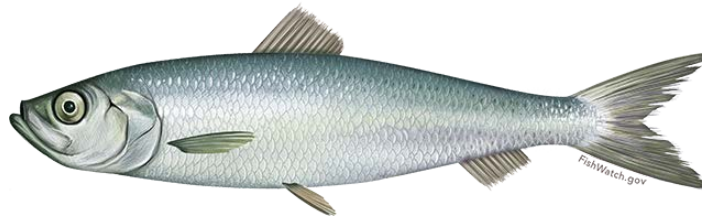


Summary of public comments on the Draft Environmental Impact Statement for Amendment 8 to the Atlantic Herring Fishery Management Plan

Summary of Public Comments

On the DRAFT Environmental Impact Statement for Amendment 8 to the Atlantic Herring Fishery Management Plan



August 31, 2018

**Compiled by the
Herring Plan Development Team**

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1.0 INTRODUCTION

In May and June 2018, the New England Fishery Management Council (NEFMC) accepted written and oral comments on the Draft Environmental Impact Statement (DEIS) for Amendment 8 to the Atlantic Herring Fishery Management Plan (A8). Written comments were submitted to the NEFMC and seven public hearings were held, moderated by the Herring Committee chairman and supported by NEFMC staff. At each hearing, public testimony was taken on the measures proposed in the amendment. All written (letters) and oral comments (summary and audio recordings) are available for review by the NEFMC and public. This report summarizes the demographics of commenters and the key themes of their statements. This report does not respond to the comments. It is intended to serve as a guide for reviewing the comments and should not substitute for reading the comments directly.

2.0 METHODS

All comments received during the public comment period are summarized here. This includes the written comments and summaries of each hearing that contain close (but not exact) transcriptions of the oral comments. All comments were converted into text-searchable formats and imported into a *QSR NVivo 10* project for sorting and synthesis.

Demographics: Each person who signed a letter or spoke at a hearing was entered into a database within the *NVivo* project and classified by demographic attributes such as home state, stakeholder type (16 stakeholder types identified), and comment type (oral and/or written). Due to time constraints, it was not possible to enter the demographics of the over 17,000 people who signed two large form letters. Several commenters stated that they represent multiple stakeholder types. In those cases, a primary stakeholder type was assigned based on certain assumptions. For those who indicated that they fish both commercially and recreationally, the primary stakeholder type was assigned as commercial fisherman, since the person would presumably have greater financial stake in a commercial rather than recreational fishery. For those who submitted

comments on behalf of themselves and a non-governmental organization (NGO), the primary stakeholder type was assigned as an NGO representative, since the NGO presumably represents a larger group of people. For those who represent a regional or national NGO as well as an NGO of “other fishing interests”, the primary stakeholder type assigned was regional/national NGO, since that, again, presumably represents a larger group of people. Demographics of commenters is reported in Section 3.0.

Themes: Within the NVivo project, a “person node” was created for each person commenting (not for the 17,000+ people), and these nodes were organized by primary stakeholder type. The text of each comment was assigned (i.e., coded) to the appropriate “person node”. “Theme nodes” were then created for each of the Amendment 8 alternatives. As the comments were carefully read, text that stated support for a given alternative was highlighted and coded to the appropriate theme node. Additional themes were created and coded, themes such as ideas for other alternatives not in Amendment 8, what people thought were current problems that they hoped Amendment 8 would resolve, tradeoffs the NEFMC should consider, and comments on the DEIS and Management Strategy Evaluation. The two large form letters included brief personal comments from about 2,156 people. The form letters were coded, but due to time constraints, the personal comments were not. A review of these personal comments confirmed that their themes are consistent with those of their associated form letter.

After all the comments were coded to persons and themes, the software was used to identify how many comments and people commenting supported specific alternatives and the stakeholder type of the commenters, as reported in Section 4.0. To identify the rationale for supporting a given alternative, the text coded to its respective theme node (i.e., all statements in support of the alternative) was read carefully. Bullets points were created that represent the range of rationale but are listed here in no order. Many bullets use direct quotes to capture the flavor of the comments.

3.0 DESCRIPTION OF COMMENTERS

3.1 ORAL COMMENTERS

Table 1 - Public hearing attendance

Location	Attendees	Speakers
Rockport, ME	25	6
Portland, ME	52	12
Gloucester, MA	40	8
Chatham, MA	100	26
Narragansett, RI	50	13
Philadelphia, PA	35 ²	10
webinar	30	4
Total	332³	75⁴
² Includes 15 MAFMC members		
³ Duplicates possible.		
⁴ Duplicates removed.		

In total, the seven public hearings were attended by about 332 people (duplicates possible), and 75 people spoke on Amendment 8 (no duplicates; Table 1). Oral comments were received from 42 people representing themselves or their business (56%), 25 people representing non-governmental organizations (local to national, 33%), and eight were government representatives (town and county, 11%).

The following is an overview of each public hearing:

Rockport, ME: This hearing was about one hour, including a 25-minute staff presentation followed by six individual public comments. Two speakers commented on the control rule alternatives, both supporting No Action. One was also in favor of leaving quotas at the same value for three years at a time, and the other supported not selecting either alternative, leaving more flexibility to set quotas at the same level or varying amounts per year. All six speakers commented on the measures to address potential localized depletion and user conflicts, some supporting No Action, others supporting Alternative 3, and one supporting Alternative 5.

Portland, ME: This hearing was held in conjunction with a NEFMC meeting and was about one hour, including a 25-minute staff presentation followed by 12 individual public comments. The input was relatively diverse at this hearing with speakers supporting either No Action or Alternative 2 for the ABC control rule. Input on the measures to address potential localized depletion and user conflicts was also diverse, some supporting No Action or Alternative 9, and others supporting Alternative 3 and Alternative 6.

Gloucester, MA: This hearing was about one hour, including a 25-minute staff presentation followed by eight individual public comments. Unfortunately, only the first portion of the hearing was audio recorded. Therefore, the oral comments are not as complete for the last few speakers. In general, input at this meeting was relatively divided, some supporting No Action for both the ABC control rule and localized depletion measures (with some support for Alternative 9), and others supporting Alternative 2 for the ABC control rule as well as Alternatives 3 and 6 for localized depletion.

Chatham, MA: This hearing was about two hours, including a 25-minute staff presentation followed by 26 individual public comments. The Chairman started with a handful of elected officials that were in attendance, followed by speakers that had to catch a ferry to Nantucket, followed by several other speakers. Most speakers supported ABC control rule Alternative 2 and the 50 nm restriction on midwater trawl (MWT) vessels (Alternative 6), with some supporting a year-round restriction in Area 1A (Alternative 3) and control rule Alternatives 4e and 4f.

Narragansett, RI: This hearing was about one hour, including a 30-minute staff presentation followed by 13 individual public comments. Most speakers supported ABC control rule Alternative 2 and Alternative 1 for setting quota at the same level for three years. Most speakers supported a 25 nm restriction on MWT vessels (Alternative 5), including Area 2, to address potential negative impacts on predator fisheries, with some supporting Alternative 6 (50 nm buffer).

Philadelphia, PA: This hearing was held in conjunction with a Mid-Atlantic Fishery Management Council (MAFMC) meeting and lasted about one hour, including a 20-minute staff presentation followed by ten individual public comments and half a dozen questions from MAFMC members about the alternatives and analyses in Amendment 8. In general, public input at this hearing was primarily supportive of ABC control rule Alternative 2 and localized depletion Alternative 6. Many commenters focused on the importance of herring for seabirds.

Webinar: This hearing was about 45 minutes, including a 25-minute staff presentation followed by four individual public comments. The speakers who identified preferred alternatives recommended ABC control rule Alternative 2 and a 50 nm buffer (Alternative 6) as the measure to address potential localized depletion and user conflicts.

3.2 WRITTEN COMMENTERS

There were **364** written comments (letters and e-mails) received during the comment period (late comments excluded). There were 301 written comments from individuals or businesses (83%), three from small groups of individuals (2-42 signers, 0.8%), two large form letters (0.5%), 50 from non-governmental organizations (14%), and eight from government representatives (town to federal, 2%). The two large form letters were signed by 17,151 people and several of them included brief personal comments. The one federal agency (Environmental Protection Agency) indicated it has no substantive comments on Amendment 8. Thus, this letter is not considered further in this summary, which focuses on the stakeholders providing substantive comment.

There was evidence of collaboration and networking among stakeholders in developing comments, in addition to the two large form letters signed by 17,151 people. One letter was signed by 42 scientists. Of the 364 total written comments, 239 could be grouped into eight groups, ranging from two to 191 letters per group, in which the same text appeared in the letters of each group, though the text was unique from group to group. These duplicate or quasi-duplicate letters may have been written by an organization(s) as a template and then distributed.

3.3 ORAL AND WRITTEN COMMENTERS COMBINED

Through the **439 comments** (i.e., 75 oral and 364 written), **492 people** gave input (duplicates removed) on Amendment 8, in addition to the **17,151 people** (duplicates possible) who signed the two large form letters. However, many comments were given by people who represent businesses or organizations, and the total number of people those commenters represent cannot be determined.

Of the 492 commenters (excluding the two large form letters), 47 people only submitted oral comments, 418 people only submitted written comments, and 27 people submitted both (Table 2). Not including the two large form letters, just 12 (3%) of the 445 people signed more than one letter. Of the 492 commenters, 443 commented only during the DEIS comment period and 49 (10%) had also commented during public scoping in 2015.

The 492 commenters represented a variety of stakeholder types. Several commenters stated that they represent multiple stakeholder types, so a primary stakeholder type was assigned with some assumptions (as noted above; Table 2). By primary stakeholder type, 383 people commented on behalf of themselves or a business and 109 commented on behalf of an organization (government, non-governmental organization; Table 3).

Home state could be identified for 97% of the 492 commenters (excluding the three large form letters (Table 3). The majority (71%) was from New England, primarily Connecticut (30%) and Massachusetts (27%). Commenters hailed from at least 19 states and the District of Columbia.

Due to time and information constraints, it was not possible to analyze the demographics of the 17,151 people (duplicates possible) who signed the two large form letters, at least to the same degree as the other commenters. General characterizations are:

- *Ocean River Institute form letter:* This letter had 1,521 signatories with 402 people adding brief personal comments. Of the 1,521, 1,492 (98%) were from the U.S. (from all 50 states and the District of Columbia) and 29 (2%) from 14 other countries. About 8% were from New England states.

- *Pew Environment Group form letter:* This letter had 15,630 signatories with 1,754 people adding brief personal comments. One signer was from Russia and the remainder were from 54 U.S. states, territories and the District of Columbia. About 94% were from New England states.

Table 2 – Primary stakeholder type of commenters, n=492

Primary stakeholder type	Oral only (n=47)	Oral & written (n=28)	Written only (n=411)	Total (n=486)
<i>Representing themselves or businesses (individuals)</i>				
Commercial fishery - herring	4	8	18	30
Commercial fishery - lobster	1		3	4
Commercial fishery – other ²	7		7	14
Charter fisherman	5	2	11	18
Private angler	4		15	19
Fisherman – type unknown ³	1		12	13
Fishery support services			8	8
Scientist		2	47	49
Ecotourism			2	2
Other interested public	7	2	20	29
Unknown			197	197
Total individuals	29	14	340	383
<i>Representing groups or governments (organizations)</i>				
Government	7	1	25	33
NGO - Commercial	1	3	5	9
NGO - Environmental state/local	2	2	28	32
NGO - Environmental national/regional	4	5	8	17
NGO - Other fishing interests	4	2	12	18
Total representing organizations	18	13	78	109
Total	47	27	418	492
Note: Those people signing the two large form letters are not included here. Each person assigned here to their primary stakeholder type.				
¹ Duplicates removed.				
² Includes groundfish, striped bass, tuna, and unknown.				
³ Unknown if commercial other, private or party/charter.				

Table 3 - Organizations that commented

<i>Governments</i>	
Chatham MA Board of Selectmen	Mashpee MA Board of Selectmen
General Court of MA (state legislators)	New York City Parks
Greenwich CT Conservation Commission	Town and County of Nantucket MA Select Board and County Commissioners
Harwich MA Board of Selectmen	
<i>Commercial interests</i>	
Ad Hoc Pelagics Coalition*	Maine Lobstermen’s Association
American Bluefin Tuna Association*	New England Purse Seiner’s Alliance
Cape Cod Commercial Fishermen’s Alliance*	Northeast Coastal Communities Sector
Massachusetts Lobstermen’s Association*	Sustainable Fisheries Coalition*
Maine Coast Fishermen’s Association*	
<i>Environmental – state/local focus</i>	
Assoc. to Preserve Cape Cod (MA)	Hutchinson River Restoration Project
Audubon - Audubon Pennsylvania	Ipswich River Watershed Assoc.*
Audubon - Audubon Society of Rhode Isl.*	Lower Raritan Watershed Partnership
Audubon - New Hampshire Audubon*	Massachusetts Sierra Club
Audubon - The Connecticut Audubon Soc.	Middlesex Land Trust
Audubon - Huntington-Oyster Bay Aud. Soc.	Mystic River Watershed Association*
Barnstable Clean Water Coalition	New Hampshire Animal Rights League*
Bronx River Alliance	Riverkeeper
Chatham Conservation Foundation	Save the Bay*
Citizens for a Future New Hampshire	Save the Sound (NY)
Citizens for a Sludge-Free Land	Voices of Wildlife in New Hampshire
Friends of Herring River	WESPAC Foundation
Gotham Whale*	
<i>Environmental – National/regional focus</i>	
Conservation Law Foundation*	Pew Charitable Trusts*
Earthjustice*	Shark Angels
National Audubon Society	Whale and Dolphin Conservation
Natural Resources Defense Council	Wider Caribbean Sea Turtle Cons. Network
Ocean River Institute*	Wild Oceans*
<i>Other fishing interests</i>	
Aquidneck Island Striper Team	Mid-Atlantic Youth Anglers
Brooklyn Urban Anglers Assoc.	Northeast Tuna Club
CHOIR*	Recreational Fishing Alliance*
Delaware River Shad Fishermen’s Assoc.*	RI Fish and Game Protective Association
Gateway Striper Club	Rhode Island Saltwater Angler’s Assoc.*
MA Beach Buggy Assoc.	Salty Flyrodders of New York
MA Striped Bass Assoc.*	Stellwagen Charter Boat Association*
MA Stripers Forever	
* Also commented during scoping period	

Table 4 - Home state of commenters, n=492

State	Oral only (n=47)	Oral & written (n=28)	Written only (n=411)	Total (n=486)
<i>East Coast States</i>				
ME	6	5	27	38
NH			13	13
VT			2	2
MA	23	12	97	132
RI	7	4	5	16
CT	1		148	149
NY	1	2	72	75
NJ	1		6	7
PA	4	2	5	11
VA	1	1	6	8
DC	1	1		2
NC			6	6
SC			2	2
GA			2	2
FL			3	3
<i>Other States</i>				
CA			4	4
IL			1	1
OH			1	1
WA			2	2
Unknown	2		16	18
Total	47	27	418	492
Note: Includes commenters from both scoping periods, duplicates removed, not including the people who signed the three large form letters.				

4.0 CONTENT OF COMMENTS

4.1 AMENDMENT 8 ALTERNATIVES

Preferences for specific alternatives (including No Action) were stated by about 365 of the 383 people commenting on behalf of themselves or a business and all the 109 people who commented on behalf of an organization (government, non-governmental organization). The two large form letters also supported specific alternatives. The remainder were generally supportive of taking action but did not identify a preference for specific alternatives. Table 5 characterizes the support for specific alternatives, broken down by the number of people representing themselves or a business and the number representing an organization, as well as the number of oral and written comments received. The following subsections include more information about the commenters supporting specific alternatives. The bullets capture much of the rationale provided by individual commenters.

Table 5 – Support for specific alternatives in Amendment 8

Alternative	People commenting on behalf of (#)		Comments (#)	
	Organizations	Themselves	Oral	Written
Atlantic Herring ABC Control Rule				
<i>Alternatives for ABC control rule</i>				
No Action	3	14	4	12
Alternative 1	1	1	1	1
Alternative 2	73	85*	6	76*
Alternative 3	0	1	1	0
Alternative 4A	0	0	0	0
Alternative 4B	0	0	0	0
Alternative 4C	0	0	0	0
Alternative 4D	0	0	0	0
Alternative 4E	19	3	2	7
Alternative 4F	19	3	2	7
<i>Alternatives for setting three-year ABCs</i>				
No Action (incl. Alternative 1)	7	11	4	4
Alternative 2	5	45	1	6
<i>FMP framework provisions</i>	0	0	0	0
Potential Localized Depletion and user conflicts				
Alternative 1	2	11	3	7
Alternative 2	0	1	0	1
Alternative 3	17	53	4	19
Alternative 4	31	2	1	14
Alternative 5	34	78	4	44
Alternative 6	82	277*	6	306*
Alternative 7	20	5	2	12
Alternative 8	0	0	0	0
Alternative 9	3	7	2	7

*also supported by the two large form letters (17,151 signers).

General support for taking action: Many comments supported taking action through Amendment 8, for managing herring that explicitly accounts for its role in the ecosystem and addressing concerns about localized depletion. Such comments spoke of a need for precaution to ensure enough supply of herring as predators and prey in the ecosystem to, in part, benefit all fisheries that depend on herring (e.g., groundfish, tuna, as well as herring). Several commenters cited the outcomes of the 2018 Atlantic herring stock assessment as a need for future precaution. People felt that herring are less abundant today and that herring declines negatively effects predators. Several people were concerned about the depleted state of river herring and shad (RH/S), indicating that inland restoration efforts are being undermined by the Atlantic herring fishery and that it is unfair that this fishery catches RH/S as bycatch while directed fisheries are prohibited in most areas. Most commenters in support of taking action indicated that localized depletion by, and/or user conflicts with, midwater trawl vessels is occurring and hoped for more herring in the ecosystem, particularly nearshore. Some of these commenters saw the localized depletion issue as a matter of fairness, wanting smaller-scale (predator) fisheries to survive.

General support for No Action: Other commenters supported the No Action alternatives, stating that the current assessment and management processes sufficiently account for the role of herring in the ecosystem, that more conservative management would prevent achieving optimum yield in

the fishery, and that localized depletion is poorly defined and has not been proven scientifically. Several commenters cited the outcomes of the 2018 Atlantic herring stock assessment as a need for future flexibility. Some commenters felt that environmental factors have a larger influence on Atlantic herring recruitment and abundance trends than fishing, and that this species migrates too much for localized depletion to occur. It was explained how current temporal, spatial, and gear restrictions prevent achieving optimum yield, and there were concerns about the unintended consequences of additional restrictions. Shifting effort to other gear types, areas and seasons may do nothing to resolve the concerns that prompted this amendment.

4.1.1.1 ABC Control Rule

4.1.1.1.1 No Action

In *support* of No Action for the ABC control rule, 17 people commented via 16 comments (Table 5). These commenters were herring and lobster fishermen and their representatives (e.g., industry organizations). Rationale for No Action included:

- The current stock assessment and control rule sufficiently account for the role of herring in the ecosystem. "...there are better ways to ensure that forage needs are adequately considered... For example, the NEFSC could prioritize doing more research on consumption of herring as opposed to using outdated and inaccurate stomach content data."
- Any further restrictions on the herring fishery will put pressures on all other bait sources, driving up costs for the lobster fishery with "cataclysmic impact."
- The action alternatives are "too rigid" and have "catastrophic" fishery impacts that "would not be outweighed by any measurable benefit to predator fisheries or ecotourism...The Council has completed due diligence by thoroughly investigating the potential outcomes of all Alternatives through detailed analysis and the MSE process; however, No Action continues to be the alternative that balances herring fishery needs with predator needs."
- With likely quota reductions, based on the 2018 stock assessment, flexibility is needed.
- Over the last three specifications cycles, the current approach allowed balancing "scientific uncertainty with stability both for the fishery and those dependent on herring, such as lobstermen, while ensuring the sustainability of the herring resource, its predators, and fishing communities."
- Use of a control rule removes the role of public participation in management.
- "[We appreciate] the time and effort that went into the MSE process. However, given the results of the 2018 benchmark stock assessment, the lack of meaningful differences between the control rules in the key metric of impacts on forage stocks (though most have significant adverse economic impacts on the fishery itself), and the lack of a legal mandate to adopt a long-term control rule, all lead us to recommend no action..."

4.1.1.1.2 Action Alternatives

In *support* of taking action to establish an ABC control rule, about 175 people commented via about 85 comments (Table 5). Most comments were in support of specific alternatives, as described below. One comment also focused on process, made by a representative of a national environmental group:

- "...instead of this big political fight we're going to see this summer and winter over the new stock assessment, where everybody pulls out their lobbyists and their lawyers and their Congressmen and they have a big fight over what the quota should be, instead you have a control rule. You've decided beforehand the rules of the game, everybody's agreed to them, even if some people begrudgingly agreed to them...You don't have to listen to the lobbyists, you don't have to listen to lawyers and politicians – you make decisions beforehand."

ABC Control Rule – Alternative 1

In **support** of ABC control rule Alternative 1, two people commented via two comments (Table 5). A lobster industry representative supported Alternative 1 only if the NEFMC rejects No Action, and a herring business person stated support for Alternative 1 or 3, but preference for No Action. Rationale for Alternative 1 included:

- “Using the unbiased model, the probability of being overfished is extremely low and the probability of overfishing is under 50% for all the alternatives. Alternatives 1 and 3 were “equal to or better at producing surplus production than other alternatives. For absolute yields...the best Alternatives are 1 and 3.” For “yields relative to MSY, Alternative 1 and 3 perform best under the unbiased models and they're equal to or better than other alternatives.”

ABC Control Rule – Alternative 2

In **support** of ABC control rule Alternative 2, 158 people commented via 82 comments (Table 5). These commenters were representatives of governments, commercial and other fishing organizations and local to national level environmental organizations, as well as individual commercial and recreational fishermen (e.g., tuna, groundfish), ecotourism business people, scientists, and other interested public. Rationale for Alternative 2 included:

- It would provide “for a more stable herring population in the long run, benefiting not just the ecosystem, but providing stability for the many commercial, recreational and tourism businesses that depend on a healthy herring resource.” It has the greatest chance to benefit everyone.
- Acknowledges the importance of herring in the ecosystem, allowing “them to fulfill their primary role as a forage species.”
- Given current uncertainties, it would best “account for the highly variable population dynamics of Atlantic herring.”
- It “is consistent with approaches successfully applied in other fisheries.”
- It ranks the highest across all MSE operating models and has a near-zero chance of causing the stock to be overfished for most operating models.”
- “...it maintains a higher biomass target in order to account for herring’s role in the ecosystem and temporarily cuts off all fishing when a low biomass threshold is reached.”
- “Reducing the amount of Atlantic herring caught at sea will also reduce the amount of river herring and shad (RH/S) caught as bycatch...think about the importance of these additional forage fish species.”
- It “will help protect birds and foster environmental education... a cornerstone of conservation and stewardship...”
- “Given this time of great uncertainty, I recommend conservative approaches to maintaining the herring fishery...”
- “...maintaining an adequate forage base to support feeding and production of economically valuable predator fishes is a priority for NOAA Fisheries, and it best satisfies the purpose and need of the amendment, as well as the goals and objectives of the Atlantic Herring Fishery Management Plan.”
- “...setting a strong control rule is important for the lobster industry who rely on them for bait. Having a steady supply, rather than no supply, is an important consideration. Simply put, we must ... avoid the damaging pitfalls of control rules that have massive fluctuations and provide inconsistent fishing to the industries that rely on this fish.”

ABC Control Rule – Alternative 3

In **support** of ABC control rule Alternative 3, one person commented (Table 5). A herring business person stated support for Alternative 1 or 3, but preference for No Action. For rationale, see that provided for Alternative 1 above.

ABC Control Rule – Alternative 4A, 4B, 4C, 4D

There were **no comments** in support of or in opposition to Alternatives 4A, 4B, 4C, and 4D (Table 5).

ABC Control Rule – Alternative 4E and 4F

In **support** of ABC control rule Alternatives 4E and 4F, 22 people commented via 9 comments (Table 5). These commenters were representatives of governments, commercial organizations and local to state level environmental organizations, as well as individual commercial fishermen (e.g., tuna, groundfish), and other interested public. These comments supported both 4E and 4F (and some also supported Alternative 2). Rationale included:

- It “should result in positive impacts on predator species...[and] have positive impacts predicted across several ecosystem components supporting short and long term herring biomass, predator fisheries, ecotourism and the herring fishery.”
- “the metrics work well allowing for a herring industry to fish in a sustainable manner. There will be enough forage in the ocean for predator fish, mammals, sea birds and the entire ecosystem dependent on Atlantic sea herring.”
- “In managing any species especially complex ones such as forage fish, it is important to choose a strong formula that will most accurately depict how many fish can be removed by the human population while providing sufficient forage base for predator species...this rule will provide additional stability and benefits predator species and the herring fishery in the long run.”

4.1.1.2 Control Rule Timeframe

Some of the people who commented on the ABC control rule timeframe alternatives suggested that Council should have the flexibility to make annual adjustments based on stock conditions. Section 4.3 (p. 19) contains an idea for an additional alternative related to the timeframe, to be able to choose between the approaches in No Action and Alternative 2.

4.1.1.2.1 No Action

In **support** of No Action for the ABC control rule timeframe, 14 people commented via 6 comments (Table 5). These commenters were representatives of commercial and other fishing organizations and local to national level environmental organizations, herring and lobster fishermen, as well as charter fishermen and private anglers. The rationale for supporting Alternative 1 included:

- It allows for more stability for making business decisions in both the herring and lobster fisheries.

4.1.1.2.2 Action Alternative

In **support** of ABC control rule timeframe Alternative 2, 50 people commented via 7 comments (Table 5). These commenters were representatives of other fishing organizations and local to national level environmental organizations, as well as individual commercial and recreational fishermen (e.g., tuna, groundfish), scientists, and other interested public. Rationale for Alternative 2 included:

- The “annual application of the CR is critical due to the uncertainty of the fishery stocks even across short-term periods. This uncertainty could be further exacerbated by the effects of climate change and potential range shifts of populations. A breadth of recent work has shown that most of our fisheries, including Atlantic herring, behave in a highly chaotic fashion. They are still somewhat predictable (i.e., one can still set meaningful quotas), but not beyond a year to at most 18 months.”
- “So that we can reverse the recent decline of Atlantic herring and carefully monitor its recovery...”

4.1.1.3 FMP Framework Provisions

There were no comments regarding the framework provisions (Table 5).

4.1.1.4 Potential Localized Depletion and User Conflicts

4.1.1.4.1 No Action

In *support* of No Action on localized depletion (Alternative 1), 13 people commented via 10 comments (Table 5). These commenters were herring fishermen and their representatives (e.g. industry organizations). Rationale for No Action included:

- “No detrimental biological impacts have been observed or even identified. Nor are any likely to occur, given that both Atlantic herring and its predators are highly mobile and there are many other prey species in the region.”
- “This term was defined by the Council, there is no biological issue...user conflicts got worse when Area 1B closure put it place January-April, it put us right in that area in May when other vessels are there...let the caps control river herring mortality...the other alternatives...will have large economic impacts and close many companies down. Without MWT vessels, we cannot supply the bait need for our lobster fisheries; we need both gear types to supply the market. If the purse seine vessels cannot get to the fish when they go deeper, there will not be enough fish for the bait market. As we keep losing areas to fish, the bait supply drops, and price increases. Every price increase has come when restrictions have been put in place on one segment of the fishery. Converting to seining is not an option for most of these vessels. There are all kinds of measures that have be taken that are making it very difficult, and once the infrastructure is gone it is gone.”
- “The lobster fishery is the elephant in the room. Our preferred bait is herring and we are the largest fishery in the region. We get our bait supply from MWT vessels, and since they have not been fishing much in Area 1A, and we do not have any seiners in Massachusetts, we get less bait if the MWT vessels from Massachusetts are pushed around. When they have to fish in other places we need to pay more to transport bait to Massachusetts, so our costs increase.”
- “I prefer the term user conflict [to localized depletion]; that is what this really is. All this is is fishing, we need much more data and science before I would be convinced that depletion is happening. The human nature of fishing is lost in the big picture analysis.”
- “The economic costs far outstrip any biological benefit which are only speculative in nature.”
- “I urge you to listen to the comments based on science, facts, the document, and not anecdotal comments that continue to plague this whole process about bycatch floating. We have observers. It's highly documented...just on and on and on about bashing trawlers...constant, constant rumor-villes and untruths, we're tired of hearing over and over and over again.”
- “...during the development of Herring Amendment 8, there was a committee meeting...I asked the Committee what science had been used to create the buffer zone alternatives and the answer was none. The Magnuson Act requires that any management be based on science...since none of the herring buffer zone alternatives were developed using any science, I can't support it.”
- “Should the Council choose to move forward with fishing prohibitions regardless of these facts, no measures contained in Alternatives 4-6 should apply to Area 2. The herring fishery in Area 2 is a seasonal fishery, which only occurs when the fish are migrating through the area in the winter months and often occurs close to shore when many other commercial and recreational species have migrated offshore. As localized depletion cannot occur on a transient stock, Area 2 should be removed from consideration.”
- “all but one of the so-called "localized depletion" measures further limit where midwater trawlers can fish. These lengthen trips and raise costs while making significant amounts of herring biomass off-limits to the fishery. Each will foster the unhidden objective of their proponents of eliminating the "industrial" herring midwater trawl fishery.”
- “The assessment results also make it imperative that Council not adopt any of the "buffer zones" that will merely add to the industry's woes. Obviously, the lower TAC will reduce the fisheries' footprint significantly. That should also reduce any perceived conflicts.”

4.1.1.4.2 Action Alternatives

While many comments supported a specific localized depletion action alternative or subset of alternatives, there were few comments that explained exactly why their preferred alternative was best. For example, a comment supporting the 25 nm buffer (Alternative 5) did not necessarily explain why a 12 nm buffer was insufficient and a 50 nm buffer would be excessive. While the rationale in the bullets below were provided for the respective alternative, themes are similar across alternatives.

Localized Depletion – Alternative 2

In *support* of localized depletion Alternative 2, one person commented (Table 5), a scientist, who also supported combining it with Alternative 7. Rationale for Alternative 2 included:

- There is a need for precaution considering “the shifting baseline of the marine environment” including global warming, eutrophication and other competing ocean uses (e.g., wind farms).

Localized Depletion – Alternative 3

In *support* of localized depletion Alternative 3, 70 people commented via 23 comments (Table 5). Some supported combining it with other Alternatives. These commenters were representatives of commercial and other fishing organizations and local to national level environmental organizations, as well as individual herring and lobster fishermen, other commercial and recreational fishermen (e.g., tuna, groundfish), and scientists. Some commenters wanted Alternative 3 in combination with one of Alternatives 4-7. Rationale for Alternative 3 included:

- It would sustain inshore herring and benefit the predator populations in the Gulf of Maine (i.e., cod, Bluefin tuna, whales, seabirds) and businesses that depend on them.
- “...a lot of spawned fish are landed in the fall when MWT vessels are allowed back in that area...with no forage there is no tuna...[Alt. 3] would help with recruitment issues...When herring are spawning they stay put, sometimes closer to the bottom and do not flee after fishing, this behavior allows the MWT vessels to target spawning fish.”
- “This plan could provide more bait for the lobster and mackerel fisheries that use alternative gear types within the MWT gear prohibited zones. Combining alternatives 3 & 5 will increase prey escapement for foraging nearshore species.”
- “the return of the midwater trawlers into Area 1A each Fall is holding back the full recovery of the resource...[because] their return coincides with prime spawning season along the coast. One of the most destructive aspects of midwater trawlers is their ability to tow on spawn fish. It is common knowledge in the fishing industry that the term “midwater trawling” is highly inaccurate and that this gear is fully capable of fishing along flat bottom.”
- “...midwater trawl gear was never even supposed to be used inshore when it was allowed into New England waters by the Council. The stated and implied intention was to use these boats offshore, far from the important inshore waters where most fishermen made their living. The promise was that they would fish offshore—a promise that was clearly not kept.”
- It “will benefit the inshore spawning stock of herring by limiting access to this resource to purse seine vessels, while preserving fishing opportunities for the midwater fleet in the offshore...”

Localized Depletion – Alternative 4

In *support* of localized depletion Alternative 4, 33 people commented via 15 comments (Table 5). These commenters were representatives of governments, commercial fishing organizations and local to state level environmental organizations, as well as individual recreational fishermen (e.g., tuna, groundfish) and other interested public. Some comments supported either Alternatives 4, 5 or 6 or Alternative 4 in combination with other alternatives. Comments supporting the area options only supported the options that apply to Areas 1B, 2 and 3.

Comments supporting the seasonal options only supported the options that apply year-round. Rationale for Alternative 4 included:

- “We support alternatives that would move midwater trawlers a minimum of 12 miles offshore, year-round (which is an important factor for prey species who rely on herring at different times of the year), and farther off the backside of Cape Cod (Alternatives 4-7).”
- “If the midwater trawl fleet was pushed beyond 50 miles or at a minimum of 12 nautical miles the benefit to our fleet would be tremendous and would go a long way to furthering the success of the industry our town depends on. We support alternatives that would mitigate the impacts of these vessels on the forage base year-round. We believe that a year-round buffer from the shore would accomplish this as would a combination of this alternative with 30 minute blocks.”
- “We have experienced success in the Gulf of Maine with a buffer zone, and for that reason we support the creation of a coastal buffer zone off the shore of Cape Cod.”
- It “is the only way to completely protect New England marine and coastal ecosystems, and prevent overfishing of ecologically significant Atlantic Herring, river herring and menhaden.”
- “The State of Maine has good abundance of these species and they have a coastal area closure. We should do the same.”

Localized Depletion – Alternative 5

In **support** of localized depletion Alternative 5, 70 people commented via 47 comments (Table 5). These commenters were representatives of governments, other fishing organizations and local to national level environmental organizations, as well as a herring fisherman, other commercial and recreational fishermen (e.g., tuna, groundfish) and other interested public. Some comments supported either Alternatives 4, 5 or 6 or Alternative 5 in combination with other alternatives. Most comments supporting the area options supported the options that apply to Areas 1B, 2 and 3. Comments supporting the seasonal options only supported the options that apply year-round. Rationale for Alternative 5 included:

- “The fact of the matter is with my personal anecdotal observations is that pair trawling is not compatible with groundfishing in our area. It just doesn't work.”
- “We want to make sure that the state of Rhode Island is included to protect our shoreline and Block Island as well.”
- “We do see a particular user conflict occurring in Area 2 up to and including 25 miles including Cox's Ledge. A lot of members of our group fish in both the summer and winter so it is important that the restriction is year-round.”
- “The decline of alewife and blueback herring in Connecticut Rivers is well documented despite millions of dollars spent on dam removals and restoration efforts. River herring stage outside of Long Island as the documents show, and the bycatch is responsible for a lot of the decline.”
- “Along with preventing localized depletion of herring inshore where most of the recreational, charter and commercial fishing occurs, moving the larger mid water trawl boats offshore would also prevent gear conflicts with fixed gear fisheries such as lobster, gillnet and hook gear and also might reduce by catch of untargeted species in these areas.”

Localized Depletion – Alternative 6

In **support** of localized depletion Alternative 6, 401 people commented via 313 comments (Table 5). These commenters were representatives of governments, commercial and other fishing organizations and local to national level environmental organizations, as well as individual herring and lobster fishermen, other commercial and recreational fishermen (e.g., tuna, groundfish), ecotourism business people, scientists, and other interested public. Some comments supported either Alternatives 4, 5 or 6 or Alternative 6 in combination with other alternatives. Most comments supporting the area options supported the options that apply to Areas 1B, 2 and 3. Comments supporting the seasonal options only supported the options that apply year-round.

A few commenters supported Alternative 6 but would like the boundary to be revised (see Section 4.3, p. 19). Rationale for Alternative 6 included:

- “the “midwater trawlers” should be banned entirely, as they are way too efficient and destructive to the biomass and the ecosystem, I support a 50-mile “buffer zone” that should be in place year-round and provides for a total ban of the mid-water trawl gear.”
- It “does not eliminate the ability to fish for herring, but does prohibit large mid-water trawl gear, which can remove millions of herring rapidly from a small area. This affects the ability of natural predators to find food, and restricts recreational and commercial fishermen, targeting other species such as cod and tuna needing herring as bait. Removing this food source for species like large whales can have a dramatic effect on eco-tour operations utilizing feeding grounds to allow for responsible viewing opportunities of these incredible creatures. Whales will have to travel to other, possibly farther areas, in search of a food source.”
- It “will provide the most benefit to the forage fish as well as the federally protected marine mammal species which depend on them.”
- “The capability and speed of today’s boats allow many fishermen daily access to these areas leading to a widespread user conflict that needs to be addressed in this Amendment...[Alt. 6] protects some of the most important herring spawning areas off the backside of Cape Cod, which the midwater trawl fleet has been targeting in the late summer and fall. The new herring assessment will emphasize the poor lack of recruitment. As such, increased protection of the Nantucket Shoals and Georges Bank spawning areas will be essential to rebuilding the herring resource.”
- “The ecological importance of coastal waters necessitates they be protected from industrial fishing methods and large-scale removals of herring schools.”
- “While the very idea of 145-foot small-mesh pair trawlers fishing hundreds of yards from land is hard to accept, more concerning is the fact that those are over-wintering aggregations made up in part of Area 1A fish being caught in the middle of winter, when essentially no U.S. lobstermen are even fishing.”
- “Regulating midwater trawlers to fish more than fifty miles offshore leaves the inshore waters for other smaller fishermen like purse seines, small-mesh bottom trawls, and fishing weirs”.
- “Having these boats as close as 2-3 miles from shore has always been a very questionable activity.”
- “I have fished on the Cape my entire life and I have seen the decline first hand. I can’t understand the logic in shutting down the Borndale herring run to rod and reel anglers while allowing these boats to operate right in our fishery. It makes no sense.”
- “These vessels can quickly remove millions of herring from the ocean in a small area, depriving predators like tuna, striped bass, whales, and seabirds of an important food source, which also disrupts commercial cod and tuna fishermen, recreational striped bass fishermen, and whale watch operators, as the species they pursue must search harder and farther for a meal.”
- It “would also have the important effect of protecting severely depleted populations of anadromous river herring.”
- “We’ll never gonna get there unless you be highly aggressive, do as much as possible which is a 50 mile buffer, Alternative 6. That is what you must do, because we’ve already hit the bottom, we’re rock bottom. People aren’t gonna be left in this industry they’re aren’t going to be children to go in it, there are going to be a bunch of permits and rusted old boats and a bunch of big midwater trawlers barely making any money.”

Localized Depletion – Alternative 7

In **support** of localized depletion Alternative 7, 25 people commented via 14 comments (Table 5). These commenters were representatives of governments, commercial and other fishing organizations and local to state level environmental organizations, as well as other commercial and recreational fishermen (e.g., tuna, groundfish), a scientist, and other interested public. Most comments supported Alternative 7 in combination with either Alternatives 2 - 6. Most commenters were from Cape Cod, and their rationale was like those for these other alternatives

(see above). A few commenters supported Alternative 7 but would like the boundary to be revised (see Section 4.3, p. 19).

Localized Depletion – Alternative 8

There were ***no comments in support*** of localized depletion Alternative 8 (Table 5) and only one commenter against, a herring industry representative. Rationale ***against*** Alternative 8 included:

- The current boundaries between Areas I B and 3 were changed from the original herring FMP “for biological reasons and there is no new science to suggest that decision was incorrect...[It] would create difficulties in setting new area TACs, so it is impractical and biologically unviable.

Localized Depletion – Alternative 9

In ***support*** of localized depletion Alternative 9, 10 people commented via 9 comments (Table 5). These commenters were herring fishermen and their representatives and a lobster industry organization. Rationale for Alternative 9 included:

- It is a potential “win-win” that can benefit all stakeholders.
- “Returning to a winter fishery there, and thereby increasing opportunities for the mackerel fishery, will reduce congestion on the water in the spring.....In retrospect, changing the access to that area to May...was a mistake. Not only did it reduce our access to mackerel, but it put us on the ground at the same time that everybody else is out in the water and that probably wasn't a very strategically sound decision. So we want to go in there in the winter time and we think that that in and of itself will reduce a lot of this concern about the too many people on the water at the same time.”
- “I believe the user conflicts got worse when Area IB closure put it place January-April, it put us right in that area in May when other vessels are there.”
- “This would hopefully relieve the user conflict issues that are occurring at this time causing issues between two important sectors that consider this resource important to their livelihoods.”
- “...at least we will be able to prosecute a mackerel fishery, some part of the mackerel fishery somewhere closer to home, during the winter months which right now we can't. And again, we're forced into other areas to fish for mackerel where maybe we could catch them cleaner or maybe we could have less interaction of bycatch elsewhere, but we can't, our hands are tied.”

4.2 AMENDMENT 8 DOCUMENTATION AND MANAGEMENT STRATEGY EVALUATION

Feedback about the Amendment 8 DEIS and Management Strategy Evaluation was provided through about 23 comments. The Atlantic Herring Plan Development Team is reviewing these comments to determine what revisions to the DEIS may be appropriate. Comments include:

General

- The addition of considering user conflicts is “arbitrary and capricious,” since the Council scoped for localized depletion.
- Localized depletion should not be characterized as “potential,” as it “is a fact.”
- The problem statement on localized depletion is not strong enough. Given the recent assessment, there is stock-wide depletion, so the stock in a lot more places is a lot smaller.

Alternatives – ABC Control Rules

- The status quo for setting herring quotas should be described better; “...it means that the Council and the SSC have the opportunity to look at the output from a benchmark assessment and look at what F_{MSY} is, consider all of the information and the uncertainty and make decisions.”
- “A lot of time and effort went into that process and it could have a lot of value if we could figure out how to use it. The first time around is difficult and we should learn from what went well and

what could have gone much better. So much work was done, and it took time to get the Committee to a place to even make recommendations. My concern is that when the analysis for the initial alternatives came back there was no iterative process to fine tune those results. When and if these move forward I hope there would be a more iterative process, especially around Alternatives 4a-4f because I think there is a solution there, we just have not found it yet. More time is needed for the Committee to go back and forth with the technical analysis to further refine those ideas.”

Alternatives – Localized Depletion

- “The idea that fish could be found in other areas during times of our current dependence is sorely lacking in any knowledge of the seasonal migration patterns of the fish. We question why any year round alternatives are considered in the document at all as herring do not reside year round in these areas. The logic of these alternatives is incomprehensible.”

Affected Environment

- Include relevant updates from the 2018 Atlantic herring assessment.
- “...there are various changes in the environment that would affect the pelagic essential fish habitat for herring, and there does not seem to be any statement about what the herring EFH is, or how it would be affected by other uses or shifting baselines in the marine environment...emphasize adaptive ecosystem fisheries management approaches that could analyze some of these changes and potential impacts to the natural mortality and EFH to allow you to address changes in both the ABC allocation and depletion and user conflicts. As you go along it could help so that if there are serious changes like what happen to GOM cod, which required an entire rethinking of a way forward.”
- The illex squid fishery should be included in the description of “other Managed Resources and Fisheries.” Many herring vessels also have squid permits, and there is good potential for effort shift onto squid if the herring fishery is constrained through this action.

Management Strategy Evaluation

- Commends the Council for using MSE, persevering “in this complex process” and having it peer reviewed to help validate the work. The staff “did an excellent job trying to keep participants from getting off topic.”
- “I was able to attend both workshops and clearly from the participants: anglers, charter boat captains, tuna, lobster, and herring fishermen, NGOs, and whale watching groups, you could see how important this herring resource is for so many diverse stakeholders. I am really encouraged that the NEFMC has recognized that and is now moving to an approach where we recognize that this resource is a shared resource, and there are many users impacted by it.”
- The models used are not “comprehensive enough to account for the massive and extremely complex ecosystem they are attempting to explain.”
- “The inclusion of assessment bias in the herring operating models is flawed, which distorts the summary results. The most common assessment bias found in stock assessments models in the Northeast is a retrospective pattern. The analysis assumes that no action is taken in response to the presence of that bias. In reality, the NEFSC has developed protocols to address needed adjustments to findings of a retrospective pattern to mitigate overestimating biomass and underestimating fishing mortality. Herring Operating Models A, B, E and F do not reflect these automatic responses to a biased assessment.”
- “...the inclusion of the status of the resource relative to unfished biomass is problematic. On the US West Coast comparing stock status to unfished biomass is not uncommon as commercial exploitation developed in more recent time. In the US Northeast, where commercial exploitation goes back in hundreds of years, we are not aware of any stock assessment that considers unfished biomass as a reference point in a stock assessment. This long history of exploitation makes any estimate of unfished biomass highly uncertain and therefore not informative. The Atlantic herring fishery is one of the oldest in the region and this metric should be excluded in the analysis.”
- “Unfortunately, the science involved is and was far too complex for a majority of participants. As a result, most of the suggested criteria for the model were based on emotions that had nothing to

do with best available science. MSE would be more productive if the participants were selected from relevant research organizations rather than the general public. There should be no reason to change a working system with one that was developed by the public with varying biases to the harvesting of the resource.”

- The MSE should have included more on the economic importance of herring as lobster bait.
- “The interannual variation, I'm not sure if I believed all the output on the interannual variation, and I had difficulty trying to figure out which is better. I mean one was like, well if you have a good result one year and you have a bad result the following year that seems to be a good thing...I was confused... The net revenue results, again I'm not sure what confidence I have in our ability to model that, you know revenue for the fishery over the short term or the long term. For example, you know one alternative did particularly well and had higher revenue for an alternative that actually cut the fishery by 20%, so it's a little difficult for me to figure out how that results in a better revenue output for the fishery.”
- “there are also predator models that are examined in the document. And yet for these metrics, looking at terns, dogfish and tuna it the alternatives don't seem to have any large impact and any direction for any of those. For dogfish it shows absolutely no impact at all, for terns there were just very small variation from alternative to alternative. And you know for tuna some perform better than others but even the lowest ranked alternative still performed well. So I'm not sure that we have the information the document that supports that goal that would lead you is a direction of choosing one alternative over the other.”
- “I do support the concept of MSE process, I do think we really need to maintain the flexibility to take evolving science into account.”
- The research and analysis resulting from the herring MSE process was used to justify support for control rule alternatives (both in support of No Action and Alternative 2).

Impact Analysis – ABC Control Rules

- The impacts analysis should be reevaluated given the pending, likely quota reductions for 2019-2021. The short-term impacts were done assuming a much higher quota for 2019 than is likely.
- “...the [control rule] section is overly complicated and almost impossible to understand. It is not clear to us what any of these options will ultimately lead to under the new assessment results, other than that some of them will lead to the complete shut down of the herring fishery-which is obviously unacceptable.”

Impact Analysis – Localized Depletion

- “The document does not adequately characterize the importance of the supply of herring for the State of Maine...In our community, 100% of all herring landings are used as bait. The document notes that herring prices are not generally sensitive to the quantity available and notes other sources of substitute bait...we supply all available bait products fresh and frozen. Our experience is that the price of herring is very sensitive to the low availability in recent years as the price has nearly doubled.”

Impact Analysis – Cumulative Impacts

- The cumulative impacts could be improved to consider the herring regulations in total. “...one of the reasons that the fishery fell so far short of meeting its overall ABC last year was simply the preponderance of rules. The 100% observer coverage in the groundfish closed areas...the move-along provisions, the shad and river herring caps, all these things add up.” The Council should do the analysis the law envisions...”

4.3 MODIFYING AMENDMENT 8 ALTERNATIVES

Ideas for modifying the Amendment 8 alternatives were provided in about 8 comments.

ABC Control Rule Timeframe

- Rather than predetermine whether annual TACs are set on a constant or varying catch level, allow the Council to use either approach “as has been the practice in recent specs packages.” This could provide “much needed flexibility for the public and the Council to make a decision that

is best for the fishery and the resource.”

Localized Depletion

- Protect the Great South Channel from localized depletion. For example, add area blocks in Alternative 7 to the east and south.
- Revise Alternative 6 (50 nm buffer) by setting “the southwestern boundary of the 50 nm buffer as the New England/mid-Atlantic jurisdictional line, and 2) set the northern boundary east of the New Hampshire/Maine border (eliminate the upper “sliver” adjacent to herring management area 1A by drawing a boundary line from 69.533326W, 42.946723N to 69.471637W, 42.896404N). These slight modifications will focus conservation to the area most important to herring, its predators, and the user communities that rely upon it.”
- Anticipating effort shifts, add scale restrictions for converting to purse seining.

4.4 ADDITIONAL ALTERNATIVES NOT IN AMENDMENT 8

Ideas for alternatives not currently in the Amendment 8 DEIS were provided in about 28 comments. These ideas could be considered by the Council in future actions.

Atlantic herring spawning protections

- In waters south of Provincetown MA, e.g., the spawning areas and Essential Fish Habitat on Nantucket Shoals.
- In all areas, including on Georges Bank.
- Halt the Atlantic herring fishery immediately when there are “signs of eggs”.
- There should be much more herring spawning data collection, and it should not be a process handled solely by the individual state agencies.

Atlantic herring gear restrictions

- Eliminate midwater trawls.
- Given the 2018 assessment, take emergency action to halt pair trawl fishing.
- Levy a fee for fishing with midwater trawl inshore “and use that money to help our local fisherman the same way the federal government uses federal money to help the farmers in the Midwest.”
- Eliminate purse seines.

Permits

- “Allow haddock permit holders to take possession of the haddock caught by the herring fleet at little or no cost, and have those landings of haddock count against their permits, and not the haddock bycatch cap.... There should at a minimum be provisions for haddock that is landed to be used in a way that is inoffensive to groundfishermen, such as a donating it to food banks, and not wasting it.”

Atlantic herring catch setting process

- Task the Scientific and Statistical Committee with providing guidance on choosing a control rule.
- Task the PDT with reviewing the status of Atlantic herring on an annual basis so that catch can be adjusted if the circumstances change.
- Revise the Council risk policy to explicitly address the risk of overfishing your forage base.

4.5 RESEARCH NEEDS

Ideas for research needs were provided in three comments from herring fishermen and their representatives. These ideas could be included by the Council in future research priority-setting processes. Ideas included:

- Improved understanding of the migratory patterns of Atlantic herring, e.g., through a tagging and tracking project using technological advances to better understand migration and stock definition.
- Increase Federal sampling of the fishery, as the current system relies too much on states.
- Investigate localized depletion issues.
- Improve/update herring consumption data for assessments.