does not comply with the OMB guidelines, and report periodically to OMB on the number and nature of complaints. The NOAA Section 515 Information Quality Guidelines require a series of actions for each new information product subject to the Data Quality Act. Information must meet standards of utility, integrity and objectivity. This section provides information required to address these requirements.

Utility of Information Product

Framework Adjustment 4 includes: a description of the management issues to be addressed, statement of goals and objectives, a description of the proposed action and other alternatives considered, analyses of the impacts of the proposed measures and other alternatives on the affected environment, and the reasons for selecting the preferred management measures. These proposed modifications implement the FMP's conservation and management goals consistent with the Magnuson-Stevens Fishery Conservation and Management Act as well as all other existing applicable laws.

Utility means that disseminated information is useful to its intended users. "Useful" means that the content of the information is helpful, beneficial, or serviceable to its intended users, or that the information supports the usefulness of other disseminated information by making it more accessible or easier to read, see, understand, obtain or use. The information presented in this document is helpful to the intended users (the affected public) by presenting a clear description of the purpose and need of the proposed action, the measures proposed, and the impacts of those

measures. A discussion of the reasons for selecting the proposed action is included so that intended users may have a full understanding of the proposed action and its implications.

The information being provided in the Framework Adjustment 4 concerning the Atlantic herring fishery is updated based on landings and effort information through the 2013 fishing year, and 2014 if possible. The intended users of the information contained in this document are participants in the Atlantic herring fishery and other interested parties and members of the general public. The information contained in this document may be useful to owners of vessels holding an Atlantic herring permit as well as Atlantic herring dealers and processors since it serves to notify these individuals of any potential changes to management measures for the fishery. This information will enable these individuals to adjust their fishing practices and make appropriate business decisions based on the new management measures and corresponding regulations. Over the course of the development of both Amendment 5 to the Atlantic Herring FMP and this framework adjustment, the information pertaining to management measures contained in this document has been improved based on comments from the public, fishing industry, members of the Council, and NOAA Fisheries.

The media being used in the dissemination of the information contained in this document will be contained in a *Federal Register* notice announcing the Proposed and Final Rules for this action. This information will be made available through printed publication and on the Internet website for the Greater Atlantic Regional Fisheries Office (GARFO) of NOAA Fisheries. In addition, the final Framework Adjustment 4 document will be available on the Council's website (www.nefmc.org) in standard PDF format. Copies will be available for anyone in the public on CD ROM and paper from the Council's office.

Integrity of Information Product

Integrity refers to security – the protection of information from unauthorized access or revision, to ensure that the information is not compromised through corruption or falsification. Prior to dissemination, NOAA information, independent of the intended mechanism for distribution, is safeguarded from improper access, modification, or destruction, to a degree commensurate with the risk and magnitude of harm that could result from the loss, misuse, or unauthorized access to or modification of such information. All electronic information disseminated by NOAA adheres to the standards set out in Appendix III, "Security of Automated Information Resources," OMB Circular A-130; the Computer Security Act; and the Government Information Security Reform Act. If information is confidential, it is safeguarded pursuant to the Privacy Act and Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business and financial information).

Objectivity of Information Product

Objective information is presented in an accurate, clear, complete, and unbiased manner, and in proper context. The substance of the information is accurate, reliable, and unbiased; in the scientific, financial, or statistical context, original and supporting data are generated and the analytical results are developed using sound, commonly-accepted scientific and research methods. "Accurate" means that information is within an acceptable degree of imprecision or error appropriate to the particular kind of information at issue and otherwise meets commonly accepted scientific, financial, and statistical standards.

For purposes of the Pre-Dissemination Review, this document is considered to be a "Natural Resource Plan." Accordingly, the document adheres to the published standards of the Magnuson-Stevens Act; the Operational Guidelines, Fishery Management Plan Process; the Essential Fish Habitat Guidelines; the National Standard Guidelines; and NOAA Administrative Order 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act. Several sources of data were used in the development of this document, including the analysis of potential impacts. These data sources include, but are not limited to: landings data from vessel trip reports, landings data from individual voice reports, information from resource trawl surveys, data from the dealer weighout purchase reports, descriptive information provided (on a voluntary basis) by processors and dealers of Atlantic herring, and ex-vessel price information. Although there are some limitations to the data used in the analysis of impacts of management measures and in the description of the affected environment, these data are considered to be the best available.

This information product uses information of known quality from sources acceptable to the relevant scientific and technical communities. Stock status (including estimates of biomass and fishing mortality) reported in this document are based on either assessments subject to peer-review through the Stock Assessment Review Committee (SARC) or on updates of those assessments. Landings and revenue information is based on information collected daily VMS catch reports and VTR reports, and supplemented with state/federal dealer data. Information on catch composition and bycatch is based on reports collected by the NOAA Fisheries Service observer program and incorporated into the sea sampling or observer database systems. These reports are developed using an approved, scientifically valid sampling process. In addition to these sources, additional information is presented that has been accepted and published in peer-reviewed journals or by scientific organizations. Original analyses in this document were prepared using data from accepted sources, and the analyses have been reviewed by members of the Herring Plan Development Team.

The policy choices (i.e., management measures) proposed in Framework 4 are supported by the best available scientific information. All supporting materials, information, data, and analyses within this document have been, to the maximum extent practicable, properly referenced according to commonly accepted standards for scientific literature to ensure transparency. Qualitative discussion is provided in cases where quantitative information was unavailable, utilizing appropriate references as necessary.

The review process for any action under an FMP involves the Greater Atlantic Regional Fisheries Office (GARFO) of NOAA Fisheries, the Northeast Fisheries Science Center (Center), and NOAA Fisheries Headquarters (Headquarters). The Council review process involves public meetings at which affected stakeholders have the opportunity to provide comments on the proposed changes to the FMP. Reviews by staff at NERO are conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with the applicable law. The Center's technical review is conducted by senior-level scientists with specialties in population dynamics, stock assessment methodology, fishery resources, population biology, and the social sciences.

Final approval of this Framework Adjustment 4 and clearance of the Proposed and Final Rules is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget. This review process is standard for any action under an FMP, and provides input from individuals having various expertise who may not have been directly involved in the development of the proposed actions. Thus, the review process for any FMP modification, including Framework 4, is performed by technically-qualified individuals to ensure the action is valid, complete, unbiased, objective, and relevant.

5.7 IMPACTS ON FEDERALISM/E.O. 13132

This E.O. established nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. The E.O. also lists a series of policy making criteria to which Federal agencies must adhere when formulating and implementing policies that have federalism implications. This action does not contain policies with federalism implications sufficient to warrant preparation of an assessment under E.O. 13132. The affected States have been closely involved in the development of the proposed management measures through their representation on the Council (all affected states are represented as voting members of at least one Regional Fishery Management Council) and coordination with the Atlantic States Marine Fisheries Commission and the Mid-Atlantic Fishery Management Council.

5.8 ADMINISTRATIVE PROCEDURES ACT (APA)

This action was developed in compliance with the requirements of the Administrative Procedures Act, and these requirements will continue to be followed when the proposed regulation is published. Section 553 of the Administrative Procedure Act establishes procedural requirements applicable to informal rulemaking by Federal agencies. The purpose of these requirements is to ensure public access to the Federal rulemaking process, and to give the public adequate notice and opportunity for comment. At this time, the Council is not requesting any abridgement of the rulemaking process for this action.

5.9 COASTAL ZONE MANAGEMENT ACT (CZMA)

Section 307(c)(1) of the Federal CZMA of 1972 requires that all Federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. Pursuant to the CZMA regulations at 15 CFR 930.35, a negative determination may be made if there are no coastal effects and the subject action: (1) Is identified by a state agency on its list, as described in § 930.34(b), or through case-by-case monitoring of unlisted activities; or (2) which is the same as or is similar to activities for which consistency determinations have been prepared in the past; or (3) for which the Federal agency undertook a thorough consistency assessment and developed initial findings on the coastal effects of the activity. The Council has determined that this action is consistent with the coastal zone management plan and policies of the coastal states in this region. NMFS will formally request consistency reviews by CZM state agencies following Council submission of Framework Adjustment 4.

5.10 REGULATORY FLEXIBILITY ACT (RFA)/E.O. 12866 (REGULATORY PLANNING AND REVIEW)

5.10.1 Regulatory Flexibility Act – Initial Regulatory Flexibility Analysis (IRFA)

The purpose of the RFA is to reduce the impacts of burdensome regulations and recordkeeping requirements on small businesses. To achieve this goal, the RFA requires Federal agencies to describe and analyze the effects of proposed regulations, and possible alternatives, on small business entities. To this end, this document contains an Initial Regulatory Flexibility Analysis (IRFA), found below, which includes an assessment of the effects that the Proposed Action and other alternatives are expected to have on small entities.

Under section 603(b) of the RFA, an IRFA must describe the impact of the proposed rule on small entities and contain the following information:

1. A description of the reasons why the action by the agency is being considered.
2. A succinct statement of the objectives of, and legal basis for, the proposed rule.
3. A description—and, where feasible, an estimate of the number—of small entities to which the proposed rule will apply.
4. A description of the projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the types of professional skills necessary for preparation of the report or record.
5. An identification, to the extent practicable, of all relevant federal rules that may duplicate, overlap, or conflict with the proposed rule.

5.10.1.1 Reasons for Considering the Action

The statement of the problem(s) that this document addresses can be found in the Purpose and Need for Action (Section 1.2, p. 5) and should be referenced for additional information. The goals and objectives of Framework 4 are discussed in Section 1.3.

5.10.1.2 Objectives and Legal Basis for the Action

The objective of the Proposed Action is to implement Framework Adjustment 4 to the Atlantic Herring FMP. The background and legal basis for this action is discussed in Section 1.0 of this document (p. 1).

5.10.1.3 Description and Number of Small Entities to Which the Rule Applies

The RFA recognizes three kinds of small entities: small businesses, small organizations, and small governmental jurisdictions. The size standard for finfish fishing (NAICS 114111) is $19.0 million of gross revenue and the size standard for shellfish fishing (NAICS 114112) is $5.0 million of gross revenues. A firm is classified as a finfish firms if more than half of the firm's gross receipts are derived from finfish. It is classified as a shellfish firm if more than half of the firm's gross receipts are derived from shellfish. Seafood dealers (NAICS 424460) would be directly regulated by some of the proposed management measures in this Framework Adjustment. The size standard for small entities is 100 or fewer employees.

Regulated Commercial Harvesting Entities

Some parts of the proposed action would directly regulate active Category A/B/C Atlantic herring vessels, other parts would directly regulate Category A/B herring vessels. Therefore, the regulated entity is the business that owns at least one Atlantic herring category A, B, or C permit.

In 2013, there were 93 fishing vessels that help a limited access herring permit. Vessels and/or permits may be owned by entities affiliated by stock ownership, common management, identity of interest, contractual relationships, or economic dependency. For the purposes of this analysis, ownership entities are defined by those entities with common ownership personnel as listed on permit application documentation. Only permits with identical ownership personnel are categorized as an affiliated entity. For example, if five permits have the same seven personnel listed as co-owners on their application paperwork, those seven personnel form one ownership entity, covering those five permits. If one or several of the seven owners also own additional vessels, with sub-sets of the original seven personnel or with new co-owners, those ownership arrangements are deemed to be separate entities for the purpose of this analysis.

Based on this ownership criterion, NMFS dealer reported landings data for the last three years, and the size standards for finfish and shellfish firms, there are sixty-eight (68) directly regulated fishing firms that hold A, B, or C herring permits. Of those 68 firms, there are sixty-one (61**)** **directly regulated small entities** and seven (7) large entities (Table 30). Not all of these permitted firms are active: only thirty-two (32) directly regulated small entities and five (5) directly regulated large entities were actively fishing for Atlantic herring during the last three years (Table 31).

Table 30 Summary of Small Entities (A/B/C) by Revenue Classification

Revenue Class	Average Revenue	Average Herring Revenue	Small Firms
<.5M	$208,438	$22,024	18
.5-1M	$735,889	$175,655	12
1-2M	$1,449,227	$226,394	16
2-3M	$2,376,780	$481,220	8
3+ M	$4,541,443	$1,478,701	7
Grand Total	**$1,419,255**	**$333,234**	**61**

Table 31 Summary of Active Small Entities (A/B/C) by Revenue Classification

Revenue Class	Average Revenue	Average Herring Revenue	Small Firms
<.5M	$272,511	$44,048	9
.5-1M	$731,384	$234,207	9
1-2M	$1,520,865	$517,472	7
2-3M	$2,519,116	$1,283,255	3
3+ M	$4,671,068	$2,587,727	4
Grand Total	**$1,435,085**	**$635,227**	**32**

There are thirty-two (32) directly regulated fishing firms that hold Category A or B Atlantic herring permits. Of those 32 firms, there are twenty-seven (27**) directly regulated small entities** and five (5) large entities (Table 32). Not all of these permitted firms are active: only nineteen (19) directly regulated small entities and five (5) directly regulated large entities were actively fishing for Atlantic herring during the last three years (Table 33).

Table 32 Summary of Small Entities (A/B) by Revenue Classification

Revenue Class	Average Revenue	Average Herring Revenue	Small Firms
<.5M	$251,791	$74,800	5
.5-1M	$770,476	$289,485	7
1-2M	$1,599,937	$723,355	5
2-3M	$2,427,800	$504,348	5
3+ M	$4,748,677	$2,070,181	5
Grand Total	**$1,871,643**	**$699,623**	**27**

Table 33 Summary of Active Small Entities (A/B) by Revenue Classification

Revenue Class	Average Revenue	Average Herring Revenue	Small Firms
<.5M	$307,890	$93,500	4
.5-1M	$766,202	$337,732	6
1-2M	$1,758,399	$1,205,592	3
2M+	$3,990,612	$2,145,441	6
Grand Total	**$1,844,613**	**$994,201**	**19**

Regulated Fish and Seafood Merchant Wholesalers

Some of the non-preferred alternatives considered in this framework adjustment would impact dealers that purchase or intend to purchase herring. As indicated in Section 3.5.3.1 of this document, there are 100 active dealers who bought Atlantic herring in 2013. The size standard for small wholesalers is 100 employees. NMFS has no information on the employment of these dealers and all 100 active dealers are treated as small entities in this analysis.

5.10.1.4 Record Keeping and Reporting Requirements

Dealer Alternatives:

Alternative 2A would require fishing vessels and dealers to coordinate to report landings. Both types of businesses currently maintain and report this information to NMFS.

Alternative 2B would require earlier reporting of catch and sales. Both types of businesses currently maintain and report this information to NMFS.

Alternatives 2C, 3, 4 would not require additional recordkeeping and reporting. Alternative 3 would require third-party catch verification at the first point of landing on trips by limited access herring vessels carrying a NMFS-approved observer. This would require no additional recordkeeping or reporting; all additional recordkeeping would be conducted by a NMFS-approved observer.

Slippage Alternatives:

Net Slippage Alternative 1 would have no additional recordkeeping or reporting requirements. Slippage Alternatives 2-5 would all require notification of slippage events to NMFS via VMS to facilitate enforcement. All of the regulated entities are required to install and operate a VMS unit. Additional regulatory burden would be incurred if VMS units required reprogramming or retrofitting in order to transmit this information to NMFS. A small amount of additional recordkeeping burden is required to transmit slippage information to NMFS.

5.10.1.5 Duplication, Overlap, or Conflict with Other Federal Rules

The proposed action does not duplicate, overlap or conflict with any other Federal rules.

5.10.1.6 Impacts of Proposed Action on Small Entities

The baseline of the expected impacts of the Dealer Alternatives is the *status quo*, no action alternative.

Alternative 2A would require herring dealers to obtain vessel representative confirmation of SAFIS transaction records. This would have minimal, if any, pecuniary costs for dealers and fishing vessels. The non-pecuniary compliance costs may increase by a small amount for small entities (both dealers and fishing firms). The small and large fishing firms are likely to experience similar increases in non-pecuniary compliance costs.

Alternative 2B would require fishing firms to file VTR reports within 24 hours and dealers to file reports within 24 hours. This would have minimal, if any, pecuniary costs for dealers and fishing vessels. The non-pecuniary compliance costs may increase by a small amount for small entities (both dealers and fishing firms). The small and large fishing firms are likely to experience similar increases in non-pecuniary compliance costs.

Alternative 2C would require fishing vessels to have empty holds prior to departing for a trip. Waivers may be issued if there is refrigeration failure or non-marketable fish. Presumably, fishing vessels do not discard marketable fish at-sea after returning to port; therefore, the waiver would available for the most frequent reason that fishing vessels would want to discard fish at-sea after returning to port. We have no data about the extent to which fishing vessels depart with non-empty holds and discard fish at sea. Therefore, Alternative 2C is likely to have minimal impacts on both large and small fishing firms.

Alternative 3 (***Preferred 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. This would require certification of fish holds, a measuring stick, and observers to measure and convey to NMFS an estimate of total weight. As described in Section 4.5.1 of this document (p. 128), the direct compliance costs for certification are likely to be $300-600 per vessel for vessels that are not already certified, plus the cost of a measuring stick. There may be additional non-pecuniary impacts on small firms while observers are conducting this measurement. The small and large fishing firms are likely to experience similar increases in both direct and non-pecuniary compliance costs.

Alternative 4 (Non-Preferred) would require dealers to use a standardized weight of herring boxes, estimate weights through a standardized conversion, and certify the capacity of transport trucks. All of these would have negative impacts on fish dealers (wholesalers) that require new equipment. The magnitude of those negative impacts on fish dealers is not known.

The clarifications to existing management measures would clarify that catch not brought on board due to gear damage would be considered a slippage event under the “mechanical failure” exemption, and clarify that observed catch not brought on board due to falling out/off of gear would not be subject to management measures to address net slippage. In isolation, these are expected to have minimal impacts on small entities. In combination with the Slippage Alternative 4, this clarification is likely to have positive impacts on all vessels by reducing the frequency with which a move-along rule would be put into effect.

Net Slippage Alternatives 2, 3, and 4 specify consequences for slippage; Alternative 2 would require leaving the statistical area, Alternative 3 would require leaving the herring management area, and Alternative 4 (***Preferred Alternative***) would vessels to move 15 nm. Alternative 3 would have the largest negative consequences for all businesses; due to the seasonality of the herring fishery, leaving a management area would be similar to trip termination. Alternative 2 would have smaller, but still negative consequences for all businesses, especially for vessels using Areas 1A and 1B, where there are a small number of alternative fishing areas. Alternative 4 would have the smallest negative impacts on all businesses.

In order to evaluate the impacts of a move-along rule, information is needed on the frequency that vessels slip nets and the costs of doing so. 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. Furthermore, because there are costs associated with slippage, this policy will deter future slippage events.

Understanding the costs of the move along rules is also difficult because it required information about the fishing activities that a vessel would pursue after the move-along rule is triggered. For a move-along radius of 15nm, this would require understanding the fishing activities available to a vessel after the move-along is triggered. NMFS has no information about this. An upper bound of costs, corresponding to the worst case scenario, would be a trip-termination event in which no fish were caught and large expenses were incurred. Table 34 summarizes average revenues and costs per day and per trip to provide some insight into the upper bound of costs that would be incurred if a move-along rule is triggered. On average, the foregone revenues of a terminated trip may be 2-3% of annual revenues. However, for small firms that do not take many trips, this percentage may be higher.

Table 34 2008-2010 ABC Average Revenues, Costs Per Trip, and Net Revenue

	Revenue/Trip	Operating Costs/Trip	Net Revenue/Trip
OTF	$7,863	$524	$7,339
OTM	$41,721	$12,608	$29,113
PTM	$43,166	$9,372	$33,794
PUR	$25,499	$2,746	$22,753

5.10.2 E.O. 12866 (Regulatory Planning and Review)

The purpose of E.O 12866 is to enhance planning and coordination with respect to new and existing regulations. This E.O. requires the Office of Management and Budget (OMB) to review regulatory programs that are considered to be "significant." E.O. 12866 requires a review of proposed regulations to determine whether or not the expected effects would be significant, where a significant action is any regulatory action that may:

- Have an annual effect on the economy of $100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, of the principles set forth in the Executive Order.

In deciding how whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, include the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider.

The RIR contains:

- A statement of the problem;
- A description of the management goals and objectives;
- A description of the fishery and/or other affected entities;
- A description of each selected alternative, including the no-action alternative;
- An economic analysis of the expected effects of each selected alternative relative to the baseline.

5.10.2.1 Statement of the Problem/Management Goals and Objectives

The statement of the problem(s) that this document addresses can be found in the Purpose and Need for Action section (Section 1.2, p. 5) and should be referenced for additional information. The goals and objectives of Framework 4 are discussed in Section 1.3.

5.10.2.2 Description of the Fishery

Information about fishery-related businesses and communities potentially affected by the measures proposed in Framework Adjustment 4 is presented in detail in Section 3.5 of this document (p. 67).

5.10.2.3 Management Alternatives and Rationale

The proposed management action as well as other alternatives considered by the Council in Framework 4 are described Section 2.0 of this document (p. 7). **The Council's *Preferred Alternatives* for Framework 4 include:**

- **Dealer Alternative 2, Option C** (Section 2.1.2, p. 9), which 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;
- **Dealer Alternative 3** (Section 2.1.3, p. 10), which would require third-party catch verification at the first point of landing on trips by limited access herring vessels carrying a NMFS-approved observer;
- **Operational Discard Option A** (Section 2.2.1, p. 18), which maintains the status quo with respect to operational discards on observed midwater trawl trips (prohibited in year-round groundfish closed areas);
- **Gear Damage Option A** (Section 2.2.1, p. 18), which clarifies that observed catch not brought on board due to gear damage would be considered the same as a slippage event under the "mechanical failure" allowance;
- **Option B for Fish that Fall Out/Off of Gear** (Section 2.2.1.3, p. 23), which clarifies that observed catch not brought on board due to **falling out/off of gear** would not be subject to management measures to address net slippage; and
- **Slippage Alternative 4, 15-nm move-along rule** (Section 2.2.2.4, p. 30), which would require Category A/B herring vessels to move 15 nm before fishing again when an observed slippage event occurs due to safety, mechanical failure, or spiny dogfish; the move-along rule would create a closed area for the vessel for the remainder of the trip; any observed slippage events for reasons other than safety, mechanical failure, or spiny dogfish would require trip termination.

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

In Framework 4, the Council is proposing clarifications to the current measures requiring full sampling (implemented in Amendment 5) as well as additional management measures to address net slippage on limited access herring vessels carrying an observer on board (described in the following subsections). If all of the Council's ***Preferred Alternatives*** to address net slippage in Framework 4 are implemented, the following rules would apply to limited access Atlantic herring vessels:

- Observed slippage events (*catch not brought on board*) due to safety, mechanical failure, or spiny dogfish would be considered "allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as the 15-nm move along rule described in Section 2.2.2.4.
- Observed slippage events (catch *not brought on board* for reasons other than safety, mechanical failure, and spiny dogfish) would be considered "non-allowable" slippage events and would be subject to existing requirements for a Released Catch Affidavit as well as trip termination described in Section 2.2.2.4.
- Operational discards reported by observers would *not* be prohibited outside the groundfish closed areas (status quo); although operational discards represent catch that is not brought on board, they would *not* be treated like slippage events (no additional consequences, Section 2.2.1.1).
- Catch reported by observers as "*not brought on board due to gear damage"* would be considered the same as "*not brought on board due to mechanical failure"* for the purposes of complying with and enforcing the regulations to address net slippage. In other words, when catch is released due to gear damage, this would be an "allowable" slippage event, and vessels would be subject to current requirements for a Released Catch Affidavit as well as the 15-mile move along requirement described in Section 2.2.2.4(not trip termination).
- Fish that are documented by observers to fall out of gear (and therefore are not brought on board the vessel) would *not* be treated like slippage events and would not be subject to any additional consequences (Section 2.2.1.3).

The **No Action Alternative** was also considered. This will be considered the *status quo* or baseline against which the costs and benefits of the ***Preferred Alternative*** will be evaluated.

Management measures that the Council considered but rejected during the development of this framework adjustment are discussed in Section 2.3 of this document.

5.10.2.4 Economic Analysis of Expected Effects

Dealer Alternatives:

Alternative 2A would require herring dealers to obtain vessel representative confirmation of SAFIS transaction records. This requirement would have minimal, if any, pecuniary costs for dealers and fishing vessels. The non-pecuniary compliance costs for dealers and fishing vessels, in terms of time, may increase by a small amount for small entities (both dealers and fishing firms). This requirement would also impose costs on the nation through increased expenditures by NMFS associated with developing and implementing this system.

Expected benefits of Alternative 2A are better reports of catches and landings. It is not possible to quantify these benefits, in dollar terms, at this time.

Alternative 2B would require more rapid earlier reporting of catch and sales (1 day instead of 1 week). This requirement would have minimal, if any, pecuniary costs for dealers and fishing vessels. The non-pecuniary compliance costs, in terms of time, may increase by a small amount. This requirement would impose minimal, if any, additional costs on the nation in terms of increased expenditures by NMFS because NMFS currently has the capacity to receive high frequency VTR and dealer reports.

Expected benefits of this alternative are better reports of catches and landings and better quota monitoring. It is not possible to quantify the benefits of better reports, in dollar terms, at this time. Better quota monitoring could, in theory, eventually lead to slightly later closures (for example closures at 95% of an HMAs sub-ACL instead of the current 92%).

Alternative 2C would require fish holds to be empty before leaving the dock when declared into a herring trip. This may impose pecuniary costs on the herring fleet if fish must be disposed of. However, since waivers will be granted for non-marketable fish, these disposal costs should be minimal. Instead, fishing vessels will bear non-pecuniary costs associated with obtaining a waiver and delays before departure while waiting for the appropriate law enforcement officer to arrive. There will be also additional costs on the nation or state(s) responsible for enforcement through increased expenditures by NMFS or the state agencies responsible for these inspections. These costs cannot be quantified in dollars at this time, in part, because the implementation protocol has not been fully developed.

Benefits of Alternative 2C include better monitoring and reporting of catch and landings because deliveries from vessels to dealers would be from a single fishing trip, as opposed to being mixed The extent to which fish are currently mixed from multiple trips is unknown.

Alternative 3 would require third-party catch verification at the first point of landing on trips by limited access herring vessels carrying a NMFS-approved observer. This alternative impose small to moderate one-time pecuniary costs (certification, durable equipment) for fishing vessels. This would impose small to moderate ongoing costs for fishing vessels and small ongoing costs (additional time required for observer/samplers to measure fish). As described in Section 4.5.1 of this document (p. 128), the direct compliance costs for certification are likely to be $300-600 per vessel for vessels that are not already certified, plus the cost of a measuring stick. There may be additional non-pecuniary impacts on small firms while observers are conducting this measurement. The small and large fishing firms are likely to experience similar increases in both direct and non-pecuniary compliance costs.

This alternative would impose also impose costs on the nation through increased expenditures by NMFS associated with developing and implementing this system (one-time training for observers, recurring costs associated with additional tasks of those samplers). This alternative provides no expected benefits in terms of additional data to support science. It is unclear how the estimate of total catch will be more or less accurate than existing hail weights or dealer landing reports, which includes data on catch composition. It is unclear how this additional data would be used in catch (quota) monitoring or stock assessments.

Alternative 4 would require standardization of fish containers, either through the use of standardized weights, a standardized volume conversion, or a standardized method for estimating weights of transport vehicles. Currently, there is no information available about the accuracy or inaccuracy of dealer reported landings. Alternative 4 would impose one-time (durable equipment, or certification) costs on dealers. This alternative would provide no expected benefits. It is unclear how a standardized container or box would be more accurate than currently dealer reporting methods. Currently, dealers have good incentives to accurately weigh fish: if customers or vessels feel that they are being shorted in some way, they can deliver fish to other dealers. A single, non-time varying conversion factor or standardized method for volumetric conversion may actually be less accurate than the current methods.

Net Slippage Alternatives:

The proposed clarifications to existing measures to address net slippage are not expected to have costs or benefits when considered in isolation.

Net Slippage Alternatives 2-5 would all impose costs on the herring fishery, relative to the status quo. A general framework that could be used to estimate these costs is described first. A general framework that could be used to estimate the benefits of alternatives 2-5 is described next.

The costs on fishing vessels are costs are difficult to predict. All firms will take steps to avoid slippage events when on an observed trip. This averting behavior may have small direct costs, both pecuniary and non-pecuniary, such as pumping fish that would otherwise be slipped across the rail. This averting behavior may have larger direct costs, such as changing fishing locations or trip length. The fishing vessels will undertake these behavioral changes when the benefits (to themselves) outweigh the costs of those activities.

The benefits of averting behavior can be understood from an expected utility standpoint: averting behavior will reduce the probability that an undesired event with an associated cost (slippage) will occur. The cost of slippage to the fishing vessel depends on the precise fishery regulation.

Net slippage Alternatives 2, 3, and 4 specify spatial closures of various sizes that result from slippage events. Alternative 2 would require leaving the statistical area, Alternative 3 would require leaving the herring management area, and Alternative 4 (***Preferred Alternative***) would vessels to move 15 nm. In theory, the costs of each of these alternative closures could be examined using a location choice model. In this type of analysis, fishing vessels are modeled as profit maximizing firms that select the most profitable fishing location from a feasible set of fishing locations. These fishing locations are usually grid cells. Costs of access to a location are based on distance. Revenues for a particular grid are constructed based on recent historical catch by that vessel (or similar vessels) in that area. A Random Utility Model can be estimated to determine where vessels fish. Removing an area from the feasible set can reduce the number of trips (fewer trips may be taken if “good” areas area closed) or result in vessels fishing in the “next-best” alternative locations. This can be converted into a cost in terms of foregone revenue or additional costs. A model of this type is not currently available to examine the costs of the proposed net slippage alternatives. Nevertheless, economic theory suggests the following:

- Alternative 3 would have the largest negative consequences for all businesses; due to the seasonality of the herring fishery, leaving a management area would be similar to trip termination. In particular, slippage occurring in winter in Area 2 would be *de facto* trip termination because there are no areas to find herring. Similarly, slippage in Areas 1B or 3 by midwater trawlers during the summer is likely to result in trip termination because Area 1A is closed to trawling during the summer. Slippage by purse seine vessels in 1A (and 1B to a lesser extent) is likely to result in trip termination as well.
- Alternative 2 would have smaller, but still negative consequences for all businesses, especially for vessels using Areas 1A and 1B, where there are a small number of alternative fishing areas (statistical areas). Depending on the precise location of slippage events, returning to port may be less costly than switching statistical areas.
- Alternative 4 would have the smallest negative impacts on all businesses because the area closed (15nm radius) is the smallest.

In order to fully evaluate the costs of a move-along rule in a net national benefits context, information is needed on the frequency that vessels slip nets. 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. Because there are costs associated with slippage, this policy will deter future slippage events. It is therefore difficult to predict what number of slippage events may occur in the future under a different regulatory system.

The benefits of Net Slippage Alternatives 2-5 (fewer slippage events) are difficult to quantify in monetary terms. This might include improved stock and quota monitoring of herring and other species. Currently, observers estimate the amount and composition of slipped catch; therefore the improvements in data quality are inversely related to the skill with which observers can estimate the size and composition of that slipped catch.

5.10.2.5 Determination of Significance

Based on the analyses provided in this document, Framework Adjustment 4 to the Atlantic Herring FMP is not expected to constitute a "significant regulatory action." This action is not expected to have an impact of $100M or more on the economy, or adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or State, local, or tribal governments or communities. They are not expected to raise novel legal and policy issues. The proposed action also does not interfere with an action taken or planned by another agency. It does not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients.

5.11 E.O. 13158 (MARINE PROTECTED AREAS)

The Executive Order on Marine Protected Areas requires each federal agency whose actions affect the natural or cultural resources that are protected by an MPA to identify such actions, and, to the extent permitted by law and to the extent practicable, avoid harm to the natural and cultural resources that are protected by an MPA. The E.O. defines a Marine Protected Area as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." The E.O. requires that the Departments of Commerce and the Interior jointly publish and maintain such a list of MPAs. The Tilefish Gear Restricted Areas in Oceanographer, Lydonia, Veatch, and Norfolk canyons are included in the National System of Marine Protected Areas (MPAs). This action under the Herring FMP is not expected to occur within any of these MPAs. No further guidance related to this Executive Order is available at this time.

5.12 E.O. 12898 (ENVIRONMENTAL JUSTICE)

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations provides guidelines to ensure that potential impacts on these populations are identified and mitigated, and that these populations can participate effectively in the NEPA process (E.O. 12898, 1994). These individuals or populations must not be excluded from participation in, denied the benefits of, or subjected to discrimination because of their race, color, or national origin. Although the impacts of the Atlantic herring specifications may affect communities with environmental justice concerns, the actions in this document should not have disproportionately high effects on low income or minority populations. The proposed measures would apply to all participants in the affected area, regardless of minority status or income level.

The existing demographic data on participants in the Atlantic herring fishery (i.e. vessel owners, crew, dealers, processors, employees of supporting industries) do not allow identification of those who live below the poverty level or are racial or ethnic minorities. Thus, it is not possible to fully determine how the actions within this specification document may impact these population segments. The public comment processes is an opportunity to identify issues that may be related to environmental justice, but none have been raised relative this proposed action. The public has never requested translations of documents pertinent to the herring fishery.

For the Atlantic herring *Communities of Interest* (Section 3.5.4), poverty and minority rate data at the state and county levels are provided in Table 35. In terms of poverty, Washington County is the only county that is more than 1% higher than its state average (Maine). Washington and Cumberland Counties are the only counties with a minority rate more than 1% higher than their state average (Maine). Minority populations in Southern New England have historically participated in the fishing industry. For the Atlantic herring fishery, evidence suggests that minority participation is focused within the processing sector. For a New Bedford-based herring processor, 90-95% of its employees are of Central American decent (see Amendment 5 FEIS).

For a New Jersey-based processor, its minority employees are Hispanic and the rate is close to the county rate (Lund's, personal communication, 2012).

With respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. NERO tracks these issues, but there are no federally recognized tribal agreements for subsistence fishing in New England federal waters.

Table 35 Demographic Data for Atlantic Herring Fishing Communities of Interest

State/County	Minority Rate a	Poverty Rate b
Maine	**5.7%**	**12.6%**
Cumberland	8.3%	10.5%
Knox	3.7%	12.5%
Hancock	4.0%	11.5%
Washington	9.0%	19.8%
Sagadahoc	4.6%	8.8%
New Hampshire	**7.8%**	**7.8%**
Rockingham	6.0%	4.7%
Massachusetts	**23.6%**	**10.5%**
Essex	24.3%	10.1%
Bristol	13.5%	11.3%
Rhode Island	**23.5%**	**12.2%**
Newport	12.2%	7.3%
Washington	7.9%	7.4%
New Jersey	**41.1%**	**9.1%**
Cape May	13.4%	9.2%

Source: U.S. Census Bureau, 2010, http://quickfacts.census.gov/qfd/states.html
[a] *Persons other than those who report as White persons not Hispanic.*
[b] *Persons below poverty level, 2006-2010.*

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The following agencies were consulted during the development of the Framework 4, either through direct communication/correspondence and/or participation on the Herring Committee or Herring PDT:

- NOAA Fisheries, National Marine Fisheries Service, Greater Atlantic Regional Fisheries Office, Gloucester MA
- Northeast Fisheries Science Center, Woods Hole MA
- Atlantic States Marine Fisheries Commission and Atlantic Herring Section
- Mid-Atlantic Fishery Management Council