Regulatory Definition of Midwater Trawl Gear

NOAA OLE supports the intent of changing the regulatory definition of midwater trawl gear to enhance enforcement.

8.7 CUMULATIVE EFFECTS

8.7.1 Introduction

The term "cumulative effects" is defined in the Council of Environmental Quality's (CEQ) regulations in 40 CFR Part 1508.7 as:

"The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."

In 1997, the CEQ published a handbook entitled, *Considering Cumulative Effects Under the National Environmental Policy* Act. The CEQ identified the following eight principles of cumulative effects analysis, which should be considered in the discussion of the cumulative effects of the proposed action:

1. Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions.
2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, non-federal, or private) has taken the actions.
3. Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected.
4. It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.
5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.
6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.
7. Cumulative effects may last for many years beyond the life of the action that caused the effects.
8. Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accumulate additional effects, based on its own time and space parameters.

The following analysis will identify and characterize the impact on the environment by the Proposed Action and alternatives considered in Amendment 1 when analyzed in the context of other past, present, and reasonably foreseeable future actions. Summary tables can be found following each of the text sections describing impacts. These tables contain brief text summaries intended to distill the more detailed text descriptions found both in this section and in Section 7.0 (Affected Environment) and Section 8.0 (Environmental Impacts). To enhance clarity and maintain consistency, the following terms are used to summarize impacts:

Table 164 Terms Used in Tables to Summarize Cumulative Impacts

Impacts Are Known	Impacts Are Uncertain	Impacts Are Unknown
High Negative/Positive	Potentially High Negative/Positive	Unknown
Negative/Positive	Potentially Negative/Positive	
Low Negative/Positive	Potentially Low Negative/Positive	
Neutral	Potentially Neutral	
No Impact		

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

8.7.2 Significance Determinations

Recognizing that the ultimate objective of this section is to determine if a significant adverse affect is likely as a result of the proposed action and/or alternatives, this document will use the significance criteria from NOAA Administrative Order 216-6 as a threshold for making such a determination. These criteria are:

1. Can the proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?
2. Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?
3. Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?
4. Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety?
5. Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?
6. Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?
7. Are significant social or economic impacts interrelated with natural or physical environmental effects?
8. Are the effects on the quality of the human environment likely to be highly controversial?
9. Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?
10. Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?
11. Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?
12. Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?
13. Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?

14. Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?
15. Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?
16. Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

Information and analyses contained in Section 7.0 (Affected Environment) and Section 8.0 (Environmental Impacts) address these sixteen criteria either explicitly or implicitly. The summary tables contained in this section distill these analyses. The use of the word "high" (e.g. "high negative") conveys an impact that meets or exceeds the above criteria. Note that, as stated in the previous section of this analysis, it is possible to have an uncertain but potentially significant impact. In the instance that an impact is determined to be "high" and therefore significant, discussion in Section 8.7.7.2 will address which criteria were met or exceeded and why. The level of uncertainty, as highlighted by the text descriptions of the impacts, will be addressed as well; only those impacts deemed to meet the above criteria will be considered significant.

8.7.3 Valued Ecosystem Components (VECs)

This document was structured such that the cumulative effects can be readily identified by analyzing the impacts on valued ecosystem components (VECs). The affected environment is described in this document based on VECs that were identified specifically for Amendment 1. The VECs identified for consideration in Amendment 1 include: **Atlantic herring; protected resources; physical environment and essential fish habitat (EFH); fishery-related businesses and communities; and other fisheries**.

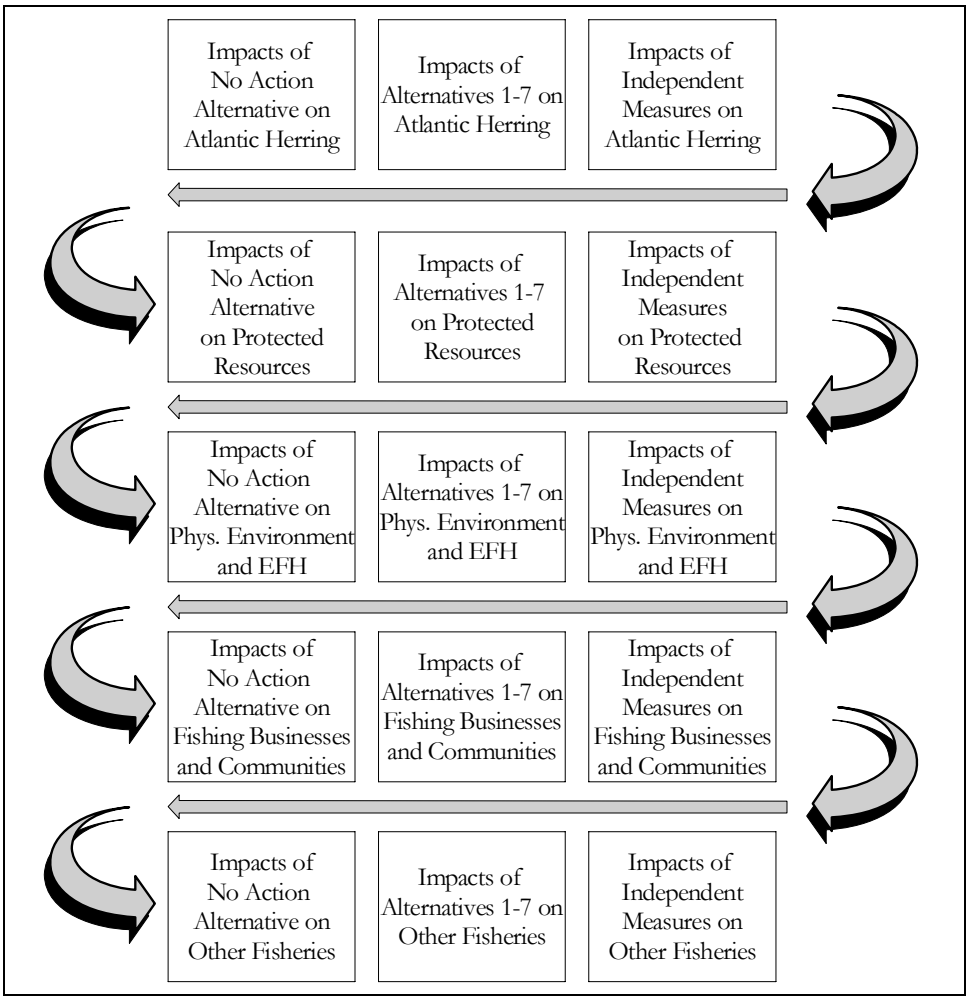
VECs represent the resources, areas, and human communities that may be affected by a proposed action or alternatives and by other actions that have occurred or will occur outside the proposed action. VECs are the focus of an EIS since they are the "place" where the impacts of management actions are exhibited. An analysis of impacts is performed on each VEC to assess whether the direct/indirect effects of an alternative adds to or subtracts from the effects that are already affecting the VEC from past, present and future actions outside the proposed action (i.e., cumulative effects).

Changes to the Herring FMP have potential to directly affect the Atlantic herring resource. Similarly, management actions that would alter the distribution and magnitude of fishing effort for herring could directly or indirectly affect other species and their corresponding fisheries, which, for this amendment, have been identified as mackerel and lobster. The physical environment and EFH VEC focuses on habitat types vulnerable to activities related to directed fishing for herring. The protected resources VEC focuses on those protected species with a history of encounters with the herring fishery. The fishery-related businesses and communities VEC could be affected directly or indirectly through a variety of complex economic and social relationships associated with either the managed species (herring) or any of the other VECs.

The descriptive and analytic components of this document are constructed in a consistent manner. The Affected Environment section traces the history of each VEC and consequently addresses the impacts of past actions. The Affected Environment section is designed to enhance the readers' understanding of the historical, current, and near-future conditions (baselines and trends) in order to fully understand the anticipated environmental impacts of the management action proposed in this amendment. The direct/indirect and cumulative impacts of the Proposed Action and other alternatives are then assessed in Section 8.7.7.2 of this document (p. 618) using a very similar structure to that found in the Affected Environment.

This EIS, therefore, is intended to follow each VEC through each management alternative. Figure 100 demonstrates the general approach used in this document.

Figure 100 Orientation of Amendment 1 Impact Analysis (VECs in Rows)



8.7.4 Spatial and Temporal Boundaries

The geographic area that encompasses the physical, biological and human environmental impacts to be considered in the following cumulative effects analysis is described in detail in Section 7.0 of this document The physical environment, including habitat and EFH, is bounded by the range of the Atlantic herring fishery, from the GOM through the mid-Atlantic Bight, and includes adjacent upland areas (from which non-fishing impacts may originate). The geographic range for impacts to fish species is the range of each fish species in the western Atlantic Ocean, as described in the Affected Environment. For Protected Species, the geographic range is the total range of Atlantic herring. The geographic range for the human environment is defined to be those fishing communities bordering the range of the herring fishery.

Overall, while the effects of the historical herring fishery are important and are considered in this amendment, the temporal scope of past and present actions for Atlantic herring, the physical environment and EFH, protected species, fishery-related businesses and communities, and other fisheries is focused principally on actions that have occurred since 1996, when the Magnuson-Stevens Fishery Conservation and Management Act was enacted and implemented new fisheries management and EFH requirements. In 1996, the Magnuson-Stevens Act identified sustained participation of fishing communities as a new National Standard (#8), so consideration of fishery-related businesses and communities is consistent within this temporal scope. The temporal scope for marine mammals begins in the mid-1990s, when NMFS was required to generate stock assessments for marine mammals that inhabit waters of the U.S. EEZ that create the baseline against which current stock assessments are evaluated. For turtle species, the temporal scope begins in the 1970s, when populations were noticed to be in decline.

The temporal scope for Atlantic herring is focused more on the time since the Council's original Herring FMP was implemented at the beginning of the 2001 fishing year. This FMP serves as the primary management action for the Atlantic herring fishery and has helped to shape the current condition of the resource. The Herring FMP was developed with comprehensive analysis as part of a complete EIS, which this document serves to supplement and update. All elements of the original Herring FMP that are not specifically addressed in this amendment will continue to influence the status of the herring resource.

The Atlantic herring fishery has a long history, which was dominated by international foreign fishing prior to implementation of the Magnuson Act in 1976, re-authorization of the M-S Act in 1996, and final implementation of the NEFMC Herring FMP in 2001. Landings information for the herring fishery date back to 1960 (Section 7.4.1.2.2). There is limited observer information available prior to 1994. However, because the proposed limited access incidental catch permit qualification criteria date back to 1988 in this amendment, the temporal scope for fishery-related businesses and communities extends beyond 1996 to consider impacts through the proposed qualification time period.

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

8.7.5 Past, Present, and Reasonably Foreseeable Future Actions

Section 7.0 of this document summarizes the current state of the herring resource, herring fishery, and provides additional information about habitat, protected resources, and non-target species that may be affected by the Proposed Action.

8.7.5.1 Past and Present Actions

The impacts of past and present actions have been considered relative to the VECs in this amendment and are described below and presented in Table 165.

Atlantic Herring

For Atlantic herring, the impacts of past and present actions include the prosecution of the herring fishery by foreign fleets prior to implementation of the Magnuson Act in 1976 as well as more recent management actions in the fishery. Heavy fishing pressure from foreign fleets contributed to the collapse of the resource on Georges Bank during the 1970s and helped to shape current fishing practices for herring. The historical context relative to this action is provided in the NEFMC Herring FMP.

More recently, and more within the temporal scope for this amendment, ASMFC management of Atlantic herring in State waters commenced in 1983 and continues to influence the status of the herring resource. The relationship between this management action and ASMFC management of Atlantic herring is discussed in more detail in Section 2.2 of this document. The Council's Herring FMP was implemented in 2001, and regulations in the Herring FMP remain in effect today unless otherwise changed in this amendment. The status of the herring resource is updated in this document, and the history of the herring fishery is summarized in Section 7.4.1 of this document. The offshore stock has recovered from its collapse in the early 1970s and, overall, the coastal Atlantic herring resource is not overfished. There is more concern for the inshore stock since it receives more fishing pressure.

Protected Resources

A general description of protected species that may be affected by the proposed action is provided in Section 7.2 of this document. The populations of the potentially-affected protected species are generally healthy with notable increases in recent years for some seal species. There is a Harbor Porpoise Take Reduction Plan in place that is anticipated to reduce takes in gillnet gear, which will have a positive effect on the population of this species. Leatherback sea turtles are endangered and have been declining in the Western North Atlantic area.

Large whales may be adversely affected by habitat degradation, habitat exclusion, acoustic trauma, harassment, or reduction in prey resources due to trophic effects resulting from a variety of activities including the operation of commercial fisheries. Ship strikes and fishing gear entanglement continue to be the most likely sources of injury or mortality for the right, humpback, fin and minke whales. Gear entanglement occurs in the vertical buoy lines of sink gillnet and pot/trap gear, the groundlines of pot/trap gear, and also in the net panels of gillnet gear. Sei, blue and sperm whales are also vulnerable, but fewer ship strikes or entanglements have been recorded. Mobile bottom trawls are less of a concern for the large whale species. Other marine mammals, such as harbor porpoise, dolphins and seals, are also vulnerable to entanglement in net gear (including seines, gillnets and drift nets).

The Atlantic Large Whale Take Reduction Team (ALWTRT) was formed in 1996 to address interactions between strategic stocks of large whales and pot and gillnet fisheries in the western Atlantic. The main tools of the plan include a combination of broad gear modifications and time/area closures (which are being supplemented by progressive gear research), expanded disentanglement efforts, extensive outreach efforts in key areas, and an expanded right whale surveillance program to supplement the Mandatory Ship Reporting System. New regulations to the Atlantic Large Whale Take Reduction Plan (ALWTRP) are proposed to be implemented to address the number of observed Atlantic large whale entanglements. A Notice of Availability for the DEIS for the ALWTRP was published in the Federal Register on February 25, 2005. The purpose of the proposed action is to further reduce the risk of entanglement to Atlantic large whales in fishing gear. The proposed action includes broad-based gear modifications in lieu of seasonal and/or area management requirements. In addition to the currently regulated lobster trap/pot fishery, other trap/pot fisheries such as red crab could be included.

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

Physical Environment and EFH

Although not explicitly described in this document, numerous previous actions to protect fish habitat have contributed to existing conditions. For example, fishery management actions that include gear restrictions, time and area closures, and harvest restrictions have been implemented as part of many MSFCMA managed species' FMPs. Atlantic herring management measures were implemented in two related, but separate FMPs in 2000 – one by the federal government (NEFMC 1999) and one by the states (ASMFC 1999).

The EFH designations for Atlantic herring were developed as part of an Omnibus Amendment prepared by the New England Fishery Management Council (NEFMC) for all NEFMC managed species. The EFH Omnibus Amendment was approved for Atlantic herring by the Secretary of Commerce on October 27, 1999. The final rule implementing the Atlantic herring FMP to allow for the development of a sustainable Atlantic herring fishery was published on December 11, 2000 (65 FR 77450).

The Habitat Closed Areas (HCAs) established in 2004 under Amendment 13 to the Northeast Multispecies FMP and Amendment 10 to the Atlantic Sea Scallop FMP currently prohibit all bottom-tending mobile gear as a Level 3 closure. The purpose of these closures is to minimize, mitigate or avoid adverse impacts to EFH that are more than minimal and less than temporary in nature from gears used in the Multispecies and Scallop fisheries. In addition, two additional HCAs were established by Amendment 2 to the Monkfish FMP which close Lydonia and Oceanographer Canyon to any vessel fishing with trawls or gillnets on a Monkfish DAS. In total, approximately 2,929 square nautical miles are included in the network of HCAs established by the Council in recent years. Groundfish closed areas, established in 1994 and 1998 to protect the overfished stocks of cod, haddock and other groundfish species, overlap in some areas with the HCAs.

In January 2005, NMFS published a Final Environmental Impact Statement to evaluate management alternatives to minimize impacts of the Atlantic herring fishery on essential fish habitat (EFH). The alternatives considered include: (1) No Action, which is also the status quo option; (2) modifications to the regulatory definition of midwater trawl gear; (3) prohibit the use of midwater trawl gear in habitat closed areas; and (4) prohibit the use of midwater trawls in the Gulf of Maine (herring management Area 1). The analysis of the alternatives supports the conclusion that gears used in the directed Atlantic herring fishery, primarily purse seine and midwater trawl gear, generate habitat impacts that are minor and no more than temporary in nature. As such, the need to implement management measures to minimize the impacts of the Atlantic herring fishery on essential fish habitat does not exist and the No Action alternative was identified as the preferred alternative. Therefore, there are no impacts from this past/present action; the impacts of this action across all VECs is assumed to be neutral (i.e., none).

Herring EFH is generally described in Section 7.3.2 of this document. Herring EFH has not been adversely affected in more than a minimal or temporary manner by fishing activities because the primary substrates utilized by herring for egg deposition are not affected by disturbance, and the fact that the noise produced by fishing operations only temporarily disperses schools of juvenile and adult herring.

Fishery-Related Businesses and Communities

Updated information about the human environment is provided in Section 7.4 of this document. The Atlantic herring fishery is relatively stable, and no specific past or present actions can be directly linked to changes that have occurred within the different communities participating in the herring fishery. Landings have declined dramatically since the 1960s but have been variable since then, averaging about 100,000 mt/year, and have not shown a definite trend. There was a shift to more mobile gear (purse seines and midwater trawls) from fixed gear in the early 1980s. With that change, the domestic fishery transformed from what was primarily a canning industry for human consumption to a fishery that supplies lobster bait and an overseas market for frozen herring. The economic and social structure of the industry has adjusted to these changes and has not changed significantly in recent years.

Other Fisheries

General information about other fisheries is provided in Section 7.5 of this document. The status of other fisheries is directly related to the FMPs that govern the activities of vessels engaged in those fisheries. The mackerel and lobster fisheries have been identified as "other fisheries" that are most important in terms of their relationship with the Atlantic herring fishery. These fisheries are therefore most likely to contribute to cumulative impacts associated with the management actions proposed in this amendment. Past and present actions related to the management of these other fisheries are described very generally below. The governing FMPs and management actions (Amendments, Framework Adjustments) should be referenced for more specific information about the direct and indirect impacts of the management actions.

<u>Atlantic Mackerel</u>

The original Mackerel, Squid, and Butterfish FMPs were adopted in final form by the Mid-Atlantic Fishery Management Council in November 1978. NMFS approved the Squid FMP in June 1979 and the Mackerel FMP in July 1979. The Butterfish FMP was disapproved by NMFS in April 1979. Upon revision, the Butterfish FMP was approved by NMFS in November 1979. In 1982, the three fisheries were merged into a single FMP. Since that time, there have been eight amendments and four framework adjustments to the Atlantic Mackerel, Squid, and Butterfish FMP.

Regulations implementing the Atlantic Mackerel, Squid, and Butterfish FMP appear at 50 CFR part 648, subpart B. These regulations require that NMFS annually publish a proposed rule specifying the initial amounts of the initial optimum yield (IOY), as well as the amounts for allowable biological catch (ABC), domestic annual harvest (DAH), domestic annual processing (DAP), total allowable level of foreign fishing (TALFF), and joint venture processing (JVP) for the affected species managed under the FMP. In addition, for butterfish, the regulations specify that a butterfish bycatch TALFF will be specified only if TALFF is specified for Atlantic mackerel. The regulations also allow the specification of research set-asides (RSA) of up to 3% of the IOY for each species.

The 2006 specifications for Atlantic mackerel specify an ABC of 335,000 mt, an IOY of 115,000 mt, a DAH of 115,000 mt (which includes 15,000 mt for the recreational fishery), a DAP of 100,000 mt, a JVP of zero, and a TALFF of zero.

American Lobster

The ASMFC American Lobster Board approved Amendment 3 in December 1997. The plan is designed to minimize the chance of population collapse due to recruitment failure. The goal of the amendment is to have a healthy American lobster resource and management regime, which provides for sustained harvest, maintains appropriate opportunities for participation, and provides for cooperative development of conservation measures by all stakeholders. The primary management measures used to prevent overfishing include a minimum size, protection of egg bearing females, and trap limits.

Amendment 3 established a framework for area management, which includes industry participation through seven Lobster Conservation Management Teams (LCMT). The LCMTs were encouraged to develop a management program, which suits the needs of the area while meeting targets established in the plan. The Board adopted a three-phase approach to incorporate the LCMT recommendations, which involved three addenda to Amendment 3. Addendum I incorporated measures from the LCMT proposals directed at effort control. After consideration of the stock assessment and peer review results in ASMFC (2000), the Board initiated the development of Addendum II in August 2000 to continue implementation of the 1998 LCMT proposals. Several Addendums to the ASMFC Lobster FMP were implemented in recent years; these actions are described in more detail in Section 7.5.2 of this document.

Table 165 Impacts of Past and Present Actions on VECs Identified for Amendment 1

Action	Description	Impacts on Herring	Impacts on Protected Species	Impacts on Physical Env and EFH	Impacts on Fishery and Communities	Impacts on Other Fisheries
HERRING ACTIONS						
[P] Prosecution of the Herring fisheries by foreign fleets in the area that would become the U.S. EEZ (prior to implementation of the M-S Act)	Foreign fishing pressure peaked in the 1960s and slowly declined until passage of the M-S Act and implementation of the FMP	**High Negative** – declining population and crash on Georges Bank	**Potentially Negative** - given high bycatch in DWF mackerel and squid fisheries	**Low Negative** – unknown impacts from foreign fishing practices	**Low Negative** – value from fishery cycling to foreign businesses	**Potentially Negative** – high bycatch and fishing mortality rates
[P, Pr] Interstate FMP beginning in 1983 and ASMFC Atlantic Herring FMP in 1993, ASMFC FMP actions in 1998 and 2000	Management in state waters Address growth in the fishery, allocate IWP Define overfishing, estimate MSY, spawning closures, days out Redefine spawning areas, impose landing restriction from spawning areas	**Positive** – establish management in State waters to ease overfishing pressure and rebuild stock	**Low Positive** – limited fishing effort	**Positive**	**Positive** – establish IWP, more available to local economies	**Neutral**
[P] NEFMC Herring FMP in 2001	Establish TACs, management areas, reporting requirements, permits, complement state management	**Positive** – establish complementary Federal management to protect stock	**Positive** – established overall TAC and area TACs	**Low Positive** – limit fishing effort	**Neutral** – support local economies, but limit catch with TAC	**Low Positive** – address bycatch and overall effort in EEZ
[P, Pr] FW 1 to NEFMC FMP in 2002	Split TAC for Area 1A by season	**Neutral**	**Neutral**	**Neutral**	**Low Positive –** slow derby in Area 1A	**Neutral**
SUMMARY OF IMPACTS FROM HERRING ACTIONS- Overall positive impacts from rebuilding stock, limiting catch, and managing development of domestic fishery		**Positive**	**Low Positive**	**Neutral**	**Low Positive**	**Low Positive**
PROTECTED RESOURCES ACTIONS						
[P, Pr] Harbor Porpoise TRP	Contains measures to reduce interactions of harbor porpoise in gillnet fisheries in the Gulf of Maine and Mid-Atlantic	**Unknown** – measures affect gillnet gear which is not used in the herring fishery except for bait; ecosystems effects are unclear given that herring is a prey species for porpoise	**Positive** – TRP measures reduce takes of porpoise in gillnet fisheries	**Neutral** – herring gear has minimal if any contact with the seafloor; limits on herring gear use through TRP actions are therefore moot in this case	**Neutral** – there are no restrictions in the HPTRP that affect herring gear; bait nets must meet certain deployment requirements but still may used	**Negative** – if the fishery uses gillnet gear that is subject to TRP gear and time/area restrictions

Table 165 continued. Impacts of Past and Present Actions on VECs Identified for Amendment 1

Action	Description	Impacts on Herring	Impacts on Protected Species	Impacts on Physical Env and EFH	Impacts on Fishery and Communities	Impacts on Other Fisheries
[P, Pr] Large Whale TRP	Contains measures to reduce interactions between right, humpback, fin and minke whales in certain gillnet and pot fisheries	**Unknown** – measures do not reduce fishing effort in the herring fishery; ecosystems effects are unclear given that herring is a prey species for humpback, fin and minke whales	**Positive** – TRP measures are designed to reduce takes of whales in gillnet and pot fisheries	**Neutral** – herring gear has minimal if any contact with the seafloor, but more importantly is not restricted by the TRP	**Neutral** – there are no restrictions in the ALWTRP that affect the herring fishery with respect to lost revenues or other discernable economic impacts	**Negative** – a number of fisheries are subject to gear modifications and time/area closures that are mandated through the TRP
SUMMARY OF IMPACTS FROM PROTECTED RESOURCES ACTIONS- Impacts overall are positive or neutral. Some negative impacts may accrue as the result of specific measures implemented to reduce protected species entanglements in fishing gear		**Unknown**	**Positive**	**Neutral**	**Neutral**	**Negative**
PHYSICAL ENVIRONMENT AND EFH ACTIONS						
[P, Pr] Habitat Omnibus Amendment	EFH designations for herring and all managed species	**Positive**	**Neutral**	**Positive**	**Neutral**	**Neutral**
[P, Pr] Habitat Closed Areas 2004	Area closures to minimize impacts on EFH from bottom-tending mobile gear	**Neutral** – does not restrict herring gear	**Positive** - but does not eliminate herring gear from CAs	**Neutral** – does not restrict herring gear	**Neutral** – does not restrict herring gear	**Positive/ Negative**– protects EFH but impacts participants in bottom fisheries, esp multispecies
[P, Pr] Herring EFH EIS 2005	Evaluate impact of herring fishery on EFH	**Neutral** – no action associated with this EIS	**Neutral** – no action associated with this EIS	**Neutral** – no action associated with this EIS	**Neutral** – no action associated with this EIS	**Neutral** – no action associated with this EIS
SUMMARY OF IMPACTS FROM PHYSICAL ENV/EFH ACTIONS – Overall positive impacts from protecting habitat, but minimal impacts on herring fishery due to the nature of herring gear		**Low Positive**	**Low Positive**	**Positive**	**Neutral**	**Low Negative**
FISHERY AND COMMUNITY ACTIONS						
No Specific Actions	**N/A**	N/A	N/A	N/A	N/A	N/A
OTHER FISHERY ACTIONS						
[P, Pr] Mackerel Management	Establish TACs, overfishing definition, reporting requirements, permits, fishery specifications and allocations	**Neutral**	**Positive** – established regulatory framework	**Neutral** – midwater trawl gear impacts are not more than minimal and temporary in nature	**Neutral**	**Positive/Negative**– various impacts on mackerel fishery and its participants
[P, Pr] Lobster Management	Measures to minimize risk of population collapse due to recruitment failure; min. size, protection for females, trap limits, effort controls	**Neutral**	**Positive** – established regulatory framework	**Neutral**	**Neutral/Low Negative** – to the extent that demand for lobster bait decreased	**Positive/Negative**– various impacts on lobster fishery and its participants

Table 165 continued. Impacts of Past and Present Actions on VECs Identified for Amendment 1

Action	Description	Impacts on Herring	Impacts on Protected Species	Impacts on Physical Env and EFH	Impacts on Fishery and Communities	Impacts on Other Fisheries
[P, Pr] Multispecies Management	Measures to rebuild and manage 15 species of demersal fish; limited access, DAS, trip limits, size restrictions, area closures, special access programs, other provisions	**Neutral**	**Positive** – limits effort and includes closed areas	**Positive** – limits effort and includes closed areas for bottom-tending gear	**Negative** – impacts for herring businesses and communities also engaged in the multispecies fishery	**Positive/ Negative**– improves stock condition, but substantial negative impacts on multispecies fishery participants
SUMMARY OF IMPACTS FROM OTHER FISHERIES ACTIONS – Overall, impacts are both positive/negative and direct for participants in the affected fisheries; neutral impacts on herring and herring fishery from general management of other fisheries.		**Neutral**	**Positive**	**Neutral/Positive**	**Low Negative**	**Positive/Negative**
SUMMARY OF IMPACTS OF ALL PAST AND PRESENT ACTIONS ON EACH VEC		**LOW POSITIVE**	**LOW POSITIVE**	**NEUTRAL/LOW POSITIVE**	**NEUTRAL**	**LOW NEGATIVE**

P = Past action/impact
Pr = Presently occurring action/impact

8.7.5.2 Reasonably Foreseeable Future Actions

The impacts of reasonably foreseeable future actions have been considered relative to the VECs in this amendment and are described below and presented in Table 166. Overall, the impacts associated with reasonably foreseeable future actions to the VECs considered in this assessment are neutral and/or considered to be insignificant, as most impacts cannot be predicted at this time.

Atlantic Herring

The Atlantic States Marine Fisheries Commission recently completed development of an amendment to herring management in state waters to promote consistency with federal regulations and the measures under consideration in the Council's Amendment 1. Amendment 2 to the ASMFC Interstate FMP for Atlantic Herring is scheduled to be implemented by the States during the 2006 fishing year. Consistent with management measures contained in this NEFMC Amendment, Amendment 2 revises management area boundaries, biological reference points, the specification process, research set-asides, internal waters processing operations, and measures to address fixed gear fisheries. ASMFC Amendment 2 also requires fixed gear fishermen to report herring catches through the IVR program, a requirement which is essential to ensure the success of the fixed gear measures included in both the ASMFC and Council amendments.

Amendment 2 differs from the Federal Amendment with regard to its effort control measures (days out) and spawning restrictions. The days out measure was adopted as it is currently being implemented by States. By April of each fishing year, if the catch in a particular area is projected to be harvested before the end of a given period, states will meet to discuss and agree to the start date, number of days out, and which consecutive days of the week will have landings restrictions. Under this measure, fixed gear fisheries are exempt from the days out provision and off-loading of herring is permitted during days out of the fishery; the intent of the provision is to have herring vessels at the dock at the time the restriction is set to begin. Vessels with an Atlantic herring permit will be allowed to participate in other fisheries for other species in restricted areas during the days out provision. For spawning restrictions, a zero tolerance provision was approved, which will prohibit any vessel from fishing for, taking, landing, or possessing spawn herring from or within a restricted spawning area. East of Cutler fixed gear fisheries will be exempt from spawning restrictions.

In general, the management actions proposed in the ASMFC amendment are expected to have a positive impact on the biological components of the herring fishery and the herring stock complex. Spawning stock biomass is projected to continue to increase at the same time that landings of herring could double. In the long-term, the establishment of a total allowable catch and effort controls should develop a sustainable herring fishery.

ASMFC Amendment 2 implements biological reference points and management measures that are designed to ensure that Atlantic herring populations do not become overfished. The reference points are intended to prevent overfishing, prevent adverse effects on the age structure and provide adequate spawning protection. The reference points will also provide adequate biomass to support the predatory consumption of herring.

Protected Resources

Potential future actions whose effects would be cumulative to the proposed action include actions taken to protect marine mammals, and endangered and threatened species. These could be modified in the future under either a fishery management plan, marine mammal take reduction plan, or regulation promulgated under authority of the Marine Mammal Protection Act or Endangered Species Act.

Specifically, known or anticipated future actions include: short-term closures to sink gillnets under the Atlantic Large Whale Take Reduction Plan Dynamic Area Management (DAM) system; possible changes to the Harbor Porpoise Take Reduction Plan; and measures adopted under the NMFS final rule implementing large-mesh gillnet closures off the North Carolina/Virginia coast to protect sea turtles. Since the specific nature of those potential changes are not known at this time, their effects cannot be determined at this writing. Additionally, NOAA Fisheries has prepared a Draft Environmental Impact Statement for the ALWTRP to solicit comments on revised management measures and provisions in the plan and possible modifications to reduce interactions of right, humpback fin and minke whales with commercial fisheries.

In 2001, NMFS approved a new approach to address sea turtle bycatch across similar gear types rather than fishery by fishery because previous management strategies were considered insufficient. Key elements of a more comprehensive and integrated plan are to evaluate the significance of bycatch by gear type, develop solutions (gear modifications and/or changes to fishing practices) to reduce sea turtle bycatch and implement and evaluate solutions based on the best available data. This last element includes efforts to improve monitoring and assessments of sea turtle populations as well as bycatch estimates.

NMFS in the Northeast Region will convene a Trawl Gear TRT no later than September 30, 2006. The preliminary plan is to organize fishery-gear type combinations for east coast Atlantic trawl gear that are responsible for taking white-sided and common dolphins and pilot whales. This includes several configurations of trawl gear – bottom trawl, pair trawl, and likely both small and large mesh trawl gear. The final makeup of the TRT will be determined after the appropriate observer and stock assessment information has been completed and analyzed. Since sea turtles have documented takes in many of the trawl gear configurations being considered for the new TRT, the intent is to work with managers to incorporate sea turtle management strategies into the new trawl TRT process. Consequently, the agency will be implementing a broad-based TRT that encompasses several configurations of trawl gear that have known incidental moralities and serious injuries of marine mammals and sea turtles.

Physical Environment and EFH

In the spring of 2003, the New England Council initiated a Habitat Omnibus Amendment that will be considered Amendment 2 to the Atlantic Herring FMP. It will also amend the Northeast Multispecies (Amendment 14) the Sea Scallop (Amendment 11), Monkfish (Amendment 3), Skate (Amendment 1), Red Crab (Amendment 1) and Atlantic Salmon (Amendment 1) FMPs. This omnibus amendment will fulfill the five year EFH review and revision requirement specified in 50 CFR Section 600.815(a)(10). Although it is not known at this time how the recommendations might change fisheries or fisheries management, the intention is to provide additional habitat and species protection where it appears to be needed.

Fishery-Related Businesses and Communities

No specific reasonably foreseeable future actions can be directly linked to changes that may occur within the different communities participating in the herring fishery at this time.

Other Fisheries

The Mid-Atlantic Fishery Management Council is currently developing Amendments 9 and 10 to the Squid, Mackerel, and Butterfish FMP. While the measures in Amendment 9 relate primarily to management of the squid fishery, Amendment 10 is being developed specifically to consider measures relating to controlled or limited access in the Atlantic mackerel fishery. The Council is concerned about the recent, rapid expansion of the Atlantic mackerel fishery, which is one of the relatively few in the Northwest Atlantic Ocean that is not considered over-exploited. The Council is considering the development of a system of controlled or limited access to the fishery to avoid the overcapitalization problem that has plagued open access fisheries throughout the U.S.

The overlap and interactions between the Atlantic herring and mackerel fisheries suggest that Amendment 10 may impact the herring fishery and its participants just as this amendment is likely to impact the mackerel fishery and its participants. Currently, the DSEIS for Amendment 10 is scheduled to be completed over the next year or so, and implementation of Amendment 10 is expected prior to the start of the 2008 calendar year.

Table 166 Impacts of Reasonably Foreseeable Future Actions on VECs Identified for Amendment 1

Action	Description	Impacts on Herring	Impacts on Protected Species	Impacts on Physical Env/EFH	Impacts on Fishery and Communities	Impacts on Other Fisheries
HERRING ACTIONS						
RFFA ASMFC FMP Amendment 2	Measures to promote consistency with Federal Am. 1 and address spawning restrictions and effort controls	**Positive** – Consistent management	**Neutral**	**Neutral**	**Unknown**	**Neutral** – measures proposed in ASMFC amendment not likely to impact other fisheries
PROTECTED RESOURCES ACTIONS						
RFFA ALWTRP DAM Closures	Relatively short-term actions that may involve gear modifications or removal of gear to protect concentrations of endangered whales	**Unknown** – measures do not reduce fishing effort in the herring fishery; ecosystems effects are unclear given that herring is a prey species for humpback, fin and minke whales	**Positive** – TRP measures are designed to reduce takes of whales in gillnet and pot fisheries	**Neutral** – herring gear has minimal and/or very temporary contact with the seafloor and benthic habitats and is not subject to DAM actions	**Neutral** – prosecution of the herring fishery is not affected by DAM actions	**Negative** – gillnet and lobster fisheries are subject to DAM closures mandated through the TRP
RFFA HPTRP Changes	Possible modifications could address changes in the fisheries subject to HPTRP rules, new FMP measures, increases or decreases in takes or other unforeseen circumstances	**Unknown** – measures do not reduce fishing effort in the herring fishery; ecosystems effects are unclear given that herring is a prey item for porpoise	**Positive** – TRP measures are designed to reduce takes of harbor porpoise in gillnet fisheries	**Neutral** – herring gear has minimal and/or very temporary contact with the seafloor and benthic habitats	**Neutral** – prosecution of the herring fishery is not affected by TRP measures	**Unknown** – since changes in measures have not been determined
RFFA Gillnet closures for sea turtles	Closures to address significant bycatch problems in sea turtle habitat high use times and areas	**Neutral** – to date; closures have occurred in the Mid-Atlantic and have not affected the herring fishery or resource	**Positive** –measures are designed to reduce entanglements	**Neutral** – measures to protect sea turtles have not affected the herring resource, fishery or seafloor	**Neutral** - prosecution of the herring fishery is not affected by measures to protect sea turtles	**Negative** –Gillnet fishing has been curtailed by measures to protect sea turtles
RFFA Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (w/in 5 years)	May recommend strategies to reduce sea turtle bycatch in commercial fisheries operations	**Potentially Positive** – measures could reduce prosecution of competing fisheries resulting in less fishing effort	**Potentially Positive** – measures would reduce mortality and injury to sea turtles	**Neutral** – herring gear has minimal and/or very temporary contact with the seafloor and benthic habitats	**Potentially Negative** – potential limits on fishing opportunities and additional gear modifications could result in economic loss	**Potentially Negative** – measures could reduce opportunities in other fisheries through new restrictions
RFFA Convene Atlantic Trawl Gear Take Reduction Team (2006)	Will recommend measures to reduce mortality and injury to common and white-sided dolphins and long finned pilot whale	**Potentially Positive** – measures could reduce prosecution of fisheries resulting in less fishing effort	**Potentially Positive** – measures could reduce mortality and injury to the species targeted for protection	**Neutral** – herring gear has minimal and/or very temporary contact with the seafloor and benthic habitats	**Potentially Negative** – possible limits on fishing opportunities and gear modifications could result in economic loss	**Potentially Negative** – measures could reduce opportunities in other fisheries through new restrictions

Table 166 continued. Impacts of Reasonably Foreseeable Future Actions on VECs Identified for Amendment 1

Action	Description	Impacts on Herring	Impacts on Protected Species	Impacts on Physical Env/EFH	Impacts on Fishery and Communities	Impacts on Other Fisheries
SUMMARY OF IMPACTS FROM PROTECTED RESOURCES ACTIONS – Impacts of future actions are positive if they are implemented to afford greater benefits to protected resources, but may be negative if they further restrict fishing effort and require additional gear modifications		**Potentially Positive**	**Positive**	**Neutral**	**Neutral**	**Neutral – Low Negative**
PHYSICAL ENVIRONMENT AND EFH ACTIONS						
RFFA Habitat Omnibus Amendment	5-year EFH review and revision to provide additional habitat and species protection where necessary	**Potentially Neutral or Low Positive**	**Potentially Neutral**	**Positive**	**Unknown**	**Unknown**
FISHERY AND COMMUNITY ACTIONS						
No Actions	N/A	N/A	N/A	N/A	N/A	N/A
OTHER FISHERY ACTIONS						
RFFA Amendment 9 to the SMB FMP (2006)	Multi-year specifications for all species Extend moratorium on entry into the *Illex* fishery Revise biological reference points for Measures to minimize adverse affects of fishing on EFH Measures to reduce bycatch and discarding	**Potentially Neutral or Low Positive**	**Potentially Positive**– to the extent that fishing effort is limited	**Potentially Positive**– some measures expected to protect critical habitat	**Unknown –** but will potentially impact herring fishery participants due to overlap of herring/mackerel fisheries	**Unknown Impacts on Mackerel Fishery**
RFFA Amendment 10 to the SMB FMP (~ 2007)	Establish limited access Atlantic mackerel fishery	**Potentially Neutral or Low Positive**	**Potentially Positive**– to the extent that fishing effort is limited	**Potentially Neutral**	**Unknown –** but will potentially impact herring fishery participants due to overlap of herring/mackerel fisheries	**Unknown Impacts on Mackerel Fishery**
SUMMARY OF IMPACTS FROM OTHER FISHERIES ACTIONS – *Overall, impacts unknown, but may be positive to the extent that management actions promote long-term sustainability; mackerel fishery most impacted, and herring fishery potentially impacted due to overlap.*		**Potentially Neutral or Low Positive**	**Potentially Positive**	**Potentially Positive**	**Unknown**	**Unknown**
SUMMARY OF RFFAs on EACH VEC		**LOW POSITIVE**	**POTENTIALLY POSITIVE**	**NEUTRAL**	**POTENTIALLY NEGATIVE**	**POTENTIALLY NEGATIVE**

RFFA = Reasonably Foreseeable Future Action

8.7.6 Non-Fishing Impacts

The impacts of the following non-fishing activities are discussed in relation to herring EFH in Section 7.3.2.4 of this document. Although they are presented in relation to the physical environment and EFH, the non-fishing impacts relate to all VECs identified in this amendment and are considered accordingly in this analysis (Table 167). Other non-fishing impacts that are important for consideration are also discussed below. The non-fishing impacts discussed in Section 7.3.2.4 include:

- Vessel operations and marine transportation;
- Dredge and fill activities;
- Pollution/water quality;
- Agricultural and silviculture/timber harvest runoff;
- Pesticide application;
- Water intake structures/discharge plumes;
- Loss of coastal wetland;
- Road building and maintenance;
- Flood control/shoreline stabilization;
- Utility lines/cables/pipeline installation;
- Oil and gas exploration/development/production;
- Introduction of exotic species;
- Aquaculture operations;
- Marine mining; and
- Other potential sources.

Low frequency sonar may pose an additional threat to protected species, although the extent of its continued use by the U.S. military is unclear at this writing. A successful lawsuit brought by environmental groups limited the use of such sonar following a number of marine mammal deaths in the vicinity of naval exercises in several places around the world. Federal legislation being debated in Congress at this time could override the lawsuit settlement agreement and exempt the military from the "harassment" provisions of the MMPA, easing the restrictions on the limited deployment of low frequency sonar.

The National Offshore Aquaculture Act is proposed to provide the necessary authority to the Secretary of Commerce to establish and implement a regulatory system for aquaculture in federal waters. The bill would: authorize the Secretary to issue offshore aquaculture permits and establish environmental requirements where existing requirements under current law are inadequate; exempt permitted offshore aquaculture from legal definitions of fishing that restrict size, season, and harvest methods; authorize the establishment of a research and development program in support of offshore aquaculture; require the Secretary to work with other federal agencies to develop and implement a streamlined and coordinated permitting process for aquaculture in the EEZ; authorize to be appropriated "such sums as may be necessary" to carry out this Act; and provide enforcement for the Act.

One way the United States plans to meet its present and future energy demands is through the importation of **Liquefied Natural Gas (LNG).** Currently, the United States has four onshore LNG import terminals in coastal port areas: Everett, Massachusetts, Cove Point, Maryland, Elba Island, Georgia, and Lake Charles, Louisiana. These four existing import terminals have been around since the 1970s. There is an additional onshore import facility located in Penuelas, Puerto Rico. This facility began importing liquefied natural gas in August 2000.

Due to potential hazards associated with onshore LNG, many state and local governments have opposed the construction of any new onshore LNG terminals. For example, there have been numerous proposals for onshore LNG terminals along the coast of Maine. Most of these proposals (Harpswell, Hope Island, Cousins Island, Sears Island, and Pleasant Point) have either been rejected by local voters or withdrawn. Most opponents to onshore LNG terminals maintain that LNG is unsafe, harms the environment, and disrupts commercial fishing. Companies, like ChevronTexaco and Shell, are now moving towards developing LNG terminals offshore, on the outer continental shelf.

In April 2005, Gulf Gateway Energy Bridge (formerly known as El Paso Energy Bridge) became the world's first offshore LNG terminal to begin operation. Gulf Gateway is located 116 miles offshore of the Louisiana coastline. To date, including Gulf Gateway, there are three offshore LNG projects that have been approved. These three LNG terminals are all located in the Gulf of Mexico. Port Pelican's (ChevronTexaco) proposed site is located thirty-six miles off the Louisiana coastline, while Gulf Landing's (Shell) is located thirty-eight miles offshore of Louisiana.

Nationally, seven proposed offshore LNG terminals are currently under review, including a potential terminal to be built offshore Gloucester, Massachusetts. The other projects under review include: Cabrillo Port (fourteen miles offshore Ventura County, California), Clearwater Port (fourteen miles offshore southern California), Main Pass Energy Hub (offshore of Alabama, Louisiana, and Mississippi), Compass Port (offshore of Alabama and Mississippi), Pearl Crossing (forty-one miles offshore of Louisiana), and Beacon Port (offshore of Louisiana). The application for the proposed offshore LNG terminal off the coast of Gloucester is currently under review for completeness.

The two primary effects on the commercial and recreational fishing industries from offshore LNG terminals are the indirect impacts of displaced fishing effort and the potential for adverse impacts on fish stocks resulting from adverse impacts on EFH due to the vaporization process, where LNG is converted from a liquid to gas state. The degree to which the herring fishery in particular may be impacted can not be fully understood until an LNG terminal has completed the siting process. However, a recent EIS filed by the U.S. Coast Guard and the Maritime Administration on the Main Pass Energy Hub plan indicates that the "open-loop" vaporization process, which pushes seawater through a radiator-type structure that warms and vaporizes the super-cooled LNG and discharges that water back into the sea, would affect fish eggs and larvae as well as other zooplankton and phytoplankton. The resulting impacts are limited to the water discharge plumes, and while not firm data on the size of such plumes has been provided, the report states that the effects will not be serious or long lasting. The report concludes that none of the potential impacts on EFH would be expected to result in population-level impacts or a reduction in biomass for any stocks.

According to preliminary documents filed with the U.S. Coast Guard and the Federal Energy Regulatory Commission, displacement of fishing effort would be limited to a less than one nautical mile radius circle that would be closed to all fishing and recreational activities during the offloading of LNG. Additionally, a security zone of less than one quarter of a nautical mile would be maintained around the LNG tankers as they transit to and from the offload facility. While these closures may displace a limited amount of

fishing effort, the total amount of fishable bottom impacted is expected to be minimal, and the effort displaced would not likely have an adverse impact on neighboring, or any other, fishing areas.

Onshore LNG facilities are currently being proposed or planned for construction in Pleasant Point, ME; Somerset, MA; Providence, RI; Long Island Sound, NY; Logan Township, NJ; Philadelphia, PA; and an expansion of an existing facility in Cove Point, MD.

Depending on the specific location and type of LNG facility, a range of impacts to fisheries and/or fisheries habitat may result from both construction and operation of terminals. Due to the large size of LNG tankers, dredging may need to occur in order to access onshore terminals. Dredging can result in direct loss of fish and/or shellfish habitat and can elevate levels of suspended sediment within the water column. As with other dredging, suspended sediments can impact various life stages of fish and shellfish. Further, the construction of pipelines and fill associated with site construction can have adverse impacts on inter-tidal habitats and salt marshes in the area.

Although only two **offshore wind energy projects** have formally been proposed in the northeast region, at least 20 other separate projects may be proposed in the near future. Cape Wind Associates (CWA) proposes to construct a wind farm on Horseshoe Shoal, located between Cape Cod and Nantucket in Nantucket Sound, Massachusetts. A second project is proposed by the Long Island Power Authority (LIPA) off Long Island, New York. The CWA project would have 130 wind turbines located as close as 4.1 miles offshore of Cape Cod in an area of approximately 24 square miles with the turbines being placed at a minimum of 1/3 mile apart. The turbines will be interconnected by cables, which will relay the energy to shore to the power grid.

The Army Corps of Engineers has developed a DEIS and has completed a scoping process for the proposed Cape Wind Associates (CWA) project on Horseshoe Shoal. If constructed, the turbines would preempt other bottom uses in an area similar to oil and natural gas leases. The potential impacts associated with the CWA offshore wind energy project include the construction, operation and removal of turbine platforms and transmission cables; thermal and vibration impacts; and changes to species assemblages within the area from the introduction of vertical structures. A thorough analysis of the effects of these impacts on fishing has not yet been conducted, but data indicate that there would not be a substantial impact on the herring fishery as there is little herring fishing activity in this area. While EFH may be adversely impacted in the vicinity of the wind turbines, the extent of this proposal is not sufficient to have any population-level impacts on resource biomass or health.

Non-fishing activities pose a risk to EFH for all species as well as to each herring life stage's EFH. As indicated in the discussion and the summary of NMFS' EFH EIS for Atlantic Herring, most of the non-fishing impacts are unknown and/or unquantifiable. In general, the greatest potential for adverse impacts to herring and herring EFH occurs in close proximity to the coast where human induced disturbances, like pollution and dredging activities, are occurring. Because inshore and coastal areas support essential egg, larval and juvenile herring habitats, it is likely that the potential threats to inshore and coastal habitats are of greater importance to the species than threats to offshore habitats. It is also likely that these inshore activities will continue to grow in importance in the future. Activities of concern include chemical threats, sewage, changes in water temperature, salinity and dissolved oxygen, suspended sediment and activities that involve dredging and the disposal of dredged material.

Impacts of non-fishing activities on all the VECs that were considered in this EIS were evaluated to be low to moderately negative.

Table 167 Impacts of Past, Present, and Reasonably Foreseeable Future Non-Fishing Actions on VECs Identified for Amendment 1

Action	Description	Impacts on Herring	Impacts on Protected Species	Impacts on Physical Env and EFH	Impacts on Fishery and Communities	Impacts on Other Species
P, Pr, RFFA Vessel operations, marine transportation	Expansion of port facilities, vessel operations and recreational marinas	**No Impact at Site**	**Negative at Site** – inshore species impacted by reduced water quality and haul out activity	**Potentially Negative Inshore** – may lead to destruction of habitat	**Potentially Negative** if loss of fishing opportunities occur	**No Impact at Site**
P, Pr, RFFA Beach nourishment, dredge and fill activities	Offshore mining of sand for beaches Placement of sand to nourish beach shorelines	**Negative at Site** – entrainment, sedimentation and turbidity impacts to fish in area in and around borrow site **Negative at Site** – may displace fish, remove benthic prey and increase mortality of early life stages	**Negative at Site** – mining activity increases noise and reduces water quality **Negative at Site** – turtles susceptible to impacts from beach nourishment	**Negative at Site** – may lead to destruction of habitat in and around borrow site **Negative at Site** – may result in burial of structures that serve as foraging or shelter sites	**Negative at Site** – potential loss of fishing opportunities **Positive at Site** – restoration of an eroding shore may protect or restore recreational beaches	**Negative at Site** – entrainment, sedimentation and turbidity impacts to fish in area in and around borrow site **Negative at Site** – may displace fish, remove benthic prey and increase mortality of early life stages
P, Pr, RFFA Pollution/water quality	Land runoff, precipitation, atmospheric deposition, seepage, or hydrologic modification Point-source discharges	**Negative at Site** – impacts primarily inshore	**Negative at Site** – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading	**Negative at Site** – impacts primarily inshore, leads to destruction of habitat and EFH	**Negative at Site** – potential loss of fishing opportunities, human health issues	**Negative at Site** – impact to species located inshore
P, Pr, RFFA Agriculture and timber harvest runoff	Nutrients applied to agriculture land are introduced into aquatic systems	**Negative at Site** – impacts primarily inshore	**Negative at Site** – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading	**Negative at Site** – impacts primarily inshore, leads to destruction of habitat	**Negative at Site** – potential loss of fishing opportunities	**Negative at Site** – impact to species located inshore
P, Pr, RFFA Pesticide application	Substances that are designed to repel, kill, or regulate the growth of undesirable biological organisms	**Negative at Site** – impacts primarily inshore	**Negative at Site** – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading	**Negative at Site** – impacts primarily inshore, leads to destruction of habitat and EFH	**Negative at Site** – potential loss of fishing opportunities, human health issues	**Negative at Site** – impact to species located inshore
P, Pr, RFFA Water intake structures/ discharge plumes	Withdrawal of estuarine and marine waters by water intake structures	**No Impact**	**Negative at Site** – intake structures can entrap protected species	**Potentially Low Negative at Site** - discharge plumes may affect local oceanographic conditions	**No Impact**	**Potentially Low Negative at Site** – particularly anadromous species that school or spawn in the vicinity of such structures

Table 167 continued. Impacts of Past, Present, and Reasonably Foreseeable Future Non-Fishing Actions on VECs Identified for Amendment 1

Action	Description	Impacts on Herring	Impacts on Protected Species	Impacts on Physical Env and EFH	Impacts on Fishery and Communities	Impacts on Other Species
P, Pr, RFFA Loss of coastal wetland	Urban growth and development Development activities within watersheds and in coastal marine areas	**Potentially Low Negative at Site** – may result in habitat degradation	**Negative at Site** – results in habitat loss for fish species that represent prey items	**Potentially Low Negative at Site** – may result in habitat degradation	**Potentially Low Negative at Site** – may result in biomass declines if spawning, health, or mortality are affected	**Potentially Low Negative at Site** – may result in habitat degradation
P, Pr, RFFA Road building and maintenance	Paved and dirt roads Poorly surfaced roads can substantially increase surface erosion	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data
P, Pr, RFFA Flood control/ shoreline stabilization	Protection of riverine and estuarine communities from flooding events Dikes, levees, ditches, or other water controls	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data
P, Pr, RFFA Utility lines/cables/ pipeline installation	Dredging of wetlands, coastal, port and harbor areas for port maintenance	**Negative at Site** – impacts primarily inshore	**Negative at Site** – dredging activity increases noise and may lead to mortality or injury of protected species	**Negative at Site** – impacts primarily inshore, leads to destruction of habitat	**Negative** – potential loss of fishing opportunities	**Negative at Site** – impact to species located inshore
P, Pr, RFFA Oil and gas exploration/ development	General exploration and development, as well as hydrocarbon spills associated with the transportation, loading and offloading of oil and gas products	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data
P, Pr, RFFA Exotic Species	Introduction of non-indigenous and reared species	**Potentially Negative**- while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species	**Potentially Negative**– ecosystem effects of non-native species	**Potentially Negative**- exotic species (ex., tunicates) found to adversely impact EFH and displace marketable and forage species	**Potentially Negative**- while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species	**Potentially Negative**- while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species
P, Pr, RFFA Marine Mining	Offshore mining as well the mining of gravel from beaches	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data	**Unknown –** no data

Table 167 continued. Impacts of Past, Present, and Reasonably Foreseeable Future Non-Fishing Actions on VECs Identified for Amendment 1

Action	Description	Impacts on Herring	Impacts on Protected Species	Impacts on Physical Env and EFH	Impacts on Fishery and Communities	Impacts on Other Species
P, Pr, RFFA Low and mid-Frequency Sonar	Used in military exercises; considered a potential source of serious injury and mortality	**Unknown – may negatively impact species in immediate vicinity of exercises using sonar**	**Potentially Negative**- literature documents cetacean mortalities in vicinity of exercises using sonar	**Unknown**	**Unknown** – potential loss of fishing opportunities, but exercises related to national security	**Unknown – may negatively impact species in immediate vicinity of exercises using sonar**
RFFA National Offshore Aquaculture Act of 2005 (currently proposed)	Legislation would grant DOC authority to issue permits for offshore aquaculture in federal waters	**Unknown**- may negatively impact species by reducing water quality near aquaculture sites	**Unknown**- may be negative if activities result in interactions with protected species	**Unknown**- may negatively impact habitat by reducing water quality near aquaculture sites	**Unknown**-may be positive for communities near sites; negative if prices of commercially harvested fish are impacted	**Unknown**- may negatively impact species by reducing water quality near aquaculture sites
RFFA Liquefied Natural Gas (LNG) terminals - several LNG terminals are proposed, including RI, NY, NJ and DE (w/in 5 years)	Transportation of natural gas via tanker to terminals located offshore and onshore	**Potentially Negative**– short-term disruption of habitat during construction could negatively impact organisms	**Negative** – may disrupt protected species during construction through increased noise and poor water quality	**Negative** - habitat negatively impacted during construction phase and when vessels anchor to offload gas	**Negative** - security zones around LNG facilities restrict access to fishing areas Positive – location of LNG facilities offshore may protect or improve communities	**Potentially Negative**– short-term disruption of habitat during construction could negatively impact organisms
RFFA Offshore Wind Energy Facilities - several facilities proposed from ME through NC, including off the coast of NY/NJ and VA (w/in 5 years)	Construction of wind turbines to harness electrical power	**Potentially Negative**– short-term disruption of habitat during construction could negatively impact organisms	**Potentially Negative**– may disrupt protected species during construction through increased noise and poor water quality	**Negative** – habitat negatively impacted during construction phase	**Negative** – if fishing activity is precluded in area where turbines are located Negative – aesthetic impacts **Positive** – renewable clean energy resource	**Potentially Negative**– short-term disruption of habitat during construction could negatively impact organisms
SUMMARY OF IMPACTS OF NON-FISHING ACTIVITIES – Overall, impacts are variable but greatest on the physical environment and EFH, but found to be low to moderately adverse; lack of data precludes more in-depth analysis of impacts on other VECs		**Potentially Negative**	**Potentially Negative**	**Negative**	**Potentially Negative**	**Potentially Negative**

8.7.7 Cumulative Impacts

8.7.7.1 Impacts of the Proposed Action

To consider cumulative impacts, it is important to understand the impact of the management measures proposed in this amendment across all of the VECs identified for this analysis. Table 169 summarizes the impacts of the proposed action and other alternatives/measures considered in this amendment across the five VECs identified in this amendment. The impacts also are summarized for each VEC in the text provided below.

Atlantic Herring

The overall conclusion is that the direct impacts of the management action proposed in this amendment on the Atlantic herring resource – the biological impacts –are not likely to be significant, but there should be long-term benefits to the resource resulting from the Proposed Action. Similar to the seven management alternatives that were considered in the Amendment 1 DSEIS, the Proposed Action would not affect the amount of total removals from the fishery, an outcome that would be most likely to directly result in impacts on the herring resource. Therefore, no additional impacts on the herring resource overall are expected from the Proposed Action when compared to the management alternatives that were considered in Amendment 1. The Atlantic herring fishery will continue to be managed by quotas ("hard" TACs) under all of the limited access alternatives, which restrict total removals to levels that are intended to prevent overfishing.

As discussed in the impact analyses, more restrictive limited access programs that effectively prevent overcapacity could increase long-term benefits for the resource. However, the specifics of any particular impacts of the measures under consideration cannot be predicted with accuracy, nor can the impacts of the management alternatives relative to the herring resource be compared at present. There are too many variables that could influence the outcome under any of the management alternatives that were considered by the Council in this amendment – changes in fishing patterns/behavior, variations in fish availability, uncertainty about stock mixing ratios, and a general lack of biological/ecological information specific to the inshore component of the resource at this time. As noted in the impact discussion, management measures within the alternatives (Proposed Action, Alternative 7) that could cause a substantial shift of fishing effort in Area 1A to later in the fishing year could cause concern for the inshore component of the resource, assuming that the currently-assumed mixing ratios are accurate. Tagging and morphometric studies will help answer this question in the future.

The Atlantic herring fishery will continue to be managed by area-specific TACs (quotas) that are established in a manner that is intended to prevent overfishing on the resource as a whole as well as the individual spawning components. For the most part, given market conditions (for example, summertime demand for lobster bait) and fish availability observed in Area 1A in recent years, it is unlikely that the Area 1A TAC would not continue to be fully utilized. This conclusion is somewhat less certain relative to Alternative 7 as well as the Proposed Management Action, however, which both establish a purse seine/fixed gear-only area in all of Area 1A from June – September, the peak season for lobster bait demand. Purse seine vessels are generally limited to fishing during the night hours, so depending on fish availability, weather conditions, and ASMFC restrictions (days out, spawning restrictions), the chance of not fully utilizing the Area 1A TAC are higher under the Proposed Action and Alternative 7 relative to the other alternatives under consideration in Amendment 1. While this may be beneficial for the inshore component of the herring resource, it could result in negative social and economic impacts on the herring and other fisheries, and it may be inconsistent with the amendment's objective to achieve full utilization of OY in this fishery.

Establishing a purse seine/fixed gear-only area in the inshore Gulf of Maine could affect access to the herring fishery for some midwater trawl vessels and could produce changes in fishing patterns, but the specific biological impacts resulting from purse seine/fixed gear measures cannot be predicted with any degree of certainty. However, the Council believes that the measures proposed in this amendment, especially the purse seine/fixed gear only area, will produce indirect biological benefits to the herring resource and the Gulf of Maine ecosystem that may not be quantified in the Amendment 1 impact analysis. These impacts stem from managing the inshore component of the resource in a precautionary manner and restricting concentrations of fishing effort by midwater trawl vessels in the inshore Gulf of Maine during the summer months, some of which are spawning months for the inshore stock component. These impacts are generally not quantifiable at this time due to a lack of information, but they are related to the importance of maintaining a sufficient abundance of herring as prey in this area for other important fish species, marine mammals, and seabirds. The Council views this measure as part of a precautionary and proactive approach to ensure that the risk of overfishing the inshore component of the resource is minimized.

In general, measures that affect total removals from the fishery would have the greatest biological impacts and related impacts on the availability of herring as forage. Since none of the measures contained within the Proposed Action are likely to change total removals from the fishery (because the fishery is managed through hard TACs that are established and analyzed during the fishery specification process), the overall impacts on herring as forage are not likely to be significant. Although small-scale impacts cannot be predicted at this time, it is recognized that significant changes in fishing patterns could impact the seasonal availability of herring for forage (for example, if fishing patterns changed such that the majority of fish from Area 1A are caught during June/July). Fishing patterns, particularly in Area 1A, should be monitored closely following the implementation of Amendment 1.

Protected Resources

Protected species interactions have been well-documented in the major gear types currently used in the Atlantic herring fishery. Purse seines operating in this fishery are known to take several species of seals and harbor porpoise, while midwater trawl gear (including paired midwater trawls) has had documented interactions with pilot whales, white-sided dolphins and seals. Lack of observer coverage hampers quantitative discussions of impacts, but several issues are important to note. The NMFS *List of Fisheries for 2005* places the herring midwater trawl fishery, including pair trawls, in Category II, denoting a fishery that has been determined to have occasional serious injury and mortality of marine mammals. The purse seine fishery is considered to have a remote likelihood of interactions and is listed in Category III. This gear type has the ability to release entrapped animals alive and, as reported in the NMFS sea sampling database is often successful, at least with pinnipeds.

Given the target species of this fishery and because herring is a primary prey species for seals, porpoises and some whales, levels of protected species interactions with fishery are likely. The Proposed Action, however, includes a limited access program that controls capitalization of the fleet, including growth of the midwater trawl sector, and a seasonal purse seine/fixed gear only area that should, at a minimum, not increase interactions with protected species beyond the status quo, and may have indirect positive benefits by imposing more controls on the fishery. Similarly, because most of the independent measures improve the management program through administrative and monitoring mechanisms, they are unlikely to affect protected species in any direct or measurable way.

Physical Environment and EFH

In 1996, Congress passed the Sustainable Fisheries Act (SFA), which amended and re-authorized the MSA and introduced new emphasis on rebuilding overfished fisheries, ending overfishing, minimizing bycatch and bycatch mortality, and minimizing to the extent practicable the adverse impacts of fishing activity on essential fish habitat (EFH). One purpose of this FSEIS is to comply with section 303(a)(7) of the Magnuson-Stevens Fisheries Conservation Management Act (MSA). More specifically, the purpose includes evaluating the potential adverse effects of fishing on Atlantic herring EFH and on the EFH of other species, and to minimize to the extent practicable any adverse effects, which are more than minimal and not temporary in nature. This evaluation was undertaken in Amendment 1 to ensure the conservation and enhancement of EFH as required under the MSA.

An assessment of the potential effects of the directed Atlantic herring commercial fishery on EFH for Atlantic herring and other federally-managed species in the Northeast region of the U.S. was conducted as part of an EIS that evaluated impacts of the Atlantic herring fishery on EFH (NMFS 2005). (This analysis is included in Appendix VI, Volume II of this FSEIS) and determined that midwater trawls and purse seines do occasionally contact the seafloor and may adversely impact benthic habitats utilized by a number of federally-managed species, including EFH for Atlantic herring eggs. However, after reviewing all the available information, *if* the quality of EFH is reduced as a result of this contact, the impacts are minimal and/or temporary and, pursuant to MSA, do not need to be minimized. This conclusion also applies to pelagic EFH for Atlantic herring larvae, juveniles, and adults and to pelagic EFH for any other federally-managed species in the region.

Based on the conclusions in the 2005 Atlantic herring EFH EIS, development or consideration of measures to minimize, mitigate or avoid impacts of the fishery to essential fish habitat in Amendment 1 to the Herring FMP was not necessary or warranted. This analysis therefore is limited to the possible habitat impacts of the non-habitat-related management measures included in the Proposed Action.

In general, the Proposed Action will not have any additional impacts on essential fish habitat (EFH) beyond those analyzed in the Amendment 1 DSEIS. The Proposed Action is similar to Alternative 7 from the DSEIS (with modifications to the limited access program) and also includes a suite of independent measures that were considered and analyzed in the DSEIS. The Proposed Action would establish all of Area 1A as a seasonal purse seine and fixed gear-only area, a measure that was ultimately incorporated into the Proposed Action for Amendment 1 (see Section 4.0 for a complete description of the Proposed Action).

The limited access program that is included in the Proposed Action would not affect the amount of total removals from the resource or the amount or spatial distribution of fishing activity. Any increase or re-distribution of fishing effort that might occur would be influenced by other factors such as changes in the seasonal availability of herring on different fishing grounds or changes in fishing gear and practices by vessels that qualify for limited access permits. In the long term, limited access will limit the growth of the fishery in all three management areas. Any potential adverse impacts of the directed Atlantic herring fishery on EFH will continue to be minimal and/or temporary under the proposed limited access program.

The Area 1A gear prohibition could cause a shift in midwater trawling effort from the inner Gulf of Maine on to Georges Bank during June-September. However, if this does occur, it is not expected to adversely impact EFH in more than a minimal and/or temporary manner. This conclusion is based on information in the Gear Effects Evaluation (Appendix VI, Volume II) indicating that bottom contact by midwater trawls occurs only occasionally, and that the use of bottom trawls and dredges, which contact the bottom continuously, far exceeds the use of herring midwater trawls. Bottom habitats in open access

areas where the use of midwater trawls could increase are already subjected to disturbance by bottom trawls and/or dredges, so any additional disturbance of bottom habitats caused by gears used in the directed herring fishery would be negligible. Bottom habitats in areas that are closed to bottom trawls and dredges are more susceptible to disturbance, but there is no reason to believe that closed areas on GB – where midwater trawling may increase – are any more vulnerable to bottom contact than closed areas in the GOM – where midwater trawling would decrease.

The Proposed Action in Amendment 1 does not adversely impact EFH. The Gear Effects Evaluation (Appendix VI, Volume II) concluded that there are potential adverse habitat impacts associated with the use of midwater trawls and purse seines, but that they are minimal and/or temporary in nature. Under the Proposed Action, they would continue to be minimal and/or temporary and therefore not require minimization.

Fishery-Related Businesses and Communities

The management measures included in the Proposed Action that are most likely to directly impact fishery-related businesses and communities are the proposed limited access program and the purse seine/fixed gear-only area. The Proposed Action is estimated to qualify 31 vessels for limited access directed fishery permits to fish in all management areas, three additional vessels for limited access directed fishery permits in Areas 2/3 only, and 56 vessels for limited access incidental catch permits with a 25 mt possession limit. **The estimated total number of limited access vessels under the Proposed Action is 90, with 34 unique vessels qualifying for the directed herring fishery.**

Under the Proposed Action, there are 56 vessels that qualify for incidental catch permits that do not qualify for the directed fishery permits. Seventeen of these vessels were recently active. These vessels can retain up to 25 metric tons of herring per calendar day until 95% of the TAC is reached and the management area closes, at which time they would be limited to an incidental catch of 2,000 pounds per trip. This is the least restrictive alternative for the limited access incidental catch permit that was considered in this amendment. It provides opportunities in the fishery for historical vessels that would not have otherwise qualified (due to lack of adequate landings since 1993).

The majority of vessels that do not qualify under the Proposed Action have not been active in the herring fishery in recent years, and in some cases, for many years. Some have switched to other fisheries like mackerel and squid. The limited access incidental catch permit will likely accommodate the catch of herring on these vessels and allow them to continue normal operations in other fisheries. This should help to mitigate the impacts of not qualifying for a directed fishery permit in Areas 2/3.

While the majority of non-qualifying vessels have not been active in the herring fishery in recent years, there are four pair trawl vessels and nine single midwater trawl vessels that, on average, get about a third of their revenue from herring. The four pair trawl vessels average $91,730 per year in herring revenue and the nine single midwater trawl vessels average $21,420 per year. Of the four pair trawl vessels, three receive a significant level of revenue from herring (an average of $122,000 per year) and the other vessel receives a minor amount of revenue from herring. Of the nine single midwater trawl vessels, only one receives a significant amount of revenue from herring while the other eight receive small amounts of revenue from herring (less than $4,500 per year).

There are 16 midwater pair trawl and six single midwater trawl vessels that qualify for Area 1 but would not be able to fish in the purse seine/fixed gear area proposed in the Proposed Action (all of Area 1A) from June through September. Of the 16 affected pair trawl vessels, 9 have their primary landing port in Massachusetts, four in Maine, and three are from other states in the Northeast. Of the six affected single midwater trawl vessels, two have their primary landing port in Maine, three in Rhode Island, and one in Mid-Atlantic States. Recent landings data show that four of the midwater trawl vessels and 13 of the pair trawl vessels are actively fishing in Area 1A during the June through September period.

During 2002 through 2004, the affected midwater trawl vessels landed an average of 5,472 metric tons (worth about $892,000), and the pair trawl vessels landed 21,298 metric tons of herring (worth about $3,472,000) per season (June through September) from Area 1A. These landings represent 68% and 60% of the total Area 1A landings by these single and paired midwater trawl vessels, respectively. The midwater trawl vessel landings ranged from 266 to 3,372 metric tons, and the pair trawl vessel landings ranged from 90 to 3,263 metric tons. To compensate for potential losses, they will have the choice to either seek alternative fishing grounds or fisheries and/or to re-rig to purse seine in Area 1A during the time of the restriction. All of the above choices are associated with financial costs.

Pair trawl vessels that qualify for limited access directed fishery permits under the Proposed Action are 69% dependent on herring. Qualifying midwater trawl vessels are 38% dependent, and qualifying purse seine vessels are 100% dependent on herring. Dependence on herring for single midwater trawl vessels ranges from 38% to 45% for most alternatives considered in the Amendment 1 DSEIS. Bottom trawl vessels are the least dependent on herring. Under the Proposed Action, there are four pair trawl vessels that would not qualify for a directed limited access herring permits. These vessels have, on average, annual revenue from herring of $91,730 (from an average of 25 days of herring fishing) which represents about 35% of their total revenue from all species.

Based only on the potential catch measures of the 28 active vessels that qualify for all areas, the potential catch measures range from **161,030 to 198,710 metric tons** (relative to current total TAC for the fishery of 150,000 mt). This provides some perspective on what the potential harvesting capacity of the limited access directed fishery fleet may be under the Proposed Action. The range of potential catch of the limited access directed fleet represents a 5% decrease from the status quo. The additional potential catch measures for the one active vessel that qualifies for Areas 2/3 only increases the potential catch measures slightly (cannot report due to confidentiality issues). The Proposed Action ranks in the middle of the alternatives considered in Amendment 1 relative to the potential catch measures (see Section 8.4.4 for a description of the potential catch measures).

The following table summarizes the impacts of the Proposed Action on fishery-related businesses and communities, which are discussed in great detail in Section 8.4 of this document. The table focuses on the impacts of the limited access program and the purse seine/fixed gear-only area, the two management measures that are likely to result in the greatest impact on affected participants in the fishery.

Table 168 Impacts of Proposed Action on Fishery-Related Businesses and Communities

Measures with Greatest Impacts	Limited Access Program and Permits Purse Seine/Fixed Gear-Only Area
LIMITED ACCESS DIRECTED FISHERY QUALIFIERS	
Area 1 (All Areas)	31
Areas 2/3 Only	3
TOTAL DIRECTED FISHERY QUALIFIERS = 34	
Limited Access Incidental Catch Qualifiers	56
TOTAL NUMBER OF LIMITED ACCESS VESSELS = 90	
Potential Catch Measure 1 for Area 1 Qualifiers (Active Directed Fishery Qualifiers Only)	161,030 mt
Potential Catch Measure 2 for Area 1 Qualifiers (Active Directed Fishery Qualifiers Only)	198,710 mt
POTENTIAL CATCH = 5% REDUCTION FROM NO ACTION	
Active Non-Qualifiers for Directed Fishery	2 purse seine 9 midwater trawl (2 qualify for incidental catch) 4 pair trawl (1 qualifies for incidental catch)
Average Revenues from Herring for Active Non-Qualifiers	Purse seine = cannot report Midwater trawl = $21,420 Pair Trawl = $91,730
Qualifying Vessels Impacted by Purse Seine/Fixed Gear Area	16 Pair Trawl 6 Midwater Trawl
Percentage of Total Area 1A Catch During Purse Seine/Fixed Gear Closure for Impacted Vessels	60% Pair Trawl 68% Midwater Trawl

Other Fisheries

Lobster Fishery

Clearly, the issue of most concern to the lobster fishery is the consistent supply of herring for bait. This need is particularly acute during the summer months at the height of lobster season. Any measure that would disrupt this flow/access could have significant impacts on participants in the lobster fishery – and secondary and tertiary stakeholders that are dependent on them (such as families, lobster dealers, and restaurants). The demand for bait may have increased since Amendment 5 and 7 to the Multispecies Fishery Management Plan that reduced access to groundfishing. Particularly in Maine, former gillnetters turned to lobster fishing as a more viable alternative.

In general, the Proposed Action as well as most of the management alternatives that were considered during the development of Amendment 1 are not expected to substantially alter the supply of herring for lobster bait and/or result in any significant impacts on the lobster fishery. This is because none of the measures in this amendment change the total removals from the fishery, i.e., the overall amount of herring that can be landed and supplied to the lobster bait market. The limited access provisions are not likely to have a significant impact because there should be an adequate number of vessels with limited access

permits to supply the market under any of the proposed qualification criteria. This is particularly true under the Proposed Action, which provides 36 vessels with access to the directed fishery in Area 1; in general, about 30-35 vessels land 99% of the Area 1A TAC during a fishing year. The minimal impacts of the limited access program on the lobster fishery, however, must be considered in conjunction with the potential impacts of the proposed purse seine/fixed gear-only area.

While herring that is utilized for lobster bait could come from any of the management areas, lobster fishermen in Maine prefer fresh bait and have consequently increased their reliance on herring from Area 1A. Therefore, there could be some impacts associated with the proposed purse seine/fixed gear only area, which includes all of Area 1A where most lobster bait comes from at this time. The more restrictive purse seine/fixed gear area, which is proposed in this Amendment, may limit the number of vessels fishing for herring in Area 1A during the peak season of demand (summer) such that the supply of bait could be affected.

Currently, there are only about five purse seine vessels in the herring fishery. However, if there is enough financial incentive to do so, some midwater trawl vessels may re-rig to purse seining in order to fish in Area 1A during the summer months and supply the lobster bait market. Moreover, lobster fishermen would likely seek alternative bait if the supply of herring is inconsistent or if herring is not available for bait at some time. While alternative baits may not be preferable, it is likely that fishermen would utilize them in order to remain fishing during the peak season. There may be costs associated with utilizing alternative baits. Moreover, the price for herring could increase if supply is disrupted considerably. The extent to which this will occur and the associated impacts cannot be predicted at this time.

Mackerel Fishery

The mackerel and herring fishery often overlap, and efforts have been made by the Council to take the needs of participants in this fishery into account. The limited access provisions contained in the Proposed Action affect participants in the mackerel fishery if they do not qualify for a limited access permit to fish for herring. The overlap between the two fisheries would make it very difficult for a mackerel vessel to fish for mackerel without catching any herring incidentally. There would obviously be costs associated with prohibiting non-limited access vessels from possessing and/or landing any herring when they are fishing for mackerel.

To characterize the impacts of the Proposed Action and other alternatives considered in Amendment 1 on vessels in the Atlantic mackerel fishery, logbook data from 2001 through 2004 were examined to identify recently-active vessels participating in the mackerel fishery. Thirty five (35) vessels were identified which averaged greater than 10 metric tons of mackerel per year over the 2001-2004 period. These 35 vessels are the focus of the analysis of impacts on the mackerel fishery.

The Proposed Action qualifies 22 mackerel vessels for limited access directed fishery permits in all areas. The Proposed Action does not qualify any mackerel vessels for Areas 2&3 only (since most qualify for all areas). Under the Proposed Action, 6 vessels do not qualify for any type of limited access fishery permit (others qualify for a limited access incidental catch permit). The Proposed Action qualifies the largest number of mackerel vessels (7) for limited access incidental catch permits. The proposed limited access incidental catch permit should mitigate the negative impacts of the limited access directed fishery program on mackerel vessels that may be excluded, and consequently, on the mackerel fishery overall.

Under the Proposed Action, no additional mackerel vessels qualify for limited access directed fishery permits for Areas 2/3 only since all qualify for all management areas. Again, the Proposed Action minimizes impacts on the mackerel fishery by providing a substantial proportion of mackerel vessels with access to the limited access directed herring fishery in all management areas. The Proposed Action results in 13 of the recently-active mackerel vessels not qualifying for a limited access directed fishery permit. The average mackerel landings of these non-qualifiers is low, on average (less than 300 mt for all alternatives except Alternative 5). This indicates that these vessels are not highly dependent on Atlantic herring or mackerel at this time.

The measure to modify the regulatory definition of midwater trawl gear will affect vessels fishing with midwater trawl gear in the Atlantic mackerel and other fisheries. The regulatory definition of midwater trawl gear is not specific to the Atlantic herring fishery, and unless the Council specifies the gear for the herring fishery only in Amendment 1, all vessels using midwater trawl gear in all Northeast Region fisheries, will be required to comply with the gear definition established in this amendment.

Table 169 Impacts of the Proposed Action (Shaded) and Other Alternatives on the Five VECs Identified for Consideration

	Atlantic Herring	Protected Resources	Physical Environment and EFH	Fishing Businesses and Communities	Other Fisheries
PROPOSED ACTION (Limited Access and Purse Seine/Fixed Gear Area)	**Positive** – measures may prevent overcapacity and address other biological/ ecosystem concerns	**Potentially Positive** – with limited access program and seasonal purse seine/fixed gear only area	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral/Low Negative**– 34 vessels in all areas; 31 vessels in Area 1; 56 vessels for limited access incidental catch; potential catch measures similar to status quo; negative impacts from ps/fg area	**Neutral/Low Negative** – Impacts on supply of lobster bait unknown; impacts on mackerel mitigated by limited access incidental catch permit
No Action Alt – No Amendment 1	**Negative** – no controls on capacity/race to fish	**Potentially Negative** with no controls on increases in midwater trawl and pair trawl gear	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral or Negative**– depends on economic conditions/factors in an open access fishery – 54 active vessels	**Neutral**
Alternative 1	**Low Negative/Neutral**	**Potentially Positive** with the addition of several of the independent measures	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral or Negative**– depends on economic conditions/factors in an open access fishery – 54 active vessels	**Neutral**
Alternative 2	**Low Positive** – measures may prevent overcapacity and address other biological/ ecosystem concerns	**Potentially Positive** with the elimination of the open access fishery and addition of a limited access program	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral/Low Negative**– 36 vessels in all areas; 10 vessels in Areas 2/3; potential catch similar to status quo	**Neutral**
Alternative 3	**Low Positive** – measures may prevent overcapacity and address other biological/ ecosystem concerns	**Positive** with the addition of limited access in 1A and 1B, permit moratorium in areas 2/3 and the seasonal proposed purse seine/fixed gear only area, although some species still subject to risk of entanglement	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral/Low Negative**– 57 vessels in all areas; trigger may increase short-term opportunities; potential catch similar to status quo; impacts 25 trawl vessels restricted by ps/fg area (potentially low negative)	**Neutral/Low Negative**– Impacts on supply of lobster bait unknown

Table 169 continued. Impacts of the Proposed Action (Shaded) and Other Alternatives on the Five VECs Identified for Consideration

	Atlantic Herring	Protected Resources	Physical Environment and EFH	Fishing Businesses and Communities	Other Fisheries
Alternative 4	**Low Positive** – measures may prevent overcapacity and address other biological/ ecosystem concerns	**Positive** with the addition of limited access in 1A and 1B, permit moratorium in areas 2/3 and the seasonal proposed purse seine/fixed gear only area, although some species still subject to risk of entanglement	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral/Low Negative**– 38 vessels in all areas; 7 vessels in Areas 2/3 once trigger is reached; trigger may increase short-term opportunities but delays negative impacts for non-qualifiers; potential catch similar to status quo; impacts 24 trawl vessels restricted by ps/fg area (potentially low negative)	**Neutral/Low Negative**– Impacts on supply of lobster bait unknown
Alternative 5	**Low Positive** – measures may prevent overcapacity and address other biological/ ecosystem concerns	**Positive** with restrictive limited access criteria, but no purse seine/fixed gear only area	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Low Negative**– 29 vessels in all areas; 13 vessels in Areas 2/3; 13 of 29 vessels qualify for priority permit in 1A; more non-qualifiers in Area 1, more negative impacts; potential catch 18-20% lower than status quo	**Neutral/Low Negative**– Impacts on supply of lobster bait unknown; possible impacts on mackerel fishery for non-qualifiers
Alternative 6	**Positive** – measures may prevent overcapacity and address other biological/ ecosystem concerns	**Positive** with limited access program and seasonal purse seine/fixed gear only area	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Negative**– 32 vessels in all areas; 13 vessels in Areas 2/3; use of control date in Area 1 increases negative impacts; potential catch 40-45% lower than status quo	**Neutral/Low Negative**– Impacts on supply of lobster bait unknown; possible impacts on mackerel fishery for non-qualifiers

Table 169 continued. Impacts of the Proposed Action (Shaded) and Other Alternatives on the Five VECs Identified for Consideration

	Atlantic Herring	Protected Resources	Physical Environment and EFH	Fishing Businesses and Communities	Other Fisheries
Alternative 7 PREFERRED IN DSEIS	**Most Positive** – measures may prevent overcapacity and address other biological/ ecosystem concerns; long-term benefits increase b/c most restrictive	**Positive** – with most restrictive limited access alternative and seasonal purse seine/fixed gear only area	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Most Negative**– 23 vessels in all areas; 13 vessels in Areas 2/3; use of control date in Area 1 increases negative impacts; potential catch 42-47% lower than status quo; 12 trawl vessels restricted by ps/fg area (potentially negative)	**Low Negative**– most likely to impact supply of lobster bait, although impacts are unclear; impacts on mackerel fishery for non-qualifiers
Open Access Incidental Catch Permit					
No Action – no permit	**No Impact**	**Neutral** – effort already exists	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral/Low Negative**– impacts depend on nature of limited access program and number of non-qualifiers	**Low Negative** – impacts vessels in other fisheries that do not qualify for a herring limited access permit
1 MT permit	**No Impact**	**Neutral**	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Low Positive** – benefits vessels that do not qualify for limited access permit	**Low Positive** – benefit participants in other fisheries that do not qualify for limited access permit
3 MT permit	**No Impact**	**Neutral**	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Positive** – benefits vessels that do not qualify for limited access permit	**Positive** – benefit participants in other fisheries that do not qualify for limited access permit
5 MT permit	**No Impact**	**Neutral**	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Most Positive** – benefits vessels that do not qualify for limited access permit	**Most Positive** – benefit participants in other fisheries that do not qualify for limited access permit

Table 169 continued. Impacts of the Proposed Action (Shaded) and Other Alternatives on the Five VECs Identified for Consideration

	Atlantic Herring	Protected Resources	Physical Environment and EFH	Fishing Businesses and Communities	Other Fisheries
MSY					
No Action = 317,000 mt	**Negative – increased risk of overfishing**	**Negative** – potentially not precautionary	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Unknown but Potentially Negative** if yield is above long-term sustainable levels	**No Impact**
MSY = 220,000 mt proxy	**Positive** – precautionary value ensures heath of resource, increases buffer available for forage	**Positive** - utilizes precautionary approach and increases buffer for forage	**Neutral/Low Positive** – while herring gear impacts are temporary and minimal, lower MSY equates to decreased fishing activity potential	**Positive/Negative** –value allows for expansion of fishery beyond current harvest levels, but reduces future opportunities compared to status quo	**Neutral/Low Positive** – potential benefits from increased buffer available for forage
Determining the Distribution of Area-Specific Total Allowable Catches (TACs)					
No Action – Current approach	**Neutral**	**No Impact**	**No Impact**	**No Impact**	**No Impact**
Consider other Analytical Approaches	**Neutral/Low Positive** – Account for information regarding stock mixing and minimize risk of overfishing inshore component	**Positive** – given enhanced ability to evaluate and use a range of approaches	**Neutral**	**Neutral**	**No Impact**
TAC Set-Asides to Support Herring-Related Research					
No Action	**Neutral**	**Neutral**	**Neutral**	**Neutral**	**No Impact**
Authorize Research Set-Asides	**Low Positive** – Indirect benefit if new information collected contributes to management	**Positive** - if resources can be directed toward protected species interactions	**Low Positive** – Indirect benefit if new information collected relates to EFH	**Neutral** – Small possibility of negative impacts from reduced yield in Area 1A if some of the TAC is set-aside for research	**No Impact**

Table 169 continued. Impacts of the Proposed Action (Shaded) and Other Alternatives on the Five VECs Identified for Consideration

	Atlantic Herring	Protected Resources	Physical Environment and EFH	Fishing Businesses and Communities	Other Fisheries
Timing of the Herring Fishery Specification Process					
No Action –Annual process	**No Impact**	**No Impact**	**No Impact**	**No Impact**	**No Impact**
Two-year process	**Neutral** - administrative measure	**Neutral** - administrative measure	**Neutral** - administrative measure	**Neutral** – impacts on business planning not clear; specific impacts considered in EA for specs	**Neutral** - administrative measure
Three year process	**Neutral** - administrative measure	**Neutral** - administrative measure	**Neutral** - administrative measure	**Neutral** – impacts on business planning not clear; specific impacts considered in EA for specs	**Neutral** - administrative measure
Adjustments to Management Area Boundaries					
No Action – Maintain current boundaries	**No Impact**	**No Impact**	**No Impact**	**No Impact**	**No Impact**
TRAC Recommendations	**Positive** – better reflect stock component distribution	**Positive** – may lead to better management of herring resource	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral/Low Positive** – benefits if new areas reduce reporting errors and better reflect stock component distribution	**Neutral**
Measure 2 + Eliminate 1A/1B line	**Low Positive** – better reflect stock component distribution but may increase effort in inshore GOM	**Positive** if change leads to better management of herring resource	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral/Low Positive** – benefits if new areas reduce reporting errors and better reflect stock component distribution; may involve TAC trade-offs; specific impacts to be considered in future EA for specifications	**Neutral**

Table 169 continued. Impacts of the Proposed Action (Shaded) and Other Alternatives on the Five VECs Identified for Consideration

	Atlantic Herring	Protected Resources	Physical Environment and EFH	Fishing Businesses and Communities	Other Fisheries
Vessel Monitoring System Requirements					
No Action – Vessels that catch 500 MT +	**Neutral/Low Positive** – indirect benefit if quota overage prevented with improved monitoring	**Negative** – information necessary to better determine protected species impacts as well as monitor fishery	**No Impact**	**No Impact**	**Neutral**
All vessels with limited access permit	**Neutral/Low Positive** – indirect benefit if quota overage prevented with improved monitoring	**Positive** – will allow better monitoring of the fishery	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral/Low Negative**– costs associated with installing VMS for vessels that would be new to the program	**Neutral**
Vessel Upgrade Restrictions					
No Action – no restrictions	**Low Negative** – may allow excess harvesting capacity	**Neutral** – fishing power and effort not limited	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral**	**No Impact**
Consistent with all limited access fisheries	**Low Positive** – indirect benefit if excess harvesting capacity prevented	**Low positive**	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral/Low Negative**– may constrain future business opportunities	**Neutral/Low Negative** – may restrict mackerel fishery
ECPA proposal	**Low Positive** – indirect benefit if excess harvesting capacity prevented	**Low positive** – to some degree will limit fishing power and effort	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Neutral/Less Negative**– may constrain future business opportunities	**Neutral/Low Negative** – may restrict mackerel fishery
Measures to Address Fixed Gear Fisheries					
No Action	**No Impact**	**Neutral**	**No Impact**	**Neutral/Low Negative**– impacts of reduced opportunities for fixed gear fishermen	**No Impact**
Include catch in New Brunswick weir fishery catch	**Neutral/Low Negative**– potential to overfish 20,000 mt TAC if landings not monitored closely	**Positive** – ensures availability of herring to Downeast fishery, but will also have a positive effect on availability of herring as prey species	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Low Positive** – benefits Downeast fixed gear fishery	**No Impact**
TAC set-aside in Area 1A (500 MT)	Impacts considered in future fishery specification EA	**Positive** – same as above	**Neutral** – herring gear impacts are not more than minimal and temporary in nature	**Low Positive** – benefits fixed gear fishery in Area 1A, but increased reporting burden	**No Impact**

Table 169 continued. Impacts of the Proposed Action (Shaded) and Other Alternatives on the Five VECs Identified for Consideration

	Atlantic Herring	Protected Resources	Physical Environment and EFH	Fishing Businesses and Communities	Other Fisheries
Regulatory Definition of Midwater Trawl Gear					
No Action – no change	**No Impact**	**No Impact**	**No Impact**	**No Impact**	**No Impact**
Modified per Enforcement OS	**No Impact**	**No Impact**	**Neutral/Low Positive** – to the extent that minimal bottom contact is further reduced	**Low Negative**– costs associated with gear modifications	**Neutral/Low Negative**– may impact vessels in other pelagic fisheries like mackerel
Modified per West Coast/PFMC	**No Impact**	**No Impact**	**Neutral/Low Positive** – to the extent that minimal bottom contact is further reduced	**Low Negative**– costs associated with gear modifications	**Neutral/Low Negative**– may impact vessels in other pelagic fisheries like mackerel
Modified per ECPA	**No Impact**	**No Impact**	**Neutral/Low Positive** – to the extent that minimal bottom contact is further reduced	**Low Negative**– costs associated with gear modifications	**Neutral/Low Negative**– may impact vessels in other pelagic fisheries like mackerel

8.7.7.2 Summary – Cumulative Impacts

To determine the magnitude and extent of cumulative impacts, the incremental impacts of the actions proposed in this amendment should be considered, on a VEC-by-VEC basis, with the cumulative effects of all actions – those effects identified and discussed relative to the past, present, and reasonably foreseeable future as well as the effects from non-fishing actions. In general, while the management measures proposed result in cumulative impacts in some cases, none of the impacts discussed exceed the threshold that would indicate a significant adverse impact.

Atlantic Herring

This analysis has considered the potential impacts of the Proposed Action and other alternatives/measures on the Atlantic herring resource, in combination with relevant past, present, and reasonably foreseeable future actions as well as applicable non-fishing impacts. While the management measures proposed would take a precautionary approach to setting MSY and area-specific TACs, in addition to creating a limited access system that may more effectively match harvesting capacity to the capacity of the resource, based on the significance criteria described in Section 8.7.2 of this analysis, these incremental benefits are not likely to result in significant cumulative effects on the Atlantic herring resource. The significance criteria that applies to the herring resource requires the consideration of whether or not the Proposed Action is reasonably expected to jeopardize the sustainability of any target species (herring) and whether or not the proposed action is expected to result in cumulative adverse impacts with a substantial effect on herring. The herring resource has rebounded from heavy fishing pressure in the 1960s and 1970s, and while negative impacts from non-fishing activities are expected to continue in the future, other RFFAs, such as SMB Amendments 9 and 10 may be benefit the population through the reduction of fishing effort in the mackerel fishery (see Section 7.5.1 for information regarding the relationship between the herring and mackerel fishery). Table 170 provides a summary of the impacts that led to this determination and includes only those measures proposed in this amendment that are expected to impact the Atlantic herring VEC.

Protected Resources

This analysis has considered the potential impacts of the Proposed Action on protected resources, in combination with relevant past, present, and reasonably foreseeable future actions as well as applicable non-fishing impacts. Similar to the other VECs for this amendment, non-fishing impacts from activities occurring now and expected in the future to protected resources are largely unknown or unquantifiable, but are considered to be negative. Nearly all of the proposed management measures that result in direct and indirect impacts to protected resources are expected to have some minor or low benefit to protected species. When all impacts are combined and considered together, along with past and present actions and RFFAs, the impacts are predominately neutral, or low positive. Therefore, based on the significance criteria described in Section 8.7.2 of this analysis, there are no significant cumulative effects on protected resources expected from the Proposed Action. Table 171 provides a summary of the impacts that led to this determination and includes only those measures proposed in this amendment that are expected to impact the protected resources VEC.

Physical Environment and EFH

This analysis has considered the potential impacts of the Proposed Action on the physical environment and EFH, in combination with relevant past, present, and reasonably foreseeable future actions as well as applicable non-fishing impacts. While the impacts to the physical environment encompassed by the herring fishing as well as EFH for herring and other species has been and continues to be degraded by a variety of non-fishing activities, such as pollution and utility installation, combining the temporary and

minimal adverse impacts of the operation of the herring fishery does not result in additive or cumulative impacts. Furthermore, RFFA's identified as important for this amendment would result in either neutral or potentially positive impacts to EFH or the physical environment. Therefore, based on the significance criteria described in Section 8.7.2 of this analysis, there are no significant cumulative effects on the physical environment and EFH expected from the Proposed Action. The Proposed Action is not expected to result in substantial damage to ocean and coastal habitats and EFH, nor is it expected to have substantial impact on ecosystem function. Table 172 provides a summary of the impacts that led to this determination and includes only those measures proposed in this amendment that are expected to impact the physical environment and EFH VEC.

Fishing-Related Businesses and Communities

This analysis has considered the potential impacts of the Proposed Action on fishing-related businesses and communities, in combination with relevant past, present, and reasonably foreseeable future actions as well as applicable non-fishing impacts. Based on the significance criteria described in Section 8.7.2 of this analysis, while the incremental effects of the Proposed Action are likely to be positive over the long-term, there are no additional significant cumulative effects on fishery-related businesses and communities expected. Because the impacts to fishery-related businesses and communities are not considered to be significant (as would be indicated by "High Negative" or "High Positive"), significant social and economic impacts are not interrelated with significant natural or physical environmental effects. There will be some significant direct impacts of the Proposed Action on fishery-related businesses and communities, particularly at the individual vessel level; these impacts are discussed in Section 8.4 of this document. Nevertheless, when combined with the impacts of past, present, and reasonably foreseeable future actions, no additional significant cumulative impacts are expected. Furthermore, the Proposed Action is not expected to have a substantial adverse impact on public health or safety, nor are the effects of the proposed action likely to be controversial. The effects of the Proposed Action on the human environment are not expected to involve unique or unknown risks, nor are they expected to result in the introduction or spread of non-indigenous species. It also does not violate any Federal, State, or local laws imposed for the further protection of the environment. Table 173 provides a summary of the impacts that led to this determination and includes only those measures proposed in this amendment that are expected to impact the fishery-related businesses and communities VEC.

Other Fisheries

This analysis has considered the potential impacts of the Proposed Action on other fisheries, in combination with relevant past, present, and reasonably foreseeable future actions as well as applicable non-fishing impacts. The lobster and mackerel resources have experienced negative impacts from non-fishing activities, such as mortality of early life stages, that will continue to occur in the future. Impacts of the RFFAs identified to be important to this amendment (Table 166) are largely unknown, however some future actions are expected to result in some negative impacts. When these impacts are considered cumulatively with the proposed management measures, the net impact to the lobster and mackerel fisheries is potentially negative. For example, the proposed limited access program may affect the supply of bait for the lobster fishery during the summer months. This has the potential to result in an incremental negative impact to the lobster fishery as a whole when combined with the impacts to the lobster population from pollution and a potential restriction on lobster fishing as a result of a DAM closure. However, based on the criteria described in Section 8.7.2 of this analysis, the cumulative impacts are not expected to be significant. The impacts of the Proposed Action are not expected to jeopardize the sustainability of any non-target species, nor are they expected to result in cumulative adverse effects to non-target species that are substantial. Table 174 provides a summary of the impacts that led to this determination and includes only those measures proposed in this amendment that are expected to impact the other fisheries VEC.

Table 170 Summary of Cumulative Impacts of Proposed Action (Shaded) on Atlantic Herring

	Direct and Indirect Impacts of Proposed Action	Past to Present Condition	Non-Fishing Impacts	Impacts from RFFAs	Cumulative Impacts
Proposed Limited Access Program and Permits **Proposed Purse Seine/Fixed Gear Only Area**	Positive	Low Positive	Potentially Negative	Low Positive	**Low Positive** - the incremental benefit of the proposed action should result in positive cumulative impacts to herring, but these impacts are not considered to be significant
Non-Preferred Management Alternatives					
No Action Alternative and Alternative 1	Negative	Low Positive	Potentially Negative	Low Positive	**Low Negative** – continuing with status quo management would result in negative cumulative impacts to the herring resource
Alternatives 2-6	Low Positive				**Low Positive** - the incremental benefit of limited access system would result in minor positive cumulative impacts to herring
Alternative 7	Most Positive				**Positive** - the incremental benefit of this limited access option would result in the most relative positive cumulative impacts to herring
MSY					
No Action = 317,000 mt	**Negative**	Low Positive	Potentially Negative	Low Positive	**Low Negative**
MSY = 220,000 mt proxy	Positive				**Low Positive**
Vessel Upgrade Restrictions					
No Action – no restrictions	Low Negative	Low Positive	Potentially Negative	Low Positive	**Low Negative**
Consistent with all limited access fisheries	Low Positive				**Low Positive**
ECPA proposal	Low Positive				**Low Positive**
Adjustments to Management Area Boundaries					
No Action – Maintain current boundaries	No Impact	Low Positive	Potentially Negative	Low Positive	**Neutral**
TRAC Recommendations	Positive				**Positive**
Measure 2 + Eliminate 1A/1B line	Low Positive				**Low Positive**
Determining the Distribution of Area-Specific Total Allowable Catches (TACs)					
No Action – Current approach	Neutral	Low Positive	Potentially Negative	Low Positive	**Neutral**
Consider other Analytical Approaches	Neutral/Low Positive				**Low Positive**
TAC Set-Asides to Support Herring-Related Research					
No Action	Neutral	Low Positive	Potentially Negative	Low Positive	**Neutral**
Authorize Research Set-Asides	Low Positive				**Positive**

Table 170 continued. Summary of Cumulative Impacts of Proposed Action (Shaded) on Atlantic Herring

	Direct and Indirect Impacts of Proposed Action	Past to Present Condition	Non-Fishing Impacts	Impacts from RFFAs	Cumulative Impacts
Measures to Address Fixed Gear Fisheries					
No Action	No Impact	Low Positive	Potentially Negative	Low Positive	**Neutral**
Include catch in New Brunswick weir fishery catch	Neutral/Low Negative				**Neutral**
TAC set-aside in Area 1A (500 MT)	Impacts considered in future fishery specification EA				**Neutral**

Note: Only the management measures that are expected to impact the Atlantic herring VEC are addressed in the above table.

Table 171 Summary of Cumulative Impacts of Proposed Action (Shaded) on Protected Resources

	Direct and Indirect Impacts of Proposed Action	Past to Present Condition	Non-Fishing Impacts	Impacts from RFFAs	Cumulative Impacts
Proposed Limited Access Program and Permits **Proposed Purse Seine/Fixed Gear Only Area**	Potentially Positive	Low Positive	Potentially Negative	Potentially Positive	**Neutral/Low Positive**
Non-Preferred Management Alternatives					
No Action Alternative and Alternative 1	Potentially Negative	Low Positive	Potentially Negative	Potentially Positive	**Potentially Low Negative** – expansion of the fishery, without matching capacity to harvest, could result in additional protected species interactions that create an incrementally minor negative cumulative impact
Alternatives 2-7	Positive				**Neutral/Low Positive**
MSY					
No Action = 317,000 mt	Negative	Low Positive	Potentially Negative	Potentially Positive	**Low Negative**
MSY = 220,000 mt proxy	Positive				**Low Positive**
TAC Set-Asides to Support Herring-Related Research					
No Action	Neutral	Low Positive	Potentially Negative	Potentially Positive	**Neutral –** This measure does not contribute to cumulative impacts
Authorize Research Set-Asides	Positive				**Low Positive**
Vessel Monitoring System Requirements					
No Action – Vessels that catch 500 MT +	Negative	Low Positive	Potentially Negative	Potentially Positive	**Neutral/Low Negative**
All vessels with limited access permit	Positive				**Low Positive**

Table 172 Summary of Cumulative Impacts of Proposed Action (Shaded) on Physical Environment and EFH

	Direct and Indirect Impacts of Proposed Action	Past to Present Condition	Non-Fishing Impacts	Impacts from RFFAs	Cumulative Impacts
Proposed Limited Access Program and Permits **Proposed Purse Seine/Fixed Gear Only Area**	Neutral	Neutral/Low Positive	Low Negative	Neutral	**Neutral** – no net cumulative impacts
Non-Preferred Management Alternatives					
No Action Alternative and Alternative 1	Neutral	Neutral/Low Positive	Low Negative	Neutral	**Neutral –** This measure does not contribute to cumulative impacts
Alternatives 2-7	Neutral				**Neutral** – no net cumulative impacts
MSY					
No Action = 317,000 mt	Neutral	Neutral/Low Positive	Low Negative	Neutral	**Neutral** – no net cumulative impacts
MSY = 220,000 mt proxy	Neutral/Low Positive				**Low Positive** – minor incremental benefit
TAC Set-Asides to Support Herring-Related Research					
No Action	Neutral	Neutral/Low Positive	Low Negative	Neutral	**Neutral** – no net cumulative impact
Authorize Research Set-Asides	Low Positive				**Neutral/Low Positive** – very minor incremental benefit
Regulatory Definition of Midwater Trawl Gear					
No Action – no change	No Impact	Neutral/Low Positive	Low Negative	Neutral	**No Cumulative Impact**
Modified per Enforcement OS	Neutral/Low Positive				**Neutral**
Modified per West Coast/PFMC	Neutral/Low Positive				**Neutral**
Modified per ECPA	Neutral/Low Positive				**Neutral**

Table 173 Summary of Cumulative Impacts of Proposed Action (Shaded) on Fishing-Related Businesses and Communities

	Direct and Indirect Impacts of Proposed Action	Past to Present Condition	Non-Fishing Impacts	Impacts from RFFAs	Cumulative Impacts
Proposed Limited Access Program and Permits **Proposed Purse Seine/Fixed Gear Only Area**	Neutral/Low Negative	Neutral	Potentially Negative	Potentially Negative	**Neutral/Low Negative –** no additional significant cumulative impacts expected
Non-Preferred Management Alternatives					
No Action Alternative and Alternative 1	Neutral/Negative	Neutral	Potentially Negative	Potentially Negative	**Neutral/Low Negative**
Alternative 2	Neutral/Low Negative				**Neutral/Low Negative**
Alternative 3	Neutral/Low Negative				**Neutral/Low Negative**
Alternative 4	Neutral/Low Negative				**Neutral/Low Negative**
Alternative 5	Low Negative				**Low Negative**
Alternative 6	Negative				**Negative**
Alternative 7	Most Negative				**Negative**
MSY					
No Action = 317,000 mt	Unknown/Potentially Negative	Neutral	Potentially Negative	Potentially Negative	**Potentially Negative**
MSY = 220,000 mt proxy	Neutral/Low Positive				**Neutral**
Adjustments to Management Area Boundaries					
No Action – Maintain current boundaries	Neutral	Neutral	Potentially Negative	Potentially Negative	**Potentially Negative**
TRAC Recommendations	Neutral/Low Positive				**Low Negative**
Measure 2 + Eliminate 1A/1B line	Neutral/Low Positive				**Low Negative**
Open Access Incidental Catch Permit					
No Action – no permit	Neutral/Low Negative	Neutral	Potentially Negative	Potentially Negative	**Low Negative**
1MT permit	Low Positive				**Low Negative**
3 MT permit	Positive				**Neutral**
5 MT permit	Most Positive				**Neutral/Low Positive**
Vessel Monitoring System Requirements					
No Action – Vessels that catch 500 MT +	No Impact	Neutral	Potentially Negative	Potentially Negative	**No Impact** – since no direct/indirect impacts, would not contribute to cumulative impacts
All vessels with limited access permit	Neutral/Low Negative				**Low Negative**
Vessel Upgrade Restrictions					
No Action – no restrictions	Neutral	Neutral	Potentially Negative	Potentially Negative	**Neutral** – no action would not contribute to cumulative impacts
Consistent with all limited access fisheries	Neutral/Low Negative				**Low Negative**
ECPA proposal	Neutral/Less Negative				**Low Negative**

Table 173 continued. Summary of Cumulative Impacts of Proposed Action (Shaded) on Fishing-Related Businesses and Communities

	Direct and Indirect Impacts of Proposed Action	Past to Present Condition	Non-Fishing Impacts	Impacts from RFFAs	Cumulative Impacts
Measures to Address Fixed Gear Fisheries					
No Action	Neutral/Low Negative	Neutral	Potentially Negative	Potentially Negative	**Low Negative**
Include catch in New Brunswick weir fishery catch	Low Positive				**Neutral/ Low Negative**
TAC set-aside in Area 1A (500 MT)	Low Positive				**Neutral/ Low Negative**
Regulatory Definition of Midwater Trawl Gear					
No Action – no change	No Impact	Neutral	Potentially Negative	Potentially Negative	**No Impact** – since no direct/indirect impacts, would not contribute to cumulative impacts
Modified per Enforcement OS	Low Negative				**Low Negative**
Modified per West Coast/PFMC	Low Negative				**Low Negative**
Modified per ECPA	Low Negative				**Low Negative**

Table 174 Summary of Cumulative Impacts of Proposed Action (Shaded) on Other Fisheries

	Direct and Indirect Impacts of Proposed Action	Past to Present Condition	Non-Fishing Impacts	Impacts from RFFAs	Cumulative Impacts
Proposed Limited Access Program and Permits **Proposed Purse Seine/Fixed Gear Only Area**	Neutral/Low Negative	Low Negative	Potentially Negative	Potentially Negative	**Low/Potentially Negative –** cumulative impacts not expected to be significant
Non-Preferred Management Alternatives					
No Action Alternative and Alternative 1	Neutral	Low Negative	Potentially Negative	Potentially Negative	**Low/Potentially Negative**
Alternatives 2-7	Neutral/Low Negative				**Low/Potentially Negative –** Negative cumulative impacts would occur if limited access restricts supply of lobster bait
MSY					
No Action = 317,000 mt	**Neutral**	Low Negative	Potentially Negative	Potentially Negative	**Low Negative**
MSY = 220,000 mt proxy	Low Positive				**Potentially Negative**
Open Access Incidental Catch Permit					
No Action – no permit	Low Negative	Low Negative	Potentially Negative	Potentially Negative	**Negative**
1MT permit	Low Positive				**Neutral/Potentially Negative**
3 MT permit	Positive				**Neutral/Potentially Negative**
5 MT permit	Most Positive				**Neutral/Potentially Negative**
Regulatory Definition of Midwater Trawl Gear					
No Action – no change	No Impact	Low Negative	Potentially Negative	Potentially Negative	**No Impact** – since no direct/indirect impacts, would not contribute to cumulative impacts
Modified per Enforcement OS	Neutral/Low Negative				**Low Negative**
Modified per West Coast/PFMC	Neutral/Low Negative				**Low Negative**
Modified per ECPA	Neutral/Low Negative				**Low Negative**