

## **4.0 Description of the Fishery**

### **4.1 Description of the Resource**

A description of the resource is contained in section E.6.3.1.

### **4.2 Description of the Habitat**

A description of the habitat is contained in section E.6.2 and in the Council's description of essential fish habitat (NEFMC 1998a).

### **4.3 Description of the Fishery**

A description of the herring fishery is contained in section E.6.4.

### **4.4 Social/Cultural Framework**

The social/cultural framework is described in section E.6.4.4 and Appendix 1.

## **4.5 Existing Management Framework**

### **4.5.1 Applicable Federal Laws and Regulations**

The Council's authority and responsibility to develop fishery management plans (FMPs) is established by the Magnuson – Stevens Fishery Conservation and Management Act (M-SFCMA). Section 303(a)(1) of the M-SFCMA requires the FMP to contain the conservation and management measures which are necessary and appropriate to prevent overfishing, and to protect, restore, and promote the long-term health and stability of the fishery, consistent with the national standards (described in section 301) other provisions of the M-SFCMA, regulations implementing recommendations by international organizations in which the United States participates, and any other applicable laws. The conservation and management measures proposed in this amendment are described in section 3.0 while the following section describes and discusses other applicable law.

### **4.5.2 Other Applicable Laws**

A number of federal statutes and executive orders apply to the development of FMPs, including the following:

- APA – Administrative Procedures Act
- CSMZ – Coastal Zone Management Act
- E.O. 12866 – Regulatory planning and review
- ESA – Endangered Species act
- MMPA – Marine Mammal Protection Act
- NEPA – National Environmental Policy Act

PRA – Paperwork Reduction Act  
RFA – Regulatory Flexibility Act  
E.O. 12612 – Executive order on federalism  
E.O. 12630 - Order on interference with constitutionally protected property rights

The requirements of these laws with respect to analysis or other options in the development or implementation of these proposed management measures will be discussed in the FMP and final EIS.

#### **4.5.3 Other Fishery Management Plans**

There are currently 22 management plans for fisheries in the northeast which may be directly or indirectly be affected by the measures proposed in this plan. The New England Fishery Management Council (NEFMC), Mid-Atlantic Fishery Management Council (MAFMC), National Marine Fisheries Service (NMFS) and Atlantic States Marine Fisheries Commission (Commission) are the management bodies with regulatory authority of these fisheries. In addition to the managed fisheries, a number of unregulated fisheries exist in the region although management plans are in development for some of these.

The following management plans are in effect in the northeast:

##### **NEFMC**

Atlantic sea scallops  
American lobster  
Atlantic salmon  
Northeast multispecies  
Monkfish (in development) (joint with MAFMC)

##### **MAFMC**

Squid-mackerel-butterfish  
Surf clam-ocean quahog  
Bluefish (joint with ASMFC)  
Summer flounder, Scup, Black Sea Bass (joint with ASMFC)  
Dogfish (in development) (joint with NEFMC)

##### **ASMFC**

Striped bass  
Northern shrimp  
Winter flounder (vessels not holding federal permits)  
Summer flounder (joint with MAFMC)  
Bluefish (joint with MAFMC)  
Weakfish  
Shad-river herring  
Spanish mackerel (joint with SAFMC)

## NMFS

Atlantic swordfish

Atlantic billfish

Atlantic sharks

Atlantic bluefin tuna (managed under the Atlantic Tunas convention Act, P.L. 96-339)

For most of the plans listed above, the relationship to this FMP is indirect. This FMP may regulate activities by fishermen who may have been displaced from some of these fisheries. There is, however, a direct relationship to the Northeast Multispecies.

Existing Northeast Multispecies FMP regulations apply to the herring fishery. Under this FMP, mid-water trawl and purse seine vessels fishing in the Gulf of Maine/Georges bank regulated mesh area must obtain a Letter of Authorization from the Regional Administrator of the NMFS Northeast Region. Purse seine and mid-water trawl vessel are limited to catching certain species under this FMP. This FMP restricts vessels fishing for shrimp from retaining herring, contributing to herring discards. The FMP also restricts the use of small pelagic gillnets to catch herring for bait in the harbor porpoise areas. Finally, Framework Amendment 18 allowed herring mid-water trawl vessels to fish in groundfish closed areas.

### **4.5.4 Management Institutions**

Herring is managed by the National Marine Fishery Service (NMFS), the New England Fishery Management Council (NEFMC), the Atlantic States Marine Fisheries Commission (ASMFC), and individual state governments.

**NMFS:** NMFS is responsible for the management, conservation, and protection of living marine resources within the United States Exclusive Economic Zone. The Magnuson-Stevens Fishery Conservation and Management Act (M-SFCMA), under which fisheries within the 200-mile Exclusive Economic Zone (EEZ) are regulated, places responsibility for fishery management jointly with the Secretary of Commerce (through NOAA Fisheries) and eight Regional Fishery Management Councils which it established in 1976. Together, NMFS, the Councils, and the Commissions are responsible for preparing Fishery Management Plans (FMP) for the nation's fishery resources.

**NEFMC:** The NEFMC is one of eight Regional Fishery Management Councils established by the M-SFCMA. The NEFMC is responsible for preparing and submitting fishery management plans to the Secretary of Commerce for each fishery under its authority that requires conservation and management. The NEFMC manages fisheries seaward of the states of Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut.

**ASMFC:** The Commission coordinates management of fishery resources within state waters. The Atlantic Coastal Fisheries Cooperative Management Act and the Atlantic Coast Striped Bass Conservation Act, under which many Atlantic coastal fisheries are managed, provide a special role for the Atlantic States Marine Fisheries Commission in management of certain fisheries in federal waters.

State governments: The coastal states are responsible for managing fisheries resources within state waters. The states of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, and New Jersey actively manage herring fishing within their waters through a variety of state regulations.

#### **4.5.5 Treaties or International Agreements**

There are no treaties or international agreements that affect the management unit. Informally, herring management is coordinated with Canada through semi-annual discussions between the U. S. and Canadian industry. Cooperative discussions between U. S. and Canadian scientists occur frequently to compare stock assessment results. The NMFS and Canadian Department of Fisheries and Oceans (DFO) are considering the adoption of a joint herring assessment, which may be in place as early as spring, 2000.

#### **4.5.6 Federal laws, Regulations, and Policies**

Herring is currently managed under a Preliminary Management Plan established under the authority of the M-SFCMA. The regulations establish OY, DAH, DAP, and JVP specifications for herring, adopt the use of the Commission management areas for distributing the JVP allocations, and prohibit JVP in Management Area 1.

P. L. 104-297 section 105(e) specifically authorizes the Secretary of Commerce to issue permits for up to 14 Canadian vessels to transship herring from U. S. catcher vessels to Canada. The herring may be used only for sardine processing and the transshipments must occur east of 69° 30' W. longitude and within the boundaries of the State of Maine.

P. L. 105-119 section 616(e) restricted the Secretary of Commerce from using appropriated funds during fiscal year 1998 to issue a permit or other authorization to any vessel larger than 165 feet or 750 gross registered tons(GRT), and 3,000 shaft horsepower, to fish for Atlantic herring or mackerel. This restriction was carried over into fiscal year 1999 by P.L. 105-277.

#### **4.5.7 State Laws, Regulations, and Policies**

Maine: The Department of Marine Resources regulates fishing for herring in Maine. In 1998, Maine state herring regulations included the following provisions:

- (a) A prohibition on using otter trawls, beam trawls, pair trawls, or mid-water trawls to fish for herring within Maine territorial waters north.
- (b) During the period August 1 – October 31, inclusive, it was unlawful to fish for, take, or possess spawn herring on board a Maine registered vessel within Management Area 1, or to land spawn herring caught by any vessel in this area, in any Maine port, unless spawn herring comprised no more than 20 percent of the catch. The 20 percent tolerance was determined by examination of one hundred herring from each 50 hogsheads of herring, or fraction thereof, selected at random from the catch. This restriction did not apply to stop seine and weir catches in waters north of a line drawn from Spruce Point, Cross Island, Cutler, due east magnetic to the international boundary with Canada.
- (c) A spawning closure south of 43° 32'N for three or four weeks in duration, dates coordinated with the state of New Hampshire and the Commonwealth of

Massachusetts. This closure does not have a tolerance provision, but allowed an incidental catch of up to 10 percent of the total weight of the catch, or 2,000 pounds, whichever is greater. The incidental catch herring could not contain more than 20 percent spawn herring by number..

- (d) A prohibition on fishing for or landing herring taken by a vessel that exceeds 165 feet in length or 3,000 shaft horsepower.
- (e) A requirement for all herring harvesters to obtain a permit.
- (f) A requirement for all herring bait dealers to obtain a permit.
- (g) Provisions for an emergency closure if determined necessary by the Commissioner.
- (h) A prohibition on using artificial lights to take herring in coastal waters, with the exception of coastal waters of York County for use as bait.
- (i) A prohibition on taking, buying, selling, processing, shipping, transporting or possessing herring less than 4 and 1/2 inches in length. This provision included a tolerance to allow up to 25 percent by volume small herring per lot.
- (j) Restrictions on the use of herring for purposes other than human consumption or bait.

New Hampshire: Herring is managed within the state of New Hampshire by the New Hampshire Division of Fish and Game. In 1998, the following regulations were in effect:

- (a) A prohibition on fishing for, taking, or possessing unprocessed herring within the jurisdiction of New Hampshire from September 24 through October 14. The executive director shall revise the beginning and ending dates of the closure so that the closure will be in effect when it is determined that the mean gonad somatic index for female herring is 18% or greater.
- (b) During this closure, vessels fishing for species other than herring are allowed an incidental catch of herring of not more than 10% by weight, to a maximum of 2,000 pounds, of the total catch of all fish on board at any time.
- (c) Permits are required to take or land herring.
- (d) These provisions do not prohibit a person from possessing herring for use as bait while in the normal conduct of tending lobster or crab pots, or for angling purposes.

Massachusetts: Herring is managed within the state of Massachusetts by the Division of Marine Fisheries. In 1998, the following regulations were in effect:

- (a) A prohibition on fishing for, or possessing, herring during the period September 17 through October 7. A vessel may have on board or land sea herring during this closure provided the herring are not caught in the Gulf of Maine, or herring are an incidental catch in other fisheries limited to the following percentages: no more than 20 percent by weight if a vessel is fishing for mackerel, no more than 5 percent by weight or 1,000 pounds if the vessel is not fishing for mackerel.
- (b) A requirement that vessels possessing or landing herring caught outside the closure area obtain special authorization from the Director, report time of sailing and return, and submit weekly catch reports.

- (c) A permit requirement
- (d) A prohibition on any vessel greater than 165 feet in overall length or 3,000 or greater horsepower to land sea herring.

Rhode Island: Herring is managed within Rhode Island by the Department of Environmental Management. 1998 regulations were:

- (a) No vessel harvesting Atlantic herring shall exceed 165 feet in overall length, and 3,000 horsepower.
- (b) No person shall take or possess Atlantic sea herring between October 1 and October 21 annually.
- (c) No person may process Atlantic herring for other than human consumption. Direct mealing is prohibited until further notice.
- (d) IWP applications must be submitted by March 1, unless accompanied by a legally binding contract for an IWP in Rhode Island waters involving Rhode Island fishing vessels. The Director may grant an allotment from Rhode Island's existing unallocated or contracted quota for a legally bound IWP application submitted after the March 1 deadline.

#### **4.5.8 Local and Other Applicable Laws, Regulations, and Policies**

There are no known local laws, regulations or policies that would impact this plan.

## **5.0 Compliance with National Standards**

### **5.1 National Standard 1 – Optimum Yield**

*"Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the OY from each fishery for the U.S. fishing industry."*

Optimum yield for the Atlantic herring fishery is defined so that it will not exceed the Allowable Biological Catch (ABC), and cannot exceed MSY (section 3.2). The ABC is based upon a target fishing mortality rate that is determined as prescribed in the overfishing definition (section 2.6). Optimum yield (OY) can be reduced from this maximum amount based upon relevant economic, social, or ecological factors.

The overfishing definition (section 2.6) includes the four types of reference points that are recommended by the National Standard 1 guidelines (50 CFR §600.310). These reference points are a maximum fishing mortality threshold consistent with  $F_{MSY}$ , a minimum biomass threshold, a biomass target consistent with  $B_{MSY}$ , and a fishing mortality target that is risk-averse. OY is derived from the overfishing definition. The primary management measure is the use of a TAC, based on OY. Other management measures are designed to reduce the likelihood the TAC will be exceeded and to distribute fishing effort throughout the range of the resource. These measures will prevent overfishing which will allow the development of a sustained fishery and the attainment of OY on a continuing basis.

### **5.2 National Standard 2 – Scientific Information**

*"Conservation and management measures shall be based upon the best scientific information available."*

This FMP is based upon the most recent stock assessment for the coastal stock complex of Atlantic herring, conducted by the 27<sup>th</sup> Stock Assessment Workshop (SAW 27) (NEFSC 1998a) during the spring of 1998. This assessment used estimates of the number of fish caught at age for the years 1995-1997 and added them to the existing time series of data. This data provided inputs used in a virtual population analysis which was performed using the ADAPT formulation of the model. The coastal stock complex VPA was tuned using spring and winter NEFSC bottom trawl survey data. Additional analyses of fall and winter bottom trawl survey data were also summarized for characterizing the age composition of the stock complex over time and comparing the relative abundance of herring in different geographical areas during spawning season.

Estimates of discards and bycatch in the herring fishery were obtained from two sources. An analysis of the NEFSC sea sampler and observer databases was conducted by the NEFSC to characterize the incidental catch of herring in other fisheries as well as the bycatch of other species in the herring fisheries. The summary of this analysis is contained in Appendix II. This information was not examined to determine if sampling accurately characterized the fisheries. There was no

information on takes of marine mammals in the directed herring fishery in this database. There was also limited information in these databases on the directed herring fishery. In the fall of 1997 and spring of 1998, the Maine Department of Marine Resources sponsored a limited number of observer trips on herring purse seine, mid-water trawl, and paired mid-water trawl vessels. Detailed information on the fall trips is contained in section E.6.4.2.6, as well as summaries for the trips in 1998, but detailed information on the 1998 trips has not been distributed.

Information on areas and times fished and the number of vessels fishing for herring was obtained from the Maine Department of Marine Resources. Because there is no single permit or reporting requirement in place for the herring fishery, this information was obtained by combining observations in the NMFS vessel trip report database with Maine DMR information on vessels that do not submit federal logbook reports. A further discussion of the availability and limitations of catch and revenue data is contained in section E.6.1.6.

Analysis of permit data was accomplished by examining the Northeast Region permit database. This reflects permits valid as of October 2, 1998. Analysis of potential harvesting capacity in the herring fishery was performed in November, 1997 and reflects information in the permit database as of that date.

### **5.3 National Standard 3 – Management Units**

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

This FMP proposes to manage Atlantic herring throughout the range of the species in U.S. waters, in accordance with the jurisdiction of U.S. law. While most Atlantic herring are landed in Maine, Massachusetts, and Rhode Island, Atlantic herring landings have been reported in every state from Maine through Virginia. Most Atlantic herring – between 60 and 70 percent in recent years – are caught in the EEZ. In order to address that portion of the resource that is caught in state waters, the FMP was developed in close cooperation with the Commission. As described in section 3.12, the Commission's adopted management measures are nearly identical to those recommended by the Council. The Commission's measures will be implemented through state regulations. As a result, management of herring in state and federal waters will be nearly identical. A key element of the FMP is that all herring catches, in both state and federal waters, will be limited by the TACs established by the FMP. This will require continued close coordination between the Commission and the Council. The annual plan monitoring process formally establishes that the Council consult with the Commission on an annual basis.

The coastal stock complex of Atlantic herring includes herring that are caught in the Canadian fixed gear fishery in New Brunswick and in Canadian waters on Georges Bank. While the management plan considers catches of herring that may occur in Canadian waters, it does not explicitly regulate those catches because of a lack of U. S. jurisdiction. The FMP estimates an allowable biological catch (ABC) for the entire coastal stock complex and then bases the determination of optimum yield for the U. S. fishery by accounting for the Canadian catch. Estimates of the Canadian catch that are deducted from the ABC are based on recent catches. The



FMP recognizes that these estimates may need to be revised in the future and establishes a framework adjustment mechanism so that can be accomplished expeditiously.

While the FMP manages the coastal stock complex as a single unit, it also considers impacts of fishing mortality on individual spawning components. The TAC system established to control catches assigns TACs to one of four management areas or sub-areas. This system is designed to protect the individual spawning components from excessive fishing pressure.

#### **5.4 National Standard 4 – Allocations**

*"Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocations shall be:*

- 1) fair and equitable to all such fishermen*
- 2) reasonably calculated to promote conservation*
- 3) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges."*

The proposed management measures for Atlantic herring manage the fishery as an open access fishery. None of the measures included in the plan discriminate between the residents of any state. The FMP proposes spawning closures off the coasts of Maine, New Hampshire, and Massachusetts. These closures may disadvantage fishermen from those states, who must travel further to fish for herring during the closures, but they are necessary to provide protection to spawning aggregations of herring. This will help protect individual spawning components of herring that cannot be individually assessed because of a lack of information. The closures actually reduce the size of the areas subject to spawning restrictions from the areas incorporated in the Commission's 1994 Atlantic herring FMP.

One proposed management measure allocates fishing privileges among U.S. fishermen. The FMP restricts the catching, taking, or harvesting of herring to those vessels that meet the size limits prescribed in the plan (section 3.6.6). These size limits incorporate all current participants in the herring fishery. In effect, they allocate the herring resource to existing participants and future participants that comply with the size restrictions. By preserving the status quo, the FMP restricts future opportunity to participate in the fishery. This measure is designed to achieve a number of the FMP's goals and objectives. Preventing the introduction of large catcher vessels into the fishery will help provide for the orderly development of the herring fishery because the rapid introduction of large domestic harvesting vessels could quickly lead to harvesting overcapacity. While the same problem can develop if a large number of small vessels choose to enter the fishery, the incremental effect of each small vessel will be less and capacity is not likely to grow as quickly (see section E.6.4.2.2 for examples of current catch rates and annual catches). In addition, as discussed in section E.1.1.1.1, in an open access fishery a restriction on vessel size limits the share of the resource that can be harvested by each participant. Limiting maximum vessel size will increase the number of vessels that can participate in the fishery, helping to meet the FMP's objective to provide opportunities for fishermen in other New England and mid-Atlantic fisheries (section 2.3). This measure does not eliminate any current participants from the fishery. While any

existing vessel over the size limit will not be able to enter the fishery in the future, no vessels of this class have participated in the fishery to date. One large vessel obtained a letter of authorization to use a small mesh mid-water trawl in the Gulf of Maine/Georges Bank area, but this authorization was revoked by congressional action before the vessel actually caught herring. The proposed FMP will prevent this vessel (as well as any other vessel that exceeds the size limit) from catching, taking, or harvesting herring.

The FMP provides an opportunity for vessels over the size limits for harvesting herring to participate in the fishery by receiving or processing herring at sea, subject to the amount of herring allocated to this activity through the annual specification process. This measure directly allocates part of the resource to different processing sectors (at-sea and shoreside). The intent is to provide a mechanism for the Council to control, if necessary, the development of large vessel at-sea processing capability for the herring fishery. For the first year of the plan, the Council has recommended the specification for large vessel U.S. at-sea processing be set at zero. This recommendation allocates fishing (processing at sea is defined as fishing under the Magnuson-Stevens act) privileges for the first year of the plan to existing and new participants that use shoreside processors or small at-sea processors. This will enable the Council to evaluate the effectiveness of its management measures before introducing an unknown factor into the fishery and is consistent with the Council's goal to encourage development while taking into consideration the viability of current industry participants (section 2.3). This measure does not discriminate between the residents of any state; all are subject to the same specification limits. It also addresses the concerns of communities that are dependent on herring processing activity (section E.7.4.2.2.2), a consideration required by National Standard 8.

For both catching and processing vessels, the size restrictions are reasonably calculated to promote conservation. These restrictions help prevent the rapid introduction of excess fishing capacity into the fishery. The management measures included in the plan rely on area-specific TACs that must be monitored on a near-real time basis to be effective. By restricting vessel size, catch rates are slowed so that projections of the TAC can be more accurately determined. There are also concerns over the takes of marine mammals by large trawlers, based in part on experience with large foreign trawlers in the mid-1980's.

The Council considered a limited or controlled access scheme, in particular for the inshore Gulf of Maine area. A number of different qualification criteria (section E.5.2.2.3.1) were considered with a wide range of possible impacts on eligible participants. The most restrictive criteria would have limited the fishery to approximately 20 current participants, while the least restrictive criteria would have allowed almost any vessel with a current permit to enter the fishery. These plans were rejected because the Council did not deem it appropriate to limit participation in the fishery at the same time it was trying to encourage its development. Any limited entry program would also conflict with the Council's objective to provide opportunities for fishermen in other fisheries. The Council may, in the future, adopt a limited entry or controlled access scheme in this fishery.

## **5.5 National Standard 5 – Efficiency**

*"Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measures*

*shall have economic allocation as its sole purpose."*

The FMP proposes to establish an open-access fishery for Atlantic herring. The open-access fishery will allow the entry of new participants, necessary to meet the goals of the FMP. These include harvesting the OY, providing for the orderly development of the inshore and offshore fishery taking into account the viability of current participants, and providing controlled opportunities for fishermen and vessels in other mid-Atlantic and New England fisheries.

The primary management measure adopted by the FMP to prevent overfishing is the establishment of an annual TAC and the distribution of that TAC to the four management areas. The establishment of a TAC will prevent overfishing of the resource. By distributing it to different management areas, the fishery is forced to spread effort over the entire range of the resource, which will reduce the risk of overfishing particular spawning components. As the TAC in an area is approached, mandatory days out of the fishery are imposed. Vessels are limited to a small incidental catch in these areas on the mandatory days out of the fishery, but can fish in other areas. This system imposes inefficiencies on the fishery as it limits the days available for vessels to fish. It also will require those vessel that want to continue fishing to travel farther in order to do so. The mandatory days out of the fishery are designed to slow fishing pressure on the resource and to encourage vessels to fish in other areas. Slowing catch rates will make it easier to accurately determine when the TAC will be reached and the fishery should be closed. Encouraging vessels to fish in different areas will provide additional protection to individual spawning components. While the mandatory days out system introduces inefficiency into the fishery, ultimately it will benefit the industry by "stretching out" the supply of herring to processors and bait dealers and by helping a sustainable fishery to develop.

Generally, there are no restrictions on gear types or product use. This will allow fishermen to use the most efficient gear available to catch herring, and to sell their catch into the most profitable markets. The plan does propose to limit the participation of large domestic fishing vessels (see the size limits in section 3.6.6). Vessels over the size limits are prohibited from catching, taking or harvesting herring. Vessels over the size limits are allowed to process Atlantic herring, subject to the USAP specification (which is recommended to be 0 mt for the first year of the plan). For the first year, this will prevent the entry into the fishery of large vessels that may be more efficient than smaller vessels. This restriction introduces inefficiencies into the fishery, as it prevents fishermen from taking advantage of economies of scale possible by using a large catcher-processor. These restrictions, however, support other biological and social objectives of the plan. As discussed in sections E.7.2.5.4 and E.7.4.2.2, the vessel size limits help to prevent overfishing and the rapid introduction of excessive fishing capacity into the fishery. These limits also take into account the uncertain impacts of large vessels on fishing communities in the region. In addition, as discussed in section E.1.1.1.1 the limitations on vessel size reduce the average share of the resource harvested by each vessel. This will help further the goal to provide additional opportunities for other fishermen and vessels in New England and mid-Atlantic fisheries by spreading the herring resource among a wider group of participants.

The Council considered using a limited entry or controlled access system. There is a desire to develop the fishery and such a system was viewed as inconsistent with this goal. While there is sufficient capacity in the region to harvest herring should vessels choose to do so, not all of these

vessels have a history of catching herring. An open access fishery provides the greatest flexibility for these fishermen to enter the herring fishery. The danger is that this will encourage the development of excess fishing capacity. From a specific fishery viewpoint this may be undesirable. When looked at in the context of other northeast region fisheries, however, this may allow the temporary shift of fishing effort from rebuilding fisheries into the under-utilized herring fishery. There are a number of factors which should serve to inhibit the rapid development of excess capacity in this fishery, including the relatively high cost for a vessel to convert to herring fishing and the high volume/low price nature of the product, and the limitations on vessel size.

## **5.6 National Standard 6 – Variations and Contingencies**

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

There are a number of factors which could introduce variations into the Atlantic herring fishery. As noted in section E.6.3.1.9, there is some uncertainty in the estimate of current stock size. In addition, the structure and status of individual spawning components cannot be determined with precision, resulting in the assessment of a coastal stock complex rather than separate assessments for each individual spawning component. The domestic Atlantic herring fishery has not been subject to limits on catch by a federal management plan since 1982. Because of the lack of a current permitting and reporting system, there is some uncertainty in the current levels of fishing effort and the actual harvest of Atlantic herring. There is also uncertainty in the ability of U.S. fishermen to develop new markets for the increased catch levels that are possible, and for U.S. processors to process increased catches of herring that may occur under this plan.

These uncertainties make it difficult to predict exactly how the fishery will develop. The Council has adopted a precautionary approach to many elements of the management program in order to account for these uncertainties. First, even though current estimates show the stock exceeds  $B_{MSY}$  (and may be over twice as large as  $B_{MSY}$ ), the Council has recommended that the initial determination of OY be based on  $B_{MSY}$  rather than on estimates of current biomass (ABC) (section 3.2.2). OY has been further reduced to less than the maximum amount possible. Because of uncertainties in harvesting and processing capacity and the impact of the management program on communities, the Council has chosen measures which will limit participation in the fishery to vessels that are similar in size and capacity to current participants. Processing activity is limited to shoreside processors or small at-sea processors.

In order to provide the greatest flexibility possible for future management decisions, the FMP includes a framework adjustment mechanism with an extensive list of possible framework adjustment measures that can be used to quickly adjust the plan as conditions in the fishery change (section 3.3.5). The FMP also establishes an annual review process, using the Council's Plan Development Team (PDT) and working closely with the Commission, to monitor the fishery and recommend changes as necessary. Finally, the Regional Administrator is provided discretion to adjust some elements of the plan as necessary after consulting with the Council.

## **5.7 National Standard 7 – Costs and Benefits**

*"Conservation and management measures shall, where practicable, minimize*

*costs and avoid unnecessary duplication."*

Atlantic herring is a key ecosystem resource in need of management to prevent the possibility of overfishing and achieve OY. The past record of Atlantic herring management (section 2.1) shows that it is possible to quickly deplete the resource in the absence of an effective management program. As demonstrated by the overfishing of Atlantic herring on Georges Bank in the 1970's, it can take an extended period to rebuild an overfished herring resource. Because of its key role in the ecosystem, this can have adverse impacts on a wide variety of species. One of the primary reasons for adoption of the management plan is to implement a system that will prevent a repeat of this overfishing and the resulting economic losses.

Because of a lack of current information on costs in the herring fishery, the economic benefits of the management program cannot be quantified. Under the management program, landings of herring could more than double from current levels, theoretically resulting in a doubling of ex-vessel revenues. An expansion of the fishery, however, will probably result in increased costs (both fixed and operating) as fishing vessels exploit herring in offshore areas. The plan also will limit catches in inshore areas, forcing vessels into other areas. An increase in landings and the resulting increase in revenues is highly dependent on the development of additional markets for herring, rather than a direct result of the regulatory scheme. Unless these new markets develop, an increase in landings could actually depress the ex-vessel value of herring and result in few benefits accruing directly to herring fishermen while benefiting processors, bait dealers, and other users. The qualitative benefit of the management measures is that they provide an opportunity for an increase in landings and revenues in a manner that will result in a sustained fishery. Section E.7.3 provides a detailed qualitative analysis of the costs and benefits of each management measure.

## **5.8 National Standard 8 – Communities**

*"Conservation and management measures shall, consistent with the conservation requirements of the Magnuson-Stevens Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to:*

- 1) Provide for the sustained participation of such communities; and*
- 2) to the extent practicable, minimize adverse economic impacts on such communities."*

The importance of Atlantic herring to communities and the expected impact of the management measures are described in section E.7.4. In summary, the FMP is designed to allow a significant increase in herring landings and a potential increase in revenues that should result in benefits to fishing communities. The measures are designed to encourage development of a sustainable herring fishery throughout the range of the resource while preventing overfishing. Increased landings will return significant benefits to fishing communities, but any increase in landings depends on market conditions rather than the regulations in the management plan. There are some management measures that may redistribute fishing effort away from traditional areas, and this may result in local impacts (sections E.7.3 and E.7.4). The TAC distribution system and, to a lesser extent, the spawning closures will move fishing effort away from the inshore Gulf of Maine.

This will benefit the resource and should ultimately benefit the industry and local communities. It will reduce the possibility that the spawning components in the inshore areas will be overfished and will encourage the catch of the burgeoning offshore resource. Communities that rely on landings from the inshore Gulf of Maine areas that have traditionally provided most of the herring catch may suffer adverse impacts from the FMP if fishermen are unable to catch herring in other areas. These impacts are expected to be minor because overall landings are not expected to decline and herring is readily transported to processors and dealers from all areas. In any case, they should be less than the impacts on these communities that would result if the resource is overfished due to a lack of management controls.

The FMP may also benefit some communities suffering under increasing regulation in other fisheries. Because the herring fishery will be managed as an open-access fishery, there is an opportunity for new entrants. Vessels may be able to shift effort into the herring fishery until rebuilding plans in other fisheries are successful. Because of the costs necessary to adapt vessels to a pelagic fishery and the difficulty to find herring markets, the number of vessels able to make a successful transition is likely to be small.

The FMP takes a cautious approach to the introduction of large domestic processing vessels into the fishery. These vessels are limited to a specific allocation which is set at zero for the first year of the plan. One of the reasons for this approach is because of the unknown impacts of large processing vessels on those communities that rely on or are making preparations to enter the herring fishery. Because large processing vessels have not participated in any east coast fishery, the possible social and economic impacts they may have are subject to considerable debate. What is known, however, is that in some instances the current industry structure has become important to coastal communities. The sardine canneries described in section E.1.1.1 are vital to several small communities in coastal Maine. The lobster industry, which relies on a steady supply of herring for bait, is the most valuable fishery in the northeast, with ex-vessel landings value of over \$267 million in 1997. The introduction of large at-sea processors could have adverse impacts on the ability of canneries to obtain the raw material necessary for their operations. Large at-sea U.S. processors may also result in less herring being brought to shore, reducing the amount of bait available for the lobster industry. In part for these reasons, the FMP provides the ability to carefully control the introduction of offshore processing capacity in order to carefully assess the impacts on fishing communities.

One of the options considered by the Council was a complete ban on at-sea processing by large domestic fishing vessels. This would preclude any possibility of benefits accruing to communities from at-sea processors unless the plan is amended. Large at-sea processors will need to be supplied by smaller catcher vessels. If these boats come from communities in the northeast or mid-Atlantic states, this will provide an additional economic opportunity for vessels facing restrictions in other fisheries. By retaining the option to allocate herring to at-sea processors, the Council may, after consideration of the costs and benefits, choose to allocate herring to these vessels.

## **5.9 National Standard 9 – Bycatch**

*"Conservation and management measures shall, to the extent practicable:*

*1) Minimize bycatch; and*

*2) To the extent bycatch cannot be avoided, minimize the mortality of such bycatch."*

The information available on the extent of bycatch in the herring fishery is summarized in section E.6.4.2.6. This information – while perhaps not representative of the entire fishery in all areas and seasons - indicates that the traditional purse seine and mid-water trawl herring fisheries are relatively "clean" fisheries, with limited bycatch of other species. The greatest "bycatch" appears to be herring that are caught and discarded for a number of different reasons. There is some concern over possible marine mammal interactions with the herring mid-water trawl fishery, based on experience with other mid-water trawl fisheries. For this reason, NOAA listed the herring mid-water trawl fishery as a Category II fishery. This will facilitate the use of marine mammal observers to determine the extent of any interactions.

There are a number of management measures in the FMP which will encourage a reduction in bycatch. Bycatch and discard information will be considered when establishing the annual TACs. Some herring discards occur because the herring is not fit for market because it is full of spawn or is "feedy". The plan's use of spawning closures in the Gulf of Maine will reduce the amount of spawn herring that are caught and will minimize those discards. The plan allows the landing of incidental catches of herring, even during spawning closures or when directed herring fishing is prohibited due to the imposition of effort controls. This will allow the landing of herring that would otherwise be discarded if a complete prohibition on landings were in place. Vessels are required to report all catches of herring – landings and discards – which will be counted towards the TAC. This provision may result in more accurate catch statistics and less discards of herring, since there will be an economic incentive to land all herring caught. Another possibility, however, is that this will encourage vessels to continue discarding herring but not to report these discards. This practice can only be monitored through the use of at-sea observers. Finally, restrictions on the size of vessels in the herring fishery may reduce the likelihood of bycatch of marine mammals. Large pelagic trawlers in the mackerel fishery are known to have taken marine mammals (Waring et al. 1990). While the reasons for the observed level of takes are not clear, the prohibition on the catching of herring by large domestic vessels will prevent a possible recurrence of this problem.

## **5.10 National Standard 10 – Safety of Life at Sea**

*"Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea."*

National Standard 10 requires that conservation and management measures shall, to the extent possible, promote the safety of life at sea. Fishing is a dangerous occupation; participants must constantly balance the risks imposed by weather against the economic benefits. A management plan should be designed so that it does not encourage dangerous behavior by the participants. Two of the proposed management measures may have an impact on vessel safety. These are the imposition of a TAC and the use of mandatory days out of the fishery to slow fishing effort as the TAC is approached. The possible impacts of these measures on safety are discussed in section E.7.4.4. Another safety issue addressed in this section is vessel stability concerns that result the entry of vessels into the herring fishery from other fisheries. Vessel owners converting groundfish vessels to participate in the herring fishery must carefully consider the ability of their vessel to

safely carry the large weights associated with herring fishing, and the dangers that result if those loads are allowed to shift. This issue is a factor that must be considered before vessel operators choose to enter the open access herring fishery and is not a direct result of the adoption of the management plan.

The conclusion of the analysis is that the management measures do not pose additional safety risks. The closures that result from the TAC and mandatory days out of the fishery allow considerable flexibility to vessel operators to fish in other areas rather than choose to fish if the weather is bad on a day that is closed to fishing. The seasonal nature of the fishery also helps to minimize the potential dangers from these measures. No specific comments were received during public hearings on this issue, and no written comments were received that identified concern for the regulations impact on vessel safety. In addition, the U.S. Coast Guard evaluated the safety aspects of this management plan and concluded that the management measures did not cause any significant safety concerns (see Appendix VIII, written comments).