

NEW ENGLAND FISHERY MANAGEMENT COUNCIL

Amendment 5 to the Herring Fishery Management Plan (FMP)

DRAFT Discussion Document

This document summarizes the work of the New England Fishery Management Council’s Herring Committee, Advisory Panel (AP), and Plan Development Team (PDT) to date regarding the development of specific management measures and the range of alternatives that may be analyzed in the Draft EIS for Amendment 5 to the Herring FMP. Relevant background and supporting information/analyses provided by the Herring PDT are also included in this document.

AMENDMENT 5 DISCUSSION DOCUMENT

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1.0 INTRODUCTION/BACKGROUND

The New England Fishery Management Council (Council) is developing an amendment to the Fishery Management Plan (FMP) for Atlantic herring (*Clupea harengus*) under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), recently reauthorized as part of the Magnuson-Stevens Reauthorization Act of 2006 (MSRA). In accordance with the National Environmental Policy Act (NEPA), the Council also intends to prepare an Environmental Impact Statement (EIS) that will analyze the impacts of this amendment on both the physical and human environment.

1.1 PURPOSE AND NEED

The original Herring FMP and Amendment 1 represent important milestones in the Council's efforts to maintain a sustainably-managed Atlantic herring fishery throughout New England. Recently, concerns about the fishery have led the Council to determine that additional action is needed to further address issues related to the health of the herring resource throughout its range, how the resource is harvested, how catch/bycatch are accounted for, and the important role of herring as a forage fish in the Northeast region. These concerns are reflected in the unprecedented level of interest in managing this fishery by New England's commercial and recreational fishermen, eco-tourism and shoreside businesses, and the general public.

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1.2 GOALS AND OBJECTIVES

1.2.1 Goals and Objectives – Herring Fishery Management Program (Amendment 1)

The goals and objectives of the Atlantic herring fishery management program were specified in Amendment 1 to the Herring FMP and will continue to frame the long-term management of the resource and fishery:

GOAL (AMENDMENT 1): Manage the Atlantic herring fishery at long-term sustainable levels consistent with the National Standards of the Magnuson-Stevens Fishery Conservation and Management Act.

OBJECTIVES (AMENDMENT 1):

1. Harvest the Atlantic herring resource consistent with the definition of overfishing contained in the Herring FMP and prevent overfishing.
2. Prevent the overfishing of discrete spawning components of Atlantic herring.
3. Avoid patterns of fishing mortality by age which adversely affect the age structure of the stock.
4. Provide for the orderly development of the herring fishery in inshore and offshore areas, taking into account the viability of current and historical participants in the fishery.

- 5. Provide for long-term, efficient, and full utilization of the optimum yield from the herring fishery while minimizing waste from discards in the fishery. Optimum yield is the amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, taking into account the protection of marine ecosystems, including maintenance of a biomass that supports the ocean ecosystem, predator consumption of herring, and biologically sustainable human harvest. This includes recognition of the importance of Atlantic herring as one of many forage species of fish, marine mammals, and birds in the Northeast Region.
- 6. Prevent excess capacity in the harvesting sector.
- 7. Minimize, to the extent practicable, the race to fish for Atlantic herring in all management areas.
- 8. Provide, to the extent practicable, controlled opportunities for fishermen and vessels in other Mid-Atlantic and New England fisheries.
- 9. Promote and support research, including cooperative research, to improve the collection of information in order to better understand herring population dynamics, biology and ecology, and to improve assessment procedures.
- 10. Promote compatible U.S. and Canadian management of the shared stocks of herring.
- 11. Continue to implement management measures in close coordination with other Federal and State FMPs and the ASMFC management plan for Atlantic herring, and promote real-time management of the fishery.

1.2.2 Goals and Objectives of Amendment 5 (Proposed)

At this time, it is intended that the management measures considered in this amendment will address one or more of the following:

Comment [IIs1]: Committee should modify/approve the goals/objectives for Am. 5

GOAL (AMENDMENT 5)

To develop an amendment to the Herring FMP to improve catch monitoring and ensure compliance with the Magnuson-Stevens Reauthorization Act of 2006

OBJECTIVES (AMENDMENT 5)

- 1. To implement measures to improve the long-term monitoring of catch (landings and bycatch) in the herring fishery;
- 2. To implement other management measures as necessary to ensure compliance with the new provisions of the MSRA;
- 3. To implement management measures to address bycatch in the Atlantic herring fishery;
- 4. In the context of Objectives 1 -4 (above), to consider the health of the herring resource and the important role of herring as a forage fish and a predator fish throughout its range.

Discussion

The objectives specific to Amendment 5 may change as the management alternatives are developed and the Council narrows the scope of the amendment. Ultimately, the Council will approve conservation and management measures to address the relevant management issues and meet the goals/objectives that it determines are appropriate to address for Amendment 5, also considering the goals/objectives of the herring management program that were established in Amendment 1.

1.3 AMENDMENT 5 – DEVELOPMENT OF ALTERNATIVES AND ANTICIPATED TIMELINE

The measures proposed in this amendment were originally developed as part of Amendment 4 to the Atlantic Herring FMP, but Amendment 4 was split in June 2009 so that the Council could develop annual catch limits (ACLs) and accountability measures (AMs) in a timely manner. The ACL/AM component was completed as part of Amendment 4, and other measures under consideration (catch monitoring program, river herring bycatch measures, criteria for midwater trawl access to groundfish closed areas, measures to address interactions with the Atlantic mackerel fishery) will be developed in Amendment 5.

After gathering information during the scoping period for Amendment 4 (through June 30, 2008), the Herring Committee began work on developing a range of alternatives to be considered and analyzed in a Draft Environmental Impact Statement (DEIS) and public hearing document for Amendment 4. Committee meetings were held during the scoping period so that background information could be provided by the Herring PDT and scoping comments could be submitted by the public and the Herring Advisory Panel (AP). The Committee met jointly with the Herring AP during July 2008 and met independently during September/October 2008 to continue work on the development of management alternatives and develop recommendations for the Council to review at its meeting in October 2008.

At the October 7-9, 2008 meeting, the Council reviewed work on the management alternatives and considered the Herring Committee's recommendations regarding specific management measures for further development in Amendment 4. Following the October Council meeting, the Committee continued to flesh out the details of the management alternatives that will be forwarded to the Council for approval and incorporation into a Draft EIS (DEIS) for Amendment 4. At its November 2008 meeting, the Council agreed to also develop measures during 2009 that establish criteria for midwater trawl access to the groundfish closed areas; these measures are now proposed for inclusion in Amendment 5.

In late 2008, the Council also solicited suggestions/proposals from stakeholders regarding the specific elements of a catch monitoring program for the Atlantic herring fishery. Stakeholder proposals were reviewed by the Herring Committee at the December 2008/January 2009 meetings, and some elements of the proposals have been incorporated into the Committee's alternatives for further consideration in this document. The Council approved these proposals for further consideration/development at its February 2009 meeting. In April 2009, the Council prioritized the management issues to be addressed in Amendment 4:

1. Annual Catch Limits and Accountability Measures;
2. Catch Monitoring Program;
3. Measures to Address River Herring Bycatch;
4. Criteria for Midwater Trawl Access to Groundfish Closed Areas; and
5. Measures to Address Interactions with the Mackerel Fishery.

The Herring Committee continued to work with the Herring Advisory Panel and PDT on the development of management alternatives for Amendment 4 throughout the first half of 2009, and the Council reviewed progress on Amendment 4 at its June 2009 meeting. While some elements of the amendment were complete and ready to move forward at this time, the larger, more significant components of the catch monitoring program and other measures (river herring bycatch measures, groundfish closed area access) required additional work/discussion. To ensure that the ACL/AM provisions of Amendment 4 can be implemented for the 2011 fishing year (as mandated by the MSRA), the Council must submit the ACL/AM action (i.e., Amendment 4) to NMFS no later than May 2010. This would require completion of the development of alternatives and the Draft EIS for Amendment 4 during the fall of 2009; the Council recognized that this timeline is highly unlikely since the range of alternatives for catch monitoring and measures to address other issues in the amendment were not fully developed as of June 2009, and Council staff/Herring PDT work will be diverted to the 2010-2012 specifications process for much of summer/fall 2009. The Council therefore decided to split Amendment 4 so that the ACL/AM provisions could be completed in a timely manner, and the other elements of the action could be further developed in Amendment 5, following completion of Amendment 4 and the 2010-2012 specifications.

Development of the Amendment 5 catch monitoring alternatives will continue through the summer/fall 2009 while the Council develops the 2010-2012 fishery specifications and completes/submits Amendment 4. Once the DEIS for Amendment 5 is prepared and approved, and once the Council identifies its preferred alternative(s), the Council will distribute the DEIS as well as an abbreviated public hearing document for public review. A 45-day public hearing and comment period will allow interested stakeholders to comment on any aspects of the Amendment 5 DEIS, including the alternatives under consideration and the analyses of the impacts prepared by the Council’s Herring PDT.

Following a review of all public comments and input from the Herring Advisory Panel and Herring Committee, the Council will select the final management measures for submission to the Secretary of Commerce as Amendment 5 to the Herring FMP. The Council is scheduled to select the final measures for Amendment 5 in late 2010 or early 2011.

The following “milestones” in the development of Amendment 4, the 2010-2012 fishery specifications, and Amendment 5 are anticipated (always subject to change):

MILESTONES	PLANNED
1. Herring PDT works with SSC to develop recommendations re. ABC and address scientific uncertainty for 2010-2012 fishery specifications	JULY-SEPT 2009
2. SSC reviews stock assessment results, PDT recommendations, and provides recommendations for ABC, etc. for 2010-2012 fishing years	AUGUST-SEPT 2009

3. Committee, Advisory Panel, and PDT work on options for ACLs; Committee (and ASMFC) develops recommendations for final 2010-2012 specifications	SEPT-NOV 2009
4. Council selects final 2010-2012 fishery specifications, approves research recommendations for 2011-2012 RSAs, and finalizes Amendment 4 (ACLs/AMs)	NOV 2009
5. Staff submits Amendment 4 and specifications package for 2010-2012 fishing years (two separate submissions)	DEC 2009
6. Herring Committee, PDT, and Advisory Panel continue development of alternatives for Amendment 5	JAN – MAY 2010
7. Council approves Amendment 5 alternatives for analysis in DSEIS	JUNE 2010
8. Council approves Draft Amendment 5/DSEIS and public hearing document and selects preferred alternatives	SEPT 2010
9. Herring Amendment 5 Public Hearings	OCT/NOV 2010
10. Council reviews public and advisor comments and O/S recommendations; approves final Amendment 5 measures	*DEC 2010 or JAN 2011*
11. Staff submits Amendment 5	JAN OR FEB 2011

2.0 MEASURES TO ESTABLISH A CATCH MONITORING PROGRAM FOR THE ATLANTIC HERRING FISHERY

2.1 BACKGROUND

The Council has identified *catch monitoring* as a primary management issue for consideration in Amendment 5 and has directed the Herring Committee to focus on the development of specific management alternatives to improve catch monitoring in the herring fishery. “Catch monitoring” is intended to be comprehensive in nature and relates to improving the collection of information regarding shoreside (landings of herring and other species) and at-sea catch (including bycatch/discards), as well as improving vessel/dealer reporting and real-time quota (TAC) monitoring.

A catch monitoring program for the Atlantic herring fishery that supplements and improves the existing program can take on many forms and include several different approaches. In general, two important elements of the fishery must be adequately documented to improve catch monitoring and ensure that data are as complete and accurate as possible: (1) **at-sea catch**; and (2) **dockside landings**. At-sea monitoring should focus on both total catch and bycatch – everything that enters the net and is either pumped aboard the fishing vessel or discarded at sea. Dockside monitoring should focus on accurate and real-time accounting of landings and incidental catch – all fish are brought to port and offloaded from the vessel, either to a processing plant, a bait truck/dealer, other fish dealers, or to be disposed of as bycatch. Another important element of catch monitoring is improving reporting and ensuring real-time monitoring of the management area TACs for the herring fishery.

A thorough understanding of the strengths and weaknesses of the existing catch monitoring program is a fundamental first step towards designing a new and better program. This has been the focus of the Herring Committee and Advisory Panel’s discussions during and since the initiation of Amendment 5. The existing catch monitoring program will be described in detail

and evaluated to the extent possible as part of the description and discussion of the no action alternative in the Amendment 5 Draft EIS.

2.1.1 Relationship to Standardized Bycatch Reporting Methodology (SBRM)

Amendment 2 to the Atlantic Herring FMP was developed by NMFS to ensure that all FMPs of the Northeast Region comply with the Standardized Bycatch Reporting Methodology (SBRM) requirements of the Magnuson-Stevens Act. The purpose of the SBRM amendment was to: (1) explain the methods and processes by which bycatch is currently monitored and assessed for Northeast Region fisheries; (2) determine whether these methods and processes need to be modified and/or supplemented; (3) establish standards of precision for bycatch estimation for all Northeast Region fisheries; and (4) document the SBRMs established for all fisheries managed through the FMPs of the Northeast Region.

Generally, a SBRM can be viewed as a combination of sampling design, data collection procedures, and analyses used to estimate bycatch. The Northeast Region SBRM amendment provides a structured approach for evaluating the effectiveness of the allocation of fisheries observer effort across multiple fisheries to monitor a large number of species. Both precision and accuracy are addressed in analyses conducted using observer data and to determine the appropriateness of the data for use in stock assessments and by fishery managers. A coefficient of variation (CV) of thirty percent (30%) was selected as a standard level of precision based upon the recommendation of the National Working Group on Bycatch.

The SBRM amendment, therefore, establishes a baseline and target levels of observer coverage for accurately monitoring bycatch across the Northeast Region's federally-managed fisheries. However, the Council acknowledges that recent developments in the herring fishery have contributed to the need for improved monitoring of catch in the fishery (landings and discards). For instance, increased concerns about the status of river herring and some groundfish stocks, as well as uncertainty regarding the nature and extent of river herring and groundfish bycatch in the Atlantic herring fishery illustrate the need for more and better bycatch information. Seasonal and annual TAC overages in some management areas, inconsistent and inadequate levels of observer coverage, and the emergence of U.S. at-sea processing operations also argue for a more thorough and accurate catch monitoring program in the fishery. For these reasons, the Council is considering management measures in this amendment to supplement the baseline established in the SBRM and enhance the collection of bycatch information in the Atlantic herring fishery.

2.1.2 Development of Specific Management Alternatives for Catch Monitoring in the Amendment 5 Draft EIS

The Herring Committee, in consultation with the Herring AP and PDT, has reviewed and discussed numerous detailed scoping comments regarding the establishment of catch monitoring measures in this amendment. In addition, the Committee has received reports and presentations from individuals on the Herring PDT who work closely with the NOAA Fisheries Observer Program as well as portside/dockside samplers and those who have participated in related research projects.

The catch monitoring measures under consideration in this amendment are still in the early stages of development, as the issues are quite complicated, and input regarding the kinds of approaches that should be considered has been extensive. Several management measures under consideration for catch monitoring in Amendment 5 are described individually in this document so that each measure can be evaluated independently in terms of costs, benefits, and the nature and utility of the information it may generate. Ultimately, the Committee/Council will merge the measures described in the following sections to formulate more comprehensive management alternatives for further consideration and analysis in the Draft EIS for Amendment 5. The catch monitoring alternatives that are evaluated in the DEIS will be “packages” that incorporate various measures/options described in the following sections. To the extent possible, the analyses provided in the DEIS will consider the interaction between the catch monitoring measures and the potential cumulative impacts of the measures on the resource and the fishery.

2.2 GOALS AND OBJECTIVES

In general, the goals (numbered) and objectives (bulleted) of the catch monitoring program established in Amendment 5 are:

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

2.3 MANAGEMENT MEASURES THAT CAN BE INCORPORATED INTO ANY CATCH MONITORING ALTERNATIVE

The following subsections describe proposed management measures that can be incorporated into any of the catch monitoring alternatives that the Council is considering in this amendment (alternatives are described in Sections **XXX** of this document). Measures that can be incorporated into any alternative include measures to improve quota monitoring, reporting, and compliance; measures to address the transfer of herring at-sea; measures to eliminate reporting redundancies; and measures to enhance at-sea monitoring (observer coverage). Options under consideration are described in detail in the following subsections.

2.3.1 Measures to Improve Quota Monitoring, Reporting, and Compliance

Increasing compliance with reporting will help to improve the accuracy of landings data and quota/TAC monitoring, which will lead to more effective management of the herring fishery. The Council is considering management measures to provide for real-time quota monitoring to the extent possible. The following subsections describe the measures that are currently under consideration/development by the Herring Committee to improve real-time quota monitoring, reporting, and compliance. Some of these measures may ultimately be incorporated into the management alternatives for the Draft EIS, while others may be considered but rejected, based on available information/analysis and feedback from the industry, Herring Advisory Panel, and other interested stakeholders.

At the March 2008 Herring Committee Meeting, during the development of the Scoping Document for Amendment 4, NMFS Regional Office staff presented a summary to the Herring Committee detailing the current program for monitoring landings in the Atlantic herring fishery and the process by which NMFS currently ensures compliance with the management area TACs. Several Herring Committee and audience members asked questions about how the TACs are monitored, and several individuals identified issues of concern and potential areas for improving the current process.

At the May 22, 2008 Herring Committee meeting, individuals from the NEFSC Northeast Fisheries Observer Program provided a detailed presentation on the structure of the current observer program and the data collected on observed vessels participating in the Atlantic herring fishery. Numerous individuals from the Observer Program attended the meeting with summary handouts and visual displays illustrating how observers work to collect data on fishing vessels. Following the observer presentation, a Herring PDT member provided an overview of portside bycatch sampling work in the herring fishery, which has been conducted by the ME Department of Marine Resources (see May 22, 2008 Meeting Summary for more detailed information and presentation slides).

At the July 30, 2008 Joint Committee/Advisory Panel Meeting, NMFS Regional Office presented a “permit holder letter” that was released on July 29, 2008 by NOAA Fisheries. The intent of the letter is to provide detailed examples and clarify the current notification and reporting requirements for vessels participating in the Atlantic herring fishery. NMFS staff answered a number of questions for the Committee and Advisory Panel members, as well as the

audience. The Committee and Advisory Panel engaged in a general discussion with the Regional Office about current reporting and notification requirements.

The following management measures under consideration have been identified by the Herring Committee, Advisory Panel, and PDT during the discussions related to the current catch monitoring program; these measures would be intended to address some of the potential problems or inadequacies associated with the current catch monitoring program that have been identified by NMFS, the industry, and/or other stakeholders. As the Committee and Council continue to move forward with the development of the catch monitoring alternatives in Amendment 5, it will also be important to detail the strengths and weaknesses of the measures under consideration so that the catch monitoring alternative that is ultimately adopted in Amendment 5 is successful and efficient, and provides accurate and real-time data to the extent possible.

2.3.1.1 Section 648.2 and 648.4 – Regulatory Definitions and Vessel Permits

Establishing a catch monitoring program for the Atlantic herring fishery in Amendment 5 provides an opportunity to review and possibly modify/clarify existing regulatory definitions and current permit/reporting provisions as they pertain to reporting Atlantic herring fishing activity. Some modifications may help to improve reporting compliance, ensure accuracy and completeness of data, and improve consistency between databases.

Comment [IIs2]: The Herring Committee agreed by consensus to forward the options described in this section for further consideration. Although specific language needs to be developed, this section is complete for the purposes of developing a Draft EIS.

Existing Regulatory Definitions (Status Quo)

Section 648.2 Atlantic herring carrier means a fishing vessel that may receive and transport herring caught by another fishing vessel, provided the vessel has been issued a herring permit, does not have any gear on board capable of catching or processing herring, and has on board a letter of authorization from the Regional Administrator to transport herring caught by another fishing vessel.

Section 648.4(a)(10) (ii) currently specifies the following provisions for an Atlantic herring carrier:

An Atlantic herring carrier must have been issued and have on board a herring permit and a letter of authorization to receive and transport Atlantic herring caught by another permitted fishing vessel. The letter of authorization exempts such a vessel from the VMS and IVR vessel reporting requirements as specified in §648.7 and subpart K of this part, except as otherwise required by this part. An Atlantic herring carrier vessel must request and obtain a letter of authorization from the Regional Administrator, and must report all herring carried from each vessel on a given trip in its Fishing Vessel Trip Report. The Fishing Vessel Trip Report must include the vessel name. Carrier vessels under a letter of authorization may not conduct fishing activities except for purposes of transport or possess any fishing gear on board the vessel; must be used exclusively as an Atlantic herring carrier vessel; and must carry observers if required by NMFS. There is a minimum enrollment period of 7 calendar days. While operating under a valid LOA, such vessels are exempt from any herring possession limits associated with the herring vessel permit categories. Herring carrier vessels under an LOA may not possess, transfer, or land any species except for Atlantic herring, except that they may possess Northeast multispecies transferred by

Comment [IIs3]: The Observer Program does not currently assign observers to carrier vessels, but the LOA requires carriers to take observers if requested.

vessels issued either an All Areas Limited Access Herring Permit and/or an Areas 2 and 3 Limited Access Herring Permit, consistent with the applicable possession limits for such vessels.

Section 648.2 Atlantic herring dealer means:

- (1) Any person who purchases or receives for a commercial purpose other than solely for transport or pumping operations any herring from a vessel issued a Federal Atlantic herring permit, whether offloaded directly from the vessel or from a shore-based pump, for any purpose other than for the purchaser's own use as bait; or
 - (2) Any person owning or operating a processing vessel that receives any Atlantic herring from a vessel issued a Federal Atlantic herring permit whether at sea or in port.
- This means that any Atlantic herring carriers that sell fish (i.e., "receive for commercial purpose other than solely for transport") are considered Atlantic herring dealers and are subject to dealer reporting requirements. This is an important clarification. ***To improve reporting, the Council may want to consider clearly distinguishing Atlantic herring carriers from Atlantic herring carrier/dealers in this amendment.***

Section 648.2 Atlantic herring processor means a person who receives unprocessed Atlantic herring from a fishing vessel issued a Federal Atlantic herring permit or from an Atlantic herring dealer for the purposes of processing; or the owner or operator of a fishing vessel that processes Atlantic herring; or an Atlantic herring dealer who purchases Atlantic herring from a fishing vessel with a Federal Atlantic herring permit for resale as bait.

Section 648.2 Dealer means any person who receives, for a commercial purpose (other than solely for transport on land), from the owner or operator of a vessel issued a valid permit under this part, any species of fish, the harvest of which is managed by this part, unless otherwise exempted in this part.

Section 648.2 Processing, or to process, with respect to the Atlantic herring fishery, means the preparation of Atlantic herring to render it suitable for human consumption, bait, commercial uses, industrial uses, or long-term storage, including but not limited to cooking, canning, roe extraction, smoking, salting, drying, freezing, or rendering into meat or oil.

Section 648.2 Transfer means to begin to remove, to remove, to pass over the rail, or to otherwise take away fish from any vessel and move them to another vessel.

The Council may select any or all of the following options under consideration.

2.3.1.1.1 Option 1: Establish a Regulatory Definition of *Transfer at Sea*

This option will establish a regulatory definition of “transfer at sea” for the purposes of the Atlantic herring fishery to clarify provisions related to each vessel engaged in the operation.

SPECIFIC LANGUAGE TBD

2.3.1.1.2 Option 2: Establish Regulatory Definition for *Atlantic Herring Carrier/Dealer* and a Corresponding Federal Permit

This option would establish a new herring carrier/dealer permit that would be required for carrier vessels that sell Atlantic herring to any entity.

- This option would require the addition of a regulatory definition of “Atlantic herring carrier/dealer” in Section 648.2 (Definitions).
- The permit would require compliance with federal dealer reporting requirements at any time the vessel is in possession of a (new) carrier/dealer LOA. A “dealer identifier” would have to be developed for carrier/dealers for the purposes of reporting.
- This measure would also require the establishment of two LOAs for carrier vessels: one for vessels that only transport fish, and one for vessels that transport and sell fish.

ADDITIONAL LANGUAGE TBD

2.3.1.2 Modifications to the Interactive Voice Response (IVR) Reporting Requirements

Currently, vessels participating in the Atlantic herring fishery are required to call-in and report their herring catch on a weekly basis through the Interactive Voice Response (IVR) system. The IVR system is an automated, phone-based reporting method initially created for multispecies dealer reporting. It was later modified to include Atlantic herring catch reports in response to the need for real-time quota monitoring. The regulations specify that the owner or operator of any vessel issued a limited access Atlantic herring permit must submit an Atlantic herring catch report via the IVR system each week, regardless of how much herring is caught (including weeks when no herring is caught), unless exempted from this requirement by the Regional Administrator. In addition, the owner or operator of any vessel issued an open access permit for Atlantic herring that catches 2,000 pounds of Atlantic herring on any trip in a week must submit an Atlantic herring catch report via the IVR system for that week as required by the Regional Administrator.

Comment [Ils4]: The measures proposed in this section appear to be complete enough for further consideration in a Draft EIS.

The main reason for utilizing the IVR system in the Atlantic herring fishery is to monitor the Total Allowable Catch (TAC) limits set for the four herring management areas. As part of the Atlantic herring fishery specification process, each management area is annually assigned a TAC (in metric tons). Although vessels are also required to report catches with vessel trip report (VTR) forms, near real-time data is obtained through the IVR system allowing the TACs to be

monitored. When the catch in a management area is projected to reach 95% of its specified TAC (or 92% in areas with research set-asides), the Regional Administrator enacts a closure for all directed herring fishing, and all vessels are restricted to a herring possession limit of 2,000 pounds to accommodate incidental catch.

The IVR system currently requires vessel owners/operators to submit herring catch reports through the IVR system even during weeks when the vessel may not have fished and/or may not have caught any herring. These are considered “negative reports,” i.e., reports of zero catch. NMFS supports the continuation of negative IVR reporting in the herring fishery and has indicated that other fisheries are moving towards implementing this requirement where applicable. Negative IVR reports ensure that catch/landings data are more complete and affirm an action relative to vessels’ fishing activity during any given week. Negative reports help to resolve potential problems with “missing” data; for example, if a vessel has been submitting herring catch reports through the IVR system and does not fish or catch herring for several weeks, the negative reports allow database managers to know that the vessel did not fish or catch herring during those weeks, versus making assumptions about the vessel’s fishing activity and/or applying a proxy level of catch for the vessel’s missing reports. Data gaps must be addressed in a timely fashion in order to use the IVR system for real-time quota monitoring, so if negative reports are not filed, it is less clear whether the available data accurately characterize catch in the fishery for quota monitoring purposes.

During the scoping process and ongoing discussions regarding the development of Amendment 5, several possible modifications to the herring IVR reporting system have been proposed for further consideration. The intent of these measures would be to improve reporting compliance and the accuracy and timeliness of quota monitoring information.

In this amendment, it will be important to clarify and ensure, to the extent possible, that all catch is required to be reported through both IVRs and VTRs. Management area TACs represent total allowable catch, which includes landings and discards. Monitoring the TACs in a timely and effective manner will require improved reporting and documentation of bycatch/discards in the fishery. Observer reports, confirmed by industry members, indicate that herring vessels (trawlers and purse seiners) sometimes release hauls for various reasons (too many fish to pump to vessel; fish too small, bycatch, etc). The amount of fish released should be reported as discard through the IVR and counted toward TAC monitoring, in addition to being reported on VTRs. Efforts should be made in this amendment to improve IVR and VTR reporting of discards in the Atlantic herring fishery.

Current regulations for VTR reporting in **Section 648.7** require vessels to submit the following information on VTRs: Vessel name; USCG documentation number (or state registration number, if undocumented); permit number; date/time sailed; date/time landed; trip type; number of crew; number of anglers (if a charter or party boat); gear fished; quantity and size of gear; mesh/ring size; chart area fished; average depth; latitude/longitude (or loran station and bearings); total hauls per area fished; average tow time duration; haul weight, in pounds (or count of individual fish, if a party or charter vessel), by species, of all species, or parts of species, such as monkfish livers, **landed or discarded**; and, in the case of skate discards, “small” (i.e., less than 23 inches (58.42 cm), total length) or “large” (i.e., 23 inches (58.42 cm) or greater, total length) skates;

dealer permit number; dealer name; date sold, port and state landed; and vessel operator's name, signature, and operator's permit number (if applicable).

Current regulations for IVR reporting in **Section 648.7** state the following for IVR reporting: The owner or operator of a vessel issued a permit to fish for Atlantic herring must report catches (retained and discarded) of herring each week to an IVR system, as specified in paragraphs (b)(2)(i)(A) and (B) of this section. The report shall include at least the following information, and any other information required by the Regional Administrator: Vessel identification, week in which species are caught, **pounds retained, pounds discarded**, management areas fished, and pounds of herring caught in each management area for the week. The IVR reporting week begins on Sunday at 0001 hrs (12:01 AM) local time and ends Saturday at 2400 hrs (12 midnight). Weekly Atlantic herring catch reports must be submitted via the IVR system by midnight, Eastern Time, each Tuesday for the previous week. Reports are required even if herring caught during the week has not yet been landed.

2.3.1.2.1 IVR Alternative 1: No Action

Under this alternative, provisions and requirements for IVR reporting would remain unchanged.

2.3.1.2.2 IVR Alternative 2: Trip-by-Trip IVR Reporting

Limited Access Permit Holders (Categories A, B, C)

- All limited access permit holders (Category A, B, and C) would be required to submit an Atlantic herring catch report via the IVR system on a trip-by-trip basis.
- Negative reports would continue to be submitted on a weekly basis (status quo).
- **Option:** Limited access permit holders also would be required to report their first page VTR serial number for the trip; this will establish a mechanism to more accurately match/link trips between the IVR, VTR, and dealer databases.
- Offloading to herring carrier/dealer vessels would be considered the same as offloading to a shoreside dealer for the purposes of IVR reporting.

Under this alternative, two options are under consideration for ***Open Access Permit Holders (Category D)***.

2.3.1.2.2.1 Open Access Option 1

- Open access permit holders would be required to submit an Atlantic herring catch report via the IVR system on a trip-by-trip basis for any trips on which herring is caught (landed or discarded).
- Negative IVR reports would not be required for open access permit holders.
- **Sub-Option:** Open access permit holders also would be required to report their first page VTR serial number for the trip; this will establish a mechanism to more accurately match/link trips between the IVR, VTR, and dealer databases.
- Offloading to herring carrier/dealer vessels would be considered the same as offloading to a shoreside dealer for the purposes of IVR reporting.

2.3.1.2.2.2 Open Access Option 2

- Open access permit holders that possess a Letter of Authorization (LOA) to transfer Atlantic herring at sea would be required to submit an Atlantic herring catch report via the IVR system on a trip-by-trip basis for any trips on which herring is caught (landed or discarded). These permit holders also would be required to report their first page VTR serial number for the trip; this will establish a mechanism to more accurately match/link trips between the IVR, VTR, and dealer databases.
- Negative IVR reports (weekly) would be required for open access permit holders that possess a LOA to transfer Atlantic herring at sea. The current LOA would be revised to include this requirement.
- Open access permit holders that do not receive a LOA to transfer Atlantic herring at sea would continue to be subject to current (status quo) IVR reporting requirements (weekly reporting for vessels that catch 2,000 pounds of Atlantic herring on any trip in a week, negative reports not required).
- Offloading to herring carrier vessels would be considered the same as offloading to a shoreside dealer for the purposes of IVR reporting.

2.3.1.2.3 Additional IVR Options and Outstanding Issues

2.3.1.2.3.1 Options for IVR Reporting Deadlines – Trip-Level

1. **Option 1** – For permit holders that would be subject to a requirement to report catch via the IVR system on a trip-by-trip basis, the deadline for reporting would be within **24 hours** of offloading or prior to starting the next fishing trip, whichever is less. This option is based on the current provisions for IVR reporting in the Tilefish FMP:
 - (ii) *Tilefish vessel owners or operators.* The owner or operator of any vessel issued a limited access permit for tilefish must submit a tilefish catch report via the IVR system within 24 hours after returning to port and offloading as required by the Regional Administrator...
2. **Option 2** – For permit holders that would be subject to a requirement to report catch via the IVR system on a trip-by-trip basis, the deadline for reporting would be within **6 hours** of offloading or prior to starting the next fishing trip, whichever is less.

2.3.1.2.3.2 Options for IVR Weekly Reporting Deadlines

- 1. **Option 1 – Status Quo (No Action)** – For permit holders that would be subject to a requirement to report catch via the IVR system on a weekly basis (proposed in the alternative described above for open access permit holders and negative reports for limited access permit holders), the current reporting deadline would apply. The IVR reporting week begins on Sunday at 0001 hrs (12:01 AM) local time and ends Saturday at 2400 hrs (12 midnight). Weekly Atlantic herring catch reports must be submitted via the IVR system by midnight, Eastern Time, each Tuesday for the previous week.
- 2. **Option 2**– IVR reporting deadlines could be changed from Tuesday midnight (current) to Monday midnight – this would provide better lead time for projections and management area closures. For permit holders that would be subject to a requirement to report catch via the IVR system on a weekly basis (proposed in the alternative described above for open access permit holders and negative reports for limited access permit holders), weekly Atlantic herring catch reports and negative reports must be submitted via the IVR system by midnight, Eastern Time, each Monday for the previous week.

2.3.1.3 Measures to Address VTR Reporting and VMS Provisions

The Council may select any combination of the following options to address VTR reporting and VMS provisions.

Comment [Ils5]: The first two options proposed in this section appear to complete enough for further consideration in a Draft EIS. Herring Committee option (added June 2009) may need further discussion/development.

2.3.1.3.1 Option 1: Require Vessel Trip Reports (VTRs) to be submitted on a weekly basis (versus the current monthly requirement)

This measure could facilitate timely cross-checking between VTRs and weekly dealer reports. NMFS made this suggestion during the development of Amendment 16 to the Multispecies (Groundfish) FMP, although the status of this measure with respect to Amendment 16 is unclear at this time.

Comment [Ils6]: NMFS is encouraging all FMPs to require weekly VTR reporting.

2.3.1.3.2 Option 2: Eliminate the VMS “power down” provision for limited access herring vessels;

This measure would prohibit limited access herring vessels from turning off their VMS units when in port unless specifically authorized by NMFS through a Letter of Exemption, consistent with VMS provisions for the multispecies, scallop, and surf clam/ocean quahog fleet:

Comment [Ils7]: Enforcement Committee and NMFS OLE supports this measure

- The Northeast Fisheries Regulations allow vessels holding certain permits to turn off their VMS units during periods when the vessel will be out of the water or during extended periods of no fishing activity. The request must be made in advance of the intended exemption period, and a “Letter of Exemption” (LOE) must be issued by NMFS. Vessels may not turn VMS units off until they receive a LOE approval from NMFS.
 - **All Vessels.** May request a Letter of Exemption from NMFS if the vessel is expected to be out of the water for more than 72 consecutive hours.

- **Limited Access Multispecies, Limited Access Scallop and Surfclam/Ocean Quahog Vessels (Proposed to Add Limited Access Herring Vessels).** May sign out of the VMS program for a minimum of 30 consecutive days by obtaining a Letter of Exemption from NMFS. The vessel may not engage in ANY fisheries until the VMS unit is turned back on.

NMFS Office of Law Enforcement (OLE) strongly supports this measure to enhance the enforceability of TAC monitoring and other related regulations for the Atlantic herring fishery.

2.3.1.3.3 Option 3: Require Daily VMS reporting of Atlantic herring catch and discards;

This measure would require that limited access herring vessels (Category A, B, and C) report Atlantic herring catch and discards, and statistical area fished on a daily basis through their vessel monitoring systems (VMS) on any declared herring trip.

Comment [IIs8]: Added by Herring Committee June 4/5, 2009; intent would be to implement VMS reporting requirements similar to those for multispecies vessels fishing in the US/Canada area

The operator of a limited access herring vessel must submit reports via VMS, in accordance with instructions provided by the Regional Administrator, for each day of the fishing trip when declared into the herring fishery. The reports must be submitted in 24-hour intervals for each day, beginning at 0000 hr and ending at 2400 hr, and must be submitted by 0900 hr of the following day, or as instructed by the Regional Administrator. The reports must include at least the following information:

(A) Total pounds of cod, haddock, yellowtail flounder, winter flounder, witch flounder, American plaice, and white hake kept; and total pounds of cod, haddock, yellowtail flounder, winter flounder, witch flounder, American plaice, and white hake discarded;

(B) Date fish were caught and statistical area in which fish were caught; and

(C) Vessel Trip Report (VTR) serial number, as instructed by the Regional Administrator.

2.3.1.4 Other Measures to Address Reporting

XXX

2.3.1.4.1 Option 1: Requirement for vessel operators to complete an affidavit providing details on any slippage event

This measure requires that an affidavit be created for slippage/dumping events, to be signed by vessel operators under penalty of perjury. The affidavit will contain detailed information including (1) the reason for slippage; (2) an estimate of the quantity and species composition of the slipped fish; and (3) the location and time that the slippage event occurred. When an observer is present on the vessel during a slippage event, the event would be fully documented with photographs.

Discussion: The proposed affidavit would be required in addition to VTRs because VTRs do not include requirements to provide detailed information slippage events. The affidavit would

facilitate the collection of more information about slippage events and would require captains to report the events individually when they occur (versus reporting total discards on VTRs at a trip-level).

2.3.2 Measures to Address Transfers at Sea

NMFS has indicated that the current provisions and allowances for transfers of herring at sea are problematic and may be one of the most challenging problems when trying to resolve differences between databases and/or ensure completeness of Atlantic herring catch/landings data.

Comment [IIs9]: The measures proposed in this section (as modified by the Committee June 4/5, 2009) appear to be complete enough for further consideration in a Draft EIS.

The Letters of Authorization (LOAs) issued by NMFS for the Atlantic herring fishery currently allow an unlimited amount of herring (or the amount allowed by the vessels' herring permit) to be transferred at-sea (a) from herring catcher vessels to carriers; (b) between federally-permitted herring vessels; and (c) from herring catcher vessels to non-permitted vessels for personal use as bait (see example LOAs distributed at July 30, 2008 Meeting). As a result, many transfers of herring at-sea may not be captured in both of the databases (IVR and dealer) used for in-season monitoring of catch and landings, which can lead to incomplete catch data and inconsistencies between datasets.

VTR records indicate that 933,862 pounds of herring were reported as "sold for bait" by vessels, presumably as transfers at sea. To date, during the 2008 fishing year, **25** unique vessels have been issued a Letter of Authorization to transfer Atlantic herring at-sea. VTR records for the 2008 fishing year are incomplete, and since most activity occurs during summer/fall, only 76,625 pounds have been reported as "sold for bait" in 2008 to date. Of the reported bait transactions during 2007 and 2008 to date, only 24 were for 10,000 pounds or more. The largest transaction reported was for 20,000 pounds. However, it is unclear what percentage of the total transfers at sea and/or bait transactions between vessels these numbers may represent because this activity may be under-documented due to the current reporting system and allowance of at-sea transfers to occur in this fishery without restriction on the amount or nature of the transfer. NMFS suspects that transfer at-sea activity may be substantially higher than the current data indicate; addressing this issue could help to resolve some discrepancies between databases and provide for more complete and accurate records of the activity occurring in this fishery.

In Amendment 5, the Council is considering measures to minimize transfers at sea and/or standardize reporting requirements for vessels transferring/receiving herring. Management options currently under consideration to address transfers of herring at sea are described in the following subsections. **The options described below are not necessarily independent of each other; Option 3 could be combined with another option described below, in order to address transfers to/from Category D vessels.**

2.3.2.1 Option 1: Restrict Transfers At-Sea to Only Vessels with Category A or B Limited Access Permits

This measure would allow only vessels participating in the limited access directed fishery for Atlantic herring (Category A or B permits) to transfer herring at sea.

- Transferring and receiving vessels would be required to possess a limited access Category A or B permit for the herring fishery.
- Herring carrier vessels operating under a Carrier LOA would be exempt from this requirement.

If selected alone (i.e., without Option 3), this measure limits at-sea transfers to the limited access directed fishery permit holders only. These are the vessels that do not operate under a possession limit for herring, improving at-sea enforceability.

2.3.2.2 Option 2: Prohibit Transfers At-Sea to Non-Permitted Vessels

This measure would allow only vessels that possess a federal Atlantic herring permit to transfer herring at sea. Non-permitted vessels would be prohibited from receiving herring at-sea, even for personal use as bait.

- Transferring and receiving vessels would be required to possess a Category A, B, C, or D permit for the herring fishery. The Category D permit is an open access permit, so any vessel can obtain this permit, but possession of this permit subjects the vessel to VTR and other reporting requirements.

This measure may improve reporting compliance. Requiring a federal permit of some sort by all vessels engaged in the transfer activity reduces the likelihood that some herring catch, even in small amounts, will not be documented. However, this measure would require that vessels with no Federal permits (recreational vessels, for example) obtain a permit for herring and comply with all related reporting requirements.

2.3.2.3 Option 3: Transfer At Sea Provisions for Category D (Open Access) Vessels

This measure would allow vessels with open access Category D permits to transfer herring at sea provided:

- The transferring vessel has a LOA issued by the Regional Administrator on board; and
- The transferring vessel identifies on its VTR the name of the vessel and the pounds of Atlantic herring transferred for each receiving vessel on a trip.
- Herring carrier vessels operating under a Carrier LOA would be exempt from this requirement.

This option could be combined with one of the above two options to address transfers of Atlantic herring at sea.

2.3.3 Measures to Address Trip Declarations and Notification Requirements

Duplicative/redundant reporting requirements is an issue that was identified by the herring industry during the scoping process for this amendment. Participants in the herring fishery are currently required to declare a herring trip via the Vessel Monitoring System (VMS), call-in to request an observer prior to leaving port, provide a pre-landing notification through VMS, call-in herring catch through the IVR reporting system, and submit vessel trip reports (VTRs, logbooks) and electronic dealer reports. While developing a comprehensive catch monitoring program in this amendment, there may be opportunities to streamline some of the reporting requirements and consequently reduce the burden on the industry as well as compliance, monitoring, and enforcement costs.

In addition, a comprehensive catch monitoring program will likely require notification by vessels prior to taking trips (to deploy observers) and/or prior to landing (to deploy dockside samplers), so efforts should be made to clarify notification requirements and ensure that all vessels participating in the herring fishery are subject to the same requirements.

2.3.3.1 Option 1: Modify and Extend the Pre-Trip Call-in Requirement to All Limited Access Vessels

This measure would require limited access herring vessels (Category A, B, and C) to notify the Observer Program **prior to any trip where the operator may harvest, possess, and land Atlantic herring**. It would also modify the call-in requirements to make them less burdensome for the industry.

In order to possess, harvest, or land herring, representatives for Category A, B, and C fishing vessels must provide notice to NMFS, including the vessel name, contact information for coordination of observer deployment, and the date, time, and port of departure at least 18 hours prior to beginning the trip. Vessel representatives may notify NMFS through telephone, fax, email, or other mechanisms (TBD). If a vessel has been issued a limited access herring permit but does not provide notification to NMFS before beginning the fishing trip, the vessel is prohibited from possessing, harvesting, or landing Atlantic herring on that trip.

Comment [IIs10]: Details to be developed with input from Observer Program

Discussion

The call-in requirement for vessels to request an observer before leaving port was established in response to concerns about haddock bycatch and the establishment of the haddock catch cap in the herring fishery (Framework 40B to the Multispecies FMP) and currently applies only to Category A and B vessels fishing on a declared herring trip. Although developed for a very specific purpose, this requirement has been helpful to the Observer Program to determine the schedule of observer coverage and know better where and when herring trips will occur. It also helps NMFS to estimate and target specific levels of coverage in the fishery during the fishing year. If the notification program is set up in the most efficient manner, it can help to reduce operating costs for the observer program, as fishing trips are more predictable and less time is spent determining when/where observed trips should occur. If the expectation is that all herring vessels should be observed during some or all of their fishing operations, then this measure could

assist the Observer Program in deploying observers in the most efficient way across the entire fishery while minimizing the burden on the vessels. The proposed modifications to the current program (options for notification, timing) would both improve efficiency and reduce the burden on the industry.

2.3.3.2 Option 2: Modify and Extend the Pre-Trip Call-in Requirement and Extend Pre-Landing Notification Requirement to All Limited Access Vessels

In addition to the measures proposed in Option 1 to modify and extend the pre-trip call-in requirement, Option 2 would require limited access herring vessels (Category A, B, and C) 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).

Discussion

Category A and B vessels fishing on a declared herring trip are also currently required 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). Extending the VMS pre-landing requirement to all limited access herring vessels encountering herring on a trip may be an appropriate option to consider, especially if the catch monitoring program developed in this amendment includes a dockside monitoring/sampling program. This notification could facilitate the deployment of dockside samplers (the proposed dockside sampling alternative in this amendment already includes some form of pre-landings notification, so the current VMS notification could possibly serve this purpose if it is extended to the entire limited access fleet). It would also provide consistency regarding vessels that would be subject to pre-trip and pre-landing notification requirements and may reduce the complexities associated with declarations into/out of the fishery.

2.3.4 Measures to Address At-Sea Monitoring

2.3.4.1 Background

One of the most important elements of an at-sea monitoring program, and one of the initial decisions that must be made, concerns the goals and objectives of the program – specifically:

- What are the observers going to measure? (catch/bycatch, species, gear types, etc.)
- What are the priorities?
- Should observer data be used to estimate bycatch of species x across the entire fishery or gear type? If so, what is the level of precision that should be achieved by using observer data to estimate bycatch?

Example Approach – Preliminary Analysis

A statistical approach to determining the appropriate level of observer coverage in a fishery would to (1) set a goal (usually based on precision and expressed as a *coefficient of variation*, CV) and then (2) use existing information to determine the level of coverage needed to achieve the goal. A CV is a normalized measure of dispersion of a probability distribution. The CV is generally defined as the ratio of the standard deviation to the mean.

As part of the development of the omnibus amendment to address standardized bycatch reporting methodology (SBRM), the National Working Group on Bycatch (NWGB) concluded that, “*for fishery resources, excluding protected species, caught as bycatch in a fishery, the recommended precision goal is a 20-30% CV for estimates of total discards (aggregated over all species) for the fishery; or if total catch can not be divided into discards and retained catch then the goal is a 20-30% CV for estimates of total catch.*” (NMFS 2004) As the NWGB pointed out, “Ideally, standards of precision would be based on the benefits and costs of increasing precision” (NMFS 2004). They also noted that under some circumstances, attaining the precision goal alone would not be an efficient use of the public resources. **The tradeoffs associated with increasing precision to meet a specified goal are very important to understand when developing an observer program.**

To begin to explore this issue relative to catch monitoring in Amendment 5, the Herring PDT provided a *example approach* to determining levels of observer coverage necessary to meet a specific goal. The following exercise was conducted by the Herring PDT using existing observer data for two years during which there was more observer coverage of these two gear types (2004 and 2005), combined with the methodology and formulas specified by the SBRM amendment to calculate variance and to estimate the number of trips necessary to achieve certain levels of precision.

Table 1 and Table 2 illustrate how the SBRM methodology can be used to develop a statistical approach to sampling the herring fishery to meet a specific goal – in this example, the goal is estimating river herring bycatch on midwater trawl and pair trawl vessels with a certain level of precision (as expressed by the CV). Observer records for midwater trawl and pair trawl vessels during 2004 and 2005 were used to generate discard/kept ratios of river herring/total herring. These ratios were used in formulas specified by the SBRM amendment to first calculate variance, and then determine, based on available information, how many sea days/observer trips would be necessary to achieve that level of precision. This exercise highlights a few key points with respect to designing an observer program:

- There are costs associated with increasing precision of bycatch estimates resulting from observer data. The lower the CV, the higher the precision, and the more sea days/observer trips are required to achieve that level of precision.
- When discard/kept ratios are small (see 2004 single midwater trawl D/K ratio in Table 2, for example), observed bycatch events are rare, so capturing these events in the future will require more coverage. These tradeoffs must be thoroughly explored when designing an appropriate observer program and prioritizing available resources.

Comment [Ils11]: Some concern has been expressed about applying D/K ratios to determine coverage levels for a high volume/low discard fishery.

- The D/K ratios, and therefore the target number of sea days and percent coverage, will vary by species and by gear type. The example provided in Table 1 and Table 2 characterizes the statistical approach that can be taken to evaluate levels of coverage and identify priorities, but the specific formulas must be applied to each species and gear type individually when designing a program. Ultimately, a statistically-sound program should be developed based on both the top priorities for coverage and the resources that will be available to support it.

Table 1 Example Approach to Determining Appropriate Levels of Observer Coverage – Based on 2005 Bycatch Data for River Herring

PAIR TRAWL (2005) D/K = 0.031787			
Target Coefficient of Variation (CV)	Target No. Trips	Target No. Sea Days	Target % Coverage (of total trips)
10%	91.82	137.73	35.18
20%	31.18	46.77	11.95
30%	14.84	22.27	5.69
40%	8.56	12.84	3.28
50%	5.55	8.32	2.12
MIDWATER TRAWL (2005) D/K = 0.074375			
Target Coefficient of Variation (CV)	Target No. Trips	Target No. Sea Days	Target % Coverage (of total trips)
10%	159.00	238.51	30.52
20%	51.55	77.33	9.89
30%	24.24	36.37	4.65
40%	13.92	20.88	2.67
50%	9.00	13.49	1.73

Table 2 Example Approach to Determining Appropriate Levels of Observer Coverage – Based on 2004 Bycatch Data for River Herring

PAIR TRAWL (2004) D/K = 0.0343432			
Target Coefficient of Variation (CV)	Target No. Trips	Target No. Sea Days	Target % Coverage (of total trips)
10%	112.73	169.09	12.64
20%	31.13	46.70	3.49
30%	14.11	21.17	1.58
40%	7.99	11.99	0.90
50%	5.13	7.70	0.58
MIDWATER TRAWL (2004) D/K = 0.000016933			
Target Coefficient of Variation (CV)	Target No. Trips	Target No. Sea Days	Target % Coverage (of total trips)
10%	153.69	230.53	67.41
20%	77.71	116.56	34.08
30%	42.60	63.90	18.69
40%	26.10	39.15	11.45
50%	17.42	26.13	7.64

Follow-up – Establishing Priorities

At its October 7-9, 2008 meeting, the Council reviewed the preliminary analysis of observer coverage levels and the example approach provided by the Herring PDT (above) and passed the following motion:

To request that the Herring PDT develop a range of alternatives for an at-sea monitoring program (onboard observer and electronic) with a CV of 20%, that focuses upon Atlantic herring, river herring species and haddock.

At its February 9-11, 2009 meeting, the Council reconsidered this recommendation and passed the following motion:

to reconsider the recommendation for a 20% CV on Atlantic herring, river herring, and haddock, and instead **recommend using a 30% CV on the stocks that are not overfished (herring, haddock) and 20% on the stocks of concern (river herring).**

The above motion therefore reflects the Council's intent with respect to designing a sampling program for at-sea monitoring and determining the levels of coverage that may be needed to achieve the desired result. The Council agreed that the justification for identifying priority species be linked to the status of the stock. Achieving a 20% CV for Atlantic herring and haddock may be an unrealistic target, especially since these stocks are not considered overfished and are thought to be healthy. The Council emphasized the need to be practical when determining an appropriate sampling design for at-sea monitoring, especially given available resources. When designing the sampling program, priority should be given to the species of

greatest concern, from a biological perspective. It is acknowledged that all species will be sampled regardless of the priorities, and CVs of 30% or even less may be achieved for many of the other species.

Rather than conduct an analysis based solely on achieving a 20% CV for these species, the Herring PDT re-ran the example above for all three species over a range of desired CVs. This helps to better illustrate the trade-offs associated with the choices that would need to be made, based on goals and priorities for observer coverage as well as available resources. Table 3 and Table 4 summarize the results of this analysis for midwater trawl and pair trawl vessels respectively. The analysis is based on 2005 observer data because 2005 was the year with the most sea sampling (coverage, intensity) in recent years for these gear types. Observer coverage during the 2005 fishing year sampled close to 20% of the herring fishery.

This analysis is intended to give managers an understanding of the level of observer coverage that would likely be necessary to achieve the desired CV for estimating bycatch of herring, river herring, and haddock on midwater trawl and pair trawl vessels. The output (#trips) has been translated to observer sea days using an assumption of 1.5 days per trip. This should help in terms of designing a sampling program that can meet specific goals. Once goals are identified and the number of required sea days is estimated, the next step would be to design a sampling schedule for the fishing year based on current patterns of fishing effort.

The results illustrate the costs that would be associated with covering the fishery to sample “rare” bycatch events adequately enough to estimate bycatch with a CV of 20%. Based on available data, bycatch (discards) of Atlantic herring appear to be somewhat rare in the fishery and would therefore require a very high level of coverage (over 300 sea days) in order to sample enough to estimate the total bycatch with a 20% CV. A similar result is seen for estimating haddock bycatch on pair trawl vessels. The observed discard/kept ratios are low, which means that a high level of sea days would be required to achieve a CV of 20%. Likewise, when a sea day is allocated for the purposes of estimating river herring bycatch, available information suggests that no river herring will be encountered about 75% of the time.

While this exercise helps to illustrate tradeoffs and identify priorities for sampling, it really only provides some background and context for managers to consider what level of coverage may be necessary to achieve certain goals. It serves as a guideline and supplements the information and analysis provided in the SBRM amendment. **(ADD MORE ABOUT SBRM AMENDMENT)**

Because this analysis serves as a guideline for decision-making with respect to at-sea monitoring, it is important to remember that the results are dependent on observed discard/kept (D/K) ratios and how the variance around those ratios is estimated. Variance most likely does not carry forward from year to year, especially if management measures affect effort and/or fishing patterns. Also, this approach does not consider the magnitude of mortality of the species in question. The biological impact of bycatch that is occurring in the herring fishery is an important factor to consider when identifying priorities for at-sea monitoring.

Table 3 Designing an Observer Program for Midwater Trawl Vessels– Based on 2005 Bycatch Data for River Herring, Haddock, and Atlantic Herring

Single Midwater Trawl (2005)			
River Herring			
CV	# trips	# sea days	% Coverage (trips)
0.1	159	239	31
0.2	52	77	10
0.3	24	36	5
0.4	14	21	3
0.5	9	13	2
Haddock			
CV	# trips	# sea days	% Coverage (trips)
0.1	157	236	30
0.2	51	76	10
0.3	24	36	5
0.4	14	21	3
0.5	9	13	2
Atlantic Herring			
CV	# trips	# sea days	% Coverage (trips)
0.1	384	575	74
0.2	214	321	41
0.3	123	185	24
0.4	77	116	15
0.5	52	79	10

Table 4 Designing an Observer Program for Pair Trawl Vessels– Based on 2005 Bycatch Data for River Herring, Haddock, and Atlantic Herring

Pair Trawl (2005)			
River Herring			
CV	# trips	# sea days	% Coverage (trips)
0.1	92	138	35
0.2	31	47	12
0.3	15	22	6
0.4	9	13	3
0.5	6	8	2
Haddock			
CV	# trips	# sea days	% Coverage (trips)
0.1	242	364	93
0.2	200	299	76
0.3	154	231	59
0.4	117	176	45
0.5	89	134	34
Atlantic Herring			
CV	# trips	# sea days	% Coverage (trips)
0.1	242	364	93
0.2	200	300	77
0.3	155	232	59
0.4	118	176	45
0.5	90	135	34

2.3.4.2 Options to Improve At-Sea Monitoring

Current regulations for vessels carrying NMFS-approved sea samplers/observers on board (Section 648.11(d)) specify that owners/operators of fishing vessels must:

1. Provide accommodations and food that are equivalent to those provided to the crew.
2. Allow the sea sampler/observer access to and use of the vessel’s communications equipment and personnel upon request for the transmission and receipt of messages related to the sea sampler’s/observer’s duties.
3. Provide true vessel locations, by latitude and longitude or loran coordinates, as requested by the observer/sea sampler, and allow the sea sampler/observer access to and use of the vessel’s navigation equipment and personnel upon request to determine the vessel’s position.
4. Notify the sea sampler/observer in a timely fashion of when fishing operations are to begin and end.
5. Allow for the embarking and debarking of the sea sampler/observer, as specified by the Regional Administrator, ensuring that transfers of observers/sea samplers at sea are accomplished in a safe manner, via small boat or raft, during daylight hours as weather and sea conditions allow, and with the agreement of the sea samplers/ observers involved.

Comment [IIs12]: The measures proposed in this section have been discussed in detail; most are relatively fleshed out, but the Herring Committee proposed new measures with details TBD and tabled a motion relative to one proposed measure; while some measures are complete, this section is complicated and may need further refinement.

- 6. Allow the sea sampler/observer free and unobstructed access to the vessel’s bridge, working decks, holding bins, weight scales, holds, and any other space used to hold, process, weigh, or store fish.
- 7. Allow the sea sampler/observer to inspect and copy any the vessel’s log, communications log, and records associated with the catch and distribution of fish for that trip.

Additional management measures are being considered in Amendment 5 to enhance regulations pertaining to the current at-sea monitoring program. This should improve the vessel owner/operator’s understanding regarding expectations and the collection of information by observers during a fishing trip, and ensure safe working conditions for observers on all fishing vessels. The Herring PDT supports inclusion of the management measures to ensure observer safety in Amendment 5, but recognizes that some of the measures to ensure accurate and complete collection of catch data may be problematic from an enforcement or compliance perspective. However, further discussion of all possible management measures is warranted at this time. The Council’s Enforcement Committee will review the proposed management measures and provide feedback in May 2009, and the Herring Advisory Panel may also be able to provide substantive feedback regarding some of these measures.

Moreover, the Council may want to consider requiring an outreach program and/or working with the fishing industry to develop a clear Code of Conduct for trips carrying a fisheries observer. This approach may be particularly helpful to address issues that cannot be resolved through regulatory change and to reach some sort of agreement regarding any of the measures below that are eliminated from consideration due to enforcement, compliance, and/or practicability problems.

Comment [IIs13]: Several modifications to the proposed measures have been made (see below), based on recommendations from the Observer Program and discussion at the June 4/5, 2009 Herring Committee meeting.

2.3.4.2.1 Proposed Measures to Improve Observer Safety

Comment [IIs14]: General consensus that the measures to improve observer safety should be applied across all fisheries, not just the herring fishery

A. *Providing the observer with a safe sampling station adjacent to the fish deck– this may include a safety harness (if footing is compromised and grating systems are high above the deck), a safe method to obtain samples, and a storage space for baskets and sampling gear*

- Vessels must maintain safe conditions on the vessel for the protection of observers including adherence to all U.S. Coast Guard and other applicable rules, regulations, or statutes pertaining to safe operation of the vessel.

B. *Providing reasonable assistance to enable observers to carry out their duties, including but not limited to obtaining samples and sorted discards*

“Reasonable assistance” could be defined as:

- Measuring decks, codends, and holding bins;
- Collecting bycatch when requested by the observers;
- Collecting and carrying baskets of fish when requested by the observers;

2.3.4.2.2 Proposed Measures to Ensure the Accurate and Complete Collection of Catch Data

C. Requirement to provide accurate details to the observer regarding why a bag may be partially pumped and fish released

- Vessel operators could be required to provide information about whether a bag was partially/fully slipped, the reason for the slippage, and the estimated weight of fish that were released.

Comment [IIs15]: Observer program can add these information requirements to observer logs.

D. Provide observer notice when pumping may be starting and when to allow sampling of the catch, and when pumping coming to an end;

E. When observers are deployed on herring trips involving more than one vessel, require observers on any vessel taking on fish where/when possible

F. In pair trawl operations, require additional communication between the boats if fish are being pumped to both vessels with to keep the observer informed of catch

G. Require a flow scale on a processing vessel since there is no other method to estimate volume of catch

- No at-sea processors are engaged in the herring fishery at this time; potential for future at-sea processing vessels in the fishery may not be significant

H. All fish must be at least pumped aboard the boat so that the entire catch can be sampled by an observer.

- At its April 9-11, 2009 meeting, the Council passed a motion regarding herring vessel access to Closed Area I, suggesting that there be 100% observer coverage on herring trips in Closed Area I and a prohibition on slipped cod ends so that all fish would at least be pumped aboard the boat so it can be sampled by an observer. The Council may want to consider adding a requirement for all fish to be pumped on board so they can be sampled by an observer to the measures under consideration in this amendment.

Comment [IIs16]: Additional potential challenges applying this provision to the entire fishery (ex., purse seine vessels and utilization of carriers)

Comment [IIs17]: Enforcement Committee concerned about this measure and recommends consultation with NOAA GC to develop provisions to address vessel safety.

Comment [IIs18]: Committee/Council could consider applying this measure throughout the fishery – summer/fall 2009 application in Closed Area I may provide more information about potential challenges, etc.

Comment [IIs19]: Motion regarding this measure was tabled by the Herring Committee June 4/5, 2009

I. Requirement that observers be allowed to view the codend after pumping has ended, before the pump is removed

J. Determine (and apply) minimum portion of a slipped catch that would be required to be pumped on board a vessel to ensure complete sampling

This measure requires that a minimum portion of a slipped catch be determined to ensure that observers obtain statistically-valid samples to characterize the catch composition (species and amounts) of slipped tows. The Herring PDT will work with the Observer Program and NEFSC scientists to develop the details of this measure. If a minimum portion/threshold can be determined, this measure will require sampling at that level for any slipped tows.

Comment [IIs20]: Details of this measure TBD; measure to be added to options to improve at-sea monitoring

2.3.5 Outreach Programs to Improve Compliance and Consistency

The Council recommends that NMFS to conduct outreach programs to enhance the industry's understanding of all regulations pertaining to the reporting of herring catch and the catch monitoring program that may be established in this amendment.

Comment [Ils21]: PDT supports the development of outreach programs with the implementation of this amendment

Outreach Program to Ensure Consistency in Reporting and Improve Compliance

The Council will work with NMFS to structure an outreach program for improving reporting compliance by vessels and dealers once Amendment 5 is implemented. The Atlantic herring fishery is discrete enough that NMFS could work with the majority of participants in the fishery to standardize and clarify reporting requirements and better ensure that landings/catch data are provided to NMFS in a consistent and complete format.

Outreach Program to Foster Cooperation with Catch Monitoring Program

The Council will work with NMFS to structure an outreach program for enhancing communication and fostering cooperation between vessel operators, dealers, processors, and managers upon the implementation of the catch monitoring program proposed in this amendment.

Comment [Ils22]: Observer Program supports outreach for observer requirements, including the possibility of a pre-trip meeting.

2.4 CATCH MONITORING – NO ACTION ALTERNATIVE

The following outline characterizes the current program for monitoring the management area TACs in the Atlantic herring fishery. It represents the status quo with respect to quota monitoring and reporting and ultimately will be incorporated into the “no action alternative” for this amendment. NMFS Regional Office staff presented this outline to the Herring Committee as a starting point for discussion when considering measures to improve catch monitoring in this amendment. It is important to understand the current monitoring/reporting structure in order to identify strengths, weaknesses, and areas that require improvement.

Data Sources

Primary:

- IVR reports from vessels – one report/week for limited access permit holders (including negative reports when no herring caught) and for open access permit holders that catch 2,000 lb or more on any trip in a week

Supplemented by:

- Dealer landing reports from SAFIS (dealer reporting system)
- Using VMS to attribute dealer landings to herring management area based on time spent in area by vessel on herring trips

Quality Control and Compliance

- IVR Database Quality Control and Compliance – FSO does compliance, corrections, and makes contact with vessels
 - o Weekly compliance report checking for duplicate reports, reviewing multiple trips per week, correcting negative entries, missing IVR reports, reviewing required permits to land, etc.
- SAFIS Dealer Database Quality Control and Compliance
 - o FSO checks dealers landings against required permits, IVRs and VTRs from vessels checked against dealer reports
 - o Atlantic Coastal Cooperative Statistics Program (ACCSP), FSO, and Northeast Fisheries Science Center (NEFSC) perform multiple levels of audits on all dealer-reported data and investigate issues as necessary.
- Ad hoc checks of trip declarations, trip limits, area fished, observer call-in, etc.
- Potential violations are sent to the Office of Law Enforcement

Area Fishery Monitoring

- FSO reviews multiple data sources to monitor the area herring TACs, including VMS, declared herring trips, observer program call-ins, herring pre-landing reports, port agent comments, IVR catch reports, and SAFIS dealer landing reports.
- FSO publishes a weekly herring monitoring report to the NERO website (http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm), which displays how much of the herring TACs has been caught based on preliminary data. This report is generated by:
 - o Tabulating IVR reports of herring landings and discards
 - o Supplementing with additional dealer landings for vessels where total dealer landings are greater than total IVR landings
 - o Attributing these dealer landings to fishery management area based on
 - IVR, if available, if not then,
 - VMS - where vessel spent the most time - if available, if not then,
 - The fleet's activity for the week

Other Monitoring

- **Border Transfer (BT)** (TAC = 4,000 mt)
 - o U.S. catcher vessels only; vessels report weekly through IVR
 - o Foreign carrier vessels do not report
 - o Foreign dealers report through SAFIS same as U.S. dealers do, entering the foreign country as the state and the U.S. catcher vessel permit number
 - BT landings are identified by selecting the foreign country as landing state in SAFIS

- FSO identifies the corresponding IVR landings and includes these landings from area fishery landings for the purposes of quota monitoring
- BT landings are not posted separately because of confidentiality restrictions, but are tracked separately by FSO and counted against the management area TACs
- FSO will report these on the weekly herring monitoring report on NERO website (http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm)
- **Maine Weir Fishery** (500 mt set-aside from Area 1A TAC)
 - Inshore, state fishery managed by Maine
 - Vessels will report weekly through IVR, as directed by Maine managers and using an identifying code
 - Dealers report through SAFIS
 - Maine weir landings will be identified by selecting the identifying code in IVR
- **Research Set-Aside (RSA)** (TAC = 3% from each management area TAC)
 - Vessels apply through NMFS Sustainable Fisheries Division
 - Vessels will report weekly through IVR using an identifying code for RSA
 - FSO will select these and corresponding dealer landings and exclude from the management area fishery TAC
 - FSO will report these on the weekly herring monitoring report on NERO website (http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm)
- **U.S. At-Sea Processing (USAP)** (TAC = 20,000 mt from Areas 2 and 3 only)
 - Processing vessels must be permitted as herring dealers
 - Catcher vessels report weekly through IVR
 - Processing vessels report through SAFIS as other dealers, entering “Domestic JD 970999” as the port code.
 - USAP landings are identified by selecting “Domestic JD 970999” port as landing port in SAFIS
 - FSO identifies the corresponding IVR landings and excludes these landings from area fishery landings
 - FSO will report these on the weekly herring monitoring report on NERO website (http://www.nero.noaa.gov/ro/fso/reports/reports_frame.htm)
- **Area 2 New York Inshore Herring Landings**
 - Non-federally permitted vessels land herring in NY and are not required to report through IVR
 - Federally permitted dealers report these herring through SAFIS as usual; herring management area is unknown

- FSO identifies NY landings without federal permit numbers in SAFIS and attributes them to the Area 2 TAC
- **Total Allowable Level of Foreign Fishing** (TAC = 0 mt)
 - No fishing allowed
 - Not currently monitored by FSO

2.5 CATCH MONITORING ALTERNATIVE 1

This alternative was first discussed at the December 16, 2008 Herring Committee meeting. This alternative includes all of the management measures/options described in the following subsections.

2.5.1 Measures to Ensure Maximized Retention

This alternative will include management measures designed to ensure *maximized retention* of catch on all herring vessels, to the extent possible. Options under consideration for maximized retention under this alternative are described below.

This alternative would mandate maximized retention for the Atlantic herring fishery, targeting the landing of 99.5% of all catch. Herring vessels would be required to land all fish that are caught during their fishing operations, and discarding would be largely prohibited.

Comment [IIs23]: See Herring PDT Report (May 26, 2009) for additional discussion re. maximized retention provisions

Comment [IIs24]: Herring Advisory Panel recommends to move to the considered but rejected portion of the discussion document all maximized retention options consistent with the recommendations of the Enforcement Committee concerning vessel safety

Mandatory Maximized Retention (target of 99.5% of all catch landed)

- Two Categories of Prohibited Species (not to be landed)
 1. Species protected under the Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) or subject to similar prohibitions will not be landed under any circumstances.
 2. Species for which the vessel is not permitted or is subject to landings limits may be addressed through a series of sub-options (see Section XXX, Alternative 3, for description of sub-options to address non-permitted landings).

2.5.2 Measures to Standardize/Certify Volumetric Measurements of Catch

This alternative will include management measures that require standardization and/or certification of volumetric measurements used to estimate catch. The measures under consideration are described below.

- As a condition of obtaining the limited access permit, limited access herring vessels (Category A/B and C?) would be required to contract a marine surveyor to certify the vessel's fish hold for volumetric capacity. Schematics and conversion charts for each fish hold would be submitted to NMFS at the time of renewal of the limited access permit. NMFS would provide the schematics and conversion charts (and calibration tables) to the dockside sampling service providers. Each vessel would retain on board a customized

Comment [IIs25]: Need to determine to which vessels these requirements would apply

measuring stick for the fish hold for the dockside sampler to utilize to estimate the total weight of the catch on board. With a known weight of fish per unit of volume, a relatively simple calculation can be performed to determine the amount of fish in the hold (using calibration tables).

Comment [Ils26]: PDT Note – only effective if part of a dockside sampling program so that species composition of catch can be determined; should be used as a cross-check mechanism to verify the accuracy of self-reporting; need more information on conversion factors and how appropriate calibration tables would be developed

- As a condition of obtaining a Federal dealer permit for Atlantic herring, dealers would be required to contract a surveyor to certify bait/transport trucks that are used during offload operations. A truck is often estimated to hold about 40,000 lbs. (18 mt), but this can range from 25,000 lbs. to 60,000 lbs. Schematics and conversion charts, when necessary, would be submitted to NMFS at the time of renewal of the Federal dealer permit. NMFS would provide the schematics and conversion charts to each DSM service provider that is approved for this program. Only trucks that are certified for volumetric capacity could be used to offload and transport Atlantic herring.

Comment [Ils27]: PDT Note – may be very challenging for dealers/trucks; for example, not sure how carriers and secondary transport vehicles would be addressed

Background

All E.U. and Norwegian-registered fishing vessels that carry their catch in refrigerated sea water (RSW) tanks are required to carry on-board calibrated volume tables for all of the fish tanks on the vessel. Those calibration tables must be checked and stamped by the member state under whose flag the vessel operates. The calibration tables are normally produced by the marine architect when the vessel is in the final stages of building; this will then be certified by inspectors from the fishery control of that state. In the case of a second-hand or converted vessel coming into the fishery, all the fish tanks have to be measured separately and calibrated by a competent marine architect, and again verified by an inspector.

Comment [Ils28]: Advisory Panel also believes this to be problematic for trucks – Advisory Panel supports this measure for vessels.

Comment [Ils29]: Information provided by the herring industry

The calibration system works by measuring the entire volume of the tank to get its cubic capacity. The tank is then measured at 10 cm increments, and this is scaled from the floor up to the edge of the hatch.

To actually measure the volume of fish in the tank, the fishery officer drops a small, flat steel weight about six inches square, connected to the end of a regular tape. When the weight falls through the water and settles on the fish, the officer then checks off the measurement against the hatch top. With this measurement, the officer can go to the calibration book for the vessel and calculate the cubic volume of fish in the tank. This process is then repeated on all the other tanks that contain fish, and the total cubic volume is calculated.

Because a cubic meter of fish does not equal a ton of fish, it was agreed with all control agencies in Europe and Norway that the following volume calculation values should be used:

- Herring per cm² x 0.82 (i.e., 100 cm² = 82 tons of herring)
- Mackerel per cm² x 0.78 (i.e., 100 cm² = 78 tons of mackerel)

Comment [Ils30]: Need more information – not clear how these conversion factors were derived and if they are appropriate

This system has been in place for over 20 years and has been tried and tested many times, with total catches monitored and weighed in controlled conditions. It was always found to have an accuracy of between two and seven percent, depending on how accurate the person was when measuring. The vessels were originally allowed a discrepancy of 20% in what they declared and

what the final result was, but this was found to be unnecessary. The discrepancy is now reduced to 10%, and both fishermen and control agencies feel comfortable working with this level.

2.5.3 Dockside Sampling Program

Under this alternative, the Council, in consultation with the ASMFC, would set-aside up to 3% of the TAC from any management area(s) or the total TAC for the herring fishery to support dockside monitoring and commercial catch sampling of herring landings. The Council would determine the specific percentages for the DSM set-aside and the management area(s) to which they apply during the fishery specification process.

Comment [Ils31]: Dockside Sampling or Dockside Monitoring or Both?

Comment [Ils32]: Not much support for a set-aside; Council may want to consider eliminating options for a set-aside and instead identify this as a priority for the current research set-aside

2.5.3.1 Set-Aside Option 1 – Eliminate the Research Set-Aside and Replace it with a DSM Set-Aside

Under this option, the current research set-aside (RSA) for the herring fishery would be eliminated, and a DSM set-aside would be established.

Comment [Ils33]: Not much support (see above)

Currently, the herring fishery closes in a particular management area when it is projected that 95% of the area TAC has been/will be caught. Five percent of the remaining TAC is set-aside for incidental catch in other fisheries (under a 2,000-pound trip limit) after the directed fishery is closed. In some management areas, an additional 3% is currently set-aside to support herring-related cooperative research. Similar to the RSA, the DSM set-aside is intended to be in addition to the current 5% set-aside for incidental catch once the directed fishery in a management area closes. Under this option, the RSA would be eliminated, and the herring fishery would close in a management area when it is projected that 92% of the TAC is reached in areas where a DSM set-aside is allocated (100% minus the 5% incidental catch set-aside and the 3% DSM set-aside).

2.5.3.2 Set-Aside Option 2 – Establish DSM Set-Aside in Addition to the RSA

Under this option, the current research set-aside (RSA) for the herring fishery would continue, and a DSM set-aside would be established in addition to the RSA.

Comment [Ils34]: Not much support (see above)

Currently, the herring fishery closes in a particular management area when it is projected that 95% of the area TAC has been/will be caught. Five percent of the remaining TAC is set-aside for incidental catch in other fisheries (under a 2,000-pound trip limit) after the directed fishery is closed. In some management areas, an additional 3% is currently set-aside to support herring-related cooperative research. Under this option, the herring fishery would close in a management area when it is projected that 89% of the TAC is reached in areas where a DSM set-aside is allocated (100% minus the 5% incidental catch set-aside, the 3% RSA, and the 3% DSM set-aside).

2.5.3.3 Set-Aside Option 3 – Identify DSM as Top Priority for RSA

This option would retain the current RSA process, but the only priority for funding that would be identified by the Council would be dockside monitoring.

Comment [Ils35]: This may be a better option than a separate set-aside; does not require a management measure, can be identified as top priority by the Council during RSA priority identification process; additional sources of funding would still likely be required for a comprehensive and long-term dockside sampling program.

2.5.3.4 Dockside Sampling Program Objectives

Based on Herring Committee discussion and recommendations, this alternative for a dockside sampling program (DSP) is intended to achieve the following objectives:

1. Sample enough landings events to accurately estimate catch/bycatch in the herring fishery (in combination with at-sea monitoring/observer coverage);
2. Confirm the accuracy of self-reporting of herring landings.

In addition, samplers may collect important biological information and commercial catch samples necessary to support stock assessments and other biological needs.

To achieve these objectives, this dockside sampling program (DSP) would be designed similarly to the current portside bycatch sampling programs managed by ME DMR and MA DMF with increased sampling coverage to ensure that extrapolations of landings and landed bycatch estimates can be made with some specified degree of precision (expressed as a coefficient of variation, CV). The sampling design and coverage levels for this program (distribution of sampling events across space and time) would be determined by NOAA Fisheries similarly to how the NEFSC allocates sea days for observer coverage in the fishery, depending on the priority species and target CVs that are identified by the Council (see below).

2.5.3.5 DSP – Responsibilities, Notification requirements, and Sampling Design

- NOAA Fisheries would be required to determine levels of coverage for dockside sampling similar to the SBRM approach for at-sea monitoring, based on the Council’s specified goals/objectives and the SBRM methodology (see below).
- Because multiple service providers can be used for dockside sampling, NOAA Fisheries would be responsible for determining levels of coverage on an annual basis, including time/area/gear type. This information would be provided to DSP service providers on an annual basis to assist them in developing plans for sampling and ensuring that dockside samplers can be made available at the appropriate times/places.
- Herring limited access vessels would be required to call NOAA Fisheries and notify the agency of a landings event at least six hours prior to landing. The current pre-landing notification system could be used to provide ample notice to NOAA Fisheries prior to landing, in order to arrange for samplers when they may be available. The vessel must indicate when/where the boat will land, the approximate amount of the catch, and whether or not the offload will be to a processing facility, bait dealer, or truck. NOAA Fisheries will inform the vessel if the landings event requires sampling, and if so, the vessel must contact the DSP service provider. DSP service providers will work with the vessels to ensure that trips that require dockside sampling are met by a sampler.

Comment [Ils36]: Need to determine which vessels (Category A/B and C?)

On an annual basis, NOAA Fisheries will supply each approved DSP service provider with the following:

- List of certified vessels and dealers subject to DSP requirements;
- Summary of dockside sampler duties;
- List of relevant NOAA Fisheries contacts;

- Schematics and conversion charts for certified vessels and trucks;
- Protocols for complete sampling, sub-sampling, and calculating the weight of fish;
- Other relevant protocols and directives.

Sampling Design for Estimating (Landed) Bycatch – Objective #1

The overall objective of the sampling program is to be able to derive reasonable estimates of species-specific bycatch rates across gear types, seasons, and areas. The sampling design for the DSP will be based on the same approach utilized in the SBRM for determining target levels of observer coverage to generate estimates of bycatch based on specified levels of precision. A statistical approach to determining the appropriate level of coverage or sampling in a fishery would to (1) set a goal (usually based on precision and expressed as a *coefficient of variation*, CV) and then (2) use existing information to determine the level of coverage needed to achieve the goal. A CV is a normalized measure of dispersion of a probability distribution. The CV is generally defined as the ratio of the standard deviation to the mean.

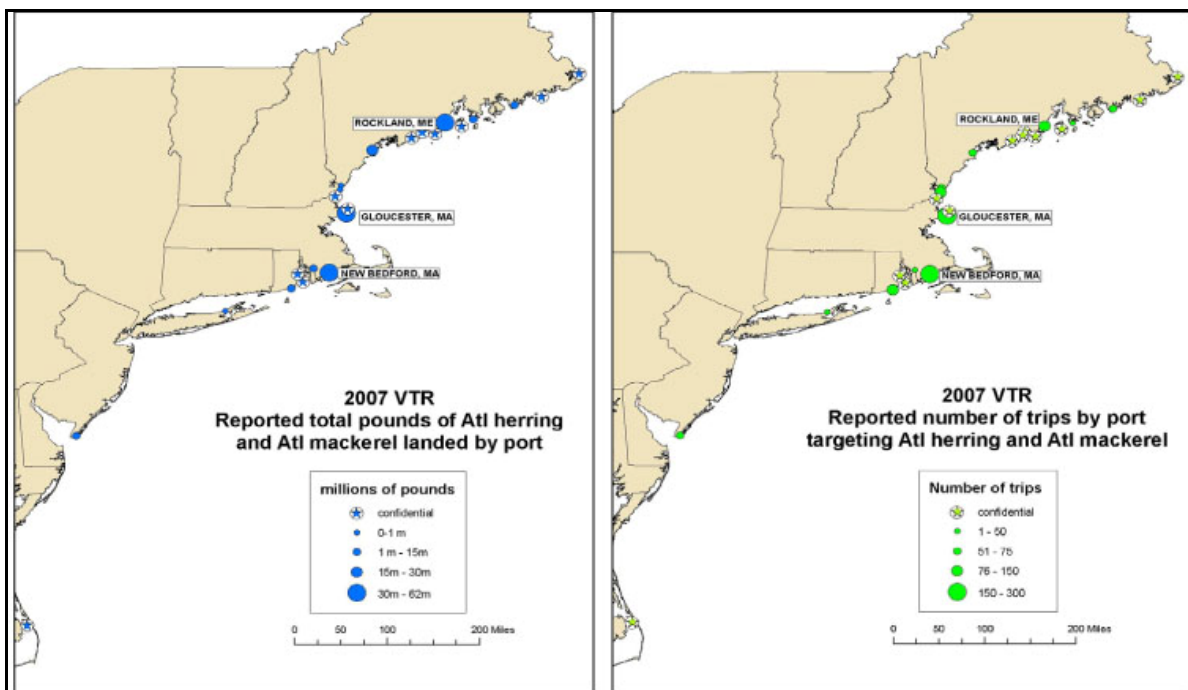
As part of the development of the omnibus amendment to address standardized bycatch reporting methodology (SBRM), the National Working Group on Bycatch (NWGB) concluded that, “*for fishery resources, excluding protected species, caught as bycatch in a fishery, the recommended precision goal is a 20-30% CV for estimates of total discards (aggregated over all species) for the fishery; or if total catch can not be divided into discards and retained catch then the goal is a 20-30% CV for estimates of total catch.*” (NMFS 2004) As the NWGB pointed out, “Ideally, standards of precision would be based on the benefits and costs of increasing precision” (NMFS 2004). They also noted that under some circumstances, attaining the precision goal alone would not be an efficient use of the public resources. The tradeoffs associated with increasing precision to meet a specified goal are very important to understand when developing a sampling program, whether dockside or at-sea.

At its February 9-11, 2009 meeting, the Council reviewed preliminary analysis of at-sea coverage levels, the example approach provided by the Herring PDT, and Herring Committee recommendations, and passed a motion to **construct a program for sampling/observer coverage that is intended to achieve a 20% CV on river herring catch and a 30% CV on Atlantic herring and haddock catch as the priority species.** CVs are likely to be near these levels for all other species that are sampled as well.

The analysis provided in Section 2.3.4.1 of this document represents an example of how a dockside and/or at-sea sampling program could be constructed to achieve the desired objectives (see Section 2.3.4.1, p. 20). It is intended to give managers an understanding of the level of coverage/sampling that would likely be necessary to achieve the desired CV for estimating bycatch of herring, river herring, and haddock on midwater trawl and pair trawl vessels. This should help in terms of designing a sampling program that can meet specific goals. Once goals are identified and the number of required sea days is estimated, the next step would be to design a sampling schedule for the fishing year based on current patterns of fishing effort in a stratified random design. Recent patterns of fishing effort (time and space) and landings events would be examined to determine the appropriate sampling design for the dockside sampling program (see Figure 1).

The estimates of coverage shown in the following tables are for the purposes of providing an example and should be considered **minimum estimates** of coverage that would be needed to achieve the desired CVs for the midwater trawl and pair trawl fleet. Sampling in the fishery has been relatively low and inconsistent in recent years, so variability is high and, in some cases, has not been adequately characterized. Higher levels of sampling would likely be required in the beginning years to better understand variability and achieve the goals of the program. As sampling increases, data improve, and the program evolves, the sampling design and coverage levels will change; the sampling program must be an iterative process with regular review/analyses of previous years to determine the best course of action for future years. The Council should continue to specify the goals/objectives of the sampling program, and NOAA Fisheries scientists should determine the appropriate sampling design to achieve these goals. The Herring PDT will evaluate the sampling program (dockside and at-sea) regularly as part of the herring SAFE Report and specifications process.

Figure 1 2007 Landings and Number of Trips by Port for Vessels Targeting Herring and Mackerel (VTR Data)



Federal Vessel Trip Report Summary for Year 2007. Landings and number of trips by port for Category A, B, C, and D permitted vessels where target species were Atlantic herring and Atlantic mackerel. Weights are reported in pounds and trips with 2000 pounds or less were not included in the analysis. Ports that had reported landings are shown, but consistent with Massachusetts Division of Marine Fisheries confidentiality rules, data for ports that had less than 3 trips, or less than 3 vessels reporting landings, were kept confidential.

2.5.3.6 DSP Sampling Methodology/Protocols

Sampling methodology will be consistent with NOAA Observer Program protocols, with some modifications to decrease variance in extrapolation of bycatch estimates and reduce potential sampling bias. Due to the large quantities of fish that are typically landed in the herring fishery, sub-sampling will likely be necessary for many offloading events. Sub-sampling is used when the volume of fish that the sampler is attempting to quantify is too large to obtain actual weights or if the amount of bycatch is too abundant. During sub-sampling, the sampler will collect smaller batches of fish, sort and weigh by species, and then extrapolate to the total catch.

In the Atlantic herring fishery, no offload points/events are the same. The methodology described in this section provides some general guidelines and examples for sampling landings events in the herring fishery. NOAA Fisheries should coordinate efforts with DSP service providers to better determine the most appropriate sampling approaches given the logistical differences in offload points and other complicating factors.

The two fundamental elements necessary for a dockside sampler to know in order to successfully sample a landings event are a volumetric estimate of the total landings and the species composition of the catch. Landings will be either sampled completely or sub-sampled to determine the species composition of the catch (see protocols for complete sampling and sub-sampling below). In most situations, sampling will be conducted over the entire offloading period to capture any stratification that may occur throughout the entire fishing activity (e.g. while being pumped aboard while out at sea, due to the difference in species size and composition between tows, settling in the vessel's holding tanks, etc.). Because the catch is not unloaded the same way at every dealer or plant, sampling techniques may vary (examples are provided below). Typically, samples will be collected systematically at set intervals with predetermined sample sizes. All samples will be sorted by species and actual weights will be taken. Lengths will be taken according to the NOAA Observer Program species priority list by statistical area, and commercial catch samples for assessment purposes will be collected using current protocols.

Complete Sampling Protocol (Processing Plants and Whenever Possible)

A complete sampling protocol can be utilized in cases where the entire offload can be observed and sampled, and all bycatch can be sorted and counted. Complete sampling is desirable for offload events that occur at processing plants. The samplers collect and quantify all landings from individual lots of fish (transported by trucks or vessels) that enter the processing facilities. Samplers position themselves at the point of entry into the facility along an assembly line or at the base of the hoppers where the fish are unloaded. Sampling is conducted before grading or sorting of the catch occurs. All bycatch is removed from the assembly line or hopper and placed in bushel baskets or buckets specific to each species. The total weight of any observed bycatch is recorded along with species identification, total species weight, individual lengths and weights of all fish according to a NOAA Fisheries and ACCSP specified protocol. If there is a large amount of one incidental species, the total weight is recorded and then length frequencies and weight are gathered from a sub-sample of 50-100 individuals.

Sub-Sampling Protocol

A sub-sampling protocol can be utilized when sampling a very large volume of catch and/or when facilities at the offload point make complete sampling impossible. Instances where this is likely to occur include offload points where fish are pumped directly into trucks. Sub-sampling is also appropriate in instances when the volume of fish pumped is greater than the manpower available at the sampling point can observe with certainty. In these cases, it may not be possible to use the complete sampling protocol regardless of the amount inspected (< 80,000 lbs.). These situations are also likely to occur when vessels are fishing mixed groups of herring and mackerel, some of which can have a 50-50 composition.

Sub-samples are to be collected using bushel baskets at timed intervals during the pumping or unloading process following the NOAA Fisheries at-sea observer sampling protocol. To accomplish this type of sub-sampling, the dockside sampler needs to know the total lot weight and the duration of time it will take to unload the catch. After sampling, the bushel baskets of fish should be sorted by species, and total weight of each species and length frequencies should be recorded (sub sample n=50, for length frequencies if more than fifty of any species occurs).

Sub-Sample Example (Trucks, Bait Dealers)

1. Lot size (determined by the sampler) = 120,000 lbs (3 Trucks)
2. Pumping or unloading time = 3 hours (180 minutes)
3. If a sample basket is to be collected for every 10,000 lbs of fish, then 12 sample baskets need to be collected over the entire pumping or unloading process.
 - o $120,000 \text{ lbs} / 10,000 \text{ lbs} = 12$
4. If the entire pumping or unloading process takes an estimated 180 minutes, then a basket sample should be taken every 15 minutes
5. If the catch composition from the bushel baskets is 99% Atlantic Herring, then one can extrapolate that out of the 120,000 lbs unloaded, then 118,800 lbs is Atlantic Herring.
 - o $99\% \text{ Atlantic Herring} = 120,000 \text{ lbs} \times 0.99 = 118,800 \text{ lbs of Atlantic Herring}$
6. If the remaining 1% of the catch composition is Atlantic Mackerel, then one can extrapolate that out of the 120,000 lbs unloaded, 1,200 lbs is Atlantic Mackerel.
 - o $1\% \text{ Atlantic Mackerel} = 120,000 \text{ lbs} \times 0.01 = 1,200 \text{ lbs of Atlantic Mackerel}$

Data will be recorded on sheets consistent with ME DMR and MA DMF data collection sheets for the existing portside bycatch sampling programs (Figure 2 – Figure 4). The sampling sheet for the processing plant (Figure 2) is designed to collect and record all data needed to comprehensively quantify discards through the field “inches in vat.” Once the discard composition is recorded, along with pump rate and data for “kept” catch, Excel worksheets are used to derive the composition of the landings. Sub-sampling data sheets (Figure 3) are used to sample baskets of unsorted catch at intervals set by the sampler based on the total volume of catch and pump rates.

Figure 4 Example Length Frequency Data Collection Sheet

SMALL PELAGIC PORTSIDE BYCATCH SURVEY											
YEAR _____		SPECIES _____		AREA _____		SAMPLERS _____		PAGE _____		OF _____	
MONTH _____		LOT WT _____		SAMPLE NO. _____				DATA ENTRY COMPLETE		<input type="checkbox"/>	
Species _____			Species _____			Species _____			Species _____		
Tot Wt (kg) _____			Tot Wt (kg) _____			Tot Wt (kg) _____			Tot Wt (kg) _____		
Sub Wt (kg) _____			Sub Wt (kg) _____			Sub Wt (kg) _____			Sub Wt (kg) _____		
Lt (cm)	Frequency	Sub Wt (kg)	Lt (cm)	Frequency	Sub Wt (kg)	Lt (cm)	Frequency	Sub Wt (kg)	Lt (cm)	Frequency	Sub Wt (kg)
0			0			0			0		
1			1			1			1		
2			2			2			2		
3			3			3			3		
4			4			4			4		
5			5			5			5		
6			6			6			6		
7			7			7			7		
8			8			8			8		
9			9			9			9		
0			0			0			Species _____		
1			1			1			Tot Wt (kg) _____		
2			2			2			Sub Wt (kg) _____		
3			3			3			Lt (cm)		
4			4			4			Frequency		
5			5			5			Sub Wt (kg)		
6			6			6			0		
7			7			7			1		
8			8			8			2		
9			9			9			3		
0		Notes	0		Notes	0		Notes	4		
1			1			1			5		
2			2			2			6		
3			3			3			7		
4			4			4			8		
5			5			5			9		
6			6			6			COMMENTS		
7			7			7					
8			8			8					
9			9			9					

Protocol for Collecting Commercial Catch Samples

As part of this alternative, there would be a procedure in plan for collecting commercial catch samples for stock assessment purposes when sampling landings events. Currently, ME DMR collects commercial catch samples using the following protocol (provided here as an example):

1. Herring must have been caught in U.S. waters.
2. Two samples per week from each statistical area where the fish are being caught (see map section).
3. One sample per week from each type of fishing gear where possible (mid-water trawl, pair trawl, purse seine, stop seine, weir and gill net).
4. 50 herring are randomly selected from the load (plus a couple to allow for damaged fish). The fish are placed in DMR herring sample boxes.
5. The sample boxes are labeled and transported to DMR headquarters in W. Boothbay Harbor.
6. The following information should be recorded on the sample boxes:
 - a. Amount of herring landed (lbs or metric tons)

- b. Date of catch
- c. Catch location: NMFS Statistical Area # and Sub-Area #
- d. Port landed
- e. Fishing vessel
- f. Location of where sample was collected (sometimes different than where fish were landed)
- g. Name of collector
- h. Under remarks note gear type (purse seine, midwater/pair trawl, stop seine, gillnet or weir)
- i. Label number of boxes per sample (i.e. 1 of 2 and 2 of 2)

2.5.3.7 Objective #2 – Estimating Total Catch and Verifying the Accuracy of Self-Reporting

The objective to confirm the accuracy of self-reporting could be accomplished by extending the current role of dockside samplers to include the verification of landings because the samplers need this information anyway to determine how to best sample the offload.

- When sub-sampling, dockside samplers would use the certified volumetric capacity estimates to derive the total volume of the offload, which can then be converted to weight and used to determine the time intervals for sub-sampling. See Section 2.5.2 of this document for additional information.
- For every landings event that is sampled by a dockside sampler, there would be several estimates of herring landings: IVR reports (captains' hail weights), VTRs, dealer reports, and dockside sampler estimates. These data sources can be cross-checked by NOAA Fisheries to confirm the accuracy of self-reporting.

This program will utilize independent private contractor(s) to coordinate dockside sampler deployment and summarize, enter, and review data associated with the program. Data will be recorded by dockside samplers and submitted to NOAA Fisheries (see example data forms). NOAA Fisheries will cross-check the DSP data with dealer and VTR reports to confirm the accuracy of self-reporting, and bycatch estimates will be compared to those derived through at-sea monitoring.

2.5.3.8 DSP Service Providers – Requirements and Standards

These requirements/standards can apply to at-sea monitors as well, if at-sea monitoring is contracted out to private service providers.

The following standards would be used by NOAA Fisheries to evaluate service providers to comply with the dockside sampling requirements outlined in this section. NOAA Fisheries will certify/approve service providers and associated dockside samplers as eligible to provide services based upon criteria specified below and can decertify/disapprove service providers and/or individual samplers if such criteria are no longer being met. NOAA Fisheries will publish a list of approved service providers consistent with the Administrative Procedures Act (APA). The following standards and criteria for approval can be further modified by a future Council action.

Dockside sampling program service providers must apply for certification/approval from NOAA Fisheries. NOAA Fisheries shall approve or disapprove a service provider based upon the completeness of the application and a determination of the applicant's ability to perform the duties and responsibilities of a dockside sampling service provider, as further defined below. As part of that application, potential service providers must include the following information:

- Identification of corporate structure, including the names and duties of controlling interests in the company such as owners, board members, authorized agents, and staff; and articles of incorporation, or a partnership agreement, as appropriate;
- Contact information for official correspondence and communication with any other office;
- A statement, signed under penalty of perjury, from each owner, board member, and officer that they are free from a conflict of interest with fishing-related parties including, but not limited to, vessels, dealers, shipping companies, sectors, sector managers, advocacy groups, or research institutions and will not accept, directly or indirectly, any gratuity, gift, favor, entertainment, loan, or anything of monetary value from such parties;
- A statement, signed under penalty of perjury, from each owner, board member, and officer describing any criminal convictions, Federal contracts they have had, and the performance rating they received on the contract, and previous decertification action while working as a DSP service provider;
- A description of any prior experience the applicant may have in placing individuals in remote field and/or marine work environments – this includes, but is not limited to, recruiting, hiring, deployment, and personnel administration;
- A description of the applicant's ability to carry out the responsibilities and duties of a DSP service provider and the arrangements to be used;
- Evidence of adequate insurance to cover injury, liability, and accidental death for dockside samplers (including during training). Workers' Compensation and Maritime Employer's Liability insurance must be provided to cover the dockside samplers; vessel owners; processors/dealers; and service provider. Service providers shall provide copies of the

insurance policies to dockside samplers to display to the vessel owner, operator, vessel manager, or dealer/plant manager, when requested.

- Service providers shall provide benefits and personnel services in accordance with the terms of each sampler's contract or employment status.
- Proof that the service provider's dockside samplers have passed an adequate training course that is consistent with the curriculum used in the current Northeast Fisheries Observer Program (NEFOP) training course, unless otherwise specified by NOAA Fisheries;
- An Emergency Action Plan (EAP) describing the provider's response to an emergency with a dockside samplers, including, but not limited to, personal injury, death, harassment, or intimidation; and
- Evidence that the company is in good financial standing.

Dockside sampling service providers must be able to document compliance with the following criteria and requirements:

- A comprehensive plan to deploy NOAA Fisheries -certified dockside samplers, according to a prescribed coverage level (or level of precision for catch estimation), as specified by NOAA Fisheries, including all of the necessary vessel reporting/notice requirements to facilitate such deployment, including the following requirements:
 - A service provider must be available to industry 24 hours per day, seven days per week, with the telephone system monitored a minimum of four times daily to ensure rapid response to industry requests;
 - A service provider must be able to deploy dockside samplers to all ports in which service is required by this section;
 - A service provider must report dockside samplers in a timely manner to determine whether the predetermined coverage levels are being achieved;
 - A service provider's dockside sampler assignment must be representative of fishing activities must be able to monitor fishing activity throughout the fishing year;
- The service provider must ensure that dockside samplers remain available to NOAA Fisheries, including NMFS Office for Law Enforcement, for debriefing for at least two weeks following any sampled trip/offload;
- The service provider must report possible dockside sampler harassment; discrimination; injury; and any information, allegations, or reports regarding dockside sampler conflict of interest or breach of the standards of behavior to NOAA Fisheries;
- Service providers must submit to NOAA Fisheries, if requested, a copy of each signed and valid contract (including all attachments, appendices, addendums, and exhibits incorporated into the contract) between the service provider and those entities requiring services and between the service provider and specific dockside samplers;
- Service providers must submit to NOAA Fisheries, if requested, copies of any information developed and used by the service providers distributed to vessels, such as informational pamphlets, payment notification, description of duties, etc.;

- A service provider may refuse to deploy a dockside sampler for any reason including, but not limited to, the following:
 - If the service provider does not have an available dockside sampler prior to a vessel's intended date/time of landing
 - If the service provider is not given adequate notice of vessel departure or landing, as specified by the service provider
 - Any other reason, including failure to pay for previous deployments of dockside samplers
- A service provider must not have a direct or indirect interest in a fishery managed under Federal regulations, including, but not limited to, fishing vessels, dealers, shipping companies, advocacy groups, or research institutions and may not solicit or accept, directly or indirectly, any gratuity, gift, favor, entertainment, loan, or anything of monetary value from anyone who conducts fishing or fishing-related activities that are regulated by NOAA Fisheries, or who has interests that may be substantially affected by the performance or nonperformance of the official duties of service providers. This does not apply to corporations providing reporting, dockside, and/or at-sea monitoring services to participants of another fishery managed under Federal regulations.
- A system to record, retain, and distribute the following information for a period specified by NOAA Fisheries:
 - Dockside sampling levels, including the number of refusals and reasons for refusals
 - Incident/non-compliance reports (e.g., failure to offload catch)
 - Hail reports, landings records, and other associated communications with vessels
- A means to protect the confidentiality and privacy of data submitted by vessels, as required by the Magnuson-Stevens Act; and
- A service provider must be able to supply dockside samplers with sufficient safety and data-gathering equipment, as specified by NOAA Fisheries.

For an individual to be certified as a dockside samplers, the service provider must demonstrate that each potential sampler meets the following criteria:

- A high school diploma or legal equivalent;
- Successful completion of all NOAA Fisheries -required training and briefings before deployment;
- Physical capacity for carrying out the responsibilities of a dockside sampler pursuant to standards established by NOAA Fisheries such as being certified by a physician to be physically fit to work as a dockside sampler. The physician must understand the sampler's job and working conditions, including the possibility that a sampler may be required to climb a ladder to inspect fish holds and/or trucks;
- Absence of fisheries-related convictions based upon a thorough background check; and
- Independence from fishing-related parties including, but not limited to, vessels, dealers, shipping companies, advocacy groups, or research institutions to prevent conflicts of interest.

2.5.4 Measures to Require Electronic Reporting

Under this alternative, electronic reporting would be required for Category A and B limited access herring vessels.

- Electronic reporting for limited access vessels (based on study fleet program with possible additions/modifications, including Frulla et al suggestions to utilize technologies to identify bycatch areas and slippage events)

Comment [Ils37]: The Herring Committee received a presentation about the NEFSC Study Fleet at the June 4/5, 2009 meeting. Electronic logbook reporting may be a possibility for this amendment, but further testing is required, and testing on herring vessels will hopefully occur during the summer/fall 2009. Incorporating additional technology into the software (for example, net sensors to detect slippage events) needs further investigation.

2.5.5 Measures to Improve Quota Monitoring, Modify IVR Requirements, and Address Transfers At-Sea (from Section 2.2)

This alternative will incorporate some of the measures proposed in this document to improve quota monitoring (Section 2.3.1, p. 8), modify IVR Reporting requirements (Section 2.3.1.2, p. 11), and measures to address transfers at-sea (Section 2.3.2, p. 17). The Council's preferred options from these sections will be incorporated into this alternative.

2.5.6 Measures to Address At-Sea Monitoring

At-sea monitoring in this alternative will be based on a sampling design that is intended to achieve a 20% CV for estimating bycatch of Atlantic herring, river herring, and haddock in the herring fishery. Based on available resources, observer days will be allocated to the herring fishery based on the sampling design that is ultimately adopted in this amendment (see Section 2.3.4.1 of this document for a detailed description of the sampling design – still under development, final details TBD). This amendment encourages and requires the maximum amount of observer coverage that available resources can support, within the bounds of the sampling program described in Section 2.3.4.1.

Management measures to improve at-sea monitoring are described in Section 2.3.4.2 of this document. The measures that are ultimately adopted by the Council to address/improve at-sea monitoring will be incorporated into this alternative.

2.5.7 Video Monitoring Pilot Program

This alternative will establish a pilot program to collect information and determine the most appropriate applications for video monitoring in the Atlantic herring fishery.

- Details TBD
- Could be tested with maximized retention to ensure compliance
- Incentives to participate? Cost recovery?

2.6 CATCH MONITORING ALTERNATIVE 2

This alternative was approved by the Committee and Council for further consideration/development at the January and February 2009 meetings. This alternative includes all of the management measures/options described in the following subsections.

2.6.1 Measures to Improve Catch Weighing

The intent of these measures is to move towards as close to 100% catch weighing as practicable. Proposed measures include:

Comment [IIs38]: Catch weighing or improving catch estimates?

- Volumetric catch weighing program with a provision for alternative catch weighing plans to be developed and submitted by herring fishermen for approval by NMFS – calibration of fish holds by recognized certification agencies (American Bureau of Shipping, etc.) so that tanks can be measured by captain and crew to determine the amount of fish in the hold
- Captain and crew work with observers and shoreside samplers to confirm volume and weight of fish whenever possible, and VTRs cross-checked with dealer reports for accuracy
- To estimate total catch for monitoring TACs/ACLs, NMFS would develop a protocol for estimating weight and species composition of slipped catch (measures to improve observer program and utilization of new technologies, described below, can help to improve accuracy of data regarding slipped tows)

Comment [IIs39]: see Section 3.5.2 of this document for details.

Comment [IIs40]: Electronic logbooks could be utilized as well, if incorporated into this alternative

2.6.2 Measures to Encourage Utilization of New Technology to Improve Information Collection

- Top priority for the current RSA to investigate the feasibility of using the Study Fleet technology in the Atlantic herring fishery – electronic monitors, net sensors measuring trawl depth, temperature, and other data, and GPS integrated into a vessel’s major systems to collect information and transmit electronically – technology can be used to measure incidences of slipped hauls on unobserved trips and provide fine-scale effort data

Discussion

The amount and quality of the information collected can help managers and the industry to better assess conditions that may lead to higher levels of bycatch, thereby improving the ability of fishermen to avoid it. Ultimately, this technology may also prove to be a much more cost-effective means of monitoring the fishery than either additional at-sea observers or video monitors. This technology can also provide a tool for better enforcement.

2.6.3 Measures to Achieve at Least 20% CV for Bycatch Estimates in the Fishery from a Combination of At-Sea and Shoreside Sampling

The intent of this alternative is to achieve a level of accuracy that reflects at least a 20% coefficient of variation (CV), for estimates of bycatch in the herring fishery from a combination of at-sea and shoreside sampling. Given the volume of fish caught by midwater trawl vessels, there are no opportunities for sorting fish at sea. Fish are pumped directly from the net to the holds below the deck. Other than larger species that are excluded by grates, samples taken portside and those taken at-sea should yield identical results. High levels of precision for species of concern, like river herring and haddock, can therefore be obtained through a combination of at-sea and shore-based sampling. (Improving estimates for bycatch that is not brought on board is addressed through measures to improve at-sea monitoring in Section 2.6.4).

2.6.3.1 Dockside Monitoring/Portside Sampling Program

This measure would require NMFS, in cooperation with the States of Maine and Massachusetts, to establish a uniform and statistically-robust shore-based catch sampling protocol, including standard reporting forms, criteria for sampling (number of samples, methodology, etc), standards for species identification training and data archiving. This will ensure that all information collected is comparable and rigorous, regardless of whom it is collected by (State, Federal, or other samplers).

This measure also would mandate the establishment of a shore-based sampling program – direct NMFS to use some existing resources to collect catch/bycatch information at the first point of landing or production, subject to the normal operation of the fishing company.

Discussion

NMFS, the States, and the herring industry should work jointly to establish the most effective and efficient means for gathering samples, develop a uniform methodology for collecting such samples, and establish provisions for working space that do not interfere with offload and processing operations, in addition to other operational details. The current call-in system would be used to provide ample notice to NMFS prior to landing, in order to arrange for port samplers when they may be available.

2.6.3.2 Increase Observer Coverage to SBRM Levels

This measure would require NMFS to increase observer coverage in the Atlantic herring fishery to levels required by the Standardized Bycatch Reporting Methodology (SBRM) amendment. At-sea monitoring for the herring fishery would be prioritized by NMFS in such a way that the necessary levels of coverage could be achieved.

Discussion

The Council should insure that the full measure of observer coverage necessary to meet the standards in the SBRM is achieved. However, even if the provisions for at-sea monitoring target

Comment [IIs41]: Same as the DSP in Alternative 1?

a 30% coefficient of variation (CV) for bycatch estimates, the Council could achieve higher levels of precision by utilizing an expanded shore-based sampling program, as proposed (see above).

2.6.4 Measures to Improve At-Sea Monitoring

Some of the measures to improve at-sea monitoring, data collection, and observer safety that are proposed Section 2.3.4 of this document would be incorporated into this alternative, including:

- Provide the observer with a safe sampling station – this may include a safety harness (if grating systems are high above the deck), a safe method to obtain basket samples, and a storage space for baskets and gear
- Provide assistance in obtaining basket samples and sorting discards, with utilization of diverter shoots or some other method (to the extent practicable)
- Provide accurate details to the observer regarding why a bag may be partially pumped and fish released (also joint effort by observers and crew to estimate weight and composition of released tows). Whenever possible releasing fish should be with the intention of returning them to the sea alive. Observer logs would be updated to accommodate this information with an opportunity for Captains to record their remarks.
- Provide observer notice when pumping may be coming to an end to assist in allowing a consistent stratification of basket samples
- Captains and crew to notify the observer when there is a marine mammal entanglement so that the observer can ensure that the incident is fully documented in the observed trip records and the animal can be biologically sampled when possible. Current requirements under the MMPA's Marine Mammal Authorization Program require the Captain to report serious injury and mortalities of marine mammals to NMFS Protected Resources after a trip.
- In pair trawl operations, ensure communication between the boats if fish are being pumped to multiple vessels with only one observer on the trip.

This alternative would also encourage the development of a Code of Conduct by/for the herring fishing industry. The Code of Conduct would be designed to improve the working relationship between observer program and vessel personnel, as well as the quality and amount of information provided on unobserved trips. This Code would include standards for cooperation, pre-season meetings with observer program representatives to discuss problems, issues, and protocols for the fishing year, and, to the extent practicable, strive for pre-cruise meetings between the captain, officers, and observers to establish working protocols and methodologies for helping to improve data collection. This Code would also include standards for providing detailed information on unobserved trips, such as details regarding slipped hauls, including estimates of weight, species composition, and the reason for slipping the haul (for the observer logs). Vessels will also commit to providing details on species that are excluded from catch due to size and other limitations. Adherence to the Code would be voluntary, and the Code would be established in addition to the measures proposed in this section. Placards to provide important information contained in the Code to crewmembers would be developed for distribution to the fleet.

2.7 CATCH MONITORING ALTERNATIVE 3

This alternative was approved by the Committee and Council for further consideration and development at the January and February 2009 meetings. This alternative includes all of the management measures/options/sub-options described in the following subsections.

Comment [IIs42]: Herring Committee recommends including additional options described in CHOIR letter dated June 1, 2009 for further consideration/development in this alternative.

The primary elements of this alternative include Verified Maximized Retention (VMR), with verification via Video-Based Electronic Monitoring (VBEM) at 100% coverage and a target retention rate of 99.5% of total catch, and Dockside Monitoring (DSM) at 100% coverage. The measures proposed in this alternative are intended to apply to those vessels participating in the limited access directed fishery for Atlantic herring (Category A and B vessels).

2.7.1 Measures to Ensure Maximized Retention

This alternative would mandate maximized retention for the Atlantic herring fishery.

Comment [IIs43]: See Herring PDT Report (May 26, 2009) for additional discussion re. maximized retention provisions

Comment [IIs44]: Herring Advisory Panel recommends to move to the considered but rejected portion of the discussion document all maximized retention options consistent with the recommendations of the Enforcement Committee concerning vessel safety

2.7.1.1 Option 1 – 99.5% of Catch

Herring vessels would be required to land *all fish* that are caught during their fishing operations, and discarding would be largely prohibited.

- Mandatory Maximized Retention (target of 99.5% of all catch landed)
 - Two Categories of Prohibited Species (not to be landed)
 1. Species protected under the Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) or subject to similar prohibitions will not be landed under any circumstances.
 2. Species for which the vessel is not permitted or is subject to landings limits may be addressed through a series of sub-options (see Section XXX for description of sub-options to address non-permitted landings).
 - Mandatory Verification of Compliance with Maximized Retention Requirements
 - At-sea component of vessel-designed Catch Monitoring and Control Plan (CMCP, see below) will be required to outline procedures for the installation and operation of a Video-Based Electronic Monitoring (VBEM) system.
 - CMCP must include detailed procedures to demonstrate the absence of pre-sorting, including demonstration that the codend is empty after each haul and that no fish were slipped from the codend while the codend was in the water (see Section XXX for a description of options to address slippage).

2.7.1.2 Option 2 – Species-Based Maximized Retention

Herring vessels would be required to land *all of the following species* (to be selected in any combination from the list below) caught during their fishing operations. Discarding of these species would be prohibited.

- Atlantic herring
- Mackerel

- Haddock
- Other Large-Mesh Regulated Groundfish - Atlantic cod, witch flounder, American plaice, yellowtail flounder, pollock, winter flounder, windowpane flounder, redfish, white hake
- Small-Mesh Groundfish – silver hake (whiting), offshore hake, red hake
- River herring
- Shad
- Dogfish
- Other ASMFC-managed species (???)

2.7.1.3 Options for Phase-In of Maximized Retention Provisions

1. A temporal phase-in of maximized retention over two to four years which includes a gradual but steady reduction in the amount of at-sea discarding permitted as well as the dumping tonnage cap. Data from the U.S. west coast hake fishery maximized retention program show a steady reduction in at-sea discarding as unnecessary discards and bad behavior are identified and eliminated.
2. A spatial phase-in of maximized retention in which bycatch hotspots, for instance the previously identified river herring hotspots or groundfish closed areas, require maximized retention.
3. A gradual phase-in of Video Based Electronic Monitoring (VBEM) as the verification system through pilot programs. This approach is briefly mentioned in Alternative 3 now, but warrants further attention. It will be important to provide overlapping coverage with Federal observers on pilot fishing trips to ensure robust monitoring during the phase-in period while herring fishermen dial in VBEM. Though a proven application of VBEM, maximized retention verification in trawl fisheries would be new to New England.

2.7.1.4 Trip Termination Option

This measure would require a vessel to terminate its trip and return to port in the event that slippage occurs.

(Needs more discussion/development – which section should this measure be included in?)

2.7.2 Video-Based Electronic Monitoring (VBEM)

This alternative will require video-based electronic monitoring equipment to ensure compliance with maximized retention provisions.

(This section needs further discussion/development.)

VBEM systems will require two distinct types of support service. While these two service categories may be handled by the same vendor, it is also possible that they would be handled separately. For instance, when CCCHFA pilot-tested VBEM solutions in New England and

planning discussions were held pending potential operational implementation, a model was considered in which a local non-governmental organization (NGO) might handle field service and Archipelago would handle analysis.

- Field service
- Analysis service

2.7.3 Measures to Ensure Actual Weight Measurements or Verifiable Volumetric Proxies

The intent of this measure is to rely on independently-verifiable weights from certified scales (or an approved volumetric proxies) instead of estimates made by captains and dealers.

The tools, called flow scales or hopper scales, are specially designed to deliver an accurate weight for total landings in a fishery which pumps the fish from one place to another. These scales do not slow down or otherwise interfere with the offload process for the vessels or processors. Regulations mandating the installation, maintenance, and use of approved scales or other weighing techniques which can be verified by a shore-based observer for all pelagic fishery offloads forms the first key component of this measure.

Other methods which may also provide certified actual weights include truck scales or certified volumetric estimates based on vessel fish-hold surveys and calibrated measuring techniques. The industry will choose from a range of alternatives for providing a verifiable independent estimate of catch weight, including something as simple as “sticking” a calibrated fish hold or truck, and it will be up to them to choose their preferred techniques. This can be specified in their catch monitoring and control plan (CMCP, see below).

2.7.4 Measures to Ensure 100% Dockside Monitoring (DSM)

Rigorous sampling of the landed fish and certification of the offload weigh-outs (census of all landing events) by certified shore-based observers forms another critical component of this alternative. 100% coverage of offloads by certified shore-based fishery observers (SBOs) who execute a robust protocol to derive total species-level landings composition would be necessary in this alternative.

Participation in the 100% Dockside Monitoring Program would be mandated.

- Shoreside component of CMCP (see below) will be required to outline procedures for the following catch-handling elements upon landing:
 - Procedures to ensure the presence of a shore-based observer for all landing events;
 - Certification standards for shore-based observers;
 - Minimum data collection standards and protocol guidelines for shore-based observers, including those employed by states (see Section XXX for a description of options for DSM providers);
 - Verification that no pre-sorting takes place upstream of shore-based observers;

- Procedures to provide a certified measurement of landed weight that is verifiable by the shore-based observer.

2.7.5 Options for Dockside Monitoring (DSM) Service Providers

This section describes a series of options for the provision of DSM services. It also lays out a framework whereby this alternative would maximize available resources by establishing innovative data-sharing agreements and cooperative standardization of protocols amongst existing government sampling efforts (State and Federal) and the anticipated private DSM vendors and NMFS.

2.7.5.1 Option 1 – Standardize existing state port sampling programs and incorporate them into the proposed action by certifying them as approved DSM vendors

Under this option, the existing port sampling programs run by the States of Maine and Massachusetts would be incorporated into the new catch monitoring program, ensuring that the data they produce is utilized. Their protocols would be standardized and adjusted to meet the required data elements of the proposed action, and State port samplers would only monitor offloads for vessels with an approved CMCP in place. State port sampling data would be converted to landings reports which would in turn be submitted to NMFS-NERO-FSO.

Maine DMR Program

The State of Maine, through the Division of Marine Resources (DMR), has conducted a port sampling program in the herring fishery for several years. Historically, funding for the program, which employs one full-time port sampler and for which DMR contributes supervisory and analysis services, has come from the Atlantic Coastal Cooperative Statistics Program (ACCSP). The program has undeniable value, but would likely be more effective if sampling protocols were changed somewhat.

Under this alternative, the DMR port sampler(s) would implement a standardized sampling protocol that would allow them to certify a landings report for any landing they observed that included landed weights for all species. DMR port sampler(s) would also benefit from other requirements of the program including the requirement to provide a certifiable actual weight or approved proxy and the requirement to demonstrate the absence of pre-sorting.

Massachusetts DMF Program

Few details on the size, scope and sampling strategy of the DMF program are available at this time, in part because the program is quite new, but it is believed to consist of one full-time port sampler. It is also believed to be modeled on the DMR program and is, like that one, voluntary for vessels. It is not known whether the DMF sampler works outside Massachusetts.

Resources are currently available to support an expansion of this program. The Cape Cod Commercial Hook Fishermen's Association (CCCHFA) has recently assisted Massachusetts' fishery managers and state legislators in the development of progressive legislation that will

enable the Division of Marine Fisheries (DMF) to build and implement a groundbreaking dockside monitoring system for the pelagic fishing industry. Specifically, a piece of state legislation, H5054, also known as the Energy and Environmental Bond Bill (EEBB) was signed into law by the Governor in August 2008. The EEBB specifies that the Commonwealth will create a rigorous DSM program with verifiable landings weights and 100% sampling of landing, and also contains a provision to authorize the Governor to appropriate \$750,000 to support such a program.

2.7.5.2 Option 2 – Implement an immediate or phased-in use of NEFOP observers as shore-based observers for the proposed action, essentially certifying the NEFOP as a DSM vendor

Under this option, NEFOP observers, at currently projected staffing levels or perhaps under a future expansion, would be able to operate as shore-based observers and provide DSM services under the proposed program. While the NEFOP could simply continue to operate as it does now in terms of observing the herring fishery, even once the proposed program were implemented (if chosen by the Council), this option would allow for a more efficient use of resources on all fronts, provided NMFS was satisfied that the proposed program was adequate and therefore supportive of shifting NEFOP personnel from vessel to shore.

There would also be an option for NEFOP to employ a diverse approach to placing Federal observers into this fishery- sometimes on the vessels, sometimes on shore, depending upon data needs and resource availability. This option might allow for a highly efficient use of NEFOP personnel otherwise on “stand-by” for various reasons and thus unable to go to sea to observe the herring fishery (see Option 6 in Section XXX below for more information).

2.7.5.3 Option 3 – Implement a single-service provider plan for DSM operations which cannot be covered by shore-based observers employed by state or Federal agencies

2.7.5.4 Option 4 – Implement a multi-service provider plan for DSM operations which cannot be covered by shore-based observers employed by state or Federal agencies

2.7.6 Requirements for Catch Monitoring and Control Plans (CMCPs)

This component of this alternative is intended to assure that the industry retains control and flexibility over fishing, landing, and processing operations while still ensuring the delivery of a robust data collection program. **Pelagic fishery vessels and dealers would be required to design and submit for approval a Catch Monitoring and Control Plan (CMCP) that would outline in detail how they will meet the catch monitoring and control standards set by the Council and NMFS.**

Comment [IIs45]: See additional information about CMCPs in Section XXX of this document.

The standards specified in this amendment would outline requirements for each CMCP to include the following: sorting and weighing all landings under the oversight of the shore-based observer (SBO), notification requirements in advance of a landing, use of approved scales or other weighing techniques, provision of safe and convenient access points and sampling locations for SBO, and procedures to ensure that no unobserved pre-sorting occurs, including at-sea through the installation and operation of a VBEM system.

Under this alternative, catcher vessels are defined as first receivers and are responsible for CMCP design and submission. CMCP must cover all possible offload scenarios, including cod-end handling and pump-out procedures between pair trawl vessels, and may include cooperative arrangements with dealers and/or carriers and/or receivers of at-sea transfers including USAP vessels if necessary and appropriate.

The Council will specify data collection standards that dockside monitoring (DSM) provider protocols must meet, including but not limited to the following:

- All catch will be sampled and/or sub-sampled for each landing event;
- Actual measured weights or certified volumetric estimates will be collected for all species;
- Landing estimates for all species will be produced for each landing event;
- A strictly census-style approach to catch sampling will not be permitted unless it is demonstrated that every fish is actually sorted and examined.

The Council will specify CMCP elements and design parameters:

- All CMCPs must outline fish handling procedures in detail such that the absence of pre-sorting can be verified or the pre-sorted fish can be clearly demonstrated to be retained and provided to the shore-based observer;
- All CMCPs must provide an explanation of how a certified, independently verifiable weight or volumetric conversion will be attained for all species;
- All CMCP must provide an outline of the VBEM system to be operated and its installation specifications.

Shoreside component of CMCP (see below) will be required to outline procedures for the following catch-handling elements upon landing:

- Procedures to ensure the presence of a shore-based observer for all landing events
- Certification standards for shore-based observers
- Minimum data collection standards and protocol guidelines for shore-based observers, including those employed by states (see **Section 4.4.4- options for DSM providers**)
- Verification that no pre-sorting takes place upstream of shore-based observers
- Procedures to provide a certified measurement of landed weight that is verifiable by the shore-based observer

NMFS will approve CMCP on an annual or semi-annual basis as part of fishery permit renewal procedures.

2.7.6.1 CMCP Options

Modifications to Catch Monitoring and Control Plan (CMCP) measures: CHOIR suggests that a series of options be developed and analyzed under which CMCP's would be required in the herring fishery for different fleet sectors (i.e. processors only, Category A and B vessels only, pump vessels only, vessels which utilize carriers, etc.)

2.7.7 Reporting/Analysis Requirements

This component of the catch monitoring program will ensure that the information generated through the program enters into the management system quickly and accurately. Shore-based observers will certify and report the weight and species composition of each landing within 24 hours of its conclusion, providing real time data. Analysts will compile, audit, and summarize the data produced under this program, quickly generating hard numbers on landed catch and bycatch of all species. VBEM data will be checked subsequently to reconcile landings against fishing activity to verify compliance with maximized retention requirements.

Specification of Procedures for Centralized Analysis and Reporting

- Shore-based observers will submit certified landings reports to relevant supervisory entity (state/Federal agency or certified vendor).
- Supervisory entity will submit landings summary reports to the Fisheries Statistics Office (FSO) at the NMFS Northeast Regional Office (NERO) and the VBEM analysis vendor.
- FSO undertakes the same tasks they currently perform, only with higher-quality and more timely data than they currently use. Specifically, FSO tallies landings reports, including reconciliation against Dealer Electronic Reporting (DER) and vessel reporting, and produces summarized landings reports for all species which are publicly available. For quota and bycatch cap monitoring purposes, landings are assumed to equal catch until and unless analysis of VBEM data shows that a discard event has occurred, at which point catch estimates would be revised. Existing vessel and dealer self-reporting and Northeast Fisheries Observer Program (NEFOP) data may be used as a backup until and unless they are discontinued if and when they are demonstrated to be unnecessary.
- VBEM field service vendor collects VBEM data from vessels, performs system operation checks to verify that no data gaps are evident, which might indicate non-compliance or mask a discard event, and provides data including imagery to VBEM analysis vendor.
- VBEM field service vendor also performs maintenance and outreach services to assist vessels in ensuring continuous high-quality VBEM system operation.
- VBEM analysis vendor reconciles VBEM dataset with landings summary reports to certify compliance with maximized retention and provides a summary report to FSO.

2.7.8 Options to Address Non-Permitted Landings by Herring Vessels

This alternative may present a regulatory obstacle in that maximized retention provisions will likely require the landing of certain species for which herring vessels have landing limits or are not currently permitted to land at all. This section describes a series of options to potentially address this obstacle, as well as sub-options to address the disposition of the non-permitted landings.

2.7.8.1 Option 1 – Amend Other FMPs and Regulations to Allow Landings

Under this option, a number of other Fishery Management Plans would be amended to modify limits or prohibitions which might affect herring vessels attempting to participate in a maximized retention program. For instance, the Multispecies FMP would need to be amended to change landings limits for all other groundfish species except haddock, which has a separate, fishery-wide cap. Jurisdictional overlap may occur for species managed by the Atlantic States Marine Fisheries Commission (ASMFC), and ASMFC plans might need to be amended.

In order to be effective in a timely fashion, work on these amendments would likely need to begin concurrent to the development of Amendment 5. Thus a necessary precursor to this option might need to be a very early Council decision to pursue development of a maximized retention program so that the cross-fishery regulatory infrastructure could be built. Impact on these other species would clearly need to be capped at biologically and economically appropriate levels, thus there is a preferred sub-option for this option which would set bycatch caps on all species for the herring fishery.

Several sub-options are under consideration relative to this measure and the treatment of non-permitted or non-authorized catch. Additional sub-options address whether or not such fish landed outside current regulations could be sold, and, if so, how the revenues could be utilized.

- Sub-option 1A:** Allow landing of non-permitted catch, including in excess of current trip limits, with such landings subject to appropriate caps (Preferred);
- Sub-option 1B:** Allow landing of non-permitted catch, including in excess of current trip limits, without caps (Non-Preferred).
- Sub-option 2A:** Allow sale of catch landed outside of current regulatory allowances with revenues returned to NMFS for use in management of fishery targeting species in question;
- Sub-option 2B:** Mandate that catch landed outside of current regulatory allowances is donated to food banks;
- Sub-option 2C:** Mandate that catch landed outside of current regulatory allowances must be destroyed.

2.7.8.2 Option 2 – Annual Issuance of Exempted Fishing Permits

Under this option, the maximized retention program would operate under an Exempted Fishing Permit (EFP) issued by the Sustainable Fisheries Division (SFD) at NERO on an annual basis.

Vessels would apply annually and NMFS would issue EFPs provided all program participation requirements were met and program elements were in place. The EFP would provide the regulatory relief necessary to allow the currently non-permitted landings to take place.

All of the Sub-options described above under Option 1 (Section XXX) would be applicable under Option 2 and would need to be considered by the Council if Option 2 is selected.

Discussion

The maximized retention program in the Pacific Council’s shore-based hake fishery currently operates under an EFP, as it has for approximately seven years, although this fishery is fairly far along in the process of transitioning to a fully-approved program without annual EFPs.

2.7.8.3 Option 3 – Modified Maximized Retention: Use VBEM to Monitor Minimal At-Sea Discards

Under this option, modifications to the at-sea components of a CMCP would specify that any at-sea discards must be disposed of through a designated discard chute with monitoring through an additional camera close enough in range to distinguish species. The wide-angle deck-wide and rail-area cameras would essentially identify pre-sorting as they would under the maximized retention measures, and imagery analysis would be conducted to confirm that the pre-sorted piece count observed matched the piece count sent through the discard chute one at a time. Additional imagery analysis would be conducted to identify each discarded animal to its species and estimate its size and weight based on the high-quality look at it the closed circuit television (CCTV) cameras will be afforded as the animal passes through the discard chute.

Comment [IIs46]: Observer Program comment – unsure whether this is feasible for all herring vessels

This option could potentially be applied for specific species for which no regulatory relief is possible. It may also be necessary to implement this option for certain prohibited species, for instance marine mammals or birds.

2.7.9 Options for Net Handling to Address Slippage

This alternative may present a challenge in that rigorous protocols may have to be developed to address slippage (the dumping of catch directly from the codend without it being brought on board). Accommodation should be made to allow this practice for legitimate safety reasons, so the challenge is therefore to minimize and mitigate it. A further challenge will be to devise net-handling techniques to assure that slippage does not occur and demonstrate this fact adequately such that the VBEM can verify the absence/minimization of slippage.

Finally, particular attention should be paid to a subset of slippage events which are relatively low in volume on a tow-by-tow basis, but probably fairly significant overall given the number of tows in a fishing year. This would be the “operational discards,” a term used to describe the fish that are left in the net at the conclusion of pumping. It is possible that these operational discards are not representative of what was pumped, so they must be sampled carefully. By its nature, slippage occurs underwater, and thus devising techniques to document it will be difficult.

The proposed requirement for a CMCP can address this. While this section will briefly outline (as sub-options) a series of suggested net handling techniques, the preferred alternative will be to place the burden on the herring industry to devise and document techniques to demonstrate that slippage has not occurred and secure approval for those techniques through the CMCP.

2.7.9.1 Option 1 – Maximized Retention Techniques Addressed Through CMCP

Under this option, vessels would have the flexibility to design their own plans for demonstrating compliance with maximized retention provisions. The vessels' plan would be described in the CMCP and approved by NMFS.

2.7.9.2 Option 2 – Maximized Retention Techniques Developed in Amendment 5

Under this option, the Council would develop standards and management measures to ensure compliance with maximized retention provisions. These standards would be implemented in Amendment 5 and would apply to all Category A and B vessels.

Sub-Options

Sub-option 2A – Interruption Prohibition: Under this sub-option, removal of the pump from the codend once pumping has been initiated would be prohibited unless the vessel was able to lift the net from the water and demonstrate in a visible way that the codend was either empty or was re-pursed before being placed back in the water.

Sub-option 2B Codend Lifting: Under this sub-option, the vessel would be required to lift the codend from the water to visibly demonstrate that it was empty prior to re-setting the net.

Sub-option 2C Bring Codend Aboard: Under this sub-option, the vessel would be required to bring the codend aboard the vessel to visibly demonstrate that it is empty or that the catch remaining in the net was removed to the deck and either retained or visibly discarded.

2.7.9.3 Option 3 – Unobservable Fishery

Under this option, if no techniques to ensure that slippage does not occur or that slipped fish are measurable and identifiable are possible, the Council would declare the herring fishery “unobservable,” and the fishery would be suspended indefinitely until appropriate techniques could be developed to observe all of the catch.

2.7.9.4 Sub-Options to Address Non-Compliance with Maximized Retention

Sub-options 1 and 2: Suggestions for penalties/accountability measures specific to maximized retention non-compliance including failure to visibly demonstrate maximized retention compliance

Sub-option 1A: Apply **assumed** slippage event tonnage against at-sea discard cap

Under this sub-option, an assumed tonnage for each detected or suspected/inferred slippage event would be applied against an overall tonnage cap on at-sea discards in the fishery. The assumed amount would be set at the current best estimate for the average tow in the fishery (approximately 65 tons). Since the goal of the maximized retention program is to land 99.5 % of the catch, the total at-sea discard cap would be set at 0.5% of the TAC in the fishery (approximately 500 tons at current TAC levels).

Sub-option 1B: Apply **estimated** slippage event tonnage against slippage cap

Under this sub-option, an estimated tonnage for each detected slippage event would be applied against an overall tonnage cap on at-sea discards in the fishery. The estimated amount would be based on an independent measure of the total weight of the slipped discards. Captain's estimates would not be accepted. Therefore, this sub-option would only be practical in cases in which the VBEM dataset provided a clear and acceptable estimate of weight, or in which the vessel had additional EM technology such as catch-weight sensors in the CMCP, or in which an at-sea observer happened to be aboard. Since the goal of the maximized retention program is to land 99.5 % of the catch, the total at-sea discard cap would be set at 0.5% of the TAC in the fishery (approximately 500 tons at current TAC levels). Suspected/inferred slippage or discard events would still be subject to the assumed tonnage application because by definition, no actual data would exist for these events.

Sub-option 2A: Apply **assumed** slippage event tonnage against species specific bycatch caps (**preferred**)

Under this sub-option, an assumed tonnage for each detected or suspected/inferred slippage event would be applied against all target species quotas and against individual tonnage caps on all bycatch species in the fishery. The assumed amount would be set at the current best estimate for the average tow in the fishery. Individual species quotas would be set at biologically-appropriate levels for each species and in consideration of economic and other concerns of all other fisheries targeting those species. The multiple-jeopardy nature of this approach could be severe, but desirable in that it will have a strong likelihood of success at achieving the desired result of eliminating slippage and undetected at-sea discard events.

Sub-option 2B: Apply **estimated** slippage event tonnage against species specific bycatch caps

Under this sub-option, an estimated tonnage for each detected slippage event would be applied against all target species quotas and against individual tonnage caps on all bycatch species in the fishery. The estimated amount would be based on some independent measure of the total weight of the slipped discards. Captain's estimates would not be accepted. Therefore, this sub-option would only be practical in cases in which the VBEM dataset provided a clear and acceptable

estimate of weight, or in which the vessel had additional EM technology such as catch-weight sensors in the CMCP, or in which an at-sea observer happened to be aboard. Individual species quotas would be set at biologically-appropriate levels for each species and in consideration of economic and other concerns of all other fisheries targeting those species. The multiple-jeopardy nature of this approach could be severe, but desirable in that it will have a strong likelihood of success at achieving the desired result of eliminating slippage and undetected at-sea discard events. Suspected/inferred slippage or discard events would still be subject to the assumed tonnage application because by definition, no actual data would exist for these events.

Sub-Option 3: Consequences of Quota or Bycatch Cap Overages

Under this sub-option, if an at-sea discard caused an overage, or an at-sea discard event is suspected/inferred based on VBEM data or absence of data, and the event is known or suspected to have caused resulted in a quota or bycatch cap overage, the offending vessel would be suspended from the herring fishery for the following fishing year, and all other vessels would be forced to pay back the overage. The offending vessel also would be forced to carry an at-sea observer at its own expense, in addition to participating in the maximized retention and dockside monitoring program under the proposed action, for an additional probationary year.

Discussion

In addition to the schedule of penalties and violations that are specific to a failure to adequately demonstrate that no catch was slipped on every haul (i.e. demonstrate compliance with maximized retention requirements, described above), a schedule of general penalties should be created to discourage non-compliance with the overall catch monitoring program, including such violations as failure to adhere to the provisions of a CMCP, fishing without an operational VBEM system, failure to cooperate with a shore-based observer, etc..

Specification of Measures to Address Non-Compliance with Program Requirements

- Non-compliance with any or all of the following program elements must be considered a serious violation and strict measures must be in place to both punish violators and deter future infractions:
 - Failure to adhere to provisions of an approved CMCP;
 - Failure to adhere to maximized retention requirements; and
 - Deliberate interference with VBEM system operation.
- Accountability measures should be established to account for monitoring and/or quota/bycatch cap accounting errors caused by such non-compliance.

2.7.9.5 Trip Termination Option

This option would require a vessel to terminate a trip if a slippage event occurs.

(Needs more discussion/development – which section does this fit in this alternative?)

2.7.10 Options for Modifying This Alternative

If there is a need to modify the general approach proposed in this alternative, or to perhaps phase-in some of the measures, the following options are proposed for consideration.

2.7.10.1 Option 1 – 100% Verification by At-Sea Observers

Under this option, maximized retention would be verified by at-sea observers at a rate of 100%. At-sea observers would certify compliance with maximized retention requirements and sample any at-sea discards that did take place, but the vast majority of catch sampling would be done dockside, as would the certified weighing or certified volumetric estimation of landed weight.

2.7.10.2 Option 2 – Hybrid Option

Under this option, a combination of VBEM and monitoring by at-sea observers would be used to verify maximized retention. Potential sub-options include allowing industry to choose which verification vector to employ.

2.7.10.3 Option 3 – <100% Verification Coverage

Under this option, verification of maximized retention would not be done 100% of the time, and self-reporting would be relied upon for assurances that landed weight is equal to catch.

2.7.10.4 Option 4 – <100% Dockside Monitoring Coverage With Extrapolation

Under this option, shore-based observers would be present and sample at less than 100% of landing events, but the coverage would be statistically designed to allow for the extrapolation of observed landings, including bycatch and incidental catch rates, across the entire fleet such that unobserved landings had a bycatch rate applied.

2.7.10.5 Option 5 – <100% Dockside Monitoring Coverage Without Extrapolation

Under this option, shore-based observers would be present and sample at less than 100% of landing events, but the coverage rate and coverage design would not allow for the extrapolation of observed landings, including bycatch and incidental catch rates, across the entire fleet such that unobserved landings had a bycatch rate applied.

2.7.10.6 Option 6 – Phased-In Approach

Under this option, the proposed action would be implemented as proposed, but instead of full implementation of the maximized retention/VBEM/DSM program effective immediately with the implementation of Amendment 5, the program would be phased in. Full implementation of the proposed action presumes that program infrastructure will have been sufficiently developed concurrent to the development of final Amendment 5 measures. This may not be possible, and if so, under this option, the primary source of catch information would continue to be the current observer program and the existing State DSM programs during the phase-in period. As a result, the Council would mandate, and NMFS would implement provisions to ensure that during the

phase-in period, sea sampling and/or state port sampling data are subject to fleet-wide extrapolation to provide total catch estimates for the fishery.

2.7.11 Possible Sources of Funding

Table 5 Preliminary List of Potential Funding Sources

Source	Potential Contribution
Maine DMR Program (ACCSP)	\$100,000
Mass DMF Program (existing)	\$100,000
Mass DMF Program (EEBB)	\$750,000
Congressional MSRA research appropriation	\$2,000,000
Herring RSA dedication (3% of 75,000 mt annual landings @ \$.10 per pound)	\$496,000
New quota set-aside program (1.5% of 75,000 mt annual landings @ \$.10 per pound)	\$248,000
Landings surcharge (\$0.01 per pound)	\$1,600,000
Industry cash payments (3% of average per trip ex vessel revenue)	\$600,000
Potential Total	\$5,894,000

The preliminary analysis in Table 5 does not assume any contribution from NMFS except an in-kind contribution of the following services:

- FSO will continue to act as the centralized processing entity for summarized catch, discard, and landings information and also make this information publicly available.
- NMFS will certify CMCP plans as designed and submitted by first receivers (vessels).
- NEFOP would continue to cover the fishery in some manner, including ongoing at-sea coverage, but possible also including shore-based coverage at some future point, and also possible including at-sea coverage during testing and/or phase-in periods for VBEM/MR/DSM when a control is needed in the form of at-sea observers.

The potential funding sources above represent a suggested array of mix and match options to draw from in order to finance the proposed monitoring program. Of the sources, two are one-time possibilities: the Massachusetts funding under the EEBC and the potential Congressional appropriation of funds authorized under the MSRA. The latter were written into the MSRA for the purpose of funding ecosystem research in the herring fishery.

All the other sources are annualized possibilities and could be mixed, matched or modified. The proposal assumes that Maine and Massachusetts continue their port sampling programs and fold them into the Amendment 5 monitoring program in an official capacity. The existing Research Set-Aside (RSA) could be prioritized towards monitoring and/or an additional RSA program could be created. A per-pound landings fee could be assessed.

Finally, assuming an average trip in the Category A and B herring fishery of 100 mt (based on data in the Amendment 5 Draft Discussion Document), and assuming an average ex-vessel price of \$.10 per pound, average per trip revenues are assumed to be about \$22,000 dollars. At a 3% cash contribution to monitoring for 1,000 trips per year in the fishery (taken from data presented to the Herring Committee by NEFOP on 5/22/08), approximately \$600,000 per year would be available for funding this program.

3.0 MEASURES TO ADDRESS INTERACTIONS WITH RIVER HERRING AND MINIMIZE RIVER HERRING BYCATCH

Comment [Ils47]: These alternatives require more discussion and development.

At the September 30/October 1, 2008 Herring Committee meeting, the Committee received a presentation summarizing a recent report prepared for the ASMFC river herring stock assessment regarding the bycatch of river herring (blueback herring, alewife) in the Atlantic herring fishery. While the report highlighted the variability associated with the data and the resulting bycatch estimates, it does show that river herring is caught as bycatch in the Atlantic herring fishery, particularly seasonally in certain areas. Some Committee members expressed concern about the declining status of the river herring resource and felt that management action should be taken to try to protect the important runs in the southern area. While the data are clearly limited, the Committee acknowledged that mortality is occurring and suggested that management action should be considered to prevent further declines. As a result, the Committee passed the following motions:

- (1) That the Council request that the Herring PDT craft alternatives for time/area closures to protect the SNE/MA runs of river herring (including Cape Cod area)
- (2) That the Council collaborate as much as possible with ASMFC and the MA Council regarding the management of the river herring resource

The Council unanimously approved the same motions at its October 7-9, 2008 meeting.

Since that time, the Herring PDT has been reviewing and further analyzing available observer and other bycatch data. The data are limited and quite variable, however, and the PDT's work on this issue is not yet complete. The PDT will discuss this issue further and work towards providing a report that responds to the Council directive to develop management alternatives to address this issue in Amendment 5.

4.0 MEASURES TO ADDRESS HERRING VESSEL ACCESS TO GROUND FISH CLOSED AREAS

Comment [IIs48]: These alternatives require additional discussion and development.

At the November 18-20, 2008 New England Fishery Management Council meeting, the Council approved the following two motions:

“That the Council request NMFS review recent herring midwater trawling observer data from groundfish Closed Area I to determine if Council requirements for continued access have been met. If criteria have not been met, access should be prohibited.”

And...

“To include criteria for midwater trawler access to groundfish closed areas in the list of 2009 herring management actions.”

The Herring Committee discussion on December 16, 2008, was general and preliminary, and focused primarily on the second motion and the alternatives that may be considered in Amendment 5 to establish criteria for midwater trawl access to groundfish closed areas. The Herring Committee discussed the Council’s motion and provided additional details and guidance so that more specific measures can be developed. Some questions the Committee considered during the discussion included:

- What specific kinds of criteria should be considered in Amendment 5 for allowing or prohibiting midwater trawl access to groundfish closed areas?
- To which groundfish closed areas would these criteria apply?
- How would the closed area access criteria and the associated review process be structured? For example, would Amendment 5 prohibit midwater trawl access to the groundfish closed areas and establish criteria and a process to evaluate whether access should be granted in the future? Or, would Amendment 5 continue to allow access to the closed areas and establish criteria that would prohibit access in the future, once a review occurs?
- How would the process for reviewing these criteria be structured? Who would be responsible for evaluating the criteria and determining the appropriate course of action regarding midwater trawl access to the closed areas?
- How often would the review process occur, and what management action(s) would be required to modify either the criteria or provisions for access to the groundfish closed areas? Would Council action be required to allow/prohibit access to the closed areas, or would NMFS be responsible for the review and any related management adjustments?

The Committee developed a general approach to be included in at least one alternative for consideration in this amendment. In addition, two alternatives have been proposed by the Herring Alliance and included by the Committee for further discussion/development. Under both alternatives proposed by the Herring Alliance (described in the subsections below), access to closed areas by midwater trawl vessels (single or paired) would be prohibited except with an experimental fishing permit (EFP) meeting specific requirements. Future access without an EFP

along with minimum criteria for access may be reconsidered and established through a framework action after consideration of the data obtained through any EFPs.

4.1 ALTERNATIVES UNDER CONSIDERATION

4.1.1 Alternative 1 (Herring Committee)

At its December 16, 2008 meeting, the Herring Committee passed the following motion, which will form the basis of at least one alternative developed in Amendment 5 to address this issue (the Committee agreed that additional alternatives may be developed):

That if, on any given trip, a vessel targeting herring in a groundfish closed area has regulated groundfish exceeding 1% of the catch of herring, that vessel will be required to have 100% observer coverage for one year as a condition to gain further access to the closed areas. If the 1% bycatch allowance is exceeded again, that vessel would be denied access for one year.

4.1.2 Alternative 2 (Herring Alliance)

Under this alternative, access to groundfish closed areas by midwater trawl vessels (single or paired) would be prohibited except with an experimental fishing permit (EFP) meeting the following requirements:

- Full observer coverage (one or more observers per vessel, as necessary to ensure that every haul is observed)
- Electronic monitoring systems to augment observer data
 - Tow characteristics (i.e., total catch, GPS, height of foot-rope)
 - Video record of catch pre-sorted on deck for observer analysis
- Additional requirements and criteria for access to groundfish closed areas
 - Pair trawling in closed areas prohibited
 - No more than 20 midwater trawl trips per closed area per fishing year
 - Fishing with net foot-rope less than 20 feet off the bottom prohibited
 - Monitoring protocols including mandatory reporting of vessel electronics information and shoreside gear inspections to determine the depth fished by midwater trawl gear and whether contact with the bottom has occurred
 - Groundfish bycatch triggers exclude vessels from access to the closed areas
 - Groundfish bycatch is detected in an amount greater than 100 pounds for any vessel trip – all midwater trawling in such closed area suspended for a minimum of 48 hours
 - Overfished stock – Regional Administrator determines bycatch to be 0.1% of TAC for stock – one year exclusion
 - Other groundfish – Regional Administrator determines bycatch to be 0.5% of TAC for stock – one year exclusion

4.1.3 Alternative 3 (Herring Alliance)

Under this alternative, access to groundfish closed areas by midwater trawl vessels (single or paired) would be prohibited except with an experimental fishing permit (EFP) meeting the following requirements:

- Full observer coverage (one or more observers per vessel, as necessary to ensure that every haul is observed)
- Electronic monitoring systems to augment observer data
 - Tow characteristics (total catch, GPS, height of foot-rope)
 - Video record of catch pre-sorted on deck for observer analysis
- Monitoring protocols including mandatory reporting of vessel electronics information and shoreside gear inspections to determine depth fished by midwater trawl gear and whether contact with the bottom has occurred

5.0 MEASURES TO ADDRESS INTERACTIONS WITH THE ATLANTIC MACKEREL FISHERY AND RELATED BYCATCH CONCERNS

The limited access permit program implemented in Amendment 1 to the Herring FMP established three types of herring limited access permits: (1) a limited access directed fishery permit that allows access to all management areas with no possession limit (Category A); (2) a limited access directed fishery permit that allows access to Areas 2/3 only with no possession limit (Category B); and (3) a limited access incidental catch permit that allows access to all management areas with a possession limit of 25 mt (55,000 pounds) and a restriction of one landing per calendar day (Category C). The limited access Category C incidental catch permit was developed primarily to address the incidental catch of herring by mackerel vessels that do not qualify for a directed fishery permit in any of the management areas. Qualification criteria for the limited access incidental catch permit were less restrictive and spanned a longer qualifying time period (15 mt in any calendar year from 1988 – 2003).

Comment [IIs49]: These measures appear to be complete for the purposes of developing a Draft EIS. The proposed measures do not address potential problems associated with an early closure of the Area 2 directed fishery, which could create problems for a late year mackerel fishery (all vessels would be limited to 2,000 pounds of herring after the closure).

Amendment 1 also established an open access incidental catch permit for vessels that do not qualify for either of the limited access permits (Category D). The possession limit associated with the open access incidental catch Category D permit is 3 mt per trip in all management areas, with a restriction of one landing per calendar day.

As of August, 2008, the following information is available about vessel permitting:

Table 6 Amendment 1 Limited Access Permits Issued as of August 2008

2008 Permits Issued (LA = limited access)			
Category A (LA All Areas)	Category B (LA Areas 2/3)	Category C (LA Incidental)	Category D (Open Access)
41	4	42	2,219

As of April, 2009, the following information is available about vessel permitting:

Table 7 Amendment 1 Limited Access Permits Issued as of April 2009

2009 Permits Issued (LA = limited access)			
Category A (LA All Areas)	Category B (LA Areas 2/3)	Category C (LA Incidental)	Category D (Open Access)
41	4	54	2,272

Since the implementation of Amendment 1, concerns have been raised about vessels participating in the Atlantic mackerel fishery that do not qualify for any of the limited access herring permits, either because they do not have adequate herring landings history between 1988 and 2003, or because they are new participants in the mackerel fishery. These vessels are

currently required to fish with the open access incidental catch permit to retain any herring, and they may encounter herring in amounts larger than 3 mt on some fishing trips. Without a permit that allows them to retain an adequate amount of herring, these vessels may be forced to discard any herring they catch incidentally. As the mackerel fishery continues to grow, a herring bycatch problem could become an increasing concern.

At its April 30, 2008 meeting, the Herring Advisory Panel briefly discussed issues raised in the Amendment 4 Scoping Document regarding the interaction of the Atlantic herring and mackerel fisheries and the potential for herring bycatch on mackerel vessels that may not possess a limited access permit for herring. One advisor described the issue and suggested that there may be about 12 vessels in the southern New England/Mid-Atlantic region that may receive limited access mackerel permits but do not have a limited access herring permit and would therefore continue to be limited to 3 mt of herring per trip. The concern about herring bycatch on mackerel vessels appears to be primarily in Areas 2 and 3 where the herring TACs are not yet fully utilized, so the advisors agreed that there may be an opportunity to allow the vessels in these areas to retain additional amounts of herring.

HERRING AP MOTION (April 30, 2008): Jeff Reichle/Vito Calomo

To recommend that any vessels issued a limited access mackerel permit that do not have a limited access herring permit be allowed to retain up to 25 mt of herring as incidental catch in the mackerel fishery (Motion carried 9-0-3).

At its July 30, 2008 joint meeting with the Herring Advisory Panel, the Herring Committee discussed this issue and passed the following motion, directing the Herring PDT to draft management alternatives for consideration and provide additional information:

HERRING COMMITTEE MOTION (July 30, 2008): MIKE LEARY/DANA RICE

As an alternative in Amendment 4, that Area 2/3 Category D Incidental Limit be Raised to 25 mt (Motion carried unanimously).

Additional Discussion on the Motion: One advisor suggested that the Committee may want to consider limiting this measure to only vessels with mackerel permits. The mackerel fishery is an open access fishery now, but the Mid-Atlantic Council is in the process of developing a limited access program in an amendment. Another advisor asked about whether this could apply to vessels fishing for whiting in Area 1, but the Committee agreed that the intent of the motion is to consider increasing the trip limit only in Areas 2 and 3 because the Area 1A TAC is already fully utilized. The Committee also agreed that the PDT could develop options that incorporate the suggestion regarding possession of a mackerel permit.

5.1 PROPOSED MANAGEMENT ALTERNATIVES

The management alternatives currently under consideration in Amendment 5 to address this issue were developed by the Herring PDT based on Herring Committee and Advisory Panel guidance (see above) and are described below. Herring PDT comments/recommendations are included below for the Herring Committee's consideration as the alternatives are further refined.

Background information and analysis used to develop the proposed measures are provided by the Herring PDT in Section 5.2 of this document.

Herring PDT Comments/Recommendations

The Herring PDT provides the following comments and recommendations at this time regarding the development of management alternatives to address this issue in Amendment 5:

- Available fishery data do not indicate that the current 3 mt possession limit of herring for open access permit holders is problematic at this time; it does not appear to be resulting in bycatch/regulatory discards for vessels fishing in any of the management areas and reporting their herring landings and discards through the logbooks.
- The overlap between the Atlantic herring and mackerel fisheries is universally recognized as an important fishery management issue that the Council has always intended to accommodate in the most appropriate manner. If the Category D vessels have not been targeting mackerel or taking trips where they may encounter a mix of herring and mackerel (and/or other species) more recently (for a variety of reasons), VTR records may not reflect a bycatch problem at this time and may not fully characterize the potential for this problem to exist in the future. The industry has stated that these vessels have not been fishing for mackerel as much in recent years because (1) they are smaller vessels, and the mackerel fishery shifted into offshore areas; and (2) concerns about encountering herring in quantities larger than 3 mt on "mixed" trips and consequently being in violation of the herring possession limit have influenced their decisions about taking these trips at all.
- Because the data do not indicate that a bycatch problem exists at this time, the Herring PDT expressed concern with increasing the open access incidental catch possession limit in Areas 2 and 3 to as much as 25 mt (55,000 pounds) at this time. This is the same amount of herring that is allowed under the current Category C limited access incidental catch possession limit, so increasing the limit for the open access permit to this amount essentially negates the benefit/effect of having a limited access incidental catch permit in Areas 2 and 3.
- Although the TACs are not fully utilized in Areas 2 and 3 at this time, the Herring PDT is concerned that increasing the open access possession limit to 25 mt, especially in Area 2, may create additional opportunities for vessels to target herring directly under the open access permit. This outcome could very well be likely given the (low) levels of landings that have been documented by open access permit holders in recent years. Increasing the possession limit for open access permit holders to 25 mt could create a "loophole" that is inconsistent with the intent of the herring limited access program, as well as the open access permit, implemented in Amendment 1. The Council created the open access possession limit permit in Amendment 1 to minimize the potential for directed herring fisheries to develop while still providing controlled opportunities for vessels in other fisheries to catch small

amounts of herring and minimize their bycatch. Decisions regarding increased opportunities in these areas should be made with adequate consideration of overall fleet capacity and the long-term effects of over-capacity.

- Moreover, if additional opportunities for directed fishing in Areas 2/3 result from an increase in the open access possession limit, new vessels could create fishing history in these areas. This is a **very** important consideration if quota allocation programs are going to be developed for the herring fishery. Increasing the open access possession limit to a level that allows for directed fishing and the establishment of any substantial amount of fishing history could increase the number of participants to be considered in a sector allocation or individual quota allocation program, should the Council choose to develop one in the future.
- **Based on the concerns about increasing opportunities for directed fishing in Areas 2/3, the Herring PDT recommends the following:**
 - An additional alternative that proposes an increase in the open access possession limit for Areas 2/3 less than 25 mt (10,000 pounds is proposed, see Alternative 4, Section 5.1.4); an alternative like this would help to bound the range of alternatives under consideration in this amendment and would provide the Council with greater flexibility when selecting final measures;
 - The possession limit associated with the open access herring permits could be added to the list of measures that can be implemented through a framework adjustment to the Herring FMP. This will provide a mechanism to modify the open access possession limit (increase or decrease) in a more timely manner in the future.
- The Herring PDT seeks guidance from the Committee regarding the current draft alternatives (described below) as well as any additional alternatives that should be developed for further consideration. It is unclear at this time whether the Herring Committee is interested in exploring options for incidental catch in Areas 2/3 based on a percentage of total catch, a ratio of herring/mackerel landings, and/or TAC set-asides to address these issues. However, these approaches could be more complicated to administer and enforce than the current alternatives under consideration.

5.1.1 Mackerel Alternative 1 – No Action

Under this alternative, no action would be taken in Amendment 5 to address herring/mackerel fishery interactions and concerns about the potential for herring bycatch in the directed mackerel fishery.

- The open access incidental catch permit for herring (Category D) would continue to apply to all management areas.
- Vessels that obtain the open access incidental catch herring permit would continue to be restricted by a possession limit of 3 mt of herring per trip (6,600 pounds) in all management areas and limited to one landing per calendar day up to the 3 mt possession limit.
- When the TAC in a management area is projected to be reached and the directed fishery closes, incidental catch in the area would be limited to 2,000 pounds per trip, as it is currently.

- Open access permit holders catching more than 2,000 pounds of herring per week would continue to be required to report their catches on a weekly basis through the IVR reporting program.

5.1.2 Mackerel Alternative 2 – Increase the Open Access Possession Limit to 25 mt in Areas 2/3 Only

Under this alternative, two open access permits for herring would be created, one for Area 1 and one for Areas 2/3:

1. The current provisions for the Category D permit, including the 3 mt possession limit, reporting requirements, and landings restrictions, would apply to an open access permit for Area 1 (1A and 1B), as described in the no action alternative;
2. An open access incidental catch permit would be created to apply to Areas 2/3 only; this permit would be associated with a **25 mt (55,000 pounds)** possession limit for herring; all other provisions currently associated with the current open access Category D permit would apply:
 - Vessels that obtain the open access incidental catch herring permit for Areas 2/3 only would be restricted by a **possession limit of 25 mt** of herring and limited to **one landing per calendar day** up to the 25 mt possession limit.
 - When the TAC in a management area is projected to be reached and the directed fishery closes, incidental catch in the area would be limited to 2,000 pounds per trip, as it is currently.
 - Open access permit holders catching more than 2,000 pounds of herring per week would continue to be required to report their catches on a weekly basis through the IVR reporting program.

5.1.3 Mackerel Alternative 3 – Increase the Open Access Possession Limit to 25 mt in Areas 2/3 for Vessels that also Possess a Federal Mackerel Permit

Under this alternative, two open access permits for herring would be created, one for all areas and one for mackerel fishery participants in Areas 2/3 only:

1. The current provisions for the Category D permit, including the 3 mt possession limit, reporting requirements, and landings restrictions, would apply to an open access permit for all management areas, as described in the no action alternative;
2. **A new open access incidental catch permit would be created for mackerel fishery participants in Areas 2/3 only;** this permit would be associated with a **25 mt (55,000 pounds)** possession limit for herring; all other provisions currently associated with the current open access Category D permit would apply:
 - Vessels that do not qualify for a limited access herring permit and possess a federal permit for Atlantic mackerel would be eligible for this herring permit. *(The Atlantic mackerel fishery is currently an open access fishery, but it is assumed that once a limited access program is implemented for the mackerel fishery, this alternative would require possession of a federal limited access mackerel permit.)*

- **Vessels that obtain the open access incidental catch herring permit for mackerel fishery participants in Areas 2/3 would be restricted to fishing for herring in Areas 2/3 only, under a possession limit of 25 mt (55,000 pounds) of herring and limited to one landing per calendar day up to the 25 mt possession limit.**
- When the TAC in a management area is projected to be reached and the directed fishery closes, incidental catch in the area would be limited to 2,000 pounds per trip, as it is currently.
- Open access permit holders catching more than 2,000 pounds of herring per week would continue to be required to report their catches on a weekly basis through the IVR reporting program.

Additional Discussion – Mackerel Limited Access Program

While the mackerel fishery is currently an open access fishery, the Mid-Atlantic Council is in the process of developing Amendment 11 to the Squid, Mackerel, and Butterfish FMP, which will implement a limited access program for mackerel. The Mackerel Committee is close to finalizing a range of alternatives for the proposed mackerel limited access program and is resolving outstanding issues so that the document can move forward through the public hearing process. The Draft EIS for Mackerel Amendment 11 is scheduled to be approved by the Council in 2009, with implementation anticipated for 2010. If this schedule is met, the mackerel limited access program would likely be implemented prior to the measure in Amendment 5 to the Herring FMP, so this alternative would apply to vessels that possess a limited access permit for mackerel.

Alternatives under consideration for the limited access program for the Atlantic mackerel fishery are based on a multi-tiered approach to a limited access permit structure, with each tier specifying different criteria for limited access qualification. Proposed qualification for a “Tier 3” mackerel permit, for example, include poundage thresholds for herring and/or possession of a herring limited access permit in order to address the overlap between the two fisheries and minimize problems that may result if herring vessels do not receive limited access permits for mackerel. Additional information will be made available as the Mid-Atlantic Council finalizes the limited access alternatives under consideration in Amendment 11.

5.1.4 Mackerel Alternative 4 – Increase the Open Access Possession Limit to 10,000 Pounds in Areas 2/3 Only

Under this alternative, two open access permits for herring would be created, one for Area 1 and one for Areas 2/3:

1. The current provisions for the Category D permit, including the 3 mt possession limit, reporting requirements, and landings restrictions, would apply to an open access permit for Area 1 (1A and 1B), as described in the no action alternative;
2. An open access incidental catch permit would be created to apply to Areas 2/3 only; this permit would be associated with a **10,000 pound** possession limit for herring; all other provisions currently associated with the current open access Category D permit would apply:

- Vessels that obtain the open access incidental catch herring permit for Areas 2/3 only would be restricted by a **possession limit of 10,000 pounds** of herring and limited to **one landing per calendar day** up to the 10,000 pound possession limit.
- When the TAC in a management area is projected to be reached and the directed fishery closes, incidental catch in the area would be limited to 2,000 pounds per trip, as it is currently.
- Open access permit holders catching more than 2,000 pounds of herring per week would continue to be required to report their catches on a weekly basis through the IVR reporting program.

5.2 BACKGROUND INFORMATION/ANALYSIS

5.2.1 Trends in the Atlantic Mackerel Fishery

The Atlantic mackerel fishery continues to evolve. U.S. commercial landings of Atlantic mackerel from 1982 to 2006 and annual quotas (1994-2006) are summarized in Table 8 and Figure 5. U.S. commercial landings of Atlantic mackerel increased gradually from less than 3,000 mt in the early 1980s to around 10,000 mt in 1990. In the 1990s, U.S. management policy eliminated the directed foreign Atlantic mackerel fishery in the EEZ. Atlantic mackerel landings by U.S. vessels in the 1990s ranged from 4,700 mt in 1993 to 15,500 mt in 1996 and 1997. U.S. landings were approximately 12,500 mt in 1999 and declined to 5,600 mt in 2000. After 2000, Atlantic mackerel landings increased markedly from 12,300 mt in 2001 to 59,000 mt in 2006. **Preliminary information suggests that mackerel landings dropped significantly in 2007 to about 25,545 mt valued at about \$6.6 million.**

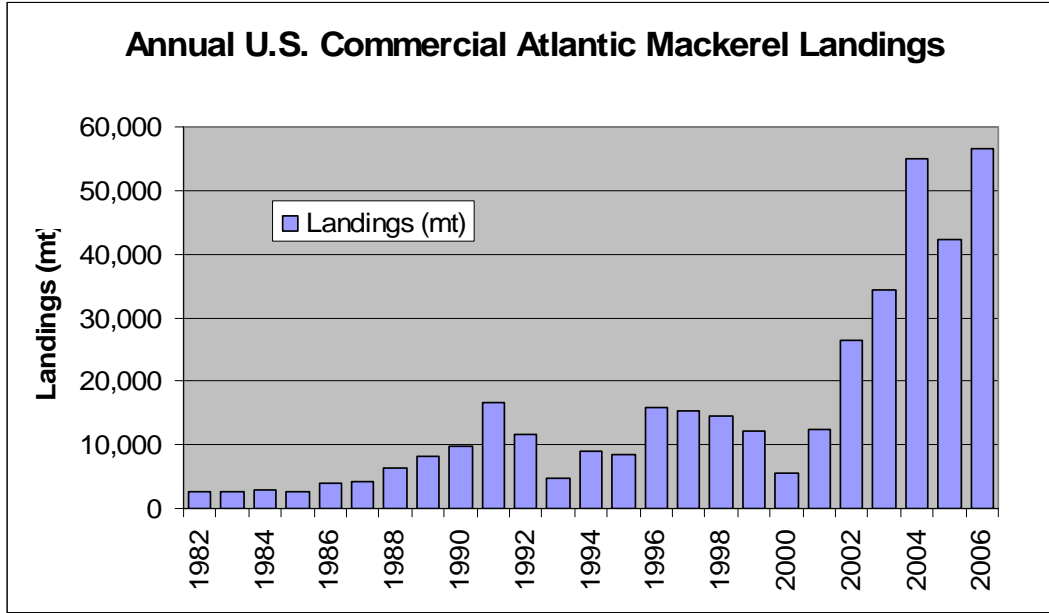
Based on data from the Northeast Region Dealer Weighout database, the vast majority of commercial Atlantic mackerel landings are taken by trawl gear (Table 8). Among trawl types, midwater otter trawls and paired midwater otter trawls have become increasingly important in recent years. From 2002-2006, paired midwater trawls comprised 38% of commercial Atlantic mackerel landings, while unspecified midwater trawls also accounted for 40% of the landings, and bottom otter trawls comprised only 14% of the landings. By comparison, from 1996-2000, paired midwater trawls landings comprised only 2% of the total commercial Atlantic mackerel landings, while unspecified midwater trawls accounted for 22% of the landings, and bottom otter trawls accounted for 71% of the landings.

Table 8 U.S. Commercial Atlantic Mackerel Landings (mt) 1982 – 2006, by Major Gear Type and Recent Quota Specifications

YEAR	BOTTOM TRAWL	MIDWATER TRAWL	PAIR TRAWL	ALL OTHERS	TOTAL	INITIAL OY (IOY)	% of IOY LANDED
1982	1,908		19	744	2,671		
1983	890		410	1,342	2,642		
1984	1,235	118	396	1,045	2,795		
1985	1,481		249	905	2,635		
1986	3,436		2	514	3,951		
1987	3,690		0	649	4,339		
1988	5,770		0	562	6,332		
1989	7,655		0	589	8,245		
1990	8,847		0	1,031	9,878		
1991	15,514	564	223	285	16,585		
1992	11,302		1	458	11,761		
1993	3,762	479		412	4,653		
1994	8,366	1		551	8,917	120,000	7%
1995	7,920	50		499	8,468	100,000	8%
1996	13,345	1,295		1,088	15,728	105,500	15%
1997	13,927	628		847	15,403	90,000	17%
1998	12,095	571	1,363	495	14,525	80,000	18%
1999	11,181	99		752	12,031	75,000	16%
2000	4,551	736		362	5,649	75,000	8%
2001	584	11,396		360	12,340	85,000	15%
2002	4,008	11,669	10,477	376	26,530	85,000	31%
2003	5,291	17,212	11,572	222	34,298	175,000	20%
2004	5,884	23,170	20,499	5,440	54,993	170,000	32%
2005	5,437	8,410	18,894	9,468	42,209	115,000	37%
2006	10,349	24,413	19,360	2,519	56,640	115,000	49%

Source: Unpublished NMFS dealer weighout data.

Figure 5 Annual U.S. Commercial Atlantic Mackerel Landings (mt) 1982-2006



Source: Unpublished NMFS dealer weighout data.

5.2.2 2007 Fishery Data

To begin to evaluate the extent to which there may be a problem with herring bycatch on non-permitted mackerel vessels, permit data were queried for all vessels that reported landings of Atlantic mackerel in logbooks during the 2007 fishing year. 2007 was the year during which Amendment 1 to the Herring FMP was implemented, including the limited access permit program. However, it should be noted that Amendment 1 did not become effective until June 1, 2007, after the majority of the 2007 mackerel fishery season had already occurred (Jan-April).

Table 9 summarizes the Amendment 1 (herring) permit category and the average herring landings for vessels that participated in the mackerel fishery during 2007, based on vessel trip reports (VTRs). Note that since Amendment 1 to the Herring FMP was not implemented until June 1, 2007, there are three vessels with no herring permits in 2007 (they possessed open access permits for herring prior to the implementation of the Amendment 1 limited access permit program). Herring landings were insignificant and mackerel landings were less than 1,000 mt for these vessels during 2007.

According to Table 9, every vessel that landed more than 1,000 mt of Atlantic mackerel during 2007 qualified for and obtained a limited access directed fishery permit to fish in all management areas for herring (Category A). These vessels are therefore allowed to fish for and land herring in unrestricted amounts until a TAC is reached in a management area and the area closes. All other vessels with mackerel landings (71) reported less than 1,000 mt total for the fishing year.

Thirteen of these vessels qualified for an unrestricted herring limited access permit for all areas (Category A), two qualified for unrestricted limited access permits in Areas 2/3 only (Category B), and two qualified for limited access incidental catch permits with a 25 mt possession limit restriction. There were 51 vessels that reported mackerel landings in 2007 that did not qualify for a limited access permit but obtained the open access incidental catch permit with an associated herring possession limit of 3 mt. These 51 vessels averaged 17 mt of herring landings total during the 2007 fishing year. It is important to keep in mind that this analysis considers activity during the 2007 fishing year only, and 2007 saw a substantial reduction in the Atlantic mackerel fishery (see Section II of this document for additional information).

Table 9 Amendment 1 Permit Category for Vessels with Reported Mackerel Landings in 2007

2007 Mackerel Landings		Herring Permit Category					Total
		A	B	C	D	None	
< 1,000 mt	Number of Vessels	13	2	2	51	3	71
	Avg 2007 Herring Landings (mt)	2,043	Cannot report	Cannot report	17	0	401
1,000 - 2,000 mt	Number of Vessels	8					8
	Avg 2007 Herring Landings (mt)	2,119					2,119
2,000 - 4,000 mt	Number of Vessels	5					5
	Avg 2007 Herring Landings (mt)	3,395					3,395
Total number of vessels		26	2	2	51	3	84
Overall Avg 2007 Herring Landings (mt)		2,326	Cannot report	Cannot report	17	0	743

The Amendment 1 limited access permit program was implemented on June 1, 2007.

Herring permit data were also queried to characterize the location of the vessels that reported Atlantic mackerel landings in their logbooks during 2007 (Table 10). Table 10 describes the same set of vessels that are described above in Table 9. The majority of Category A mackerel vessels (limited access herring permits for all management areas) are homeported in Massachusetts, New Jersey, and Rhode Island. The majority of Category D mackerel vessels (open access herring permit for 3 mt) are homeported in New Jersey, New York, and Rhode Island, which is consistent with trends in participation and activity in the Atlantic mackerel fishery. It is likely that the Category D vessels from NY, NJ, and RI are some of the vessels for which there may be concern about potential herring bycatch, especially if their activity in the mackerel fishery increases.

Table 10 Amendment 1 Permit Category and Home Port State for Vessels with Reported Mackerel Landings in 2007

Home Port State	Herring Permit Category					Total
	A	B	C	D	None	
CT				3		3
MA	12			6	1	19
ME	1			2		3
NC	1			2		3
NE	1					1
NH	2				1	3
NJ	5			7		12
NY				17	1	18
RI	4	2	2	14		22
Total	26	2	2	51	3	84

The Amendment 1 limited access permit program was implemented on June 1, 2007.

Observer data from 2007 also were queried to see the extent to which vessels fishing without a limited access herring permit may be discarding herring (primarily Atlantic mackerel vessels). Of all the observed trips which landed and/or discarded herring or mackerel, there were only two trips by vessels without a limited access herring permit in 2007. In neither case were herring discards larger than a couple hundred pounds. However, with so few observations, little can be drawn in the way of conclusions from this data set.

2007 Landings from Bottom Trawls in Area 2

During the 2007 fishing year, a total of 19,535 metric tons of Atlantic herring were landed from Area 2. Table 11 characterizes the Area 2 landings by gear type. In 2007, bottom trawl gear accounted for 36% of the herring landings from Area 2 (7,009 mt). This is a significant increase over 2005 and 2006 levels, which were approximately 1,500 metric tons. However, it is important to note that about one half of the 7,009 metric tons Area 2 bottom trawl landings are from one vessel. For data confidentiality reasons, details about this vessel cannot be reported.

Table 12 characterizes the 2007 Area 2 bottom trawl landings by the remaining 60 bottom trawl vessels, which landed 3,415 mt, based on vessel trip report (VTR) data. Table 12 breaks out the number of vessels that landed less than 10 mt of herring and those that landed greater than 50 mt of herring by State landed. Included in the count of vessels that landed greater than 50 mt of herring are seven (7) vessels that landed greater than 100 mt of herring during 2007. The majority of the bottom trawl vessels are landing small quantities of herring (less than 10 mt total in 2007), suggesting that the herring may be incidental catch while fishing in Area 2 for other species.

The majority of Area 2 herring landings from bottom trawl trips occur in New Jersey and Rhode Island. While some vessels land in more than one port (this is why the total vessel count in Table 12 is 63 versus the overall vessel count of 60), the vessel counts of 19 for New Jersey and 10 for Rhode Island are unique to these ports.

Of the 3,429 metric tons of herring landed by the bottom trawl vessels described in Table 12, 2,763 mt (81%) were landed by seven vessels with Category A limited access permits and two vessels with Category B limited access permits. Three Category C limited access vessels landed a total of 357 metric tons, but two of these vessels landed less than 5 mt each. Of the Category D (open access) permit holders, 38 accounted for the remaining 124 mt of Area 2 bottom trawl landings of herring during the 2007 fishing year. Nearly all of the Category D landings from this group appear to be incidental catch, since the amount landed per vessel was less than 10 metric tons. Landings by 11 vessels with no herring permit totaled 185 metric tons. Two of these vessels landed greater than 50 metric tons during 2007, while the remaining vessels landed less than 10 mt each.

With the exception of one vessel, all of the seven Category A bottom trawl vessels with Area 2 landings landed greater than 50 mt during the 2007 fishing year and appear to have been directing on Atlantic herring. Landings by four of these vessels range from 250 mt to 1,000 mt, with one vessel landing greater than 3,500 mt (as mentioned above). Two of these vessels also had significant Area 2 landings using midwater trawl gear, so it is unclear whether or not they were actually fishing for herring with bottom trawls. One of these two vessels also had significant landings from Area 1A using purse seine gear.

The majority of trips on which Atlantic herring is landed by Category A and B bottom trawl gear fishing in Area 2 are considered directed herring trips. Atlantic mackerel are landed on some of these trips, and loligo squid was landed on some of the other trips.

Table 11 2007 Area 2 Landings by Gear Type

Gear Type	Herring Landed (mt)
Midwater Trawl	2,589
Paired Midwater Trawl	9,934
Bottom Trawl	7,009
Other	3
Total	19,535

Table 12 2007 Area 2 Bottom Trawl Herring Landings by State Landed (one vessel with > 3,500 mt landings excluded)

State Landed	Herring Landed (mt)	Number of Vessels Landing Herring	Number of Vessels Landing < 10 Metric Tons	Number of Vessels Landing > 50 Metric Tons
CT	13	3	3	0
MA	79	4	3	1
MD	cannot report	1	cannot report	cannot report
NC	cannot report	1	cannot report	cannot report
NJ	1,369	19	15	4
State UNK	5	6	6	0
NY	89	19	18	1
RI	1,861	10	5	5
VA	cannot report	1	cannot report	cannot report
Total	3,429	63		

Source: Vessel Trip Reports.

5.2.3 2008 Fishery Data

The industry has suggested that the 2007 mackerel fishery was different than previous years in that the mackerel were located offshore, and opportunities were consequently reduced for smaller and mid-sized boats, which are the boats of particular concern with respect to potential herring bycatch. Preliminary 2007 landings data do suggest that activity in the mackerel fishery was substantially lower than previous years. The industry maintains that the shift in the distribution of mackerel to offshore areas precluded smaller vessels from participating in the mackerel fishery. Some of these smaller boats did not qualify for a limited access herring permit; without a permit that allows them to retain any herring they may catch and with reduced opportunities inshore, many of these vessels did not fish for mackerel during the 2007 fishing year. It was noted during several Herring Committee/Advisory Panel discussions of this issue that many vessels are so concerned about being found in violation of the possession limit that they are not taking the risk and fishing for mackerel. Some industry members suggested that the fishery has shifted again during 2008 and that available information for the 2008 fishing year should be investigated to better characterize mixing and overlap between the two fisheries.

5.2.3.1 Permit and Monthly/Annual-Level Data for 2008

To begin to evaluate the extent to which there may be a problem with herring bycatch on mackerel vessels, permit data were queried for all vessels that reported landings of Atlantic mackerel in logbooks during the 2008 fishing year. Since Amendment 1 was implemented on June 1, 2007 and the Atlantic mackerel fishery occurs primarily from December through April, 2008 is the first year in which a full mackerel season occurred while under Amendment 1 regulations. This year is used to provide some perspective on recent activity in the Atlantic

mackerel fishery, including activity by vessels that may not have qualified for herring limited access permits.

The 2008 data are preliminary, so all trips may not have been entered into the database, and fishing activity during December has obviously not occurred. Table 13 reports the total landings of herring and mackerel by month through July 2008.

Table 13 2008 Monthly Landings of Atlantic Herring and Mackerel Through July 2008

January 2008	Herring landed (mt)	7,105
	Mackerel landed (mt)	11,539
February 2008	Herring landed (mt)	7,897
	Mackerel landed (mt)	2,442
March 2008	Herring landed (mt)	3,441
	Mackerel landed (mt)	2,513
April 2008	Herring landed (mt)	2,922
	Mackerel landed (mt)	5,511
May 2008	Herring landed (mt)	4,179
	Mackerel landed (mt)	27
June 2008	Herring landed (mt)	5,473
	Mackerel landed (mt)	13
July 2008	Herring landed (mt)	6,143
	Mackerel landed (mt)	1
Total	Herring landed (mt)	37,160
	Mackerel landed (mt)	22,047

Table 14 summarizes the 2008 herring permit category and the average herring landings for vessels that participated in the mackerel fishery during 2008, based on vessel trip reports (VTRs). According to Table 14, every vessel that landed more than 1,000 mt of Atlantic mackerel during 2008 qualified for and obtained a limited access directed fishery permit to fish in all management areas for herring (Category A). These vessels are therefore allowed to fish for and land herring in unrestricted amounts until a TAC is reached in a management area and the area closes. All other vessels with mackerel landings (183) reported less than 1,000 mt total for the fishing year. Nine of these vessels qualified for an unrestricted herring limited access permit for all areas (Category A), three qualified for unrestricted limited access permits in Areas 2/3 only (Category B), and 10 vessels qualified for limited access incidental catch permits with a 25 mt possession limit restriction.

There were 128 Category D vessels that reported mackerel landings during the 2008 fishing year to date; these vessels did not qualify for a limited access permit but obtained the open access incidental catch permit with an associated herring possession limit of 3 mt. While it is possible that some individual trips may have encountered larger amounts of herring, the Category D vessels landed one (1) metric ton of herring, on average, in 2008. It is important to keep in mind

that this analysis considers activity during the 2008 fishing year through July 2008 only, and there is likely to be additional fishing activity in the mackerel fishery towards the end of the year (December).

Table 14 Amendment 1 Permit Category for Vessels with Reported Mackerel Landings in 2008

2008 Mackerel Landings		2008 Herring Permit Category					
		A	B	C	D	None	Total
< 1,000 mt	Number of Vessels	9	3	10	128	33	183
	Avg 2007 Herring Landings (mt)	2,166	266	0	1	0	398
1,000 - 2,000 mt	Number of Vessels	7					7
	Avg 2007 Herring Landings (mt)	989					989
2,000 - 4,000 mt	Number of Vessels	3					3
	Avg 2007 Herring Landings (mt)	1,163					1,163
Total number of vessels		19	3	10	128	33	193
Overall Avg 2007 Herring Landings (mt)		1,541	266	0	1	0	515

NMFS permit data were queried to characterize the location and average length of all vessels with herring permits (Table 15). The average length of category C vessels (62 feet) and Category D vessels (47 feet) is quite a bit smaller than the vessels with limited access directed fishery permits. This is consistent with the industry's claims that the open access permit holders are dominated by smaller and mid-sized vessels; if the mackerel did in fact move offshore during 2007, these vessels may have experienced reductions in their fishing opportunities. The 2008 data summarized in Sections 5.2.3.1 and 5.2.3.2 of this document (below) do not suggest that mackerel fishing activity by this group of vessels has increased substantially during the 2008 fishing year.

Table 16 reports the average length and principal port state of the vessels which landed mackerel in 2008. The majority of Category A mackerel vessels (limited access herring permits for all management areas) have principal ports in Massachusetts, and New Jersey. The majority of Category D mackerel vessels (open access herring permit for 3 mt) have principal ports in New Jersey, New York, and Rhode Island, which is consistent with trends in participation and activity in the Atlantic mackerel fishery. It is likely that the Category D vessels from NY, NJ, and RI are some of the vessels for which there may be concern about potential herring bycatch, especially if their activity in the mackerel fishery increases in the future.

Table 15 2008 Herring Permit Category and Principal Port State

Principal Port State		2008 Herring Permit Category				Total
		A	B	C	D	
AK	Number of vessels				2	2
	Average length				139	139
CT	Number of vessels			2	41	43
	Average length			83	53	54
DE	Number of vessels				20	20
	Average length				41	41
FL	Number of vessels				13	13
	Average length				50	50
GA	Number of vessels				2	2
	Average length				68	68
LA	Number of vessels				1	1
	Average length				75	75
MA	Number of vessels	17		6	816	839
	Average length	111		67	46	47
MD	Number of vessels				34	34
	Average length				55	55
ME	Number of vessels	10		9	307	326
	Average length	78		48	37	38
NC	Number of vessels			3	82	85
	Average length			75	64	65
NH	Number of vessels	2		6	111	119
	Average length	122		46	36	38
NJ	Number of vessels	6		7	341	354
	Average length	91		75	54	55
NY	Number of vessels			2	213	215
	Average length			72	44	44
PA	Number of vessels				2	2
	Average length				55	55
RI	Number of vessels	5	4	7	145	161
	Average length	96	70	61	51	53
SC	Number of vessels				1	1
	Average length				33	33
TX	Number of vessels				2	2
	Average length				64	64
VA	Number of vessels	1			86	87
	Average length	80			64	65
Total	Number of vessels	41	4	42	2,219	2,306
	Average length	98	70	62	47	48

Table 16 2008 Herring Permit Category and Principal Port State (Vessels with Mackerel Landings)

Principal Port State		2008 Herring Permit Category					Total
		None	A	B	C	D	
CT	Number of vessels					4	4
	Average length					87	87
MA	Number of vessels	4	8		1	20	33
	Average length	43	126		57	44	64
MD	Number of vessels	1					1
	Average length	44					44
ME	Number of vessels	6	2			3	11
	Average length	35	105			30	46
NC	Number of vessels					2	2
	Average length					66	66
NH	Number of vessels	5	2			2	9
	Average length	53	122			49	67
NJ	Number of vessels	4	4		1	29	38
	Average length	52	102		75	56	61
NY	Number of vessels	2			3	37	42
	Average length	33			73	59	59
RI	Number of vessels	3	3	3	5	30	44
	Average length	40	114	68	62	64	66
VA	Number of vessels	1				1	2
	Average length	40				74	57
No Federal Permit	Number of vessels	7					7
	Average length						
Total	Number of vessels	33	19	3	10	128	193
	Average length	43	116	68	66	58	62

5.2.3.2 Trip-Level Data for 2008

Since vessels with any type of herring permit (including Category C and D) are required to submit vessel trip reports (which should include the reporting of discards), logbook data were queried to find all trips where either herring or mackerel was reported as landed or discarded in 2008. Table 17 summarizes the 2008 logbook data by categorizing trips according to mackerel landings and permit type. The reason for creating the mackerel landings categories in Table 17 is to characterize the proportion of current trips that may be approaching the trip limits specified by the Category C and D herring permits. Information for Categories A and B is shown for purposes of comparison.

As shown in Table 17, all of the trips greater than 100 metric tons of mackerel were landed by vessels with Category A herring permits. Vessels with Category B, C, or D permits landed less than 100 metric tons – many with no mackerel landings. Of the 35 Category C trips in the less than 100 metric ton mackerel landing category, the average amount of herring landed is very small, and the average herring discards are zero. A similar scenario holds for the 530 Category

D trips and the 154 trips by vessels with no herring permit. This indicates that the Category C and D vessels did not encounter large amounts of herring while fishing for mackerel (or encountering both herring and mackerel while fishing for something else) during the 2008 fishing year (to date). Had the average herring landings on the Category C trips been at the 25 metric ton level, or the herring landings on the Category D trips been at the 3 metric ton level, and/or high levels of herring discards, this would have provided clear evidence that these vessels were reaching their respective trip limits.

However, as indicated by industry representatives, some vessels may have chosen not to make a mackerel trip at all because they thought it would be difficult to remain under the trip limit. This type of information would not be revealed by an examination of the logbook data. An indication that this may be occurring is shown through the decrease in Atlantic mackerel landings by Category C and D vessels relative to the overall recent decline in mackerel landings. Category C and D mackerel landings dropped by 85% between 2006 and 2008, whereas overall mackerel landings dropped by 63.5%.

Table 18 reflects the same data that is embedded in Table 17 but it is displayed by categories of herring landings rather than categories of mackerel landings. The relevant landings range to consider for Category C permit holders is 30,000 to 55,000 pounds. The data in Table 18 show that there have been no trips reported in that range during the 2008 fishing year. If there had been many trips with average landings approaching 55,000 pounds and high herring discards reported, this would have indicated that Category C vessels were reaching the possession limit and being forced to discard.

For open access permit holders (Category D, 3 mt), there has only been one trip reported in the 3,300-6,600 pound range and one trip in the 6,600 to 30,000 pound range during 2008 (which exceeded the 3 mt trip limit). This suggests that at least for trips taken by Category D vessels, very few have reported landings of herring greater than 50% of the current possession limit. For the 748 trips with herring landings that were less than 50% of the 3 mt trip limit (0 to 3,300 pounds), the average herring landings reported by these vessels are only 50 pounds, and average herring discards reported are only 22 pounds.

Table 17 2008 Herring Landings and Discards by Permit Category and Mackerel Landings Category (All Logbook Trips with Herring or Mackerel Catch)

Mackerel Landings Category		2008 Herring Permit					
		A	B	C	D	None	Total
No landings	Number of trips	233	27	34	220	51	565
	Average herring landed (mt)	119	17	0.148	0.055	1	50
	Average herring discarded (mt)	0	17	0.003	0.061	0.008	1
	Maximum herring discarded (mt)	0	446	0.017	6.250	0.179	446
Less than 100 mt	Number of trips	85	4	35	530	154	808
	Average herring landed (mt)	80	13	0.005	0.025	0.005	8
	Average herring discarded (mt)	0	0	0	0	0.0001	0.011
	Maximum herring discarded (mt)	4	0	0	0	0.0112	4.464
100 to 200 mt	Number of trips	30					30
	Average herring landed (mt)	55					55
	Average herring discarded (mt)	0					0
	Maximum herring discarded (mt)	0					0
200 to 300 mt	Number of trips	17					17
	Average herring landed (mt)	5					5
	Average herring discarded (mt)	0					0
	Maximum herring discarded (mt)	0					0
300 to 400 mt	Number of trips	15					15
	Average herring landed (mt)	20					20
	Average herring discarded (mt)	2					2
	Maximum herring discarded (mt)	18					18
400 to 500 mt	Number of trips	11					11
	Average herring landed (mt)	3					3
	Average herring discarded (mt)	0					0
	Maximum herring discarded (mt)	0					0
Total	Number of trips	391	31	69	750	205	1,446
	Average herring landed (mt)	93	17	0.076	0.033	0.314	26
	Average herring discarded (mt)	0.108	14	0.001	0.018	0.002	0.348
	Maximum herring discarded (mt)	18	446	0.017	6	0.179	446

Table 18 2008 Herring Landings and Discards by Herring Landing Category

Herring Landings Category		2008 Herring Permit					Total
		A	B	C	D	None	
0 to 3,300 lbs	Number of trips	96	3	69	748	204	1,120
	Average herring landed (lbs)	52	0	169	50	21	52
	Average herring discarded (lbs)	531	333,333	3	22	5	954
	Maximum herring discarded (lbs)	35,000	1,000,000	38	10,000	400	1,000,000
	Average mackerel landed (lbs)	342,565	84	174	922	136	30,014
3,300 to 6,600 lbs	Number of trips	1	1		1		3
	Average herring landed (lbs)	6,000	5,000		5,000		5,333
	Average herring discarded (lbs)	0	0		0		0
	Maximum herring discarded (lbs)	0	0		0		0
	Average mackerel landed (lbs)	420,000	0		400		140,133
6,600 to 30,000 lbs	Number of trips	11	8		1		20
	Average herring landed (lbs)	18,884	14,500		14,000		16,886
	Average herring discarded (lbs)	0	0		14,000		700
	Maximum herring discarded (lbs)	0	0		14,000		14,000
	Average mackerel landed (lbs)	199,327	0		0		109,630
30,000 to 55,000 lbs	Number of trips	25	11				36
	Average herring landed (lbs)	45,859	42,636				44,874
	Average herring discarded (lbs)	0	0				0
	Maximum herring discarded (lbs)	0	0				0
	Average mackerel landed (lbs)	148,536	182				103,205
55,000 to 75,000 lbs	Number of trips	10	5				15
	Average herring landed (lbs)	64,300	66,400				65,000
	Average herring discarded (lbs)	0	0				0
	Maximum herring discarded (lbs)	0	0				0
	Average mackerel landed (lbs)	0	0				0
75,000+	Number of trips	248	3			1	252
	Average herring landed (lbs)	321,964	83,333			140,000	318,402
	Average herring discarded (lbs)	177	0			0	175
	Maximum herring discarded (lbs)	40,000	0			0	40,000
	Average mackerel landed (lbs)	38,064	400			0	37,464
Total	Number of trips	391	31	69	750	205	1,446
	Average herring landed (lbs)	209,349	37,806	169	75	704	57,565
	Average herring discarded (lbs)	243	32,258	3	40	5	779
	Maximum herring discarded (lbs)	40,000	1,000,000	38	14,000	400	1,000,000
	Average mackerel landed (lbs)	124,430	111	174	920	135	34,153

5.2.4 Fishery Information Considered in Amendment 1 to the Herring FMP

During the development of the limited access alternatives in Amendment 1, the Herring PDT examined vessel logbook data from 2000 to 2002 to show how many trips may be affected by trip limits of 15 and 25 metric tons, which were considered as part of the incidental catch permit options. The following information is useful to illustrate the overlap between the herring fishery and other small mesh (whiting) and pelagic fisheries (squid, mackerel) occurring throughout the region. This information provides a somewhat more historical perspective on the nature and degree of overlap between the herring fishery and other small mesh fisheries.

In Table 19 – Table 21, incidental herring landings are summarized for directed mackerel, squid (loligo and illex combined), and whiting trips. In the following analysis, a *directed* trip is defined as one in which 50% or more of the landings consisted of the species in question. For the Atlantic mackerel trips, only trips with more than 1 metric ton were included in the analysis.

Table 19 shows that in 2002, nine (9) of the 254 directed mackerel trips greater than 1 mt had greater than 25 mt of herring landed on the same trip. No directed mackerel trips landed between 15 and 25 metric tons of herring, and six (6) trips landed between 0 and 15 mt of incidental herring landings during 2002. In 2001, nearly all directed mackerel trips landed no herring with the exception of three (3) trips that landed between 0 and 1 mt of herring. In 2000, three (3) of the 95 directed mackerel trips greater than 1 mt landed greater than 25 mt of herring on the same trip. No directed mackerel trips landed between 15 and 25 mt of herring, and two (2) trips had between 0 and 15 mt of incidental herring landings during 2000. Therefore, at the time this analysis was conducted, the incidental catch of herring on directed mackerel trips appeared to be low. It was noted that this issue may become more of a concern if/when the Atlantic mackerel fishery expands beyond levels observed in the early 2000s.

Table 20 shows that for the directed squid trips, there were only three (3) trips in 2000 in which more than 25 mt of herring was landed. The rest of the directed squid trips during that year as well as all directed squid trips in 2001 and 2002 landed less than 15 mt of herring. Most directed squid trips landed no amount of herring. The trips that did land herring landed less than 600 pounds of herring.

Table 21 shows that all for all the directed whiting trips in 2000 to 2002, none had greater than 15 metric tons of incidental herring landings. Most directed whiting trips had no herring landings. The trips that did land herring landed less than 1.4 mt of herring.

Table 19 Incidental Catch of Herring on Directed Mackerel Trips

	2000	2001	2002
Number of directed trips with greater than 1 mt of mackerel	95	122	254
Number of trips with herring catch > 0 and < 15 mt	2	3 (maximum of 1 mt of herring)	6
Number of trips with herring catch between 15 and 25 mt	0	0	0
Number of trips with herring catch > 25	3 (maximum of 120 mt of herring)	0	9 (maximum of 109 mt of herring)

Table 20 Incidental Catch of Herring on Directed Squid (Loligo and Illex Combined) Trips

	2000	2001	2002
Number of directed trips	5,624	3,394	3,377
Number of trips with herring catch > 0 and < 15 mt	32 (maximum of 400 LBS)	26 (maximum of 500 LBS)	8 (maximum of 600 LBS)
Number of trips with herring catch between 15 and 25 mt	0	0	0
Number of trips with herring catch > = 25	3 (maximum of 36 mt)	0	0

Table 21 Incidental Catch of Herring on Directed Whiting Trips

	2000	2001	2002
Number of directed trips	1,777	1,933	1,131
Number of trips with herring catch > 0 and < 15 mt	52 (maximum of 1 mt)	76 (maximum of 625 LBS)	68 (maximum of 1.4 mt)
Number of trips with herring catch between 15 and 25 mt	0	0	0
Number of trips with herring catch > = 25	0	0	0

6.0 ADDITIONAL BACKGROUND INFORMATION TO SUPPORT THE DEVELOPMENT OF AMENDMENT 5 MANAGEMENT ALTERNATIVES

6.1 UPDATED STOCK/FISHERY INFORMATION

The following stock/fishery information is updated through the 2007 fishing year, and the 2008 fishing year if possible. The Herring PDT will continue to enhance/update this information throughout the development of Amendment 5; more detailed information will be provided in the Draft EIS for Amendment 5.

6.1.1 Stock Information

6.1.1.1 NMFS Trawl Survey – All Strata

Table 22 summarizes data (mean weight per tow in kilograms and mean number per tow) from the NMFS spring and autumn bottom trawl surveys from 1990 – 2008. Table 23 summarizes data from the NMFS winter bottom trawl survey from 1992 – 2007 (the winter survey ended in 2007, so no additional information is available).

The NEFSC trawl survey samples the range of the Atlantic herring resource in the U.S. Exclusive Economic Zone (EEZ). The 2007 fall survey numbers were slightly lower, but not substantially different from those seen in 2005 and 2006. The 2007 spring survey numbers dropped from 2006 levels but also are similar to those in 2005. The 2008 spring survey numbers were slightly higher than 2007, and the 2008 autumn survey numbers were almost identical to those observed in 2007. Overall, no trend is apparent in any of the surveys in recent years, although the long-term trend over the survey time series has been upwards.

Table 22 NMFS Trawl Survey – Herring Catch Per Tow (Mean Number and Weight in kg), 1990-2008

YEAR	SPRING SURVEY		AUTUMN SURVEY	
	number/tow	kg/tow	number/tow	kg/tow
1990	8.98	0.92	13.98	1.64
1991	25.40	2.29	20.75	2.95
1992	39.30	2.76	56.61	9.25
1993	68.52	7.68	16.81	2.51
1994	35.40	3.88	13.71	2.15
1995	27.57	3.14	125.75	13.12
1996	58.58	3.81	37.65	4.64
1997	64.66	4.08	37.06	4.87
1998	50.62	4.73	20.63	2.84
1999	84.52	9.45	13.52	1.84
2000	32.02	2.80	20.65	3.18
2001	33.72	3.22	25.33	3.69
2002	40.92	2.63	77.99	10.74
2003	19.71	1.87	94.76	6.23
2004	48.00	2.22	40.70	5.04
2005	19.87	1.49	25.70	3.37
2006	27.72	2.89	28.16	3.48
2007	17.34	1.72	22.97	3.17
2008	19.18	2.02	22.83	3.07

Table 23 NMFS Winter Trawl Survey – Herring Catch Per Tow (Mean Number and Weight in kg), 1992-2007

YEAR	WINTER Number/Tow	WINTER KG/Tow
1992	35.42	3.19
1993	49.77	6.56
1994	4.39	0.51
1995	17.60	2.60
1996	112.25	6.86
1997	54.53	8.47
1998	57.29	6.05
1999	56.01	6.77
2000	66.20	3.54
2001	77.09	7.56
2002	74.66	9.45
2003	42.78	4.49
2004	34.26	2.16
2005	98.06	9.08
2006	50.87	4.80
2007	55.26	6.37

6.1.1.2 NMFS Trawl Survey – Inshore GOM

To examine trends in the inshore Gulf of Maine separately, NMFS survey strata 26, 27, and 38-40 were isolated because they include the majority of the area from this survey that represents the inshore Gulf of Maine. The NMFS fall survey and the spring survey were relatively flat, averaging very few fish per tow during the late 1960s through the early 1980s (Figure 6 – Figure 9). In the late 1980s, the indices increased significantly, and although variable, have remained relatively high.

The number of fish per tow from the survey in the inshore Gulf of Maine increased to a record high in the 2004 spring survey. A similar peak was observed in the fall survey in the previous year. Another relatively significant increase in numbers and weight per tow occurred during the fall of 2006, but this was not observed in the spring survey; the following 2007 spring survey increased slightly from very low levels, and 2008 levels are slightly lower than those observed in 2007. Throughout the more recent time series, the surveys in the inshore Gulf of Maine have been quite variable, and no trend is apparent. Overall, survey tows in the inshore GOM since 2004 are not as high in number or weight as those observed during the late 1990s and early 2000s. It should be noted that while the fall survey might be construed to represent mostly the Gulf of Maine spawning component, the same cannot be said for the Spring inshore survey.

Figure 6 Herring Catch/Tow (Number) Indices from the NMFS Autumn Bottom Trawl Survey Strata 26-27,38-40 (Inshore GOM Area), 1963-2008

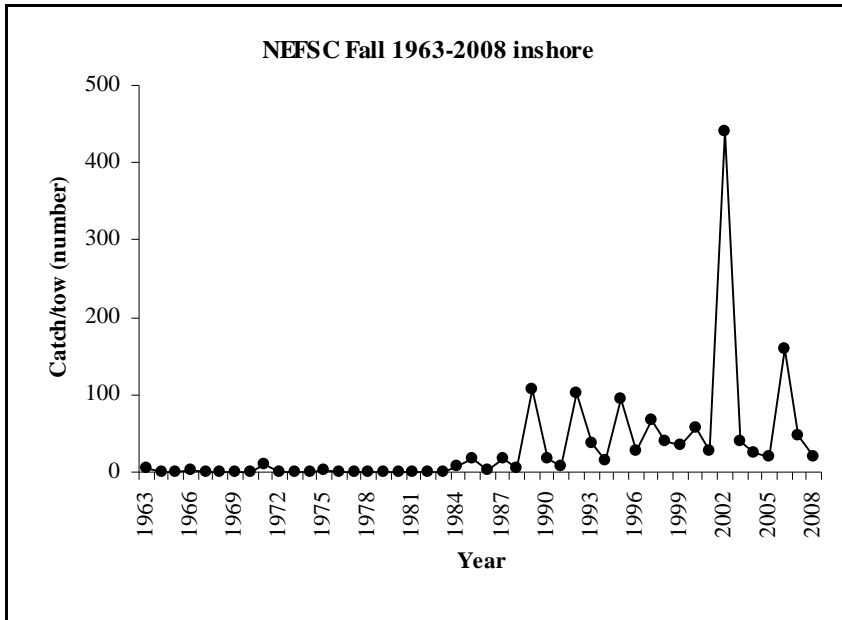


Figure 7 Herring Catch/Tow (Kilograms) Indices from the NMFS Autumn Bottom Trawl Survey Strata 26-27,38-40 (Inshore GOM Area), 1963-2008

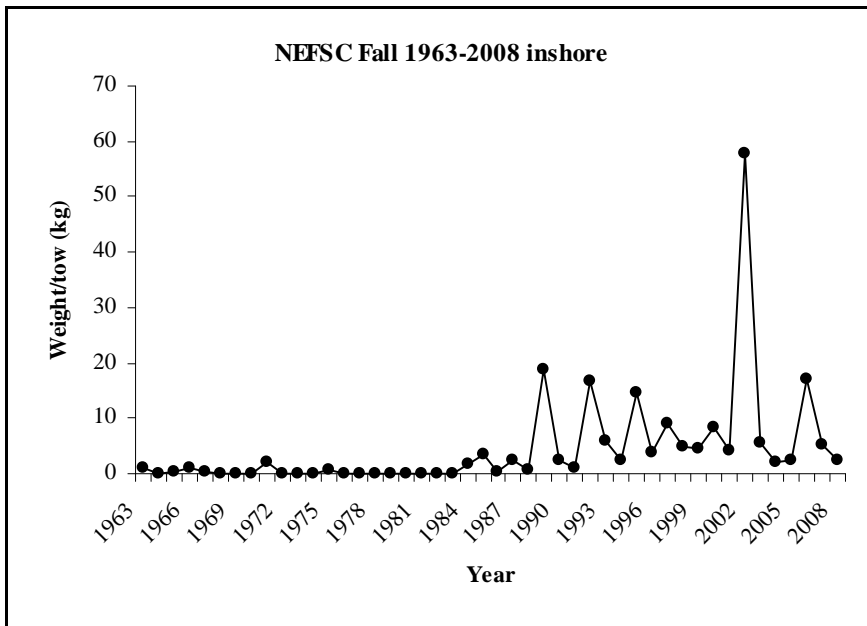


Figure 8 Herring Catch/Tow (Number) Indices from the NMFS Spring Bottom Trawl Survey Strata 26-27,38-40 (Inshore GOM Area), 1968-2008

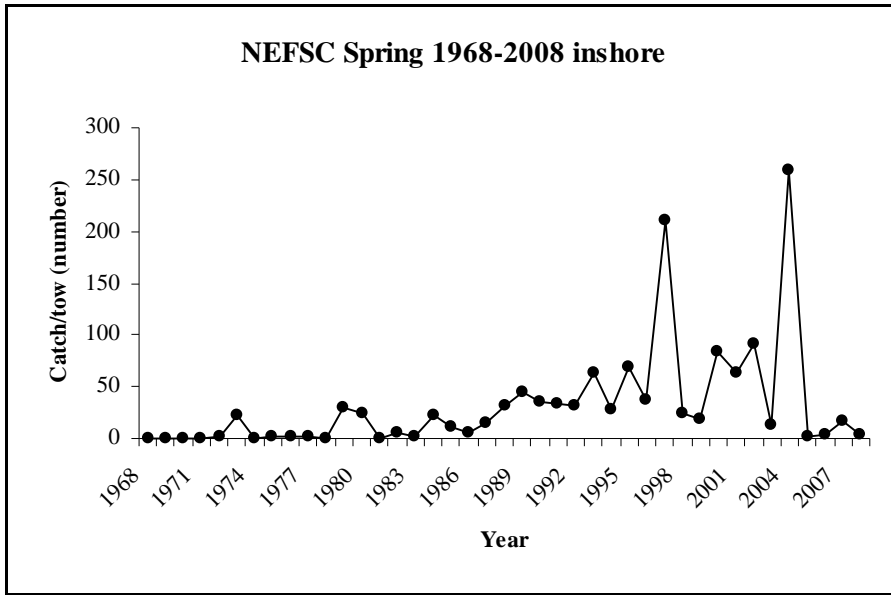
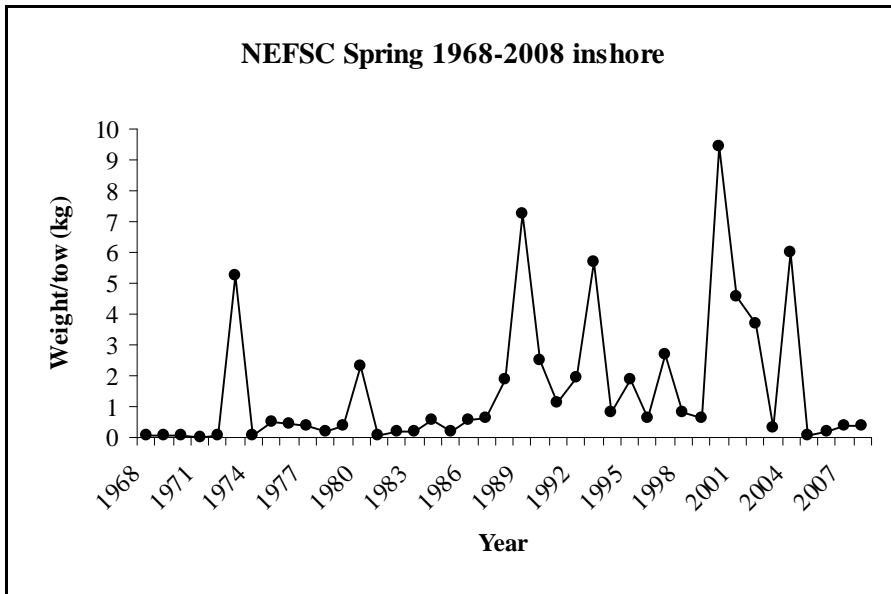


Figure 9 Herring Catch/Tow (Kilograms) Indices from the NMFS Spring Bottom Trawl Survey Strata 26-27,38-40 (Inshore GOM Area), 1968-2008



6.1.1.3 Stock Assessment Schedule for Atlantic Herring

At this time, the next stock assessment for Atlantic herring is scheduled for June 8-12, 2009 in St. Andrew's, New Brunswick. It will be a joint assessment with Canada, conducted through the Transboundary Resource Assessment Committee (TRAC). This assessment will not be a benchmark assessment, but rather an update from the 2006 TRAC assessment.

6.1.2 Fishery Information

6.1.2.1 IVR Landings

The main reason for utilizing the interactive voice response (IVR) system in the Atlantic herring fishery is to monitor the Total Allowable Catch (TAC) limits set for the four Federal management areas. As part of the herring FMP, each management area is annually assigned a TAC (in metric tons). Although harvesters are required to also report catches with vessel trip report (VTR) forms, near real-time data is obtained through the IVR system allowing the TACs to be monitored. As of the 2008 fishing year, the 3% research set-aside established in Amendment 1 requires that when the catch in a management area is projected to reach 92% of its specified TAC, the Regional Administrator closes the area to all directed herring fishing. The 2008 fishing year was the eighth year of mandatory IVR reporting for the Atlantic herring fleet.

Table 24 Total Allowable Catches (TACs) for 2008 Fishing Year

Management Area	TAC (mt)	92% of TAC (mt)
Area 1A (Jan 1 st – May 31 st)	5,000	N/A
Area 1A (June 1 st – Dec 31 st)	40,000	N/A
Area 1A TOTAL	45,000	41,400
Area 1B	10,000	9,200
Area 2	30,000	27,600
Area 3	60,000	55,200

Table 25 Total IVR Landings of Atlantic Herring, 2000-2008

Year	Total IVR Landings (MT)
2000	107,387
2001	121,569
2002	91,831
2003	100,544
2004	93,722
2005	96,895
2006	99,185
2007	78,172
2008	80,800

Table 26 provides IVR catches for the 2008 fishing year. Overall, the IVR reports totaled 80,800 mt of herring across all management areas, which represents about 56% of the OY for the U.S. fishery (145,000 mt). Consistent with previous years, the majority of the landings were taken from Area 1 (1A and 1B). Part of the reduction in total landings since 2006 is attributable to a 15,000 mt decrease in the TAC for Area 1A. Overall, the timing of the fishery appears to have been consistent with previous years (Figure 10). However, fishing effort in Area 1A was distributed over the year in a more step-wise fashion due to adjustments to the days out provisions that are intended to slow the pace of the fishery (Figure 11). In 2008, the Area 1A fishery closed on November 14, 2008.

Table 26 IVR Herring Catch for 2008 Fishing Year

Management Area	IVR Catch (mt)	% of TAC
Area 1A (Jan 1 st – May 31 st)	0	N/A
Area 1A (June 1 st – Dec 31 st)	41,640	N/A
Area 1A TOTAL	41,640	92.5%
Area 1B	8,104	81%
Area 2	19,256	64.2%
Area 3	11,800	19.7%
Total	80,800	55.7%

Figure 10 Cumulative Total Catch of Atlantic Herring in All Management Areas by Week, 2004-2008 (IVRs)

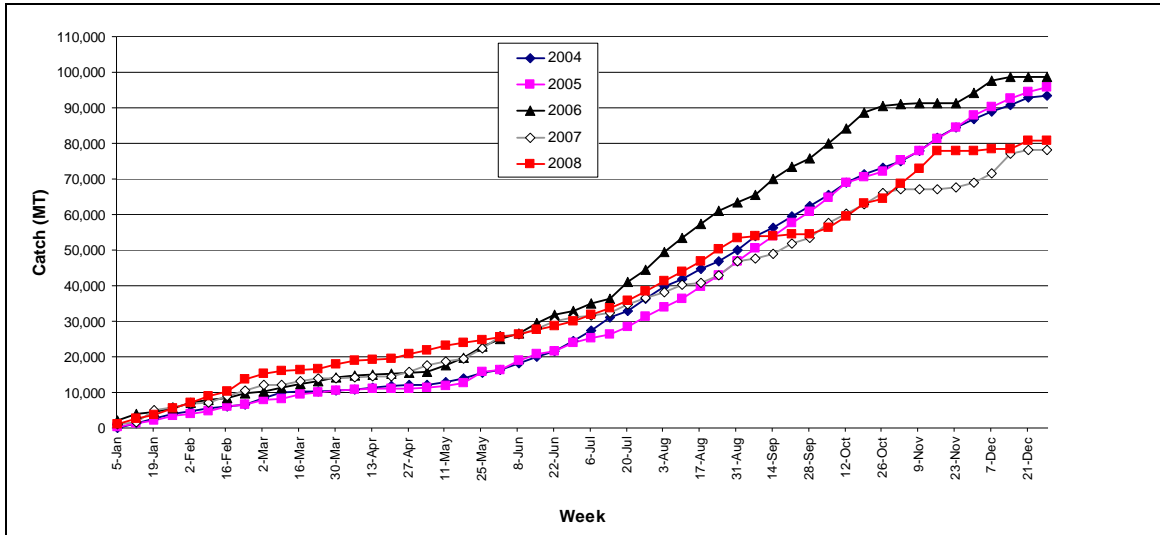


Figure 11 Cumulative Total Catch of Atlantic Herring in Area 1A by Week, 2004-2008 (IVRs)

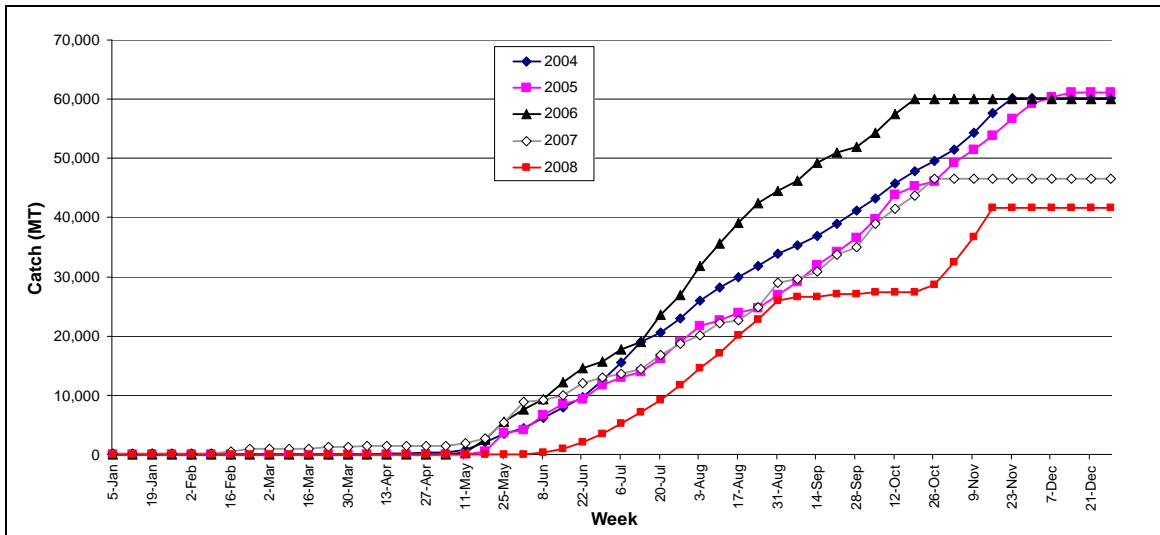


Table 27 shows the differences in IVR-reported herring catch by management area from 2007 to 2008. The decrease in Area 1A catch corresponds with the additional 5,000 mt decrease in the 1A TAC from 50,000 mt in 2007 to 45,000 mt in 2008. Catch from Area 1B increased to compensate, in part, for the catch reduction in Area 1A. The Area 2 fishery increased substantially. Landings from Area 3 increased as well but remain far lower than the 60,000 mt TAC for that area. Overall, landings increased from 2007 to 2008 by 2,628 metric tons (+3.4%) but remain considerably lower than years prior to 2007 and well below the total available OY for the U.S. Atlantic herring fishery.

Table 27 Differences in IVR Herring Catch by Management Area, 2007-2008

Management Area	2007 Catch (mt)	2008 Catch (mt)	Difference (mt)
1A	46,870	41,640	-5,230
1B	6,859	8,104	+1,245
2	14,687	19,256	+4,569
3	9,756	11,800	+2,044
Total	78,172	80,800	+2,628

6.1.2.2 VTR Landings

TBD

6.1.2.3 Economic Factors

One of the major features of Amendment 1 was the establishment of a limited access program in the herring fishery. There are four permit categories: 1) limited access permit for all management areas (Category A); 2) limited access permit for access to Areas 2 and 3 only (Category B); 3) limited access incidental catch permit for 25 mt per trip (Category C); and 4) an open access incidental catch permit for 3 mt per trip (Category D).

With the implementation of the limited access permit program in Amendment 1, the following numbers of vessels applied for and received permits in 2007 (estimates provided as of December 2008):

- Category A – 43 vessels;
- Category B – 3 vessels;
- Category C – 44 vessels; and
- Category D – 2,558 vessels.

As of April, 2009, the following information is available about vessel permitting:

Table 28 Amendment 1 Limited Access Permits Issued as of April 2009

2009 Permits Issued (LA = limited access)			
Category A (LA All Areas)	Category B (LA Areas 2/3)	Category C (LA Incidental)	Category D (Open Access)
41	4	54	2,272

Not all of the vessels that received Amendment 1 herring permits were active during the 2007 fishing year. Table 29 classifies all *active* vessels – those that reported landing herring by principal gear (based on the gear which earned the most revenue for the vessel in a given year) and permit category (in 2005 and 2006, there were two open access permit categories based on intended level of herring catch). The majority of the vessels that had Category 1 permits in 2005 and 2006 qualified for either the all-areas limited access permit or the limited access Areas 2 and 3 only permit. The majority of Category 2 permits in 2005 and 2006 obtained either the limited access incidental catch permit or open access permit. However, there were a few vessels in which these patterns were reversed. The vessels in the “no permit” category did not obtain any kind of permit for herring after the implementation of Amendment 1 and do not have significant landings.

Table 30 shows the 2007 landings by gear used, management area, and permit category. Nearly 95% of the total 2007 landings are landed by vessels with an all-areas limited access permit. Approximately 36% of the total landings in 2007 were from limited access purse seine vessels landing herring from Area 1A.

2007 Atlantic Herring Revenues

Based on dealer weighout reports, herring revenues by permit category during the 2007 fishing year were:

- Category A - \$15.7 million;
- Category B – cannot report, less than three vessels;
- Category C - \$485,000;
- Category D - \$207,000.

Table 29 Number of Vessels by Principal Gear and Permit Category (VTR Data, 2005-2007)

	2005 Permit Category					Total	
	Category 1	Category 2	No Permit				
2005	PURSE SEINE	4				4	
	MIDWATER TRAWL	5	6			11	
	PAIR TRAWL	12				12	
	BOTTOM TRAWL	7	45	6		58	
	SEINE/WEIR			1		1	
	OTHER		42	16		58	
	TOTAL	28	93	23		144	
	2006 Permit Category						
	Category 1	Category 2	No Permit			Total	
2006	PURSE SEINE	4	2			6	
	MIDWATER TRAWL	6	5			11	
	PAIR TRAWL	14	1			15	
	BOTTOM TRAWL	9	50	9		68	
	SEINE/WEIR			1		1	
	OTHER		37	20		57	
	TOTAL	33	95	30		158	
	2007 Permit Category						
	All Areas	Areas 2/3	LA Inc. Catch	Open Access	No Permit	Total	
2007	PURSE SEINE	6			5	11	
	MIDWATER TRAWL	4			3	7	
	PAIR TRAWL	13			1	14	
	BOTTOM TRAWL	5	2	11	56	14	88
	SEINE/WEIR				36	14	50
	TOTAL	28	2	11	101	28	170

Table 30 2007 Herring Landings (mt) by Gear and Amendment 1 Permit Category (VTR Data)

	Management Area	Amendment 1 Permit Category					Total
		All Areas	Areas 2/3	LA Inc. Catch	Open Access	No Permit	
PURSE SEINE	1A	29,171			349		29,520
	1B	1,200			52		1,252
	3X	54					54
	Unknown	193					193
MIDWATER TRAWL	1A	3,088					3,088
	1B	1,474					1,474
	2X	1,827			762		2,589
	3X	1,043					1,043
PAIR TRAWL	1A	11,533					11,533
	1B	2,949			c		c
	2X	9,359			c		c
	3X	8,746					8,746
	Unknown	50					50
BOTTOM TRAWL	1A			420	291	5	716
	2X	5,288	c	357	124	185	c
	3X			2			2
OTHER	1A				5		5
	1B						
	2X				1	2	3

Table 31 summarizes the number of trips and days absent by management area and permit category for the 2007 fishing year. The 2007 fishing year saw a shift in the fishery from trawling to purse seining, presumably due to the prohibition on midwater trawling in Area 1A from June – September. Purse seine vessels took more trips in total than midwater trawl or pair trawl vessels in 2007, the vast majority of which occurred in Area 1 (1A and 1B). Although some trawling activity still occurred in Area 1, midwater trawls and pair trawls operated most in Areas 2 and 3. The bottom trawl sector represents incidental catch fishing, and most bottom trawl vessels possess an open access incidental catch permit for herring. Limited access Category C vessels fished for herring with bottom trawls in Area 1A, but the majority of bottom trawl activity occurred in the southern New England/Mid-Atlantic region (Area 2). Virtually no bottom trawl activity for herring occurred in Area 3. The majority of activity in Area 3 occurred by pair trawl vessels.

Table 31 Number of Trips and Days Absent by 2007 Permit Category

GEAR TYPE	AREA		2007 PERMIT CATEGORY					2007 TOTAL
			A	B	C	D	#N/A	
PURSE SEINE	1A	Number of trips	312			17		329
		Total days absent	376			17		393
		Average trip length	1.205			1		1.195
	1B	Number of trips	9			2		11
		Total days absent	11			2		13
		Average trip length	1.222			1		1.182
	3X	Number of trips	1					1
		Total days absent	2					2
		Average trip length	2					2
4X	Number of trips	1					1	
	Total days absent	1					1	
	Average trip length	1					1	
(blank)	Number of trips	2					2	
	Total days absent	2					2	
	Average trip length	1					1	
Total	Number of trips	325			19		344	
	Total days absent	392			19		411	
	Average trip length	1.206			1		1.195	
MIDWATER TRAWL	1A	Number of trips	55					55
		Total days absent	79					79
		Average trip length	1.436					1.436
	1B	Number of trips	12					12
		Total days absent	25					25
		Average trip length	2.083					2.083
	2X	Number of trips	35			58		93
		Total days absent	121			106		227
		Average trip length	3.457			1.828		2.441
	3X	Number of trips	14					14
		Total days absent	45					45
		Average trip length	3.214					3.214
	(blank)	Number of trips	14					14
		Total days absent	23					23
		Average trip length	1.643					1.643
	Total	Number of trips	130			58		188
		Total days absent	293			106		399
		Average trip length	2.254			1.828		2.122

Table 31 Number of Trips and Days Absent by 2007 Permit Category

GEAR TYPE	AREA		2007 PERMIT CATEGORY					2007 TOTAL
			A	B	C	D	#N/A	
PAIR TRAWL	1A	Number of trips	82					82
		Total days absent	151					151
		Average trip length	1.841					1.841
	1B	Number of trips	25			1		26
		Total days absent	51			1		52
		Average trip length	2.04			1		2
	2X	Number of trips	83			3		86
		Total days absent	278			11		289
		Average trip length	3.349			3.667		3.360
3X	Number of trips	52					52	
	Total days absent	154					154	
	Average trip length	2.962					2.962	
(blank)	Number of trips	2					2	
	Total days absent	6					6	
	Average trip length	3					3	
Total	Number of trips	244			4		248	
	Total days absent	640			12		652	
	Average trip length	2.623			3		2.629	
BOTTOM TRAWL	1A	Number of trips			227	285	41	553
		Total days absent			228	285	41	554
		Average trip length			1.004	1	1	1.002
	2X	Number of trips	58	C	28	272	97	513
		Total days absent	197	C	28	329	100	718
		Average trip length	3.397	C	1	1.210	1.031	1.400
	3X	Number of trips			3			3
		Total days absent			3			3
		Average trip length			1			1
Total	Number of trips	58	C	258	557	138	1069	
	Total days absent	197	C	259	614	141	1275	
	Average trip length	3.397	C	1.004	1.102	1.022	1.193	

Table 31 Number of Trips and Days Absent by 2007 Permit Category

GEAR TYPE	AREA		2007 PERMIT CATEGORY					2007 TOTAL
			A	B	C	D	#N/A	
OTHER	1A	Number of trips				68	40	108
		Total days absent				69	45	114
		Average trip length				1.015	1.125	1.056
	1B	Number of trips				2		2
		Total days absent				10		10
		Average trip length				5		5
	2X	Number of trips				108	49	157
		Total days absent				108	49	157
		Average trip length				1	1	1
	(blank)	Number of trips				1		1
		Total days absent				1		1
		Average trip length				1		1
	Total	Number of trips				179	89	268
		Total days absent				188	94	282
		Average trip length				1.050	1.056	1.052

Table 32 and Table 33 summarize the number of trips and the amount of Atlantic herring landings, respectively, by fishing port and permit category, for the 2007 fishing year. The majority of the limited access directed fishery for Atlantic herring (Category A permits) operates from ports in Maine and Massachusetts, with another smaller component operating out of Cape May, New Jersey.

Table 32 2007 Trips by Port and Permit Category

NUMBER OF TRIPS		2007 PERMIT CATEGORY			
STATE	PORT	A	B	C	D
	Fall River	13			
	Gloucester	160		14	77
	New Bedford	83			70
	Other MA			7	35
MA Total		256		21	182
	Portland	76			13
	Prospect Harbor	65			5
	Rockland	141			
	Other ME	116			112
ME Total		398			130
	Portsmouth	3			107
	Other NH			206	
NH Total		3		206	135
	Belford				53
	Cape May	37			8
	Long Beach				
	Point Pleasant				48
	Other NJ				78
NJ Total		37			187
	Montauk Total				42
	Shinnecock Total				71
	Other NY				27
NY Total					140
RI Total		61	C	29	3
CT Total					26
Other States		2			14

Table 33 2007 Atlantic Herring Landings by Port and Permit Category

MT HERRING LANDED		2007 PERMIT CATEGORY			
STATE	PORT	A	B	C	D
	Fall River	1,189			
	Gloucester	19,742		10	100
	New Bedford	11,120			1,215
	Other MA			1	37
MA Total		32,052		10	1,353
	Portland	8,535		0	6
	Prospect Harbor	5,937			146
	Rockland	14,684			
	Other ME	7,290			280
ME Total		36,446		0	432
	Portsmouth	101		0	171
	Other NH			409	15
NH Total		101		409	186
	Belford				5
	Cape May	2,573			195
	Long Beach				
	Point Pleasant				1
	Other NJ				
NJ Total		2,573			202
	Montauk Total				5
	Shinnecock Total				9
	Other NY				1
NY Total					15
RI Total		4,789	C	358	8
CT Total					12
Other States		14			5

6.1.2.4 Updated Canadian Fishery Information

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. Currently, the Herring FMP assumes that 20,000 mt of fish from the inshore component of the Atlantic herring resource will be taken annually in the NB weir fishery. This assumed catch is subtracted from the available yield from the inshore component of the resource before TACs are determined for management areas in the U.S. EEZ. While the NB weir catch has been quite variable over time, the 20,000 mt assumption has been determined in previous years to be appropriate. The language in Amendment 1 provides flexibility to reconsider this assumption and adjust according to trends in the fishery in future years as part of the fishery specification process.

Table 34 summarizes landings of herring from all Canadian fisheries from 1963-2008. The column labeled “Non-Stock 4Xs N.B. Weir & Shutoff” generally represents catch from the NB weir fishery. For the most part, shutoffs are not located in the same area as weirs, and landings from shutoffs are thought to be from the 4WX stock component. Combined weir and shutoff landings were almost 31,000 mt in 2007, a significant increase from 12,863 mt in 2006. The catch from this fishery in 2007 was the highest observed since the late 1980s and early 1990s. However, catch is clearly quite variable and dropped again to just under 6,500 mt in 2008. The NB weir fishery landings are presented separately in Table 35 and totaled about 30,145 mt in 2007 and 6,041 mt in 2008.

Table 35 lists herring landings by month for weirs located in New Brunswick from 1978 to 2008. 2007 NB weir landings of 30,145 mt were the highest on record since 1992 and 1993. 2008 NB weir landings were the lowest of the time series. The most recent five-year average of NB weir landings (2004 – 2008) is 16,217 mt, and the most recent ten-year average (1999-2008) is 15,739 mt. Extremely low landings during the 2008 fishing year decreased these moving averages, especially the ten-year average. The average landings for the entire time series is 21,829 mt, which is consistent with the 20,000 mt assumption that is factored into the determination of the U.S. herring fishery specifications. Landings from the NB weir fishery have always been somewhat variable; the fishery is dependent on many factors including weather, fish migration patterns, and environmental conditions. NB weir landings should be monitored closely over the next several years to see if a trend emerges.

Table 36 provides information on the number of active weirs and the average catch per weir from the Canadian fisheries from 1978 to 2008. The columns labeled “NB” represent the New Brunswick weir fishery that catches fish from the Atlantic herring stock complex (the Nova Scotian weir fishery primarily catches herring from a different stock). Over time, the number of active weirs in the fishery has decreased considerably, although 2007 saw the highest number since 2001. The number of active weirs declined in 2008, as did catch per unit effort (CPUE). With such low landings, CPUE in 2008 was the second-lowest of the entire time series.

Table 34 Historical Series of Nominal and Adjusted Annual Landings (t) by Major Gear Components and Seasons of the 4WX Herring Fishery, 1963-2008

Year [^]	4W		4Xs		4Xqr		4X		4Xr		4WX		4WX		4WX		Non-Stock		4VWX		Offshore		Total 4VWX Adjusted Landings
	Winter		Fall&Winter		Summer		Summer		Nova		Stock		Stock		Stock		4Xs		Coastal		Scotian		
	Purse Seine	Purse Seine	Purse Seine	Purse Seine	Gillnet	Gillnet	Scotia	Scotia	Nominal	Adjusted	Nominal	Adjusted	Nominal	Adjusted	Nominal	Adjusted	TAC	N.B. Weir & Shutoff	Nova Scotia	Nova Scotia	Shelf Banks		
1963			6,871		15,093		2,955		5,345		30,264		30,264					29,366				3,000	62,630
1964			15,991		24,894		4,053		12,458		57,396		57,396					29,432				2,000	88,828
1965			15,755		54,527		4,091		12,021		86,394		86,394					33,346				6,000	125,740
1966			25,645		112,457		4,413		7,711		150,226		150,226					35,805				2,000	188,031
1967			20,888		117,382		5,398		12,475		156,143		156,741					30,032				1,000	187,773
1968			42,223		133,267		5,884		12,571		193,945		196,362					33,145				18,000	247,507
1969	25,112		13,202		84,525		3,474		10,744		137,057		150,462					26,539				121,000	298,001
1970	27,107		14,749		74,849		5,019		11,706		133,430		190,382					15,840				87,000	293,222
1971	52,535		4,868		35,071		4,607		8,081		105,162		129,101					12,660				28,000	169,761
1972	25,656		32,174		61,158		3,789		6,766		129,543		153,449					32,699				21,000	207,148
1973	8,348		27,322		36,618		5,205		12,492		89,985		122,687					19,935				14,000	156,622
1974	27,044		10,563		76,859		4,285		6,436		125,187		149,670					20,602					170,272
1975	27,030		1,152		79,605		4,995		7,404		120,186		143,897					30,819					174,716
1976	37,196		746		58,395		8,322		5,959		110,618		115,178					29,206					144,384
1977	23,251		1,236		68,538		18,523		5,213		116,761		117,171	109,000				23,487					140,658
1978	17,274		6,519		57,973		6,059		8,057		95,882		114,000	110,000				38,842					152,842
1979	14,073		3,839		25,265		4,363		9,307		56,847		77,500	99,000				37,828					115,328
1980	8,958		1,443		44,986		19,804		2,383		77,574		107,000	65,000				13,525					120,525
1981	18,588		1,368		53,799		11,985		1,966		87,706		137,000	100,000				19,080					156,080
1982	12,275		103		64,344		6,799		1,212		84,733		105,800	80,200				25,963					131,763
1983	8,226		2,157		63,379		8,762		918		83,442		117,400	82,000				11,383					128,783
1984	6,336		5,683		58,354		4,490		2,684		77,547		135,900	80,000				8,698					144,598
1985	8,751		5,419		87,167		5,584		4,062		110,983		165,000	125,000				27,863					192,863
1986	8,414		3,365		56,139		3,533		1,958		73,409		100,000	97,600				27,883					127,883
1987	8,780		5,139		77,706		2,289		6,786		100,700		147,100	126,500				27,320					174,420
1988	8,503		7,876		98,371		695		7,518		124,653		199,600	151,200				33,421					233,021
1989	6,169		5,896		68,089		95		3,308		83,557		97,500	151,200				44,112					141,612
1990	8,316		10,705		77,545		243		4,049		102,627		172,900	151,200				38,778					211,678
1991	17,878		2,024		73,619		538		1,498		97,010		130,800	151,200				24,576					155,376
1992	14,310		1,298		80,807		395		2,227		100,227		136,000	125,000				31,967					167,967
1993	10,731		2,376		81,478		556		2,662		98,464		105,089	151,200				31,573					136,662
1994	9,872		3,174		64,509		339		2,045		80,099		80,099	151,200				22,241					102,340
1995	3,191		7,235		48,481		302		3,049		62,499		62,499	80,000				18,248					80,747
1996	2,049		3,305		42,708		6,340		3,476		58,068		58,068	57,000				15,913	1,450		11,745		87,176
1997	1,759		2,926		40,357		6,816		4,019		56,117		56,117	57,000				20,552	2,340		20,261		99,270
1998	1,405		1,494		67,433		2,231		4,464		77,027		77,027	90,000				20,091	4,120		5,591		106,829
1999	1,235		4,764		64,432		1,660		5,461		77,552		77,552	105,000				18,644	5,618		12,646		114,460
2000	1,012		4,738		78,010		823		701		85,284		85,284	100,000				16,829	4,283		2,182		108,578
2001	0		4,001		62,004		1,857		3,708		71,570		71,570	78,000				20,209	6,006		12,503		110,288
2002	367		5,257		69,894		393		1,143		77,054		77,054	78,000				11,874	10,375		7,039		106,342
2003	0		8,860		79,140		439		921		89,360		89,360	93,000				9,003	9,162		998		108,523
2004	0		5,659		69,015		225		3,130		78,029		78,029	83,000				20,686	6,924		4,165		109,804
2005	0		2,601		43,487		566		2,245		48,899		48,899	50,000				13,055	6,311		5,263		73,528
2006	0		930		45,002		719		2,508		49,159		49,159	50,000				12,863	6,566		9,809		78,397
2007	0		1,847		46,045		1,334		1,130		50,356		50,356	50,000				30,944	5,240		5,385		91,925
2008	0		2,000		50,022		15		2,524		54,561		54,561	55,000				6,447	3,704		918		65,631

[^]Annual landings by purse seiners are defined for the period from October 15 of the preceding year to October 14 of the current year.

*Adjusted totals includes misreporting adjustments for 1978-84 (Mace 1985) and for 1985-93 (Stephenson 1993, Stephenson et al 1994)

All landings by other gear types are for the calendar year.

Table 35 Revised Monthly Weir Landings (t) for Weirs Located in New Brunswick, 1978 to 2008

PROVINCE	YEAR	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Total
N.B.	1978	3				512	802	5,499	10,275	10,877	4,972	528	132	33,599
	1979	535	96			25	1,120	7,321	9,846	4,939	5,985	2,638	74	32,579
	1980					36	119	1,755	5,572	2,352	1,016	216		11,066
	1981					70	199	4,431	3,911	2,044	2,435	1,686	192	14,968
	1982			17		132	30	2,871	7,311	7,681	3,204	849	87	22,181
	1983					65	29	299	2,474	5,382	3,945	375		12,568
	1984					6	3	230	2,344	2,581	3,045	145		8,353
	1985					22	89	4,217	8,450	6,910	4,814	2,078	138	26,718
	1986	43				17		2,480	10,114	5,997	6,233	2,564	67	27,516
	1987	39	21	6	12	10	168	2,575	10,893	6,711	5,362	703	122	26,621
	1988		12	1	90	657	287	5,993	11,975	8,375	8,457	2,343	43	38,235
	1989		24			95	37	385	8,315	15,093	10,156	7,258	2,158	43,520
	1990					93	20	4,915	14,664	12,207	7,741	168		39,808
	1991					57	180	4,649	10,319	6,392	2,028	93		23,717
	1992					15	50	774	5,477	10,989	9,597	4,395	684	31,981
	1993					14	168	5,561	14,085	8,614	2,406	470	10	31,328
	1994					18	55	4,529	10,592	3,805	1,589	30		20,618
	1995					15	244	4,517	8,590	3,956	896	10		18,228
	1996					19	676	4,819	7,767	1,917	518	65		15,781
	1997					8	153	1,017	6,506	7,396	5,316			20,396
	1998					560	713	3,832	8,295	5,604	525			19,529
	1999					690	805	5,155	9,895	2,469	48			19,063
	2000					10	7	2,105	7,533	4,940	1,713	69		16,376
	2001					35	478	3,931	8,627	5,514	1,479			20,064
	2002					84	20	1,099	6,446	2,878	1,260	20		11,807
	2003					257	250	1,423	3,554	3,166	344	10		9,003
	2004					21	336	2,694	8,354	8,298	913	3		20,620
	2005						213	802	7,145	3,729	740	11		12,639
	2006					8	43	1,112	3,731	3,832	2,328	125	462	11,641
	2007	182		20	30	84	633	3,241	11,363	7,637	6,567	314	73	30,145
2008					81	1,502	2,479	1,507	389	49	32		6,041	
NB Average Catch (t)		160	34	9	38	134	331	3,673	8,390	5,657	3,087	682	119	21,829

**Table 36 Overall Effort from New Brunswick and Nova Scotia Weirs for Catch (t),
Number of Active Weirs and Catch per Weir (t), 1978 – 2008**

Year	Annual Catch (t)			No. Active Weirs			Catch per weir (t)		
	NB	NS	Total Catch	NB	NS	Total No.	NB	NS	Average
1978	33,599	7,858	41,458	208	31	239	162	253	173
1979	32,579	6,339	38,918	210	27	237	155	235	164
1980	11,066	2,383	13,449	120	29	149	92	82	90
1981	14,968	1,824	16,793	147	28	175	102	65	96
1982	22,181	1,130	23,311	159	19	178	140	59	131
1983	12,568	896	13,464	143	23	166	88	39	81
1984	8,353	2,702	11,056	116	13	129	72	208	86
1985	26,718	4,055	30,774	156	14	170	171	290	181
1986	27,516	1,957	29,473	105	18	123	262	109	240
1987	26,621	6,776	33,397	123	21	144	216	323	232
1988	38,235	7,480	45,715	191	21	212	200	356	216
1989	43,520	3,296	46,817	171	20	191	255	165	245
1990	39,808	4,132	43,940	154	22	176	258	188	250
1991	23,717	1,498	25,216	143	20	163	166	75	155
1992	31,981	2,224	34,206	151	12	163	212	185	210
1993	31,328	2,662	33,990	145	10	155	216	266	219
1994	20,618	2,045	22,662	129	11	140	160	186	162
1995	18,228	3,049	21,277	106	10	116	172	305	183
1996	15,781	3,476	19,257	101	12	113	156	290	170
1997	20,396	4,019	24,415	102	15	117	200	268	209
1998	19,529	4,048	23,577	108	15	123	181	270	192
1999	19,063	4,537	23,600	100	14	114	191	324	207
2000	16,376	683	17,058	77	3	80	213	228	213
2001	20,064	3,708	23,772	101	14	115	199	265	207
2002	11,807	1,143	12,950	83	9	92	142	127	141
2003	9,003	921	9,924	78	8	86	115	115	115
2004	20,620	3,130	23,750	84	8	92	245	391	258
2005	12,639	2,245	14,884	76	10	86	166	225	173
2006	11,641	2,491	14,132	89	6	95	131	415	149
2007	30,145	1,130	31,275	97	8	105	311	141	298
2008	6,041	2,524	8,565	76	8	84	79	315	102
Average	21,829	3,108	24,938	124	15	140	175	218	179

6.2 PRELIMINARY ASSESSMENT OF POTENTIAL COSTS OF SOME ELEMENTS OF STAKEHOLDER CATCH MONITORING PROPOSALS

The purpose of this discussion is to provide preliminary feedback to the Herring Committee on the potential costs associated with some components of the CHOIR and Herring Alliance monitoring proposals. Estimates of costs were provided in each proposal, but the preparers' access to recent information about the fishery may have been limited. This section provides information regarding some of the assumptions about herring fishing activity as it relates to monitoring costs.

This discussion does not represent a detailed analysis of each proposal. As alternatives are developed by the Herring Committee and the Council for the Draft EIS, more detailed analyses of monitoring costs will be provided. This discussion also provides some qualitative discussion of potential costs.

6.2.1 Census vs. Sample

In general, the over-riding feature of both proposals is that a census (very high level of sampling) is required to estimate with confidence the level of bycatch in the Atlantic herring fishery. This is somewhat separate from the need to ensure that all catch of herring is accurately recorded for purposes of quota monitoring and/or is available for inspection by either at-sea or land-based samplers.

From the assumption that the current level of sampling for bycatch is inadequate, the question then becomes *what amount of sampling provides managers with a reasonable level of confidence when estimating bycatch in the Atlantic herring fishery?* The Standardized Bycatch Reporting Methodology (SBRM) amendment provides guidance on this issue. Moving beyond the SBRM level and approaching census levels raises the question of benefits versus costs. That is, does the marginal benefit of increased precision of bycatch estimates outweigh the marginal increase in sampling costs (regardless of who pays)?

Also at issue is whether increasing the sample size is a more appropriate course of action versus developing measures to improve how representative the current sample is of the population (for example, are observer days or port sampling occurrences appropriately stratified over gear/area/season?). In this case, gains in precision might be obtained from better sampling methods without the associated costs of increasing sample size.

6.2.2 Full/Maximized Retention of Catch

The CHOIR proposal advocates full/maximized retention of catch on herring vessels to ensure that any bycatch that might normally be discarded at sea (and possibly not observed) will be documented through a land-based sampling program.

For the Atlantic herring fishery, one significant impact of full/maximized retention may relate to handling unwanted herring. Herring that is determined to be of low quality and unsuitable for sale would have to be disposed. This is further complicated by the regulatory prohibition on direct mealing. This potential cost may be mitigated somewhat by the demand for lobster bait or other non-human uses, but this is likely to be seasonal.

Unwanted herring may also be a result of landing more herring than is needed by the market. Often, captains begin a trip with a market order for a certain quantity. If they are unable to precisely fill their holds with that quantity, they may be forced to arrive in port with an excess that they must either sell to another buyer or dispose it. This could have the effect of suppressing prices.

Disposal of unwanted non-herring catch may also be an issue. The extent of this will be determined by market conditions for those species (and the authority to land them) and the degree of bycatch (which is the issue currently under debate). In addition, a requirement to keep unwanted non-herring catch could be problematic if the unwanted fish compromise the quality of herring catch (dogfish, for example), or if sorting the catch during pumping operations increases fishing/handling time (which could affect operating costs). Participants in the herring fishery have cited in the past as one reason that they try to avoid non-target species. These issues should be explored in detail if full/maximized retention is considered in this amendment, and approaches to mitigate/minimize costs should be considered.

An extensive review of the literature regarding realized costs of full retention programs has not yet been conducted, but the following excerpt from the Federal Register pertaining to a full retention program in the Pacific groundfish and halibut fisheries provides an indication of the kinds of costs that may be associated with such a program.

Federal Register, January 21, 2004 Proposed Rule:

Fisheries of the Exclusive Economic Zone off Alaska; Full Retention of Demersal Shelf Rockfish in the Southeast Outside District of the Gulf of Alaska

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments.

SUMMARY: NMFS issues a proposed rule that would require full retention of demersal shelf rockfish (DSR) by certain vessels fishing in the Southeast Outside District (SEO) of the Gulf of Alaska (GOA). This proposed rule would require that the operator of a federally-permitted catcher vessel using hook-and-line or jig gear in the SEO must retain and land all DSR caught while fishing for groundfish or for Pacific halibut under the Individual Fishing Quota program (IFQ) in the SEO. Under existing Federal and State of Alaska regulations, all landed fish must be weighed and reported on State of Alaska fish tickets or, in the case of fish landed in a port outside of Alaska, on equivalent Federal or State documents. Current maximum retainable amounts (MRAs) for DSR in the SEO would be eliminated for catcher vessels but would remain in place for catcher/processors (CPs) in the SEO. This action is necessary to improve estimates of fishing

mortality of DSR. This proposed rule is intended to further the goals and objectives of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and the Fishery Management Plan for Groundfish of the Gulf of Alaska (FMP).

...

Under this proposed rule, small entities may experience increased costs associated with handling the additional DSR, storing them on the vessel until it reaches port, and unloading and disposing of the fish. Some fishermen may incur additional costs as a result of changing their fishing patterns for their target species in order to avoid DSR bycatch. Handling and delivery costs would take the form of increased work effort required on the vessel, but would not affect the operation's cash flow. Costs may be higher on smaller vessels using refrigerated sea water (RSW) that lack deck space for special DSR totes, or on vessels that would otherwise have filled their holds with their target fish, but that are unable to given the need to retain a larger amount of DSR. Fishermen will also face costs of disposing of the excess DSR on shore since they will not be allowed to sell the excess. Fishermen may only use the excess DSR for personal use, donate it for charitable purposes, or discard it. Small processors would face the costs of weighing and recording additional DSR that may be landed. They are likely to play a role in helping vessel owners to dispose of DSR in excess of the amount that could be sold. These actions could include allowing employees to fillet and take excess DSR, adding DSR waste to the processors' waste streams, or coordinating with donation programs to take excess DSR. Processors would no longer be able to sell excess DSR from federal waters. In 2001, excess DSR totaled approximately ten metric tons (the largest annual volume listed), equivalent to about \$16,000 in gross revenues from this source.

6.2.3 Video-Based Electronic Monitoring (VBEM)

Setup and infrastructure costs such as VBEM system purchase, equipment, or service costs are not addressed in this discussion at this time but will be evaluated if these measures are proposed in an alternative in this amendment. Additional information is provided below regarding the ongoing costs once VBEM systems are implemented.

The CHOIR proposal estimates that the ongoing cost for VBEM is \$290 per sea day. In 2007, the 30 active Category A and B vessels were at sea for a total of 1,586 days. At a cost of \$290 per day, the total annual cost would be approximately \$460,000 or \$15,000 per active vessel.

6.2.4 Dockside Monitoring

Infrastructure costs including flow scales and vessel surveying costs are not addressed in this discussion at this time but will be evaluated if these measures are proposed in an alternative in this amendment. The CHOIR proposal estimated \$10,000 per vessel. For 46 vessels, the total cost would be \$460,000.

The CHOIR proposal utilizes two methods for calculating dockside monitoring costs. The first is a \$300 per landing event cost. In 2007, the Category A vessels landed herring 757 times, and the Category B vessels landed herring 58 times for a total of 815 landing events. The vast majority of these landing events were in the ports of Gloucester MA, New Bedford MA, Portland ME, Prospect Harbor ME, and Rockland ME. At a rate of \$300 per landing event, the total dockside monitoring costs would be \$244,500 or an average of \$8,150 per active vessel (30 of the 47 vessels with Category A or B permits were active in 2007). The average cost per vessel with Category A/B permits is \$5,315 per vessel.

The second method uses a rate of \$3,300 per month for one to two roving monitors based on conversations with service providers. For twelve months, this is a total of \$39,600 or \$860 per permitted vessel.

Further investigation into the costs associated with dockside monitoring will be conducted as the Council develops the management alternatives in Amendment 5.

6.2.5 100% Observer Coverage of Category A and B Vessels

The Herring Alliance proposal advocates 100% observer coverage for Category A and B herring vessels. The proposal estimates that a third-party observer program could operate at a cost of \$600 to \$700 per sea day (as opposed to a cost of approximately \$1,200 per day for a federally-provided observer). In 2007, the 30 active Category A and B vessels were at sea for 1,586 days. If the rate of observer coverage is 100%, at \$700 per day, the total annual cost would be just over \$1.1 million. On a per active vessel basis, the cost would \$37,000 per vessel.

To put this into a total-revenue perspective, the Herring Alliance concludes that based on the estimate of costs provided in the proposal, this level of observer coverage represents 3% to 3.5% of total fishery revenues. A similar comparison is made here. However, since there were only two active vessels with Category B permits in 2007, for data confidentiality reasons, the Category B vessel revenues cannot be reported. Instead, only Category A vessels are examined. Total Category A days at sea in 2007 were 1,522, resulting in a total cost of \$1.06 million based on an assumed observer cost of \$700 per day. Total revenues were \$15.7 million for Category A vessels in 2007, so this represents a cost of nearly 7% of revenues annually. While these comparisons provide some perspective, the true measure of economic impacts will be the impact on profits. As management alternatives develop, available cost data will be queried to estimate what these costs represent as a percent of profits.

Note that for 2009, the total observer days available for monitoring *all fisheries* in the Northeast region equate to approximately 1,500 sea days.

6.2.6 Impacts on Vessel Operations

Both the CHOIR and Herring Alliance proposals have aspects in their plans that have the potential to impact vessel operations. The extent of these costs is not fully understood and are not estimated in either proposal. As monitoring alternatives develop, the Herring PDT will further evaluate the potential costs to vessels, in terms of how vessel operations might change (and the associated costs) in order to comply with the new measures. Some potential costs could include (not an exhaustive list):

- Increased fuel costs from returning to port if transfer of catch to a carrier vessel is not allowed because it was not observed;
- Longer trips (and associated higher costs) if the flow of product from the net to the hold is significantly interrupted to accommodate sampling.

6.3 DOCKSIDE SAMPLING – ADDITIONAL BACKGROUND INFORMATION

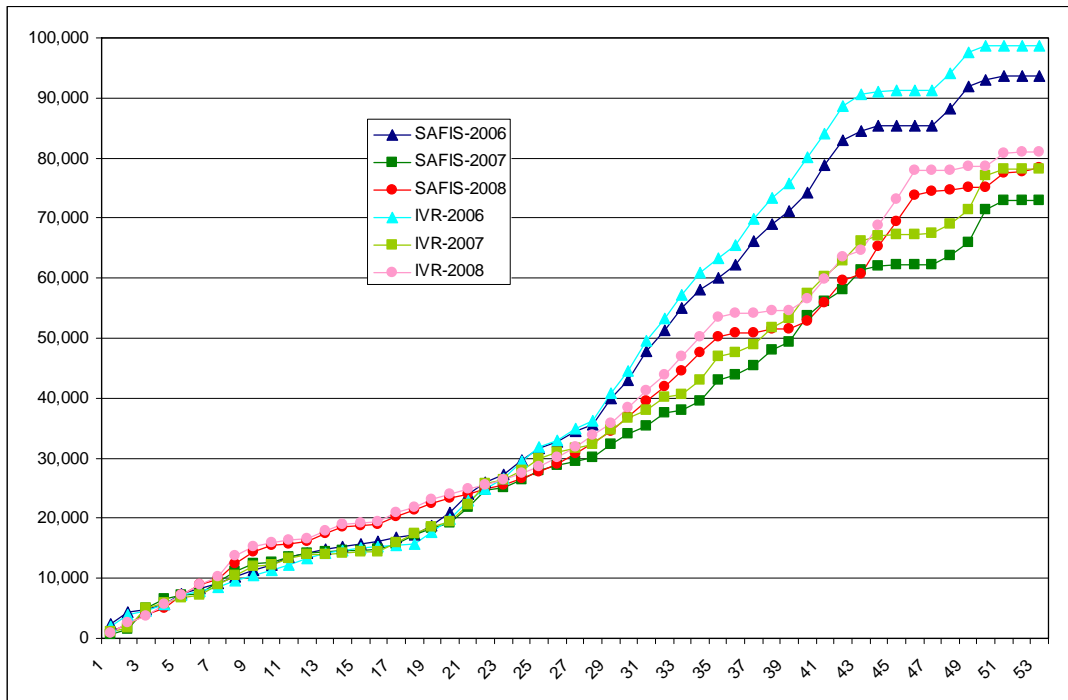
6.3.1 Confirming the Accuracy of Self-Reporting

The IVR system is an automated, phone-based reporting method initially created for multispecies dealer reporting. It was later modified to include Atlantic herring catch reports in response to the need for real-time quota monitoring. Every limited access herring vessel is required to compile their daily herring catches (in pounds) by week and report them for each management area fished. Other herring permit holders and commercial fishermen in State waters are required to report using the IVR system if they catch more than 2,000 lbs. of herring in a week. NOAA Fisheries utilizes IVR reports to project when 95% of the TAC in a management area will be reached and the directed fishery in that area closed. NMFS also publishes weekly quota reports so that the industry and other interested parties can monitor activity in the fishery and the utilization of the TACs. Changes to the IVR reporting system are being considered in Amendment 5, including a trip-by-trip reporting requirement (versus weekly).

IVR reports are based on hail weights, i.e., the captains' estimates of the amount of fish in the hold. The objective related to confirming the accuracy of self-reporting appears to be predicated, in part, on the notion that current self-reporting through IVRs may not be accurate enough or adequate enough to monitor quotas on a real-time basis. Since the IVRs are utilized to monitor TACs and close management areas to directed fishing, it seems that the likely result of inaccurate self-reporting would be lower estimates of catch provided through the IVRs, perhaps in order to keep the fishery in a management area open for a longer period of time.

However, a review of weekly herring IVR and dealer reports from 2006-2008 indicates otherwise. Figure 12 compares weekly IVR reports (captains' estimates) with data from the SAFIS (Standard Atlantic Fisheries Information System) reports submitted electronically by seafood dealers. In every year, and in almost every week, the IVR reports of herring catch were higher than the dealer reports.

Figure 12 Comparison of Weekly Atlantic Herring IVR (Captain’s Estimates) and Dealer Reports, 2006-2008



It is unclear whether adopting the approach outlined in this alternative for confirming the accuracy of self-reporting will, in fact, produce estimates of herring landings that are more accurate than the IVR hail weights. The proposed approach to certify volumetric capacity of fish holds and bait/transport trucks is likely to be relatively resource- and time- intensive, and some concerns should be considered:

- “Sticking” a fish hold prior to offload may provide an estimate of total landings based on volumetric capacity, but it is not clear that this estimate would be any better than the captains’ estimates. More often than not, individuals with experience sampling these vessels indicate that captains’ estimates are relatively accurate. It also only provides an estimate of **total landings** based on volumetric capacity – herring landings are reported separately through the IVRs and cannot be confirmed by this approach until the sampler has determined the species composition of the catch.
- Fish are pumped into holds containing refrigerated sea water, so some proportion of the volume of fish landed includes seawater, which can be a variable that could introduce a substantial amount of error into the catch estimation, depending on the experience and knowledge of the sampler. This is especially true for fish holds that are not filled to capacity. Some of the error can be minimized by allowing the fish to settle to the bottom of the tank before measuring.

6.3.2 Additional Information About Dockside Monitoring Programs

Some general information about DFO's Canadian Dockside Monitoring Program (DMP) is provided with this document to give some perspective on how a DMP may be structured. Canada's DMP is called a "weighmaster" program, but the individuals/companies involved do not weigh the fish; they provide independent, third party verification of landings for DFO and the industry. There are six approved Dockside Monitoring Companies that provide weighmaster services for DFO and the industry. DFO approves these companies, but the fishermen may select which company they want to employ.

Summary of Canadian Dockside Monitoring Program (DMP)

Agency Responsibilities:

- The Canadian Department of Fisheries and Oceans (DFO) will oversee Dockside Monitoring Companies (DMCs) participating in the DMP
- DFO will certify DMCs eligible to participate in the DMP
- DFO will review/approve training programs developed by DMCs
- DFO will develop protocols to increase accuracy of landings data

DMCs must:

- Submit corporate paperwork
- Be in good financial standing
- Develop a plan to operate on a 24-hour basis
- Develop a training plan for dockside observers, including:
 - Industry fish-handling practices, offloading methods, and weigh-out practices and protocols
 - Role and purpose of data in fisheries management
 - Fish identification
 - Ethics
 - DMP policies and procedures
 - Recording and reporting procedures
 - Weights and measures
 - Data quality
 - Communication skills and conflict management
- Establish criteria to prevent perceived conflicts of interest
- Establish a plan to ensure data quality
- Reapply for certification every 2 years
- Submit to routine audits to ensure accurate and timely data
- Deploy dockside observers to monitor offloading and record deployment levels
- Document and forward incident reports (e.g., failure to offload catch)
- Protect the confidentiality and privacy of data
- Maintain all hail reports and landings records for 2.5 years
- Facilitate collection of logbook data

- Report data to DFO on a weekly basis

Dockside observers must meet several requirements, as follows:

- Successfully complete high school education or equivalent
- Be a Canadian citizen or legal equivalent
- Submit to a background check and have no fisheries-related convictions
- Be independent from vessels they observe (to prevent conflicts of interest)
- Be physically fit
- Successfully complete DMC training
- Conduct a minimum number of landings observations each year
- Obtain a dockside observer license
- Duties:
 - Arrive at landing station at least 15 minutes before scheduled offloading
 - Record gear type, logbook weight by species, product type, area fished, vessel number, and weight of fish using certified scales.
 - Confirm that all fish are offloaded by checking holds
 - Confirm that landings match logbook entries
 - Maintain a line-of-sight at all times during offloading procedures
 - Verify and record weigh-out information

Vessel requirements:

- Call the IVR system 6 hours before departure
- Submit a hail report to the DMC at least 3 hours before returning to port:
 - Vessel and captain name
 - Vessel permit number
 - Logbook page number
 - Accurate weight of fish on board by species
 - Date and time of landing and offloading
 - Location of offloading
 - Dealer purchasing fish

Additional Considerations Re. Weighmaster Programs (Modified from Groundfish Amendment 16 Discussions)

The Council has recently developed measures for shoreside monitoring of sector landings for consideration in Amendment 16 to the Multispecies (Groundfish) FMP. The proposed provisions are somewhat different than those in Canada and are described below, following some general discussion regarding objectives, scope, questions to consider, and NMFS recommendations.

Objectives: In considering a weighmaster program, the Council should define its objectives for the program. These objectives would shape the scope and detail of any program implemented. Objectives could include:

- To provide accurate and timely landings information for all or a portion of landed catch;
- To validate dealer landings reports through independent, third-party observation of landings; and/or
- To ensure compliance with offloading and reporting requirements.

Scope: The Council should evaluate whether a weighmaster program should observe all herring landings, or a representative subset of all herring landings.

Questions the Council Should Consider When Developing a Weighmaster Program

- How will a weighmaster program be implemented?
- How involved can/should NMFS be with the implementation of a weighmaster program?
- How would weighmasters operate?
- Should weighmasters apply for certification to operate from NMFS?
- Should weighmasters operate in specific ports or across the entire region (e.g., through area coordinators who distribute weighmasters similar to the Observer Program)?
- What is the payment mechanism for an industry-sponsored weighmaster program?

NMFS Recommendations (Groundfish):

1. Weighmasters should validate dealer landings, but not actually weigh fish, unless necessary to accommodate ports without adequate facilities.
2. All landings should be observed at the point of first offload, regardless where the product is finally sold – some accommodation must be made to weigh fish at point of first offload.
3. Vessels should coordinate landing operations with the weighmaster:
 - Via hail report at least 6 hours prior to landing, including date/time and port of landing, landings amount, area fished, and other pertinent data, as appropriate, or

During landings window (e.g., 6 am to 6 pm)

6.4 CATCH MONITORING AND CONTROL PLANS (CMCPS) – ADDITIONAL INFORMATION

Catch Monitoring Plans are utilized on the west coast in the crab, rockfish, and pollock fisheries for processing facilities to demonstrate how all of the fish/crabs will be sorted and weighed by the plants. The Monitoring Plan requirements are for processing facilities only, however.

A Register Crab Receiver (RCR) must submit a Crab Monitoring Plan (CMP) for approval by NMFS. The CMP must be approved before receiving any Crab Rationalization crab deliveries. An inspection of the processing facility must be requested 10 working days before the requested inspection date. CMPs will be approved for one year. An owner or manager must notify NMFS in writing if changes are made in plant operations or layout. Regulations regarding the CMP performance standards can be found at 50 CFR 680.23(g).

A processor taking deliveries from vessels engaged in directed fishing for Pollock in the Bering Sea and Aleutian Islands Management area and the GOA Rockfish Pilot Program must operate under an approved Catch Monitoring and Control Plan (CMCP). A CMCP must be submitted to NMFS for approval prior to receiving any BSAI Pollock deliveries. An inspection of the processing facility must be requested 10 working days before the requested inspection date. CMCPs will be approved for one year. Regulations regarding the CMCP performance standards can be found in 50 CFR 679.28(g).

A CMCP template is provided for additional information (see following).

Crab Catch Monitoring Plan (CMP) Template

All crab, including crab parts and crab that are dead or otherwise unmarketable, delivered to a Registered Crab Receiver (RCR) must be sorted and weighed to species. A CMP should detail how and where crab are sorted and weighed. This template may be used as a CMP. Another format may be used, but it must include all the required information found in 50 CFR 680.23 (g) (5). Additional pages may be submitted if needed.

RCR Name:	Date of Application:	Contact Number:	Fax Number:	Email Address:
Plant Liaison(s):		Signature of Applicant:		

Crab Sorting and Weighing Procedures Detail procedures for all locations where sorting and weighing can occur.
A. List all locations where crab can be offloaded:
B. Describe how crab are removed from the vessel:
C. Describe how and where crab are sorted:
D. Describe how crab are transported from the vessel to the scale:
E. Describe how crab are weighed on the scale. Include procedure for taring container for holding crab:
F. How are dead loss, crab parts or unmarketable crab sorted and weighed (if different than procedure described above):

G. Describe any other steps involved in sorting and weighing of crab:

Scales Identify each scale used for weighing crab and the reason for its use.				
Manufacturer	Model	Serial Number	Type	Purpose

Scale Test Procedures Describe how each scale used for weighing crab is tested. Include the maximum capacity of the scale. Refer to §680.23(f)(4) for more information on Inseason Scale Testing.

Scale Serial Number	Testing Procedure

List all test weights:

Where are test weights stored?

List personnel responsible for conducting scale tests:

Observation Area Describe the location where an individual can monitor the entire offloading, sorting and weighing of crab. The observation area must; 1) be freely accessible at any time during an offload, 2) provide an unobstructed view of the entire offload between the 1st location where crab are offloaded and a location where all sorting and weighing of each species has taken place, 3) be sheltered from the weather and not exposed to unreasonable safety hazards.

Printed Record Include an example of a printed record of a delivery. The printout should include; 1) RCR Name, 2) total weight of crab in each landing, 3) date and time information is printed, 4) name and ADF&G # of each delivering vessel (may be handwritten).

Scale Drawing of Delivery Location Include a scale drawing that contains; 1) each location where crab are removed from a vessel, 2) observation area, 3) location of each scale used to weigh crab, 4) location where crab are sorted, 5) location of printer

For more information contact: Jennifer Watson (907)586-7537 Jennifer.Watson@noaa.gov Alan Kinsolving (907)586-7237 Alan.Kinsolving@noaa.gov

Mail completed CMP, Printed Record and Drawing to: National Marine Fisheries Service
PO Box 21668
Juneau, AK 99802-1668

PUBLIC REPORTING BURDEN STATEMENT

Public reporting burden for this collection of information is estimated to average 16 hours per response, including the time for reviewing instructions, searching the existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Sue Salvesson, Assistant Regional Administrator, Sustainable Fisheries Division, NOAA National Marine Fisheries Service, P.O. Box 21668, Juneau, AK 99802-1668 (Attn: Lori Durall).

ADDITIONAL INFORMATION

Before completing this form please note the following: 1) Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information, subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB control number; 2) This information is mandatory and is required to manage commercial fishing efforts under 50 CFR part 680, under section 402(a) of the Magnuson-Stevens Act (16 U.S.C. 1801, *et seq.*) and under 16 U.S.C. 1862(j); 3) Responses to this information request are confidential under section 104(b) of the Magnuson-Stevens Act (16 U.S.C. 1801, *et seq.*) They are also confidential under NOAA Administrative Order 216-100, which sets forth procedures to protect confidentiality of fishery statistics.
