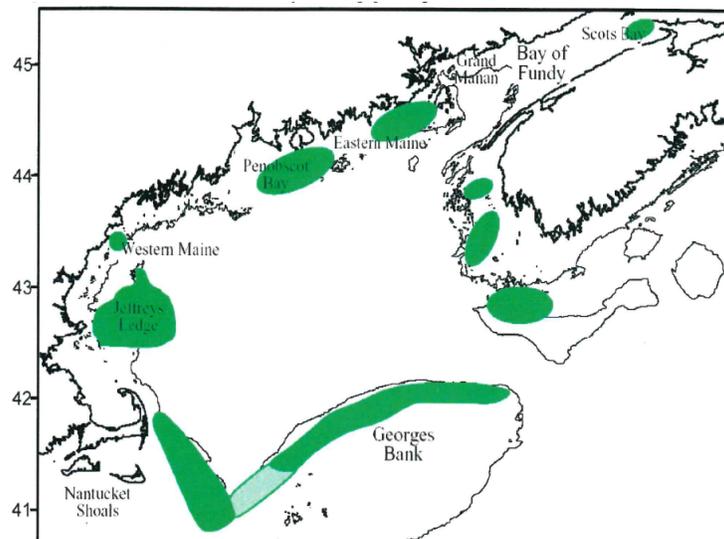


Atlantic Herring Fishery Management Plan

Framework Adjustment 7

Including an Environmental Assessment and
Initial Regulatory Flexibility Analysis



DRAFT
April 2021

Prepared by the
New England Fishery Management Council
In consultation with the
National Marine Fisheries Service and the
Mid-Atlantic Fishery Management Council



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Cover image

Generalized view of major herring spawning areas in the Gulf of Maine and Georges Bank (Overholtz et al. 2004)



**FRAMEWORK ADJUSTMENT 7 TO THE
ATLANTIC HERRING FISHERY MANAGEMENT PLAN**

Proposed Action: Propose measures to protect spawning of Atlantic herring on Georges Bank.

Type of Statement: Draft Environmental Assessment

Responsible Agencies: New England Fishery Management Council
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Abstract: The New England Fishery Management Council, in consultation with NOAA National Marine Fisheries Service, has prepared Framework Adjustment 7 to the Atlantic Herring Fishery Management Plan, which includes a draft environmental assessment that presents the range of alternatives to achieve the goals and objectives of the action. The proposed action focuses on measures to protect spawning of Atlantic herring on Georges Bank. The document describes the affected environment and valued ecosystem components and analyzes the impacts of the alternatives on both. It addresses the requirements of the National Environmental Policy Act, the Magnuson Stevens Fishery Conservation and Management Act, the Regulatory Flexibility Act, and other applicable laws.

1.0 EXECUTIVE SUMMARY

This document contains the New England Fishery Management Council (Council) recommendations for the protection of Atlantic herring spawning on Georges Bank, consistent with the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Atlantic Herring Fishery Management Plan (FMP), approved by the National Marine Fisheries Service (NMFS) on October 27, 1999. In addition, this document includes information and supporting analyses required under other applicable law, including the National Environmental Policy Act (NEPA) and Regulatory Flexibility Act (RFA).

Proposed Action

The Council's preferred alternative includes ...

Impacts of the Alternatives

The impacts of the alternatives considered by the Council on each VEC described in the Affected Environment are in Section 7.0 and summarized in Table 1. Overall,

Table 1. Summary of potential impacts of the alternatives under consideration in Framework 7 across the valued ecosystem components (Preferred alternatives shaded).

FW7 Alternatives		Herring Resource	Non-target species	Protected Resources	Physical Env. (EFH)	Human Communities

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2.2 FIGURES

Figure 1 – Potential options for GB spawning areas (Option 1 in red and Option 2 in green) (For reference - grey hatched area is the MWT gear prohibition area approved in Amendment 8). 11

2.3 ACRONYMS

ABC	Acceptable Biological Catch
ACL	Annual Catch Limit
ALWTRP	Atlantic Large Whale Take Reduction Plan
AM	Accountability Measure
AP	Advisory Panel
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission
B _{MSY}	Biomass that would allow for catches equal to Maximum Sustainable Yield when fished at the overfishing threshold (F _{MSY})
BiOp, BO	Biological Opinion, a result of a review of potential effects of a fishery on Protected Resource species
CEQ	Council on Environmental Quality
DFO	Department of Fisheries and Oceans (Canada)
DMF	Division of Marine Fisheries (Massachusetts)
DMR	Department of Marine Resources (Maine)
DPWG	Data Poor Working Group
EA	Environmental Assessment
EEZ	Exclusive economic zone
EFH	Essential fish habitat
ESA	Endangered Species Act
F	Fishing mortality rate
FEIS	Final Environmental Impact Statement
FMP	Fishery management plan
FW	Framework
FY	Fishing year
GARFO	Greater Atlantic Regional Fisheries Office
GB	Georges Bank
GIS	Geographic Information System
GOM	Gulf of Maine
HAPC	Habitat area of particular concern
HPTRP	Harbor Porpoise Take Reduction Plan
IFM	Industry-funded monitoring
LOA	Letter of authorization
MA	Mid-Atlantic
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MPA	Marine protected area
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSY	Maximum sustainable yield

NEMAP	Northeast Area Monitoring and Assessment Program
NEFMC	New England Fishery Management Council
NEFOP	Northeast Fisheries Observer Program
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NLSA	Nantucket Lightship closed area
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OBDBS	Observer database system
OY	Optimum yield
PDT	Plan Development Team
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
RPA	Reasonable and Prudent Alternatives
SA	Statistical Area
SARC	Stock Assessment Review Committee
SAW	Stock Assessment Workshop
SIA	Social Impact Assessment
SMB	Squid Mackerel Butterfish FMP (MAFMC)
SNE	Southern New England
SNE/MA	Southern New England-Mid-Atlantic
SSB	Spawning stock biomass
SSC	Scientific and Statistical Committee
TEWG	Technical Expert Working Group
TRAC	Trans-boundary Resources Assessment Committee
VEC	Valued Ecosystem Component
VMS	Vessel monitoring system
VTR	Vessel trip report

3.0 INTRODUCTION AND BACKGROUND

3.1 PURPOSE AND NEED

To be completed later as Council develops this action.

3.2 GOALS AND OBJECTIVES

The goal of this action is to protect spawning adults of Atlantic herring and/or Atlantic herring egg mats to increase overall herring biomass. The specific measurable action, or objective of this action is to consider similar measures to ones in place in Area 1A for other spawning components of this resource (i.e., Georges Bank and Nantucket Shoals).

The goal specifically includes the term “and/or” before herring egg mats to clarify that if there is not enough information to support measures for adult herring or herring egg mats, the action could focus on just one. The intent of the broad goal of this action is to allow for flexibility in which fisheries this action could apply to. For example, as the Council proceeds with this action it may develop alternatives that restrict other fisheries in the region, not just the herring fishery.

4.0 ALTERNATIVES UNDER CONSIDERATION

4.1 ACTION 1 – HERRING SPAWNING CLOSURE

4.1.1 Alternative 1 - No Action

Alternative 1 (No Action) would not be any new measures to protect spawning of Atlantic herring.

Draft Rationale: The measures that are currently in place would be considered adequate.

4.1.2 Alternative 2 - Implement a Herring Spawning Closure on Georges Bank

Alternative 2 would impose new measures to protect spawning of Atlantic Herring on Georges Bank. Within each of the following sub-section, the Council will identify the recommended measures for spawning protection.

Draft Rationale: Implementation of a spawning closure on Georges Bank is expected to improve overall herring biomass by reducing potentially negative impacts of fishing on spawning of this sub-component of the overall herring stock. These measures are intended to protect spawning fish from harvest, reduce disturbance/interaction of spawning activity, and protect herring egg EFH from impacts from benthic fishing. Finally, these measures are intended to be a compliment to spawning closures that have been implemented under the Atlantic States Marine Fisheries Commission to protect spawning of sub-components of Atlantic herring known to occur within more inshore areas within the Gulf of Maine.

4.1.2.1 Spawning Area

4.1.2.1.1 Area Option 1

Spawning Area Option 1 would close two separate areas to protect spawning of Atlantic herring, the two red polygons in Figure 1. One area is about 20 nautical miles southeast of Cape Cod and the other area is on the northeast peak of Georges Bank. The specific coordinates of these areas are in Table 2. In combination, the closure would be about 3,500 km². The season and vessels restricted from fishing in these spawning closures are considered in Sections 4.1.2.2 and 4.1.2.3, respectively.

Table 2 – Coordinates of spawning closure under consideration for Spawning Area Option 1

Draft Rationale: Option 1 includes areas where three or more data layers overlap from an analysis of six existing data sets of Atlantic herring spawning information. This analysis occurred during a Council review and analysis of Atlantic herring spawning on Georges Bank before this action was developed (NEFMC 2019). The datasets evaluated include: the food habits database, larval monitoring dataset, Atlantic herring egg EFH, historical spawning grounds, DMR portside monitoring (maturity stage U), and fall trawl survey (maturity stage U). Straight lines were drawn around the core areas of overlap.

4.1.2.1.2 Area Option 2

Spawning Area Option 2 would close two separate areas to protect spawning of Atlantic herring, the areas in green in Figure 1. One area encompasses most of the Great South Channel east of Cape Cod and the other area is on the northeast peak of Georges Bank that extends farther west than Option 1. The specific coordinates of these areas are in Table 3. In combination, the closure would be about 5,500 km². The season and vessels restricted from fishing in these spawning closures are considered in Sections 4.1.2.2 and 4.1.2.3, respectively.

Table 3 – Coordinates of spawning closure under consideration for Spawning Area Option 2

Draft Rationale: Option 2 also uses analyses from the GB Spawning Discussion Document, but is more focused on identifying the location of spawning adults from both the NEFSC bottom trawl fall survey as well as Maine DMR portside samples of spawning adults by decade (1981 – 2018)(NEFMC 2019). This Option also identifies areas in eastern and western GB; the eastern GB area is very similar to the eastern GB in Option 1 (both about 1,500 km²); however, the western GB areas are quite different. Option 2 focuses on locations of adult spawning herring and recognizes spatial variation by decade, compared to

the previous option which includes additional datasets including location of herring larvae, herring egg EFH, etc.

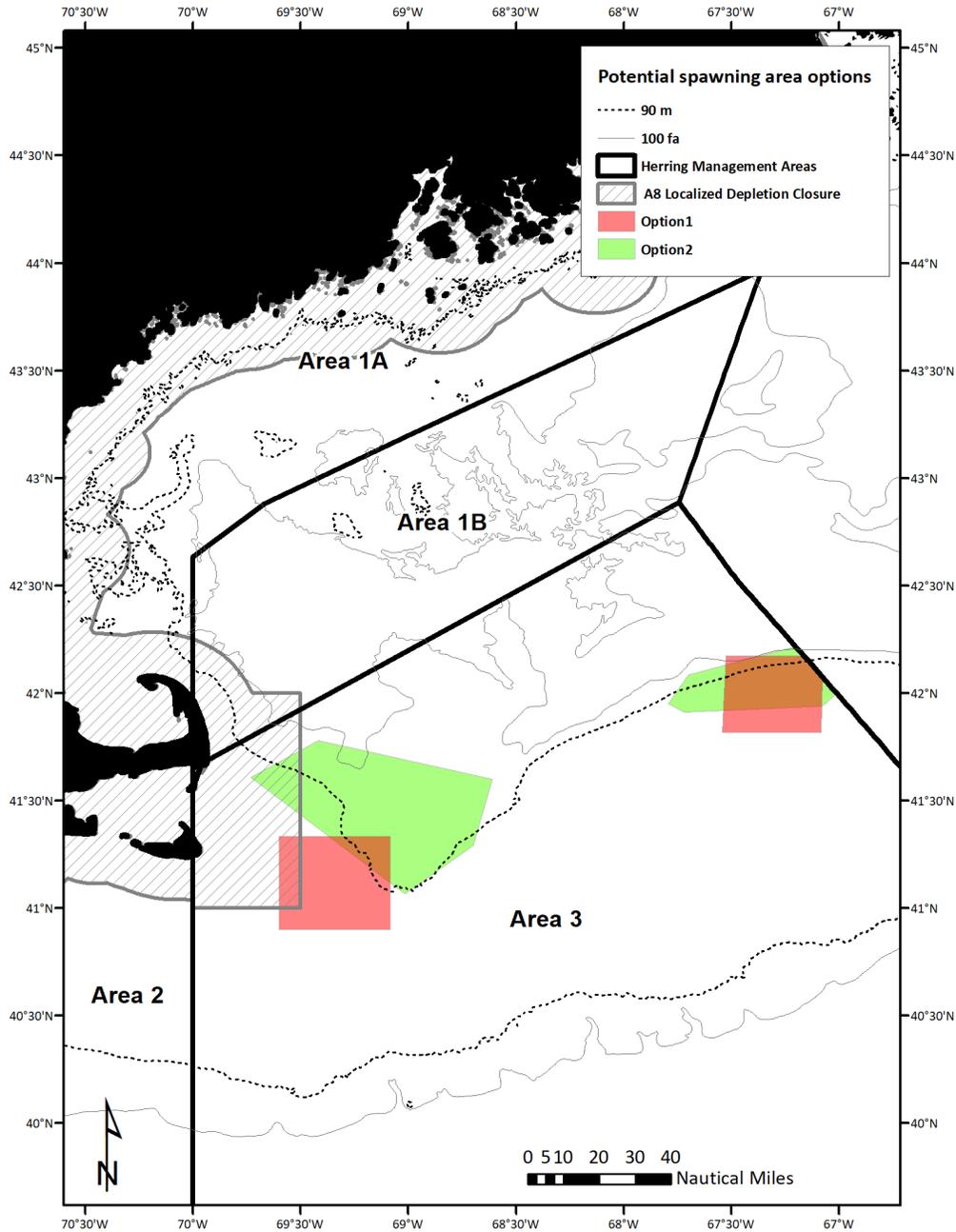


Figure 1 – Potential options for GB spawning areas (Option 1 in red and Option 2 in green) (For reference - grey hatched area is the MWT gear prohibition area approved in Amendment 8).

4.1.2.2 Spawning Closure Season

4.1.2.2.1 Closure Season Option 1 (six-week closure starting Sept 14)

Closure Season Option 1 would close the spawning area to all vessels selected in Section 4.1.2.1 for six weeks, September 14 through October 25 each year. Vessels could transit the area with all fishing gear stowed but could not fish within the boundary selected during these six weeks.

This season may be revised in a future action based on new data. In addition, if a more detailed real-time monitoring program is implemented similar to the one used by ASMFC for the spawning closures in the Gulf of Maine, it is possible this closure season could be modified based on real-time samples of spawning condition.

Draft Rationale: This alternative was included to be consistent with approaches used in the Gulf of Maine by ASMFC when spawning closures were recently updated in Addendum II (ASMFC 2019). Analyses of spawning herring samples from the Gulf of Maine (GOM) show that 25% of fish have begun to spawn when mean GSI equals 30, and for Atlantic herring that is when fish are about 23 cm. The length of time between when 25% of fish have begun to spawn and 25% have yet to spawn takes about 2.5 to 5 weeks. Based on these analyses, ASMFC implemented a default closure of six weeks to ensure low probability of fishery interaction with spawning.

Georges Bank (GB) does not receive the same level of consistent pre-spawning fishing activity as in the GOM, making in-season monitoring and adaptive closures infeasible. Therefore, this action only considers closure seasons with a fixed starting date and length, more of a default closure since real-time monitoring of spawning on Georges Bank is not currently available. While real-time data are not available, there are sufficient GSI samples from GB to inform the calculation of a closure date. The Herring PDT replicated the gonadal somatic index (GSI) timing analysis used in Addendum II using over 7,000 fish samples from over 270 herring trips on Georges Bank from 1998-2019 (See Appendix II for more details). Based on these analyses, September 14 is the predicted mean date that 25% of fish on Georges Bank will reach a GSI of 30, be in spawning condition.

4.1.2.2.2 Closure Season Option 2 (eight-week closure starting Sept 7)

Closure Season Option 2 would close the spawning area to all vessels selected in Section 4.1.2.1 for eight weeks, September 7 through November 1 each year. Vessels could transit the area with all fishing gear stowed but could not fish within the boundary selected during these eight weeks.

This season may be revised in a future action based on new data. In addition, if a more detailed real-time monitoring program is implemented similar to the one used by ASMFC for the spawning closures in the Gulf of Maine, it is possible this default closure could be modified based on real-time samples of spawning condition.

Draft Rationale: This eight-week alternative addresses interannual variability and the inability to conduct in-season adaptive closures (See Figure ??? in Appendix II). Option 1 is based on means, but there is variation from year to year and Option 2 would be more precautionary since in-season monitoring of GSI is not currently available for trips throughout the range of the fishery, as it is in the Gulf of Maine. Furthermore, herring egg mats are thought to remain on the ocean floor for about 15 days after spawning. The additional two weeks could increase protection of herring eggs from impacts of benthic fishing gears.

4.1.2.3 Vessels Restricted from Fishing in Herring Spawning Areas on Georges Bank

[See PDT memo with additional information. Preliminary data on potential fishery overlap will be presented at the meeting to help inform this discussion further.]

See Committee Motion #5 from 02/25/21 meeting:

Specify in the Framework 7 document that the affected vessels related to spawning restrictions are only those that are on a declared Atlantic herring trip.]

Initial PDT Discussion from Nov 2020: The PDT discussed that this issue has come up several times over the years when ASMFC developed and modified the GOM spawning closures. The PDT can spend more time researching ASMFC technical memos, but from memory, the PDT members that participate on both the NEFMC and ASMFC technical panels do not believe the rationale has been clearly documented about why the GOM measures were limited to herring fishing only, and did not include other gear types. Most likely, the reasons why other gears were not included were: 1) there was limited information on the direct effects of specific gear types on herring egg beds; and 2) closing large areas to multiple gear types is a relatively large political battle, and may have been more than folks wanted to take on when these measures were first being developed.

The PDT discussed that logically, all gears that interact with the bottom in areas where herring are known to spawn could jeopardize the spawning success of individual components of the overall herring stock. In theory, spawning closures that would restrict all bottom gear types (i.e. bottom trawls, dredges, pots, etc) would have a higher potential for greater reproductive success and benefits to overall herring biomass, but would also likely have higher costs the more gear types that are restricted to fish within spawning closures.

4.2 ACTION 2 - REQUIRED REVIEW PROGRAM

4.2.1 Alternative 1 - No Action

Alternative 1 (No Action) would not require the Council to complete a specific review of spawning closures adopted in this action.

Rationale: If spawning closures were implemented by this action, the Council would always have the flexibility to complete a review, but it would not be required to within a specific timeframe or purpose.

4.2.2 Alternative 2 - Implement a required review of the measures implemented in this action

[See PDT memo for draft language to consider and more information.]

By consensus, the Committee approved the draft alternatives developed by the PDT – See 4.2.2.1 and 4.2.2.2 below.]

Initial PDT Discussion from Nov 2020: The PDT discussed that it could look at different FMPs to get a sense of how other review programs have been set up. For example, the EFH Omnibus Amendment included a planned review of the effectiveness of spatial management measures adopted in that action.

The Council committed to routinely evaluate the boundaries, scope, characteristics, and timing of habitat and spawning protection areas. Because spatial measures are generally not adjusted routinely, including a required review can give some assurance that the Council will evaluate whether the measures are having an effect in the way the Council hoped. Similarly, the industry funded monitoring program under consideration in the groundfish plan (Amendment 23) included a required review of the coverage rate after two full years of data are available, and periodically after that to be sure enhanced levels of monitoring data are working as intended and the increased costs to industry are providing expected benefits from improved accuracy and reduced potential for bias in catch data.

The PDT discussed that the Council already has an item on the 5-year herring research priority list, “analysis of previous actions implemented in the Herring FMP to determine if they have been effective and are meeting intended goals.” The PDT commented that a more comprehensive review of the entire plan would be more informative; ad-hoc reviews of individual measures can be more subjective – why evaluate this measure and not another? The Council should provide strong rationale why a review of one aspect of the plan is more important than another.

4.2.2.1 Required review of spawning closures

This alternative would develop a regular, strategic process to review the effectiveness of any spatial spawning management measure that may be adopted in this action. A strategic process would be established that will routinely evaluate the boundaries, scope, characteristics, and timing of spawning protection areas. The PDT shall prepare a technical review that evaluates the performance of spawning protection areas. This review will be completed at either:

Option A: 10-year intervals following implementation of spawning protection areas; or

Option B: several years after herring biomass rebuilds above Bmsy.

The review and associated written report will be prepared using relevant available science and data to show whether or not the areas are meeting the objectives and advise the Council whether changes are warranted. Development of this technical review and report may be aided through review of new research and data, independent evaluation, a workshop convened by the Council, consultation with Council technical teams, and/or peer review by the Council’s Scientific and Statistical Committee or the Center for Independent Experts. The review process is intended to be flexible and somewhat general but would include establishing metrics and indicators of how effective the spawning protection areas are.

This review should consider but is not limited to the following questions:

- How well does the timing of spawning coincide with the spawning closures?
- Does fishing disrupt spawning activity (apart from the effect of removing spawners)?
- Have the closed areas improved stock-wide recruitment?
- What is the variability of spawning activity (location and timing) over time?
- Are spawning closures as configured able to protect spawning activity, given this variability?
- Have new sub-populations of spawners been identified that require specific protection?
- Has the fishery changed behavior as a result of these measures? Has that had any biological or economic impacts? Have there been any unintended consequences?
- Has the monitoring and enforcement of the spawning protection area been adequate?

Based on this review, the Council may choose to initiate a framework adjustment to change spatial spawning protections. In addition, the Council could identify and periodically revise research priorities to improve spawning area monitoring.

4.2.2.2 Required review of spawning tolerance

This alternative would develop a regular, strategic process to review the effectiveness of a spawning tolerance measure, if adopted in this action. The PDT shall prepare a technical review that evaluates the performance of the spawning tolerance measures. This review will be completed at either:

Option A: 10-year intervals following implementation of the spawning tolerance measures; or

Option B: several years after herring biomass rebuilds above Bmsy.

The review and associated written report will be prepared using relevant available science and data to show whether or not the measure is the objectives and advise the Council whether changes are warranted. Development of this technical review and report may be aided through review of new research and data, independent evaluation, a workshop convened by the Council, consultation with Council technical teams, and/or peer review by the Council's Scientific and Statistical Committee or the Center for Independent Experts. The review process is intended to be flexible and somewhat general but would include establishing metrics and indicators of how effective the spawning tolerance measure is.

This review should consider but is not limited to the following questions:

- Has the monitoring and enforcement of the spawning tolerance measure adequate?
- How has compliance been with the spawning tolerance measure?
- Are there noticeable differences in proportion of catch with spawning fish by gear, area and season?
- Does fishing disrupt spawning activity (apart from the effect of removing spawners)?
- Has stock-wide recruitment improved since adoption of this measure?
- Has the fishery changed behavior as a result of these measures? Has that had any biological or economic impacts? Have there been any unintended consequences?

Based on this review, the Council may choose to initiate a framework adjustment to change the spawning tolerance measure. In addition, the Council could identify and periodically revise research priorities to improve monitoring of Atlantic herring spawning.

4.3 ACTION 3 - POSSESSION OF SPAWNING HERRING

4.3.1 Alternative 1 - No Action

Alternative 1 (No Action) would have no limit on possessing or landing herring that are in spawning condition. Many vessels avoid spawning fish for a variety of reasons, but there are no restrictions on possessing or landing herring that are in spawning condition. This alternative would permit vessels to possess and land herring in spawning condition.

Rationale: Most vessels avoid landing spawning herring, they are generally lower quality and less desirable for the bait market. Therefore, the need to impose limits on landing spawning fish has not been necessary. Catch data show that less than 3% of all MWT catch on Georges Bank from 1971-2018 was in

spawning condition, adult herring with GSI values greater than stage 3 (NEFMC, 2019). Herring in stage 4 is considered maturing, and herring in stages 5 and 6 are considered mature, ripe, and running adults. Historically, spawning tolerances have been used in this fishery through the ASMFC management plan, with some undesirable impacts such as increased regulatory discards and enforcement and monitoring challenges.

4.3.2 Alternative 2 - Implement a Herring Spawning Tolerance Possession Limit

[See PDT Memo for more details.]

Motion #7 from the 02/25/21 meeting included an alternative in this action, but many details still need to be developed.]

Any vessel may fish for, take, land, or possess “spawn” herring, as identified below, from or within a restricted spawning area as long as such herring comprise less than 20% by of the amount of herring possessed onboard at any time. “Spawn” herring shall be identified as Atlantic herring in ICNAF gonadal stages V and VI.

Initial PDT Discussion from Nov. 2020: Since plan implementation in 1999 and until 2007 a 20% tolerance was put in place by ASMFC to prevent removal of spawning adult fish in the inshore. During that time herring vessels were prohibited from landing more than 20% of their total catch in spawning condition. States enforced the tolerance provision, but enforcement was problematic. Vessels were not required to meet a monitor for each trip, but if a monitor was present they were required to sample baskets at regular intervals for an entire haul out, and in some cases that could take over 12 hours. While enforcing a tolerance can be problematic, the PDT also discussed some potential benefits. First, the industry has more flexibility compared to a closure if they can successfully target non-spawning fish from areas within spawning closures. Second, once an area closes the system loses data from that space and time, no trips would be sampled from that area to provide a full picture of spawning activity on Georges Bank.

4.4 POTENTIAL SPAWNING AVOIDANCE PROGRAM

[Motion #4 from the 02/25/21 meeting included PDT tasking related to potential development of a portside sampling program that would monitor catch. If and when catch exceeds a certain threshold, and specified area would close to the herring fishery. This idea needs more development.]

Task the PDT to develop a strawman spawning avoidance program, using other current management programs such as the River Herring Catch Cap, River Herring Bycatch Avoidance and Yellowtail Bycatch Avoidance programs as models. This spawning avoidance program would require a monitoring system, a trigger level and a resulting area closure.

5.0 ALTERNATIVES CONSIDERED BUT REJECTED

6.0 AFFECTED ENVIRONMENT

7.0 ENVIRONMENTAL IMPACTS OF ALTERNATIVES

8.0 REFERENCES

- ASMFC. (2019). *Addendum 2 to Amendment 3 to the Atlantic Herring Interstate Fishery Management Plan*. Arlington, VA: Atlantic States Marine Fisheries Commission. 29 p.
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