Draft Discussion Document:

for Framework 3

to the

Atlantic Herring

Fishery Management Plan (FMP)

Prepared by the
New England Fishery Management Council

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

Date (DRAFT): September 2013 Herring Committee/Council Meeting

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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
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
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

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
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
TC	Technical Committee
TRAC	Transboundary Resource Assessment Committee
TRT	Take Reduction Team
VMS	Vessel Monitoring System
VTR	Vessel Trip Report

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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1.0 INTRODUCTION AND BACKGROUND

This document identifies the range of alternatives under consideration in Framework Adjustment 3 to the Atlantic Herring Fishery Management Plan (FMP) and provides related background information and analyses. The measures under consideration in Framework 3 would establish a process for setting RH/S catch caps in the Atlantic herring fishery and identify the vessels and areas to which the catch caps would apply. Options described in this document include reporting requirements, catch triggers and measures that become effective when a catch cap is reached, and other related provisions. Once the process is established in this framework adjustment, future catch caps for RH/S could be specified through the herring fishery specifications process. This document also includes options for setting caps for the 2014 and 2015 fishing years. The New England Fishery Management Council is scheduled to select final measures for Framework 3 at its September 2013 meeting.

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 MSA defines "bycatch" as fish that are harvested in a fishery, but which are not sold or kept for personal use, i.e., fish that are discarded (economic and regulatory discards). Some non-target species may be caught by the same gear while fishing for Atlantic herring, and may be sold assuming the vessel has proper authorization or permit(s) and the regulations allow for the sale of the species. When landed and sold, the non-targeted species are considered "incidental catch."

The majority of catch by herring vessels on directed trips is Atlantic herring, with very low percentages of bycatch (discards). However, because of the high-volume nature of the Atlantic herring fishery, some non-targeted catch that is landed incidentally is not separated and identified as such; this is particularly true with species like river herring and shad, other alosine pelagic fish that look very similar to Atlantic herring. Sometimes, river herring and shad are referred to as bycatch in the herring fishery even if they are landed as incidental catch. While these terms are often used interchangeably, the Council recognizes the need to minimize *all catch* of river herring in the Atlantic herring fishery, and the alternatives for catch caps under consideration in this framework adjustment are intended to do so. Addressing river herring bycatch in the herring fishery includes both minimizing bycatch at-sea to the extent practicable, consistent with the MSA definition of bycatch, and minimizing the landing of river herring as incidental catch in the herring fishery. Catch caps proposed in Framework 3, therefore, address landings and discards of RH/S.

The information and analyses presented in Amendment 5 to the Herring FMP forms the basis for implementing a catch cap through this framework adjustment, including the necessary reporting and monitoring provisions to ensure its effectiveness. In Amendment 5, the Herring PDT provided a detailed discussion paper addressing the development of river herring catch caps, including a discussion of the potential challenges associated with implementing and monitoring, as well as the potential impacts of catch caps. In Amendment 5, the Council selected a long-term river herring bycatch avoidance approach developed in cooperation with the fishing industry and established the mechanism for setting catch caps in the herring fishery in as timely a manner as possible. Quickly following the submission of Amendment 5, the Council began the development of this framework adjustment.

On August 5, 2011, the National Marine Fisheries Service (NMFS) received a petition from the Natural Resources Defense Council (NRDC), requesting that alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*) be listed each as threatened throughout all or a significant portion of their range under the Endangered Species Act (ESA). NRDC requested that NMFS designate distinct population segments of alewife and blueback herring as specified in the petition (Central New England, Long Island Sound, Chesapeake Bay, and Carolina for alewives, and Central New England, Long Island Sound, and Chesapeake Bay for blueback herring). NMFS reviewed the petition and published a positive 90-day finding on November 2, 2011, determining that the information in the petition, coupled with information otherwise available to the agency, indicated that the petitioned action may be warranted. As a result of the positive finding, the Agency is required to review the status of the species to determine if listing under the ESA is warranted.

The Atlantic States Marine Fisheries Commission (ASMFC) completed a stock assessment for river herring in May 2012, which they had been conducting since 2008, covering over 50 river specific stocks throughout the species U.S. range. This represented a significant effort on behalf of the ASMFC and the coastal states from Maine to Florida. NMFS recognized this extensive effort to compile the most current information on the status of these stocks throughout their range in the United States and, in order to not duplicate this effort, has been working cooperatively with ASMFC. NMFS will utilize the information from the stock assessment as a critical component in the ESA listing decision for these two species. Due to the nature of the stock assessment, it did not contain all elements necessary for making a listing determination under the ESA; therefore, NMFS identified the additional required elements and held workshops focused on addressing this information. The three workshops organized for this purpose addressed river herring stock structure, extinction risk analysis (ERA), and climate change. Reports from the stock structure and ERA workshop and working group meeting were compiled and are being independently peer reviewed by the Center for Independent Experts, and the report from the climate change workshop has been compiled and is also being reviewed. The peer review reports and additional climate change analysis and extinction risk modeling results are expected to be available in 2013.

NMFS used these reports and the modeling results along with the 2012 ASMFC river herring stock assessment and other best available information to develop a listing determination that was published in the *Federal Register* on August 12, 2013. 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.

NMFS' review of the information pertaining to the five ESA section 4(a)(1) factors does not support the assertion that there are threats acting on either alewife or blueback herring or their habitat that have rendered either species to be in danger of extinction or likely to become so in the foreseeable future, throughout all or a significant portion of its range. Therefore, NMFS determined that listing alewife or blueback herring as threatened or endangered under the ESA is not warranted at this time.

While neither species is currently endangered or threatened, both species are at low abundance compared to historical levels, and NMFS indicated that monitoring both species is warranted. In its findings, NMFS acknowledged that there are significant data deficiencies for both species, and there is uncertainty associated with available data. There are many ongoing restoration and conservation efforts and new management measures that are being initiated/considered that are expected to benefit the species; however, it is not possible at this time to quantify the positive benefit from these efforts. Given the uncertainties and data deficiencies for both species, NMFS committed to revisiting both species in 3 – 5 years. NMFS has determined that this is an appropriate timeframe for considering this information in the future as a 3- to 5-year timeframe equates to approximately one generation time for each species, and it is therefore unlikely that a detrimental impact to either species could occur within this period. Additionally, it allows for time to complete ongoing scientific studies (e.g., genetic analyses, ocean migration patterns, climate change impacts) and for the results to be fully considered. Also, it allows for the assessment of data to determine whether the preliminary reports of increased river counts in many areas along the coast in the last two years represent sustained trends. During this 3- to 5-year period, NMFS intended to coordinate with ASMFC 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.

While data are not robust enough at this time to determine a biologically-based catch cap and/or the potential effects of such a catch cap on the RH/S species, the Council expressed support for setting RH/S catch caps in the herring fishery in as timely a manner as possible when it developed Amendment 5 to the Herring FMP in 2012. The framework adjustment process established in Amendment 5 provides the mechanism to implement this cap. The Council believes that a RH/S catch cap would provide a strong incentive for the industry to avoid river herring and help to minimize its overall catch. A river herring catch cap, in combination with the management measures implemented in Amendment 5, would form the basis for a long-term approach to managing RH/S catch similar to that used for managing yellowtail flounder bycatch in the scallop fishery. The Council supports this approach as the most effective, least costly manner to allow the industry to manage its own non-targeted catch. As data improves, so will the ability to perform analyses to inform management decisions and support effective, long-term management that minimizes bycatch to the extent practicable.

1.1 STATE MANAGEMENT (ASMFC)

Targeting river herring and shad occurs almost exclusively in State waters, and river herring is managed under the Atlantic States Marine Fisheries Commission's (ASMFC) Shad and River Herring Fishery Management Plan (FMP), which was developed in 1985. Amendment 1 was adopted in 1998 and focuses on American shad regulations as well as fishery-independent and dependent monitoring programs to improve data collection and stock assessment capabilities.

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.

Amendment 2 to the ASMFC Shad and River Herring FMP 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 and 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, New York, 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. Table 1 and Table 2 show current state regulations as of May 2011 for both the commercial and recreational fisheries.

(Update)

Table 1 2011 State River Herring Regulations for Commercial Vessels

	SFMP Target	Season	Area Restrictions	Time Restriction	Gear Restrictions	Reporting	License	Effort Controls
ME	250 fish/acre	Yes		3 days / week escapement period		voluntary and mandatory	rights granted	Yes
NH	Harvest level that results in a harvest % that does not exceed 20% of the Great Bay Indicator Stock (provides 80% escapement level).		closures due to fishway proximity	no harvest on Wednesday	no mobile gear in state waters; restrictions on gill nets w/in inland waters	required	Yes	
MA	**Moratorium since 2005**							
RI	**Moratorium since 2006**							
CT	**Moratorium since 2002**							
NY	**Juvenile recruitment threshold**		Hudson River Only	Yes	Yes	Mandatory reporting	Yes	
NJ	**Moratorium beginning 2012**							
PA	**Moratorium beginning 2012**							
DE	**Moratorium beginning 2012**							
MD	**Moratorium beginning 2012**							
DC	**Moratorium beginning 2012**							
PRFC (bycatch fishery)	**Moratorium beginning 2012***							
VA	**Moratorium beginning 2012**							
NC	**Moratorium since 2007; 7,500 pound research set-aside; 4,000 pound limit and a permit holder restrictions (125 – 250 pounds) for the Chowan River**							
SC	**Exploitation rate and juvenile abundance**	Yes	Santee-Cooper Only		Yes	Yes	Yes	10 bushels or 250 pound / day limit
GA	**No fishery**							
FL	**No fishery**							

Source: ASMFC

Table 2 2011 State River Herring Regulations for the Recreational Fishery

	Season	Time Closure	Closed Area	Gear Restrictions	Creel Limit
ME	Yes		unlawful to fish w/in 150 ft of dam w/fishway	Hook-and-line and dip net	12 fish/day for personal use
NH	Exter River - April 1 to June 30	No harvest on Wednesday on all rivers; Except Exeter River - harvest allowed Saturday and Monday only	closures due to fishway proximity		coastal net fishery - one tote/day
MA	**Moratorium since 2005**				
RI	**Moratorium since 2006**				
CT	**Moratorium since 2002**				
NY			Hudson River Only; not within 825 ft of dam	yes	10fish/day - individual anglers; 50 fish/boat
NJ	**Moratorium Beginning 2012**				
PA	**Moratorium Beginning 2012**				
DE	**Moratorium Beginning 2012**				
MD	**Moratorium Beginning 2012**				
DC	**Moratorium Beginning 2012**				
PRFC	**Moratorium Beginning 2012***				
VA	**Moratorium Beginning 2012**				
NC	**Moratorium since 2007**				
SC	Yes		Santee-Cooper River Only	hook and line and cast nets only	1 bushel / person / day
GA	No Fishery				
FL	No Fishery				

Source: ASMFC

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. These management plans must be submitted to the TC for review by August 1, 2011. 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.

Update

1.2 FEDERAL MANAGEMENT (NEFMC AND MAFMC)

NEMFC

In Federal waters, the Atlantic herring fishery is managed by the New England Fishery Management Council through the Atlantic Herring FMP. Amendment 5 to the Herring FMP established the authority and intent to develop the catch caps proposed in this framework adjustment. During the development of Amendment 5 to the Atlantic Herring Fishery Management Plan (FMP), management measures to address river herring bycatch were considered. At its September 2010 meeting, the New England Fishery Management Council (NEFMC) passed a motion for the Herring Committee to develop catch cap options for river herring in Amendment 5 to the Herring FMP. The Herring Plan Development Team (PDT) analyzed river herring removals for the Committee and Council to consider when developing river herring catch cap options for the directed Atlantic herring fishery. Amendment 5 also formally adopts a long-term bycatch avoidance strategies based on further work on the cooperative project between SFC/SMAST/MADMF to promote industry-based bycatch avoidance. The overall concept of the project is to allow the herring fishery to avoid areas with relatively high river herring encounters when river herring have been encountered at some threshold level. This project provides information for vessels to move out of bycatch hotspots during certain times.

Update

MAFMC

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

The purpose of Amendment 15 to the MSB FMP (currently under development) is to consider measures for direct river herring and shad management by the MAFMC. This amendment will consider whether the current management framework for river herring and shad is sufficient for conservation and management of these species and whether Federal management under the MSA would address any deficiencies and/or inefficiencies. If management under the MSA can address those issues, the amendment will consider a range of measures for Federal involvement/management. To assist with the development of Amendment 15, a Fishery Management Action Team (FMAT) has been put together to develop a wide range of management options for the Mid-Atlantic Council to consider. These include the full range of management measures required by the Magnuson Stevens Act for managed stocks including status determination criteria, annual catch limits, accountability measures, essential fish habitat designation/conservation, and rebuilding if appropriate. Joint or cooperative management may be appropriate with the ASMFC, NEFMC, and/or SAFMC.

1.3 PURPOSE AND NEED

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1.4 GOALS AND OBJECTIVES

The goal of Framework 3 is to establish a process for setting river herring/shad catch caps in the Atlantic herring fishery to achieve the following objectives:

- Provide strong incentive for the industry to continue to avoid river herring/shad and reduce river herring/shad catch to the extent practicable;
- Enhance coordination with the Mid-Atlantic Council to address overlapping fisheries; and
- Promote flexibility to adjust the catch cap(s) in the future as more information becomes available.

Note: The Herring PDT recommends that the Council identify objectives for the RH/S catch caps for 2014-2015 before specifying the cap amounts. For example, is the objective for 2014-2015 to reduce catch of RH/S from recently observed levels, or to cap catch at the highest level observed in recent years, or to cap catch at a level that promotes responsible management and provides an opportunity to evaluate the monitoring issues? The identification of a specific objective for specifying the 2014-2015 RH/S catch caps should influence which option is selected.

2.0 ALTERNATIVES UNDER CONSIDERATION

The management measures under consideration in Framework 3 would establish a process for setting and modifying catch caps for river herring and shad in the Atlantic herring fishery. For the purposes of this action, the term *river herring* is used to refer to alewife and blueback herring, and the term *shad* is used to refer to the species of American shad and hickory shad. Together, the four species of river herring and shad are referred to as "*RH/S*."

Alternative 2, described below, establishes the process for setting RH/S catch caps in the Atlantic herring fishery and identifies the vessels and areas to which the caps would apply. It includes reporting requirements, measures that become effective when a catch cap is reached, and other related provisions. Once the process is established in this framework adjustment, future catch caps for RH/S could be specified through the herring fishery specifications process.

Background Discussion

As previously noted, Amendment 5 to the Herring FMP established the authority and intent to develop the RH/S catch caps proposed in this framework adjustment. The Council initiated Framework 3 at its January 2013 meeting, shortly following the completion of Amendment 5 and the 2013-2015 Atlantic herring fishery specifications. A more thorough discussion regarding the development of the Framework 3 alternatives occurred at the June 2013 New England Council meeting, after a joint meeting of the Herring PDT and Mid-Atlantic Council's MSB Monitoring Committee (May 2013), a Herring Committee meeting (June 2013), and a Mid-Atlantic Fishery

Management Council meeting where RH/S catch caps were specified for the mackerel fishery (June 2013).

While the language in Amendment 5 that authorizes this framework adjustment does not explicitly include shad, the record documenting the development of Amendment 5 (meetings, discussion, comments from 2008-2012) indicates that the Council's intent is to also include shad as species to which catch caps developed in this action would apply. The Council considered shad throughout the development of Amendment 5, and there is information and analysis in the Amendment 5 EIS to demonstrate this. Shad is identified separately in the Amendment 5 Affected Environment as a component of the *Non-Target Species/Other Fisheries*, and detailed biological and fishery information about shad is provided in the Amendment 5 EIS. One of the first major elements of the Amendment 5 EIS analysis quantitatively evaluates the overlap between river herring and shad and supports the conclusion that measures proposed in Amendment 5 to address river herring will have similar impacts on shad. For these reasons, the inclusion of shad in this framework adjustment better addresses the purpose and need for this action, identified in Section 1.3. Additional information and analysis is provided in the discussion of impacts in this document.

At its June 2013 meeting, the Council reaffirmed its intent that catch caps established in this framework adjustment should apply to both river herring and shad. The Council passed the following two motions (June 2013):

> That the Council clarify its intent that the provision in Amendment 5 to establish catch caps for river herring through a framework adjustment applies to both river herring and shad
>
> To add the river herring/shad catch cap species to the list of items that could be modified in the future through a framework adjustment or the fishery specifications process

The Council considered available fishery information, technical recommendations and public comment, and provided the following guidance to Council staff and the Herring PDT for further developing alternatives/options under consideration in Framework 3:

- **At this time, the alternatives to establish catch cap(s) should apply collectively to all four RH/S species.** The catch of each species would continue to be monitored/reported individually but would apply to a collective catch cap(s), based on the measures approved by the Council in this framework adjustment. Given available data, the Mid-Atlantic Fishery Management Council is proposing to establish one catch cap for all four species of river herring and shad combined as well. Since the New England Council intends on coordinating efforts to address RH/S catch with the Mid-Atlantic Council (see goals and objectives in Section 1.4 of this document), then the caps should be structured in a similar manner in both fisheries, at least as a starting point. Without significant coordination, there is greater risk of creating loopholes that could undermine the intent of the measures and/or producing unforeseen impacts resulting from an early fishery closure.

Moreover, observed removals of the shad species in both the herring and mackerel fisheries have been very low, making it very challenging to establish and monitor species-specific caps for these fisheries. NMFS staff acknowledged the complexities that may be associated with establishing separate caps for the two river herring and two shad species in the herring and mackerel fisheries at this time. The Herring PDT also noted that the analyses in Amendment 5 show that the overlap between river herring and shad is such that any measures implemented to conserve or protect river herring will likely have a similar effect on the shads. The Council recommended adding RH/S catch cap species to the list of items that could be modified in the future through either a framework adjustment or the fishery specifications process; for example, if Framework 3 establishes one cap for all four RH/S species collectively, any need to divide the cap into a greater number of species-specific caps in the future could be addressed during the fishery specifications process, when future cap amounts are set.

The Herring PDT and Mid-Atlantic Council's MSB Monitoring Committee discussed the overlap between the herring and mackerel fisheries in the southern New England/Mid-Atlantic area in detail, and both technical groups recommend a coordinated approach in this area in the future. The Herring PDT and MSB MC recommended that the RH/S catch caps in the overlapping areas for mackerel and herring fishing be coordinated by the two Councils as closely as possible to promote efficiency and reduce complexity. To the extent possible, the PDT/MC agrees that the New England and Mid-Atlantic Councils should consider aligning the RH/S catch caps in the southern area after they are implemented during the 2014 fishing year (see May 23, 2013 Herring PDT/MSB/Monitoring Committee Report). While a combined catch cap may not be established in this framework adjustment, the New England Council discussed this approach and supports further coordination with the Mid-Atlantic Council. The provisions established in this framework adjustment would allow the Council to consider a coordinated or combined catch cap in the future during the Atlantic herring fishery specifications process. This is consistent with the goals and objectives of this framework adjustment and may help address the purpose and need described in Section 1.3. Additional information and analysis is provided in this document.

- **The Council considered how to divide the RH/S catch caps by area in Framework 3 and recommended that the Amendment 5 statistical area clusters form the basis for distributing the caps spatially.** The Council considered whether the caps should be divided by herring management area or another spatial distribution. Concerns about addressing river herring interactions along the backside of Cape Cod (Statistical Area 521) were identified as a potential problem if catch caps are divided by herring management area (three herring management areas merge along the backside of Cape Cod). The statistical area clusters developed in Amendment 5 are based on considerable technical analysis of river herring interactions in the herring fishery, and the Council recommended that these areas be re-evaluated and established as the catch cap areas in Framework 3.

- The Council's intent with respect to the Amendment 5 management measures to address river herring bycatch was to apply these measures to herring limited access vessels – Categories A, B, and C. In this framework adjustment, to simplify RH/S catch cap monitoring and accounting, **the Council recommends establishing a threshold level of herring landings, above which catch from the trip would be counted against the corresponding RH/S catch cap.** The open access incidental catch allowance threshold of 3 mt **(6,600 pounds)** was recommended by the Council an appropriate threshold to consider for determining which trips count against catch caps in the Atlantic herring fishery. Trips with herring landings greater than 3 mt would occur only by limited access herring vessels. This recommendation is consistent with the Mid-Atlantic Council's approach for the RH/S catch caps proposed in the mackerel fishery (trips landing greater than 20,000 pounds of mackerel). Vessels must possess a limited access mackerel permit to catch/land more than 20,000 pounds of mackerel. The Council considered a 20,000-pound threshold for Atlantic herring landings to identify trips subject to the catch cap but agreed that the 6,600-pound threshold is more appropriate for the herring fishery and more consistent with the intent to apply the catch caps to limited access herring vessels.
- The Council recommended that options be considered in this framework for triggering closure of a catch cap area and suggested that provisions for catch cap overage paybacks or carryovers be considered in the future through a framework adjustment.

2.1 ALTERNATIVE 1: NO ACTION

Under this alternative, the Council would not establish a process to set catch caps for RH/S for the Atlantic herring fishery, and the Council would not specify catch caps for the 2014 and 2015 fishing years. The catch of RH/S in the Atlantic herring fishery would continue to be managed under the provisions in the Atlantic Herring FMP.

2.2 ALTERNATIVE 2: ESTABLISH CATCH CAPS (PROCESS AND RELATED PROVISIONS)

This alternative would establish a process for setting and modifying catch caps for RH/S in the Atlantic herring fishery. *Catch* includes both bycatch (discards) and landed incidental catch. The elements of Alternative 2, described in the text below, establish the *process* for setting and modifying RH/S catch caps in the Atlantic herring fishery and include changes to reporting requirements for limited access herring vessels and two options for triggering the closure of a catch cap area to the directed herring fishery. Provisions for the monitoring and management of the catch cap would be established in this framework action, and cap amounts (and modifications to existing provisions) would be specified in the future during the herring fishery specifications process. If Alternative 2 is selected, Sections 2.2.1 – 2.2.4 describe the options under consideration for specifying the catch cap amounts for the 2014 and 2015 fishing years.

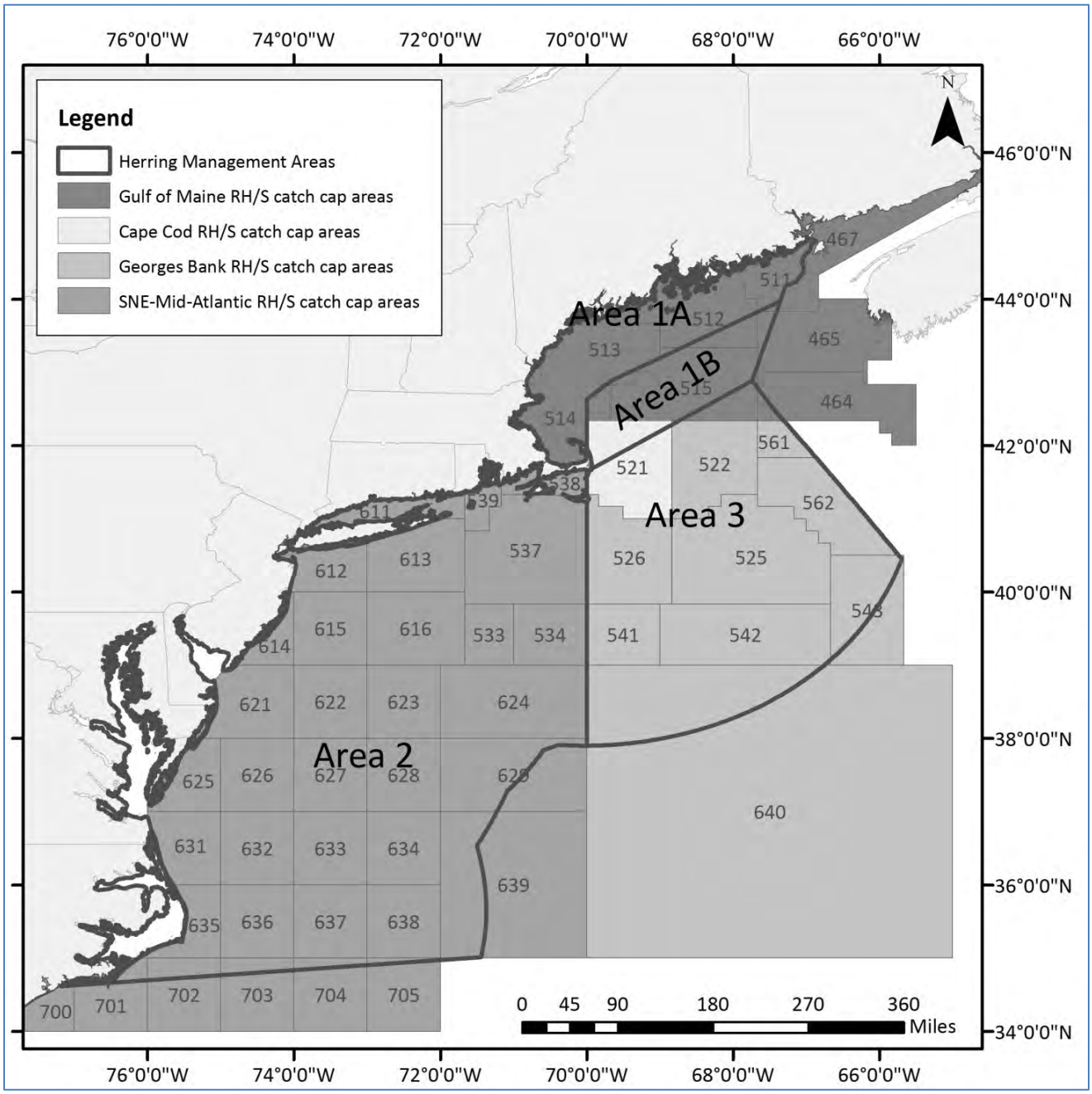
Alternative 2 Provisions

Species, Trips/Vessels/Areas: As previously described, the catch cap would include both river herring and shad collectively (four species). Catch from trips landing more than 6,600 lb would apply against the cap, and the consequences of harvesting the cap will be a 2,000 herring possession limit for the remainder of the fishing year in the cap area. The caps would apply to the herring fishery at the start of the fishing year (January 1) by gear type and area, as specified by the Council, based on the RH/S catch cap areas shown in Figure 1 on the following page. The RH/S catch cap areas would be defined as follows:

1. **The Gulf of Maine (GOM) RH/S Cap Area** includes the portions of Statistical Areas 464, 465, 467, 511, 512, 513, 514, 515 in the U.S. EEZ.
2. **The Cape Cod (CC) RH/S Cap Area** includes Statistical Area 521.
3. **The Southern New England/Mid-Atlantic (SNE/MA) RH/S Cap Area** is consistent with Management Area 2 and includes portions of Statistical Areas 533, 534, 537, 538, 539, 611, 612, 613, 614, 615, 616, 621, 622, 623, 624, 625, 626, 627, 628, 629, 631, 632, 633, 634, 635, 636, 637, 638, and 639, and other statistical areas in the U.S. EEZ that fall in Management Area 2.
4. **The Georges Bank (GB) RH/S Cap Area** includes portions of Statistical Areas 522, 525, 526, 541, 542, 543, 561, and 562 in the U.S. EEZ.

Measures that Become Effective When a RH/S Catch Cap is Reached: When the RH/S catch cap is reached in a catch cap area (based on one of the trigger options under consideration – see below), the directed herring fishery in the catch cap area would close, and all vessels (A/B/C/D) would be subject to a possession limit of 2,000 pounds of Atlantic herring in the catch cap area for the remainder of the fishing year. The remainder of the herring fishery (in non-overlapping areas) will stay open until the sub-ACL trigger is reached in a management area/areas.

Figure 1 Proposed RH/S Catch Cap Areas



**This figure will be updated for the Final Framework 3 document.*

Trip Notification Requirements and Catch Cap Monitoring: Under Alternative 2, trip notification requirements would be consistent with Amendments 5 for herring vessels subject to the RH/S catch caps. Amendment 5 requires all limited access herring vessels (as well as Category D vessels fishing with midwater trawl gear in Areas 1A, 1B, and/or 3), mackerel vessels that obtain the new Area 2/3 permit for 20,000 pounds of herring, and all herring carrier vessels to notify the Northeast Fisheries Observer Program (NEFOP) through a pre-trip notification system prior to any trip where the operator may harvest, possess, or land Atlantic herring. These vessels also must declare that they are participating in the herring fishery through VMS by entering the code "HER" and a gear code prior to leaving port. Amendment 5 requires the vessels identified above to notify NMFS Law Enforcement via VMS of the time and place of offloading at least six hours prior to crossing the VMS demarcation line on their return trip to port (or six hours prior to landing if the vessel does not fish seaward of the demarcation line).

The catch cap estimation and monitoring methodology would be determined by NMFS NERO, generally consistent with the approaches utilized for the haddock catch cap in the herring fishery and the butterfish mortality cap in the loligo squid fishery, in consultation with the Council. The details of the estimation and monitoring methods will be published by NMFS during the implementation of this framework adjustment. In general, trips with observers that retain more than 6,600 pounds of herring would be used to determine the ratio of RH/S caught to all species retained on observed cap trips. For all trips that land more than 6,600 pounds of herring, the current RH/S ratio would be applied to the combined total landings to generate a RH/S catch estimate for all herring cap trips during the fishing year.

Proposed Modifications to VMS Reporting by Herring Vessels

If Alternative 2 is selected, VMS reporting requirements for herring vessels would be modified so that total catch by statistical area can be provided to facilitate monitoring of the catch caps. Herring vessels subject to VMS reporting requirements would be required to report total catch (kept and discarded) by statistical area so that the appropriate expansions can be made from the observed catch in those areas to monitor both the haddock catch caps (Framework 46) and any RH/S catch caps that may be established in this framework (see example catch report on the following page).

Reporting Catch by Statistical Area – Example Catch Report

This report ***(example)*** is required by all limited access herring vessels on all declared herring trips. For each day of a declared trip, this report must be submitted by 9 AM the following day. Negative reports (0 lb) must be submitted when no fish were caught.

Note: VTR serial number must be the same number reported to the seafood dealer receiving the landings at the end of the trip. If you use multiple pages of the VTR on the trip, record the serial number from the first VTR page used.

Vessel Trip Report (VTR) Serial Number: _____
Date fish caught: Month (01-12) _____
Day (01-31) _____
Gear used to fish: (MWT, PS, BT) _____

SPECIES	AREA 1A	AREA 1B	AREA 2	AREA 3
Herring kept (lbs)	_____	_____	_____	_____
Herring discarded (lbs)	_____	_____	_____	_____

Report all fish kept (herring and non-herring species) and the Stat Area in which the fish were caught. If fish were caught in multiple Stat Areas in one day, report the fish kept (lbs) in each Stat Area.

All Fish Kept (lbs) _____ Stat/Chart Area ____

All Fish Kept (lbs) _____ Stat/Chart Area ____

All Fish Kept (lbs) _____ Stat/Chart Area ____

Options for Triggering Closure of a Catch Cap Area

Under Alternative 2, the Council is considering the following options that would trigger the closure of the directed Atlantic herring fishery in a catch cap area:

1. **Option 1 (100%):** When the RH/S catch cap is reached in a catch cap area, the directed herring fishery in the catch cap area would close, and all vessels (A/B/C/D) would be subject to a possession limit of 2,000 pounds of Atlantic herring in the catch cap area for the remainder of the fishing year. The remainder of the herring fishery (in non-overlapping areas) will stay open until the sub-ACL trigger is reached in a management area/areas.

   This is consistent with the accountability measures implemented for the haddock catch cap that applies to herring midwater trawl vessels.

2. **Option 2 (95% projection):** Once catch cap trips are projected to have caught 95% of the RH/S catch cap in a catch cap area, the directed herring fishery in the catch cap area would close, and all vessels (A/B/C/D) would be subject to a possession limit of 2,000 pounds of Atlantic herring in the catch cap area for the remainder of the fishing year. The remainder of the herring fishery (in non-overlapping areas) will stay open until the sub-ACL trigger is reached in a management area/areas.

   This is consistent with the provisions proposed by the Mid-Atlantic Council for the RH/S catch cap in the Atlantic mackerel fishery.

The trigger for closing a catch cap area, as well as other elements of the catch cap process described above, would remain effective until modified in the future through a Council action.

Management Measures and Provisions that can be Modified in the Future Through the Specifications Process and/or Framework Adjustment

As previously discussed, Amendment 5 to the Herring FMP established the authority and intent to develop the catch caps proposed in this framework adjustment. The intent of this framework adjustment is to establish a process and related provisions for specifying catch caps for RH/S in the herring fishery. This document also includes amounts for the 2014 and 2015 RH/S catch caps. Future catch cap amounts (and other related provisions) can be specified through the Atlantic herring fishery specifications process or another action (framework adjustment, amendment). The intent is to consider RH/S catch caps every three years as part of the Atlantic herring fishery specifications process; the next specifications process for the will occur during 2015 for the 2016-2018 fishing years.

Measures/provisions related to the RH/S catch cap process that are contemplated/analyzed in this framework document can be modified in the future through the Atlantic herring fishery specification process; new or additional provisions (for example, new accountability measures to become effective when cap is reached, seasonal distribution of catch caps) could be implemented through another framework adjustment or herring-related management action (amendment), but not through the specifications process.

The following provisions could be modified through the herring fishery specifications process (in addition to a framework adjustment or other herring-related management action):

- Specification of catch caps for any of the four RH/S species individually or in any combination;
- Specification of a joint catch cap for the herring and mackerel fisheries in the southern New England/Mid-Atlantic area, in coordination with the Mid-Atlantic Fishery Management Council (see below);
- Vessels/trips subject to RH/S catch caps;
- Distribution of RH/S catch caps by area and/or gear type, including modifications to the proposed cap areas;
- Trip notification and reporting requirements for herring vessels subject to RH/S catch caps;
- Management measures that become effective when the RH/S catch cap is reached.

Framework 3 would specify catch cap amounts for the herring fishery for 2014 and 2015 (see following sub-sections), with implementation sometime during the 2014 fishing year. The MSB specifications will include a river herring/shad (RH/S) catch cap for the 2014 mackerel fishery, and the Mid-Atlantic Council will consider a 2015 cap during the MSB specifications process in 2014. There will be an opportunity for the two Councils to better align the catch caps in the overlapping areas for the 2016 fishing year and beyond. The Herring PDT/MSB MC recommends that the two Councils consider developing a joint catch cap for the overlapping area (Southern New England/Area 2 herring fishery – see May 2013 Herring PDT/MSB Monitoring Committee Report). For these reasons, the Council proposes building flexibility into the Framework 3 provisions to allow these kinds of modifications to the catch caps to occur more expeditiously, including development of a joint herring/mackerel fishery cap for the southern New England area. The intent is to coordinate this effort through future fishery specifications.

2.2.1 Options for Specifying 2014/2015 Catch Caps in the Gulf of Maine (GOM) RH/S Cap Area

The Gulf of Maine (GOM) RH/S Cap Area includes the portions of Statistical Areas 464, 465, 467, 511, 512, 513, 514, 515 in the U.S. EEZ (see Figure 1 on p. 14).

RH/S catch caps may be distributed in the Gulf of Maine catch cap area during 2014 and 2015 in one of the following ways: (A) no RH/S catch cap; (B) one RH/S cap for all gears; or (C) a catch cap for purse seine, midwater trawl, and/or bottom trawl vessels. Once the gear-specific distribution has been determined, the Council may select the option for weighted mean, median, low, or high value from the range provided in the table below.

Detailed background data from NERO are provided in Appendix I of this document. These data were supplemented with portside sampling data by the Herring PDT to increase sample size, reduce variability/uncertainty, and generate the best estimates of RH/S shad on which to base the cap options. The Herring PDT's methodology for developing the catch cap options, as well as supporting information and analysis, is provided in Appendix II of this document. Table 3 below summarizes the GOM RH/S catch cap options under consideration for 2014 and 2015.

Table 3 Options for 2014/2015 RH/S Catch Caps in the GOM RH/S Catch Cap Area (mt)

Gear	Metric/Option	2014/2015 RH/S Catch Cap Options (MT) Gulf of Maine Area
ALL GEARS COMBINED	LOW	6.8
ALL GEARS COMBINED	HIGH	182.7
ALL GEARS COMBINED	MEDIAN	87.7
ALL GEARS COMBINED	WEIGHTED MEAN	77.4
BOTTOM TRAWL	LOW	0.0
BOTTOM TRAWL	HIGH	0.1
BOTTOM TRAWL	MEDIAN	0.0
BOTTOM TRAWL	WEIGHTED MEAN	0.0
MIDWATER TRAWL	LOW	5.6
MIDWATER TRAWL	HIGH	180.2
MIDWATER TRAWL	MEDIAN	85.5
MIDWATER TRAWL	WEIGHTED MEAN	96.3
PURSE SEINE	LOW	0.5
PURSE SEINE	HIGH	2.5
PURSE SEINE	MEDIAN	1.9
PURSE SEINE	WEIGHTED MEAN	1.7

2.2.2 Options for Specifying 2014/2015 RH/S Catch Caps in the Cape Cod RH/S Cap Area

The Cape Cod (CC) RH/S Cap Area includes Statistical Area 521 (see Figure 1 on p. 14).

RH/S catch caps may be distributed in the Cape Cod catch cap area during 2014 and 2015 in one of the following ways: (A) no RH/S catch cap; (B) one RH/S cap for all gears; or (C) one catch cap for midwater trawl gear only. Once the gear-specific distribution has been determined, the Council may select the option for weighted mean, median, low, or high value from the range provided in the table below.

Detailed background data from NERO are provided in Appendix I of this document. These data were supplemented with portside sampling data by the Herring PDT to increase sample size, reduce variability/uncertainty, and generate the best estimates of RH/S shad on which to base the cap options. The Herring PDT's methodology for developing the catch cap options, as well as supporting information and analysis, is provided in Appendix II of this document. Table 4 below summarizes the GOM RH/S catch cap options under consideration for 2014 and 2015.

Table 4 Options for 2014/2015 RH/S Catch Caps in the Cape Cod RH/S Catch Cap Area (mt)

Gear	Metric/Option	2014/2015 RH/S Catch Cap Options (MT) Cape Cod Area
ALL GEARS COMBINED	LOW	0.0
ALL GEARS COMBINED	HIGH	59.9
ALL GEARS COMBINED	MEDIAN	13.3
ALL GEARS COMBINED	WEIGHTED MEAN	32.5
BOTTOM TRAWL	LOW	*NA*
BOTTOM TRAWL	HIGH	*NA*
BOTTOM TRAWL	MEDIAN	*NA*
BOTTOM TRAWL	WEIGHTED MEAN	*NA*
MIDWATER TRAWL	LOW	0.0
MIDWATER TRAWL	HIGH	59.9
MIDWATER TRAWL	MEDIAN	13.3
MIDWATER TRAWL	WEIGHTED MEAN	32.5
PURSE SEINE	LOW	*NA*
PURSE SEINE	HIGH	*NA*
PURSE SEINE	MEDIAN	*NA*
PURSE SEINE	WEIGHTED MEAN	*NA*

2.2.3 Options for Specifying 2014/2015 Catch Caps in the Southern New England/Mid-Atlantic RH/S Cap Area

The Southern New England/Mid-Atlantic (SNE/MA) RH/S Cap Area is consistent with Management Area 2 and includes portions of Statistical Areas 533, 534, 537, 538, 539, 611, 612, 613, 614, 615, 616, 621, 622, 623, 624, 625, 626, 627, 628, 629, 631, 632, 633, 634, 635, 636, 637, 638, and 639, and other statistical areas in the U.S. EEZ that fall in Management Area 2 (see Figure 1 on p. 14). RH/S catch caps may be distributed in the Cape Cod catch cap area during 2014 and 2015 in one of the following ways: (A) no RH/S catch cap; (B) one RH/S cap for all gears; or (C) a catch cap for midwater trawl and/or bottom trawl vessels. Once the gear-specific distribution has been determined, the Council may select the option for weighted mean, median, low, or high value from the range provided in the table below.

Detailed background data from NERO are provided in Appendix I of this document. These data were supplemented with portside sampling data by the Herring PDT to increase sample size, reduce variability/uncertainty, and generate the best estimates of RH/S shad on which to base the cap options. The Herring PDT's methodology for developing the catch cap options, as well as supporting information and analysis, is provided in Appendix II of this document. Table 5 below summarizes the southern New England/Mid-Atlantic RH/S catch cap options under consideration for 2014 and 2015.

Table 5 Options for 2014/2015 RH/S Catch Caps in the Southern New England/Mid-Atlantic RH/S Catch Cap Area (mt)

Gear	Metric/Option	2014/2015 RH/S Catch Cap Options (MT) SNE/MA Area
ALL GEARS COMBINED	LOW	160.1
ALL GEARS COMBINED	HIGH	811.3
ALL GEARS COMBINED	MEDIAN	228.1
ALL GEARS COMBINED	WEIGHTED MEAN	295.2
BOTTOM TRAWL	LOW	0.0
BOTTOM TRAWL	HIGH	104.4
BOTTOM TRAWL	MEDIAN	88.9
BOTTOM TRAWL	WEIGHTED MEAN	61.5
MIDWATER TRAWL	LOW	71.2
MIDWATER TRAWL	HIGH	811.3
MIDWATER TRAWL	MEDIAN	123.7
MIDWATER TRAWL	WEIGHTED MEAN	235.3
PURSE SEINE	LOW	*NA*
PURSE SEINE	HIGH	*NA*
PURSE SEINE	MEDIAN	*NA*
PURSE SEINE	WEIGHTED MEAN	*NA*

2.2.4 Options for Specifying 2014/2015 Catch Caps in the Georges Bank RH/S Cap Area

The Georges Bank (GB) RH/S Cap Area includes portions of Statistical Areas 522, 525, 526, 541, 542, 543, 561, and 562 in the U.S. EEZ (see Figure 1 on p. 14). RH/S catch caps may be distributed in the Cape Cod catch cap area during 2014 and 2015 in one of the following ways: (A) no RH/S catch cap; (B) one RH/S catch cap for all gears; or (C) one RH/S catch cap for midwater trawl gear only. Once the gear-specific distribution has been determined, the Council may select the option for weighted mean, median, low, or high value from the range provided in the table below.

Detailed background data from NERO are provided in Appendix I of this document. These data were supplemented with portside sampling data by the Herring PDT to increase sample size, reduce variability/uncertainty, and generate the best estimates of RH/S shad on which to base the cap options. The Herring PDT's methodology for developing the catch cap options, as well as supporting information and analysis, is provided in Appendix II of this document. Table 6 below summarizes the Georges Bank RH/S catch cap options under consideration for 2014 and 2015. Note that because of low observed RH/S catch, the Herring PDT recommends that RH/S catch caps not be established in the Georges Bank Cap Area during the 2014 and 2015 fishing years.

Table 6 Options for 2014/2015 RH/S Catch Caps in the Georges Bank RH/S Catch Cap Area (mt)

Gear	Metric/Option	2014/2015 RH/S Catch Cap Options (MT) Georges Bank Area
ALL GEARS COMBINED	LOW	0.0
ALL GEARS COMBINED	HIGH	2.2
ALL GEARS COMBINED	MEDIAN	0.6
ALL GEARS COMBINED	WEIGHTED MEAN	1.1
BOTTOM TRAWL	LOW	*NA*
BOTTOM TRAWL	HIGH	*NA*
BOTTOM TRAWL	MEDIAN	*NA*
BOTTOM TRAWL	WEIGHTED MEAN	*NA*
MIDWATER TRAWL	LOW	0.0
MIDWATER TRAWL	HIGH	2.2
MIDWATER TRAWL	MEDIAN	0.6
MIDWATER TRAWL	WEIGHTED MEAN	1.1
PURSE SEINE	LOW	*NA*
PURSE SEINE	HIGH	*NA*
PURSE SEINE	MEDIAN	*NA*
PURSE SEINE	WEIGHTED MEAN	*NA*

**Note that the Herring PDT does not recommend establishing a RH/S catch cap in the Georges Bank Cap Area during 2014 and 2015.*

3.0 AFFECTED ENVIRONMENT

The Affected Environment is described in this document based on valued ecosystem components (VECs). The VECs for consideration in Framework 3 include: Atlantic Herring; River Herring and Shad (RH/S); Non-Target Species and Other Fisheries; Physical Environment and Essential Fish Habitat (EFH); Protected Resources; and Fishery-Related Businesses and Communities. 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.

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

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. Age 5 was used because it is fully selected in the mobile gear fleet, which accounted for much of the catch in recent years.

The SAW/SARC 54 assessment did not have the same problems with retrospective patterns or inconsistent biological reference points as in the TRAC 2009 assessment. Rather, after largely resolving the retrospective pattern, the three main sources of scientific uncertainty regarding Atlantic herring from this assessment included: the estimate of the 2008 year class, natural mortality, and the Biological Reference Points (BRPs). These sources of uncertainty were evaluated by the Herring PDT and the SSC during the development of the proposed ABC/ABC control rule for 2013-2015.

This assessment included significant changes from previous assessments, with almost all data inputs and model settings being reconsidered. For example, catches from all sources were combined in previous assessments, but catch-at-age was partitioned into mobile and fixed gear fleets in the new formulation of the ASAP model. Furthermore, age - and time-varying natural mortality rates were developed and herring consumption by various predators justified a 50% increase in natural mortality beginning in 1996, whereas natural mortality equaled 0.2 for all ages and years in previous assessments. Selectivity in the SAW/SARC 54 assessment was also estimated for any data source with age composition, but was fixed in previous assessments. Lastly, maturity-at-age varied among years in this assessment, but held constant in previous assessments.

Biological Reference Points (BRPs)

The BRPs from SAW/SARC 54 were based on the fit of a Beverton-Holt stock-recruitment curve (estimated internally to ASAP model) and other inputs from the terminal year of the assessment (i.e., 2011). The BRPs were affected by the 50% increase in natural mortality beginning in 1996 (see below). The 2009 reference points are from the previous TRAC 2009 assessment and were based on the fit of a Fox surplus production model.

The BRPs seen in Table 7 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 7 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.

Natural Mortality (M)

Natural mortality assumptions in SAW 54 were based on a combination of the Hoenig and Lorenzen methods, with the Hoenig method providing the scale of natural mortality and the Lorenzen method defining how natural mortality declined with age (Hoenig 1983; Lorenzen 1996). Natural mortality rates during 1996-2011 were increased by 50% to resolve a retrospective pattern and to ensure that the implied levels of consumption were consistent with observed increases in estimated consumption of herring. Consumption estimates were based on food habits data primarily for groundfish, but also informed by consumption estimates from marine mammals, highly migratory species, and seabirds. The 50% increase in natural mortality implies a decrease in sustainable yield (i.e. lower MSY absent the increase), such that monitoring for changes in predator consumption rates remains of particular importance.

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. In fact, the Atlantic herring resource is considered to be rebuilt.

Businesses and communities participating in and dependent on the Atlantic herring fishery are presented as a separate VEC in this document and are described in Section 3.6 (p. 78).

3.2 RIVER HERRING AND SHAD (RH/S)

River herring and shad are the primary non-target species of concern in this framework adjustment. 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."

3.2.1 Life History and Migration

Shad and river herring are anadromous fish that spend the majority of their adult lives at sea, only returning to freshwater in the spring to spawn. Historically, shad and river herring spawned in virtually every river and tributary along the coast.

Shad

American shad stocks are river-specific; that is, each major tributary along the Atlantic coast appears to have a discrete spawning stock. The percentage of shad that survive to spawn more than once decreases from north to south. Shad that spawn in more northerly rivers may survive to spawn again (referred to as iteroparity), while shad native to the rivers south of Cape Fear, North Carolina die after spawning (referred to semelparity). Mature females (ages five and older) produce a large quantity of eggs that are released into the water column and are fertilized by mature males (ages four and older). American shad adults that are iteroparous return to the sea soon after spawning and migrate northward to summer feeding grounds in the Gulf of Maine, while the fertilized eggs are carried by river currents, develop into larvae which begin to feed four to seven days after hatching. Larvae drift downstream into tidal freshwater reaches of the spawning rivers, and gradually mature into juveniles. In early to late summer, juvenile shad migrate out of their nursery areas to the sea. Immature American shad will remain in the ocean for three to five years.

Table 8 shows the typical migration patterns, as determined by their locations during different months, for the various age classes of fish described above, by the state in which the migration is occurring. The columns are marked by "SA" (Some Activity), which denotes that some shad have been seen in the area during that time period, and "PA" (Peak Activity), denoting that the number of shad in the area are at a peak. The table indicates that the further north the rivers are, the later the fish will begin and conclude their migration during the year.

Table 8 Typical Migration Patterns and Locations for American Shad

		January		February		March		April		May		June		July		August		September		October		November		December	
		1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30
Maine	adult immigration						SA	SA	SA	PA	PA	PA	PA	PA	PA	SA									
	adult emmigration												SA	SA	PA	PA	SA								
	spawning										SA	SA	PA	PA	PA	SA									
	incubation										SA	SA	PA	PA	PA	SA									
	juvenile freshwater residence											SA	PA	PA	PA	PA	PA	PA	PA	PA	SA	SA			
	juvenile emigration													SA	SA	SA	PA	PA	PA	PA	SA	SA			
New Hampshire	adult immigration									SA	PA	PA	SA												
	adult emmigration																								
	spawning																								
	incubation																								
	juvenile freshwater residence											PA	PA	PA	PA	SA	SA	SA	SA	SA	SA				
	juvenile emigration															SA	SA	SA	SA	SA	SA				
Massachusetts	adult immigration								SA	SA	PA	PA	PA	SA	SA										
	adult emmigration									SA	PA	PA	PA	SA	SA										
	spawning									SA	PA	PA	PA	SA	SA										
	incubation									SA	SA	PA	PA	PA	SA										
	juvenile freshwater residence										SA	PA	PA	PA	PA	PA	PA	SA	SA	SA					
	juvenile emigration													SA	SA	SA	PA	PA	SA	SA	SA				
Rhode Island	adult immigration							SA	SA	PA	PA	PA	SA												
	adult emmigration									SA	SA	PA	PA	SA	SA										
	spawning									SA	SA	PA	PA	PA	SA										
	incubation									SA	SA	PA	PA	PA	SA										
	juvenile freshwater residence										SA	SA	SA	PA	PA	PA	PA	PA	PA	SA	SA	SA	SA		
	juvenile emigration													SA	SA	SA	SA	SA	PA	PA	PA	SA	SA		
Connecticut	adult immigration							SA	SA	PA	PA	SA	SA												
	adult emmigration										SA	SA	PA	PA	SA										
	spawning									SA	PA	PA	SA												
	incubation									SA	PA	PA	SA	SA											
	juvenile freshwater residence											SA	SA	PA	PA	PA	PA	PA	PA	SA	SA	SA			
	juvenile emigration													SA	SA	SA	SA	PA	PA	PA	SA	SA			
New York	adult immigration							SA	PA	PA	SA	SA													
	adult emmigration								SA	PA	PA	SA													
	spawning								SA	PA	PA	SA													
	incubation								SA	PA	PA	SA													
	juvenile freshwater residence										PA	PA	PA	PA	PA	PA	SA	SA	SA	SA					
	juvenile emigration													SA	SA	SA	SA	SA	SA	SA	SA				
New Jersey	adult immigration			SA	SA	SA	SA	PA	PA	PA	PA	SA													
	adult emmigration							SA	SA	SA	SA	SA													
	spawning						SA	SA	PA	PA	PA	SA													
	incubation						SA	SA	PA	PA	PA	SA													
	juvenile freshwater residence											SA	SA	PA	PA	PA	PA	SA	SA	SA	SA	SA			
	juvenile emigration													SA	SA	SA	SA	SA	SA	SA	SA	SA			

Source: ASMFC

River Herring

Alewife and blueback herring are known as "river herring" and managed collectively by ASMFC. Alewives spawn in rivers, lakes, and tributaries from northeastern Newfoundland to South Carolina, but are most abundant in the Mid-Atlantic and the Northeast states. Blueback herring prefer to spawn in swift flowing rivers and tributaries from Nova Scotia to northern Florida, but are most numerous in waters from the Chesapeake Bay south. Mature alewife (ages three to eight) and blueback herring (ages three to six) migrate rapidly downstream after spawning. Larvae begin to feed three to five days after hatching, and transform gradually into the juvenile stage. Juveniles remain in tidal freshwater nursery areas in spring and early summer, but may also move upstream with the encroachment of saline water. As water temperatures decline in the fall, juveniles move downstream to more saline waters. Little information is available on the life history of juvenile and adult alewife and blueback herring after they emigrate to the sea as young-of-the-year or yearlings, and before they mature and return to freshwater to spawn.

Table 9 and Table 10 show the typical migration patterns, as determined by their locations during different months, for the various age classes of fish described above, by the state in which the migration is occurring. The columns are marked by "SA" (Some Activity), which denotes that some blueback or alewife have been seen in the area during that time period, and "PA" (Peak Activity), denoting that the number of blueback or alewife in the area are at a peak.

Table 9 Typical Migration Patterns and Locations for Alewife

		January		February		March		April		May		June		July		August		September		October		November		December	
		1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30
Maine	adult immigration							SA	SA	SA	SA	PA	PA	PA	SA										
	adult emmigration											SA	SA	PA	PA	PA	SA								
	spawning									SA	PA	PA	PA	SA											
	incubation										SA	PA	PA	SA											
	juvenile freshwater residence										SA	PA	PA	PA	PA	PA	PA	PA	PA	PA	PA	SA			
	juvenile emigration													SA	SA	PA	PA	PA	PA	PA	PA	SA	SA		
New Hampshire	adult immigration								SA	PA	PA	SA													
	adult emmigration									SA	PA	PA	SA	SA											
	spawning									PA	PA	SA													
	incubation									SA	PA	PA	SA												
	juvenile freshwater residence										SA	PA	PA	PA	PA	PA	SA	SA	SA	SA	SA				
	juvenile emigration													SA	SA	SA	SA	SA	SA	SA	SA				
Massachusetts	adult immigration								SA	SA	PA	PA	SA	SA											
	adult emigration										SA	PA	PA	SA	SA										
	spawning									SA	PA	PA	SA	SA											
	incubation									SA	SA	PA	PA	PA	SA										
	juvenile freshwater residence									SA	PA	PA	PA	PA	PA	PA	SA	SA	SA	SA	SA	SA			
	juvenile emigration													SA	SA	SA	PA	PA	PA	SA	SA	SA	SA		
Rhode Island	adult immigration							SA	PA	PA															
	adult emmigration																								
	spawning																								
	incubation																								
	juvenile freshwater residence																								
	juvenile emigration																								
Connecticut	adult immigration							SA	SA	PA	PA	SA	SA												
	adult emmigration										SA	SA	PA	PA	SA										
	spawning									SA	PA	PA	SA												
	incubation									SA	PA	PA	SA	SA											
	juvenile freshwater residence											SA	SA	PA	PA	PA	PA	PA	PA	SA	SA	SA			
	juvenile emigration													SA	SA	PA	PA	PA	PA	PA	SA	SA			
New York	adult immigration							SA	PA	PA	SA	SA													
	adult emmigration								SA	PA	SA	SA	SA												
	spawning							SA	PA	PA	PA	SA	SA												
	incubation							SA	PA	PA	PA	SA	SA												
	juvenile freshwater residence							SA	SA	PA	PA	PA	PA	PA	PA	PA	SA	SA	SA						
	juvenile emigration													SA	SA	SA	SA	SA	SA	SA	SA				
New Jersey	adult immigration			SA	SA	SA	SA	PA	PA	PA	PA	SA													
	adult emmigration							SA	SA	SA	SA	SA													
	spawning							SA	PA	PA	PA	SA													
	incubation							SA	PA	PA	PA	SA													
	juvenile freshwater residence											SA	SA	PA	PA	PA	PA	SA	SA	SA	SA				
	juvenile emigration													SA	SA	SA	SA	SA	SA	SA	SA				

Source: ASMFC

Table 10 Typical Migration Patterns and Locations for Blueback Herring

		January		February		March		April		May		June		July		August		September		October		November		December	
		1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30	1-15	16-30
Maine	adult immigration					SA	SA	SA	PA	PA	PA	PA	SA												
	adult emmigration										SA	SA	PA	PA	SA	SA	SA	SA	SA	SA	SA	SA			
	spawning								SA	SA	PA	PA	PA	SA											
	incubation								SA	SA	PA	PA	PA	SA											
	juvenile freshwater residence								SA	SA	PA	PA	PA	PA	PA	PA	PA	PA	PA	PA	PA	SA	SA		
	juvenile emigration													SA	SA	PA	PA	PA	PA	PA	PA	SA	SA	SA	
New Hampshire	adult immigration									SA	PA	PA	SA	SA											
	adult emmigration										SA	PA	PA	SA											
	spawning									SA	PA	PA	PA	SA											
	incubation										SA	PA	PA	SA											
	juvenile freshwater residence										SA	PA	PA	PA	PA	PA	SA	SA	SA	SA	SA				
	juvenile emigration															SA	SA	SA	SA	SA	SA				
Massachusetts	adult immigration					SA	SA	PA	PA	PA	SA														
	adult emigration								SA	SA	PA	PA	SA	SA											
	spawning						SA	SA	PA	PA	SA	SA													
	incubation							SA	PA	PA	PA	SA													
	juvenile freshwater residence							SA	SA	PA	PA	PA	PA	PA	PA	PA	SA	SA	SA	SA	SA	SA	SA		
	juvenile emigration												SA	PA	PA	SA	SA	PA	PA	PA	PA	SA	SA	SA	
Rhode Island	adult immigration					SA	SA	PA	PA	PA	SA														
	adult emmigration							SA	PA	PA	SA	SA	SA												
	spawning						SA	PA	PA	PA	SA														
	incubation						SA	PA	PA	PA	PA	SA													
	juvenile freshwater residence								SA	PA	PA	PA	PA	PA	PA	PA	PA	PA	PA	SA	SA	SA	SA		
	juvenile emigration											SA	SA	SA	SA	SA	SA	SA	PA	PA	PA	SA	SA		
Connecticut	adult immigration				SA	SA	PA	PA	PA	SA															
	adult emmigration				SA	SA	SA	PA	PA	SA															
	spawning				SA	SA	SA	SA	SA	SA															
	incubation					SA	PA																		
	juvenile freshwater residence							SA	SA	PA	PA	SA	SA	SA	SA	SA	SA	SA	SA	SA					
	juvenile emigration									SA	PA	PA	SA	SA	SA	SA	SA	SA	SA	SA					
New York	adult immigration						SA	PA	PA	PA	SA														
	adult emmigration							SA	SA	PA	SA	SA													
	spawning							SA	PA	PA	PA	SA													
	incubation							SA	PA	PA	PA	SA													
	juvenile freshwater residence							SA	SA	PA	PA	PA	PA	PA	PA	PA	SA	SA	SA						
	juvenile emigration													SA	SA	SA	SA	SA	SA	SA	SA				
New Jersey	adult immigration			SA	SA	SA	SA	PA	PA	PA	PA	SA													
	adult emmigration							SA	SA	SA	SA	SA													
	spawning							SA	PA	PA	PA	SA													
	incubation							SA	PA	PA	PA	SA													
	juvenile freshwater residence											SA	SA	PA	PA	PA	PA	SA	SA	SA	SA	SA			
	juvenile emigration													SA	SA	SA	SA	SA	SA	SA	SA	SA			

Source: ASMFC

3.2.2 Status of Stocks

Shad

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. The 2007 report 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.

2012 River Herring Benchmark Stock Assessment

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 were 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.

Petition for River Herring ESA Listing

On August 5, 2011, the National Marine Fisheries Service (NMFS) received a petition from the Natural Resources Defense Council (NRDC), requesting that alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*) be listed each as threatened throughout all or a significant portion of their range under the Endangered Species Act (ESA). NRDC requested that NMFS designate distinct population segments of alewife and blueback herring as specified in the petition (Central New England, Long Island Sound, Chesapeake Bay, and Carolina for alewives, and Central New England, Long Island Sound, and Chesapeake Bay for blueback herring). NMFS reviewed the petition and published a positive 90-day finding on November 2, 2011, determining that the information in the petition, coupled with information otherwise available to the agency, indicated that the petitioned action may be warranted. As a result of the positive finding, the Agency is required to review the status of the species to determine if listing under the ESA is warranted.

The Atlantic States Marine Fisheries Commission (ASMFC) completed a stock assessment for river herring in May 2012, which they had been conducting since 2008, covering over 50 river specific stocks throughout the species U.S. range. This represented a significant effort on behalf of the ASMFC and the coastal states from Maine to Florida. NMFS recognized this extensive effort to compile the most current information on the status of these stocks throughout their range in the United States and, in order to not duplicate this effort, has been working cooperatively with ASMFC. NMFS will utilize the information from the stock assessment as a critical component in the ESA listing decision for these two species. Due to the nature of the stock assessment, it did not contain all elements necessary for making a listing determination under the ESA; therefore, NMFS identified the additional required elements and held workshops focused on addressing this information. The three workshops organized for this purpose addressed river herring stock structure, extinction risk analysis (ERA), and climate change. Reports from the stock structure and ERA workshop and working group meeting were compiled and are being independently peer reviewed by the Center for Independent Experts, and the report from the climate change workshop has been compiled and is also being reviewed. The peer review reports and additional climate change analysis and extinction risk modeling results are expected to be available in 2013.

NMFS used these reports and the modeling results along with the 2012 ASMFC river herring stock assessment and other best available information to develop a listing determination that was published in the *Federal Register* on August 12, 2013. 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.

3.2.3 RH/S Management

River herring and shad fisheries occur almost exclusively in State waters and are therefore managed by the Atlantic States Marine Fisheries Commission (ASMFC). 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, New York, 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. These management plans must be submitted to the TC for review by August 1, 2011. 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.

Update

3.2.4 RH/S Catch Information

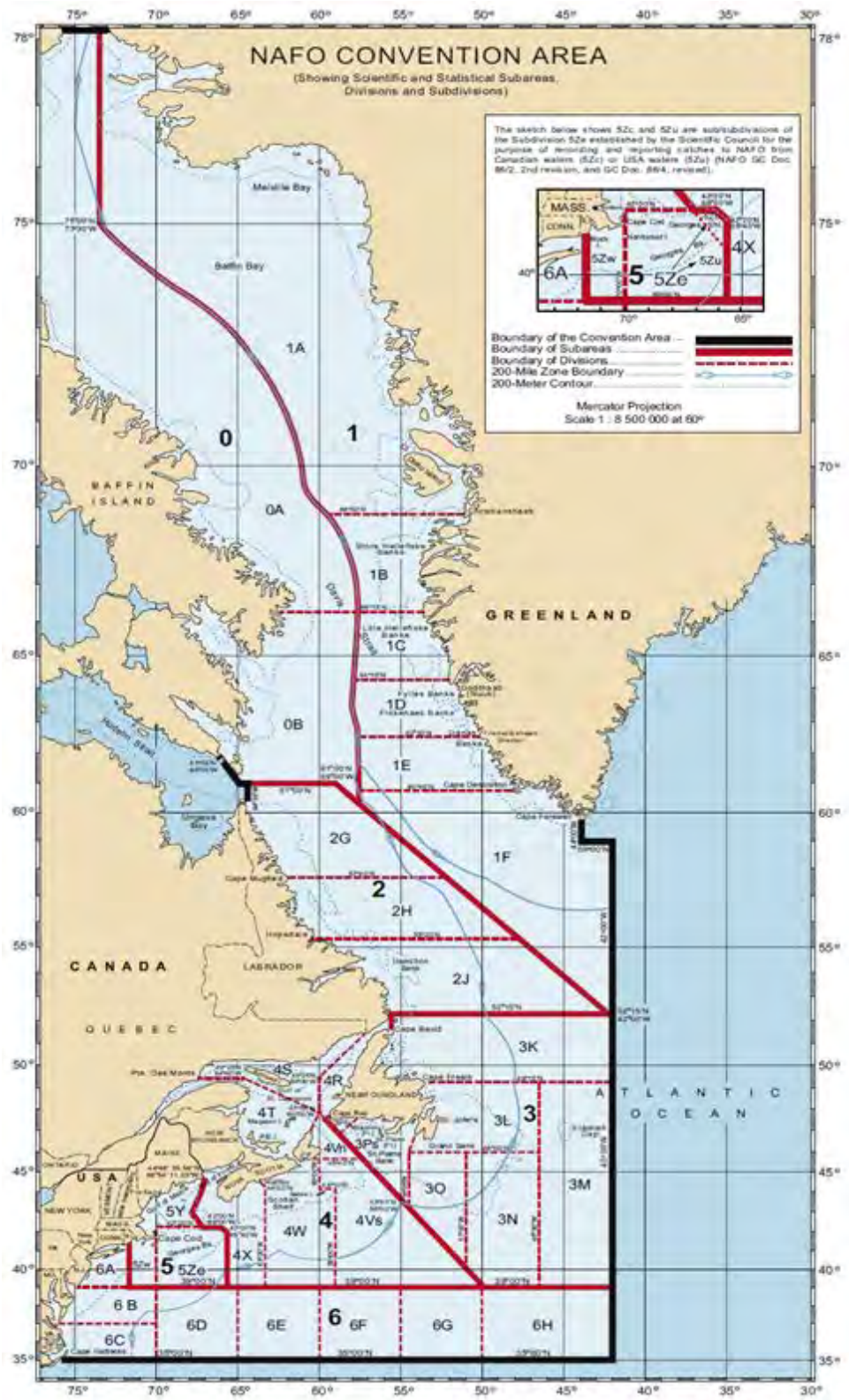
3.2.4.1 Historical River Herring Catch – NAFO (1960-2009)

The Northwest Atlantic Fisheries Organization (NAFO) is an intergovernmental fisheries science and management body founded in 1979, preceded by the International Commission of the Northwest Atlantic Fisheries (ICNAF), 1949-1978. Under the NAFO Convention, countries fishing within the (NAFO) Regulatory Area (RA) for certain NAFO managed species are required to report catches. The RA is an area outside of the coastal 200 nautical mile limit and within the NAFO Convention Area (Figure 2). In 1983, the United States established it's the Exclusive Economic Zone (EEZ) out to 200 nautical miles. Prior to that time, several foreign fleets along with the US fished within the would-be US EEZ. These fleets reported catches to NAFO.

Taking a historical perspective on oceanic river herring catch, reported river herring (alewife and blueback herring) catches by the U.S. and other countries are summarized using the NAFO database 21-A (Table 11, Figure 3). These included 1960-2009 catches reported in NAFO areas 5 and 6A-C, which generally overlap the EEZ. Reported catches from unknown areas and areas outside of NAFO areas were omitted. In addition, no river herring catches were reported for 6D, which overlaps the US EEZ. The NAFO database is available at http://www.nafo.int. Note that in the NAFO database, 'blueback shad' is the same as blueback herring.

Foreign countries catching river herring included Bulgaria, Germany, Spain, Poland, Romania, and Russia. Reported NAFO foreign river herring catch began in 1967 and ceased in 1990, peaking in 1973 at 36,154 mt with the majority of catch by Russia (former USSR). By comparison, the total catch for US and foreign vessels combined in 1973 was 37,192 mt. US river herring catch peaked in 1961 at 10,205 mt and again in 1973 at 10,797 mt. Prior to and following the establishment of the EEZ, river herring catches fell for both US and foreign countries. No river herring catches were reported from 1994-2001 and 2003-2006.

Figure 2 NAFO Convention Area



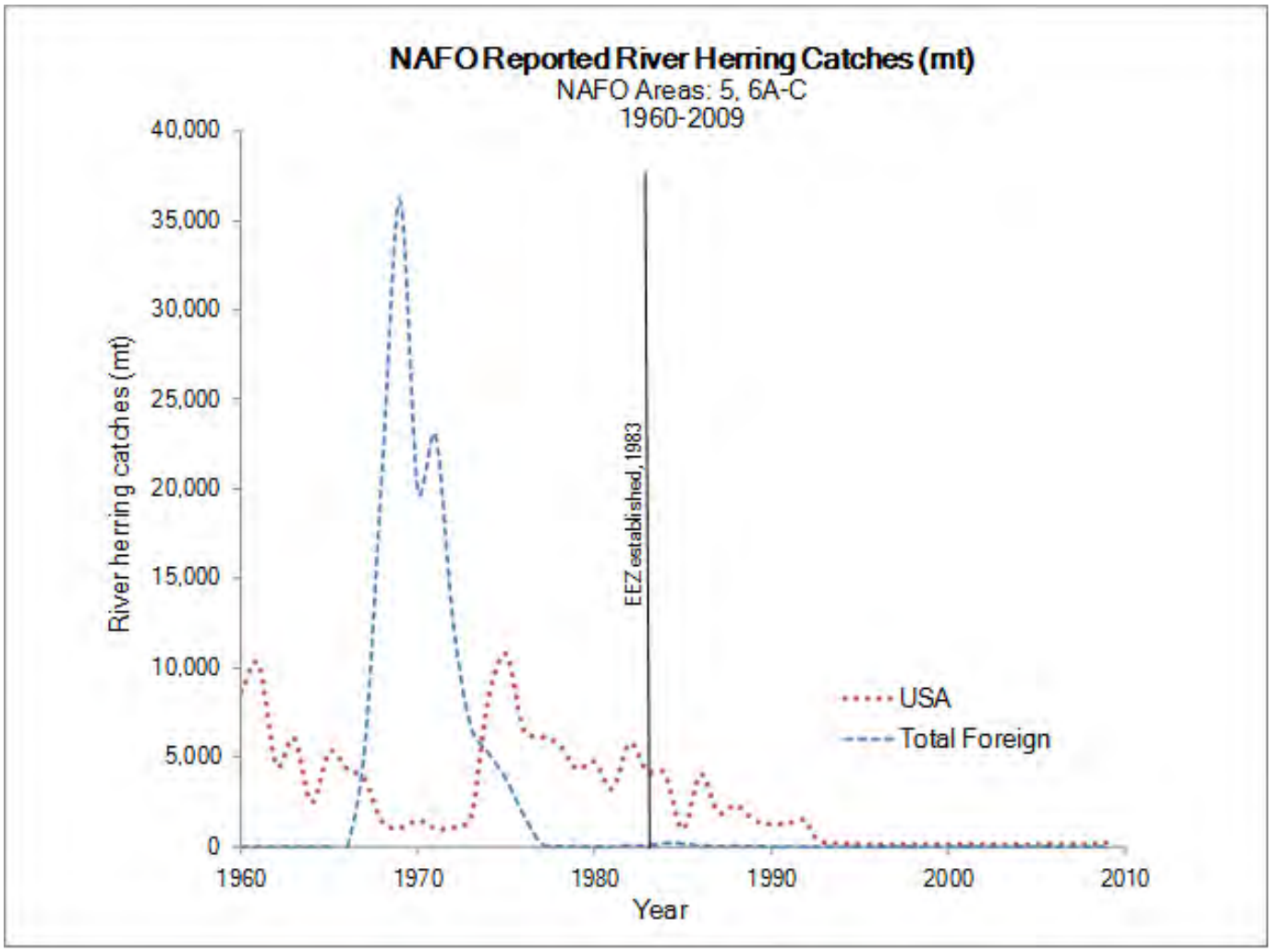
Source: NAFO, available at http://www.nafo.int/

Table 11 NAFO River Herring Catch (mt) by Country, 1960-2009

	NAFO River Herring Catches (mt)								
	Country								
Year	Bulgaria	Germany	Spain	Poland	Romania	Russia	Total Foreign	USA	Total
1960	0	0	0	0	0	0	0	8669	8669
1961	0	0	0	0	0	0	0	10205	10205
1962	0	0	0	0	0	0	0	4572	4572
1963	0	0	0	0	0	0	0	6071	6071
1964	0	0	0	0	0	0	0	2485	2485
1965	0	0	0	0	0	0	0	5326	5326
1966	0	0	0	0	0	0	0	4344	4344
1967	0	0	0	0	0	5531	5531	3754	9285
1968	0	0	0	0	0	21235	21235	1368	22603
1969	514	113	0	0	0	35527	36154	1038	37192
1970	672	190	0	0	0	19089	19951	1493	21444
1971	1039	8409	0	2225	95	11289	23057	1005	24062
1972	512	3481	0	1888	0	6693	12574	1057	13631
1973	811	1630	0	3251	0	1065	6757	1563	8320
1974	773	2659	0	1088	252	473	5245	8293	13538
1975	553	2121	0	62	0	1039	3775	10797	14572
1976	256	1260	0	14	0	244	1774	6482	8256
1977	0	69	0	0	0	120	189	6162	6351
1978	0	0	11	0	0	21	32	5730	5762
1979	0	0	0	0	0	12	12	4358	4370
1980	0	0	2	1	0	0	3	4762	4765
1981	0	0	0	10	0	0	10	3215	3225
1982	0	0	0	81	0	0	81	5799	5880
1983	0	0	0	77	0	0	77	4184	4261
1984	0	8	0	198	0	0	206	4075	4281
1985	0	23	0	157	0	0	180	960	1140
1986	0	17	0	47	0	0	64	4058	4122
1987	0	27	0	22	0	0	49	1911	1960
1988	0	29	0	30	0	0	59	2337	2396
1989	0	23	0	24	0	0	47	1509	1556
1990	0	14	0	0	0	0	14	1237	1251
1991	0	0	0	0	0	0	0	1327	1327
1992	0	0	0	0	0	0	0	1456	1456
1993	0	0	0	0	0	0	0	250	250
2002	0	0	0	0	0	0	0	129	129
2007	0	0	0	0	0	0	0	143	143
2008	0	0	0	0	0	0	0	130	130
2009	0	0	0	0	0	0	0	231	231

Source: 1960-2009 catches reported in NAFO areas 5 and 6A-C, database 21-A, available at http://www.nafo.int/

Figure 3 NAFO River Herring Catch (mt), 1960-2009



Source: 1960-2009 catches reported in NAFO areas 5 and 6A-C, database 21-A, available at http://www.nafo.int/

3.2.4.2 U.S. RH/S Landings (ACCSP)

The Atlantic Coastal Cooperative Statistics Program (ACCSP) ACCSP is a cooperative state-federal program established in 1995 that designs, implements, and conducts marine fisheries statistics data collection programs and integrates those data into a single data management system that will meet the needs of fishery managers, scientists, and fishermen. The scope of the ACCSP encompasses commercial, recreational, and for-hire fishery-dependent statistics for all living marine resources.

In keeping with its principles to ensure that fisheries-dependent commercial/recreational catch and effort data are complete, accurate, consistent, and compatible, the ACCSP opened the online Data Warehouse in 2002 and created the Standard Atlantic Fisheries Information System (SAFIS) in 2003. ACCSP continues to manage the data warehouses and provide comprehensive confidential and non-confidential data to various user groups and stakeholders. ACCSP supports various data collection programs along the Atlantic coast for the collection of fishery-dependent commercial landings data.

Table 12 summarizes RH/S landings by state group (North Atlantic (ME, NH, MA, RI, CT) and Mid-Atlantic (NY, NJ, DE, MD, VA) from the ACCSP Data Warehouse for 2007-2012.

Add Summary.

Table 12 RH/S Landings and Revenues for Mid-Atlantic and North Atlantic State Groups, 2007-2012 (ACCSP)

YEAR	COMMON NAME	MID-ATLANTIC		NORTH ATLANTIC		TOTAL	
		LBS.	$$$	LBS.	$$$	LBS.	$$$
2007	ALEWIFE	141,524	$45,151	742,323	$149,696	883,848	$194,847
	HERRING, BLUEBACK	17,526	$5,024	*	*	17,526	$5,024
	HERRINGS, RIVER	16,255	$221			16,255	$221
	SHAD, AMERICAN	189,536	$208,800	53,151	$38,640	242,687	$247,440
2007 Total		**364,841**	**$259,195**	**795,474**	**$188,336**	**1,160,316**	**$447,531**
2008	ALEWIFE	238,515	$36,731	1,180,340	$255,106	1,418,855	$291,836
	HERRING, BLUEBACK	10,609	$3,465	*	*	10,609	$3,465
	HERRINGS, RIVER	14,845	$360			14,845	$360
	SHAD, AMERICAN	55,895	$50,825	755	$690	56,650	$51,515
2008 Total		**319,864**	**$91,380**	**1,181,095**	**$255,796**	**1,500,959**	**$347,176**
2009	ALEWIFE	237,096	$44,438	1,392,570	$300,478	1,629,665	$344,916
	HERRING, BLUEBACK	6,202	$1,625	36,936	$367	43,138	$1,992
	HERRINGS, RIVER	12,977	$176			12,977	$176
	SHAD, AMERICAN	22,980	$14,953	31,028	$61,323	54,008	$76,277
2009 Total		**279,255**	**$61,193**	**1,460,534**	**$362,168**	**1,739,788**	**$423,360**
2010	ALEWIFE	211,606	$37,531	1,349,751	$292,030	1,561,356	$329,560
	HERRING, BLUEBACK	7,410	$1,226	36,528		43,938	$1,226
	HERRINGS, RIVER	13,283				13,283	
	SHAD, AMERICAN	16,754	$9,652	25,312	$30,591	42,066	$40,243
2010 Total		**249,053**	**$48,409**	**1,411,590**	**$322,621**	**1,660,643**	**$371,030**
2011	ALEWIFE	129,594	$33,484	1,155,489	$291,691	1,285,083	$325,174
	HERRING, BLUEBACK	19,181	$3,805	67,486		86,667	$3,805
	HERRINGS, RIVER	*	*	*	*		
	SHAD, AMERICAN	17,128	$18,996	27,020	$30,659	44,148	$49,655
2011 Total		**165,903**	**$56,284**	**1,249,995**	**$322,349**	**1,415,898**	**$378,634**
2012	ALEWIFE	46,656	$5,614	1,609,216	$426,488	1,655,871	$432,101
	HERRING, BLUEBACK	*	*	44,150		44,150	$0
	HERRINGS, RIVER	*	*				
	SHAD, AMERICAN	16,275	$13,228	43,729	$49,570	60,004	$62,797
2012 Total		**62,930**	**$18,841**	**1,697,095**	**$476,057**	**1,760,025**	**$494,899**

*Source: ACCSP. * denotes confidential data.*

3.2.4.3 Recent RH/S Landings by State (ASMFC)

Shad

Since the early 1800s, the American shad supported major commercial fisheries along the Atlantic coast and was one of the most valuable food fish of the U.S. Atlantic coast before World War II. The estimated U.S. Atlantic coast catch in 1896 was 50 million pounds, but it declined to approximately 10 million pounds per year between 1930 and 1960 and to about 2 million by 1976. Ocean harvest contributed about 11% of total Atlantic coast landings in 1978; this contribution increased yearly to approximately 67% by 1996 as ocean landings increased and in-river landings declined. The closure of the ocean-intercept fishery in 2005 lowered the coastwide total landings of American shad. Total coastwide harvest has averaged approximately 540,000 pounds annually since 2005.

Based upon landings data provided in ASMFC Compliance Reports from individual states and jurisdictions, 2011 in-river American shad landings totaled 642,535 pounds, a 14% increase from 2010 landings of 563,209 pounds. Combined landings from North Carolina and South Carolina (not shown in Table 13 below) accounted for 91% of the commercial harvest during 2011. The remainder of the in-river commercial harvest came from Connecticut, New Jersey, Delaware, PRFC, and Virginia. In 2011, Maine, New Hampshire, Massachusetts, Rhode Island, Pennsylvania, Maryland, DC and Florida reported no directed shad harvest in their state Compliance Reports. The National Marine Fisheries Service reported landings of shad totaling 642,535 in 2011. Each state is required to annually document that American shad ocean bycatch did not exceed 5% of the total landings (in pounds) on a per trip basis. Shad bycatch landings from ocean waters in 2011 comprised 8,683 pounds (VTR reports), or about 1.35% of the coastwide total.

Table 13 Commercial Shad Landings (Lbs) by State from Maine to New Jersey, 1999-2011

Year	ME	NH	MA	RI	CT	NY	NJ	Total
1999	77	1,667	101	20,076	20,219	97,631	121,009	**260,780**
2000	132	2,695	122	7,854	48,724	81,159	116,624	**257,310**
2001	216	368	477	30,777	26,869	60,170	122,543	**241,420**
2002	8	0	192	39,553	49,034	86,876	125,341	**301,004**
2003	2	1	503	17,548	50,407	61,098	107,036	**236,595**
2004	4	49	12	6,652	30,086	39,868	98,760	**175,431**
2005	88	3,877	0	191,312	69,333	90,932	25	**355,567**
2006	0	0	0	2,292	38,547	9,271	62,920	**113,030**
2007	0	0	0	783	51,572	50,040	58,981	**161,376**
2008	0	0	0	0	7,344	22,720	6,761	**36,825**
2009	0	0	0	176	40,998	10,204	2,660	**54,038**
2010	7,140	0	0	0	24,187	11,375	14,363	**57,065**
2011	0	0	0	0	32,183	2,606	12,167	**46,956**

Source: ASMFC; Recreational numbers included where available.

River Herring

River herring formerly supported significant commercial and recreational fisheries throughout their range. Fisheries were traditionally executed in rivers, estuaries, and coastal waters using weirs, traps, dip nets and gillnets. Commercial landings of river herring declined 95% from over 13 million pounds in 1985 to about 700,000 pounds in 2005. In 2011, river herring landings were reported from Maine, New Hampshire, New York, New Jersey, Delaware, Maryland, the Potomac River Fisheries Commission, North Carolina, and South Carolina, totaling 1,489,565, a 27% decrease from 2010 (2,052,601 pounds). The majority of the river herring landings (77%) were reported by the state of Maine (1.1 million pounds, with an additional 536,000 pounds of shad landings), followed by South Carolina (17%) and Maryland (3%). There is a moratorium for Massachusetts, Connecticut, Rhode Island, and Pennsylvania; New Jersey reported zero state-reported catch. Although recreational harvest data are scarce, most harvest is believed to come from the commercial industry.

Table 14 Commercial River Herring Landings (Lbs) by State from Maine to New Jersey, 1999-2011

Year	ME	NH	MA	RI	CT	NY	NJ	Total
1999	312,375	0	0	0	0	6,051	1,377	**319,803**
2000	246,680	0	0	77,985	574	98,845	2,246	**426,330**
2001	646,660	0	0	20	0	39,293	3,915	**689,888**
2002	819,554	0	0	0	12	40,716	4,669	**864,951**
2003	613,385	0	0	0	0	40,076	3,667	**657,128**
2004	543,172	0	89	0	0	36,685	7,131	**587,077**
2005	341,311	0	0	0	0	26,984	4,326	**372,621**
2006	1,178,758	0	0	0	0	23,505	3,414	**1,205,677**
2007	740,915	0	0	0	0	28,571	223	**769,709**
2008	1,170,469	8,137	0	0	0	0	631	**1,179,237**
2009	1,383,130	9,443	0	0	0	83	0	**1,392,656**
2010	1,334,515	7,392	31	36,232	0	17,142	1,517	**1,396,829**
2011	1,151,395	4,094	0	0	0	13,389	1,855*	**1,168,878**

**Includes in-river and coastal harvest*
Source: ASMFC; Recreational numbers included where available.

3.2.5 River Herring/Shad Catch by Atlantic Herring Vessels

River herring and shad are non-target species that are caught and/or landed incidentally in the Atlantic herring fishery. Some non-target species may be caught by the same gear while fishing for Atlantic herring, and may be sold assuming the vessel has proper authorization or permit(s) and the regulations allow for the sale of the species. When landed and sold, the non-targeted species are considered "incidental catch." Because of the high-volume nature of the Atlantic herring fishery, some non-targeted catch that is landed incidentally is not separated and identified as such; this is particularly true with species like river herring and shad, other alosine pelagic fish that look very similar to Atlantic herring. Sometimes, river herring and shad are referred to as bycatch in the herring fishery even if they are landed as incidental catch.

3.2.5.1 Sea Sampling (Observer) Data

Add Summary from data in appendices

3.2.5.2 Portside Sampling Data

Add Summary

River Herring Bycatch Avoidance Project (SMAST/SFC/MA DMF)

The following information is provided by SMAST, MADMF, and SFC staff

Update

Sustainable Fisheries Coalition (SFC) members account for the majority of US landings of Atlantic herring and mackerel. River herring species are also encountered in these directed fisheries. Minimizing unintended bycatch has been a goal of SFC members since fisheries managers alerted the industry in 2006 that the river herring species complex was depressed. To help achieve this goal, the SFC has joined with the Massachusetts Division of Marine Fisheries (MA DMF) and the University of Massachusetts Dartmouth School of Marine Science and Technology (SMAST) to develop river herring and American shad (alosine) bycatch avoidance methods through a pilot project. This collaboration seeks to develop (1) a predictive model of where alosines are likely to occur in space and time, (2) a real-time bycatch avoidance intra-fleet communication system, and (3) additional support for port sampling to inform the initiative. Three river herring bycatch avoidance systems, focusing on the times and locations with the most alosine bycatch, have been conducted. High levels of cooperation by industry members and the appearance of distinct spatial and temporal bycatch patterns within the avoidance areas suggests these systems may have resulted in reduced alosine bycatch. Several ranges of environmental variables with significantly different probabilities of catch for species of interests have been identified within the NMFS bottom trawl survey database. The MA DMF has sampled 13 of the 14 vessels that have landed in Massachusetts ports, and approximately 188 out of 360 trips (as of July 2012).

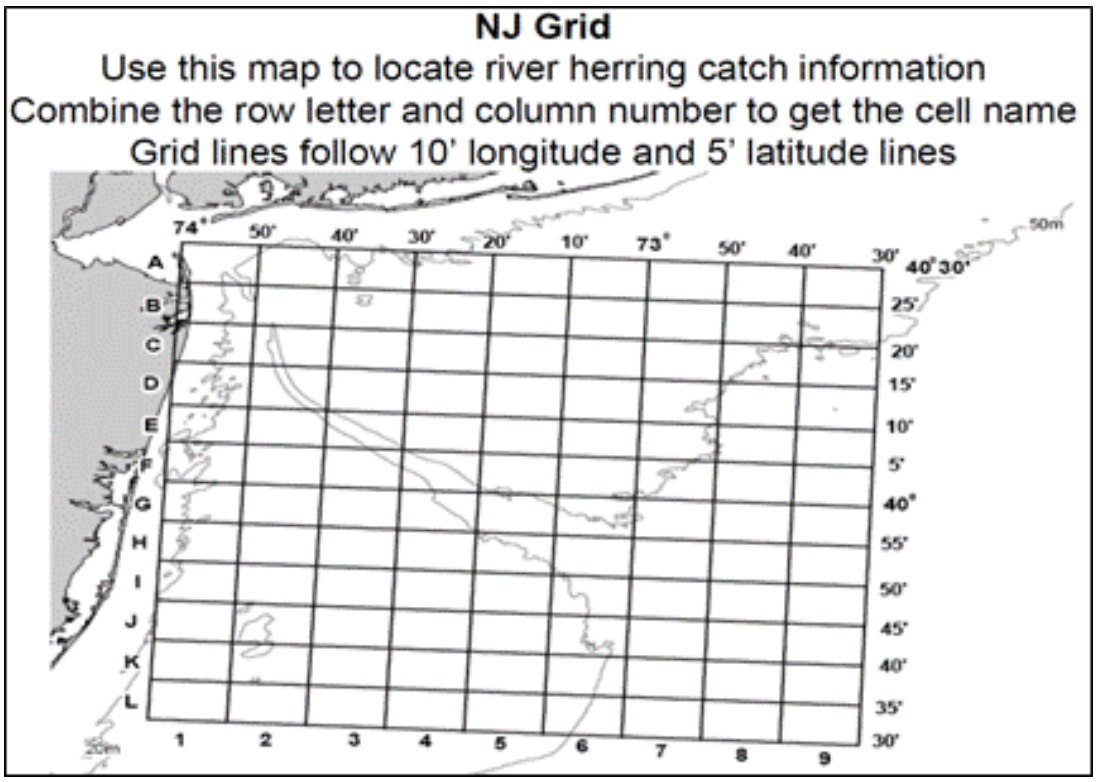
Real-Time Fleet Communication System

Since January 2011, thirteen (13) midwater trawl vessels and four (4) bottom trawl vessels have participated in four alosine bycatch avoidance systems. These voluntary bycatch avoidance systems operated under the hypothesis that alosines do not continuously school with Atlantic herring and mackerel while at sea. Therefore, with enough information and clear, quick communication, areas for vessels to fish that contain adequate amounts of target species but not large amounts of alosines could be identified. The following steps were taken to implement an initial voluntary bycatch avoidance program for midwater trawl vessels landing in Massachusetts during the 2011 winter fishery (January-March).

Determine Catch Information Source: One requirement of a near-real time information system is a reliable data source that systematically calculates bycatch rates and discloses fishing locations (Gauvin et al., 1996). Two programs, the Northeast Fisheries Observer Program (NEFOP) and the MA DMF portside sampling program, provide these data. The MA DMF portside sampling program samples approximately 50% of all Massachusetts landings and prior to 2010 about 85% of all midwater trawl landings occur in Massachusetts (MA DMF, unpublished data). Edited trip-level catch composition is available about 48 hours after a vessel lands. Tow locations were available through MA DMF trip logs voluntarily completed by vessel captains. From 2009-2010, the NEFOP sampled about 40% of Atlantic herring midwater trips, though about two-thirds of these samples were from July to December (NEFMC, 2012). Uncorrected tow level data were available about five days after a vessel landed (Beagley personal comm.). Due to coverage rates and timeliness, the MA DMF portside sampling program was the primary information source for this study while NEFOP data provided tow level catch information for trips with multiple tows and high alosine bycatch.

Reduce spatial scale: The Atlantic herring and mackerel fisheries range from coastal waters to a maximum of 66°E. During the winter, fishing effort occurs south of Cape Cod, MA to Virginia. A program over this entire range could make communications cumbersome and contains numerous alosine hotspots. An alternative approach was to conduct the program in one specific high bycatch area (Gauvin et al 1996, O'Keefe et al. 2010). Based on historic MA DMF port sampling, NEFOP data and Cournane and Correia (2010) an approximately 60x70 nm area off the coast of New Jersey was identified as the target bycatch hotspot (Figure 4).

Figure 4 Area of Focus for Winter 2011 Bycatch Avoidance System



Source: SMAST. This handout was distributed to captains and used to communicate bycatch information.

Determine Thresholds to Classify Catches: Large catches of alosines in the midwater trawl fishery are uncommon but account for the vast majority of alosine bycatch. From January 2000 through September 2010 the top 10% of tows with alosine bycatch (all tows with greater than 2,000kg of alosines) accounted for over 80% of NEFOP observed alosine midwater trawl bycatch by weight (Figure 5). Thresholds were set to identify trips with these large tows (Table 15). Ratio thresholds were used instead of hard numbers to avoid biases created by small tow or trip sizes. A ratio of 1:81kg (Alosine: Target species) identified a trip in the top 10% of alosine bycatch events while a ratio of 1:425 suggested a lower bycatch event. These ratios were used to classify trips as having high (1:80, greater than 1.25% alosines), low (1:425, less than 0.2% alosines), or moderate (between 1:80 and 1:425) amounts of bycatch.

Of 72 trips sampled by MA DMF portside sampling from May 2008 – July 2010, 55 had greater than 1 kg of alosine bycatch (Table 15). The six trips with the most bycatch (top 10%) all had greater than or equal to 2,000 kg and a ratio less than 1 kg of alosines:81 kg of target species. Trips with a ratio greater than 1:425 all had less than 900 kg of bycatch. Based on this, ratios of 1:80 (1.25%) and 1:425 (0.2%) were used to indicate high and low bycatch trips, respectively. Ratios between the two represented a buffer and identified a moderate trip.

Figure 5 NEFOP Observed Midwater Trawl Tows from January 2000-September 2010 Ranked Lowest to Highest by Amount of Bycatch

Source: SMAST
Of the 343 tows shown in the figure, the 35 tows with the most bycatch (grey box, top 10%) account for about 80% of observed bycatch.

Table 15 Bycatch Ratios on Top Six Trips Sampled by MA DMF

Trip rank (total alosine bycatch)	Alosine: Target ratio (kg)
1	1:49
2	1:26
3	1:63
4	1:81
5	1:72
6	1:64
14-55	>1:425

Source: SMAST

Develop Communication System: Vessels notified the MA DMF and SMAST through their shipboard e-mail system of their departure and landing times, hail weights, landing ports and other information. These emails allowed MA DMF portside samplers to meet vessels at ports and sample entire offloads. Edited and expanded catch data were relayed by MA DMF staff to SMAST less than 48 hours after vessels completed their offloads. This information as well as tow locations (from MA DMF trip logs) and any available NEFOP information was then accumulated and transformed into a weekly or bi-weekly bycatch advisory that was emailed to vessels. Bycatch information was accessed and shared with captains using a coded, grid system of small cells approximately 5x8 nm that was distributed to them (Figure 4). Based on the pace of the fishery weekly or bi-weekly advisories via email were appropriate. Advisories classify areas as either having low, moderate, or high bycatch and contained other information such as weekly bycatch rates or catches of river herring outside of the areas of focus. Information was not reported for cells without tows, and advisories only included information less than two weeks old. Cumulative bycatch information is available through the SMAST website (http://www.smast.umassd.edu/Bycatch_Avoidance/index.php).

Based upon the methods described above two additional avoidance systems for the midwater trawl fleet were implemented in the fall of 2011 and winter of 2012. The fall 2011 system targeted an area in the Gulf of Maine identified as a high river herring bycatch area. Due to a limited amount of Atlantic herring Total Allowable Catch when the Atlantic herring spawning area closure was opened to midwater trawl vessels, fishing activity occurred for approximately two weeks. Information indicating alosine bycatch was unlikely to occur at depths greater than 73 m was circulated prior to the launching of the bycatch information system. In the winter of 2012, the scope of the avoidance system was expanded to include an area off Rhode Island that is heavily utilized by the midwater fleet. The avoidance program methods were also adapted to create an avoidance program for Rhode Island small-mesh bottom trawl fishermen during the winter of 2012.

Amendment 5

Amendment 5 to the Atlantic Herring FMP implements a two-phase river herring bycatch avoidance strategy developed in cooperation with the fishing industry, represented by the Sustainable Fisheries Coalition (SFC) working in partnership with Massachusetts Division of Marine Fisheries (MA DMF) and UMASS Dartmouth School of Marine Science and Technology (SMAST). The SFC river herring bycatch avoidance project was funded by the National Fish and Wildlife Foundation (NFWF) in 2011 and 2012. A long-term river herring bycatch avoidance strategy would be developed, reviewed and potentially implemented through regulation for the Atlantic herring fishery through a two-phase approach, beginning in Amendment 5 and continuing with the establishment of river herring catch caps in Framework 3.

1. Phase I (Amendment 5) –

A. Identify Preliminary Bycatch Avoidance Areas

B. Focus/increase monitoring/sampling in the Monitoring/Avoidance Areas;

C. Establish mechanism for adjusting Monitoring/Avoidance Areas and implementing long-term river herring bycatch avoidance strategies in the future through a framework adjustment to the Herring FMP;

D. Work with SFC, SMAST, and MA DMF to support the current project, encourage the collection of additional information, and promote the development of long-term bycatch avoidance strategies.

During the continued development, and upon implementation of Amendment 5 (2014), the Council, through its staff and the Herring PDT, will continue to work with the SFC, SMAST, and MA DMF to evaluate progress related to the SFC river herring bycatch avoidance program. As details emerge and additional information becomes available, the PDT will update the Herring Committee/Council and assess various elements of the project, including data (nature, quality, and timeliness), and fleet compliance and communication. The Herring PDT will work with the SFC/SMAST/DMF during this time to evaluate the appropriateness of the River Herring Monitoring/Avoidance Areas and will develop recommendations for any adjustments to those areas, which would occur during Phase II (see following).

2. Phase II (Possible Framework Adjustment) –

Upon completion of the SFC bycatch avoidance project, the Council will review the results and consider developing a framework adjustment to implement any additional bycatch avoidance strategies that it deems to be appropriate (at this time, it appears that the timing for Phase II would be 2014-2015). During Phase II, the Council would:

- Formally evaluate the SFC/SMAST/DMF project and its results (through the Herring PDT, Herring Committee, and Council, with input from project participants and the Herring Advisory Panel) upon the project completion;
- Receive recommendations from the Herring PDT and Herring Committee (with input from the AP) regarding the need for/appropriateness of follow-up action to implement a long-term strategy for river herring bycatch reduction through a framework adjustment;
- Conduct an initial Framework Adjustment meeting – An initial framework meeting would be required in order to formally evaluate the results of the SFC/SMAST/DMF project and develop follow-up management action as necessary. During this process, and depending on the results of the SFC/SMAST/DMF project, the Council may determine that follow-up action is not necessary or appropriate.

The groundwork has been laid in Amendment 5, as well as through continued work with the parties involved in the project, for this approach to be utilized as a bycatch management/avoidance measure in the future. Overall, the Council believes that the river herring monitoring/avoidance measure from Amendment 5 dealing with bycatch management and mitigation can most effectively be addressed by the fishing industry on a real-time basis, in cooperation with management.

3.2.6 Overlap Between River Herring and Shad in the Atlantic Herring Fishery

As part of the analyses in Amendment 5, the Herring PDT evaluated the overlap between river herring and shad to determine whether the management measures designed to minimize river herring bycatch in the Atlantic herring fishery would have similar impacts on shad bycatch.

While there is significant overlap between shad and river herring, shads have a more southern distribution in general. The majority of shad is caught in state waters south of Virginia, outside of the range of the Atlantic herring fishery (see Section 3.2.4.3 of this document). For Amendment 5, though, the Herring PDT evaluated the coincidence of shad and river herring relative to encounters in the Atlantic herring fishery. Bycatch estimates from NEFOP observed trips that landed over 2,000 pounds of Atlantic herring from 2005 to 2009 were examined. Of the 1,099 individual hauls that were observed, 287 (26%) encountered river herring and 102 (9%) encountered shad (Table 16). Almost two-thirds of the hauls that caught shad also caught river herring, and over 80% of the shad catch came from hauls that also caught river herring (Table 17). The level of coincidence between the two species groups is even greater when the spatial distribution of bycatch events is considered. Only 4% of the ten-minute squares with observed tows had shad bycatch and no river herring bycatch (Table 18, Figure 6, Figure 7, and Figure 8). Furthermore, the shad caught from those areas only account for 1% of the total shad bycatch.

Table 16 Numbers of NEFOP Observed Hauls with River Herring (RHERR) and/or Shad on Trips that Landed Over 2,000 lbs. of Atlantic Herring, 2005-2009

	Bottom Trawl	Midwater Trawl	Purse Seine	Total
total observed hauls	169	768	162	1,099
hauls with RHERR	102	178	7	287
hauls with SHAD	17	84	1	102
hauls with both RHERR and SHAD	8	57	1	66
hauls with SHAD, but no RHERR	9	27	-	36

Source: MA DMF

Table 17 Estimated River Herring (RHERR) and Shad Bycatch from NEFOP Observed Trips that Landed over 2,000 lbs. of Atlantic Herring, 2005-2009

Estimated Bycatch (pounds)	Bottom Trawl	Midwater Trawl	Purse Seine	Total
total RHERR bycatch	44,319	540,771	1,041	586,131
total SHAD bycatch	1,974	45,587	128	47,689
total SHAD from hauls with no RHERR	1,165	6,790	-	7,955

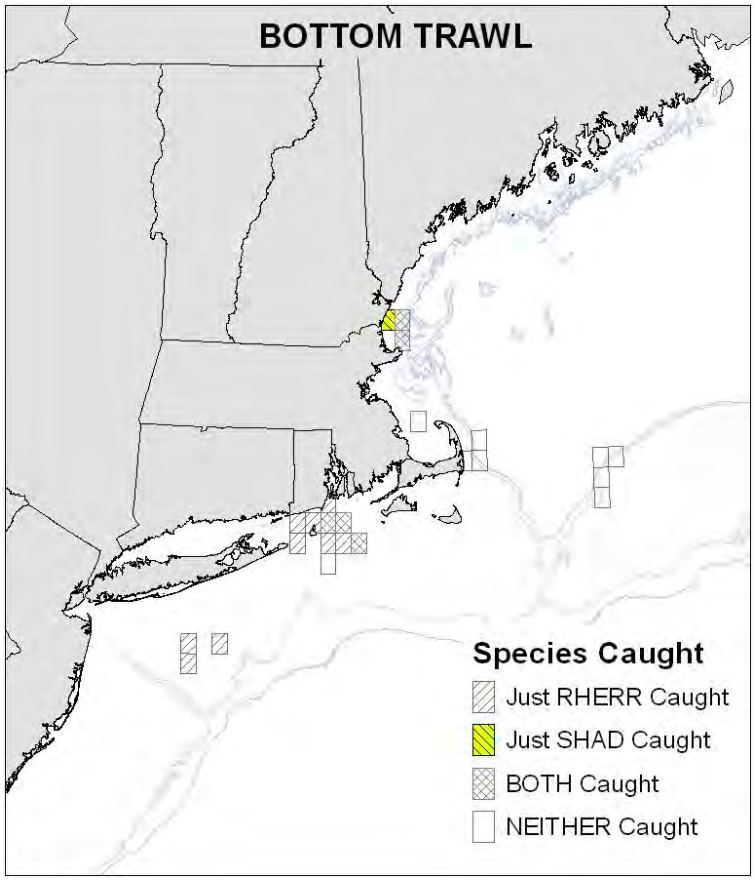
Source: MA DMF

Table 18 Numbers of 10-Minute Squares with Observed Hauls that Encountered Shad, but Not River Herring (RHERR)

	Bottom Trawl	Midwater Trawl	Purse Seine	Total
10-min squares with observed hauls	24	175	29	194
10-min squares with SHAD but no RHERR	1	6	0	7
Shad bycatch (lbs.) from 10-min squares with no RHERR	300	222	0	522

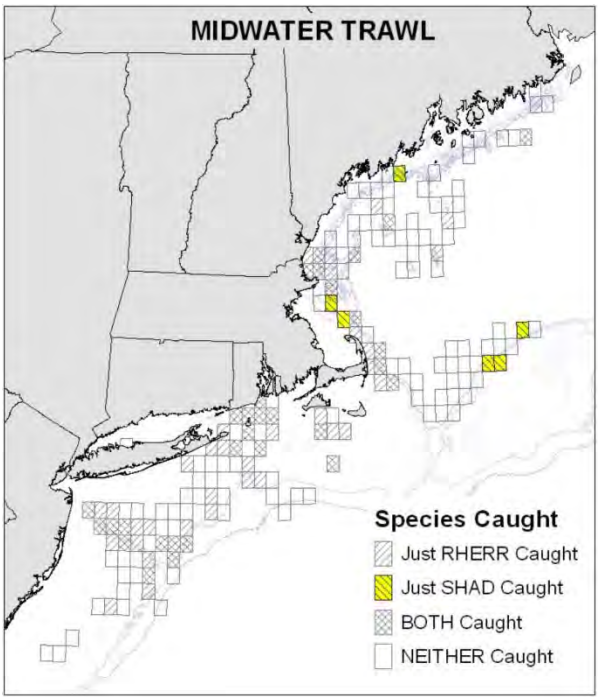
Source: MA DMF

Figure 6 Map of Overlap of Species Caught (Shad and River Herring) by Bottom Trawl Vessels



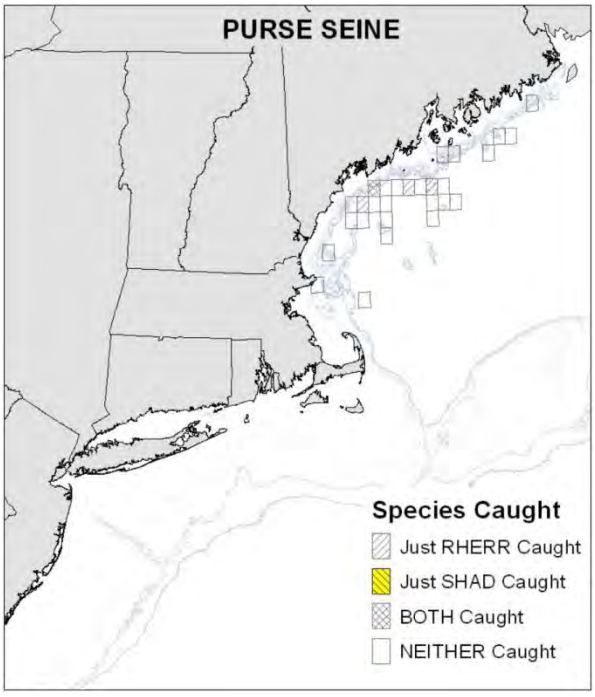
Source: MA DMF

Figure 7 Map of Overlap of Species Caught (Shad and River Herring) by Midwater Trawl Vessels



Source: MA DMF

Figure 8 Map of Overlap of Species Caught (Shad and River Herring) by Purse Seine Vessels



Source: MA DMF

3.3 NON-TARGET SPECIES AND OTHER FISHERIES

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

Table 19 summarizes coverage rates from the Northeast Fisheries Observer Program (NEFOP) for the 2009-2011 fishing years by gear type for all trips that landed greater than 2,000 pounds of Atlantic herring. During the 2011 fishing year, the Northeast Fisheries Observer Program (NEFOP) covered trips for about 55% of all midwater trawl, 45% of pair trawl, 25% of purse seine, and 13% of bottom trawl Atlantic herring landings. Observer coverage of mackerel catch has generally been less in recent years, partially because the observer program used to select away from trips that target mackerel but still notified for herring (this was due to coverage needs for herring related to groundfish).

Table 20 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. Note that 2012 VTR data are still considered preliminary.

Table 19 Observer Program Coverage Rates for Trips Landing Greater than 2,000 pounds of Herring, 2009-2011

Year	Gear Type	Total Trips	Total Days	Total Herring Landed (lbs.)	Obs Trips	Obs Days	Obs Herring Kept (lbs.)	% trips obs	% days obs	% herring obs
2009	OTF	180	306	9,647,215	11	15	554,579	6%	5%	6%
2009	OTM	50	242	13,875,075	16	69	3,747,316	32%	29%	27%
2009	PTM	356	1321	153,345,903	98	350	49,596,367	28%	26%	32%
2009	PUR	223	596	49,706,514	42	130	9,943,521	19%	22%	20%
2010	OTF	185	343	8,452,546	9	22	298,691	5%	6%	4%
2010	OTM	58	230	19,851,018	32	122	10,190,452	55%	53%	51%
2010	PTM	290	1129	98,165,321	128	545	47,528,352	44%	48%	48%
2010	PUR	222	506	18,799,340	24	58	1,850,818	11%	11%	10%
2011	OTF	175	368	9,449,163	24	59	1,208,293	14%	16%	13%
2011	OTM	61	165	17,647,500	27	91	9,758,411	44%	55%	55%
2011	PTM	295	1071	115,321,409	123	452	51,562,629	42%	42%	45%
2011	PUR	271	603	37,908,770	79	172	9,506,794	29%	29%	25%

OTF – small mesh bottom trawl; OTM – single midwater trawl; PTM – paired midwater trawl; PUR – purse seine
Herring is Atl Herring or Unk Herring;
Day defined as (date land - date sail) + 1;
Landings data from Vessel Trip Reports
Source: NEFSC Observer Program

Table 20 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%

Note: 2012 NEFOP observer data are final; VTR data are preliminary.

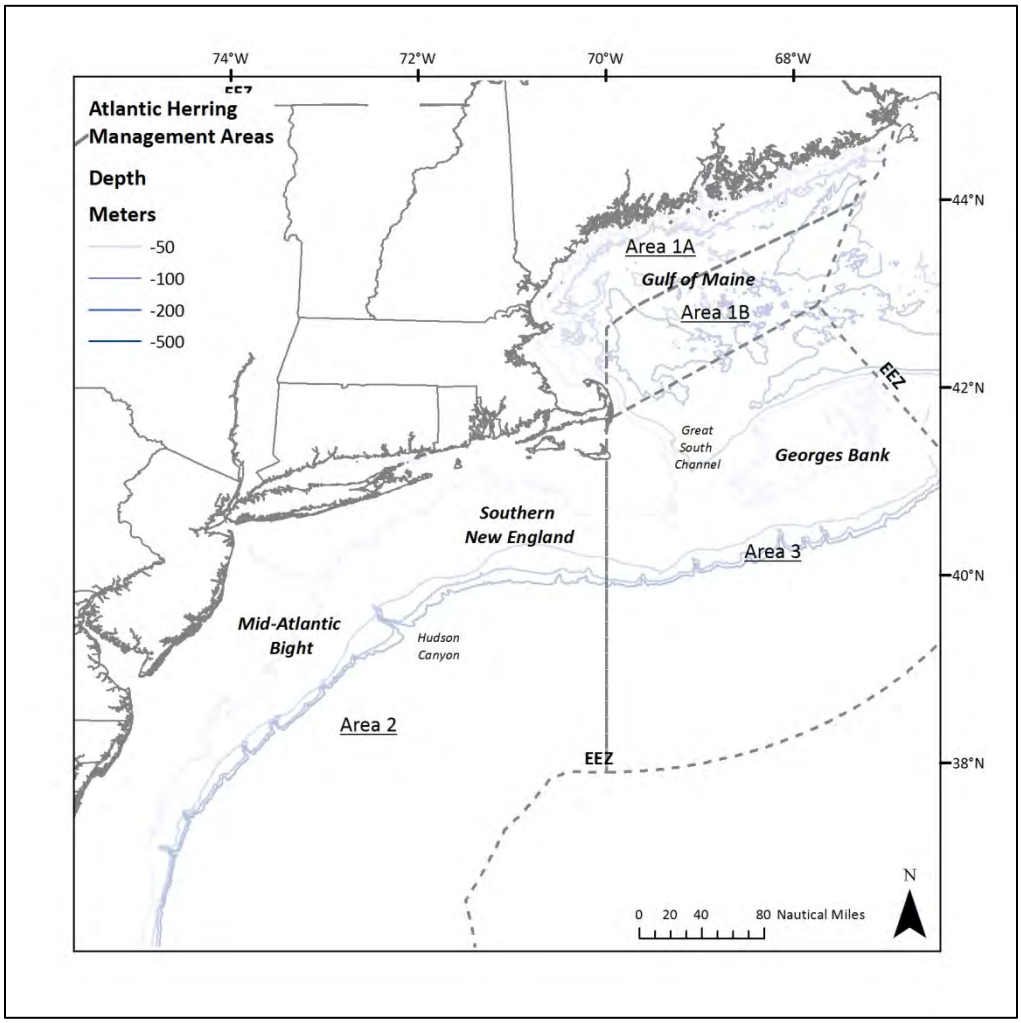
Add Summary SBRM Information

3.4 PHYSICAL ENVIRONMENT AND EFH

3.4.1 Physical Environment

The Atlantic herring fishery is prosecuted in four areas defined as 1A, 1B, 2, and 3 (Figure 9). 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 9 Atlantic Herring Management Areas and the Northeast U.S. Shelf Ecosystem



3.4.2 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 10 through Figure 13 and in Table 21 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 10. 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 11. 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 12. 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 13. 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 13. 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 21, according to life history stage. The Council acknowledges potential seasonal and spatial variability of the conditions generally associated with this species.

Table 21 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 10 EFH Designation for Atlantic Herring Eggs

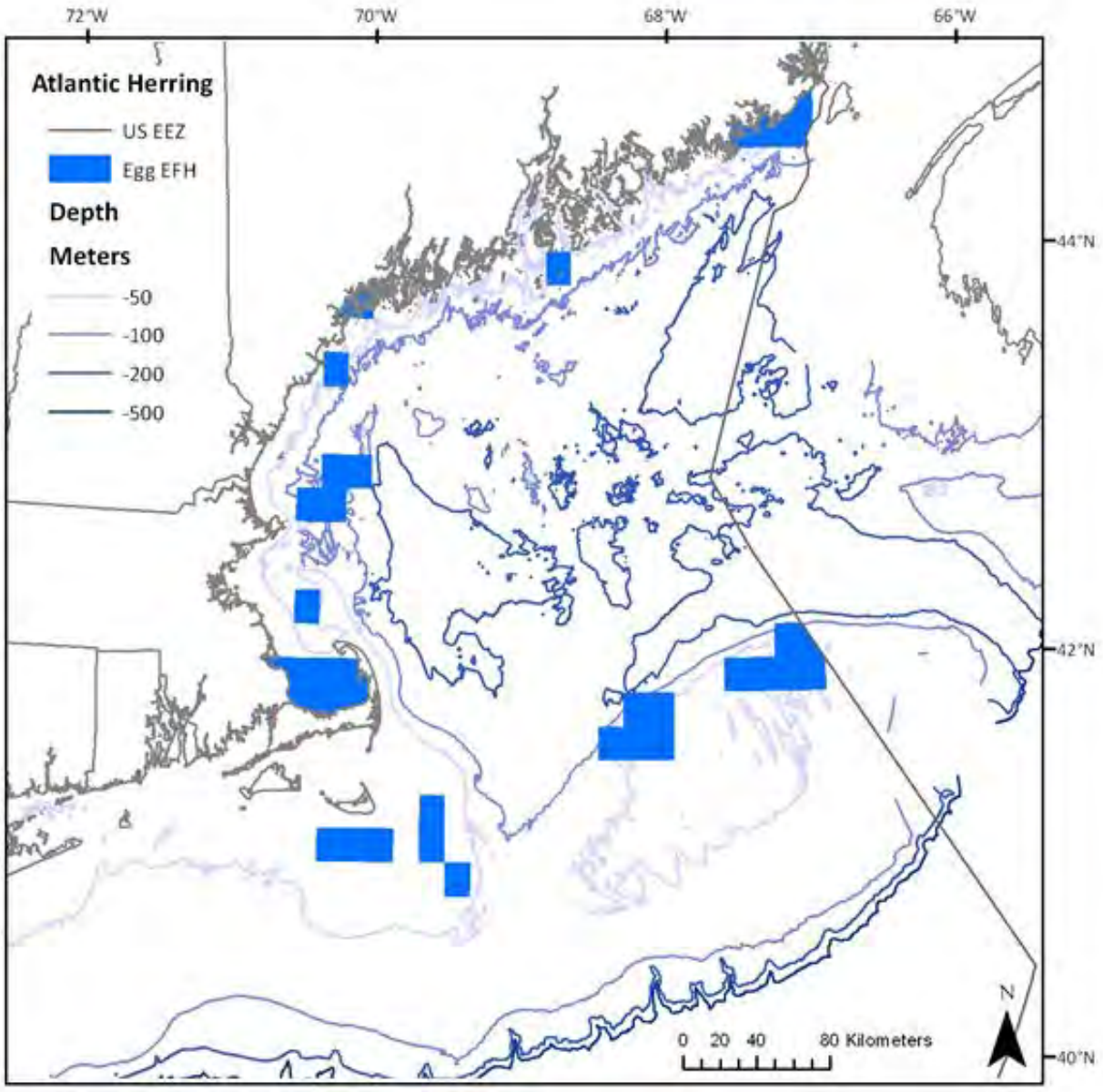


Figure 11 EFH Designation for Atlantic Herring Larvae

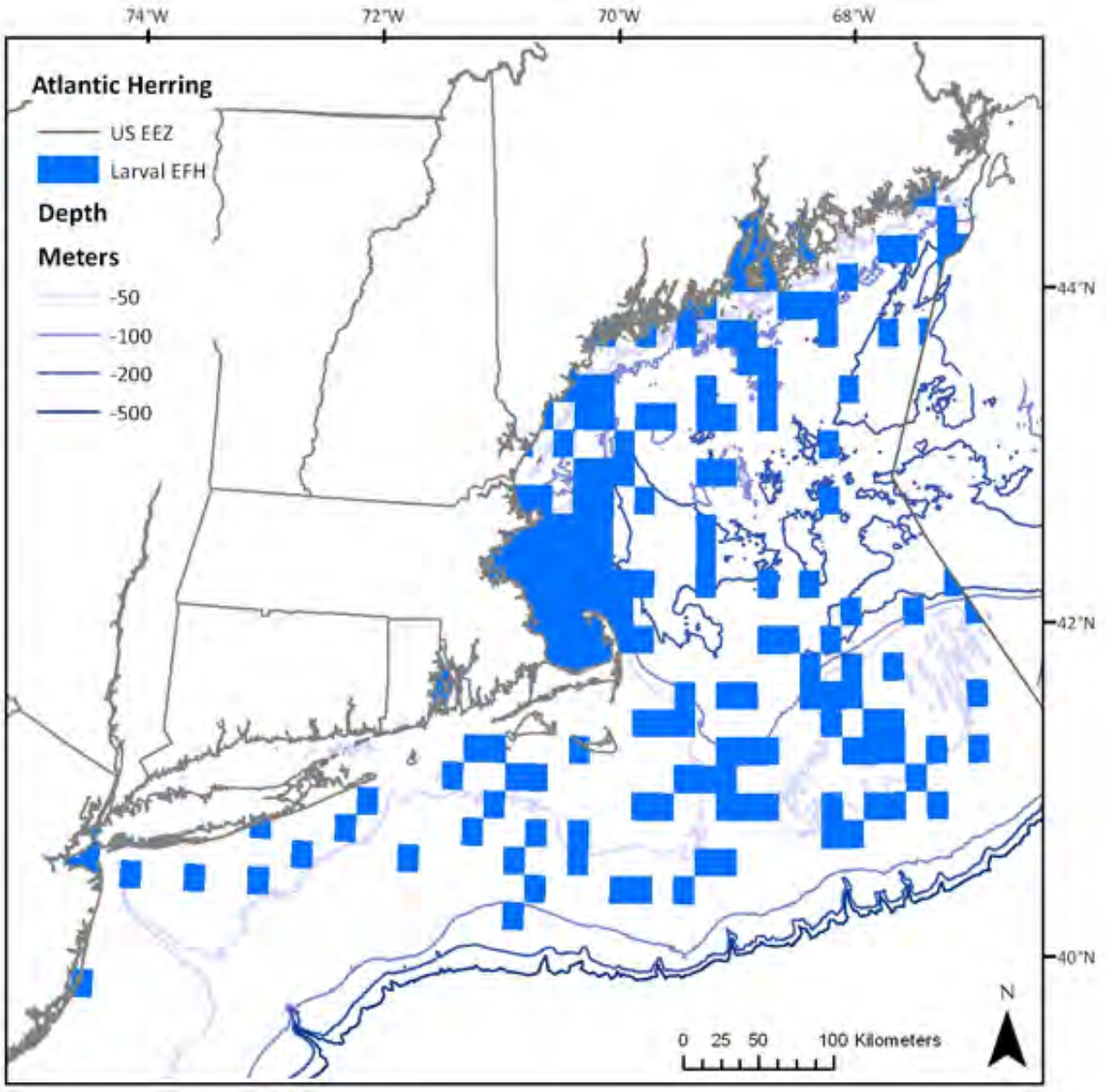


Figure 12 EFH Designation for Atlantic Herring Juveniles

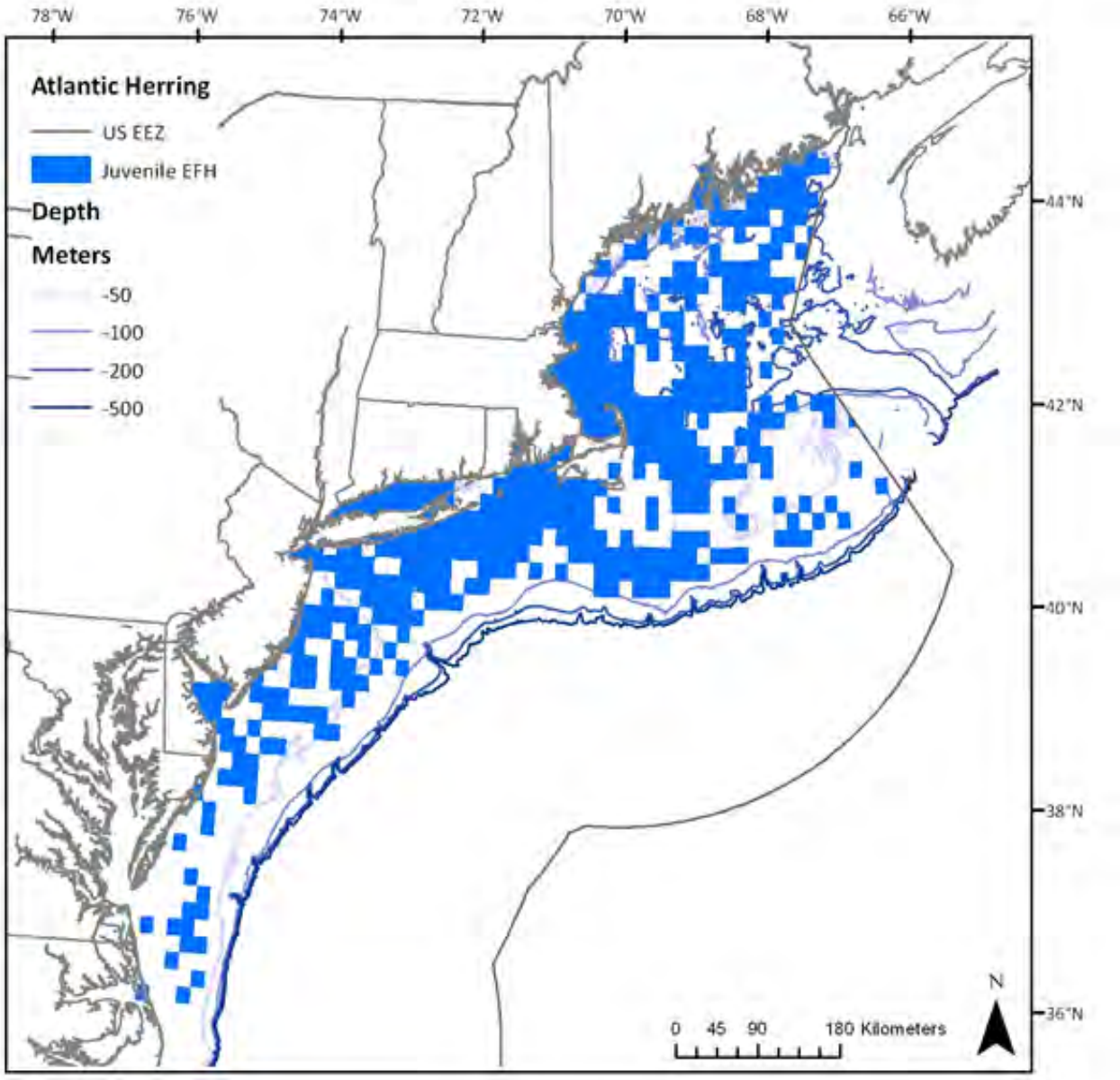
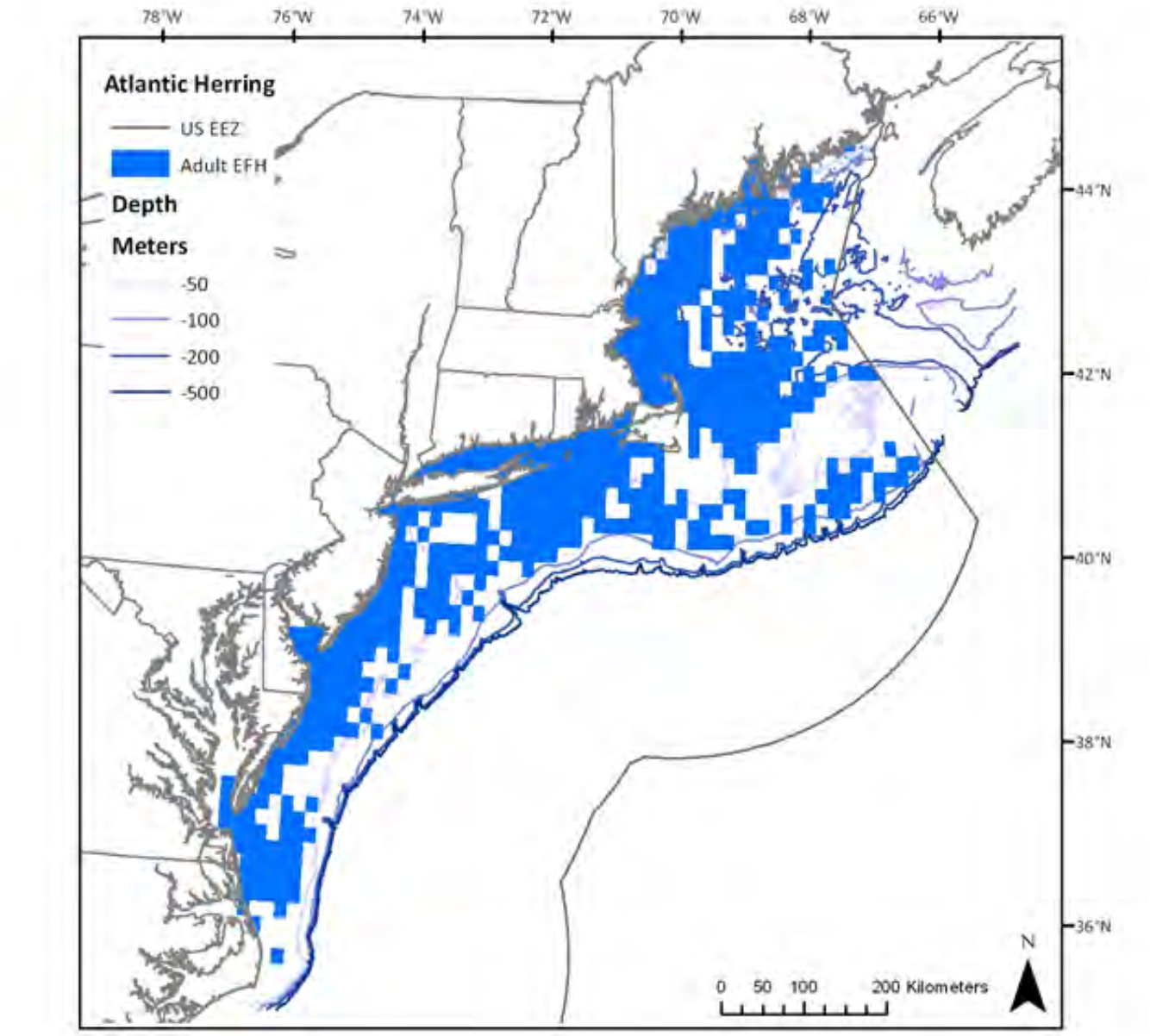


Figure 13 EFH Designation for Atlantic Herring Adults



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 22. Additional information can be found in the FMP document that most recently updated each species' EFH designation (last column in Table 22). 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 22 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: Current as of December 2012.

Table 22 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: Current as of December 2012.

3.5 PROTECTED RESOURCES

There are numerous protected species that inhabit the environment within the Atlantic Herring FMP management unit, and that, therefore, potentially occur in the operations area of the fishery. These species 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 23, 13 marine mammal, sea turtle, and fish species are classified as endangered or threatened under the ESA; the remaining species in Table 23 are protected by the MMPA and are known to interact with the 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.

3.5.1 Species Present in the Area

Table 23 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 fishery. Table 23 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. Updated information regarding the recent consideration of listing RH/S under the ESA is summarized below following Table 23.

Table 23 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.

River Herring/Shad Determination

On August 5, 2011, the National Marine Fisheries Service (NMFS) received a petition from the Natural Resources Defense Council (NRDC), requesting that alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*) be listed each as threatened throughout all or a significant portion of their range under the Endangered Species Act (ESA). In the alternative, NRDC requested that NMFS designate distinct population segments of alewife and blueback herring as specified in the petition (Central New England, Long Island Sound, Chesapeake Bay, and Carolina for alewives, and Central New England, Long Island Sound, and Chesapeake Bay for blueback herring). NMFS reviewed the petition and published a positive 90-day finding on November 2, 2011, determining that the information in the petition, coupled with information otherwise available to the agency, indicated that the petitioned action may be warranted. As a result of the positive finding, the agency is required to review the status of the species to determine if listing under the ESA is warranted.

The Atlantic States Marine Fisheries Commission (ASMFC) completed a stock assessment for river herring in May 2012, which they had been conducting since 2008, covering over 50 river specific stocks throughout the species U.S. range. This represented a significant effort on behalf of the ASMFC and the coastal states from Maine to Florida. NMFS recognized this extensive effort to compile the most current information on the status of these stocks throughout their range in the United States and, in order to not duplicate this effort, has been working cooperatively with ASMFC. NMFS will utilize the information from the stock assessment as a critical component in the ESA listing decision for these two species. Due to the nature of the stock assessment, it did not contain all elements necessary for making a listing determination under the ESA; therefore, NMFS identified the additional required elements and held workshops focused on addressing this information. The three workshops organized for this purpose addressed river herring stock structure, extinction risk analysis (ERA), and climate change. Reports from the stock structure and ERA workshop and working group meeting were compiled and are being independently peer reviewed by the Center for Independent Experts, and the report from the climate change workshop has been compiled and is also being reviewed. The peer review reports and additional climate change analysis and extinction risk modeling results will be available in September/October, 2012. NMFS used these reports and the modeling results along with the ASMFC river herring stock assessment and all other best available information to consider the petition for listing.

On August 12, 2013 NMFS published its review and findings relative to the petition to list river herring under the ESA. NMFS' review of the information pertaining to the five ESA section 4(a)(1) factors does not support the assertion that there are threats acting on either alewife or blueback herring or their habitat that have rendered either species to be in danger of extinction or likely to become so in the foreseeable future, throughout all or a significant portion of its range. Therefore, NMFS determined that listing alewife or blueback herring as threatened or endangered under the ESA is not warranted at this time.

While neither species is currently endangered or threatened, both species are at low abundance compared to historical levels, and NMFS indicated that monitoring both species is warranted. In its findings, NMFS acknowledged that there are significant data deficiencies for both species, and there is uncertainty associated with available data. There are many ongoing restoration and conservation efforts and new management measures that are being initiated/considered that are expected to benefit the species; however, it is not possible at this time to quantify the positive benefit from these efforts. Given the uncertainties and data deficiencies for both species, NMFS committed to revisiting both species in 3 – 5 years. NMFS has determined that this is an appropriate timeframe for considering this information in the future as a 3- to 5-year timeframe equates to approximately one generation time for each species, and it is therefore unlikely that a detrimental impact to either species could occur within this period. Additionally, it allows for time to complete ongoing scientific studies (e.g., genetic analyses, ocean migration patterns, climate change impacts) and for the results to be fully considered. Also, it allows for the assessment of data to determine whether the preliminary reports of increased river counts in many areas along the coast in the last two years represent sustained trends. During this 3- to 5-year period, NMFS intended to coordinate with ASMFC 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.

3.5.2 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, and 2011), 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).

3.5.2.1 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).

On March 16, 2010, the Services announced 12-month findings on petitions to list the North Pacific populations and the Northwest Atlantic populations of the loggerhead sea turtle as DPSs with endangered status and published a proposed rule to designate nine loggerhead DPSs worldwide, seven as endangered (North Pacific Ocean DPS, South Pacific Ocean DPS, Northwest Atlantic Ocean DPS, Northeast Atlantic Ocean DPS, Mediterranean Sea DPS, North Indian Ocean DPS, and Southeast Indo-Pacific Ocean DPS) and two as threatened (Southwest Indian Ocean DPS and South Atlantic Ocean DPS). On March 22, 2011, the timeline for the final determination was extended for six months until September 16, 2011 (76 FR 15932).

A final listing determination was published on September 22, 2011 (76 FR 58867). Unlike the proposed listing, the final listing 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).

3.5.2.2 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. 2011). 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 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.

3.5.2.3 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.

3.5.2.4 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.

3.5.2.5 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.

3.5.2.6 Species Not Likely to be Affected

The Gulf of Maine (GOM) Distinct Population Segment (DPS) of anadromous Atlantic salmon was initially listed by the USFWS and NMFS (collectively, the Services) as an endangered species on November 17, 2000 (65 FR 69459). A subsequent listing as an endangered species by the Services on June 19, 2009 (74 FR 29344) included an expanded range for the GOM DPS of Atlantic salmon

Presently, the GOM DPS includes all anadromous Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River. Included are all associated conservation hatchery populations used to supplement these natural populations; currently, such conservation hatchery populations are maintained at Green Lake National Fish Hatchery (GLNFH) and Craig Brook National Fish Hatchery (CBNFH). Coincident with the June 19, 2009 endangered listing, NMFS designated critical habitat for the GOM DPS of Atlantic salmon (74 FR 29300; June 19, 2009). The critical habitat designation for the GOM DPS includes 45 specific areas occupied by Atlantic salmon at the time of listing that include approximately 19,571 km of perennial river, stream, and estuary habitat and 799 square km of lake habitat within the range of the GOM DPS and in which are found those physical and biological features essential to the conservation of the species. The entire occupied range of the GOM DPS in which critical habitat is designated is within the State of Maine.

The action being considered in the 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.

3.5.3 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 24 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 24 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 the following table have the potential to be affected by the operation of the 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 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 (see Amendment 1 FEIS), 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 25 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 mid-water 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 mid-water 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, as well as that in Amendment 5, 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 26.

Table 26 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.

3.5.4 Actions to Minimize Interactions with Protected Species

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.

3.6 FISHERY-RELATED BUSINESSES AND COMMUNITIES

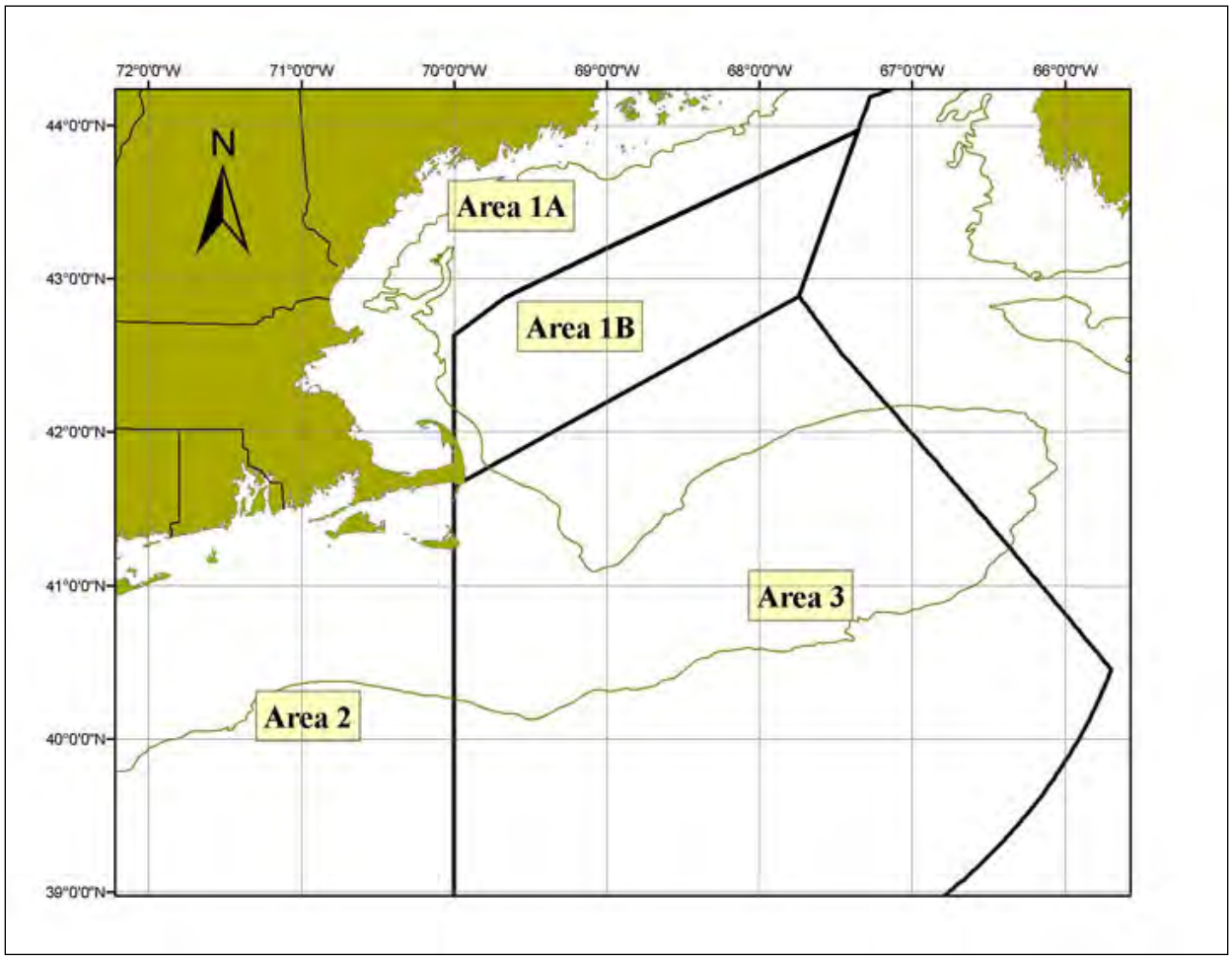
The U.S. Atlantic herring fishery occurs over the Mid-Atlantic shelf region from Cape Hatteras to Maine, including an active fishery in the inshore GOM and seasonally on GB. The herring resource is managed as one stock complex, but this stock is thought to be comprised of inshore and offshore components 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 14).

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

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

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

Figure 14 Atlantic Herring Management Areas



The 2013-2015 Atlantic herring fishery specifications were recently approved by the Council and submitted to NMFS for approval concurrently with Framework 2 to the Herring FMP, which would allow the Council to split sub-ACLs seasonally (by month) and would establish provisions for the carryover of some un-utilized sub-ACL during the specifications process. If approved by NMFS, the specifications summarized below in Table 27 will be effective for the 2013-2015 fishing years (initial allocations, not including overage deductions, carryovers, or set-aside deductions). A Final Rule for these specifications and the Framework 2 provisions is pending.

Table 27 Proposed 2013-2015 Atlantic Herring Fishery Specifications

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 (Pending Framework 2 Approval)

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

3.6.1 Catch in the Herring Fishery

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 the vessel monitoring system (VMS) catch reports and 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.

Changes to methods for monitoring Atlantic herring catch by Federally-permitted vessels (limited access and open access) started during the 2010-2012 specifications cycle due to overages in 2010, which resulted in the need for a more timely catch reporting system to better monitor catch against sub-ACLs. NMFS revised vessels reporting requirements (76 FR 54385) on September 2011; limited access herring vessels are now required to report herring catch daily via vessel monitoring systems (VMS), open access herring vessels are required to report catch weekly via the interactive voice response (IVR) system, and all herring-permitted vessels are required to submit vessel trip reports (VTRs) weekly. In-season monitoring methods (for sub-ACL monitoring) and year-end catch estimation methods (for determining overages/underages) for the herring fishery are described in the following sub-sections.

3.6.1.1 "In-Season" Catch Estimation

Catch in the herring fishery is tracked for sub-ACL monitoring using data provided by herring-permitted vessels (VMS catch reports and VTRs) combined with Federal/state dealer data. VMS catch reports are used to verify and determine catch when VTR and/or dealer records are unavailable, but VTR and dealer reports, once received, are used to determine final catch by area. Limited access herring vessels report catch daily via VMS, open access herring vessels report catch weekly via the IVR system, and all herring-permitted vessels submit VTRs weekly. Dealers also submit their reports weekly. The monitoring week extends from Sunday through Saturday. Vessel VTR reports and dealer reports are submitted by midnight on the following Tuesday.

Atlantic herring kept provided on the VMS catch reports are used as an initial place holder and summed by the VTR serial number provided on each VMS catch report. Once VTR and dealer reports are received, summed kept is matched to VMS catch reports using VTR serial number, and the kept from VMS catch reports drops out of the calculation. However, unmatched VMS catch reports are retained and included in the weekly herring report calculation by area.

Herring management area reported on VMS catch reports is assigned to the matched VTR and dealer reports using VTR serial number. If VTR and dealer reports do not match to a VMS catch report, herring management area is determined using the statistical area, latitude, and longitude provided on the VTR reports. If catch in multiple areas are reported for the same VTR serial number on VMS catch reports, then kept associated with that VTR serial number on the VTR and dealer reports are prorated using area proportions from the VMS catch reports. Once all matching is completed, summed dealer kept by area for a given VTR serial number is used in the weekly herring report unless VTR kept is greater than 90% of dealer kept, in which case VTR

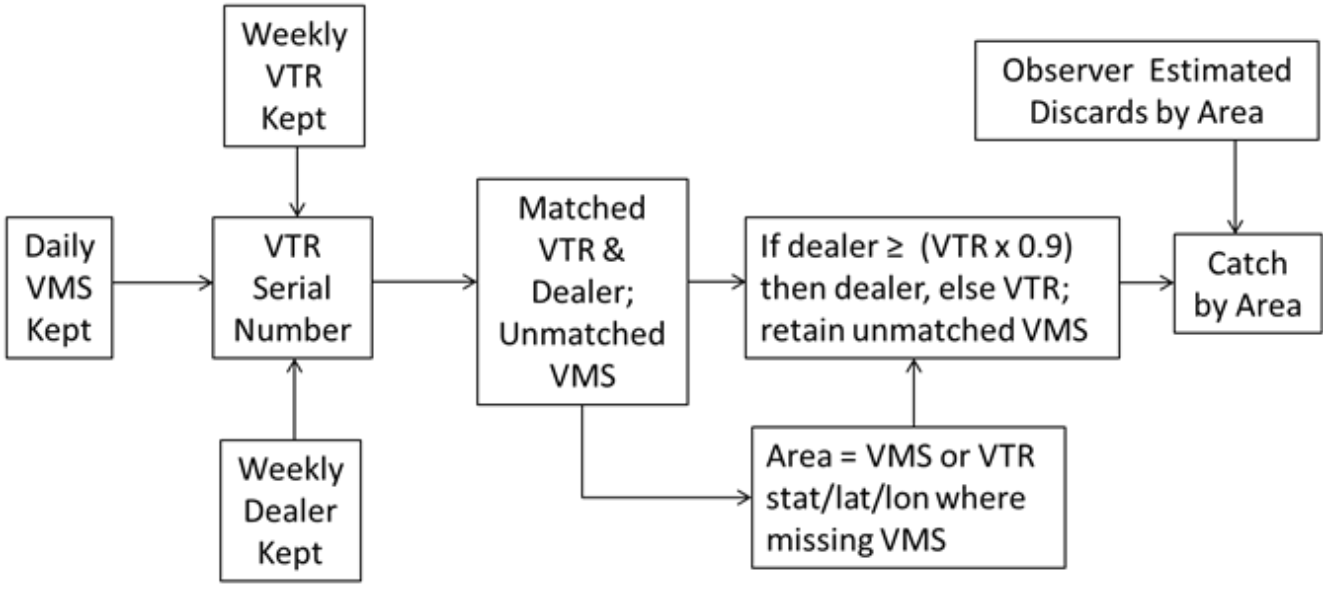
kept is used assuming missing dealer reports. As stated above, kept from unmatched VMS reports are also included in the area summation.

Discards of Atlantic herring by area are determined using the following formula, where NK = herring unknown:

$$\frac{Observed\ Atlantic\ Herring\ Discards + Atlantic\ Herring\ NK}{Observed\ Kept\ All\ Species} \times Vessel\ Kept\ All$$

Only discard and kept all data from observed hauls are used in calculating the discard ratio using data from the observer database. Discard ratios are determined for each area and gear type, and then multiplied by vessel kept all by area and gear type. Estimated discards for all gear types are then summed by area, resulting in a fleet-wide estimate of discards for Atlantic herring. Estimated discards by area are then added to the summed herring kept by area from VMS, VTR, and dealer reports as described in the previous section, providing total catch by area. A schematic of data flow is provided in Figure 15.

Figure 15 Atlantic Herring Weekly Reporting Calculation (Catch by Area)



3.6.1.2 "Year-End" Catch Estimation

NMFS determines final herring landings based on dealer reports (Federal and state) containing herring purchases, supplemented with VTRs (Federal and State of Maine) containing herring landings. Because VTRs are generally a hail weight or estimate of landings, with an assumed 10% margin of error, dealer reports are assumed to be more accurate source of landings data. However, if the amount of herring reported via VTR exceeds the amount of herring reported by the dealer by 10% or more, it is assumed that the dealer report for that trip is in error. In those instances, the amount of herring reported via VTR is used to determine the amount of herring landed on that trip. Herring landings in the VTR database are checked for accuracy against the scanned image of the paper VTRs submitted by the owner/operator of the vessel. VTR landings are also verified by comparing reported landings to harvesting potential and applicable possession limits for each vessel.

Herring landings reported on VTRs are assigned to herring management areas using latitude and longitude coordinates. VTRs with missing or invalid latitude/longitude coordinates are manually corrected using the statistical area reported on the VTR. If no statistical area is reported on the VTR, then a combination of recent fishing activity and a review of the scanned images of the original VTR are used to assign landings to herring management area. Dealer reports without corresponding VTRs are prorated to herring management area using the proportion of total herring landings stratified by week, gear type, and management area.

Year-End Herring Discards

Discards are estimated during the year and based on self-reported VMS reports. Discards of Atlantic herring by area are determined by NMFS using NEFOP observer data and applying the following formula, where NK = herring unknown:

(Observed Atlantic Herring NK/Observed Kept All Species) x (Vessel Kept All Species)

Only discard and kept all data from observed hauls are used in calculating the discard ratio. Discard ratios are determined for each area and gear type, and then multiplied by vessel kept all by area and gear type. Where vessel kept all area and gear type were missing on VTR's, observer ratios are multiplied by the weighted average of the discard ratios for all observed gear types by corresponding area. Estimated discards for all gear types were then summed by area resulting in a fleet-wide estimate of discards for Atlantic herring (provided by NMFS).

3.6.1.3 Recent Atlantic Herring Catch

Table 28 summarizes recent Atlantic herring catch estimates by year and management area from 2003-2012. The following bullets describe how these estimates were calculated.

- 2003-2006 catch estimates are provided from quota management implemented 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 catch estimates are based on IVR data supplemented with dealer data. Reported discards are included in the totals.
- 2010-2011 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 (see detailed description of NMFS' **"year-end" catch estimation** methods provided in Section 3.6.1.2). The new year-end 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, which tend to have fewer errors and are more accurate than self-reported discard data.
- 2012 catch estimates (preliminary) are based on NMFS' **"in-season" sub-ACL monitoring** methods (daily VMS catch reports and VTR reports, supplemented with state/federal dealer data, see Section 3.6.1.1 for more information). Reported herring discards are included in the totals.

Table 28 Atlantic Herring Catch by Year and Management Area, 2003-2012

YEAR	AREA (sub-ACL)	CATCH (MT)	QUOTA (MT)	PERCENT of QUOTA CAUGHT
2003	1A	61,516	60,000	103%
2003	1B	5,271	10,000	53%
2003	2	13,835	50,000	28%
2003	3	20,985	60,000	35%
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	25,057	27,668	91%
2012*	1B	4,278	2,723	157%
2012*	2	22,949	22,146	104%
2012*	3	40,845	38,146	107%

Source: NMFS.

Note the shaded rows indicate overages.

**2012 data are preliminary based on NMFS' in-season catch monitoring (Section 3.6.1.1).*

Table 29 summarizes total Atlantic herring catch as a percentage of the total available catch in each year from 2003-2012. Catch by the U.S. fishery 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 fishery has therefore become more fully utilized in recent years and experienced the first stockwide ACL overage in 2012 (based on preliminary data). Once 2012 data are finalized, the overage deduction will be applied to the stockwide ACL for the 2014 fishing year.

Table 29 Total Annual Atlantic Herring Catch 2003-2012

YEAR	TOTAL HERRING CATCH (MT)	TOTAL QUOTA ALLOCATED (MT)	PERCENT OF TOTAL QUOTA CAUGHT
2003	101,607	180,000	57%
2004	93,205	180,000	52%
2005	96,116	150,000	64%
2006	98,714	150,000	66%
2007	85,819	145,000	59%
2008	83,240	143,350	58%
2009	103,943	143,350	73%
2010	72,852	91,200	80%
2011	86,245	93,905	92%
2012*	93,130	90,683	103%

Source: NMFS.
Note the shaded rows indicate overages.
**2012 data are preliminary based on NMFS' in-season catch monitoring (Section 3.6.1.1).*

Recent ACL/Sub-ACL Overages

Update
Due to the of the high volume and seasonal nature of the fishery and restrictions on fishing times (e.g. days out, spawning restrictions), recent quota overages have tended to occur primarily in the most active areas of the fishery and in years when substantial reductions in quota have been implemented. Since the implementation of herring quota management in 2001, there were no total ACL overages from 2003 to 2011, and sub-ACL quota overages (shaded rows) have been relatively infrequent and minor in scale (see Table 28). In terms of magnitude, the largest overage under quota management occurred in Area 1B during the 2006 fishing year, where 3,000 mt of additional herring were caught (about 6.6 million pounds). Some of this overage may have been attributable to mis-reporting of management area fished and may have been addressed through the area boundary changes implemented in Amendment 1. The following describes Table 30, and provides data on the herring catch and sub-ACL totals for 2011 and 2012 along with the overages that apply to the 2013 sub-ACLs.

To account for the 2010 overages in Areas 1A and 1B, effective February 24, 2012, NMFS reduced the 2012 sub-ACLs in Areas 1A and 1B. Therefore, the sub-ACL for Area 1A is 24,668 mt (reduced from 26,546 mt) and the sub-ACL for Area 1B is 2,723 mt (reduced from 4,362 mt) for the 2012 fishing year (see Table 30). Due to the under harvest of the New Brunswick weir fishery in 2012 an additional 3,000 mt was allocated to Area 1A on November 1, 2012. An additional 295 mt was also allocated to Area 1A on November 1, 2012 due to the under harvest of the fixed gear fisheries west of Cutler, Maine. The total 1A sub-ACL for the 2012 fishing year was therefore 27,668 mt.

On November 13, 2012, NMFS published the Proposed Rule announcing that the 2013 herring specifications will not be in place on January 1, 2013 and that the 2012 herring specifications will remain in place on January 1, 2013 until the 2013-2015 specifications are implemented. The regulations at §648.200 (d) include a provision that allows the previous years' specifications to roll over when the specifications are delayed past the start of fishing year. Therefore, the sub-ACL for Area 1A would be revised from 26,546 mt to 25,121 mt (a reduction of 1,425 mt) to account for the 2011 catch overage (Table 30). The Final Rule for the 2013 adjustments was published on February 25, 2013. When the new 2013 specifications are finalized, then the 1,425 mt overage will be deducted from the final 2013 Area 1A sub-ACL.

Atlantic herring catch seen in the preliminary 2012 totals in Table 30 suggests that there are overages for Areas 1B, 2, and 3. As a result, the indicated sub-ACL overages also indicate there is likely a total ACL overage for the 2012 fishing year, (currently the only year with a total ACL overage). The resulting 2014 sub-ACLs are to be determined.

Table 30 Atlantic Herring Catch – 2011 and 2012 Overages and Resulting 2013 and 2014 Sub-ACLs

YEAR	AREA NAME	CATCH (MT)	SUB-ACL (MT)	% SUB-ACL CAUGHT	2013 SUB-ACL (MT)
2011	1A	30,676	29,251	105%	25,121
2011	1B	3,530	4,362	81%	4,362
2011	2	15,001	22,146	68%	22,146
2011	3	37,038	38,146	97%	38,146
TOTAL		86,245	93,905	92%	89,775
YEAR	**AREA NAME**	**CATCH (MT)**	**QUOTA (MT)**	**% QUOTA CAUGHT**	**2014 Quota (MT)**
2012*	1A	25,057	27,668	91%	TBD
2012*	1B	4,278	2,723	157%	TBD
2012*	2	22,949	22,146	104%	TBD
2012*	3	40,845	38,146	107%	TBD
TOTAL		93,130	90,683	103%	TBD

Source: NMFS.
Note the 2013 sub-ACLs are based on rolling over the 2012 Herring specifications per the Proposed Rule in FRN dated November 13, 2012.
Note the shaded rows indicate overages.
**2012 data is preliminary based on real-time quota monitoring methodology.*

3.6.2 Haddock Bycatch in the Atlantic Herring Fishery

Framework 43 and Framework 46 to the Northeast Multispecies (Groundfish) FMP address the bycatch of regulated multispecies, primarily haddock, in the Atlantic herring fishery. The haddock catch cap was first established in Framework 43 and is based on the multispecies fishing year (May 1-April 30).

In 2006, Framework 43 to the Groundfish FMP:

- Established a haddock catch cap and monitoring program and a multispecies incidental catch allowance (100 pounds) for the directed herring midwater trawl fishery; and
- Modified the classification of herring fishing gear relative to the multispecies fishery.

To meet the objectives identified above, Framework 43 adopted a cap on bycatch by the herring midwater trawl fleet of 0.2% of the combined target total allowable catch (TAC) for GOM and GB haddock. In 2011, Framework 46 changed Framework 43 catch cap provisions due to the increase in haddock biomass, especially in Georges Bank (GB), as the 0.2% cap was attained before the end of fishing year 2010. The primary purpose of Framework 46 was to:

- Maximize the opportunity for the Georges Bank (Area 3) herring sub-ACL to be caught;
- Provide incentives to fish offshore;
- Provide incentives to fish in a manner, at times, and in areas when and where haddock bycatch is none to low; and
- Reduce the impact of a haddock cap on the entire herring fishery.

Under Framework 46, the midwater trawl fleet (which includes 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 by expanding NEFOP sea sampling observations to the entire fleet by haddock stock area.

Accountability Measures (AM)

Because the haddock catch cap is a sub-ACL specified in the Multispecies FMP, it requires a corresponding accountability measure (AM). The AM for the haddock catch cap was formally implemented through Amendment 4 to the Herring FMP. The catch cap AM provisions state that when the Regional Administrator determines that the haddock catch cap has been caught, all midwater trawl vessels issued a herring permit are prohibited from fishing for, possessing, or landing herring in excess of 2,000 lb per trip in the appropriate AM area (see below, Figure 16). Additionally, the haddock possession limit for all midwater trawl vessels issued a herring permit is reduced to 0 lbs in the appropriate AM area. The 0 lb haddock possession limit does not apply to herring vessels that also possess a multispecies permit and are operating on a declared groundfish trip.

There is also an AM to address haddock catch cap overages. Once the total catch of haddock by midwater trawl vessels for a fishing year is determined, using all available information, any haddock sub-ACL overage would result in a reduction of the corresponding ACL/sub-ACL the following year. For example, if final accounting of the 2012 total haddock midwater trawl catch in the GB haddock stock area, which is generally available in the spring of 2013, indicated that the GB haddock midwater trawl sub-ACL was exceeded by 5 mt, then, in 2013, the sub-ACL for GB haddock would be reduced by 5 mt to account for the overage that occurred during 2012. Any overage deductions will be announced by NMFS in the *Federal Register* prior to the start of the groundfish fishing year. The GB haddock catch cap AM area depicted in Figure 16 is based on the statistical areas where 90 percent of the commercial haddock catch was caught from 2006– 2009.

Figure 16 Herring Management Areas and Georges Bank Haddock Catch Cap AM Area

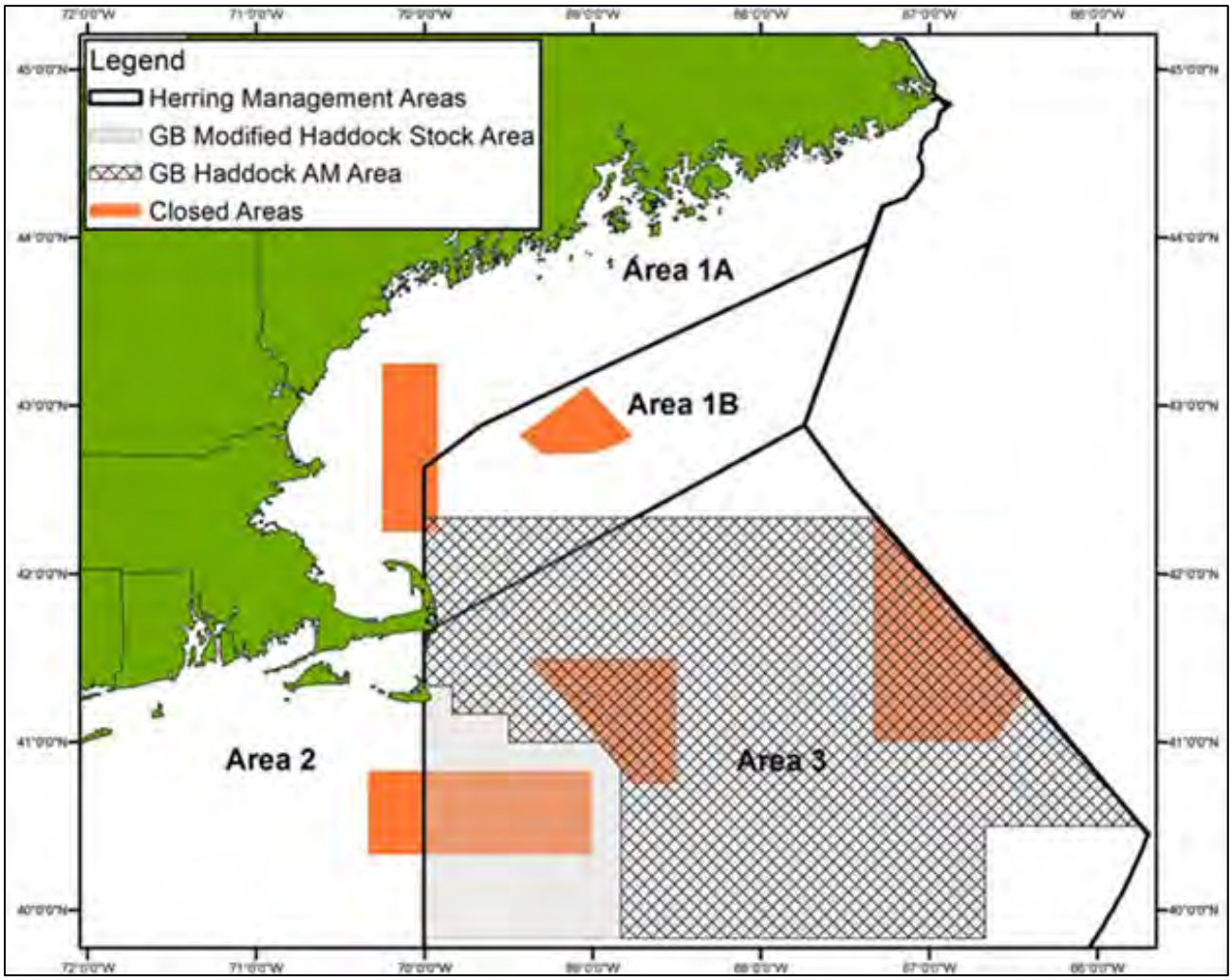


Table 31 summarizes haddock catch in the herring fishery by herring vessels subject to the Framework 43 and Framework 46 haddock catch caps from 2006 – 2012. The catch cap was not applied by gear type and haddock stock area from 2006-2010, and data from observed tows only were counted against the cap for those years. The catch in the GOM and GB areas was combined for the report/data for these years (2006-2010).

Table 31 also provides haddock catch by the herring midwater trawl vessels during 2011 and 2012, under Framework 46 provisions, when the haddock catch cap was split into two areas (GOM and GB) and applied to midwater trawl vessels. Starting in 2011, data used to estimate/monitor the cap include observer data, vessel trip reports (VTR), and dealer reports. During the 2012 groundfish fishing year, the haddock catch cap was fully utilized in the GB area. The 2013 GB haddock catch cap is 273 mt, and the GOM haddock catch cap is 3 mt. At the time of this writing, about 12% of the 2013 GB haddock catch cap has been utilized by the midwater trawl fleet (31,95 mt/70,437 pounds haddock caught since May 1, 2013).

Table 31 Haddock Catch by Midwater Trawl Vessels Subject to Framework 43 and Framework 46 Haddock Catch Cap (2006-2012)

FY	2006	2007	2008	2009	2010	2011		2012	
Areas	Gulf of Maine and Georges Bank Combined					GB	GOM	GB	GOM
Catch in Lbs.	18,067 (8 mt)	13,496 (6 mt)	37,126 (17 mt)	52,382 (24 mt)	153,382 (70 mt)	223,546 (101 mt)	5,544 (3 mt)	628,317 (285 mt)	0 (0 mt)
% of Cap	11.2	3.3	6.8	16.5	81	31.89	23.26	100	0
Cap in Lbs.	161,377 (73 mt)	404,991 (184 mt)	541,925 (246 mt)	316,218 (143 mt)	189,597 (86 mt)	701,063 (318 mt)	24,251 (11mt)	630,516/ (286 mt)	19,841 (9 mt)

Catch Caps are based on groundfish fishing year (May 1 – April 30).
Source: NOAA/NMFS (http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm)

Table 32 compares Atlantic herring catch in Area 3 to the haddock catch cap on GB for years 2006-2012. Area 3 was chosen as a comparison to GB haddock because as Figure 16 indicates, GB and Area 3 not only overlap, but also experience the highest amount of haddock incidental catch by midwater trawl vessels (Table 31). As explained above, the catch cap was split into GB and GOM and applied to midwater trawl herring vessels only in 2011 (Framework 46). As a result, the data in Table 32 are difficult to compare to years prior to 2011 and 2012. However, the data indicate that the proportion of GB haddock to Atlantic herring catch (Area 3) is less than 1% in all years, which is minimal when looking at the total quota amounts for both Atlantic herring and haddock.

Table 32 Atlantic Herring Catch (Area 3) and Haddock Catch Cap (GB) by Year, 2006-2012

FY	Atlantic Herring Catch from Area 3 (mt)	Area 3 Sub-ACL (mt)	GB Haddock Catch (mt)	GB Haddock Catch Cap (mt)	% of Haddock to Herring
2006	4,445	50,000	8	73	0.18
2007	11,236	11,431	6	184	0.05
2008	11,431	60,000	17	246	0.15
2009	30,024	60,000	24	143	0.08
2010	15,634	38,146	70	86	0.45
2011	34,452	38,146	101	318	0.3
2012*	40,845	38,146	285	286	0.75

Source: NOAA/NMFS (http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm)

Table 33 provides the current estimate of cumulative haddock catch by midwater trawl vessels fishing under the 2013 haddock catch cap (273 mt). This table includes data reported through September 11, 2013. If the haddock catch cap is reached before April 30, 2014, the directed herring fishery will close in the Georges Bank AM area (see Figure 16). As of this writing, none of the FY 2013 Gulf of Maine haddock catch cap (3 mt) has been caught.

Table 33 Cumulative GB Haddock Catch by Herring Midwater Trawl Vessels, 2013 FY (May 2013-April 2014)

Month	Monthly estimated haddock catch (mt)	Cumulative estimated haddock catch (mt)	Cumulative percent of quota (273 mt)
MAY	18.52	18.52	6.78%
JUNE	51.02	69.54	25.47%
JULY	68.32	137.86	50.50%
AUGUST	76.53	214.39	78.53%
SEPTEMBER	4.49	218.88	80.18%

3.6.3 Atlantic Herring Vessels

This section provides information regarding the vessels participating in the Atlantic herring fishery from 2008-2013. In this section, a herring trip is defined liberally as any trip in which at least one pound of Atlantic herring is retained.

3.6.3.1 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; and Category D open access incidental catch of 3 mt per trip. Category A and B vessels comprise the majority of the directed herring fishery. Many of the Category A, B, and C vessels are also active in the Atlantic mackerel fishery (managed by the MAFMC).

Since 2008, the number of vessels with either a limited access or an open access Atlantic herring permit has decreased annually (Table 34). 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 revenue.

Table 34 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.

3.6.3.2 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 35). 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 35 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
Otter Trawl, Bottom Fish	639 (0.4%)	2 (0.0%)	18,768 (18.5%)	121 (0.1%)	**19,530** **(4.6%)**
Midwater Otter 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%)**
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.

Within the river herring/shad catch cap areas proposed in this framework adjustment (see Figure 1 on p. 14), the Gulf of Maine cap area had the largest amount of Atlantic herring landings, from 2008-2012 (Table 36), and the Cape Cod cap area had the least. While the purse seine component of the fishery had just 23% of the landings in these areas overall, in the Gulf of Maine are, purse seines landed the most amount of Atlantic herring.

Table 36 Fishing Gear Distribution of Total Herring Landings from Proposed RH/S Catch Cap Areas (2008-2012)

Gear Type	GOM (mt)	CC (mt)	SNE/MA (mt)	GB (mt)	Total
Otter Trawl, Bottom Fish	639 (0.4%)	2 (0.0%)	18,768 (18.5%)	120 (0.1%)	**19,530** **(4.6%)**
Midwater Otter Trawl	7,621 (4.4%)	4,394 (12.3%)	7,803 (7.7%)	18,614 (16.8%)	**38,431** **(9.1%)**
Midwater Pair Trawl	69,532 (40.1%)	31,290 (87.7%)	74,955 (73.8%)	92,074 (83.1%)	**267,851** **(63.6%)**
Purse Seine	94,634 (54.6%)	9 (0.0%)	0 (0.0%)	0 (0.0%)	**94,643** **(22.5%)**
Other	996 (0.6%)	0 (0.0%)	15 (0%)	0 (0.0%)	**1,011** **(0.2%)**
Total	**173,432** **(100%)**	**35,695** **(100%)**	**101,542** **(100%)**	**110,808** **(100%)**	**421,467** **(100%)**

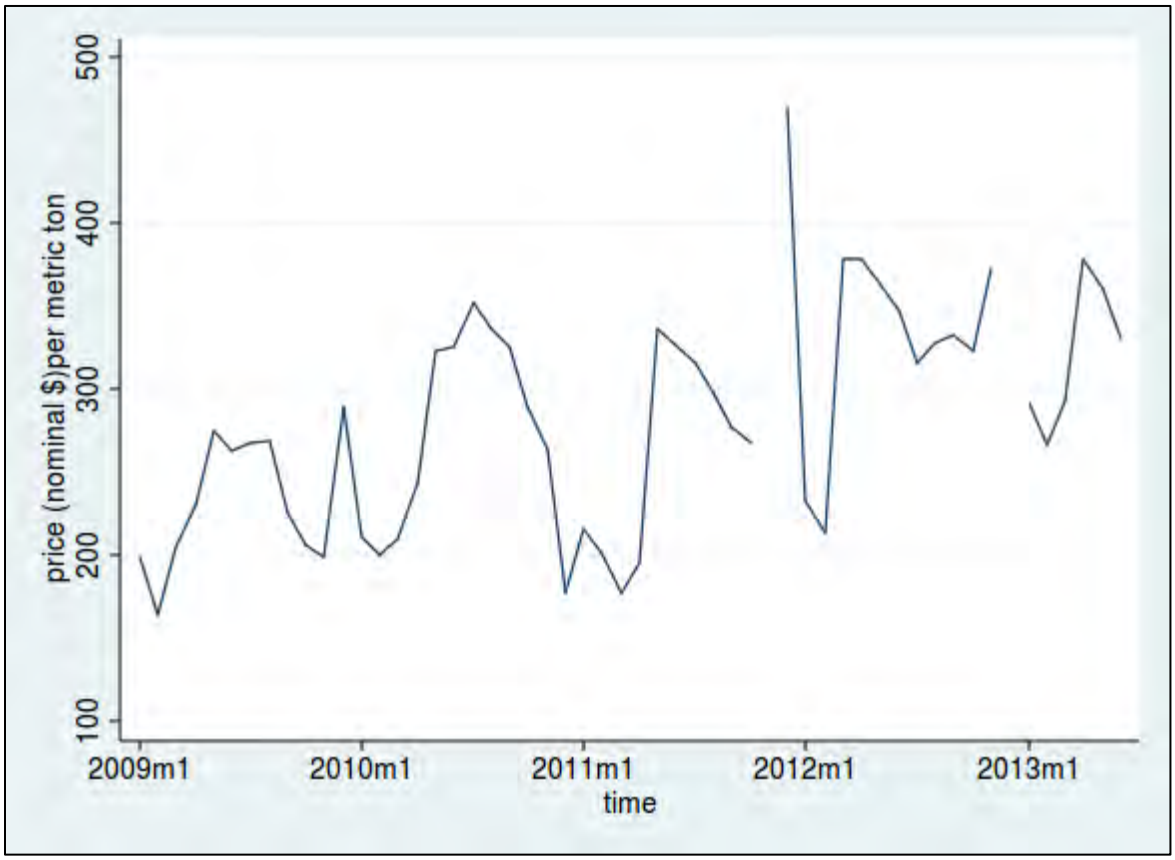
Source: VTR database. Data are as of August 23, 2013.

3.6.3.3 Economic Factors

Herring Prices

Average 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 17 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 17 Average Monthly Price of Atlantic Herring, 2009-2013



3.6.4 Overlap Between the Atlantic Herring and Atlantic Mackerel Fisheries

The overlap between the Atlantic herring and mackerel fisheries is important, as many of the same vessels and processing plants participate in both of these fisheries, and many of the participants are primarily or entirely economically dependent on these two fisheries. Many pair trawl vessels and midwater trawl vessels are dependent on herring and mackerel although pair trawl vessels are generally less dependent on herring than mackerel. Most bottom trawl vessels are not significantly dependent on either herring or mackerel, while purse seine vessels were almost entirely reliant on herring and menhaden. A more detailed description of the Atlantic mackerel fishery can be found in the Final EIS for Amendment 5 to the Herring FMP, and the EIS for Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish (MSB) FMP.

3.6.4.1 Background

The MAFMC manages the Atlantic mackerel fishery. For the 2012 fishing year, the MAFMC adopted an ABC of 80,000 mt per the recommendation of its SSC (http://www.mafmc.org/fmp/msb_files/2012_Specs/SSC_Report_25-26_May_2011.pdf). After accounting for Canadian catch, the Council also specified recreational-commercial allocations and buffers for management uncertainty such that the effective proposed U.S. commercial quota for 2012 is 33,821 mt. This is much higher than 2011 landings (less than 1,000 mt) but also substantially lower than quotas as recently as 2010 (115,000 mt). 2012 landings will likely be around 6,000 mt according to preliminary data. The limited access program, detailed below, became effective for Atlantic mackerel on March 1, 2012.

Amendment 11 to the MSB FMP (76 FR 68642, November 7, 2011) implemented a limited access system consisting of tiered limited access and open access components. The qualifying criteria for the limited access component are a valid Federal Fisheries Permit for mackerel as of March 21, 2007 and a certain level of mackerel landings during a specified time period as detailed below:

- Tier 1: At least 400,000 pounds landed in any one year 1997-2005
- Tier 2: At least 100,000 pounds landed in any one year 3/1/1994-2005
- Tier 3: At least 1,000 pounds in any one year 3/1/1994-2005.
    - Tier 3 would be capped for a maximum catch up to 7% of the commercial quota, set annually during the specifications process (no other allocations).
- Open Access: All other vessels.

Amendment 11 sets initial trip limits for each tier, with all trip limits adjustable via specifications:

- Tier 1: No trip limit
- Tier 2: 135,000 lb per trip or calendar day
- Tier 3: 100,000 lb per trip or calendar day
- Open access: 20,000 lb per trip or calendar day

All permit categories are subject to a 20,000 lb trip limit during a closure of the mackerel fishery (if the sub-ACL is projected to be reached).

Of the vessels with Atlantic herring limited access permits, all obtained either a limited or an open access mackerel permit (Table 37). Most of the Tier 1 mackerel vessels also hold limited access directed herring permits.

Table 37 Atlantic Mackerel Limited Access Program, 2012

			Total	Herring Permit Category			
				A	B,C	C	Total
Mackerel Permit Category	Limited Access	Tier 1	24	19	0	4	**23 (96%)**
		Tier 2	25	1	1	6	**8 (32%)**
		Tier 3	77	2	1	8	**11 (14%)**
	Open Access		1,630	14	2	23	**39 (2%)**
		Total	**1,756**	**36 (100%)**	**4 (100%)**	**41 (100%)**	

Source: NMFS Permit databases http://www.nero.noaa.gov/permits/permit.html (November 2012)
Note: Percentages indicate percent of the total permit holders in that category.

3.6.4.2 Herring/Mackerel Overlap in Framework 3 Catch Cap Areas

Table 38 summarizes VTR data from Atlantic herring trips in the Gulf of Maine RH/S Cap Area (see Figure 1 on p. 14) that would have been subject to a RH/S catch cap during 2008-2012 based on the proposed 6,600-pound landings threshold for identifying cap trips. This information suggests that there is very little, if any, overlap with the directed mackerel fishery, and consequently, very little potential for trips in this area to be subject to both RH/S catch caps. From 2008-2012, about 325-250 trips taken in the Gulf of Maine Cap Area landed more than 6,600 pounds of Atlantic herring. Very few of these trips landed any amount of Atlantic mackerel – less than three in 2010 and seven trips in 2011. Of these trips, almost none of them met the proposed 20,000 pound threshold for a RH/S catch cap in the mackerel fishery.

Table 38 Gulf of Maine RH/S Cap Area: 2008-2012 Trips

Year	# Herring Cap Trips (>3 mt)	Herring Landings (mt)	# Herring Cap Trips with Mackerel Landings	# Mackerel Cap Trips (>20,000 lbs)	% Trips Affected by Both Caps
2008	324	45,344	0	0	0.0
2009	341	45,922	0	0	0.0
2010	355	27,369	C	C	0.3
2011	350	29,906	7	0	0.0
2012	339	23,684	0	0	0.0

Note: "C" denotes less than three trips; detailed information cannot be reported for data confidentiality reasons.

Table 39 summarizes VTR data from Atlantic herring trips in the Cape Cod RH/S Cap Area (Statistical Area 521, see Figure 1 on p. 14) that would have been subject to a RH/S catch cap during 2008-2012 based on the proposed 6,600-pound landings threshold for identifying cap trips. This information suggests that there may be some overlap with the directed mackerel fishery in this area, but the overlap is small based on recent effort in the herring and mackerel fisheries. During these years, and average of 37 trips landed more than 6,600 pounds of herring. A small percentage of these trips landed any mackerel, and three trips in 2012 would have also met the proposed 20,000-pound threshold for the mackerel RH/S catch cap. While the potential for trips in this area to be affected by both RH/S catch caps appears to be small at this time, it is important to note that effort and landings in the mackerel fishery have been very low in recent years, especially 2010-2012. The potential for overlapping trips is likely to increase if effort in the mackerel fishery increases.

Table 39 Cape Cod RH/S Cap Area (521): 2008-2012 Trips

Year	# Herring Cap Trips (>3 mt)	Herring Landings (mt)	# Herring Cap Trips with Mackerel Landings	# Mackerel Cap Trips (>20,000 lbs)	% Trips Affected by Both Caps
2008	39	7,750	0	0	0.0
2009	15	2,495	0	0	0.0
2010	42	5,655	C	C	2.4
2011	31	5,334	0	0	0.0
2012	57	12,367	7	3	5.3

Note: "C" denotes less than three trips; detailed information cannot be reported for data confidentiality reasons.

Table 40 summarizes VTR data from Atlantic herring trips in the Georges Bank RH/S Cap Area (see Figure 1 on p. 14) that would have been subject to a RH/S catch cap during 2008-2012 based on the proposed 6,600-pound landings threshold for identifying cap trips. This information suggests that there may be some overlap with the directed mackerel fishery in this area, but the extent of the overlap appears to be small, with few trips during this time frame that would have met the landings thresholds for both RH/S catch caps (herring and mackerel fisheries). Six herring cap trips in this area in 2011 landed some Atlantic mackerel but not enough to meet the proposed 20,000-pound threshold for a RH/S catch cap trip in the mackerel fishery. There was more overlap in 2009, when participation in the mackerel fishery was higher than the most recent years. Therefore, the potential for overlapping trips in this area may increase if effort in the mackerel fishery increases.

Table 40 Georges Bank RH/S Cap Area: 2008-2012 Trips

Year	# Herring Cap Trips (>3 mt)	Herring Landings (mt)	# Herring Cap Trips with Mackerel Landings	# Mackerel Cap Trips (>20,000 lbs)	% Trips Affected by Both Caps
2008	35	7,814	C	0	0.0
2009	112	27,601	9	8	7.1
2010	90	14,306	C	C	1.1
2011	200	32,634	6	0	0.0
2012	183	30,161	0	0	0.0

Note: "C" denotes less than three trips; detailed information cannot be reported for data confidentiality reasons.

Table 41 summarizes VTR data from Atlantic herring trips in the Southern New England/Mid-Atlantic RH/S Cap Area (see Figure 1 on p. 14) that would have been subject to a RH/S catch cap during 2008-2012 based on the proposed 6,600-pound landings threshold for identifying cap trips. The information suggests that there is considerable overlap between the herring and mackerel fisheries in this area, with the potential for about 1/3 of trips in this area to be affected by both RH/S catch caps if effort in the mackerel fishery increases to levels observed prior to 2011 (landings of mackerel in 2011 and 2012 were very low). With the exception of the 2012 fishing year, about 25-50% of herring cap trips in this area landed some amount of mackerel. Most of those trips in 2008 and 2009 met the threshold for a mackerel cap trip (20,000 pounds); fewer trips met the mackerel cap threshold in more recent years.

Table 41 Southern New England/Mid-Atlantic RH/S Cap Area: 2008-2012 Trips

Year	# Herring Cap Trips (>3 mt)	Herring Landings (mt)	# Herring Cap Trips with Mackerel Landings	Mackerel Landings on Herring Cap Trips (mt)	# Mackerel Cap Trips (>20,000 lbs)	% Trips Affected by Both Caps
2008	220	22,534	96	7,518	82	37.3
2009	311	27,481	121	11,850	99	31.8
2010	259	21,878	124	8,156	81	31.3
2011	217	14,852	58	259	10	4.6
2012	266	21,649	36	2,751	21	7.9

Note: "C" denotes less than three trips; detailed information cannot be reported for data confidentiality reasons.

3.6.4.3 Proposed RH/S Catch Cap for 2014 Atlantic Mackerel Fishery

MAFMC Preferred Alternative 1b – 236 metric tons (mt) River Herring and Shad Cap

Under the Mid-Atlantic Council's preferred alternative for establishing a RH/S catch cap for the mackerel fishery in 2014, trips landing more than 20,000 pounds of mackerel would count as "cap trips" for purposes of monitoring the RH/S cap on the mackerel fishery. The exact cap estimation methodology will be developed by NMFS in cooperation with the Council during implementation, but the basic operation of the cap would mirror the butterfish cap that limits butterfish discards in the longfin squid fishery (except this cap is on all RH/S catch, not just discards since most RH/S are retained in this high-volume fishery). As such, trips with observers that retain more than 20,000 pounds of mackerel are used to determine the ratio of RH/S caught to all species retained on observed cap trips. For all trips that land more than 20,000 pounds of mackerel, the current RH/S ratio is applied to their combined total landings to generate a RH/S catch estimate for all mackerel trips. 20,000 pounds was chosen as the mackerel trip definition because that is the current mackerel incidental trip limit and trips landing 20,000 or less pounds of mackerel account for only about 1.5% of mackerel landings (2004-2012) (and typically have other species accounting for most of the catch on those trips). Once cap trips were projected to have caught 95% of the 236 mt RH/S cap, then the directed mackerel fishery would be closed and a 20,000 pound mackerel trip limit would be instituted, as would currently occur if the directed mackerel fishery closes.

236 mt of RH/S is the estimated median amount of RH/S that would have been caught had the commercial mackerel fishery landed its current quota of 33,821 mt over 2005-2012 based on analysis of observer and landings data. In some of those years the mackerel fishery landed more than 33,821 mt (2005 and 2006) but in most years the mackerel fishery landed less than 33,821 mt (2007-2012). By using 236 metric tons, the mackerel fishery could likely catch its full mackerel quota if it achieves a relatively low RH/S encounter rate (relative to 2005-2012), but would be shut down earlier if it does not. By restricting the mackerel fishery in years when high RH/S encounter rates occur, this quota would reduce RH/S catches in those years of high encounter rates.

This alternative is preferred because it creates a strong incentive for the fleet to avoid RH/S, allows for the possibility of the full mackerel quota to be caught if the fleet can avoid RH/S, and would likely reduce RH/S catches over time compared to what would occur without a cap given recent data.

"Double Checking" of the Council staff's RH/S catch calculations that were used to set the cap revealed minor differences in RH/S ratios generated by Council staff versus those generated by NERO statisticians. The source(s?) of these differences have not yet been fully explored, but they were only minor and did not substantially change the median and median values calculated by Council staff for the June Council meeting when the cap was set. The differences are likely caused by slight variations in data sub-setting during the extrapolation process. Additional work to identify the reasons for the differences will occur before the start of the 2014 fishing/calendar year but again do not appear likely to substantively change the overall conclusions in terms of recent RH/S catch in the mackerel fishery.

3.6.5 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

3.6.5.1 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 42). 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 42 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*

3.6.5.2 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 43). 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 43 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.

3.6.5.3 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.

3.6.6 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 FRAMEWORK 3 ALTERNATIVES

4.1 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 action as compared to the no action alternative. Appendix III of this document provides a more detailed description of the data and methods utilized by the Herring PDT to evaluate the potential impacts of the RH/S catch cap options for 2014 and 2015 on participants in the herring fishery. The discussion below draws from the analysis in Appendix III and also addresses the general impacts of the Framework 3 alternatives on fishery-related businesses and communities.

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

A fundamental difficulty exists in forecasting economic and social change relative to fishery management alternatives since communities or other societal groups are constantly evolving in response to numerous external factors, such as market conditions, technology, alternate uses of waterfront, and tourism. Certainly, management regulations influence the direction and magnitude of economic and social change, but attribution is difficult with the tools and data available. While this analysis focuses generally on the economic and social impacts of the

proposed fishing regulations, external factors may also influence change, both positive and negative, in the affected communities. In addition, the external factors may lead to unanticipated consequences of a regulation, due, for example, to cumulative impacts. In many cases, these factors contribute either to a community's vulnerability or 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., whale watch boat). While some management measures may have a short-term negative impact on some communities, this should be weighed against potential long-term benefits to all communities which can be derived from a sustainable herring fishery.

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

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

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

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

Under Alternative 1 (no action), the Council would not establish a process to set catch caps for RH/S for the Atlantic herring fishery, and the Council would not specify catch caps for the 2014 and 2015 fishing years. The catch of RH/S in the Atlantic herring fishery would continue to be managed under the provisions in the Atlantic Herring FMP.

Under Alternative 1 (no action), the status quo would be maintained, resulting in no additional economic or social impacts on participants in the Atlantic herring fishery. With no RH/S catch caps, there could be a higher degree of constancy and predictability for fishing industry operations and a steady supply to market, as the fishery would operate under the 2013-2015 herring specifications and sub-ACLs. 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. If selecting the no action alternative leads to a lack of coordination with the MAFMC, this might cause distrust in management among industry participants, , which could lead to a negative impact on the formation of *Attitudes* and *Beliefs.* This factor could also be affected by perceptions of inequity if the no action alternative is selected because some participants in the herring fishery may be affected by a RH/S catch cap established by the Mid-Atlantic Council for the mackerel fishery.

4.1.2 Impacts of Alternative 2 on Fishery-Related Businesses and Communities

Under Alternative 2 (Section 2.2, p. 13), a process would be established for setting and modifying catch caps for RH/S in the Atlantic herring fishery. *Catch* includes both bycatch (discards) and landed incidental catch. This alternative also includes a range of options for specifying the 2014 and 2015 RH/S catch cap amounts.

Under Alternative 2, catch of RH/S from trips landing more than 6,600 pounds (3 mt) of Atlantic herring would apply against the RH/S annual cap(s). Since only limited access herring vessels (permit categories A/B/C) are allowed to land more than 6,600 pounds of Atlantic herring, these are the vessels that this alternative would directly impact. The trips landing more than 6,600 pounds of Atlantic herring accounted for 96% of all Atlantic herring landings between 2008-2012. Alternative 2 could therefore affect not only herring fishery participants, but lobster harvesters and others who use herring as bait. Dependence on herring as lobster bait is discussed in greater detail in the Amendment 5 EIS.

General Discussion of Positive Impacts: Relative to the no action alternative, Alternative 2 could have several positive impacts on fishery-related businesses and communities. RH/S catch caps are unlikely to have a significant negative social impact on herring-dependent communities, as long as present harvesters are able to continue fishing without significant disruption; however, some 2014-2015 catch cap options in Alternative 2 may trigger closures. To the extent that the caps successfully limit catch of RH/S, the herring catch will be cleaner, requiring less culling. Some buyers of Atlantic herring, such as aquaria, prefer to not have river herring mixed in with the Atlantic herring as feed (John Dayton, General Curator, New England Aquarium, personal communication, 2013). Packing and freezing Atlantic herring with some river herring mixed in can limit marketability (Chris Joy, Seafreeze Ltd., personal communication, 2013).

Establishing RH/S catch caps provides an incentive for participants in the directed herring fishery to find innovative, low-cost solutions to avoid river herring and shad, such as the river herring bycatch avoidance program developed by SMAST and MA DMF in cooperation with the fishing industry (see Amendment 5). This collaboration will allow herring fishery participants to participate in observations and facilitate monitoring/sampling that will lead to the development of avoidance strategies. Social science research has documented improved effectiveness of regulations developed with a participatory/collaborative approach. Providing the industry with an opportunity to develop a communication network and bycatch avoidance strategy could ultimately reduce costs associated with bycatch avoidance because the industry would likely prioritize cost-effectiveness when developing strategies. Moreover, communication networks developed for river herring avoidance might be utilized for other reasons, for example, safety-related circumstances that arise suddenly, or other fisheries or fishing-related problems.

Having a RH/S catch cap in inshore areas may incentivize fishing offshore. Since many of the small-scale herring operations, as well as stakeholders who rely on herring as forage for their species of interest, would like to see mid- and pair-trawl operations restricted to offshore areas, this impact could positively affect the well-being of these sectors. To the extent that the caps successfully lead to increases in RH/S, establishing caps would increase the sense of well-being of those whose businesses rely on herring as forage, and RH/S stocks could eventually be of less concern. It would likely lead to improved coordination with the MAFMC, resulting in greater trust in management among the industry, leading to a positive impact on the formation of *Attitudes* and *Beliefs.*

General Discussion of Negative Impacts: Alternative 2 could result in some negative impacts on fishery-related businesses and communities as well. Depending on when the RH/S catch cap is reached for the directed fishery in a particular area(s), the caps could reduce fishing profits in the herring fishery if less herring is caught. This could lead to lower employment and a decrease in the *Size and Demographic Characteristics* of the fishery-related workforce. Fishermen could hold negative *Attitudes* and *Beliefs* towards management if herring fishing is closed part-way through the year. Interruption in the supply of herring could raise the cost of bait for the lobster fishery and other users, thereby potentially affecting the lobster industry's demographics and size. Additional reporting burdens could produce negative *Attitudes* about management. Closing the fishery in certain areas may cause resentment or conflict between fishing groups, a negative social impact in the form of changes to *Social Structures and Organizations*. Closing a fishery

inshore may incentivize small vessels to fish offshore, which may lead to unsafe fishing conditions, a negative impact on the *Non-Economic Social Aspects* of the action.

Use of RH/S Catch Cap Areas: The RH/S cap options within Alternative 2 are specified by clustered statistical RH/S areas (see Figure 1 on p. 14) and, in some cases, by gear. Doing so has several positive impacts relative to a RH/S cap applied broadly across all Atlantic herring management areas and gears. This avoids closing the directed herring fishery in all areas due to exceeding the cap in a certain area, which may not be considered fair within the industry. Vessels fishing in some areas are noticeably less likely to encounter RH/S than other areas, so closing those areas would hurt the industry as a whole, but may not significantly improve the status of RH/S.

Participants in the Atlantic herring fishery are accustomed to fishing and reporting catch within the herring management area boundaries, so establishing RH/S catch caps using other boundaries may cause some confusion, reporting burden and enforcement challenges, at least during the initial year(s). However, streamlined reporting requirements are proposed to facilitate compliance, monitoring, and enforcement of both the RH/S catch caps and the current haddock catch cap (see Section 2.2 and further discussion below). This should reduce complexity and any confusion associated with the establishment of new/different catch cap areas in the fishery. Overall, the positive aspects of this approach will likely outweigh the negative aspects in the long-run.

Catch reporting: Alternative 2 requires vessels to report catch by statistical area to facilitate the monitoring of catch caps. In addition to reporting herring by herring management area through the ACL-monitoring system (daily VMS reports), herring vessels subject to this rule would have to report total catch (kept and discarded) by statistical area so that the appropriate expansions can be made from the observed catch in those areas to monitor both the haddock catch caps (Framework 46) and any RH/S catch caps that may be established (see example catch report in Section 2.2 of this document). Alternative 2 should therefore streamline the administrative burden of reporting (a transactions cost) for fishermen under multiple catch caps; overall, long-term improvement in how the fishery is managed, specifically, management that includes real-time, accurate catch monitoring would be positive.

Trip notification: There are no changes to trip notification requirements proposed in this framework adjustment. Trip notification requirements would be consistent with Amendments 5 for herring vessels subject to the RH/S catch caps. Certainty about regulations and the future of the herring fishery is a substantial benefit for business and household planning.

Triggering closure of a catch cap area: There are two options that would trigger the closure of the directed herring fishery in a catch cap area: 1.) once the RH/S catch cap has been reached, or 2.) when 95% of the cap is projected to be reached. The former would be consistent with the accountability measures in place for the haddock catch cap that applies to herring midwater trawl vessels, and the latter is consistent with the provisions proposed by the MAFMC for the RH/S catch cap in the Atlantic mackerel fishery. Both options would lead to greater coordination and consistency for the fishery, albeit in different ways. Given reporting timeframes and precision of the data, it is likely that there would be little difference between the two options in terms of when

an area would be closed. Thus, the difference in impacts to fishing businesses and communities would likely be negligible between these two options. Any negative impacts would result from foregone opportunities if a trigger resulted in premature closure of the directed fishery in an area. Option 2 is a projection and provides a degree of buffer to not exceed the RH/S catch cap.

Measures that become effective when catch cap is reached: When the RH/S catch cap is reached in a catch cap area, the directed herring fishery in the catch cap area would close, and all vessels (A/B/C/D) would be subject to a possession limit of 2,000 pounds of Atlantic herring in the catch cap area for the remainder of the fishing year. The remainder of the herring fishery (in non-overlapping areas) will stay open until the sub-ACL trigger is reached in a management area/areas. This would, in essence, close the directed herring fishery in the specific RH/S catch cap area for the remainder of the year and have negative consequences on fishing businesses and communities in terms of foregone profits. The impacts would depend on when the catch cap area closes relative to nearby areas available for directed herring fishing, as well as the ability of affected vessels to access the open areas.

Options for 2014-2015 RH/S Catch Cap Amounts (Sections 2.2.1 – 2.2.4)

The Herring PDT developed and evaluated four options for establishing 2014/2015 RH/S catch caps based on the annual scaled catch amounts of RH/S for each gear (bottom trawl, midwater trawl, purse seine) and RH/S catch cap areas from 2008-2012 (see Appendix II). The PDT also analyzed whether or not a RH/S catch cap would be reached in each of the RH/S areas (except Georges Bank) under the "Low," "Median," or "High" options that were developed (see Appendix III). Catch trajectory graphs in Appendix III provide information about the timing of catch and the frequency that herring or RH/S limits may be reached. Where a RH/S catch cap may trigger a directed Atlantic herring fishery closure is noted below. Consequences of fishery closures for fishing businesses and communities are described above.

Table 44 contains the percentiles of projected Atlantic herring catch from each zone under no RH/S catch cap and the three options analyzed by the Herring PDT (see Appendix III for additional details). As an example of how to interpret this table, the herring catch in Area 1B without a RH/S catch cap would have a 10% chance of being less than 4,249 mt and a 90% chance of being less than 4,582 mt in the model. However, if the "high" option is selected, the herring catch in Area 1B would have a 10% chance of being less than 3,351 mt and a 90% chance of being less than 4,580 mt.

Options for specifying 2014/2015 catch caps in the Gulf of Maine RH/S catch cap area: If the "low" RH/S catch cap option is selected, a closure of the directed Atlantic herring fishery is more likely to be triggered. This would likely reduce revenues from the directed herring fishery in Areas 1A, 1B, and 3. Selecting either the "high" or "median" option is unlikely to trigger a closure of the directed Atlantic herring fishery in this area.

Options for specifying 2014/2015 catch caps in the Cape Cod RH/S catch cap area: If either the "low" or the "median" RH/S catch cap option is selected, a closure of the directed Atlantic herring fishery is more likely to be triggered. This would likely reduce revenues from the directed herring fishery in Areas 1B and 3. Selecting the "high" option is unlikely to trigger a closure of the directed Atlantic herring fishery in this area.

Options for specifying 2014/2015 catch caps in the Southern New England/Mid-Atlantic RH/S catch cap area: If either the "low" or the "median" RH/S catch cap option is selected, a closure of the directed Atlantic herring fishery is likely to be triggered early in the season (January-April). This would likely reduce revenues from the directed herring fishery in Area 2. Selecting the "high" option is unlikely to trigger a closure of the directed Atlantic herring fishery.

Table 44 Simulated Annual Catch of Atlantic Herring (mt) from Each Herring Management Area Under the 2014-2015 RH/S Catch Cap Options

	Percentile	Area 1A	Area 1B	Area 2	Area 3
No Catch Cap	10th	30,846	4,249	22,274	29,349
	25th	30,972	4,414	23,504	31,139
	50th	31,086	4,513	25,010	33,155
	75th	31,150	4,559	26,442	35,060
	90th	31,181	4,582	27,715	36,835
High	10th	30,844	3,351	22,274	27,626
	25th	30,971	4,241	23,504	29,726
	50th	31,081	4,479	25,010	32,207
	75th	31,147	4,549	26,442	34,484
	90th	31,176	4,580	27,715	36,340
Median	10th	30,705	2,351	17,484	25,975
	25th	30,908	3,125	21,428	27,829
	50th	31,068	4,303	23,610	30,325
	75th	31,145	4,520	25,373	32,990
	90th	31,179	4,569	26,869	35,176
Low	10th	0	1,249	12,517	24,643
	25th	2,257	1,708	15,620	26,172
	50th	14,056	2,287	19,092	28,207
	75th	22,391	2,994	23,264	30,348
	90th	24,915	4,090	25,430	32,495

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.

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

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

(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.

(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.

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

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

(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.

(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.

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

5.1.2 Other Required Provisions of MSFCMA

Section 303 of the Magnuson-Stevens Fishery Conservation and Management Act contains 14 additional required provisions for FMPs, which are discussed below. Any FMP prepared by any Council, or by the Secretary, with respect to any fishery, shall:

(1) contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are-- (A) necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery; (B) described in this subsection or subsection (b), or both; and (C) consistent with the National Standards, the other provisions of this Act, regulations implementing recommendations by international organizations in which the United States participates (including but not limited to closed areas, quotas, and size limits), and any other applicable law;

(2) contain a description of the fishery, including, but not limited to, the number of vessels involved, the type and quantity of fishing gear used, the species of fish involved and their location, the cost likely to be incurred in management, actual and potential revenues from the fishery, any recreational interest in the fishery, and the nature and extent of foreign fishing and Indian treaty fishing rights, if any;

(3) assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, the fishery, and include a summary of the information utilized in making such specification;

(4) assess and specify-- (A) the capacity and the extent to which fishing vessels of the United States, on an annual basis, will harvest the optimum yield specified under paragraph (3); (B) the portion of such optimum yield which, on an annual basis, will not be harvested by fishing vessels of the United States and can be made available for foreign fishing; and (C) the capacity and extent to which United States fish processors, on an annual basis, will process that portion of such optimum yield that will be harvested by fishing vessels of the United States;

(5) specify the pertinent data which shall be submitted to the Secretary with respect to commercial, recreational, and charter fishing in the fishery, including, but not limited to, information regarding the type and quantity of fishing gear used, catch by species in numbers of fish or weight thereof, areas in which fishing was engaged in, time of fishing, number of hauls, and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors;

(6) consider and provide for temporary adjustments, after consultation with the Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safe conduct of the fishery; except that the adjustment shall not adversely affect conservation efforts in other fisheries or discriminate among participants in the affected fishery;

(7) describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat;

(8) in the case of a fishery management plan that, after January 1, 1991, is submitted to the Secretary for review under section 304(a) (including any plan for which an amendment is submitted to the Secretary for such review) or is prepared by the Secretary, assess and specify the nature and extent of scientific data which is needed for effective implementation of the plan;

(9) include a fishery impact statement for the plan or amendment (in the case of a plan or amendment thereto submitted to or prepared by the Secretary after October 1, 1990) which shall assess, specify, and describe the likely effects, if any, of the conservation and management measures on-- (A) participants in the fisheries and fishing communities affected by the plan or amendment; and (B) participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants; and (C) the safety of human life at sea, including whether and to what extent such measures may affect the safety of participants in the fishery;

(10) specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery) and, in the case of a fishery which the Council or the Secretary has determined is approaching an overfished condition or is overfished, contain conservation and management measures to prevent overfishing or end overfishing and rebuild the fishery;

(11) establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority-- (A) minimize bycatch; and (B) minimize the mortality of bycatch which cannot be avoided;

(12) assess the type and amount of fish caught and released alive during recreational fishing under catch and release fishery management programs and the mortality of such fish, and include conservation and management measures that, to the extent practicable, minimize mortality and ensure the extended survival of such fish;

(13) include a description of the commercial, recreational, and charter fishing sectors which participate in the fishery and, to the extent practicable, quantify trends in landings of the managed fishery resource by the commercial, recreational, and charter fishing sectors;

(14) to the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors in the fishery;

(15) establish a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability.

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 3 to the Herring FMP.

To prepare the Draft Framework Adjustment 3, 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 September 2013 New England Fishery Management Council meeting.

TBD

5.3 MARINE MAMMAL PROTECTION ACT (MMPA)

TBD

5.4 ENDANGERED SPECIES ACT (ESA)

TBD

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.

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.

5.7 IMPACTS ON FEDERALISM/E.O. 13132

TBD

5.8 ADMINISTRATIVE PROCEDURES ACT (APA)

TBD

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 3.

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

5.10.1 Regulatory Flexibility Act – Initial Regulatory Flexibility Analysis

5.10.2 E.O. 12866 (Regulatory Planning and Review)

TBD

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)

TBD

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