



**Mid-Atlantic Fishery Management Council**

800 North State Street, Suite 201, Dover, DE 19901

Phone: 302-674-2331 | FAX: 302-674-5399 | [www.mafmc.org](http://www.mafmc.org)

Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman

Christopher M. Moore, Ph.D., Executive Director

## MEMORANDUM

**Date:** May 27, 2022  
**To:** Chris Moore, Executive Director  
**From:** Jason Didden, Staff  
**Subject:** Atlantic Mackerel Rebuilding

The following materials are included for Council consideration on this subject:

- 1) Mackerel, Squid, and Butterfish (MSB) Committee Summary
- 2) MSB and River Herring and Shad (RH/S) Joint AP Input
- 3) Hearings' Summaries
- 4) Written Comments
- 5) Public Hearing Document
- 6) Supplemental Links:
  - a. March 2023 SSC input on Mackerel Rebuilding: [https://www.mafmc.org/s/SSC-DRAFT-REPORT-3-28-22\\_final.pdf](https://www.mafmc.org/s/SSC-DRAFT-REPORT-3-28-22_final.pdf)
  - b. 2021 Atlantic Mackerel Management Track Assessment Summary: [https://www.mafmc.org/s/c\\_2021-Atlantic-Mackerel-MT-assessment-report-9jhh.pdf](https://www.mafmc.org/s/c_2021-Atlantic-Mackerel-MT-assessment-report-9jhh.pdf)
  - c. 2021 RH/S Update information: <https://www.mafmc.org/briefing/october-2021> (under “Atlantic Mackerel Rebuilding”)

Note that the included MSB Committee Summary details the decision points for this rebuilding action.

Staff supports the Committee rebuilding recommendations because they avoid combining too many optimistic choices that would decrease the chances of successful rebuilding.

The Scientific and Statistical Committee (SSC) recommended examining the uncertainty inherent in the projections that are used to determine that rebuilding should occur by 2032. In response, Science Center staff produced bar charts that display the distribution of biomass projections in 2032 for all 200,000 projection runs for Alternative 3 (P\*: 52% chance of rebuilding) and Alternative 4 (F=0.12: 61% chance of rebuilding). These charts are displayed and discussed on the following pages, and were selected because they illustrate the uncertainty and were the focus of MSB Committee discussion.

Figure 1. Projected 2032 Biomass distribution based on P\* at Fmsy, 150% CV (Alternative 3)

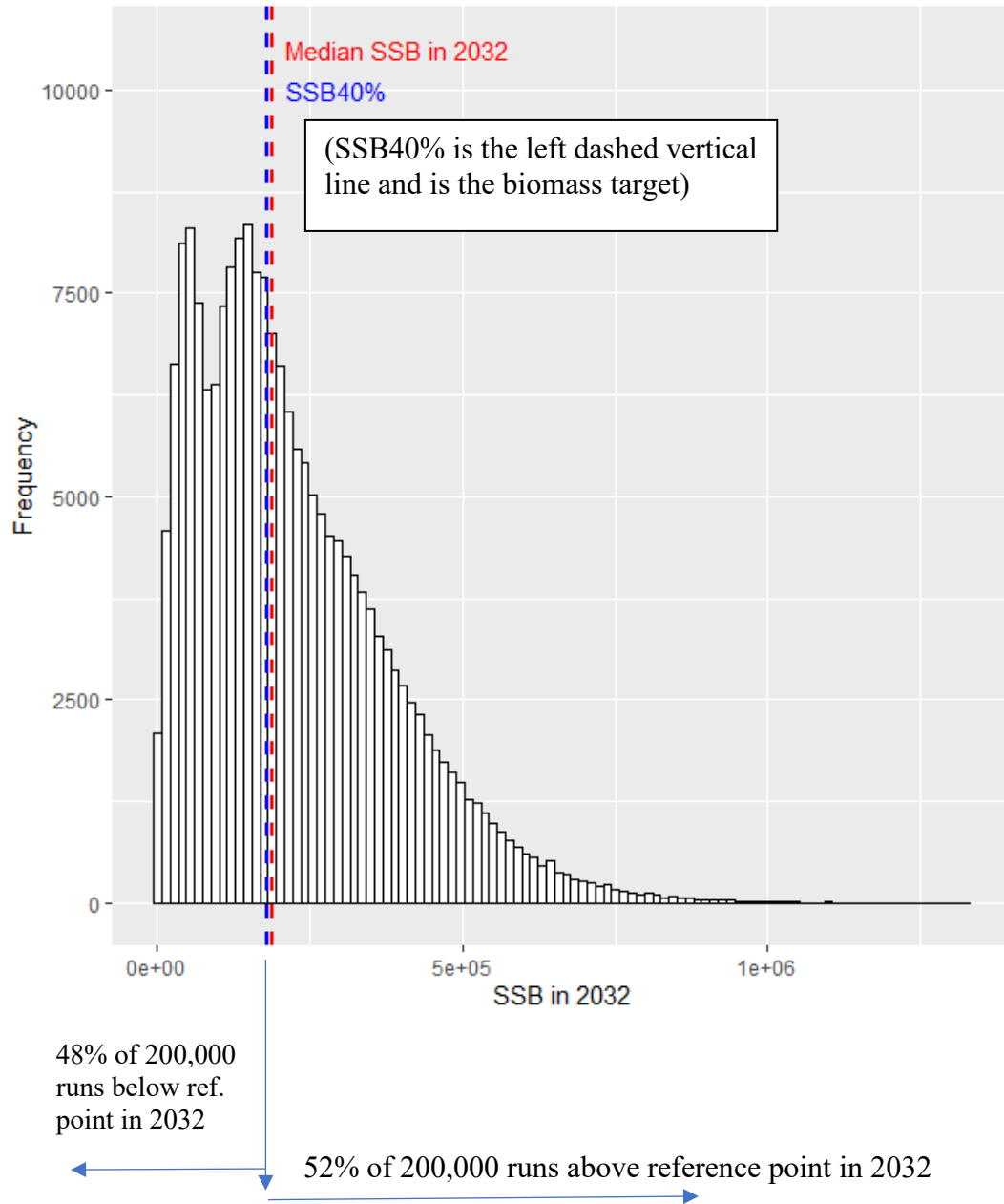
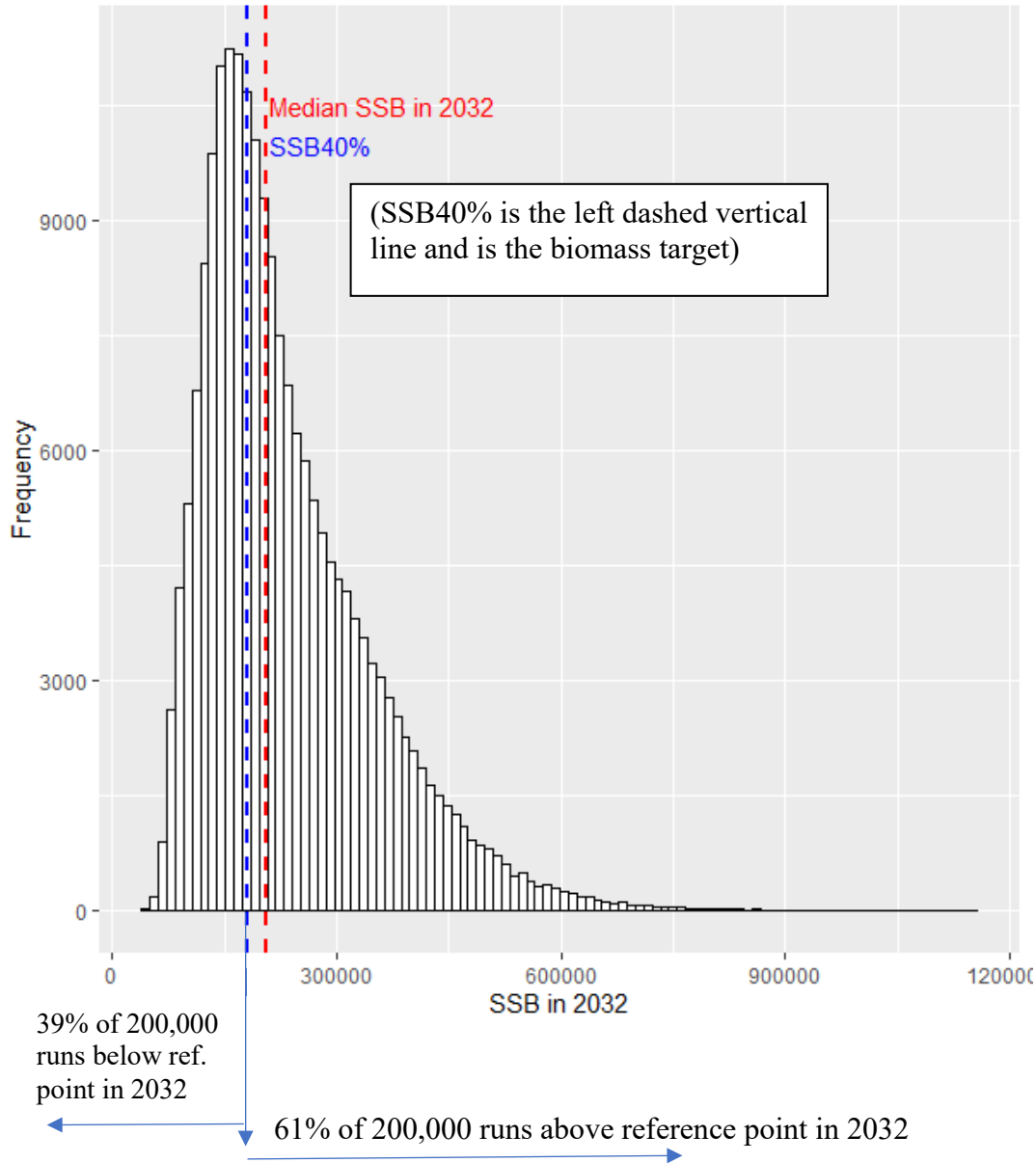
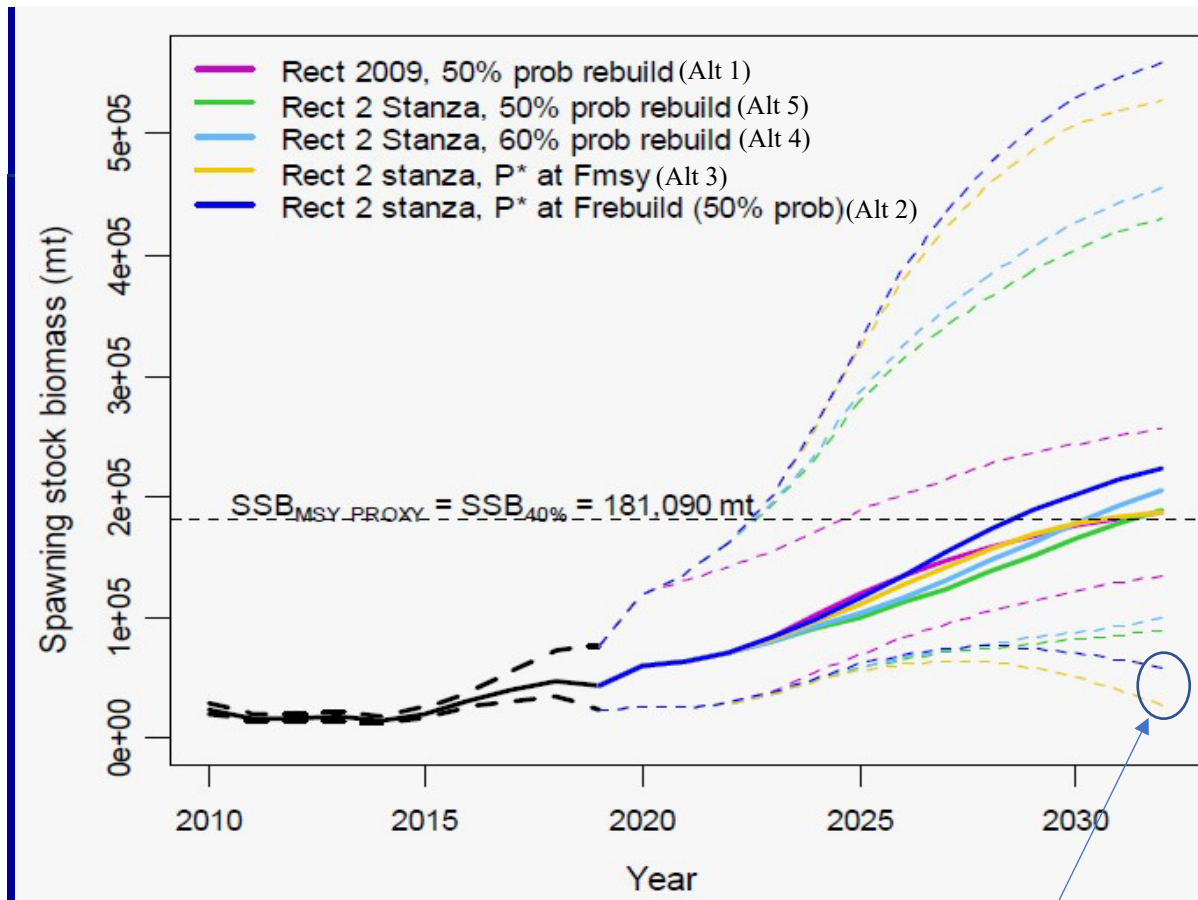


Figure 2. Projected 2032 Biomass distribution based on 61% rebuilding scenario (F=0.12) (Alternative 4)



Both Figures 1 and 2 indicate that like most fisheries projections that extend out so many years, there is substantial uncertainty at the end of the projection period. This leads to tens of thousands of runs (out of 200,000) ending at much higher or much lower biomasses than the median value, which is used as the “best science” point estimate. The true spread of uncertainty is likely even greater, because like every projection, not all uncertainties in the underlying data can be fully accounted for.

Figure 3. Median biomass trajectories for the five rebuilding approach alternatives with 90% confidence intervals. (best viewed in color)



The projection results of each alternative are what underlie the confidence intervals shown above. The dashed lines encompass 90% of all runs, so 10% of runs fall outside those bounds.

While it appears that the two P\*-based options have a surprisingly high risk of ending at a particularly low biomass, this is because the median biomass-based P\* mortality rates are used in all iterations, regardless of biomass for each particular iteration. This results in higher assigned catches and mortalities than would occur if P\* was calculated in the future for any one run with low biomass. As such, the low-end bounds of these runs are an artifact of the projection program, and the rebuilding probability of P\*-based options is likely higher than currently calculated.

While not a capability of the current projection program, run-by-run and year-by-year recalculated P\* iterations that individually consider biomass are worth exploring in the future to more realistically project the performance of P\*-based rebuilding approaches.



## **Mackerel, Squid, and Butterfish Committee (MSB) Meeting Summary and Decision Sequence**

**May 16, 2022**  
*Webinar*

The Mid-Atlantic Fishery Management Council’s (Council) MSB Committee met on May 16, 2022 at 9am. The purpose of this meeting was to develop recommendations regarding Atlantic mackerel (or just “mackerel” hereafter) rebuilding and associated specifications.

**MSB Committee Attendees: Peter Hughes (Chair), Sara Winslow, Joe Cimino, Michelle Duval, Dan Farnham, Sonny Gwin, Adam Nowalsky, Emily Gilbert, Melanie Griffin, Kris Kuhn, and Eric Reid.**

**Other Attendees: Jason Didden, Carly Bari, Cheri Patterson, Jeff Kaelin, Greg DiDomenico, Peter Fallon, John Almeida, Aly Pitts, Alan Bianchi, Purcie Bennett-Nickerson, Gerry O' Neill, Megan Ware, Meghan Lapp, Katie Almeida, James Boyle, Kelly Whitmore, Mark Binsted, Melissa Smith, Zachary Greenberg, and Will Poston.**

Jason Didden of Council staff reviewed the mackerel assessment, rebuilding approaches, and associated potential management measures. The meeting progressed through a decision sequence aligned to mackerel rebuilding as described in the public hearing document. Public comments from hearings and written comments were summarized and are provided in briefing materials. Staff notes that the National Environmental Policy Act (NEPA) document for this action may organize the alternatives slightly differently to facilitate NEPA compliance.

Decision Sequence (detailed below):

1. Canadian set aside
2. Rebuilding approach
3. Recreational measures
4. Recreational deduction
5. Discard set-aside
6. Closure approach
7. River herring and shad (RH/S) cap
8. Mackerel mesh requirements
9. Mackerel permit and regulation clarification

## 1. Canadian set-aside

Staff reviewed recent Canadian catch and the Canadian decision to close their 2022 commercial fishery, which includes a closure of their previously less-monitored and quasi-commercial “bait fishery.” Canada did not modify their recreational measures, which include a 20-fish possession limit in any one day and a 26.8 cm<sup>1</sup> (10.55 inches) minimum size. Per the Fishery Management Plan (FMP), Canadian catch is deducted from the stock-wide acceptable biological catch (ABC) in each year. The Committee passed the following motion:

**I move that the Committee recommend to the Council that 2,197 MT be set aside for Canada for 2023.**

Rationale: Uncertainty exists, but [2,197 MT] appears likely to approximate 2023 Canadian landings considering the 2022 closure in Canada.

Griffin/Reid, passed by unanimous consent.

Staff notes that if Canada closes their fishery in 2023 like 2022, some of that set-aside will likely stay “in the water” given the timing of the respective U.S. and Canadian fisheries and management processes.

## 2. Rebuilding Approach

Staff reviewed the rebuilding trajectories for the 5 rebuilding alternatives. All rebuild within ten years given their underlying assumptions, with recruitment assumptions being among the most critical. Staff noted that for even the relatively more optimistic assumptions of slowly increasing recruitment, their average of about 134 million recruits for 2020-2024 is less than the estimated realized average of 155 million recruits for 2014-2019 (the 2009-2013 average was 93 million recruits, and the 2009-2019 average was 127 million). Staff also noted the 2014-2019 average catch was about 18,000 metric tons (MT), while the average catch in the projections for 2020-2022 is about 14,000 MT. That includes a likely over-prediction for 2022 catch by about double (12,000 MT vs more likely 6,000 MT), which should provide a slight boost to biomass versus projections, all else being equal.

Staff, at the request of M. Duval and in consultation with the Executive Director, coordinated an additional rebuilding projection that was generally between Alternatives 3 and 4 in the public hearing document. Catches of 6,316 MT in 2023 and 2024, followed by P\* catches (8,142 MT in 2025 and then increasing), were still predicted to rebuild the stock by 2031 (like the original P\*/Alternative 3). The hybrid alternative had a similar overall probability of rebuilding by 2032 (i.e. in 10 years). The hybrid approach was the subject of a failed *motion to substitute* during consideration of the following motion, which did pass:

**I move the Committee recommend to the Council to select as preferred Alternative 4 – 61% Rebuilding Probability in 10 Years.**

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<sup>1</sup> 26.8 cm is the length at which 50% of Atlantic mackerel are considered mature in the Canadian assessment

Rationale: this approach balances the practicalities of landings and discards in U.S. fisheries with a high probability of rebuilding in recognition that Atlantic mackerel play an important role in the ocean food web. The SSC deemed it a suitable rebuilding approach.<sup>2</sup>

Griffin/Reid, motion passed 9/0/0

*Staff follow up regarding rebuilding: Alternative 4 would set an ABC of 8,094 just in 2023. Only one year of specifications is being set because a management track assessment (MTA) is expected in 2023 using data through 2022 (3 years of additional data beyond the last MTA). No data subject to this new rebuilding action (2023 and beyond) will be incorporated into the 2023 MTA, so the 2023 MTA will not provide information on the performance of mackerel rebuilding 2.0, but will indicate whether we appear to generally be on track leading up to implementation of mackerel rebuilding 2.0. Given implementation timetables and that each MTA also produces updated reference points (including the rebuilding target), staff notes an interesting cycle will re-occur where revisions to rebuilding plans are repeatedly required without ever really being able to observe the effects of that rebuilding plan.*

### 3. Recreational measures

Staff reviewed the recreational measures in the public hearing document and public input. Staff, at the request of P. Hughes and in consultation with the Executive Director, coordinated re-analysis of a 20-fish possession limit in addition to the 10-fish and 15-fish options in the public hearing document. (Since “no action” would mean an infinite possession limit, a 20-fish limit is still “in the range.”)

The Committee passed the following motion:

**I move that the Committee recommend the Council select as preferred a 20-fish per person Atlantic mackerel recreational possession limit for 2023 and could be adjusted in future specifications.**

Rationale: Reduces recreational mortality to further support ongoing rebuilding. While smaller limits may achieve greater reductions on paper, they cause severe economic impacts that would ripple through tuna and other fisheries as a result of a drastic possession limit change from the current unlimited; they are not practicable from a compliance and enforcement side and the costs likely outweigh the benefits. A 20 fish limit benefits from buy-in of the regulated community and is a meaningful first step for 2023. Additionally, this limit likely will improve the reliability of MRIP catch estimates and is consistent with the Canadian limit.

Griffin/Reid, passed by unanimous consent.

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<sup>2</sup> Staff notes the SSC recommended the P\* approach in March 2022, but in previous advice from July 2021 noted that rebuilding probabilities “greater than 0.5 are associated with shorter rebuilding time and greater catch stability.”

#### 4. Recreational deduction

Staff reviewed that like expected Canadian catch, expected recreational catch is deducted in the FMP as part of the process to calculate the commercial mackerel quota. The MSB Monitoring Committee previously suggested either to keep deducting the recent 5-year average regardless of any new recreational measures, or to assume that only half of the predicted “paper” reduction occurs given the uncertainty about recreational responses to possession limits. A 20-fish possession limit was associated with a 17% “paper” reduction. The 2017-2021 average recreational catch was 2,582 MT, and a 17% reduction from that would be 2,143 MT.

The Committee passed the following motion:

**I move that the Committee recommend to the Council that a 2023 recreational deduction be made using the calculated expected deduction from the 20-fish possession limit.**

The discussed rationale included potential arbitrariness in not accounting for the potential recreational measures, and that recreational responses could lead to lesser **or** greater reductions than projected. Discussion also questioned whether an overall management uncertainty buffer was included in the rebuilding options (no), whether one existed now (yes for commercial), or whether they could be included in the future (yes).

Griffin/Farnham

Motion passed by consent with one abstention.

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5/6. Discard set-aside and closure approach.

Staff reviewed that expected commercial discards are deducted per the FMP as part of the process to calculate the commercial mackerel quota. The public hearing document includes a 115 MT deduction based on recent average discard rates. Based on the other MSB Committee recommendations, the following specifications would be set for 2023:

ABC: 8,094 MT

-Minus 2,197 MT for Canada

US ABC: 5,897 MT

-Minus 2,143 MT for expected recreational catch (-17% from 5-year recent average)

-Minus 115 MT for expected commercial discards (3-year recent average rate)

U.S. Commercial Quota: 3,639 MT (also known as Domestic Annual Harvest or DAH):

In the public hearing document, the following approach to closing the fishery was included:

Averaging 2018-2021, the fishery landed 805 MT after April 1, and these were times when the directed limited access fishery was not active (range was 618 MT to 1,037 MT). As such, this time period should represent landings rates that could occur during a closure of the directed fishery. The proposed “first” closure approach is to buffer this performance by 10% and one month, so that before May 1 the directed fishery would close with 886 MT left in the quota, and from May 1 on, the directed fishery would close with half that, i.e. 443 MT left in the quota. NMFS would also have the discretion to not close the fishery in November and December if performance suggests that a quota overage is unlikely. While it is possible that an early closure in January could result in more than 886 MT in additional landings, and it is possible that a closure in late April could result in unused quota remaining, this proposed system likely strikes a reasonable balance between achieving OY and regulatory simplicity. At this threshold for the “first” closure, additional trip limits would be implemented: 40,000 pounds for Tier 1-3 directed permits and 5,000 pounds for incidental/open access permits. There would be a final closure with 100 MT left in the quota where all permits were subject to a 5,000 pound trip limit to minimize any potential overages. With these trip limits any possible overages should be minimal, and would be deducted from subsequent years if an overall ACL overage occurs. Based on the Committee recommendations, this approach would mean that before May 1 the directed fishery would close at 2,753 MT and after May 1 the directed fishery would close at 3,196 MT. At 3,539 MT of projected landings, all appropriately-permitted vessels would have a 5,000 pound trip limit.

The Committee passed the following motion:

**I move that the Committee recommend that the Council utilize the proposed replacement 2023 discard set-aside and closure approach.**

Duval/Gwin, passed by unanimous consent.

## 7. River herring and shad (RH/S) cap

Staff reviewed the current RH/S cap, recent cap performance, and related public comments. Staff, at the request of S. Winslow and in consultation with the Executive Director investigated whether a RH/S cap of 89 MT could be considered (89 MT was the median catch of RH/S by cap trips from 2005-2012). From a procedural perspective such a cap value could be considered since it would be within the range of caps discussed in the public hearing document. Staff noted that a RH/S cap of 82 MT in 2018 and 2019 led to closures of the mackerel fishery. Committee discussion revolved around two perspectives: 1) reduced incentive to avoid RH/S if the cap remains at 129 MT despite a substantially smaller mackerel quota than the quota originally associated with the 129 MT cap (a 17,371 MT mackerel DAH) versus 2) the challenges of monitoring a small cap given the limited observer coverage and how the cap begins the year using the previous year's RH/S interaction rate (new data is phased in for the first four observed trips). There was also discussion whether the discard estimation method should be revisited, and whether any progress had been made on moving toward a biologically-based cap. Staff *follow-up*: Staff notes the discard estimation method has been peer-reviewed. Staff had several informal discussions with Science Center monitoring committee staff in 2021 that indicated there might be some approaches to combining indices to inform a cap, but such an investigation would be beyond the scope of Monitoring Committee work. There is a river herring assessment commencing that may provide additional opportunity for exploring such concepts.

The Committee passed the following motion:

**I move that the Committee recommend that the Council maintain the current 129 MT river herring and shad cap for 2023.**

Farnham/Reid

Motion passed by unanimous consent.

## 8. Mesh requirements

Staff reviewed the 3" minimum mesh alternative, the limited information on potential effects, and public comment.

The Committee passed the following motion:

**I move that the Committee recommend the Council select as preferred, No Action on commercial minimum mesh size.**

Rationale: Not ripe for action given lack of information to inform costs and benefits of adopting. Limited to no public feedback on action speaks to possible lack of effective engagement on the proposal.

Motion passes by consent with 1 abstention.

## 9. Mackerel permit and regulation clarification

Staff reviewed the current regulatory issue, where it is not clear if possession of Atlantic mackerel in the EEZ triggers the need to have a permit and/or submit vessel trip reports. Staff summarized public input on the issue. The Committee discussed the need for greater clarity in communicating requirements, as well as potential clarifications that could be part of that communication.

The Committee passed the following motion:

**I move that the Committee recommend the Council request additional outreach and compliance assistance by NOAA Fisheries regarding the appropriate permitting and catch reporting for commercial and for-hire vessels possessing mackerel. (Would apply only to commercial and for-hire vessels and would not include previously-purchased fish with a bill of sale)**

Griffin/Gwin, passed by unanimous consent.



**Joint Mackerel, Squid, Butterfish (MSB) and River Herring and Shad (RH/S)**

**Advisory Panels (APs): Meeting Summary**

**May 13, 2022**

**AP Attendees:**

Katie Almeida - Brattleboro, MA  
Greg DiDomenico - Cape May, NJ  
Daniel Farnham, Jr. - Montauk, NY  
Zachary Greenberg - Washington, DC  
Emerson Hasbrouck - Riverhead, NY  
Jeff Kaelin - Cape May, NJ  
Peter Kaizer - Nantucket, MA  
Meghan Lapp - North Kingstown, RI  
Pam Lyons Gromen - Tampa, FL

Gerry O'Neill - Gloucester, MA  
Fred Akers - Newtonville, NJ  
Mark Binsted - Washington, DC  
Allison Colden - Annapolis, MD  
Mari-Beth DeLucia - Harrisburg, PA  
Roger Rulifson - Banner Elk, NC  
Jamie Winslow - Robersonville, NC

**Other Attendees:**

Jason Didden  
Chris Batsavage  
Carly Bari  
Melanie Griffin  
Melissa Smith  
Alan Bianchi  
James Boyle  
Will Poston  
Purcie Bennett-Nickerson  
Eric Reid

Peter Hughes  
Mike Waine  
Jaclyn Higgins  
D Mussina  
Brooke Handley  
Kelly Whitmore  
Mike Pierinock  
Emily Gilbert  
Will Poston

## **AP Input: Canada 2023 Catch Deduction**

Jeff Kaelin: The 2,197 MT deduction makes sense to save some catch for the U.S. given Canada closed their fishery. This matches the NE states' recommendation as well. Why can't we assume zero for Canada? We shouldn't manage our fishery based on what Canada is doing. We should focus on our rebuilding schedule. Having some catch occurring to provide data is also important.

Meghan Lapp: 2,197 MT is more appropriate given the 2021 Canadian fishery wasn't closed. Their assessment uses much of the same egg data and their egg survey dominates our data – results probably won't be too different across the assessments.

Pam Lyons Gromen: Of the two options the 2,197 MT seems more realistic and possibly still somewhat inflated. Seems unlikely Canada will change for 2023. Seems troubling that if Canada decides to leave more fish in the water, we can take them. It's a shared resource and we need to be good partners.

Zack Greenberg: I agree with Pam's comments.

Gerry O'Neil: Favor 2,197 MT for similar reasons as Jeff/Meghan above. In addition, what's the effect of us over-projecting 2022 catch? [Staff relayed expected to have a relatively small positive impact on 2023+ biomasses.]

Public:

Purcie Bennett-Nickerson: I support Pam's comment. Canada made the decision to stop fishing this year, there's no sign Canada is changing - if we are going to assume Canada is staying low, we should do the same – keep catch low. To follow the science, both countries need to stop fishing.

## **AP Input: Rebuilding Approaches**

Gerry O'Neil: I favor Alternative 5 – I'm looking to just survive – it's not much fish but it's something. At least we'll have some fish to cover bycatch levels of fishing.

Jeff Kaelin: We support Alternative 5 as a bridge to get through this. I'm worried these fish are just not surviving to recruit into the fishery – I'd like to see other research into effects on recruitment other than fishing. If we set the quota a bit higher and the fish aren't there, we won't catch them anyway. Food or water temperature issues seem likely to be driving issues.

Dan Farnham: I support Alternative 5 so we have some quota to work on to maintain infrastructure – otherwise we'll come out of rebuilding with no fleet. If the fish are not there we won't catch them but if they are, we'll be able to catch some – don't want to put people out of business.

Greg DiDomenico: I support Alternative 5 for similar reasons as others – it’s the only option given our long history in this fishery and our investment in this fishery.

Meghan Lapp: I support Alternative 5 and would like the Committee to know that with the SSC-recommended option, even if the lowest options for Canada and Recreational catch are assumed, we’re left with zero for commercial landings.

Allison Colden: I support Alternative 3, the SSC recommendation, for the same reasons the SSC provided. With the condition of the stock, we need to meet higher rebuilding probabilities and get on a better trajectory, especially given the uncertainty of the projections.

Pam Lyons Gromen: You have our comments. Reiterate Alternative 3 support: we don’t think Canada will have much quota in 2023, so Alternative 3 is practicable and consistent with Canada as a partner in a shared resource. We have a responsibility to rebuild with them. Ecologically, Alternative 3 leaves more fish in water for the ecosystem but also leads to higher catches and catch stability. Alternative 3 will be a more long-term successful strategy.

Zack: You have our comments. We support Alternative 1 – the most conservative approach that accounts for the best science and importance of the stock as forage while accounting for shared nature of the fishery.

Public:

Purcie Bennett-Nickerson: You have our comments supporting Alternative 1 – It has the highest probability of rebuilding the stock with less margin for error. MSA requires the Council to select catch within bounds of the SSC. Other options allow too much fishing as soon as any biomass occurs. [Council and NMFS Staff clarified that the SSC has endorsed all of the ABCs associated with the different rebuilding approaches.] Follow-up: The SSC’s recommended path constitutes a fishing level recommendation that should not be exceeded. Using P\* with low recruitment results in rebuilding longer than 10-year rebuilding. We need to allow this stock to rebuild to get to where this fishery was in the past – our current approach will never allow full rebuilding. Going the way we’ve been going will not get back to historical yield. You just need to stop fishing for now. There should be a conversation with the ASFMC as well to address state-waters catch.

## **AP Input: Possession Limits**

Pam Lyons Gromen: It's important to get feedback from the States on enforcement issues with differential trip limits. We should get feedback from the states if commercial permits could cover for-hire issues with getting bait. At the end of the day also need to reduce from the recreational sector – we advocated in our letter for the 10-fish limit. Consider how to address public comments without sacrificing conservation.

Jeff Kaelin: 15 fish should be sufficient for personal use. The commercial permit should be investigated to cover other catch and adds a reporting benefit.

Meghan Lapp: A lot of this discussion gets to wider questions – under most scenarios recreational catch may be substantial in the near term. Are for-hire vessels selling their catch – that should require commercial permits anyway (and a dealer permit). These questions need to be investigated to get a handle on what's occurring and address equitable contributions toward rebuilding under National Standard 4. Is this really recreational fishing or commercial fishing – we need to figure that out.

Dan Farnham Jr: If went down the road of using a commercial permit to address for-hire, need to address how catch would be handled? How might monitoring be complicated?

Gerry O'Neil – I'm recommending the lowest possible option for the sake of commercial survival - recommending 10 fish.

Public:

Mike Waine: How are you accounting for recreational catch? If a bag limit is used for recreational fishery the full reduction estimated under that limit should be used. There's obvious integer bias and it's unclear how well the fishery is captured in the surveying. Regardless of the limit chosen, the fishery should be given full credit for the reduction.

Mike Pierdinock: We need an accommodation on possession that considers how the for-hire fishery operates.

## **AP Input: Commercial Discard Assumption and Closure Provisions**

Jeff Kaelin: Discard deduction seem reasonable. Assumes 100% discard mortality.

*The AP was digesting the closure approach but there were no objections to the described approach voiced on the call based on initial impressions.*

## **AP Input: River Herring and Shad (RH/S) Cap**

Jeff Kaelin: We should stay at a 129 MT cap and it has not been reduced in the last year or two as the quota has been reduced. The Council seems to have adopted the NE approach of not down-scaling the cap. An 89 MT cap, based on the median catch, makes the future of the fishery bleak and may unnecessarily hamstring the fishery. The Council needs to see the RH/S update information when making this decision. The new river herring assessment could also utilize the cap amounts.

Pam Lyons Gromen: We strongly oppose staying at 129 MT and moving toward the NE Council's approach. We endorse staying with the ratio approach to discourage bycatch. Holding 129 MT with the very low quotas is the wrong direction. The RH/S Committee Chair's 89 MT idea seems more reasonable and was still tied to a 10,000 MT quota/catch previously. If the scaled cap is truly impracticable, 89 MT seems as high as we could support. We continue to support moving to a biologically-based cap – we need to consider restoration of individual runs. Until then, we need to focus on measures that incentivize avoidance. Our rebuilding preference is for no commercial quota, but if there is some quota the cap should not stay at a static quota.

Gerry O'Neill: Favor 129 MT and we've had shutdowns before - would rather that not happen again.

Meghan Lapp: I support 129 MT. The cap is not based on science but a math game to create avoidance and it should stay that way along the lines of New England because it's just a math exercise and not tied to the size of the RH/S stocks. It's important to note that the cap is small to begin with, and lowering any further compounds data/monitoring issues with using only last year's data before you get any trips from the current year.

Allison Colden: I echo Pam's comments. Concerned about staying at 129 MT with such a low quota. RH/S are depleted – states are doing many things but those efforts won't matter depending on bycatch. A static cap disincentivizes avoidance so doesn't make sense – it increases the allowed interaction rate. Should continue to scale the cap with the quota. 89 MT might be a reasonable ceiling, but definitely not 129 MT remaining regardless of the quota – that would be bad policy.

Mari-Beth DeLucia – I Echo Pam and Allison's comments. I work more on the inland side, we haven't seen big run improvements. We need a biologically-based cap, or 89MT at most if a smaller scaled cap is not possible.

Greg DiDomenico: We support a 129 MT cap. There's been more than enough discouragement of bycatch in this fishery. There's no where else to go and have met the end of what we can possibly be burdened by.

Zachary Greenberg: We support continuing to scale the cap and echo other comments of concern: RH/S remain depleted to historic lows. The caps are the only protection in federal waters and scaling maintains the incentive to avoid.

Fred Akers: I would support the 89MT if scaling is unfeasible and echo Pam's and Zack's comments. I'd like to see the economic value of those fish (RH/S) given they are bought and sold.



### **AP Input: 3” Mesh Requirement**

Jeff Kaelin: We’ve tried to use the mackerel brailers in the past but not even sure of what we used. We need more information about what’s been used to make a decision – it just hasn’t been looked at carefully enough – we need more investigation of what’s been used in the past and would need more discussion with the fleet to move forward given the level of uncertainty.

Gerry O’Neill: I’m torn – there’s interest in it, but also not clear about what’s been used. We did not have success with it – our experience is that as the bag started to fill up you lost your selectivity from a brailer. Would need more discussion with fishery participants. Not in favor without more vetting.

### **AP Input: Regulation Clarification**

Mike Pierdinock: The public needs clarification on permitting and reporting.

### **AP Input: RH/S Spatial Considerations**

Greg DiDomenico: It would be useful to overlay wind lease areas on these maps. Need to get RH/S update information to consider.

Jeff Kaelin: More boxes in the ocean won’t help. We need good reporting and provide that. We don’t get good information about where RH/S catch comes from with small mesh bottom trawl and that could be useful. The mackerel and herring fishing has been the bad guy and closing areas doesn’t make sense with the cap and existing reporting. Need to get RH/S update information to consider.

Pam Lyons Gromen: We support looking at other gears and having a joint cap for the herring and mackerel fisheries based on a biologically-based method. These areas seem persistent – could it be a way to focus conservation efforts? We’ve never achieved observer coverage levels we’d hoped – could the Council use these areas to focus observer coverage? With alosine genetics repository – could we use these areas to better understand where bycatch is coming from? It would be unfortunate to just not do anything with this information. We need to continue to prioritize data collection in general and for the cap. It’s also important to note that the bycatch avoidance program is no longer in operation along with its shoreside monitoring. Also, the 12-mile buffer zones, which covered at least portions of three of these areas, are no longer in operation. Let’s at least focus the limited resources we have.

Roger Rulifson: In 1980s I tagged river herring from commercial weirs in Minas Basin and Cobequid Bay, Bay of Fundy. I have very few tag returns but some. I also contacted states that

had tag returns – South Carolina had tag returns that went up to Canada – data are very sparse for tag returns, but seems useful to get that kind of data out in the public realms. Relative to the maps reviewed today, it might be useful to include those in a manuscript along with old tagging data to consider if ocean currents have shifted or what other factors may be important.

**General:**

Gerry O’Neill: how does fishery disaster work? Melissa Smith (was involved in Maine herring disaster declaration): process starts with a state’s Governor communicating with NOAA.



## **Mackerel Rebuilding 2.0 Hearings Summaries**

**April-May 2022 – 5 Hearings**

**Jason Didden of Council Staff attended all hearings. Peter Hughes, the Mackerel, Squid, and Butterfish (MSB) Committee Chair, also attended all of the in-person hearings.**

### **#1: April 25, 2022 – New Bedford, MA**

#### **Attendees:**

Katie Almeida  
Dan McKiernan  
Kelly Whitmore

#### **Summary:**

Staff provided an overview. No comments for the record were provided at this hearing.

**(other meetings continue next page)**

## #2: April 26, 2022 – Plymouth, MA

### Attendees:

Steve Wood  
Raymond Kane  
Melanie Griffin  
Matt Ayer  
Rich Antonino  
Mike Pierdinock  
John Bunar  
Richard Barbieri  
Greg Sears  
Bob Lavallea  
Kevin Simon

Tim Brady  
Mark Petitt  
Tracy Terrin  
John Parkinson  
Steve DiPillo  
Brian Curry  
Tom DePersia  
Eric Morrow  
Jeff DePersia  
Taylor Sears

### Summary:

Staff first provided an overview. Some staff clarifications are noted in the comment summary.

### Comments:

Brian Curry (Stellwagen Captain and member MV Fishermen's Preservation Trust):

The egg survey is missing the inshore areas where fishermen see a lot of mackerel, all the way to the beach. If you don't measure in the right place, you could really be missing what's going on. Mackerel are showing up in more and more areas. If you don't improve the survey you'll just keep missing fish, and you need to improve reporting (and communicate the need for reporting) so it's not assumed there's no fish just because you're not getting information from people. You didn't collect the data that you are presenting... We're catching these fish and seeing it and you're saying "Don't believe your eyes." We would like to talk to the people doing the science – they need to step towards us. With how short the eggs are eggs, seems easy that you would just miss spawning in your survey. Couldn't the Canadian's fishing during spawning be reducing the eggs? It would be great to see the distribution of egg survey stations, and when the survey starts and stops.

Ray Kaine: Are we really seeing an Eastward shift that governance bodies are not addressing?

Greg Sears (Mass Bay Guides): We support managing these stocks to make sure we have a fishery for the next generation. We oppose the scientific conclusions and the potential economic impacts, which is why you should stay away from the recreational and charter/for-hire industry. The MSA's mission statement includes increasing long term economic and social benefits. 10-15 fish might cover live bait, but it's very hard to know what's happening with the meat/chum components. Related to science, we haven't been reporting – we didn't know we were supposed to. We need to report. But the science is flawed because we haven't reported even close to what we've had for mackerel catches – we didn't know about the reporting. Regarding low catches,

you are not accounting that a lot of boats just no longer exist. You are going too fast – use the 2023 assessment and don't make harsh decisions now. We need to show the amount of recruitment occurring because we'll be locked into low numbers in the future. I don't know how you're going to enforce bait and chum rules. You're also going to hurt the commercial fishery because now a recreational guy won't be able to buy a flat of mackerel. Why are you attacking the highest social and economic impact businesses when it would cause the least impact to get the needed deductions from the commercial fishery? There will be wide array of repercussions by restricting the recreational/for-hire fishery to achieve overall reductions. Coming out of the pandemic and now this, there's already a lot fewer people here at this meeting than there would have been years ago. You're also going to take away an opportunity for folks to go out and learn about nature.

It seemed like from your presentation the thing driving all this is the catch data. [Staff clarified the different inputs used by the assessment]. I laugh when I hear the MRIP interviews – clients will tell them they caught halibut when they caught haddock – they just don't know the difference. So the data is BS. We can give the information. I didn't know before I had to report mackerel, now I am and trying to spread the word. The communities will tell you the best. Make sure people know they have to report and then make sure they do report. Stop the estimating, we know what we see and can report it.

Mike Pierdinock (President Stellwagen Charter Boat Association): I'm representing over 100 members, primarily for-hire captains also recreational anglers. With mackerel and other species, we've been seeing fish arrive sooner and leave later. With mackerel we used to have a spring run but now they stay here all season. Nearshore and offshore. The surveys cover the same areas at the same times, but with the changes in the timing and location of fish we've seen, you're not consistently capturing the biomass. We see tremendous amounts of with – small fish inshore and larger offshore. There's no lack of mackerel – to see cuts is inconsistent with our observations. And like other species, they seem to be moving NE. We worry that if the next assessment uses data from the same area and time of year, are you going to further restrict while we still see tremendous amounts of fish in our waters. We wish you'd reach out to us for data and look to us as allies and not the enemy. We fill out VTRs and could provide more information to help out with the stock assessments.

For a typical striped bass or tuna fisherman, 15-20 fish would accommodate most for live bait, but may have more fish in a pen they use throughout the week. Severe restrictions on mackerel would significantly impact these fisheries and associated indirect economic activity. The 100% discard mortality is not consistent with our observations – maybe 10%-15% if you handle them right. There needs to be accommodation for fish to be used as chum. Mackerel can also save the day fishing with kids and families if nothing else is biting. Zero possession would be devastating. 10-15 fish would not accommodate some not represented here that take bucket-fulls home to eat – they won't go out anymore. If you were accurately capturing the biomass the limit could be 50-60-100. We're looking at 15, wish it was 20. You have to be an attorney to understand all the various state/federal requirements – you need more public outreach. We promote eVTRs and safety requirements but you need to clarify what's required and do more outreach. It's not really clear what's required. Since none of us have confidence in MRIP, the harvest control rule

approach could be applied to this as a solution, or maybe a management strategy evaluation, and we need to ground truth the MRIP data.

John Bunar (Tackle Shop Owner): When you put up data like there's 20% of catch coming from shore, or don't have survey locations publicly available, you lose the confidence of people who see the fish all the time. You need to tell us exactly where this shore catch is occurring. So you won't get compliance until people have confidence that you've ground-truthed the data – hardly any fish are caught from shore as a proportion. If the biomass location trends continue, maybe you should wash your hands of it and send it to the New England Council. You're not going to obtain these reductions when people see what they see. Have you been fishing in New England in the past 10-15 years to see what's happened to the mackerel stock in New England waters? It's amazing. The mackerel have destroyed the sand eel population on Stellwagen Bank – if a sand eel sticks its head out of the gravel it's annihilated. There's no whale bubble feeding or juvenile tuna on Stellwagen – the mackerel have changed that ecosystem incredibly. There's a line from Cox's ledge over to Chatham, outside of that line without mackerel there's still the ecosystem without mackerel with bubble feeding and tuna. I've seen big humpbacks learn to feed on mackerel the last few years with aggressive charging of bubble feeding. I'd never seen that before. Mackerel have changed the ecosystem. Whale watching boats will tell you that whales had fed for 100s of years with bubble feeding but they are not seeing that because of mackerel. We haven't seen bubble feeding since the mackerel wiped out the sand eels. There's science that needs to occur to understand what's going on with mackerel and what they are doing. You have to explain the science – people have told me this is crazy. Give us something to tell these people. As a charter captain we want these fish – it's great fishing. We're willing to help but what we see is amazing. An August 1 closure would be a death sentence. What would have to take place to slide management to the New England Council? You are pulling stings from a long ways away and considering where the stock is now...

Brian Sears/Multiple: 15 years ago we had no mackerel, we had to go elsewhere for bait. Now we could catch your proposed limits in minutes.

Jeff DePersia (Charter Captain): Is there a possibility of getting changes made for the 2023 assessment? For example different areas and times for the surveys? [Staff described the kinds of changes potentially evaluated in different assessments.] There's a huge biomass out there and you are seeing them too – I was out today on Stellwagen there were mackerel all over the place and they are here all throughout the fall now. MRIP comes to our marina for collecting charter effort – they are not over at the town pier.

Mark Petit (Charter Captain): Looking at the 2021 egg survey track, there's no data collection around us south of Gloucester. Looking at the track you actually did a good job of avoiding the mackerel. May to early June when we pull mackerel out this orange stuff comes out – we can tell you when we're seeing that and could help your survey.

Keith Baker: In Cape Cod Bay there is a ton of spawning in May. I'm out every day, I go from Cape Cod Bay to Buzzards Bay to south of the Vineyard to east of Chatham and I've seen more mackerel in the last 3-5 years than I've seen in the last 50 years at a range of sizes. Looking at

your egg survey they don't do any testing where I am and I cover a lot of ground. We used to have mackerel a few weeks in the spring and another shot in the fall but now it's all season.

Tom DePersia (Charter Captain): Is surveying in the Mid-Atlantic dragging us down because we've never seen so many fish. Is this just a warming and distribution issue? We've seen the same issue with tuna and shifting stocks. Maybe there are just as many fish. We're not seeing fewer fish – we've never seen this many – to cut us down with what we have, something is wrong with this science. Maybe there should be different regulations north and south of Cape Cod, like with cod. We are overloaded with mackerel. We have zero confidence in MRIP. We need a better way of getting data and VTRs is the better way. Asking our customers what we caught and/or released, they don't know. The interviewer is just going to put big numbers down.

Missed name: Seems like you may just be missing the spawning – if your survey was better aligned with actual spawning everything could be different.

Tim Brady: The tool already exists for the for-hire fishery to tell you what we're catching every day – eVTRs. The disconnect continues to be that you're not using it for catch. The only trouble I have with mackerel is deciding what I'm going to target with it – if it's striped bass I want tinkers, if tuna then I have to look around for larger mackerel. Around Plymouth I've never seen as many mackerel and I've been fishing here for the last 58 years.

Eric Morrow (Charter Captain): You just said you agree that there's a lot of fish around here, and that fish have shifted NE. Why are we getting a cut because there are fish here but Mid-Atlantic catches have dropped off and are dragging us down? It seems like the surveys are missing the mark. With the narrow window between spawning and larvae you could easily be missing the spawning in your survey. All it takes is one little thing and exponentially it gets screwed up. Just like saying that 20% of recreational catch is off the beach. You've got four dudes on the end of the canal...that's not 20% of catch. And 100% mortality is impossible. For mackerel crushed in a trawl net sure, but there's no way we have 100% mortality.

### #3: April 27, 2022 – Portsmouth, NH

#### Attendees:

Peter Whelan  
Ritchie White  
Chris Valaskatgis

Paul Hogg  
Dan Diodati  
Cheri Patterson

#### Summary:

Staff first provided an overview and addressed clarification questions.

#### **Staff responses to clarification questions:**

MRIP Interviewers do not ask for-hire captains about catch – they ask the anglers, and they ask about all catch, harvested or released.

The assessment counts all released fish as dead though that's not likely the case, but it's a very small component of total mortality regardless, so would not affect the assessment results. This could be an area for future research.

If reporting changes, those changes should be accounted for retroactively to properly assess the stock (so catch is apples to apples across years).

#### **Comments (names missed for some comments that occurred mid-presentation):**

MRIP interviewers are not asking about bait like mackerel – they should be more specific about what they are asking and what fish. At the end of the day, a lot of anglers are not going to bother participating.

You should consider pushing management measures back one year and stress that it's important to get better recreational estimates for mackerel. Consider an app to let anglers provide data and mandatory reporting for for-hire fisheries.

Having 20% of recreational mackerel catch coming from shore does not seem right.

Accommodations for fish kept in a pen/freezer at a dock or on land need to be considered. Accommodations for charters to catch bait early in the day for all their customers need to be considered especially given fuel costs. Mackerel are key to successful striper fishing in this area, and we are trying to sell an experience that draws business into the area and benefits multiple businesses in the area.

Ritchie White (recreational angler NH):

I favor a 10-fish limit. This stock is not going to recover quick and is not showing any signs of doing that. If we have another two years of this same recruitment we'll be at a moratorium in my sense. You have to do what you can. If there is a spawning stock – recruit relationship, you're



going to have to build this up some before you get a big year class. You have to take some medicine now, take some hurt, and try to save what you can, because the next step may be severe, like other species. You need to be conservative.

Peter Whelan (Charter boat captain NH):

We all want the fishery to rebuild, but if you shut mackerel down we'll all be out of business. I favor a 15-fish limit, we'll know a lot more with the 2023 stock assessment. We have a lot of mackerel locally but I think that has to do a lot with global warming. I think we need to rebuild this resource and favor going to mandatory for-hire reporting ASAP to get a handle on effort and how many we're using but I'm in favor of a cutback the way the stock looks right now. It looks like every 10 years we get a bump in stock size.

Paul Hogg (Harbormaster, Bait and Tackle operator, charter operator, shellfish constable NH):  
Looking at the numbers I agree something has to happen but I agree with Chris that the possession limit needs to be higher to help with multiple charters.

Chris Valaskatgis (Charter captain NH):

We need better data collection – use the various organizations to stress the importance of data collection to anglers. I'm in favor of the 15-fish limit. The stock is low but trending up a bit and the 2023 assessment will be important. There seem to be plenty of bigger mackerel offshore on the bottom. I heard from some Rhode Island friends they found more than they've ever seen in deeper water. I have a good friend with an auto jigger for mackerel and they use the big mackerel trees so they physically don't get the little ones.

Dan Diodati (Commercial Striped Bass – MA & Recreational angler):

Clear something needs to be done but the data collection could be stronger. I would like to see a 25-fish possession limit for recreational anglers. I'm OK with getting a commercial mackerel permit for getting bait for striped bass and I'm open to reporting my mackerel.

#### **#4: April 28, 2022 – Brunswick, ME**

##### **Attendees:**

Megan Ware  
Costa Morehead  
Rick Wallace  
Daryl Webber  
Brett Gilliam

Daniel Harriman  
Robert Bernat  
Jay McGowan  
Doug Jowett  
Jay Farris

##### **Summary:**

Staff first provided an overview and addressed clarification questions.

##### Staff responses to clarification questions:

Staff described how MRIP estimates recreational catches.

Staff clarified that vessels without federal permits operating in state waters would only be subject to state rules. ME staff noted that the Council has not requested that states pursue any additional commercial measures, for example regarding inshore pound nets.

Staff described the general stock assessment process.

##### Comments:

Jay McGowan:

As a guide making my living from this, putting me in with general recreational is extremely unfair. The annual discards from commercial fishing is what all the guides the next 60 years would catch for bait. It's above what all the guides on the east coast would catch for bait. If you set it at 10-15 that's all I could catch for bait. With 10 fish and 6 clients I can only bait their lines 1.5 times for a 4-hour trip – I can't do that. I need fresh bait. With 7 people on my boat I should be able to have 70 fish. Storing fish in a pen won't work for me – I release or keep for lobster bait – I don't think they survive after swimming in my live well for 4-5 hours. You pick them up and there's no slime on them you know they are not going to live. I've tried keeping them overnight and they don't survive. People paying \$450 on a half day trip don't want to go have to catch mackerel. Surveying my anglers drives them away – the minute they see someone in a uniform asking about fish the first thing they say is what did we do wrong. The interviewers need to explain quickly why they are surveying and it's not an enforcement issue but just collecting data to protect the fishery. I'm worried that once it's taken away we won't get it back, or it will get worse.

Name missed:

One of this things people don't realize – it was every cove in the bay had a dory – they'd close it off when the herring came in – you don't see herring – they caught them all at night out there – they learned the science and the fish – they know the herring come up at night and they take it all. Those people are not fishermen – they are the scabs of big business – they don't get where they're at without taking everything. And they have the voices in Congress and the power and the lawyers hammering you all the time. You people are making an effort to learn – listen to us – we don't have the funds to hire lawyers at \$150 an hour to represent us at Congress or give money to get voted to give us a bigger share. Same with tuna – one big Italian family in NJ had all 5 licenses to purse seine. 35-40 years ago they came in the bay, caught 1,500 tuna in one set, that's all there was from Cape Elizabeth to Port Clyde – didn't catch another tuna that summer. That kind of operation can't be done. If they ever allow us to sell lobster licenses the big companies will buy them up because when people get poor they will sell whatever they have. When I was a kid every cove was full of herring.

Robert Bernat (Commercial Fisherman)

Menhaden is a disaster. Herring and Menhaden rules may turn people to mackerel. Could nip that in the bud. (Is a legislative process in Maine)

Doug Jowett (NY, RI, MA, ME guide)

The survey staff don't understand that we don't have for-hire permits in Maine and I'm not going to get in a legal discussion about the difference between for-hire and guiding. That's skewing the data. The guide fishery is not amounting to much mackerel. Regarding permitting, most folks don't know where the EEZ is, you are setting them up to break the law. We have too much government in our face – I'm just standing up for the little guy.

Brett Gilliam (Commercial Pound Net)

I started with gill netting mackerel but had to stop because they got so small. You don't know what's out there. The minute you see size declining you know you're overfishing (*The Unnatural History of the Sea* Callum Roberts). This science is flawed fatally – the cod, haddock, and pollock are gone, now the mackerel are gone. The only thing that survive is what's shut off like halibut. The East Coast must be the most mismanaged fishery in the entire world. Look at Alaska – the biologists are out on the water and look at the sizes. If we want to do management you need to get out on a boat with the people that are catching mackerel and herring brit (young) in harbors because that's what they feed on. All these agencies are looking at these fisheries and they are failing. Something needs to be changed – I only caught 57 bushels I can't even fish it again and they get smaller and smaller. I've got records from the 30s where they caught far bigger fish. Are we ever going to learn? The Gulf of Maine is about a fishless sea. You'll let a mid-water trawler go out and catch more in a night than I'll catch in a lifetime in my pound net. But they'll never get stopped because of money – money drives things and until that stops there will never be fish again. It could be too late now. Gulf of Maine was one of the most productive places for fish but there's been irreparable damage done. The Councils/biologists won't open up to the fact that they don't know what they are doing. This stock has been in trouble since the 1960s. All these years it's gone right to hell. My parents' families were fishermen, it's been my

life and I've watched it disappear. The only thing left is lobster and the environmentalists are going to drive us out of that. I'm done, thanks, you've really done a good job for me. And I hope you take that to the President – if I had my way I'd do away with the Mid-Atlantic Council, the ASMFC, NMFS, and probably Maine DMR. And we'd have just as much fish because they've done nothing to help us, nothing. I'd shut it right down, but let the recreationals have theirs within reason, 40-50 fish. They didn't cause this. It's been commercial fishermen and the biologists that have done nothing that's ruined the fisheries. Greed – insatiable greed. The stock should never be open until July 1 after spawning – leave them alone while spawning. All you have to do is look at the landings. We see haddock that are this thick because there's nothing for them to eat. And if you keep letting that squid fishery go on down at Cape Cod there will never be anything. Those squid fishermen are catching those little alewives. It's a dirty fishery, should never be allowed. They can figure out some other way to catch squid. That's what I believe. The Canadians are catching bigger fish – there are no big fish in our schools. If it was in my power there would be no commercial quota. If you could put the Guld of Maine back together it would feed a lot of people.

(see pictures below)

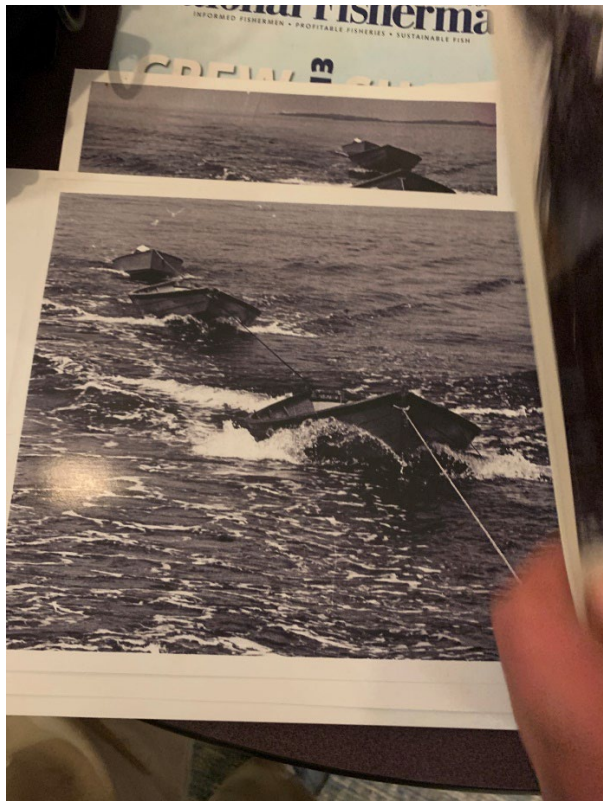
West Point Old and Rigging Co. His Post

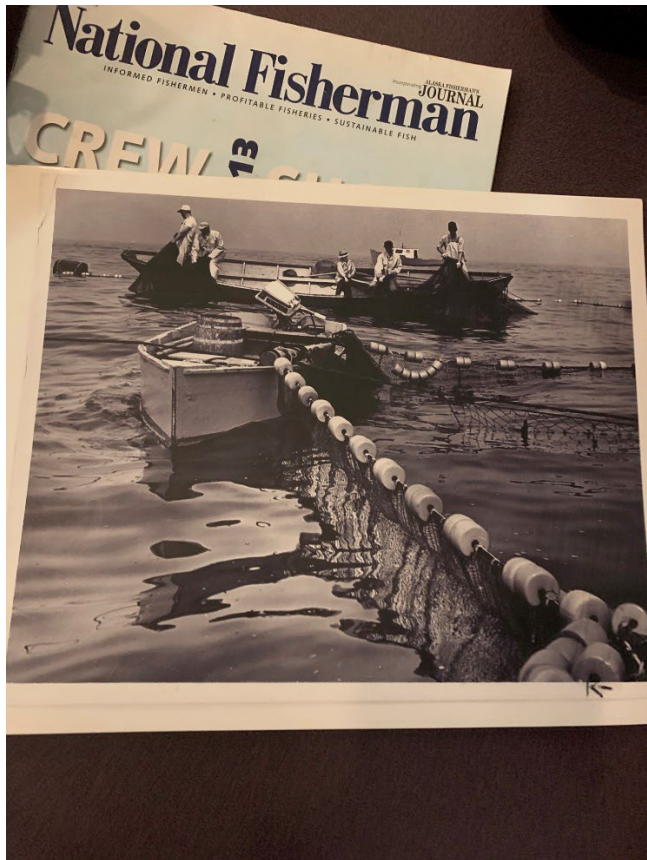
4  
 Journal of the fishing and landing  
 from Sept 1929  
 from 10 to 15 days  
 from 10 to 15 days

Date	Species	Unit	Wt	Price	Total
9	Bate	1 Bushel		1.00	
11	Salmon	X 1	21	2.0	42
11	Bate		28	1.0	28
11	Salmon	X 1	10 1/2	3.0	31.5
11	Salmon and mackerel	X 1			73
11	Mackerel		42	1.0	42
11	Bate		2	75	150
11	Mackerel		120	2	240
11	"		180	2	360
11	"		200	3	600
11	"		60	2	120
11	Salmon	X 1	1184	40	47360
11	"	X 3	20	25	500
11	Mackerel		900	3	2700
11	Mackerel		238	2	476
11	Small mackerel		1425	2	2850
11	Med "		205	3	615
11	"		250	2	500
11	"		700	2 1/2	1750
11	Small mackerel		3810	1	3810
11	Med "		50	3	150
11	Med "		280	3	840
11	Mackerel - small		190	2	380
11	"		610	1	610
11	Mackerel med		58	5	290
11	Bate fish		580	10	5800
11	"		14	10	140
11	Mackerel small		125	2	250
11	Salmon	X 1	18	25	450
11	Mackerel and Bate fish		212		424
11	Bate fish and Bate fish		580	2	1160
11	Mackerel small		285	3 1/2	997.5

Handwritten ledger titled "Yard Stock 1924" with page number "5".

22	Mackerel small		1	34	50	50
23	Mackerel		130	5	50	50
11	Salmon	X 2	210	25	6	18
12	Mackerel		160	8	8	50
13	"		40	7	8	70
14	"		80	5	5	40
15	Salmon	X 1	12	25	3	00
16	Mackerel small		150	5	2	50
17	Salmon	X 1	14	25	3	50
18	Mackerel		140	8	11	20
19	Bate	subshell	4	50	2	00
20	Mackerel		30	10	3	00
21	"		30	8	4	00
22	Mackerel		185	8	5	00
23	Bate		1	50	1	00
24	Mackerel		1	8	1	00
25	Salmon	X 1	90	25	2	38
Total Stock 19-24			2664	8	83	11
			8311			
			39959			





**West Point Old Timer  
Rigging Up His Pound**  
By Ernest Haskell Jr.

WEST POINT—Alvin C. Wallace, 73, will soon be getting ready to tend a mackerel pound for his 47th year. Forty-six years ago Alvin got 2¢ a pound for mackerel. The biggest mackerel he ever caught weighed 4½ pounds. Alvin caught the record fish off South Portland lightship. Alvin has made more money in recent years even though he has caught less fish. Forty-six years ago a mackerel pound cost \$180 and lasted two years. Today the same type of pound lasts but a season and costs \$800. Forty-six years ago Alvin fished in a 20 foot sailboat equipped with a pair of eight foot oars. He sold his fish either at Cundy's Harbor or Portland.

Mr. Wallace was born at West Point. He is the father of two veter-

Daniel Harriman (Commercial Pound Net):

Things have changed over my life and part was driven by greed. When I was a kid I could see the Russian and Portuguese boats, we pushed them out of the EEZ, we had this huge resource. My older brother had this little wooden dragger – they said look at this resource and they had applications for money to build boats – he wanted to build a 50 foot boat you could be home often, but they told him a 50-foot boat was not economically viable – you needed to build a 100-140 foot steel vessel. And 30 years later they said “Where the hell are the cod?!” “Look at what you’ve done!” My great-great grandfather came from Denmark in 1890, fished pound nets along the Cape. I truly believe everything would have been fine if no one had brought a mid-water boat from Europe and pounded hell out of the herring and mackerel. You talk about economics and saving the fleet – this is my fleet. My father went all the way to Chincoteague, VA in a 32-foot boat chasing mackerel. They fed 3 families off that boat and made a damn decent living. Build a 180-foot midwater boat that can carry 1,000,000 pounds. 5 guys make a half a million and then the corporation makes millions. They sell the fish for 15-20 cents – I average 50 cents to a dollar. 5 families make a living. This is the fleet you ought to worry about preserving. I’m an opportunist myself, but there’s good opportunities for the fleet and the working guys and the islands and the coves and the harbors. If lobster goes to hell we’re screwed, we’re done, we’re going to lose the coast of Maine. Grandpa is going to sell his pier. It’s already happening. We chose a hard life, I don’t mind it as long as we’ve got an equal shot. But when I see a boat come in with a million pounds and they pump fast so you don’t see the haddock going down the chute. I’m allowed 5 river herring per count. It’s been stacked against us. This is our resource. And how does mackerel fall under the Mid-Atlantic and why am I being regulated by... Didn’t we kick the British out... isn’t that regulation without representation? My family’s been doing this for 120 years. Is an international fishery accounted for? (Staff noted it’s not believed there’s foreign fishing on our mackerel stock.) Everybody in the inshore fishery, 100s of families, doesn’t match catch of one large boat.

Daryl Webber:

I grew up on Quahog Bay – late 1980s-90s I fished with Matt Waddle – steel-wood traps – “outside” was inside three miles. There weren’t many people fishing then... We had a old steel tanker from Mississippi the Valencia and out target was 180 MT per day so I have an idea about big amounts of fish. I made a living off the water, clams, shrimp, groundfish. Mackerel is really close to me. I’d fish mackerel as a kid with my father. I pretty much know every year when the mackerel break up and come up in the bay because the moon jellyfish get their white eyes eaten out by the mackerel. Middle May to early June they come in– the one year (I’m 51) they didn’t come up, I fish mackerel with my kids and grandkids it’s my favorite, it was the only year the jellyfish grew to their full size – huge in the tidelines. Every other year the mackerel have come in. I’m mostly fishing recreational now – I’m thinking there’s no doubt it’s overfished, I’ve seen a difference. I’m thinking the 3-mile line and in, I’m tuna fishing and haven’t had bait for hours, then mackerel come through scattered. The inshore fishery, recreational, guides, pound nets... I hate to lose this fishery. I’m just trying to buy some time before I die so I can take my grandkids out fishing... I think everybody should be able to enjoy the ocean. 10-15 fish... It starts with a number, I worry it will be shut off in the future. We have almost nothing else in this area, but there’s mackerel out there. I still catch big mackerel outside down deep, but they are depleted overall. There doesn’t need to be a limit around here recreationally given the fishing levels and

looking down seeing the schools. The guides catching mackerel for bait, there's an inshore stock for that. Sometimes you have to move around to different spots. I'm as angry about the trawlers as the other guys. We just don't need to do anything for mackerel recreational and we don't have much else.

Rick Wallace:

How do you stop the processor boats? You should cut them down some. Are the squid boats discarding tons of mackerel? Years ago when I was on them they had 30,000-pounds bags of mackerel, maybe they had room for them maybe not – is that practice still going on?

Name Missed:

People paying \$450 on a half day trip don't want to go have to catch mackerel. They want to catch stripers and they expect you to have the bait.

Costa Morehead (Charter Captain ME):

Customers expect us to have bait and having a 10-15 fish limit would absolutely kill running an efficient trip for any guides in the state, and other businesses would suffer. Mackerel is the most important part of sportfishing in the State of Maine. Without mackerel we won't have bait, same for lobster tours. That limit would not be good for the state in general regarding tourism. 25 per person could work because I need to secure baits. The floating traps don't work.

Possibly Costa Morehead:

Recreational fishing is not having an impact.

Jay Farris (Charter Captain ME):

We have to buy a license. Maybe if you have that then you get to have up to 60 onboard or however many per potential passengers. That would take care of most guides/trips. We ate a lot of mackerel growing up, 15 fish per person would be enough for dinner. The guides in Maine don't scratch the surface of the numbers you're talking about.

Name Missed:

As big as Maine is, it's a criminal act not to have at least 2-3 more meetings along the coast of Maine. It shows you what the federal government thinks about the State of Maine. They are just shoving it down our throat without public input.



## #5: May 2, 2022 – Webinar

### Attendees:

Ryan Cook	Pam Lyons Gromen
Steve V	Russ
Michelle Duval	Clarisse Brown
Katie Almeida	Betsy Fitzgerald
Zack Greenberg	Al Williams
Earl Small	Purcie Bennett-Nickerson
Willy Goldsmith	Barry Gibson
Wes Townsend	John Paul Bilodeau
Albert Didden	Melissa Smith
Jeff Kaelin	Peter Fallon
Dan Farnham	Brown
Julia Beaty	Nichola Meserve
Katie Schleit	Trevor
Will Poston	Jack Patrican

### Summary:

Staff first provided an overview and addressed clarification questions.

#### Staff responses to clarification questions:

Given performance of our first rebuilding attempt projections, it is very hard to quantify significant differences in rebuilding probabilities among the alternatives other than less catch should lead to more rebuilding.

Alternative 4 and Alternative 5 have built-in one-time risk policy adjustments, similar to the first rebuilding action.

This action will set a rebuilding approach that should rebuild in 10 years, but only sets specifications for 2023, and the information from the 2023 management track assessment (MTA) will have to be integrated as it should constitute new best available science. Depending on how far off of projections the 2023 assessment indicates the stock is, the Council's response will likewise be affected.

The higher recruitments used in Alternatives 2-5 are dependent on stock size and given the thousands of runs that go into making projections, the effect is a slow increase in recruitment as stock size increases, and Alternatives 2-5's projections never fully return to full 1975-2019 median recruitment even when fully rebuilt given the spread of projected biomasses.

Purchased bait in exceedance of the possession limit could be on board a vessel but would require a bill of sale to document purchase. Unusual cases may depend on an officer's discretion and the exact circumstances.

States control the rules in state waters, but **if** a vessel has a relevant MSB permit, then the rules related to that permit follow them back into state waters.

### **Comments:**

Purcie Bennett-Nickerson:

Alternatives 1-3 should not be deemed impracticable. Alternative 1 is best because it has the highest probability of rebuilding and we have a history of being over-optimistic. We need to shut the EEZ down in the short term and let it rebuild. Otherwise we are not acknowledging we're in a low recruitment period and creating a mathematical fiction.

Pam Lyons Gromen (Wild Oceans):

Wild Oceans supports Alternative 3 that was endorsed by the SSC that would close directed fishing in the EEZ at least for 2023, which is a necessary step. With a lower quota from the start, leaves more fish in the water as a key forage and for the past 30 years we've been overfishing. Leaving more fish in the water for a forage fish to rebuild is the right course of action. We need to remember there's not a forage control rule to incorporate predator needs when making projections – it's all very static how natural mortality is accounted for but it's a dynamic need. Alternative 3 also follows the Council's risk policy, which had high levels of public input and we were thinking about overfished stocks and setting risk lowest when the stock had the worst need. Alternative 3 is the only one that follows the Council's P\* control rule.

Regarding the river herring and shad (RH/S) cap, strongly opposed to keeping the current 129 MT even just for one year – that cap was scaled for a quota over 17,000 MT. Even if the Council chooses alternatives 4 or 5, quotas will be 1,000-4,000 MT and a 129 MT RH/S cap will allow a much higher ratio – the incentive to avoid RH/S will be eliminated. The original purpose of the cap was to reduce RH/S catch and a static 129 MT cap diverges from that purpose. We have wrestled with lower quotas in the past, including 89 MT when landings were less than 10,000 MT. The 129 MT RH/S cap amount has no scientific basis and should not be in this Amendment.

Jeff Kaelin, Lund's Fisheries:

There's minimal difference in the probabilities of rebuilding among Alternatives 3-5, and it's important to keep getting fishery dependent data to the extent possible. We've adjusted to drastic quota reductions already, and future assessments will continue to require ongoing assessments.

The Council needs to understand how a 3-inch mackerel mesh or brailer is constructed and any regulations need to account for the unique construction of the nets used in this fishery. The

current specific language for the mesh regulations may be premature. The Council should survey the fishery about use of brailers and can't assume the butterfly regulations would be directly transferable.

Katie Schleit (Ocean's North (Canada)):

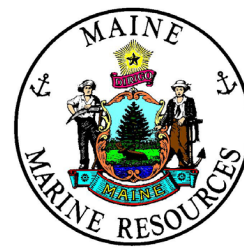
Canadian Management Strategy Evaluation was pessimistic with no chance of rebuilding in 10 years even with no catch – seems in line with MAFMC's Alternative 1. More recent stock assessment in Canada was even more pessimistic. Canada for 2022 closed its commercial and bait fisheries – we'd be looking for the U.S. to take similar measures. Canada also has recreational measures in place and it would be good for the U.S. to do something similar. There is concern that Canada's efforts may just lead to more fish being available to the U.S. fishery, which is against the spirit of what Canada is trying to do to rebuild the stock.

Zack Greenberg (PEW Charitable Trusts)

Atl mackerel provide a wide variety of benefits – can't overestimate importance of mackerel as prey for the whole regional ecosystem. Stock is overfished and subject to overfishing and the population is in decline, subject to overfishing for most of last four decades. Mackerel is a data rich stock and we need to follow the science / assessments (U.S. and Canada). Next few years are critical - With a precautionary approach mackerel abundance can grow back to support the ecosystem as forage and thriving commercial and recreational fisheries in the U.S. and Canada. We were encouraged to see Canada take tough steps to reduce in 2021 and close their fisheries in 2022. NMFS made right decision to reduce U.S. catch in 2021/2022. We need to embrace this opportunity to rebuild in as short as time as possible and will only get so many chances to go back to the drawing board. We support Alternative 1 using only the lower 2009+ recruitment. We support the U.S. and Canada continue working together. The catch reductions are a wise investment in the longevity of the fishery, which will benefit the fisheries and the shared ecosystem.

Name garbled, likely either Ryan Cook or Steve V:

Accommodations for maintaining bait in a live-car or bait pen attached to a dock or in a dockside freezer would need to be extended to a mooring device, which is used similarly as a dock for securing a bait pen. Because mackerel fishing is better early, many charters will go out early to collect mackerel before a trip to catch mackerel for their charters that day, and could then exceed the individual possession limit that would accommodate their charters for the day. This activity needs to be accommodated, and having a multiplier tied to having a charter/guide license could accommodate the needs of the for-hire fishery.



May 6, 2022

Dr. Christopher M. Moore  
Executive Director  
Mid-Atlantic Fishery Management Council  
800 North State Street, Suite 201  
Dover, DE 19901

Re: Comments on the Atlantic Mackerel Rebuilding Amendment

Dear Dr. Moore,

The States of Massachusetts, New Hampshire, and Maine provide the following comments to the Mid-Atlantic Fishery Management Council on the Atlantic Mackerel Rebuilding 2.0 Draft Amendment. The three states appreciate the efforts of the Mid-Atlantic Council staff to engage with New England stakeholders during the development of this Draft Amendment given the importance of this stock to many of our coastal communities.

### **Rebuilding Alternatives**

Rebuilding Alternatives 1, 2, and 3 appear to be largely infeasible for US fisheries given they result in quotas which are below anticipated Canadian landings and the recreational catch deduction. Further, these options could lead to an increase in discards if no quota is allocated to the commercial fisheries. As a result, the New England states support the adoption of either rebuilding Alternatives 4 or 5, with a preference for Alternative 4 (61% Rebuilding Probability in 10 Years) given Alternative 5 has the lowest probability of increasing stock size by 2025. Alternative 4 balances the practicalities of landings and discards in US fisheries with a slightly higher probability of rebuilding in recognition that Atlantic mackerel play an important role in the ocean food web.

### **Canadian Catch Deduction**

The three New England states recommend that the Mid-Atlantic Fishery Management Council deduct 2,197mt for Canadian landings in the 2023 specifications. Canada recently announced the closure of their commercial Atlantic mackerel fishery in 2022. While a new stock assessment will be used to determine Canadian quotas in 2023, it seems unlikely that Canadian catches will significantly increase given the status of the stock. As a result, a 2,197mt deduction provides some buffer for the Canadian fishery to potentially re-open in 2023 but also recognizes the recent management decisions of Canada.

### **Recreational Bag Limit**

Of the two options provided, the New England states recommend the Mid-Atlantic Fishery Management Council adopt a 15 fish bag limit in the recreational fishery. The lack of recreational measures to-date in the Atlantic mackerel fishery means a bag limit could have severe consequences on individual businesses, including those who participate in HMS fisheries which rely on mackerel for bait and the for-hire fleet. These for-hire vessels often catch bait ahead of a client trip, meaning a possession limit will impact the amount of bait that can be caught by a captain before a trip. The introduction of a bag limit also poses several management questions. For example, several for-hire businesses in New England have noted that they traditionally use bait pens at the dock to hold live mackerel. If a possession limit is instituted, can multiple for-hire businesses co-mingle their mackerel possession limit in a single bait pen? The New England states note that a 15-fish bag limit is more conservative than the 20-fish bag limit recently implemented by Canada.

The New England states express concern with several of the assumptions related to the expected impact of the recreational fishery. As has been noted several times in public meetings, the assumption of a 100% discard mortality rate in the recreational fishery does not reflect industry's reports and use of mackerel. If mackerel has a 100% discard mortality rate, for-hire businesses would not hold live mackerel in bait pens at the dock or in livewells on their boat. While historically discards have not been a large portion of total mortality, given the likelihood of very low catch, the New England states encourage the Mid-Atlantic Fishery Management Council to conduct studies which investigate the discard mortality rate of Atlantic mackerel.

In addition, the New England states raise concerns regarding the Monitoring Committee recommendation to either maintain the current 2,582mt deduction for recreational catch, or take only half credit for any calculated catch reduction. While the three states acknowledge the role that angler behavior can have on catch, both options appear to be arbitrary in nature. As previously mentioned, the introduction of a bag limit will have severe consequences on many businesses in New England and assuming a discounted effectiveness of the measure undermines the expected impact on the recreational fishery. Further, should the Mid-Atlantic Fishery Management Council assume there is no impact from the implementation of a bag limit on recreational catch (i.e., maintain the current 2,582mt deduction), it places the New England states in a very difficult position as we consider management measures in state waters. Moreover, the states would be proposing management measures which, on paper, are expected to have no impact on catch. This very easily raises the conundrum at a public hearing where the states are asked why a management change is being proposed if there is no expected benefit. The New England states strongly recommend that the Mid-Atlantic Fishery Management Council assume an impact on recreational catch from the implementation of a bag limit, and preferably assume the full effectiveness of the measure.

### **Commercial Mesh Minimum**

Given the limited information available to determine the impact of a 3-inch minimum mesh requirement in the commercial Atlantic mackerel fishery, the New England states do not support

adoption of this measure at this time. It is unclear what the magnitude of the biological benefit would be, particularly at very low quotas. It is also unclear how many permits would be impacted by this measure and the potential economic repercussions. Given the questions remaining, the New England states do not support adoption of a 3-inch minimum at this time but do support continued investigation and research on its impacts.

### **River Herring and Shad (RH/S) Cap**

The New England states support the Mid-Atlantic Fishery Management Council continuing to maintain the 129mt river herring and shad catch cap (Sub-Option 1). The original intent of the river herring and shad catch caps in Amendment 14 was to “limit the mortality of the relevant RH/S species in the mackerel and longfin squid fisheries.”<sup>1</sup> The current 129mt catch cap achieves this goal and avoids the challenges of monitoring a very small cap. As noted in the draft Amendment, the impacts of an outlier trip can have large consequences on the estimation of river herring and shad catch when the catch cap is set very low. The New England Fishery Management Council has taken a similar approach to their river herring and shad catch caps in the Atlantic herring fishery; the catch caps have remained steady in the midst of significant decreases in Atlantic herring quota. Given this approach has worked in the Atlantic herring fishery, the New England states recommend a similar approach in the Atlantic mackerel fishery.

### **Permitting Option**

In general, the three New England states support the clarification of regulations to improve compliance in any fishery. The potential benefit of the proposed permit clarification is that, for vessels possessing mackerel in federal waters, all mackerel catch on a trip would need to be reported via an eVTR. That said, the expected benefit of this requirement is somewhat obfuscated by the fact that Atlantic mackerel purchased on the dock and then transported to federal waters would not be reported on an eVTR. As a result, while the permit clarification proposed would increase federal reporting requirements for potentially 1,000-2,000 permit holders, it would only improve the reporting of mackerel landings for boats who: 1) intend to possess mackerel in federal waters; and 2) catch, as opposed to buy, mackerel on a trip.

Outside of the proposed permitting clarification, there are several factors at play which will likely result in increased reporting of mackerel catch. The New England states forecast that some anglers who traditionally use mackerel as bait in federal waters and who catch them in state waters will likely purchase state and federal open-access commercial permits to possess mackerel in excess of the recreational bag limit. The purchasing of these permits will trigger reporting requirements for these harvesters. In addition, for-hire operators in state waters may purchase state open-access commercial permits to be able to possess mackerel above the recreational bag limit to catch bait for their clients ahead of a fishing trip. This too will trigger reporting requirements at the state level for additional participants in the mackerel fishery.

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<sup>1</sup> Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan. Final Environmental Impact Statement. Submitted to NOAA on February 26, 2013.

<https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/53e3d5f5be4b0e88e72d231c6/1407440379012/Am14FEIS.pdf>

In closing, we appreciate the opportunity to comment on the draft Atlantic Mackerel Rebuilding 2.0 Amendment. We particularly thank the Mid-Atlantic Fishery Management Council's for their responsiveness to the New England states' original concerns regarding stakeholder engagement in Massachusetts, New Hampshire, and Maine. Management of the Atlantic mackerel fishery is a critical issue for many fishers in New England, and the informational webinars and public hearings have provided an opportunity for individuals to learn, ask questions, and provide comments on this important issue.

Sincerely,



Dan McKiernan  
Director  
MA DMF



Pat Keliher  
Commissioner  
ME DMR



Cheri Patterson  
Chief, Marine Division  
NH FGD

cc: Jason Didden, MAFMC  
Tom Nies, NEFMC  
Eric Reid, NEFMC

15 Comments Submitted as Emails (EM1 – EM15)

### EM1

The following is the written comment of Maine resident Thomas P. Atherton; MS Marine Ecology and Earth Sciences; and lifelong {1958 to present fishermen}.

I started Mackerel fishing in 1963 along with many other species.

To date my landings recreationally along the midcoast of Maine (Hancock County) is the same trip level catch as the last 50 years. I land between 50-150 mackerel a trip and freeze,smoke and salt my catch and it does wonders to lower my grocery bill. We have taught and encouraged many of our friends to join us over the years and the area we fish still produces lots of fish and lots of recreational enjoyment for communities throughout the state. On a calm morning you can see schools of mackerel surfacing all around the dock and floats around the public landing. There are far more fish than 20+ years ago after Russian fishing vessels (Glasnost) decimated every species of fish on shore and around the bays of midcoast maine.; Thanks US Gov't.!!

So your report actually uses no anthropological data like the story I just told. There is no such thing as "anecdotal" fishing knowledge. Instead what you scientist are doing is avoiding anthropology as a legitimate way to evaluate fisheries. What do other fishermen have for recreational info up and down the east coast?? My knowledge base has included predicting the east coast mussel collapse as early as 1983, using only anthropology as a guideline, I proved all the so-called experts wrong. My grandfather and I when I was just a boy told fishery managers the collapse of smelts in certain bays was a certainty, true again. You folks are just plain wrong on this one too. I have heard nothing about a lack of mackerel in Maine, instead we all see and hear differently and our catch illuminates that fact as some years we actually land two species of mackerel.

Here is another long list of potential errors and misleading ideas you all like to use.

1. The idea that stock rebuilding according to Magnussen Stevens is unlikely because the parameters have changed
- 2 What is the status of natural predation from larval to juvenile compared to your so-called target level years
- 3 what about fecundity of the egg and sperm population
4. how does ocean acidification effect the life-cycle and health
- 5 good old warming oceans are also unaccounted for and it's impacts



6 don't forget ocean currents, how are thermo and haloclines changing and how do they repress/enhance recruitment

7 Stock rebuilding is an inexact science that rarely leads to the chosen stock goals even under zero fishing pressure

8. Trawl data and the way you go about it raises lots more questions, because if you have different people running the gear you can get all sorts of outlier info that is not viable.

Here is the one tool scientists lack it is insight, feelings, ESP' it's the same way a shaman with no training has an ability to heal. There are fishermen like that who just have a nose for what is going on. I would never attempt a research project without there input. The leads those folks send me on are usually right.

There is no scientific substitute or data for thousands of days at sea and an inborne instinct for what you do.

Remember fishery managers said oyster reefs were not in danger

mussel reefs are in fine shape, now most are gone

lobster is overfished and unsustainable for the last 25 years, not true

green crabs are wiping out everthing/ they come and go

smelts are in danger, not on my property in my brook i fished all my life

The list just keeps going

Lastly I would like to say that the onshore mackerel recreational fishery is statistically insignificant. You have no clue what landings are compared to historical data, You are totally out of touch with value added income and local culture. Your way of gathering data can never be trusted for an onshore closure because you leave the people that know what is going on out of the data stream. In maine the DMR is not that good at getting data because those resources are to expensive and are unreliable. Like much of the historical data, soft stats.

Sincerely

Thomas Atherton

MS Marine Ecology and Earth Sciences

**EM2**

May 4, 2022

Christopher M. Moore, Ph.D.

Executive Director

Mid-Atlantic Fishery Management Council

800 N. State St, Suite 201

Dover, DE 19901

RE: Comments to the Atlantic Mackerel Stock Status and Rebuilding

Dear Dr. Moore:

I am again writing on behalf of the 100 plus members of the Cape Cod Charter Boat Association relative to the Atlantic Mackerel Stock Status and Rebuilding Efforts. Our previous submittal was in January of 2022, but we believe it is imperative to offer additional feedback.

- Our members, who spend countless days on the water - Cape Cod Bay and the Atlantic Ocean - quite honestly are perplexed some organizations and scientists believe a major decline in mackerel stocks has occurred. This is based on their recent history of being able to harvest mackerel basically whenever they target them, as well as observing larger commercial boats filling their holds in very short time.
- We also, yet again, strongly object to flawed MRIP being used to add to the justification for needing bag limits. Many fishery organizations, as well as ours, continue to point out how flawed MRIP data is used for decisions affecting other fisheries as well, with minimal corrective actions being taken. The continued use of such data to make fishery decisions which impact the livelihood of many is perplexing.
- The for-hire charter fleet depend on mackerel in a number of different ways;
- Live-lining for striped bass and bluefish
- Live-lining for bluefin tuna
- Chum when fishing for other, larger species
- Providing youngsters and novices with excitement, catching 2,3,4 at a time
- Providing leftover mackerel to population in economically depressed areas, soup kitchens, and families who use mackerel in recipes handed down through their ancestors

- To impose bag limits on for hire vessels would have a detrimental impact on the above activities, resulting in less successful charters, thereby potentially reducing the number of charters being taken, thus affecting the economic liveliness of Captains and staff. Additionally it would have a negative social impact - minimizing the joy of fishing for children and depriving people of healthy sustenance.

In conclusion, we believe prior to any bag limits being contemplated more study is needed on the mackerel biomass, including the shifting areas of where mackerel are actually concentrated due to changing water temperatures. Further, additional scientific data, better than MRIP data and egg larvae surveys, must also be utilized.

Very truly yours,

Captain Rich Wood

President, CCCBA

Beth Ann Charters

[captainrichwood@comcast.net](mailto:captainrichwood@comcast.net)

860-716-0202 cell

Captain Rich Wood

Beth Ann Charters

860-716-0202

<https://bethanncharters.com/>

Beth Ann Charters would love your feedback. Post a review to our profile.

<https://g.page/r/CcAsbLMs2zN2EB0/review>

### EM3

Good Morning,

My name is Jim Geaumont. My wife Amy and I own Maine Way Outfitters out of Scarborough, ME. We specialize in running inshore fishing trips, primarily targeting Striped Bass.

Our most productive fishing method is with bait, primarily Atlantic Mackerel. We often live-line fresh mackerel caught on each for-hire trip. Whatever bait we use and retain is frozen for lobster bait or future chunk bait. Retained live ones are released at the end of each trip. We consider ourselves excellent stewards of this valuable resource, and let nothing go to waste.

Amy and I, as well as many fellow Charter Captains throughout New England are generally in favor of rulings which can better all aspects of a fishery that we are involved in.

However, in this case when discussing retention, there is widespread belief that the proposed measures are way too aggressive. This will effectively remove mackerel as a viable resource for fisherman (both for-hire and recreational).

\*\*\*\* 10-15 fish bag limit seems very low, considering a previous unlimited bag limit with no size requirement. In comparison to other bait sources which have higher or unlimited bag limits (pollock, herring, alewives, menhaden), this seems to be a drastic change.

We propose a continuation of an unlimited OR 25+ daily bag limit, with a possession limit of 50-75 fish per person.

In addition, there should be stipulations regarding for-hire trips and retention of used bait from trips. This will eliminate waste of mackerel that would otherwise have to be retained by the passengers, or worse... discarded.

In passing comment on the commercial side of this resource; Once again it would seem that this proposal has the burden shouldered by the recreational and for-hire fleets.

As a former commercial fisherman, I am by no means placing a lesser value on this resource in their regard. A 3" net mesh requirement would do very little if anything to reduce catch numbers. This is not from any partially funded studies or science, just real world experience. I make this statement as I speak

from many years of experience in net fishing including gill nets, seines and dragging. It would seem that commercial quotas are not even being discussed in this proposal????

Please consider these ideas as this proposal moves forward. This is a valuable resource that is a hinge in recruitment in our fisheries. I do not believe that this is as simple as a flat bag limit for all.

I welcome any dialogue, and I am available at any time moving forward. Thank you for your attention to this matter.

Best,

Captain James G. Geaumont

VP, Maine Way Outfitters, LLC

(207)286-6658

#### **EM4**

Hello,

I would like to submit these comments as public comments concerning the current rebuilding of the very important Mackerel Stocks. It has gone on for way too long to not have limits on Mackerel Recreationally. In the state of Maine there has not been any Mackerel Take limits and it is clear people take everything they catch for whatever reason. It is unreasonable to assume that Fish Stocks can handle such heavy pressure. There should be no problem with putting a Bag limit on Mackerel like every other baitfish. Something like 10-15 a day seems very reasonable, and may even cut down on the poaching and illegal selling of Mackerel.

Commercially Fishing Mackerel should be scaled back some as well to help the rebuild. There are many boats that use the excuse of targeting mackerel just so they can net menhaden. So clearly there is a flawed system that is allowing too much netting of ALL baitfish. This is why we are in the situation we are today with a lot of overfishing occurring.

I would look to Alternative 1: Eliminate most catch to rebuild as much as possible in 10 years. This is the most aggressive approach and is often this kind of action that is needed to rebuild fish stocks. Thank you for your time and I hope what's done is what is best for the Fish sake.

Thank you,

Germain Cloutier

## EM5

Thank you for the opportunity to provide comments in support of the MAFMC Public Hearings, regarding Atlantic Mackerel Rebuilding.

The focus of my comments is to request that the traditional inshore, Cape Ann Mackerel Trap Fishery be given sufficient quota to continue what has been a traditional spring-time fishery for over 150 years.

Long before the advent of pair trawling or super-sized offshore seiners, the mackerel traps along the Cape Ann shore have been landing very high quality, fresh mackerel for the retail and foodservice markets in New England.

The trap fishery is unlike most any other fishery, in that the mackerel are dipped live from the trap and delivered to the wharf within an hour, (before rigor has even set in), creating a very high quality food fish.

Unlike the relatively new forms of large scale, mobile gear, fish traps are fixed, anchored along the shore, so as to lead the mackerel into the trap on the falling tide. A combination of wind, tide, water temperature and migrating mackerel schools must be in sync for the traps to be effective. On many days, the conditions are such that catches are small or non-existent. Fish traps are only viable if the catches on good days are supported by quotas that are structured and sufficient to support this traditional fishery. As such, it is critical that when conditions line up, that the quota is available for the trap fishermen to land their catch.

I appreciate that mackerel enjoy a wide geographical range, but request that providing quota for this traditional Cape Ann fishery be prioritized in light of its long history, the small boat nature of its operation and the very high quality mackerel that it delivers to New England consumers.

Thank you for considering my comments.

David Jermain  
5 Walker Street  
Gloucester, MA 01930

**EM6**

Hi. Mackerel are a very important bait used for runa fishing so I really hope there is a way to allow retention of at least a dozen recreationally through December. I also hope there is a plan in place to restrict where the midwater boats can fish now that they are again allowed to fish inshore off Cape Cod.

Sincerely.

James Goodwin

21 scotlin way

East harwich MA 02645

**EM7**

From: Michael Polisson <mikepolisson@yahoo.com>

Subject: Mackerel Rebuilding

Im curious why there is no meeting in Gloucester mass where there is usually a meeting

2 meetings in southern mass and none in the biggest fishing port in mass Gloucester

Then it jumps to Portsmouth NH ????????

Seems like you don't want to hear from us!!!!

**EM8**

Hello Jason,

My name is Captain Costa Moreshead. I own and operate Hard to Port Fishing in Kennebunkport Maine, we are a for hire charter fishing boat. We target inshore species like Striped Bass and Mackerel as well as scenic lobster tours. My business relies on Mackerel as bait and a sportfish species.

A limit of 10-15 mackerel needs to be clarified: per angler? per vessel? Live baits vs. dead baits? To make my day viable the boat would need at least 25 live bait per angler as well as a decent quantity of dead baits. I keep all the leftover baits from the trips and use them as chunk bait the next day or as bait in my lobster traps. Having 10 Mackerel for recreational lobstermen in the state would mean 2 fish per trap, that makes having recreational traps absolutely pointless.

The proposed regulation would kill my business as well as kill saltwater recreational fishing in the state of Maine. For recreational fishing the regulation should be decided by the state.

I plan on attending the meeting on Thursday the 28th.

Thank you for your time reading my input. If more questions or comments are needed please feel free to contact me via email at [hardtoportfishing@gmail.com](mailto:hardtoportfishing@gmail.com) or by phone at (207) 205-1257.

Thank you again.

Capt. Costa Moreshead

Hard to Port Fishing LLC.



**EM9**

Good afternoon,

Being a charter boat captain, Mackerel fishing is a very big part of the fishing experience I provide for my sports.

Many memories are created for young anglers catching mackerel, most of which are bigger than any fish they've ever caught.

On my vessel, these same mackerel are often used to help catch their first striper.

Farther up the coast of Maine, many boat and shore anglers don't have the opportunity to catch stripers due to the fact that they don't migrate that far north. Mackerel fishing is one of the only species they can target.

I feel strongly that the best way to help rebuild the fishery is to control the commercial quota.

I understand that there will need to be limitations to the recreational quota as well. I strongly disagree with a closed season for mackerel. This would directly affect my business which only lasts 3-4 months. I would be in support of a bag limit of 20 mackerel per angler.

Thank you for listening,

Captain Dan Couture

**EM10**

As a recreational lobsterman and commercial charter and bass guy, I catch mackerel as bait. As long as we are still allowed to catch a 5 gallon bucket of bait a day maybe max 1 tote I'm ok with limits. On the other hand, if we are going to allow mid water trawling in close then a recreational limit seems misguided from a conservative perspective.

Thanks,

John Herrick

**EM11**

Mr. Didden, I recently listened to your presentation on the status of Atlantic mackerel to the NEFMC and have read through the Public Hearing Document. I definitely agree that there is a need for action to help rebuild this important stock. However, I am really writing to make a comment on one small section of this proposal. Under Alternatives 4 and 5, I believe, there is a section about permitting and the need to close reporting loopholes.

While, this is a good idea, I believe there already is data being collected that covers the HMS Gen and CH/HB Category fisherman. And that is NOAA's Large Pelagic Survey (LPS). As has been stated mackerel is caught and used in the bluefin tuna fishery very regularly and this catch information on mackerel is recorded in the LPS. While I don't believe the survey produces an official estimate of mackerel harvest at this time I think they very easily could. It might be worth checking in with their group about it.

Thank you,

Chris Uraneck

## EM12

From: Justin Boyce <impared@hotmail.com>

Sent: Thursday, April 14, 2022 6:38 AM

To: Didden, Jason <jdidden@mafmc.org>

Subject: Mackerel Rebuilding

I find it very ridiculous to be limiting recreational fishing to try to save a fish stock. I commercial fish for herring and Manhatten in Maine state waters and have seen a massive amount of mackerel in recent seasons both mixed with other fish as well as by themselves. I understand limiting commercial fishing efforts because that is what will hurt the fishery in the long term but for the hundredth of a percent recreational fishing is going to impact the fishery is just seems like a waste of time and money to try to enforce. Mackerel are not like ground fish and many of the fish are going to die even when released back into the water because of poor fishing tactics.

It would be interesting to see where stock numbers are coming from for the mackerel and even the herring populations. I have fished inshore waters for herring since the early 90s using stop seining and purse seining tactics and I honestly haven't every seen the amount of fish I have seen the past two years inshore. My problem has been that river herring have made a huge rebound and are mixed with the herring and mackerel at a rate of about 20 percent which is too high for me to be able to land. I think some of the science should be based on the stock that is moving closer to shore rather than just in federal waters. I think the population of all fish species right now is a lot better than we give them credit for just because the science is being skewed based off where surveys are being done. Fish move and change habits so we have to adjust and move with them not just push rules hoping to make them come back to places they have left...

**EM13**

From: Karen Chin-Mancini

Subject: Mackerel Rebuilding

When are they going to help us the Recreational fisher people? We need help because the Commercial fishing people have an advantage! Karen Chin-Mancini

**EM14**

Dear Mid-Atlantic Fisheries Management Council,

I am writing, in the case of Atlantic mackerel, as a recreational fisher. My catch area is Cape Cod Bay. I would like to encourage control and limits to the recreational fishery. Having bag limits and size limits or whatever governmental regulation should address both the 1. stock management aspect and 2. the prevention of wanton waste which I think is related.

Generally in recreational fishing the mackerel is caught on sabiki or like rigs that have multiple single hooks. So to fish mackerel, the fish is so often targeted several at a time and shaken off the hook to the deck. There are deads, stunned and those that are ok for the bait well. Bait fishing for live bait mackerels to go in the well is therefore indiscriminate in nature, especially as fishers "catch the fever" when a school moves through, as speed is prioritized over care in handling. A catch limit will require of a fisher more care in handling for its specific use if that is live bait.

That said, as a concerned citizen, bycatch control is long overdue in all pelagic fisheries for river herring. Sympatric schooling should pretty much end Sea Herring fishery until river herring rebound (and reduction menhaden should also be ended). As to commercial mackerel fishing directly I can only say that river herring protection should be a top priority. Setting the catch cap is manifestly overdue because after negative review of river herring for the U.S. endangered species list in 2019 the health of the Atlantic population is not clearly appreciated or understood. Lack of comprehensive understanding combined with still low population numbers of itself spells jeopardy. Thus the need, clearly, is conservation over any other usage.

Sincerely,

Chris George

Yarmouth, MA

(508) 310-3021

**EM15**

Thank you thank you thank you.

I'm a recreational fisherman out of Plymouth and have noticed a drastic drop in the amount of mackerel in the areas I fish over the last few years. And it's no wonder as I see people abusing the resource including 6 or 7 guys on the same boat three days in a row fishing for Mack's for hours filing tote after tote.

I am 100% for a bag limit on recreational anglers. I don't know enough about commercial to comment other than saying they need to be capped too!

I don't think a recreational fisherman needs more than say 10 Mack's for a good day of striper fishing.

Thank you for attention to this!!

Also I'm all for catch and release on stripers too but I don't know if that's on the table.

Have a nice weekend

Jeff norton

Comments submitted via the mafmc.org web-form follow...

Name	Category	States	Comments
Seth Murray	Commercial, For-Hire, Private Recreational	Maine, New Hampshire, Massachusetts	never in my 24 years of fishing have i had an easier time finding or catching mackerel. full string after full string of sabiki constantly, was great. led to more time fishing for other species
French Jon	Commercial	Maine, New Hampshire, Massachusetts	I have been fishing the Gulf of Maine for over forty years out of the Merrimack. This has to be the most under studied project in the history. There is no shortage of mackerel and I will be happy to show you any time. Jon French F/V Ranger
earl sheesley	Private Recreational	Maine, New Hampshire, Massachusetts	I am in favor of a commercial quota, if necessary to regulate the stock. I am not in favor of a recreational bag limit. The fish belong to everyone not just the commercial people. While you are at it limit the commercial herring and pogie catch and watch the fish populations expand rapidly.
Tyler McLaughlin	Commercial, For-Hire	Maine, New Hampshire, Massachusetts, Rhode Island	I've been fishing my entire life. And have spent every year since childhood waiting for the spring mackerel run I'm now 34 years old and am seeing more mackerel of various sizes than I ever have. That being said I have noticed the spots the are at may be changing.

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Name	Category	States	Comments
Jack Patrican	Commercial, For-Hire	Maine, New Hampshire, Massachusetts	<p>My name is Capt. Jack Patrican and I am a 27 year old commercial &amp; charter fisherman from Gloucester, MA. I'm currently featured on National Geographic's "Wicked Tuna" as the youngest captain fishing on the smallest boat, Time Flies. Wether I am filming for Wicked Tuna or running a fishing charter, I completely rely on catching Atlantic Mackerel to use as bait, which are very plentiful and easy to catch inshore as well as offshore. In fact, they have been so plentiful over my lifetime that I decided to invest in hook &amp; line gear to catch and sell them commercially, which has accounted for more than half my yearly income. On a daily basis, I am able to "fill the boat" with Atlantic Mackerel from May-December, and almost half of my catch are medium-large grade.</p> <p>I understand that Atlantic Mackerel aren't as abundant in the Mid-Atlantic as they once were, but it's a similar case for many species. Striped Bass no longer are caught in Virginia Beach and Lobsters have crawled out of Connecticut, just to name a couple. As water temperatures rise and windmill industrialization becomes more prominent, its no surprise that the Mackerel are moving North. I believe the biggest issue is that we have a predominately North Atlantic stock that is governed by a Mid-Atlantic Council. I also believe there were serious inadequacies with the MRIP survey's. I personally was interviewed over a dozen times last year, however I know other fisherman that have never even seen a surveyor. I have personally witnessed marina staff that do not let the interviewers on the property because they are thought to bother fisherman and their crews. I believe this has led to very skewed survey data that should not be relied on to make such important decisions for our fishery.</p> <p>On a final note, I find it very discouraging that a hook &amp; line fisherman, practicing the most sustainable fishing methods possible, could be shut out of the fishery while mid-water trawlers are given the go-ahead to completely wipe out our stocks. The mid-water trawl fleet catches more mackerel in one day than a hook &amp; line boat does all year. How is it fair and equitable to allow one party such a massive allocation of the resource? I personally have witnessed what the mid-water boats can do to an area such as Stellwagon Bank and it is very sad to see. One day Stellwagon is teeming with Mackerel and Herring, and after a couple days of mid-water trawling it becomes a barren wasteland. I truly believe that if the Atlantic Mackerel stocks are actually in decline, limiting the mid-water trawlers has to be the first action to recovery.</p>
Jo Jones	Commercial, Private Recreational	Maine	We know All fish need to be regulated. Put a limit on mackerel you be better do it for everyone including all trawls and sieners. Just is not right. A fish is a fish no matter who catches it.
Todd Prock	Private Recreational	Maine	I have been fishing the coast of Maine for years and in the past 3 years I have never seen so many mackerel. There are mackerel of all sizes, no shortage that I have seen. I primarily fish around Monhegan Island.

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Name	Category	States	Comments
Eric Salamon	Private Recreational	Massachusetts	I'm in favor of the most aggressive measures taken for recovery. Recreational represents a very small percentage of the overall impact but I support the lower bag limits. Commercial fishing however is the main reason we are in such dire circumstances. Until there is a full recovery and a sustainable harvest can be maintained a full ban should be implemented
Neal E Melanson	Private Recreational, Other	Massachusetts	<p>NOAA and MDMF need to develop and publish a plan to mitigate the impact of the GRAY SEAL population explosion.</p> <p>I have observed that last year, the Spring of 2021, just 4 GRAY SEALS decimate the population of Winter Flounder in Plum Island sound. I have not seen ANY gray seals in the Sound this year, BECAUSE THERE IS NO MORE FOOD FOR THEM!!!</p> <p>The same situation exists for the local mackerel fishery, and inshore lobster fishing. My catch in the early season 2021 was near ZERO. It did pick up a little in the late summer and early Fall, then cratered again at the start of October.</p> <p>Neal Melanson Rowley Ma.</p>
Nicholas Scalli	Commercial, For-Hire, Private Recreational	Massachusetts	More mackerel last year then I've seen in the past 22 years of fishing. Not sure who does your surveys but they are clueless. Stocks are higher then ever before!!!!
Ryan Kane	For-Hire	Massachusetts	<p>The assumption that mackerel numbers are declining is based off a point in time sample that does not adequately address the warming sea state forcing mackerel to the colder waters south of cape cod and to the north in the gulf of Maine.</p> <p>I fish primarily out of Boston and South shore for Bluefin Tuna on Stellwagen Bank and Cape Cod Bay. I have fished 30 plus days a year since 2015 and have never not gotten brought mackerel to make bait for a trip. Lots of small juvenile tinker mackerel and mediums mostly. Larger horse mackerel more common south of cape cod.</p> <p>Please do not penalize small scale commercial, charter and recreational anglers for the sake of rewarding a few mid water trawlers in a dying industry in Gloucester and New Bedford. Not only does this wipe out a biomass of fish as by catch targeting Herring, it prolongs an inevitable collapse of all fisheries due to depletion.</p>

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Name	Category	States	Comments
Tyler Parisi	Private Recreational	Massachusetts	There are plenty of Mackerel and Herron in the ocean. Please choose humans/fisherman!
Joseph Scalli	For-Hire	Massachusetts	I do not understand why there would be a limit on mackerel. I have fished my entire life off of Gloucester and have never seen a lack of mackerel. By contrary, its often an over abundance. Ive fished on charter boats and commercial boats for the past 10 years and mackerel have always been very abundant and plentiful. It makes absolutely no sense to regulate the mackerel fishery and it would crush the commercial and charter bass and tuna fisheries along with mackerel fishermen. This is not right.
Alan Murray	Commercial, Private Recreational	Massachusetts	I primarily fish recreational for striped bass and haddock; however, I also fish commercially for bluefin tuna. I have not experienced a lack of finding mackerel for bait. Not sure I understand the science used to determine the quantity of available mackerel and certainly do not understand how someone that fishes like i do should be limited to 10 to 15 mackerel per trip!?!? Most bait not used are returned to the ocean with the exception of some used as chum which is not significant. Go after the guys that may be depleting the stock that fish for Mackerel solely.
Dylan Webb	Private Recreational	Massachusetts	Can walk on the amount of mackerel out there. There are so many and they seem to be together in the millions. Any mackerel that aren't used are released to live another day.
Jared Morris	Commercial	Massachusetts	How can someone possibly make a living off of these ridiculous rules and regulations
Paul T Morrison	Private Recreational	Massachusetts	Commercial overfishing is killing off the striped bass, the bluefish, and the atlantic mackerel. Place a commercial moratorium of at least a few years on those fish before the few percent that are left are wiped out.
Timothy Peles	Private Recreational	Massachusetts	Fishing for Striped bass and Tuna in Massachusettes and over never seen so many mackerel on the fishing grounds. The mackerel population is alive and well. Don't touch it. Please.

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Name	Category	States	Comments
Michael Scalli	Commercial	Massachusetts	Good morning my name is Michael Scalli I'm an avid fisherman I've been fishing since I was three years old I'm 36 now I'm telling you guys right now there are so many mackerel out there it's not even funny from Maine to the Cape is where I fish . I heard a lot of stuff is going on trying to close it down saying there's no mackerel I disagree I'm sure you're going to hear a lot of this but me and a lot of fishing buddies are very avid fisherman we fish every day of the season possible ,before you guys think about shutting anything down you should really listen to the fisherman because we are out there every day trying to make a check we need the Mackerel thank you.
Jeffrey Fortin	For-Hire	Massachusetts	There is more mackerel in our waters than you could even imagine. I fished all the way through December and everywhere I went weather it was the bank or out east of Chatham it was stacked with macks.
Tim Jones	Private Recreational	Massachusetts	There is so many mackerel out there we can walk across them. I've been fishing in mass the last 20 years and have never seen any Tim where there was lack of mackerel around in cc bay and points north. Stop with the leftist bullshit trying to control everybody's lives and let the people who are out there everyday have a say in this fishery. Because none of you have a clue to what's going on out there.
Alex Brown	Commercial, For-Hire	Massachusetts	I have seen more mackerel from dinks to jumbo in the past few years than in the previous 15 years. Whomever is trying to implement this is not out there like we are.
Ira Shank	For-Hire	Massachusetts	There is no evidence that charter or recreational fisherman impact the body of mackerel that enter and leave our waters So any attempt to change things must mean they have data that can and will be questioned ..

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Name	Category	States	Comments
Michael Fallon	Commercial, For-Hire, Private Recreational	Massachusetts	<p>Mackerel fishing from my port in the Merrimac River in Massachusetts has been the best I have seen the past few years. I'm a charter captain, commercial bass fisherman, and a recreational angler. Limiting the mackerel take for any group below 25/person would be extremely detrimental to our fishing which is primarily based on live bait and dead bait mackerel fishing.</p> <p>Some will say that if you're fishing a long day you can run back out to catch more mackerel, but that requires a lot of time and fuel, which will be extremely expensive this season. On top of that, many days they are very easy to catch at first light but difficult in the afternoon when they spread out.</p> <p>Not that anyone is asking, but my suggestion would be a 100 mackerel boat limit for charter and commercial boats, and 25/person for recreational anglers.</p> <p>The commercial mackerel boats are harvesting many times over what recreational anglers harvest. We are also able to return unused live mackerel from our livewell after each trip. The money put into the economy from commercial mackerel fishing is FAR surpassed by money put into the economy by For-hire, commercial, and recreational striped bass fishing, all of which relies HEAVILY on mackerel.</p> <p>The past few years have been the easiest mackerel fishing my local fisherman and I have ever seen. It's very difficult to believe the data being presented is relevant and accurate based on how it's being collected. I fully understand the need to protect fisheries and it's really a shame that the idiots who came up with the 2 @ 28" striped bass limit are still forming policy decisions, but cutting off mackerel fishing or reducing below a certain threshold is certainly a step too far, and unlike striped bass who are in dire need of policy reform, mackerel are not.</p>
tucker henderson	Commercial	Massachusetts	I use mackerel for bait almost every day of my life. I can assure you the population is strong. Although i will say, some of the draggers out there don't have a care for anyone but themselves. this could use some regulation.
Philip Gulino	Private Recreational	Massachusetts	<p>The mackerel population is strong. I have seen first hand, no change in the amounts of small tinker size to large jumbos for tuna over the last five years.</p> <p>Do not allow this overreach to continue to legislation</p>
Steve Mcnally	Commercial, For-Hire	Massachusetts	I fish north and south of Gloucester and I see and catch all the mackerel that you want . There were school after school of mackerel all over Stellwagon bank all the way into Boston harbor. They are on Jeffries ledge from Gloucester to Maine

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Name	Category	States	Comments
Damon Sacco	For-Hire	Massachusetts	<p>I have been a very active offshore charter captain since 2000. I regularly fish the waters in and around Cape Cod Bay. There are more mackerel in Cape Cod Bay and on the back side of the Cape now than there were 10 years ago. Each season there are masses of fish that stay all summer and fall season. There is absolutely no reason to curtail the rod and reel mackerel fishery.</p> <p>Thank you</p> <p>Damon Sacco</p>
putnam maclean	Commercial	Massachusetts	<p>I have been a commercial bluefin tuna fisherman for 50 years in the Gulf of Maine, mostly on Stellwagen Bank. Where we fished for tuna ,summer and fall we would hardly ever see a large Mackerel, for decades. Only some fingerlings in the fall.. It was as if they were overfished. I suppose they were elsewhere- The larger Mackerel started to show up in great numbers in the inshore water some 10-15 years ago. It was a slow progression. We wanted to use them for tuna bait and would spend hours trying to catch a couple for live bait.. Worked hard at it.. Now the entire Coastline is awash in Mackerel, for 8 or 9 months of the year, maybe more. what works is that they are protected from large scale industrial fishing. In part because of Herring restrictions, and in part because inshore waters are a minefield of fixed lobster gear, or other, anchored tuna boats , whale zone and all manner of activity.. Mackerel sanctuary.. There did develop some of the jig gear fishery for mackerel, day boat fishery that was hook and line and could operate within fixed gear in shallow water(70-100ft). Maybe use airplanes for assessment counts. ? I have never seen more or larger mackerel , than now.</p>
Jp Anusewicz	Commercial, Private Recreational	Massachusetts	<p>The amount of mackerel in cape cod bay is mind boggling. When I go out at sunrise most mornings as far as you can see is massive schools of mackerel on the surface. When I'm fishing at stellwagen bank trying to catch bait more times than not I can't reach the bottom nevermind drop down 50 feet before I get a full stringer of mackerel even with a 24 ounce weight. I seriously think this talk of the mackerel is foul and completely corrupt. This system is insane!!!</p>
Derek Gauron	Commercial	New Hampshire	<p>So you won't enforce the mid water boats from coming into the exclusion zone, but you're going to pick on the charter, party and rec guys that probably land 1% of a the species, a species that is overall fine.. I've been fishing mackerel my whole life and while some years they don't come in choose to shore, I've seen huge numbers where these big boats tow for bait/mackerel... You're seemingly hurting us on purpose, at a time when we need the inshore fishery the most. Stop 🚫!!!!!!!!!!!!</p>

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Name	Category	States	Comments
Daniel Wilson	Private Recreational	New Hampshire, Massachusetts	This is total bullshit, another way to ruin fun and the local economies that depend on these highly abundant fish.
Angela LaGross	Private Recreational	New Hampshire, Massachusetts	Another way to ruin family fun !
Tom Mccrosson	Private Recreational	New Jersey	In favor
Eric Van Lill	Private Recreational	Other	<p>I used to fish for them back in the 80's, and I do believe the stock has suffered, but other policies should have a positive impact. I fish out of Maryland.</p> <p>You already shutdown the sharking. The only time I use mackerel is for Bait / Chum. With the sharking closed I don't plan to target them.</p>



May 9, 2022

Dr. Christopher Moore  
Executive Director  
Mid-Atlantic Fishery Management Council (MAFMC)  
800 North State Street, Suite 201  
Dover, DE 19901

**Re: Atlantic Mackerel Rebuilding 2.0 Amendment**

Dear Dr. Moore and members of the MAFMC:

Thank you for the opportunity to comment on the Atlantic Mackerel Rebuilding 2.0 Amendment, which considers several alternatives concerning rebuilding plans and additional commercial and recreational measures.

Our organizations represent for-hire fishing guides, small fishing-related businesses, and conservation-minded private anglers who recognize the importance of science-based approaches that ensure long-term stock health in order to sustain a vibrant recreational fishing economy. Our members and supporters rely on Atlantic mackerel (hereafter “mackerel”) both directly—as a source of bait for species such as striped bass and bluefin tuna—and indirectly given their ecosystem role as forage for popular recreational targets and other marine species.

We are concerned by the troubling findings of the 2021 management track assessment, which revealed persistent low biomass, truncated age structure (lack of older fish), and continued depressed recruitment.<sup>1</sup> Even as spawning stock biomass (SSB) is estimated to have tripled from 2014-2019, the fact that the stock continues to be at less than 25% of the target SSB—coupled with the requirements of the Magnuson-Stevens Act (MSA)—makes additional action necessary at this time. While mackerel have been classified as a species that is vulnerable to climate change impacts,<sup>2</sup> and northward shifts in the resource have been documented, the poor findings of Canada’s assessment for the northern mackerel contingent, whose 2020 SSB was the lowest on record, demonstrates that depressed abundance for the species is occurring across its range in the

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<sup>1</sup> NOAA Fisheries. June 2021. Northwest Atlantic mackerel: 2021 Management Track Assessment Report [Draft]. [https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/612c54d5f1970e234ac3dcce/1630295254487/c\\_2021+Atlantic+Mackerel+MT+assessment+report.pdf](https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/612c54d5f1970e234ac3dcce/1630295254487/c_2021+Atlantic+Mackerel+MT+assessment+report.pdf).

<sup>2</sup> NOAA Office of Science and Technology. Northeast Fish and Shellfish Climate Vulnerability Assessment. <https://www.st.nmfs.noaa.gov/data-and-tools/northeast-fish-and-shellfish-climate-vulnerability/index>.

northwest Atlantic.<sup>3</sup> In recent years, many of our members have witnessed high mackerel biomass in the western Gulf of Maine from Cape Cod to Maine; however, that observation is not inconsistent with the relatively stable results of the egg survey in the region (i.e., hyperstability) even as the overall survey index (used to estimate SSB) has declined.

In deciding on both a preferred rebuilding alternative and recreational measures, we are in favor of an approach that effectively recovers this critical species while distributing the burdens of doing so across the different sectors that rely on this fishery. Given the uncertainties associated with future mackerel recruitment and Canadian landings—which are “taken off the top” of U.S. landings due to lack of a transboundary agreement—a risk-averse approach that maximizes the probability of success amongst these unknowns is needed.

### Preferred Rebuilding Alternative

In principle, we would be supportive of Rebuilding Alternative 3, which is based on the MAFMC’s standard P\* risk policy and was recommended by the Scientific and Statistical Committee. However, as the Public Hearing Document mentions, this alternative (along with Alternatives 1 and 2) does not appear practicable at this time given that it would result in zero or negative commercial quotas in 2023. A related concern with Alternative 3 is the possibility that, depending on the assumption regarding Canadian landings, it could also lead to a closure of the recreational fishery in 2023. We certainly appreciate the need for all sectors to make sacrifices when a stock is overfished. However, to suddenly move from a completely unregulated recreational fishery for mackerel to a prohibition on harvest in a single management action—especially given the high observed biomass of mackerel in the Western Gulf of Maine—would undermine the recreational community’s faith in the Council and jeopardize its engagement on future issues.

**As a result, at this time, we are supportive of Rebuilding Alternative 4, which would use a constant fishing mortality (F) of 0.12 and has a 61% probability of rebuilding the stock in 10 years.** Alternative 4 would still lead to substantial decreases in commercial landings—28-80%—and thus put the stock on a path to rebuilding while recognizing the challenges and uncertainties that are unique to this fishery. Given that the next Atlantic mackerel management track assessment (MTA) is scheduled for 2023, our understanding is that the selection of a preferred rebuilding alternative at this time is largely for the purposes of setting fishery specifications for 2023. If the results of the 2023 MTA indicate some improvement in stock status, we recommend that the MAFMC revisit the possibility of implementing the P\* rebuilding approach (i.e., Alternative 3).

### Preferred Recreational Management Measures

As commercial landings have decreased in recent years, landings from the recreational sector, which have averaged about 2,600 mt since 2017, have become a relatively larger proportion of removals. This development, along with MSA’s requirement that restrictions be allocated “fairly

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<sup>3</sup> Fisheries and Oceans Canada. July 2021. Assessment of the northern contingent of Atlantic Mackerel (*Scomber scombrus*) in 2020. <https://waves-vagues.dfo-mpo.gc.ca/Library/4098865x.pdf>.

and equitably” among fishery sectors,<sup>4</sup> underscores the need for recreational measures to be implemented as part of this amendment.

At the same time, it is important to recognize that some retention of mackerel is valued by the recreational community, both for personal consumption and for use as live and dead bait by anglers and for-hire captains targeting striped bass and pelagic species such as bluefin tuna and sharks. For charter captains during the summer months, a livewell full of mackerel can be the difference between an action-packed trip and repeat clients or a long, trying day on the water.

Moreover, as noted previously, the recreational mackerel fishery has never been subject to regulations; the prospect of moving from “nothing” to “something” has not only caused concern among members of the recreational community but could lead to management uncertainty regarding what the conservation impact of new measures would be. As the Public Hearing Document mentions, “there have been no recreational limits for mackerel before, so angler responses may be difficult to predict.” As this amendment will only be used to set specifications for 2023, Marine Recreational Information Program (MRIP) estimates will be available in early 2024 to assess what impact any new measures may have had in 2023.

In balancing the importance of mackerel to the recreational community with the need for anglers to bear some of the burden in rebuilding the stock, **we are supportive of a 15-fish per person possession limit for the 2023 season.** Such a measure would provide some opportunities for harvest and enable live-bait anglers/charter captains to continue using mackerel while also making a meaningful contribution to stock recovery. Given the dynamic nature of the live-bait fishery for mackerel and the enforcement difficulties it can engender, we believe the limit should be for possession (i.e., how many fish are in the livewell at any one time), rather than a bag limit. As with the rebuilding plan, these measures could be revisited following an assessment of their impacts in 2023 (along with the findings of the 2023 mackerel MTA).

In addition to implementing a possession limit, we recommend that the Council consider provisions that account for the fact that anglers often use frozen mackerel (either purchased or caught on a previous trip) as chum or chunk bait. While we do not have any clear solutions to this challenge at this time, we are of the opinion that such bait should not count toward the per-person possession limit.

#### Permitting/Reporting

**We are supportive of additional outreach and compliance assistance by NOAA Fisheries regarding the need for commercial and for-hire vessels possessing mackerel in federal waters to obtain the appropriate permits and report catch on vessel trip reports (VTRs).** This information is critical for better understanding the “universe” of fishermen fishing for and catching mackerel and could eventually be used to develop catch estimates from the for-hire fleet. Better data will lead to a more favorable long-term outlook for this species.

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<sup>4</sup> Magnuson–Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1854 (2012).



Thank you for the opportunity to submit our comments, and we look forward to working with you to recover this stock.

Sincerely,

A handwritten signature in cursive script that reads "Willy Goldsmith".

Willy Goldsmith, Ph.D.  
Executive Director  
American Saltwater Guides Association

A handwritten signature in cursive script that reads "Greg Vespe".

Greg Vespe  
Executive Director  
Rhode Island Saltwater Anglers Association

Jason Didden  
Fishery Management Specialist  
Mid-Atlantic Fishery Management Council

RE: Atlantic Mackerel Stock Status and Rebuilding

First, accept my second-hand apologies on behalf of some of those participating in the public information webinar on Tuesday, January 12, 2022. Their behavior was embarrassing and is a bad reflection upon those of us willing to participate in a productive dialog. I would add that some fault lies in the moderation or lack thereof. You were obviously trying to do your best in handling a contentious issue.

Hopefully my comments below will be more constructive.

First and foremost I would echo the sentiments of commissioners from the three New England states: As we would feel the greatest impact of any proposed changes. “It is concerning that such a substantial and contentious action could be taken with little public input.... It would be instructive to New England stakeholders and decision-makers to conduct initial information-gathering hearings with the public to better understand potential impacts of a reduction before designing specific management actions.”

**1) No shortage up north** - As you’ve heard, and will no doubt continue to hear, anecdotal observations from the recreational and commercial fishermen in state and federal waters of Maine are that there has been no lack of mackerel, from small to large, in these waters in the past several years. In recent years in Casco Bay and nearshore waters of the Gulf of Maine I have observed shoals of mackerel in late May and early June covering tens of acres, and spread out over several miles. I’m on the water from April through October and maintain regular contact with recreational fishermen other charter captains and there are always mackerel available as a directed catch or for bait. We catch them regularly offshore when fishing for bait from the surface to the bottom and while size is often variable, the last two years have produced a lot of larger fish, some up to 2 pounds.

**2) Relocation** - You may have addressed this in your presentation but the circus was a little distracting. Clearly, the stock has shifted farther north, as it has for several species, e.g. black sea bass. Fewer mackerel landings in the Mid-Atlantic may well be due to stock relocation to cooler waters rather than poor stock status. Continuing to survey for them in other areas, outside the Gulf of Maine might be something of a self-unfulfilling prophecy. If you don’t look where they are, you won’t find them.

**3) Flawed Data** - Have you looked at CPUE instead of just total catch? Since the commercial herring quota has been significantly reduced, fewer mackerel are being landed due to reduced effort, which could explain a substantial reduction in commercial mackerel landings.

**4) More Flawed Data** - The National Academy of Science recent MRIP review would suggest

that this MRIP data needs to be reassessed and revised for it to be at all reflective of the New England fishermen's catch. A lack of dockside intercepts and/or telephone interviews necessitates flawed assumptions regarding recreational landings and distorts MRIP recreational data. We recently addressed this with regard to bluefin, which led to a second consecutive assessment and updating of models used to assess data.

**5) Still More Flawed Data** - It's difficult to substantiate without empirical data but the 100% mortality assumption seems grossly inaccurate. Clearly more research is needed here but I can offer that when caught on a Sabiki and run on an 8/0 hook all day as tuna bait, mackerel remain quite healthy and alive. I find it hard to believe that being flipped off a Sabiki hook and released would result in 100% mortality.

**6) Impact** - The recreational, for-hire and commercial fishing communities in Maine rely heavily on mackerel for bait and as an alternative recreational fishery. We lack the variety and diversity of gamefish found in other regions like the mid-Atlantic. Striped bass are the foundation of Maine's for-hire fleet and recreational saltwater fishery. Taking away the primary method of fishing - live mackerel as bait - could be financially devastating, and is unnecessary considering the minimal impact compared to that of the commercial fishery. Furthermore, implementing measures on New England fishermen without consideration of their input will most certainly create a loss of support and confidence in fisheries management in general, and resentment for distant council control.

I sincerely hope the MAFMC will consider taking a step back and slowing down the timeline to consider potentially flawed assumptions and the potential impact proposed measures could have on northeast fisheries.

Respectfully,

Capt. Bob Humphrey  
President, Casco Bay Bluefin Bonanza  
Member, Maine Association of Charterboat Captains  
NOAA Fisheries Highly Migratory Species Advisory Panel  
ASMFC Striped Bass Advisory Panel  
727 Poland Range Road  
Pownal, ME 04069  
(207) 688-4966 o  
(207) 831-7228 c  
bob@bobhumphrey.com



May 9, 2022

Re: Mackerel rebuilding

Chris Moore, Ph.D.,  
Executive Director, Mid-Atlantic Fishery Management Council,  
800 North State Street, Suite 201  
Dover, DE 19901  
[jdiddden@mafmc.org](mailto:jdiddden@mafmc.org)

Dear Dr. Moore,

We are writing on behalf of two Canadian environmental NGOs. Both of our organizations have a focus on sustainable fisheries management and vibrant coastal livelihoods. We are members of the Atlantic Mackerel Advisory Committee and attend science and management meetings for Atlantic mackerel in Canada. Thank you for the opportunity to provide comments on the proposed U.S. amendment to rebuild Atlantic mackerel.

We have been concerned about the status of the Atlantic mackerel populations and corresponding management decisions from both Canada and the U.S. for years. According to the latest Canadian stock assessment, the northern mackerel contingent has been in Canada's "critical zone" since 2011, with spawner abundance reaching record lows in 2020. Against the backdrop of this overwhelming evidence of stock depletion, Canada reduced the Total Allowable Catch (TAC) to 4000 metric tonnes in 2021 and took the unprecedented step of closing the commercial and bait fisheries for 2022. We were encouraged that the U.S. reduced the commercial catch limit for 2022 to 4,963 metric tonnes. However, as this stock has been in decline for decades and given its critical importance as a forage fish for so many marine species, it is critical that fishing mortality be held to the lowest possible level. This should preferably be in conjunction with a closure of the commercial fishery throughout the entirety of the Atlantic mackerel stock range.

Fisheries and Oceans Canada (DFO) undertook a multi-year participatory Management Strategy Evaluation analysis which was completed in 2019. It concluded that the stock was unlikely to rebuild above our limit reference point with high probability (>75 percent) within the next 10 years if the catches—which included Canadian TAC and unaccounted-for mortalities—remained near recent levels. It is our view that DFO's 2021 Atlantic mackerel stock assessment results

combined with the MSE assumptions and conclusions most closely resemble those in rebuilding alternative 1 provided by the Mid-Atlantic Fishery Management Council.

The level of fishing activity in the U.S. for Canadian-spawned Atlantic mackerel is a concern for both the future sustainability of this stock and for the future prosperity of Canadian harvesters. Canadian management decisions to encourage rebuilding could prove negligible if many of the same mackerel are still harvested when they migrate south in the winter months. U.S. scientists provided a preliminary estimate that perhaps 50 percent of mackerel caught in the U.S. winter fishery may be from Canada (the northern contingent). The U.S. has recently been establishing a TAC in their fishery that is double the recent Canadian established level (before this year's closure). It is imperative for the future health of this population and for harvesters on both sides of the border that the U.S. and Canada take commensurate action to rebuild.

We are concerned that in some of the proposed alternatives, the amount of catch that Canada is leaving in the water for rebuilding is in essence being made available to U.S. fishermen. We understand that U.S. law requires that Canadian catch be removed from the ABC. However, in the case that catches are deliberately kept low for the purpose of leaving the fish in the water, we think this is a problematic application that could hinder rebuilding.

In 2021, Canada passed a regulation pertaining to the recreational fishery. It put in place a seasonal closure (from January to March), a minimum size of 268 mm, and a bag limit of 20 fish per day per person. We support the U.S. going forward with a proposed 10 or 15 fish bag limit to mirror these efforts.

In, conclusion, we urge the Mid Atlantic Fishery Management Council to follow Canada's lead by eliminating most catch and closing the commercial fishery, as this is the fastest way to rebuild the stock and sustain thriving fisheries once again.

Sincerely,

Sebastián Pardo  
Sustainable Fisheries Coordinator  
Ecology Action Centre

Katie Schleit  
Senior Fisheries Advisor  
Oceans North



May 09, 2022

Dr. Christopher Moore, Executive Director  
Mid-Atlantic Fishery Management Council  
800 North State Street, Suite 201  
Dover, DE 19901

**Re: Atlantic Mackerel Rebuilding 2.0 Amendment**

Dear Dr. Moore and members of the MAFMC:

On behalf of the members of the Maine Association of Charterboat Captains [MACC], thank you for the opportunity to comment on the Mid-Atlantic Fishery Management Council [MAFMC] Atlantic Mackerel Rebuilding 2.0 Amendment.

Our members are split on aspects of our input to the MAFMC regarding next steps for mackerel management.

Not a topic of debate is the importance that mackerel play to many of our operators. They are far and away the primary and preferred live and dead bait choice for striped bass, bluefin tuna, and sharks. Here in Maine we don't have much else to target. Mackerel are also the primary target species on many "family fishing charters" and in regions of Maine where we don't have a reliable striped bass fishery and distance to tuna/shark grounds is substantial. Our members are also acutely aware of the role that mackerel play as forage for striped bass, bluefin tuna, and sharks.

Our members fall into two general categories regarding recommendations to the MAFMC that are well represented by two separate comments submitted by others.

Capt. Bob Humphrey [MACC member] submitted comments [copy attached] to the MAFMC that lays out an eloquent argument **against any of the 5 Rebuilding Alternatives** presented in the 2.0 Amendment. It includes important concerns held by many of our members regarding:

- Findings of local abundance
- Climate-driven geographic shift of stock
- Data limitations associated with stock assessment, MRIP, and release mortality
- Economic impact to our fisheries in Maine

- Limited impact to mackerel mortality by our sector
- Lack of representation from Maine on the MAFMC

Dr. Willy Goldsmith [American Saltwater Guides Association] and Greg Vespe [Rhode Island Saltwater Anglers Association] make an excellent case [comment letter attached] for **Rebuilding Alternative 4 and a 15 fish per person possession limit that** summarizes the perspective of many of our members, highlighting:

- Concern regarding disappointing findings of the 2021 Management Track Assessment
- Acknowledgement and support of the requirements of the Magnuson-Stevens Act and that all previous cuts to mackerel harvest have only affected the commercial sector
- Canadian findings challenging the assumption that mackerel have just moved north
- First time regulation of the fishery for the recreational sector is both an opportunity and a challenge, especially regarding permitting and reporting

Additional comment from another MACC member who's been active in fisheries management for a long time includes observations that:

- Mackerel science overall is inadequate
- Stock assessments and management measures should be conducted regionally not as a coastwide, international stock
- Displaced effort as a result of mackerel limits will increase harvest of river herring for bait

MACC members with disparate views on next steps have expressed common desire to treat frozen mackerel [previously caught or purchased] as separate and distinct from any daily bag or possession limit.

The 2022 National Saltwater Recreational Fisheries Summit provided an excellent forum on the need for improving recreational data collection and usage. Mackerel permitting requirements serve as the introduction to federal reporting for many inshore for-hire operators in Maine who focus on state managed striped bass. It behooves both the MAFMC and NOAA Fisheries to consider the “first impression” these regulations and outreach efforts will make on long-term acceptance of permitting/reporting requirements. Additionally, making good use of data collected through mackerel permitting/reporting will build buy-in from for-hire operators.

Going forward, you can expect good-faith participation in the mackerel management process from the Maine Association of Charterboat Captains. We're committed to continued engagement with the MAFMC, NOAA Fisheries, and Maine Department of Marine Resources. We stand ready to participate in cooperative research and support investment in advancing the science behind mackerel stock assessments and investigation into advancing better understanding of release mortality.

Thank you again for considering our input as you and the MAFMC make decisions as part of the Atlantic Mackerel Rebuilding 2.0 Amendment.

Sincerely,

Capt. Peter Fallon

President, Maine Association of Charterboat Captains  
207-522-9900  
pfallon@mainestipers.com



May 9, 2022

Chris Moore, Executive Director, MAFMC  
Mike Luisi, Chair, MAFMC  
Peter Hughes, Chair, MSB Committee  
Sara Winslow, Chair, RH/S Committee  
Mid-Atlantic Fishery Management Council  
800 N. State St, Suite 201  
Dover, DE 19901

**Re: Comments on Mackerel Rebuilding Version 2: Amendment to the Mackerel, Squid, and Butterfish Fishery Management Plan: Measures to Rebuild the Atlantic Mackerel Stock Including 2023 Specifications and the River Herring and Shad (RH/S) Cap (Mackerel Rebuilding Plan Version 2)**

Dear Mr. Moore, Mr. Luisi, Mr. Hughes, and Ms. Winslow:

We are writing on behalf of The Pew Charitable Trusts (Pew), Bennett Nickerson Environmental Consulting (BNEC), and Conservation Law Foundation (CLF) to provide comments on the draft Mackerel Rebuilding Plan Version 2. A healthy forage base is essential to the ocean ecosystem of the Northwest Atlantic. The Atlantic mackerel (mackerel) stock, like stocks of many other important forage species, has declined dramatically since 1970, in large part due to overfishing. Management decisions that ignored a strong retrospective pattern of low recruitment and overfishing resulted in mackerel being overfished for over 30 years<sup>1</sup> and a stock that, at its lowest point, had decreased to less than 10 percent of its target biomass.<sup>2</sup> The Mid-Atlantic Fishery Management Council's (Council) previous attempt to rebuild mackerel was based on decision-making that allowed overfishing to continue when managers should have been stewarding mackerel's rebuilding and recovery. In the Mackerel Rebuilding Plan Version 2, selecting a rebuilding plan with the greatest likelihood of success is paramount.

The Council should follow the best available science before long-term harm to the mackerel population and broader ecosystem occurs and while impacts on the fishery remain only temporary. Taking a precautionary approach to rebuilding will deliver the best chance to return this fishery to greater abundance and high value for the nation, which for fast growing species of forage fish like mackerel, can happen relatively quickly if fishing is set appropriately low. Following the best available science, the Council should select Alternative 1 for the Mackerel Rebuilding Plan Version 2, because it presumes lower, post 2009 recruitment persists throughout

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<sup>1</sup> March 2022. MAFMC. [Mackerel Rebuilding Version 2: Amendment to the Mackerel, Squid, and Butterfish Fishery Management Plan: Measures to Rebuild the Atlantic Mackerel Stock Including 2023 Specifications and the River Herring and Shad \(RH/S\) Cap](#). P. 9. (2022 Mackerel Rebuilding Plan Version 2).

<sup>2</sup> [2021. NOAA. Management Track Assessment for Atlantic mackerel](#)



the rebuilding timeline and has the “highest overall probability of rebuilding.”<sup>3</sup> The lower recruitment timeframe accurately represents the current status of the mackerel stock and should be the basis for determining how much, if any fishing should occur during rebuilding. While the Public Hearing Document deems Alternative 1 as “impractical,” because under Alternative 1 directed U.S. catch would have to be brought down to essentially zero, we strongly believe this is the only viable alternative to recover this essential species of forage fish. Canada closed its fishery for 2022 and will follow the science for 2023. The Council must now make the necessary and difficult decision to close directed commercial and recreational mackerel fishing in the Exclusive Economic Zone (EEZ) to ensure the recovery of the stock. Additionally, the council should apply the P\* deduction to Alternative 1 to comply with the Council’s risk policy, scale the RH/S catch cap down when directed fishing resumes, and set an upper limit for the RH/S catch cap that prevents overexploitation if the mackerel stock thrives once more.

**Specifically, the Council should:**

- **Select Alternative 1 that presumes lower, post 2009 recruitment to calculate rebuilding Atlantic mackerel, because it represents the best available science, has the highest overall probability of recovering the stock, and essentially sets commercial and recreational directed fishing in the EEZ at zero;**
- **Apply the P\* deduction to Alternative 1 to comply with the Council’s risk policy;**
- **Follow the decision from the Mackerel Rebuilding Plan Version 1 and scale the RH/S catch cap to the mackerel Domestic Annual Harvest (DAH) with a lower limit of 89 mt and an upper limit of 155 mt;**
- **Implement a 10 fish bag limit for the recreational fishery; and,**
- **Require a minimum codend mesh size of 3 inches.**

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**The Council should select Alternative 1 that presumes lower, post 2009 recruitment to calculate rebuilding Atlantic mackerel, because it represents the best available science, has the highest overall probability of recovering the stock, and essentially sets commercial and recreational directed fishing in the EEZ at zero**

Alternative 1 is the only alternative offered in the rebuilding plan that represents the best scientific information available and presumes low recruitment when determining the rebuilding trajectory and allowable catch throughout the plan. All the other alternatives in the Public Hearing Document initially use the 2009-2019 low recruitment—the best available science—until spawning stock biomass (SSB) reaches 50 percent of the target, then they use an expanded timeframe of 1975-2019 to introduce the higher recruitment of the 1970s, 80s, 90s, and early 2000s to justify increasing catch during rebuilding. The higher recruitment levels prior to 2009 are not the best available science and have no bearing on the current status of the mackerel stock and should not be used to determine the allowable level of catch—especially when the stock is overfished and overfishing has been occurring for 30 years.<sup>4</sup> The two-tiered process used in alternatives 2 through 5 employ outdated recruitment data to justify increased catch levels that will undermine recovery by increasing fishing at the very moment the population is expected to

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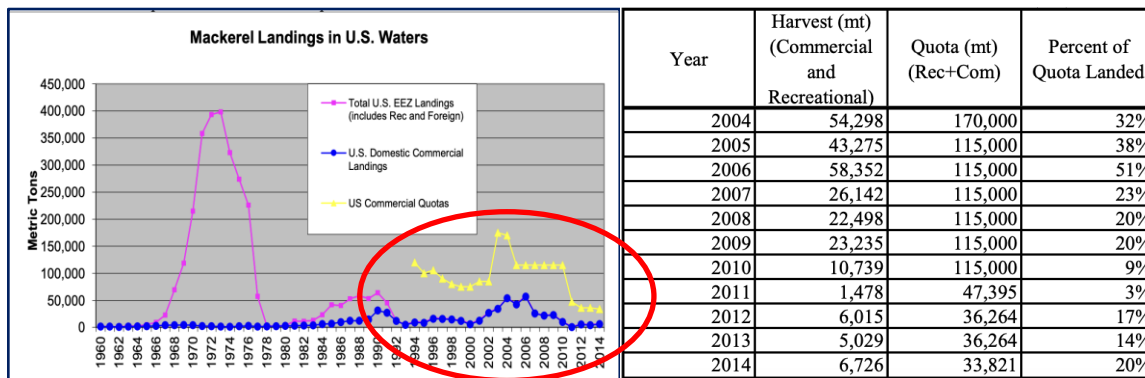
<sup>3</sup> 2022 [Mackerel Rebuilding Plan Version 2](#). P. 21.

<sup>4</sup> 2022 [Mackerel Rebuilding Plan Version 2](#). P. 9.

rebound. This is a demonstrated path for failure—the unsuccessful “Version 1” rebuilding plan took a similar approach, necessitating the now contemplated “Version 2”—for both the mackerel stock and the directed fishery. Instead, the Council must follow the best available science that indicates mackerel recruitment and SSB are alarmingly low and that “long-term rebuilding will be required for this stock.”<sup>5</sup> Alternative 1 accomplishes this by essentially closing directed commercial and recreational fishing in the EEZ, which is necessary to allow for the stock to rebuild in earnest and to comply with Magnuson-Stevens Fishery Conservation and Management Act (MSA).

Background – Mackerel management and overfishing

There has always been uncertainty in management of mackerel. Prior to the 2018 Atlantic Mackerel Stock Assessment, the most recent assessment of the Atlantic mackerel stock was the Transboundary Resources Assessment Committee in 2010 (TRAC 2010) that analyzed data through 2008.<sup>6</sup> The results of that transboundary stock assessment were so uncertain that the TRAC agreed that “short term projections and characterization of stock status relative to estimated reference points would not be an appropriate basis for management advice.”<sup>7</sup> The 2010 TRAC determined that assessments prior to 2010 were also unreliable and thus, until the 2018 Atlantic Mackerel Stock Assessment became available it was unknown if the stock was overfished or if overfishing was occurring.<sup>8</sup> Because underlying data was unreliable in guiding management, decades of management decisions were not rooted in science based determinations of how much fishing pressure the stock could sustain. Instead, Acceptable Biological Catch (ABCs) and U.S. quotas were based on average landings from previous years.<sup>9</sup> Specifically, for 2013, 2014, and 2015 the 80,000 mt ABC was based in landings data from 2006-2008.<sup>10</sup> And then for the decade from 2004-2014, there was only one year when commercial landings exceeded 50 percent of the quota. (See Figure 1) In fact: the U.S. quota has never constrained the fishery and has allowed overfishing to hammer the stock year after year.



**Figure 1:** US commercial quota versus actual Mackerel landings<sup>11</sup>

<sup>5</sup> 2022 [Mackerel Rebuilding Plan Version 2](#). P. 3.

<sup>6</sup> 2010, O'Brien L, Worcester T. 2010. Proceedings of the Transboundary Resources Assessment Committee [Mackerel Benchmark Assessment](#); 2015. Didden, J. MAFMC [Mackerel AP Information Document](#).

<sup>7</sup> 2015. Didden, J. MAFMC [Mackerel AP Information Document](#). P. 2.

<sup>8</sup> 2015. Didden, J. MAFMC [Mackerel AP Information Document](#). P. 2.

<sup>9</sup> 2015. Didden, J. MAFMC [Mackerel AP Information Document](#), 2014. Didden, J. MAFMC [Mackerel AP Information Document](#), 2013. Didden, J. MAFMC [Mackerel AP Information Document](#).

<sup>10</sup> 2015. Didden, J. MAFMC [Mackerel AP Information Document](#), 2014. Didden, J. MAFMC [Mackerel AP Information Document](#), 2013. Didden, J. MAFMC [Mackerel AP Information Document](#).

<sup>11</sup> [2015 MAFMC. Mackerel AP Fishery Information Document](#). P. 3 and 8.

These risky management decisions continued even as precipitous declines in Spawning Stock Biomass (SSB), recruitment, and egg count were apparent. (See: Figure 3). Setting ABCs and U.S. specifications based on how mackerel was fished in previous years allowed overfishing to persist for decades, ultimately causing stock collapse and driving SSB so low that recovering the stock in 10 years will be challenging and managers are limited to only hard choices.

It is the Council’s policy to manage Atlantic mackerel and all forage species with a precautionary approach when the stock is healthy, but even more importantly when the stock is in peril. The Council committed to “support the maintenance of an adequate forage base in the mid-Atlantic to ensure ecosystem productivity, structure and function and to support sustainable fishing communities.”<sup>12</sup> Maintaining healthy forage stocks is essential for ocean ecosystem health and productivity and the economies of coastal communities along the mid-Atlantic coast. Atlantic mackerel is a key part of the forage base of the mid-Atlantic that supports the populations of many larger fish and their associated fisheries including bluefish, sharks, and tunas. A successful recovery of this species will improve more than just this species’ population and its reliant fishery, it will also improve overall ecosystem health, and help support many other predator species that contribute to the ocean ecosystem and communities along the mid-Atlantic coast.

The mackerel stock is so severely depleted that its population is a mere fraction of what it was in the 1970’s. Mackerel is not the only struggling forage species in the region. Atlantic herring are fished by many of the same boats as mackerel, and were declared overfished in October 2020 and entered a rebuilding plan in September 2021.<sup>13</sup> Butterfish are considered “below target level”<sup>14</sup> and 2021 specifications for butterfish reduced catch by 72 percent stating that “the 2020 butterfish management track assessment found butterfish to be not overfished with no overfishing occurring in 2019, but if the full ABC had been caught, projections suggest overfishing would have occurred and the stock would have become overfished.”<sup>15</sup> For all these species, more precautionary management is imperative.

### What the Council should learn from the failed Atlantic Mackerel Rebuilding Version 1

After decades of setting specifications based on previous landings and allowing systemic overfishing that resulted in considerable decline in SSB, the mackerel stock reached a low point in 2012-2014 at around 8-9 percent of the biomass target.<sup>16</sup> The 2018 stock assessment declared that the mackerel stock was overfished and overfishing was occurring in 2016.<sup>17</sup> In response to the overfished and overfishing determination, the Council embarked on a mackerel rebuilding plan as required by the MSA. That plan went into effect November 2019. It set out a five-year rebuilding timeline that relied on an overly optimistic forecast of recruitment from the 2015 year

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<sup>12</sup> 2022 [Mackerel Rebuilding Plan Version 2](#). P. 15.

<sup>13</sup> Sept. 2021, NEFMC. [Atlantic Herring: Council Approves Stock Rebuilding Plan](#) and Adjustments to Accountability Measures in Framework 9.

<sup>14</sup> NOAA Species directory. [Butterfish](#).

<sup>15</sup> Fisheries of the Northeastern United States; [Atlantic Mackerel, Squid, and Butterfish Fisheries: Specifications](#).

86 Fed. Reg. 38586, 38587.

<sup>16</sup> July 13, 2021. [Didden, J. Memorandum to C. Moore](#). Mackerel Rebuilding Modification/Re-assessment and Potential Emergency Action; SSC Meeting.

<sup>17</sup> 2018. Northeast Fisheries Science Center. 64<sup>th</sup> Northeast Regional Stock Assessment Workshop: Assessment Summary Report. [Atlantic Mackerel Assessment Summary for 2017](#).

class, and predicted SSB would reach 162,796 mt in 2019.<sup>18</sup> The subsequent Management Track Assessment (MTA) demonstrated that the anticipated recruitment from the 2015 year class never materialized and determined that in fact SSB was only 42,862 mt in 2019, less than 25 percent of the rebuilding target.<sup>19</sup> The lack of a precautionary approach and resulting discrepancy resulted in the stock being overfished with overfishing occurring in every year of the plan,<sup>20</sup> leading to the plan's inevitable failure to rebuild the mackerel stock.

The first mackerel rebuilding plan failed because overly optimistic projections of recruitment guided catch levels for 2019, 2020, and 2021 that allowed overfishing to continue, preventing recovery of the stock. Mackerel catch in these years was significantly below the rebuilding quota, following the same pattern of overoptimistically setting catch and overfishing the stock.<sup>21</sup> The Council is poised to repeat this same mistake. In the Mackerel Rebuilding Plan Version 2, Alternatives 2-5 follow a similar, fatal logic. The two-tiered approach to the recruitment data implies a shift in recruitment that is neither supported by the science or data.<sup>22</sup> The persistent low recruitment in Alternative 1 represents the reality of the situation and has a slow but steady and reliable increase in SSB that recovers the mackerel stock in 10 years.<sup>23</sup> By contrast, the two-tiered approach used in Alternatives 2-5 brings considerable uncertainty in the probability that the stock will recover as projected, if at all. (See Figure 2).

The SSC outlined several other risks inherent in the two-tiered recruitment alternatives. These risks include: the possibility that the stock will not recover without lowering fishing mortality as proposed in Alternative 1; a concern that the shift to the expanded recruitment timeframe is triggered by a SSB threshold, which presumes a relationship between SSB and recruitment when this relationship is unknown for mackerel, and for which there is limited analytical support, and thus is potentially inaccurate; recruitment of mackerel has typically come in pulses and the SSB trigger that allows for increased catch may undermine the pulse of recruitment or be ill timed in relation to it; and the lack of a precedent in this approach makes determining its potential for success challenging. Knowing these concerns, the two-tiered approach is too uncertain and could potentially jeopardize rebuilding (again) and undermine the future of not just the directed fishery, but also the functionality of the northwest Atlantic marine ecosystem.

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<sup>18</sup> 2022 [Mackerel Rebuilding Plan Version 2](#), P. 10.

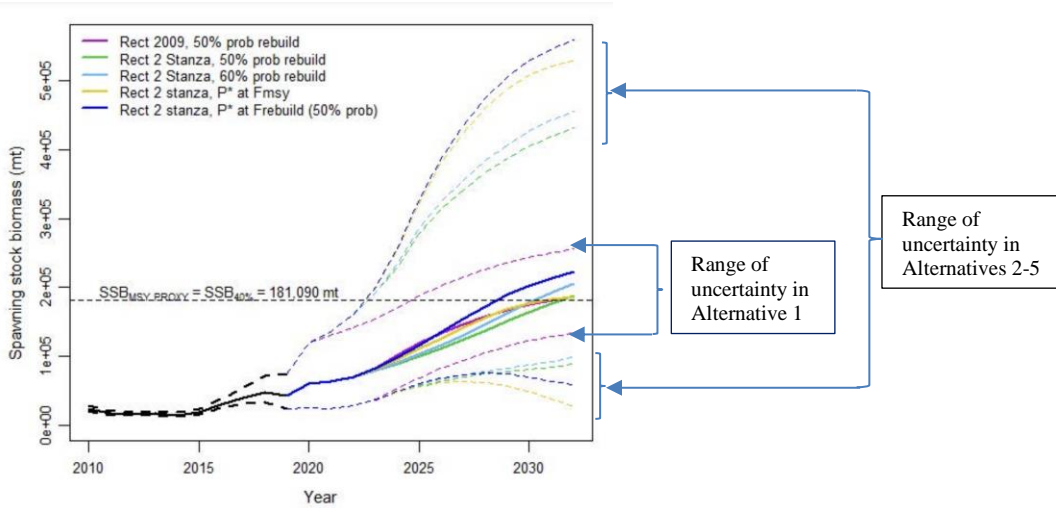
<sup>19</sup> 2022 [Mackerel Rebuilding Plan Version 2](#), P. 10.

<sup>20</sup> 2021, NOAA, [Management Track Assessment for Atlantic mackerel](#).

<sup>21</sup> 2022, MAFMC, Atlantic Mackerel Fishery Information Document ([Showing 2021 quota and landings](#)); 2021, MAFMC, Atlantic Mackerel Fishery Information Document. ([Showing 2020 quota and landings](#)); 2020, MAFMC, Atlantic Mackerel Fishery Information Document. ([Showing 2019 quota and landings](#)).

<sup>22</sup> 2022 [Mackerel Rebuilding Plan Version 2](#), P. 18.

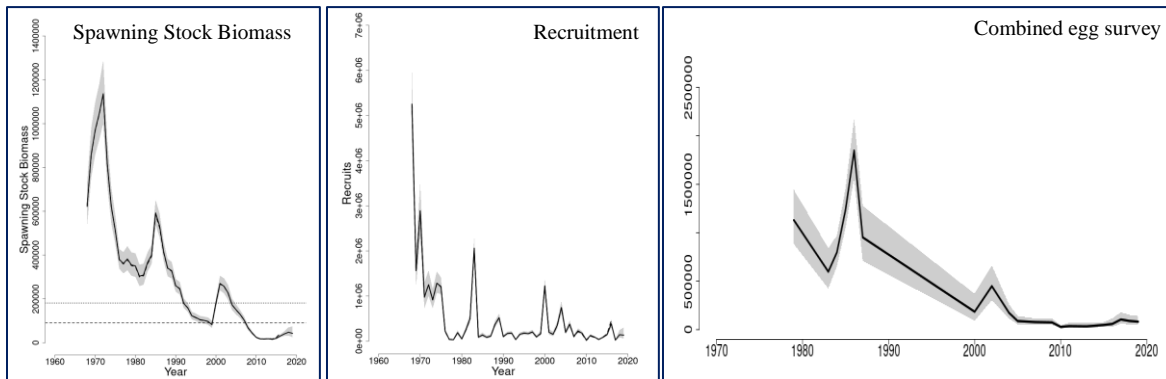
<sup>23</sup> [Staff projections of SSB for the 5 Alternatives](#) in Mackerel Rebuilding Plan V2 as presented to the Science and Statistical Committee at the March 15-16, 2022 meeting.



**Figure 2:** Mackerel SSB rebuilding projections for all alternatives. For Alternative 1 (bright pink) the range of uncertainty and risk of not rebuilding is lowest

Low recruitment represents the true situation of mackerel stock and rebuilding specifications should be based on the low 2009-2019 recruitment levels

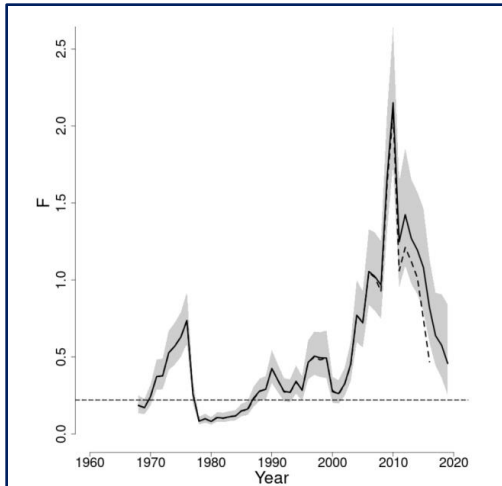
Mackerel recruitment has been low since 2003. The cause of the reduced recruitment is unknown, but it is likely a combination of environmental conditions and reduced SSB. Regardless of cause, the dramatic and continued downward trend of mackerel SSB and its recruitment from 1960 to the present is undeniable.<sup>24</sup> Conversely, fishing has increased over this time period, creating a clear picture that decades of fishing pressure and overfishing coincide directly with the decline and ultimate collapse of the mackerel stock.



**Figure 3:** Precipitous declines in Atlantic mackerel spawning stock biomass, recruits, and egg count as shown in the 2021 Management Track Assessment<sup>25</sup>

<sup>24</sup> 2022 [Mackerel Rebuilding Plan Version 2](#), P. 12.

<sup>25</sup> 2021. NOAA. [Management Track Assessment for Atlantic mackerel](#)



**Figure 4:** 2021 Northwest Atlantic Mackerel Management Track Assessment Report of fishing mortality<sup>26</sup>, also found in Atlantic mackerel rebuilding plan Version 2<sup>27</sup>

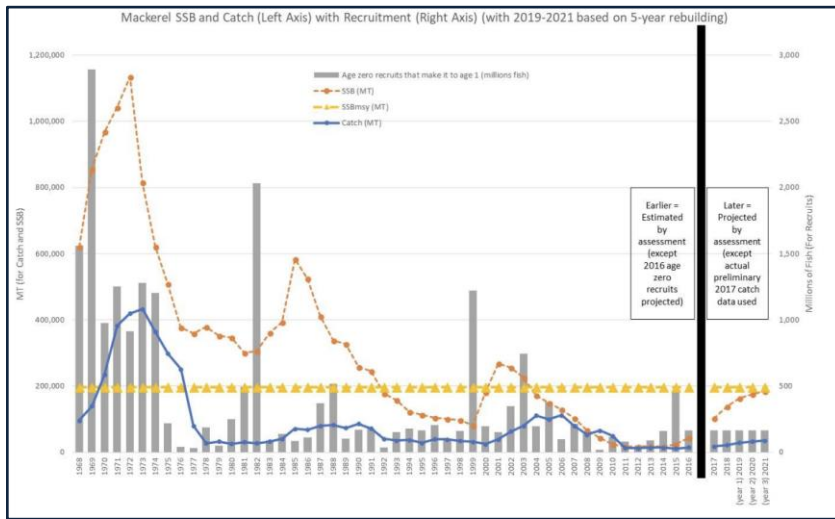
These graphs viewed together provide a clear picture of the impact overfishing has had on the mackerel stock. The health of mackerel in 1970 has no value in determining the ABC for mackerel in 2023, particularly in a revised rebuilding plan. However, these 1970 to present graphs demonstrate two things: 1) continuing the current management trend of setting ABCs based on previous catch levels and overly optimistic stock projections will only exacerbate the downward trend in SSB and recruitment that has been occurring since the mid-1970s; and, 2) if you initially remove and then limit fishing pressure, the stock can recover its historical vitality.

There have been four major recruitment events since 1976. Each of these recruitment events were followed by a spike in SSB, which never materialized into an enduring biomass increase, because fishing was increased shortly after increases in SSB. (See Figure 4). Alternatives 2-5 expand the recruitment timeframe as soon as SSB reaches the 50 percent rebuilt mark, following the historical pattern to allow for an increase in fishing as soon as the stock is beginning to recover—this lack of precautionary management is ultimately preventing enduring increases in SSB and the recovery of mackerel.

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<sup>26</sup> 2021. NOAA. Management Track Assessment for Atlantic mackerel

<sup>27</sup> 2022 Mackerel Rebuilding Plan Version 2. P. 11 and 12.



**Figure 4:** Mackerel SSB and catch, including 2019-2021 rebuilding projections under the initial 5-year rebuilding plan

Canada cut catch by 50 percent last year, and has now closed their 2022 fishery

Mackerel is a transboundary stock, which complicates management, because the mackerel ABC must be divided between the U.S. and Canada and there needs to be coordination as both countries make management decisions. Canada has determined that the mackerel stock has dropped below allowable levels and is implementing its own rebuilding plan. In doing so, Canada determined that none of their harvest control rules would result in the stock recovering to sustainable levels. As a result, Canada closed their directed commercial fishery for 2022, and determined that allowing directed commercial fishing would result in continued stock decline. While the recreational fishery remains open, Canada continues to apply a daily recreational limit that was instituted for the first time in 2021. Canada has a pending stock assessment that is projected for release in early 2023. While we cannot predict the future, we expect Canada to significantly limit future catch to enable rebuilding of the stock as the best available science demands. The U.S. should adopt similar policies and close its directed commercial and recreational fishing in the EEZ for 2023 to allow for recovery of the stock.

**Apply the P\* deduction to Alternative 1 to comply with the Council’s risk policy**

The Council’s risk policy was adopted to address precisely the situation where a stock is overfished or overfishing is occurring. Additionally, the policy was designed to ensure the Council makes consistent and precautionary management decisions when faced with variable uncertainty. The risk policy was developed by the Council through a public process with input across resource stakeholders and was finalized in 2019. As it pertains to this rebuilding plan, the Council’s risk policy has a sliding scale of acceptable probability of overfishing for a species with a typical life history. Specifically, healthy stocks are managed at a set risk of overfishing, while lower stock sizes trigger a lower probability of overfishing that decreases as the stock becomes more imperiled. Because the mackerel stock is only projected to be 32 percent rebuilt in 2023, the first year of the rebuilding plan, the risk policy would require an 85.5 percent

confidence in avoiding overfishing (or only a 14.5 percent chance of overfishing) in 2023.<sup>28</sup> In this instance, given the huge volume of fish that can be taken in just one tow from the vessels participating in this fishery, the only way to reach that level of confidence would be to simply close the commercial and recreational fishery for 2023 in the EEZ. Even then, because this stock has been managed into its current, overfished/overfishing situation, it is possible that incidental catch and state recreational catch would cause overfishing.

Despite the recently updated risk policy, the Council allowed a “temporary adjustment” to the risk policy in the first, and failed, mackerel rebuilding plan. They chose to adjust the risk policy to implement the preferred alternative that allowed for higher catch and a longer rebuilding timeframe that ultimately resulted in overfishing throughout the rebuilding plan. The Atlantic Mackerel Rebuilding Plan Version 2 should not make a habit of adjusting the Council’s risk policy to justify higher catch rates.

The Council should adjust Alternative 1 and apply the P\* deduction to comply with the risk policy and set directed catch at zero for 2023. It is possible that when you apply the P\* deduction to F at 0.01, the rebuilding timeframe will extend beyond 10 years. This highlights the hard truth that when you use the best available science and apply the appropriate risk of overfishing, this stock is so depleted that it’s possible that it cannot be rebuilt in 10 years, even if directed fishing is closed in the EEZ. The MSA creates an exception to the 10-year mandate if “the biology of the stock of the fish...dictate[s] otherwise.”<sup>29</sup> That is precisely the situation at hand. The Council should select Alternative 1, apply the P\* deduction to comply with the risk policy, and close directed fishing in the EEZ.

**The Council should follow its decision in Mackerel Rebuilding Plan 1.0 and scale the RH/S catch cap to the mackerel DAH with a lower limit of 89 mt and an upper limit of 155 mt**

RH/S are important forage fish that tie our oceans and rivers systems together through their annual migrations. The best available science says that coastwide, RH/S stocks remain at or near historic low population levels, with some individual river systems on the verge of collapse. This is particularly true regarding the distinct population segment of blueback herring in the mid-Atlantic and southern New England that are being caught in the mackerel and Atlantic herring fisheries. Although the Council’s original stated intent was to replace the RH/S cap with a biologically based limit, the Council has not done that, and the current level is *still* not based on the biology of RH/S or the needs of their many predators. The RH/S catch cap remains based solely on the directed catch of mackerel.

The original intent of the RH/S catch cap in the mackerel fishery (even one based in the allowable catch of mackerel) was to create a strong incentive to avoid catching RH/S and decreasing the catch of these species over time so that the RH/S population has an opportunity to recover. The status quo cap of 129 mt will not accomplish this.

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<sup>28</sup> 2022 [Mackerel Rebuilding Plan Version 2](#). P. 16.

<sup>29</sup> Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. § 304(e)(4)(A)(ii).



First, if rebuilding Alternative 1 is selected, a closure of the directed fishing will be necessary in 2023 and possibly for the foreseeable near future. In that instance, the RH/S cap would also be zero as the cap does not apply to incidental catch. Second, the Council should implement the 0.89 ratio of cap to catch on all mackerel trips with a floor of 89 mt and a cap of 155 mt. If allowable catch for mackerel is 10,000 mt or less, the RH/S cap should be 89 mt. If the mackerel catch is higher than 10,000 mt than the RH/S cap should be scaled up at 0.89 ratio of cap to catch, but not to exceed 155 mt. Additionally, when the mackerel U.S. commercial quota is over 10,000 mt the RH/S cap should start out low at 89 mt, and then when 10,000 mt of mackerel is landed, the RH/S cap scale up using the 0.89 ratio, but again not to exceed 155 mt. This slow start is to maintain a strong incentive to avoid RH/S bycatch early in the season and avoid a closure of the mackerel fishery that would prevent the mackerel fishery from realizing its full mackerel catch. If the 89 mt RH/S cap is reached before 10,000 MT of mackerel had been landed, the mackerel fishery would close. Additionally, if the scaled RH/S cap is reached before mackerel catch is realized, the fishery would close.

### **Implement a 10 fish bag limit for the recreational fishery**

Regulation of the recreational mackerel fishery historically has been limited or absent, and there are currently no recreational management measures in place. While it remains unclear how much the recreational fishery contributed to the decline of the stock, with the future of mackerel in the northwest Atlantic in peril, it is appropriate to look across sectors for conservation gains. In the emergency rule issued this year 2,582 mt was set aside for recreational catch. This number was generated by calculating average catch from 2017 to 2021.<sup>30</sup> Again, this catch allocation was determined by how hard mackerel were fished from 2017 – 2021, not by the level of fishing mortality the stock can handle. In general, recreational catch of mackerel has been relatively low. However, in recent years including the three initial years of Mackerel Rebuilding Plan 1.0 recreational catch was a higher percentage of overall catch, making regulations for recreational catch an important and appropriate part of Mackerel Rebuilding Plan Version 2. Alternative 1 of the rebuilding plan would close all directed fishing in the EEZ, both commercial and recreational, in the near-term. Once mackerel recovers and allowing directed fishing is scientifically feasible, the Council should require a 10 fish bag limit for recreational fishing in the EEZ and encourage the states to follow suit in their waters.

### **Require a minimum codend mesh of 3 inches**

We support the Council's inclusion of a 3-inch minimum mesh requirement that mirrors a similar requirement in the butterfish fishery for trawl vessels possessing more than 5,000 pounds (2.27 mt) of mackerel harvested in or from the EEZ. Selectivity in catch of forage species is important. Increased mesh size would allow for smaller and undersized mackerel to escape giving more individual fish the opportunity to contribute to the SSB, recruitment, and ultimately the recovery of the Atlantic mackerel stock.

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<sup>30</sup> 2022 [Mackerel Rebuilding Plan Version 2](#). P. 14.

## Conclusion

The Council faces a crucial decision with the Mackerel Rebuilding Plan Version 2. The closure of directed commercial and recreational is never an easy choice to make. Allowing management to follow the historic pattern of relying on unsupported recruitment projections inconsistent with the best scientific information available will produce the same result: overfished with overfishing that has been the status quo for decades. The mackerel stock is estimated at less than one fourth of the rebuilding target. Other important forage species like Atlantic herring and butterfish are also struggling despite policy commitments from the Councils. The impacts of a weakened forage base reverberate through the entire ocean ecosystem as well as the fisheries and communities that depend on marine resources. To recover this ecologically important species, directed fishing must cease in the near term to allow for stock recovery. We urge the Council to adopt a rebuilding plan for Atlantic mackerel that will immediately end overfishing and has the highest overall probability of rebuilding this important forage stock to a healthy abundance.

Pew, BNEC and CLF appreciate the opportunity to comment on this action. Thank you for considering these comments in your deliberations and we look forward to the Council's final decision.

Sincerely,



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Zack Greenberg  
Officer, Conserving Marine Life in the U.S. Project  
The Pew Charitable Trusts



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K. Purcie Bennett-Nickerson  
Executive Director and Staff Attorney  
Bennett Nickerson Environmental Consulting



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Erica Fuller  
Senior Attorney  
Conservation Law Foundation



39 Industrial Park Road, Unit C  
Plymouth, MA 02360  
[www.stellwagenbank.org](http://www.stellwagenbank.org)

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April 29, 2022

Christopher M. Moore, Ph.D.  
Executive Director  
Mid-Atlantic Fishery Management Council  
800 N. State St, Suite 201  
Dover, DE 19901

**RE: Mackerel Rebuilding**

Dear Dr. Moore:

On behalf of the Stellwagen Bank Charter Boat Association (SBCBA) whose membership includes the for hire fleet, recreational anglers and commercial fisherman that fish the state and federal waters off the coast of Massachusetts, we offer the following comments to the Atlantic Mackerel Stock Status and Rebuilding measures:

- The observations of the recreational and commercial fisherman in state and federal waters from Maine to south of Massachusetts is that there has been no lack of mackerel, from small to large, in these waters in the past several years.
- No doubt, due to increased temperatures, the stock has shifted farther north and/or east. Fewer mackerel landings in the Mid-Atlantic may well be due to stock relocation to cooler waters rather than poor stock status. Northerly shifting stock would be consistent with the movement of multiple other examples of species.
- As a result of lack of mackerel in the MidAtlantic waters a separate bag limit is recommended at the approximate 41 degrees latitude line where there fishery is dominated by sand eels with fewer mackerel found over the past several years and as one proceeds north the mackerel population significantly increases especially north of Cape Cod. A liberal bag limit north of latitude 41 degrees would be reflective of the significant biomass and shifting stock and as a result the reliance and use of such by the recreational, for hire and commercial fleet.
- On the surface most support a 15 fish per person bag limit for use of mackerel as bait to target for example striped bass and bluefin tuna. This does not accommodate those from the for hire fleet that



39 Industrial Park Road, Unit C  
Plymouth, MA 02360  
[www.stellwagenbank.org](http://www.stellwagenbank.org)

catch and keep live bait in bait pen at the dock for use of upcoming trips during the week. As a result a separate for hire or possession bag limit is recommended for the for hire fleet. We also question the 100% mortality assumption that based on our observations is significantly less and more in the range of 15%.

- The present bag limit does not reflect the use of mackerel as chum. There is an accommodation in one has a receipt for a “flat of mackerel” on the boat that we assume would exceed the 15 fish bag limit if using as chum. This does not reflect the fact that many anglers catch and use mackerel as bait on trip and/or freeze them for use later on a trip. As a result there needs to be an accommodation for use of such by anglers.
- The SBCBA recommends that the NMFS as well as each state detail and educate the public of the state and/or federal permitting and reporting requirements if fishing in state or federal waters or both when recreational, for hire or commercial fishing. Such is confusing and the SBCBA continues to reach out to its membership to educate and inform them of such requirements.
- Since the commercial herring quota has been significantly reduced, fewer mackerel is being caught. This has contributed to a significant reduction in commercial mackerel landings. This is the likely main source of the 184% increase in the stock biomass since 2014.
- Continued flawed MRIP results regarding recreational landings, distorts MRIP recreational data. The National Academy of Science recent MRIP review would suggest that this MRIP data needs to be reassessed and revised for it to be at all reflective of the New England fishermen’ experience.
- As set forth above, the recreational and commercial community rely on mackerel for live line or fresh bait to catch striped bass, bluefin tuna and many other species. Many also rely on a day of fishing, especially with kids, catching mackerel when few other species are available.
- There are also those that catch and eat mackerel from a segment of the population that are not economically well off that will no longer have opportunity to feed their families and they will no longer book trips on for hire vessels with a 15 fish bag limit. We know that recreational landings are a drop in the bucket in comparison to the commercial landings. However, with current flawed MRIP landing data, even this reality does not appear evident.



39 Industrial Park Road, Unit C  
Plymouth, MA 02360  
[www.stellwagenbank.org](http://www.stellwagenbank.org)

- The current means and methods associated with the spring and fall trawl survey to effectively land mackerel is questionable and as a result, NMFS also relies on egg larvae surveys with the combination of both surveys to assess the status of the stock. There is lack of egg larvae surveys in state waters that is not capturing the biomass and/or our observations of the tremendous biomass of mackerel of all sizes near or off shore in our waters. The survey limitations and ongoing fall and spring survey locations in combination with a shifting stock and changes in the location and timing of where the mackerel are currently found negatively impacts the results not capturing the actual biomass in US and Canadian waters.
- As a result the SBCBA recommends that the for hire fleet that presently is required to record landings, releases and details of each trip via eVTRs be part of the process. We encourage the NMFS to identify the details needed to assist in the stock assessments via eVTRs concerning the timing, location, egg bearing mackerel observed during each trip, etc. We have observed the change in timing, spatial distribution and extent of mackerel in our waters over many years now especially in state waters that is not reflected in the stock assessment.
- Unquestionably, there is no lack of mackerel in state and federal waters from ME to Massachusetts. Implementing measures on New England fishermen without consideration of their input will most certainly create a loss of support and confidence in fisheries management in general and resentment for distant Council control.
- Future stock assessments should consider alternatives that are less reliant on MRIP data such as the use of the Harvest Control Rule or Management Strategy Evaluation to assess stock status.
- Future recreational measures, if any, need to equitably establish the historically low recreational catch in relation to the commercial catch. Restricted access to mackerel for use as bait will dangerously compound the economic impact of future recreational reductions to seasons and bag limits.



39 Industrial Park Road, Unit C  
Plymouth, MA 02360  
[www.stellwagenbank.org](http://www.stellwagenbank.org)

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If you have any questions or comments please email or give me a call.

Very truly yours,

*Capt. Mike Pierdinock*

Capt. Mike Pierdinock  
SBCBA, President  
[sbcbamp@gmail.com](mailto:sbcbamp@gmail.com)

*Capt. John Bunar*

Capt. John Bunar  
SBCBA, Board of Directors  
[jbironskippy@gmail.com](mailto:jbironskippy@gmail.com)

*Capt. Tom Depersia*

Capt. Tom Depersia  
SBCBA, Trustee  
[hugetuna@aol.com](mailto:hugetuna@aol.com)

Cc: Tom Nies, NEFMC  
Michael Pentony, GARFO  
Russell Dunn, NMFS  
Randy Blankinship, HMS  
Dan McKiernan, MassDMF  
Ron Amidon, MassF&G  
Barry Gibson, RFA

*Capt. Timothy Brady*

Capt. Timothy Brady  
SBCBA, Vice President  
[tbrady@maritime.edu](mailto:tbrady@maritime.edu)

*Capt Mike Delzingo*

Capt. Mike Delzingo  
SBCBA, Board of Directors  
[ff\\_boston@yahoo.com](mailto:ff_boston@yahoo.com)

*Capt. Peter Murphy*

Capt. Peter Murphy  
SBCBA, Trustee  
[l-ocharters@comcast.net](mailto:l-ocharters@comcast.net)

- Blue Planet Strategies • Great Egg Harbor Watershed Association
- National Audubon Society • Riverkeeper • Theodore Roosevelt Conservation Partnership
- Wild Oceans

May 9, 2022

Dr. Chris Moore, Executive Director  
Mid-Atlantic Fishery Management Council  
Suite 201, 800 North State St.  
Dover, DE 19901

**RE: Atlantic Mackerel Rebuilding Amendment**

Dear Dr. Moore,

We, the undersigned organizations, appreciate the opportunity to provide input on Mackerel Rebuilding Version 2: Amendment to the Mackerel, Squid, and Butterfish Fishery Management Plan (MSB FMP). There are a number of worrisome findings in the 2021 Management Track Assessment, which assessed both the northern and southern spawning contingents as a single stock: 1) Atlantic mackerel are overfished at just 24% of their target biomass; 2) overfishing has been occurring for the last 30 years; 3) recruitment has been below the median since 2008, with 2017 recruitment being the lowest in the record; 4) age truncation in the stock is apparent; 4) projections in the last assessment overestimated stock size by a factor of four; and, 5) rebuilding by 2023, the original rebuilding date set in the 2019 Atlantic Mackerel Rebuilding Framework, was not possible.<sup>1</sup>

Because of the poor condition of the mackerel stock, new rebuilding plan alternatives follow a 10-year timeframe, the maximum rebuilding period allowed under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Recruitment assumptions on which the alternatives are based are critical to rebuilding success.<sup>2</sup> Given the significant error in the projections from the 2018 benchmark assessment, future management track assessments, scheduled for 2023 and 2025, will be critical for measuring rebuilding progress. Revisions to this rebuilding plan would be warranted if adequate progress is not being made.<sup>3</sup>

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<sup>1</sup> Northeast Fisheries Science Center. 2021. Atlantic Mackerel Management Track Assessment. Available at [https://apps-nefsc.fisheries.noaa.gov/saw/sasi/sasi\\_report\\_options.php](https://apps-nefsc.fisheries.noaa.gov/saw/sasi/sasi_report_options.php).

<sup>2</sup> Two recruitment regimes are identified, low recruitment (2009-2019) and long-term “normal” recruitment (1975-2019) on which management reference points are based. Alternative 1 considers persistent low recruitment through the 10-year rebuilding period, and Alternatives 2-5 assume low recruitment (2009-2019 period) unless spawning stock biomass is above 50% of the target. Then 1975-2019 recruitments are used.

<sup>3</sup> 50 C.F.R. § 600.310(j)(3)(iv)

Taking into consideration the MSA rebuilding requirements, the shared nature of the Atlantic mackerel resource with Canada, and the importance of mackerel, river herring and shad in the Northeast Shelf Marine Ecosystem forage base, we support the following options:

- **Atlantic Mackerel Rebuilding Alternative 3:** This rebuilding alternative, recommended by the Council’s Scientific and Statistical Committee (SSC)<sup>4</sup> uses the existing Council risk policy, the P\* approach with the maximum fishing mortality threshold (MFMT) equal to the  $F_{MSY}$  proxy. This risk policy, originally adopted in 2011 and modified in 2020, safeguards stocks that have reached an overfished condition by reducing the risk of overfishing as biomass declines. Under this rebuilding plan for 2023 specifications, an 85.5% probability of not overfishing would be required, calling for near-zero U.S. commercial landings (i.e., the commercial Atlantic mackerel fishery would close). The stock is projected to be rebuilt by 2031.

### **Rebuilding Measures**

- **10-fish Bag Limit for the Recreational Sector.** Recreational mackerel fishing has not been regulated to date because recreational catch historically accounted for a small portion of the overall quota. Because an estimated 90% of recreational harvest occurs in state waters, collaboration to develop complementary regulations in the states of Maine, New Hampshire and Massachusetts, where the bulk of recreational fishing occurs, are necessary for this measure to be effective.<sup>5</sup>
- **3-inch Minimum Mesh Size for the Directed Trawl Fishery.** There are currently no minimum mesh size regulations for the mackerel trawl fishery. A codend mesh size of 3 inches allows for the escapement of juvenile mackerel so they can grow and contribute to the spawning stock biomass. Implementing mesh size requirements to improve size selectivity in trawl fisheries is a proven management tool.<sup>6</sup>
- **No-action / Status Quo for River Herring and Shad (RH/S) Cap.** Under this option, if 2023 specifications allow for directed commercial fishing, the river herring and shad cap would be scaled to the quota using a median of annual RH/S catch to all retained catch ratios on mackerel trips from 2005-2012 (base years used as a reference period when the cap was first implemented with the purpose of reducing bycatch). This method was designed to create "a strong incentive for the fleet to avoid RH/S, allows for the possibility of the full mackerel quota to be caught if the fleet can avoid

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<sup>4</sup> In recommending Alternative 3, the SSC noted, “This alternative, (1) fulfills rebuilding plan requirements; (2) is the most responsive to new information on changes in stock status; (3) produces the highest rebuilding plan 10-year catch yield; (4) is fully consistent with the Council’s P\* risk policy; and (5) would avoid “break points” in catch limit advice, which would reduce year-to-year changes in the ABC.”

<sup>5</sup> Memorandum from Jason Didden to Dr. Chris Moore. July 13, 2021. *Mackerel Rebuilding Modification/Re-assessment and Potential Emergency Action; SSC Meeting.*

<sup>6</sup> Taylor, N., Clarke, L.J., Alliji, K., Barrett, C., McIntyre, R., Smith, R.K., and Sutherland, W.J. (2021) *Marine Fish Conservation: Global Evidence for the Effects of Selected Interventions.* Synopses of Conservation Evidence Series. University of Cambridge, Cambridge, UK.



RH/S, and should reduce RH/S catches over time, compared to what would occur without a cap, given recent data."<sup>7</sup>

### **Atlantic Mackerel as a Shared Resource with Canada**

The U.S. stock assessment findings are consistent with the 2020 assessment conducted by Fisheries and Oceans Canada (DFO), which concluded that the northern contingent has been in the Critical Zone<sup>8</sup> since 2011, age structure has collapsed because of overfishing, and recruitment has been near all-time lows in recent years.<sup>9</sup> In response, Canada closed its directed commercial fishery for 2022 and has implemented minimum size and bag limits for its recreational sector.<sup>10</sup> Canada's rebuilding plan flags potential U.S. catch levels as a threat to the recovery of the northern contingent and the future sustainability of the stock.<sup>11</sup> Scientific studies estimate that as much as 50 percent of mackerel caught in the U.S. winter fishery may be from the northern contingent.<sup>12</sup> Most troubling is that the U.S. specifications process for Atlantic mackerel allows for reductions in Canadian quota to be added to U.S. quota because one Acceptable Biological Catch (ABC) level is specified by the Mid-Atlantic Council's SSC for this shared resource. Alternative 3 best aligns with Canada's rebuilding strategy because it would close directed commercial fishing in 2023 while allowing for incidental catch and restricted recreational fishing.

### **Compliance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA)**

The MSA is clear regarding requirements to rebuild an overfished stock:

For a fishery that is overfished, any fishery management plan, amendment, or proposed regulations prepared...for such fishery shall specify a time period for rebuilding the fishery that shall be *as short as possible*, taking into account the status and biology of any overfished stocks of fish, the needs of fishing communities, recommendations by international organizations in which the United States participates, and *the interaction of the overfished stock of fish within the marine ecosystem*; and not exceed 10 years,

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<sup>7</sup> Memorandum from Jason Didden to the Mid-Atlantic Fishery Management Council. July 23, 2019. *Updated Annual River Herring and Shad (RH/S) Progress and Cap Review including Mackerel, Squid, and Butterfish (MSB) Monitoring Committee Input*.

<sup>8</sup> A stock in the "critical zone" has fallen below the limit reference point, triggering a rebuilding plan according to the DFO's Precautionary Approach Framework.

<sup>9</sup> DFO. 2021. Assessment of the Northern Contingent of Atlantic Mackerel (*Scomber scombrus*) in 2020. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2021/029. Available at <https://publications.gc.ca/site/eng/9.901360/publication.html>

<sup>10</sup> Canada, Fisheries and Oceans. "Rebuilding Key Forage Fish Stocks for Healthier East Coast Fisheries." *Canada.ca*, Government of Canada, 30 Mar. 2022, <https://www.canada.ca/en/fisheries-oceans/news/2022/03/rebuilding-key-forage-fish-stocks-for-healthier-east-coast-fisheries.html>

<sup>11</sup> Government of Canada, Fisheries and Oceans Canada. "Rebuilding plan for Atlantic mackerel – NAFO Subareas 3 and 4." Government of Canada, Fisheries and Oceans Canada, Communications Branch, 10 July 2020, <https://www.dfo-mpo.gc.ca/fisheries-peches/ifmp-gmp/mackerel-atl-maquereau/mac-atl-maq-2020-eng.html>

<sup>12</sup> Arai, K., M. Castonguay, and D. H. Secor. 2021. Multi-decadal trends in contingent mixing of Atlantic mackerel (*Scomber scombrus*) in the Northwest Atlantic from otolith stable isotopes. *Sci Rep* 11, 6667 (2021). Available at <https://doi.org/10.1038/s41598-021-86116-2>

except in cases where the biology of the stock of fish, other environmental conditions, or management measures under an international agreement in which the United States participates dictate otherwise.

16 U.S.C. § 1854 (e)(4)(A) (emphasis added). Because of Atlantic mackerel's prominent role in the food web as prey for a wide array of predators, including tuna, striped bass, swordfish, sharks, seabirds, seals, pilot whales and dolphins,<sup>13</sup> interactions within the marine ecosystem are considerable, and must be taken into account. All rebuilding alternatives are based on a 10-year rebuilding timeline following SSC advice that long-term rebuilding is required given the current state of the stock.

Compared with Alternatives 4 and 5, which are based on a constant fishing mortality rate strategy, Alternative 3 leaves more mackerel in the water at the onset of rebuilding, allowing fishing mortality to increase with biomass, and best accounts for mackerel's importance to dependent predators. Alternative 3 also produces the highest levels of catch over the 10-year time period, taking into account the needs of the fishing community as the law requires.

#### **Maintaining the Scaled River Herring and Shad Incidental Catch Cap**

We are advocating for a directed mackerel fishery closure in 2023 (Alternative 3). The catch cap does not apply to incidental catches of mackerel (40,000 lb. limit). However, if Alternative 4 or Alternative 5 is chosen by the Council, then a river herring/shad cap becomes an important component of 2023 specifications. **We strongly oppose maintaining the current cap of 129 MT for 2023 (a cap scaled for a commercial quota of 17,371 MT) when commercial quota options under Alternatives 4 and 5 range from 1,002 to 4,864 MT.**

A bycatch cap is only effective if it creates incentive for fishery participants to avoid reaching the cap limit. For this reason, the Mid-Atlantic Council chose to scale the bycatch cap to the quota by applying a median of the values generated using the annual RH/S catch to all retained catch ratios on mackerel trips during 2005-2012 (base years used as a reference period). The higher ratios of RH/S catch to mackerel catch that result from applying the 129 MT cap to the possible range of 2023 commercial quotas under Alternative 4 and Alternative 5 essentially eliminate the incentive to avoid river herring and shad and do not have a scientific basis tied to the purpose of reducing bycatch.

There is no evidence that Mid-Atlantic and Southern New England shad and river herring populations are in a state of recovery. The 2017 river herring stock assessment update concluded that while there were positive signs of recovery in some river systems, river herring populations remain depleted at near historic lows on a coastwide basis.<sup>14</sup> American shad are

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<sup>13</sup> Studholme A. L., Packer D. B., Berrien P. L., Johnson D. L., Zetlin C. A., Morse W. W. 1999. Essential Fish Habitat Source Document: Atlantic Mackerel, *Scomber Scombus*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-141. Available at <https://repository.library.noaa.gov/view/noaa/3138>

<sup>14</sup> ASMFC (Atlantic States Marine Fisheries Commission), 2017. River Herring Stock Assessment Update, Volume 1, August 2017.

not faring any better. The 2020 benchmark assessment found that American shad are highly depressed from historical levels and do not appear to be recovering.<sup>15</sup>

Incidental catch of river herring and shad continues to be a significant contributor to fishing mortality. Since the mackerel fishery cap was implemented in 2014, total river herring/shad extrapolated catch increased by nearly 300 mt (from 178 to 480 MT in 2018).<sup>16</sup> Other measures that have afforded river herring and shad some protection from bycatch, the SMAST Bycatch Avoidance Program and the Atlantic Herring Amendment 8 Buffer Zone, are no longer in effect,<sup>17, 18</sup> making the bycatch caps in the Atlantic Herring and Atlantic Mackerel fisheries the only measures in place in federal waters to protect river herring and shad from incidental catch.

If a static cap is desired because a scaled cap is not possible under low quotas as purported in the Public Hearing Document, it must still meet the original purpose of reducing bycatch as stated in Amendment 14 to the MSB FMP.<sup>19</sup> The median actual extrapolated river herring and shad catch from the Amendment 14 baseline years (2005-2012) is 89 MT, a value that was part of the RH/S cap measures in 2015.<sup>20</sup> The cap should be set no higher, and ideally lower, than this value for quotas under 10,000 MT.

We are at an important crossroads in Atlantic mackerel management, with climate change impacts adding uncertainty about the future of the stock and whether it can indeed build to withstand the high quotas of the past.<sup>21</sup> We urge the Mid-Atlantic Council to prioritize the health of the Atlantic mackerel resource and its role in the ecosystem as it moves ahead with the rebuilding plan. We support the Mid-Atlantic Council's forage fish policy "to support the maintenance of an adequate forage base in the Mid-Atlantic to ensure ecosystem productivity, structure and function and to support sustainable fishing communities,"<sup>22</sup> and call on the

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<sup>15</sup> ASMFC (Atlantic States Marine Fisheries Commission), 2020. American Shad Benchmark Stock Assessment and Peer Review Report, August 2020.

<sup>16</sup> See Note 7, the 2019 Annual RH/S Progress and Cap Review, Table 7.

<sup>17</sup> School for Marine Science and Technology (SMAST). "Bycatch Avoidance Programs." UMass Dartmouth, <https://www.umassd.edu/smast/bycatch/>

<sup>18</sup> NOAA Fisheries. "Court Order Vacates the Inshore Midwater Trawl Restricted Area." NOAA, <https://www.fisheries.noaa.gov/bulletin/court-order-vacates-inshore-midwater-trawl-restricted-area>

<sup>19</sup> MAFMC. 2013. Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish (MSB) Fishery Management Plan (FMP) Final Environmental Impact Statement.

<sup>20</sup> In 2015, a cap of 155 MT was set for a mackerel quota of 20,872 MT. The Council included a provision to start the cap at 89 MT until 10,000 MT of mackerel were landed, so there was still strong incentive to avoid RH/S catches even at the low levels of mackerel catch.

<sup>21</sup> Suitable Atlantic mackerel larval habitat in the Northeast U.S. Shelf has changed over the last 40 years with the Mid-Atlantic Bight becoming less suitable over time. [McManus, Michael Conon, "Atlantic Mackerel (*Scomber scombrus*) Population and Habitat Trends in the Northwest Atlantic" (2017). *Open Access Dissertations*. Paper 664. Available at [https://digitalcommons.uri.edu/oa\\_diss/664](https://digitalcommons.uri.edu/oa_diss/664)]

<sup>22</sup> MAFMC. 2016. Mid-Atlantic Fishery Management Council Ecosystem Approach to Fisheries Management (EAFM) Guidance Document. Available at [http://www.mafmc.org/s/EAFM\\_Guidance-Doc\\_2017-02-07.pdf](http://www.mafmc.org/s/EAFM_Guidance-Doc_2017-02-07.pdf)

Council to act on this policy by selecting rebuilding plan options that best conserve Atlantic mackerel, river herring and shad populations.

Sincerely,

Pam Lyons Gromen  
Executive Director  
Wild Oceans

R. Zack Klyver  
Science Director  
Blue Planet Strategies, LLC

Fred Akers  
River Administrator  
Great Egg Harbor Watershed Association

Remy Moncrieffe  
Policy Manager, Marine Conservation  
National Audubon Society

George Jackman, PhD  
Senior Habitat Restoration Manager  
Riverkeeper, Inc.

Chris Macaluso  
Center for Marine Fisheries Director  
Theodore Roosevelt Conservation Partnership

# Mackerel Rebuilding Version 2

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## Amendment to the MACKEREL, SQUID, AND BUTTERFISH FISHERY MANAGEMENT PLAN

Measures to Rebuild the Atlantic Mackerel Stock, Including  
2023 Specifications and the River Herring and Shad (RH/S) Cap

Public Hearing Document



**Atlantic Mackerel**  
*Scomber scombus*

Prepared by the

**Mid-Atlantic Fishery Management Council (Council) in collaboration with the  
National Marine Fisheries Service (NMFS)**

**Council Address**

Mid-Atlantic Fishery Management Council  
800 North State Street, Suite 201  
Dover, DE 19901

**NMFS Address**

NMFS Greater Atlantic Regional Fisheries Office  
55 Great Republic Drive  
Gloucester, MA 01930

## Overview – Atlantic Mackerel Rebuilding Version 2

For details and commenting opportunities see <https://www.mafmc.org/actions/atlantic-mackerel-rebuilding-amendment>. Hearings are April 25, 2022 to May, 2, 2022. Comments are due May 9, 2022. Contact: Jason Didden – [jdidden@mafmc.org](mailto:jdidden@mafmc.org) – 302-397-1131.

**PURPOSE:** The 2021 peer-reviewed stock assessment found that Atlantic mackerel was still overfished and that overfishing was still occurring. In response, the Council is considering a new rebuilding plan for Atlantic mackerel.

This action contains five rebuilding alternatives (see table), all of which have been endorsed by the Council’s Scientific and Statistical Committee (SSC) as being consistent with the best available science. This action will also set specifications for 2023.

Recruitment Assumptions	Rebuilding Alternative	10-Yr Rebuilding Probability
Poor recruitment for all 10 years	<b>ALTERNATIVE 1:</b> Eliminate most catch to rebuild as much as possible in 10 years.	57%
Recruitment starts low (similar to 2009+) and then increases toward long term (1975+) typical recruitment	<b>ALTERNATIVE 2:</b> Use a risk buffer from a fishing mortality rate of 0.14. Results in negligible U.S. total catch (commercial or recreational) for several years.	62%
	<b>ALTERNATIVE 3:</b> Use standard Council risk policy. Initially requires near zero U.S. commercial landings until 2025 (may increase discards) but accounts for Canadian catch and U.S. recreational catch.	52%
	<b>ALTERNATIVE 4:</b> Use a fishing mortality rate of 0.12. Depending on set asides for Canadian catch and U.S. recreational catch, could allow for about 1,000-3,600 metric tons (MT) of U.S. commercial landings initially (slow increase predicted).	61%
	<b>ALTERNATIVE 5:</b> Use a fishing mortality rate of 0.14. Depending on set asides for Canadian catch and U.S. recreational catch, could allow for about 2,300-4,900 MT of U.S. commercial landings initially (slow increase predicted).	53%

**MEASURES:** The action proposes closures and trip limits to hold the commercial fishery near the target catches. The action considers a 3-inch minimum mesh for directed trawling. The action would also set a 2023 river herring and shad cap for the commercial fishery. The action will clarify whether any possession of Atlantic mackerel in federal waters (beyond 3 miles and including bait) by commercial or for-hire vessels triggers federal permitting and electronic vessel trip report (VTR) requirements. Recreational bag/possession limits of 10 or 15 fish are possible, which might decrease recreational catch by 10%-30%.

## 1.0 EXECUTIVE SUMMARY AND TABLE OF CONTENTS

This action considers measures to rebuild the Atlantic mackerel (“mackerel” refers to Atlantic mackerel hereafter in this document) stock with an Amendment to the Mackerel, Squid, and Butterfish Fishery Management Plan (MSB FMP). This action includes 2023 mackerel specifications and related management measures, including the mackerel fishery’s river herring and shad (RH/S) cap. This action was originally going to set 2023-2024 specifications, but now proposes to only set 2023 specifications given a new Mackerel Management Track Assessment (MTA) is expected in 2023. If the assessment or subsequent specifications were delayed, then the 2023 specifications would roll-over into 2024 until new specifications were published. The MSB Monitoring Committee recommended this approach given the high degree of uncertainty that would have been involved in setting 2024 specifications based on 2019 data and then five years of projections. Setting 2024 specifications now would suggest too much stability for 2023/2024 (the initial rebuilding plan projections, which spanned only 3 years, were off by about a **factor of four**).

The purpose of this action is to rebuild the mackerel stock with appropriate measures so that Optimum Yield (OY) can be achieved on an ongoing basis. The action is needed because the recent 2021 Mackerel Management Track Assessment (MTA) found the mackerel stock to still be overfished, with overfishing still occurring through 2019 (NEFSC 2021). The 2021 Mackerel MTA determined that when implemented (11/29/2019), the original rebuilding plan (MAFMC 2019) was already out of date and did not provide a realistic rebuilding approach. The stock is estimated to have nearly tripled in size from 2014 to 2019 (from about 8% to 24% of rebuilt), but fully rebuilding on the original schedule (by 2023) appears impossible – the stock is now expected to be less than half rebuilt by 2023. This action incorporates the 2021 Mackerel MTA findings to continue rebuilding the mackerel stock.

Because none of the preferred alternatives are anticipated to be associated with significant impacts to the biological, social, economic, or physical environment, an Environmental Assessment (EA) documenting a "Finding of No Significant Impact" (FONSI) is planned, but this plan could change based on public comments or other analyses.

### *Summary of the Alternatives*

The alternatives are based on rebuilding plans that all have at least a 50% chance of rebuilding mackerel within ten years, which is the maximum time typically allowed under the Magnuson–Stevens Fishery Conservation and Management Act (MSA). The alternatives focus on the probability of rebuilding by 2032 (ten years) due to the Scientific and Statistical Committee’s (SSC) July 2021 Meeting advice that “Preliminary rebuilding scenarios indicate long-term rebuilding will be required for this stock” and that higher rebuilding probabilities “are associated with shorter rebuilding time and greater catch stability” (MAFMC SSC 2021). Final rebuilding scenarios did not differ substantially from the preliminary analyses (MAFMC SSC 2022). Additional management measures are paired with each rebuilding plan.

## Summary of Impacts

### Target Species Impact Summary

The alternatives should allow the mackerel stock to rebuild within 10 years. Changes in mackerel fishing should not impact other FMP species due to low catch of those species in the mackerel fishery, and separate management measures control catch of those species. While Atlantic herring and mackerel are often caught together, separate management measures in the Atlantic herring fishery should ensure that overfishing does not occur on the Atlantic herring stock.

### Non-Target Species Impact Summary

Non-target interactions are relatively low in the mackerel fishery, and all of the action alternatives would reduce catch from the status quo, thereby limiting effort. The RH/S cap should continue to limit interactions between the mackerel fishery and RH/S, which have been the primary non-target species of concern for the mackerel fishery.

### Habitat Impact Summary

All of the alternatives would reduce catch from the status quo thereby limiting effort, so no additional negative habitat impacts would be expected.

### Protected Resources Impact Summary

All of the alternatives would reduce catch from the status quo, thereby limiting effort, so no additional negative protected resource impacts would be expected.

### Human Communities Impact Summary

Human communities may have negative impacts in the short term due to lower catches/revenues from mackerel during the beginning of the rebuilding period, but in the long term rebuilding should lead to higher catches/revenues.



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## 2.0 LIST OF COMMON ACRONYMS AND ABBREVIATIONS

<b>ABC</b>	<b>Acceptable Biological Catch</b>
<b>ACL</b>	<b>Annual Catch Limit</b>
<b>ACT</b>	<b>Annual Catch Target</b>
<b>ASMFC</b>	<b>Atlantic States Marine Fisheries Commission or Commission</b>
<b>B</b>	<b>Biomass</b>
<b>CFR</b>	<b>Code of Federal Regulations</b>
<b>CPH</b>	<b>Confirmation of Permit History</b>
<b>CV</b>	<b>coefficient of variation</b>
<b>DAH</b>	<b>Domestic Annual Harvest</b>
<b>DAP</b>	<b>Domestic Annual Processing</b>
<b>EA</b>	<b>Environmental Assessment</b>
<b>EEZ</b>	<b>Exclusive Economic Zone</b>
<b>EFH</b>	<b>Essential Fish Habitat</b>
<b>EIS</b>	<b>Environmental Impact Statement</b>
<b>ESA</b>	<b>Endangered Species Act of 1973</b>
<b>F</b>	<b>Fishing Mortality Rate</b>
<b>FMAT</b>	<b>Fishery Management Action Team</b>
<b>FMP</b>	<b>Fishery Management Plan</b>
<b>FR</b>	<b>Federal Register</b>
<b>GB</b>	<b>Georges Bank</b>
<b>GOM</b>	<b>Gulf of Maine</b>
<b>M</b>	<b>Natural Mortality Rate</b>
<b>MAFMC</b>	<b>Mid-Atlantic Fishery Management Council</b>
<b>MMPA</b>	<b>Marine Mammal Protection Act</b>
<b>MSA</b>	<b>Magnuson-Stevens Fishery Conservation and Management Act</b>
<b>MSB</b>	<b>Atlantic Mackerel, Squid, Butterfish</b>
<b>MSY</b>	<b>Maximum Sustainable Yield</b>
<b>MT (or mt)</b>	<b>Metric Tons (1 mt equals about 2,204.62 pounds)</b>
<b>NE</b>	<b>Northeast</b>
<b>NEFMC</b>	<b>New England Fishery Management Council</b>
<b>NEFSC</b>	<b>Northeast Fisheries Science Center</b>
<b>NEPA</b>	<b>National Environmental Policy Act</b>
<b>NMFS</b>	<b>National Marine Fisheries Service (NOAA Fisheries)</b>
<b>NOAA</b>	<b>National Oceanic and Atmospheric Administration</b>
<b>OFL</b>	<b>Overfishing Level</b>
<b>OY</b>	<b>Optimum Yield</b>
<b>PBR</b>	<b>Potential Biological Removal</b>
<b>SNE</b>	<b>Southern New England</b>
<b>SSB</b>	<b>Spawning Stock Biomass</b>
<b>SSC</b>	<b>Scientific and Statistical Committee</b>
<b>U.S.</b>	<b>United States</b>
<b>VTR</b>	<b>Vessel Trip Report</b>

Notes: "Mackerel" refers to "Atlantic mackerel" unless otherwise noted. Likewise "herring" alone refers to Atlantic herring.

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## 4.0 INTRODUCTION, BACKGROUND, AND PROCESS

### 4.1 Introduction and Background

Section 4.1 reviews several critical background topics including the 2021 Mackerel Management Track Assessment (MTA), the 2021 Canadian Mackerel Assessment, Current Management and Recent Catches, Rules on Rebuilding, the Council’s Ecosystem Approach to Fisheries Management (EAFM), and the Council’s P\* Risk Policy.

The 2021 Mackerel Management Track Assessment (MTA) (NEFSC 2021)

#### *Reference Points*

“F” refers to fishing mortality, i.e. the rate at which fish die from fishing, expressed as the portion of the stock dying within a small amount of time. The rebuilding goal is based on F40% as the proxy for FMSY (MSY = “maximum sustainable yield”) and was estimated to be  $F = 0.24^1$ , (dashed line in Figure 1) down from 0.26 in the previous mackerel assessment. Mackerel stock productivity has apparently declined. F40% was selected as a proxy for FMSY due to consistency with the Canadian reference point and ability to prevent stock collapse for stocks with similar life histories. F40% produces 40% of the “spawning stock biomass (SSB) per recruit” (equivalent to lifetime egg production) relative to that produced by an unfished stock. F in 2019 was estimated to be  $0.46^2$ , so overfishing was occurring in 2019 and has been for 30 years (but 2019 was the lowest F in 15 years – see Figure 1). Past assessments (which used different methods and data) appear to have been overly optimistic about the stock’s productivity, and too many fish were caught over a long period of time. The rebuilding biomass target is the SSB associated with the FMSY proxy or “SSBmsyproxy,” and is estimated to be 181,090 MT. The 2019 spawning stock biomass (SSB) was estimated to be 42,862 metric tons (MT), or 24% of the SSB target so mackerel is “overfished” (below 50% of the target – see Figure 2). Once rebuilt, the MSYproxy (i.e. the proxy for maximum sustainable yield) is estimated to be 34,103 MT (total catch, U.S. plus Canada), which is lower than estimated in the previous assessment, reflecting the apparent reduced productivity of the stock.

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<sup>1</sup>  $F = 0.24$  equates to removing about 1/5 of the stock in a given year.

<sup>2</sup>  $F = 0.46$  equates to removing slightly over 1/3 of the stock in a given year.

## ***Projection Performance***

Based on the recent 2021 Mackerel Management Track Assessment (MTA) (NEFSC 2021), the mackerel stock (measured by Spawning Stock Biomass - “SSB”) will not rebuild as quickly as previously projected. The 2021 MTA found the mackerel stock to be overfished, with overfishing occurring through 2019 (NEFSC 2021) (see Figures 1 and 2 next pages). While the stock is estimated to have nearly tripled in size from 2014 to 2019 (from about 8% to 24% of rebuilt), rebuilding on the original schedule (by 2023) appears impossible – the stock is now expected to be less than half rebuilt by 2023. In addition, while both the 2018 and 2021 assessments concluded the stock reached a low point around 2011-2014 before starting to recover, the current assessment found that the stock was about 10% smaller at the low point. In the terminal year of the previous assessment (2016 – NEFSC 2018) the stock, while still recovering, is now estimated to have been 29% smaller in 2016 than originally estimated for that same year. While nearly all of the data in the 2021 assessment (data through 2019) represents the time period before the initial rebuilding plan took effect, the current assessment indicates we started rebuilding in 2019 at a stock size about 74% lower than anticipated (just 42,862 MT estimated in 2019 vs 162,796 MT projected). While not completely understood, factors contributing to this over-projection for 2019 include:

- starting from a lower low point in 2014 (retrospective pattern apparent but not strong enough to adjust for).
- summed 2014-2018 recruitment was 24% lower than anticipated (2017 year class lowest in time series).
- overfishing persisted.
- decreased maturity-at-age and SSB weight-at-age for some ages.

The scale of error observed in the previous three-year projection (2016 to 2019) provides some perspective for the four-year projection required to now set specifications for 2023 as the first year of the new rebuilding plan. This was part of the reason why the MSB Monitoring Committee recommended setting only a one year specification at this time, until the 2023 Mackerel MTA can be used to set 2024 specifications. The 2023 Mackerel MTA should include data through 2022, requiring only a two year projection for 2024 (2022 to 2024), versus the five-year projection that would be required to set 2024 specifications now (i.e. 2019 to 2024). While the lower recruitment inputs now being used in short term projections should help avoid as large of an over-projection, any potential improvement in projections will not be known until mid-2023 when then the 2023 Mackerel MTA is completed.

If 2022 catch happens to be lower than projected (e.g. due to recent Canadian closure), we could be slightly ahead of our final rebuilding projections, but given the general uncertainty and low stock size, lower 2022 catches are not expected to drastically change the rebuilding trajectories.

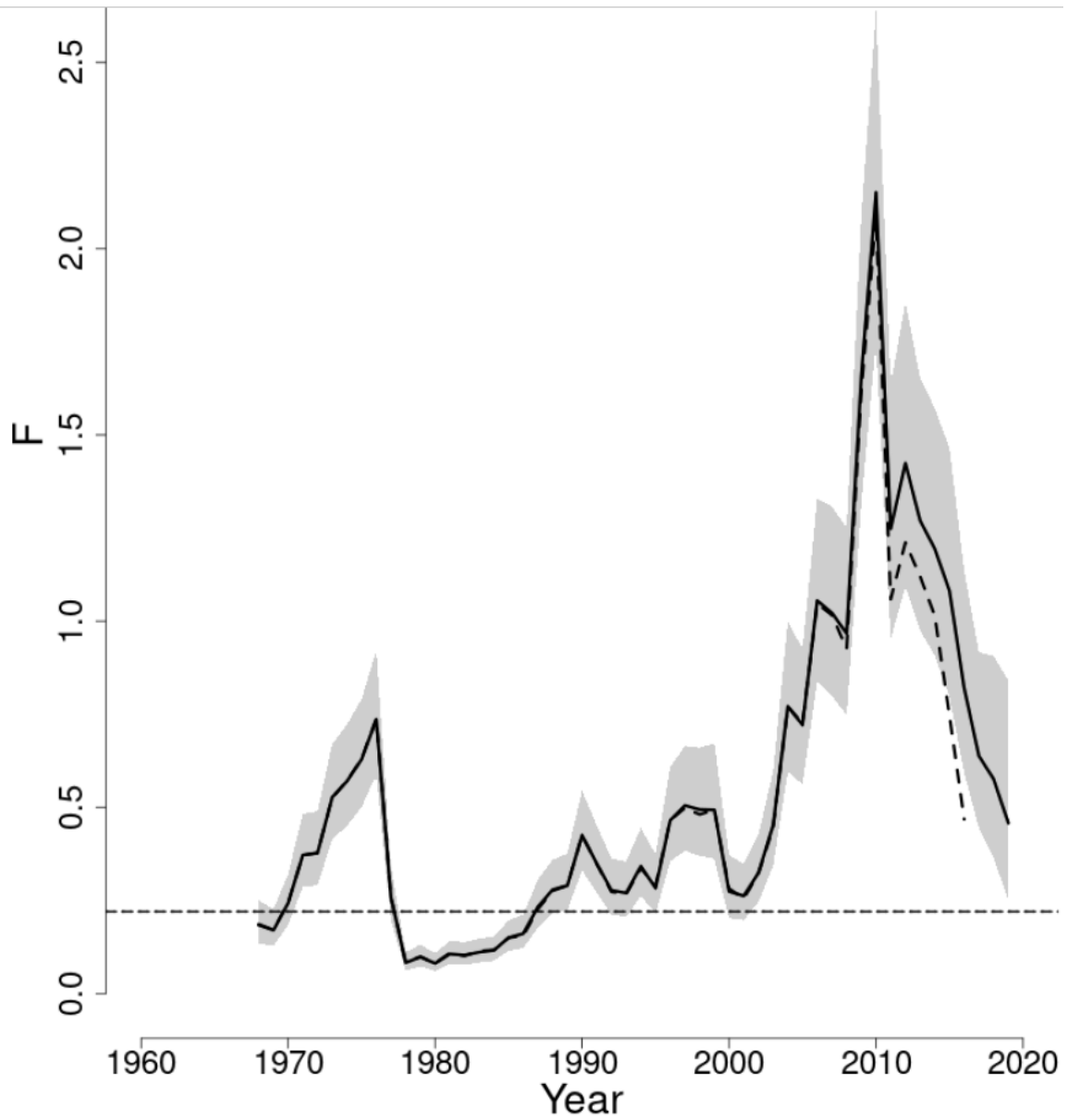


Figure 1. Trends in the fully selected fishing mortality (F) of northwest Atlantic mackerel between 1968 and 2019 from the current (solid line) and previous (dashed line) assessment and the corresponding FThreshold (FMSY proxy=0.22; horizontal dashed line). The approximate 90% lognormal confidence intervals are shown.

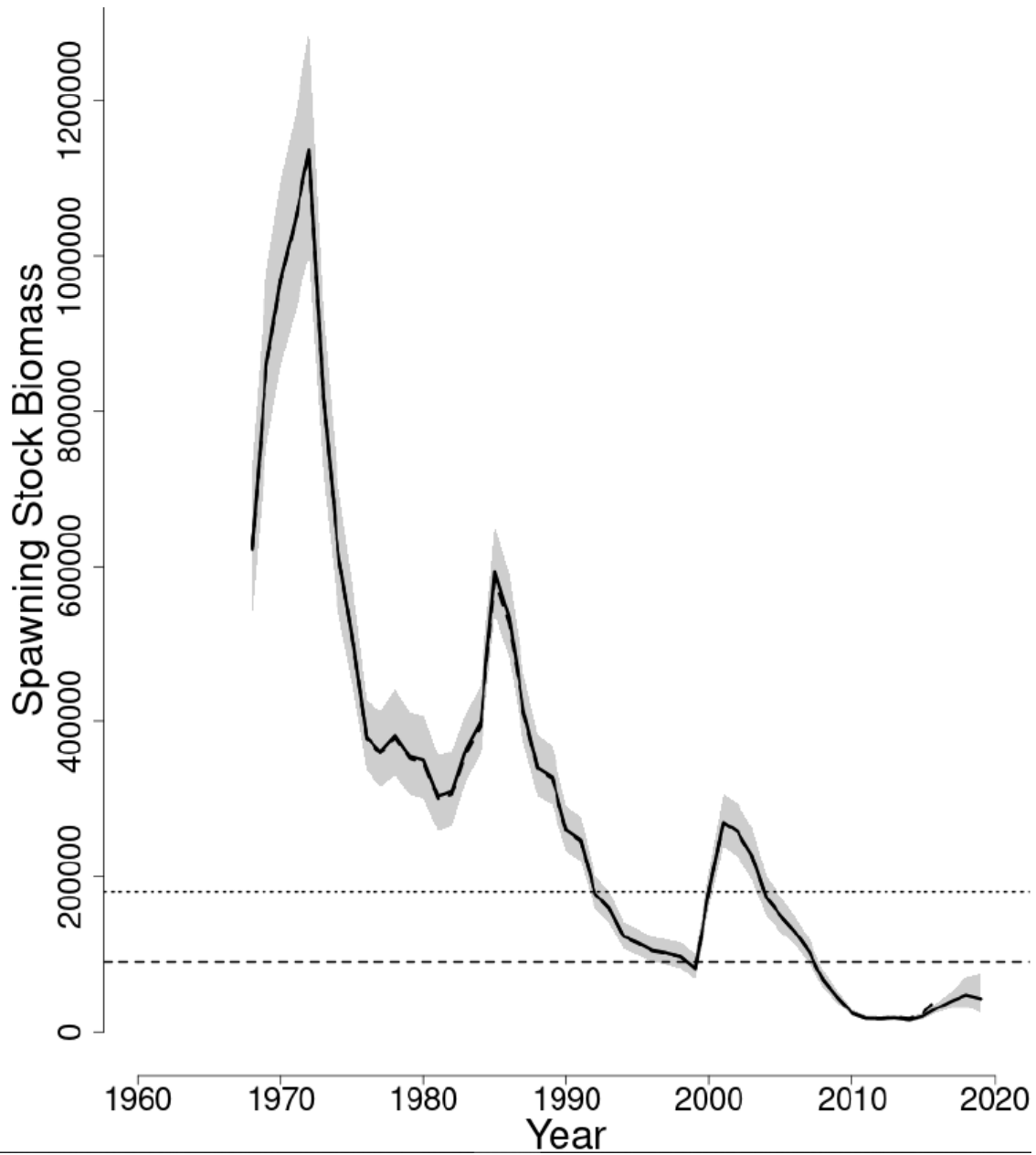


Figure 2. Trends in spawning stock biomass (MT) of northwest Atlantic mackerel between 1968 and 2019 from the 2021 MTA (solid line) and previous (dashed line, mostly the same) assessment and the corresponding SSBThreshold (1/2 SSBMSY proxy; horizontal dashed line) as well as SSBTarget (SSBMSY proxy; higher horizontal dotted line). The approximate 90% lognormal confidence intervals are shown.



## The 2021 Canadian Mackerel Assessment and Recent Canadian Quotas

The Canadian stock assessment only assesses the northern mackerel contingent, unlike the stock-wide U.S. assessment. Excerpting from their summary and assessment:

- 2017-2020 Canadian landings occurred primarily in the Gulf of Saint Lawrence and off the northeast coast of Newfoundland.
- Recent genetic analyses confirmed previous studies that the Northwest Atlantic mackerel stock is distinct from the Northeast Atlantic (European) stock. These analyses also supported the previously established distinction between the northern and southern spawning contingents of our Northwest Atlantic stock. Genetic results showed some mixing of southern contingent mackerel in Canadian waters as well as northern contingent mackerel in U.S. waters.
- A fine-scale analysis of recruitment variability showed recruitment benefits from a spatial-temporal match between mackerel larvae and their preferred food as well as optimal population structure and dynamics (maternal condition, SSB, age-structure).
- The annual egg survey did not occur in 2020 due to restrictions incurred by Covid. The stock assessment model was still run (without a 2020 data point for the egg survey) to estimate stock status.
- The last notable recruitment event was in 2015. There has been no sign of any notable recruitment event in recent years. There are currently very few fish older than 5 years old (<1%) - The age structure of the population in 2020 was relatively evenly spread among individuals between 1 and 5 years, old with no single dominant cohort (the 2015 cohort represented about 7% of the SSB in 2020).
- The estimated fully selected exploitation rate (fish aged 5-10+) in 2020 was 74%, above the reference level of 51% (F40%). The fishery was concentrated on fish aged 2-5 (exploitation rate of 56%).
- The SSB in 2020 was the lowest ever estimated (58% of the Limit Reference Point - LRP). and has been in or near the Critical Zone for over 10 years. Rebuilding the stock will also require rebuilding the age structure of the stock which has been eroded by overexploitation.

The 2021 Canadian mackerel quota was set at 4,000 MT – landings at this level were estimated to have between a 2 in 3 chance and a 3 in 4 chance of facilitating at least some stock growth from 2021 to 2023. 2021 Canadian landings (preliminary) were 4,395 MT. Canada closed its fishery for 2022 so may have minimal landings in 2022. If Canada keeps its fishery closed for 2022 and 2023, their stock assessment indicates they have about a coin flip's chance (i.e. 50-50) of reaching at least 40% of their biomass target. With a 2023 Canadian assessment pending, 2023 Canadian landings are still challenging to predict. This action explores two options for deducting Canadian landings in 2023: Deducting their 2021 landings (4,395 MT) or half that amount (2,197 MT).

## Current Management and Recent Catches

The commercial mackerel fishery is currently managed with an annual quota, in-season proactive accountability measures, and reactive accountability measures requiring paybacks if catches exceed the Annual Catch Limit (ACL). Canadian landings, U.S. recreational catch, and U.S. commercial discards are deducted off the total Acceptable Biological Catch (ABC) to derive the commercial quota. There are currently no recreational management measures. In 2022, based on an emergency rule by NMFS, total catch is expected to be 12,055 MT or less, with 4,395 MT deducted for assumed Canadian landings, 2,582 MT deducted for assumed recreational catch (the 2017-2021 average), and 115 MT deducted for assumed commercial discards (recent average). This leaves 4,963 MT for a commercial quota. When 90% of the quota is projected to be landed, trip limits of 40,000 pounds are implemented for Tier 1-3 directed permits and 5,000 pounds for incidental/open access permits<sup>3</sup>. When 100% of the quota is projected to be landed, a 5,000 pound trip limit is implemented for all permits for the rest of the fishing year to cover remaining incidental catches. The emergency rule will expire in early January 2023, at which point the previous specifications, with a much higher quota, would apply (see Alternatives Section below for details).

The 2022 emergency measures described above were designed to mirror 2021 catches while a new rebuilding plan is developed, but some differences exist due to projection approaches. 2021 catches are estimated to have been 12,220 MT, including 4,395 MT Canadian landings, 2,222 MT recreational catch, 127 MT commercial discards, and 5,476 MT commercial landings. See Section 6 for additional fishery descriptive information.

The mackerel fishery also operates under a river herring and shad catch cap (RH/S), which closes the directed mackerel fishery and implements a 20,000 pound trip limit for all permits once 129 MT of RH/S has been projected to be caught in the directed mackerel fishery. 129 MT was the amount of RH/S if the ratio of cap to all catch on mackerel trips (accounting for mostly Atlantic herring) was about 0.53% and the mackerel quota was 17,371 MT (or 0.74% applied to just the mackerel quota). Given the challenges with monitoring a very small cap, including potentially closing the fishery based on a few observed trips, the Council has kept the cap at 129 MT at the current lower mackerel quotas. This action proposes to either scale the RH/S cap with the mackerel quota or keep the RH/S cap at 129 MT if the mackerel quota is below 17,371 MT.

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<sup>3</sup> When the fishery starts each year, the various commercial mackerel permit categories start with different trip limits. Tier 1 has an unlimited trip limit, Tier 2 has a 135,000 pound trip limit, and Tier 3 has a 100,000 pound trip limit.

## Rules on Rebuilding

Section 304(e)(4) of the Magnuson–Stevens Fishery Conservation and Management Act (MSA) states:

“For a fishery that is overfished, any fishery management plan, amendment, or proposed regulations...shall...specify a time period for rebuilding the fishery that shall--

(i) be as short as possible, taking into account the status and biology of any overfished stocks of fish, the needs of fishing communities,...and the interaction of the overfished stock of fish within the marine ecosystem; and

(ii) not exceed 10 years, except in cases where the biology of the stock of fish, other environmental conditions...dictate otherwise;

...allocate both overfishing restrictions and recovery benefits fairly and equitably among sectors of the fishery...”

The Council’s SSC advised the Council that “Preliminary rebuilding scenarios indicate long-term rebuilding will be required for this stock” and that higher rebuilding probabilities “are associated with shorter rebuilding time and greater catch stability.” (MAFMC SSC 2021)

All options currently under consideration are projected to rebuild mackerel in 10 or less years so (ii) is addressed. Recreational catches have been relatively low in this fishery historically, but will be a higher percentage of total catch especially in the early part of the new rebuilding timeline, which is why recreational measures are being considered in this action.

The primary rebuilding considerations are to rebuild in a time period as short as possible, taking into account 1) the status and biology of any overfished stocks, 2) the needs of fishing communities, and 3) the interaction of mackerel within the marine ecosystem. Information on the status and biology of mackerel and interactions within the marine ecosystem (e.g. predation) is provided in Section 6.1.

## Council’s Ecosystem Approach to Fisheries Management (EAFM)

The alternatives in this document seek to rebuild mackerel to the SSBmsyproxy as defined in the recent mackerel MTA, i.e. to 181,090 MT of spawning stock biomass (SSB). The Council’s Ecosystem Approach to Fisheries Management (EAFM) Guidance Document (<https://www.mafmc.org/eafm>) states “It shall be the policy of the Council to support the maintenance of an adequate forage base in the Mid-Atlantic to ensure ecosystem productivity, structure and function and to support sustainable fishing communities” and “the Council could adopt biological reference points (overfishing levels or OFL) for forage stocks that are more conservative than the required MSA standard of FMSY.” Acknowledging that the science to evaluate the biological and socioeconomic tradeoffs of more precautionary management is lacking, the Council has adopted a policy that it would promote data collection and development

of analyses to get to the point where the Council could evaluate the relevant tradeoffs and “establish an optimal forage fish harvest policy.”

Views vary on the precaution inherent in using the recommended F40% as a proxy for FMSY (and for the resulting SSB<sub>msy</sub> proxy target). Clark 1993, Mace 1994, Gabriel and Mace 1999, and Legault and Brooks 2013 generally recommended F40% for typical stocks. Clark 2002 notes that for typical stocks, fishing at F40% would be expected to result in a target biomass that is 20%-35% of an unfished biomass. Pikitch et al 2012 recommended more conservative approaches for forage species to support predators, and this has spawned ongoing debate (e.g. Hilborn et al 2017 to the contrary). The Council’s P\* risk policy, by reducing catch to account for scientific uncertainty, should lead to biomass being maintained above the reference point target in the long run.

While not a complete picture of forage, the 2021 State of the Ecosystem reports for New England and the Mid-Atlantic indicate that for the Planktivore group that includes mackerel, long term (30-year) trends in the Mid-Atlantic Bight, Georges Bank, and Gulf of Maine are all either steady or increasing for both the Spring and Fall survey aggregate biomasses<sup>4</sup> (NEFSC 2022a, NEFSC 2022b). The 2018 mackerel assessment examined predator consumption and determined that the presence of mackerel in fish stomachs collected during the NEFSC bottom trawl surveys was generally low from 1973-2016, with spiny dogfish being responsible for 67% of all mackerel as prey occurrences in the NEFSC Food Habits Database. Mackerel were found in only 1% of sampled spiny dogfish however. Additional potentially important predators of mackerel are not sampled in the NEFSC trawl surveys, including highly migratory species, marine mammals, and seabirds. For the 17 analyzed mackerel predators from the NEFSC Food Habits Database, while mackerel did not appear to be an important contribution to their diet, there was a marked decline in consumption from 2000-2016, the terminal year of that analysis, matching the trend in mackerel abundance for that time period. The 2021 Mackerel MTA found that from 2014 to 2019 mackerel biomass had nearly tripled, so substantially more mackerel should already be available as forage by 2019. The mackerel assessment uses a constant natural mortality rate, so as mackerel biomass grows, more predation on mackerel is assumed to occur.

### Council’s P\* Risk Policy

The Council’s standard risk policy states that the Scientific and Statistical Committee (SSC) should provide Acceptable Biological Catches (ABCs) that are the lesser of rebuilding ABCs or standard risk policy (P\*) ABCs. The P\* risk policy requires higher confidence that overfishing will be avoided when biomass is lower, which results in lower catches. At the projected 2023 biomass, because it would only be 32% of rebuilt, the Council’s risk policy requires an 85.5% confidence in avoiding overfishing in 2023. For a stock 100% rebuild, the P\* risk policy requires a 55% chance of avoiding overfishing. Some alternatives being considered by the Council would

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<sup>4</sup> Planktivore Group includes Atlantic mackerel, butterfish, Atlantic herring, alewife, American shad, blackbelly rosefish, blueback herring, cusk, longhorn sculpin, lumpfish, menhaden, northern sand lance, northern searobin, and unclassified sculpin.

result in a 2023 rebuilding catch higher than what would be the standard P\*-adjusted ABC. In these cases, the alternatives note this fact, and represent a temporary adjustment of the Council's standard risk policy that apply to this particular decision – future decisions would need to re-evaluate any diversion from the Council's standard P\* approach (Alternative 3 uses the current, unmodified P\* risk policy). The risk policy adjustment would only apply to this instance of initiating rebuilding for mackerel to consider the effects of different rebuilding timelines and would not apply to management decisions regarding future ABCs once the stock is rebuilt.

#### General SSC Input (MAFMC SSC 2022)

Mackerel recruitment has been low in recent years and various assessments have debated the underlying causes. Environmental conditions may be resulting in low recruitment. Alternatively low recruitment may be due to reduced spawning stock biomass. If stock size is low due to long-term environmental conditions, then severe reductions in ABC are required to achieve the rebuilding target. Alternatively, if stock size is responsible, then increases in recruitment could occur in response to lower rates of fishing.

Owing to the varying starting conditions and random effects of time varying recruitment, the population trajectories under the rebuilding scenarios result in a broad distribution of values. Measures of central tendency (i.e., median) were used to describe the expected rebuild times, the probability of rebuilding by 2032 and the expected catch trajectories. It was noted that not all of the realizations would successfully rebuild, even under the most aggressive reductions in fishing mortality.

The SSC reviewed all alternatives and recommended the P\* approach with the maximum fishing mortality threshold (MFMT) equal to the Fmsy proxy (Alternative 3). This alternative, (1) fulfills rebuilding plan requirements; (2) is the most responsive to new information on changes in stock status; (3) produces the highest rebuilding plan 10-year catch yield); (4) is fully consistent with the Council's P\* risk policy; and (5) would avoid “break points” in catch limit advice, which would reduce year-to-year changes in the ABC.

Risks and scientific uncertainties pertain to the two classes of alternatives: Alternative 1, which considers projections on the basis of only recent recruitment (2009+) and the remainder (Alternatives 2-5) that use the recent recruitment period under the condition of  $SSB < 0.5$  SSBMSY, and use the entire recruitment series (1975+) when  $SSB \geq 0.5$  SSBMSY (Alternatives 2-5). See details on the next page.

#### Alternative 1 - Risks:

- ABC/Catch levels are quite low indicating risk of a depleted industry and foregone catch once SSB recovers.
- At low to nil catch levels, fishery-dependent data will become unavailable to support stock assessment.
- High discard potential if recruitment recovers under low catch

#### Alternative 1 - Scientific Uncertainties:

- Predictions of which recruitment regime exists is highly uncertain owing to lack of understanding on how recruitment is controlled (i.e., role of SSB, the environment, and the food web).
- Recreational catch/unreported removals may exceed low ABCs under this Alternative; knowledge about catch will need to become more precise at low ABCs.

#### Alternatives 2-5 - Risks:

- Stock may not recover without the low F specified in Alternative 1.
- The SSB trigger implies a sudden change in recruitment state, which is not supported by current understanding of what drives recruitment
- The two recruitment stanza approach applies uses an SSB trigger for which there is limited analytical support (SSC Chairman's September 22, 2021 Report to MAFMC)
- An immediate shift towards a higher recruitment regime is assumed at  $SSB \geq 0.5$  SSBMSY, whereas an unknown lag may occur between increased SSB and recruitment.
- Because a stock-recruitment relationship is unknown for this stock, it is uncertain whether SSB changes will be driven by increased recruitment or vice versa. This approach implies a S-R relationship, which may be arbitrary given that it has not been parameterized in the assessment
- The approach of shifting recruitment regimes can have unexpected effects later on with respect to stock rebuilding. The threshold is sensitive to the timing of a pulse of strong recruitment and may not reflect longer-term SSB rebuilding.
- Approaches rely on a SSB-based boost to recruitment that has not been observed recently (since 2007).
- The lack of strong precedence of this approach (but see Brodziak et al. 2001) conveys risk in predicting its performance in rebuilding.

#### Alternatives 2-5 - Scientific Uncertainties:

- We do not know the form of the underlying stock-recruitment relationship.
- Knowledge about catch will need to become more precise at low ABCs.
- The trigger SSB for using one or the other recruitment series is deterministic, without consideration of error.
- Uncertainty in small amplitude changes in SSB
- Uncertainty in long projections

## 4.2 Process

The Council initiated a framework adjustment action in 2021 upon receiving the 2021 Mackerel MTA results. This action was later converted into an amendment due to the potential consideration of recreational bag/possession limits and/or closures, which had not been previously considered in detail, and it was uncertain whether such measures could be considered via a framework adjustment action. Closures are not being considered in this action. The Council intends to take final action at its June 2022 meeting, after public hearings in late April 2022. An emergency rule currently limiting mackerel landings expires in early January 2023, necessitating rapid progress on this action to implement new measures before the emergency rule expires.

## 4.3 Purpose and Need

The purposes and needs addressed by this action are described in the table below.

Table 1. Purposes and Needs

<b>Need</b>	<b>Corresponding Purpose</b>
Prevent overfishing, rebuild the Atlantic mackerel stock, and achieve optimum yield in the mackerel fishery.	Implement measures to specify levels of catch of Atlantic mackerel consistent with the MSA and the objectives of the FMP, including ending overfishing and rebuilding the stock.
Achieve the Domestic Annual Harvest (“quota”) allocation in the mackerel fishery without exceeding it or closing the fishery in a manner that creates avoidable discarding issues.	Implement in-season management measures, including management uncertainty buffers, triggers, and post-closure trip limits.
Minimize bycatch of river herring and shad in the mackerel fishery to the extent practicable.	Implement catch caps for river herring and shad.

## 4.4 Regulatory Authority

The MSA states that Fishery Management Plans (FMPs) shall “contain the conservation and management measures... necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery.” As discretionary provisions of Fishery Management Plans (FMPs), the MSA also allows restriction of fishing by gear/area/time/season. Seasonal management based on attainment of quotas has been previously incorporated into the MSB FMP and this action could modify the existing provisions regarding how the fishery closes due to attainment of the DAH or a portion of the DAH. The RH/S cap was previously implemented under the discretionary MSA provisions providing for conservation of non-target species.

The Council’s risk policy was initially implemented via Amendment 13 to the MSB FMP (<http://www.mafmc.org/msb/>), which stated that the system would need to be “adaptive” and that “Flexibility is imperative and must allow for timely modifications given the dynamic nature of fisheries and the environment.” Changing the desired probabilities of overfishing was contemplated as something that could be accomplished through even the annual specifications process. Major departures from the original risk policy were contemplated as needing to go through either an FMP framework adjustment or FMP amendment. Risk policy adjustments were explicitly provided for and anticipated by Amendment 13. See also implementing regulations at Title 50, Chapter VI, Part 648, Subpart B, §648.25(a)(1)(ii).

#### **4.5 FMP History and Management Objectives**

Management of the MSB fisheries began through the implementation of three separate FMPs (one each for mackerel, squid, and butterfish) in 1978. The plans were merged in 1983. Over time a wide variety of management issues have been addressed including stock rebuilding, habitat conservation, bycatch minimization, and limiting participation in the fisheries. The history of the plan and its amendments can be found at <http://www.mafmc.org/fisheries/fmp/msb>.

The MSA defines Optimum Yield (OY) generally as the amount of fish which A) “will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems”; B) “is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor;” and C) “in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery.” The Omnibus ACL/AM Amendment (Amendment 13 to the MSB FMP) defined OY specifically for mackerel as: “The long-term average amount of desired yield from a stock or fishery. OY cannot exceed MSY. For Atlantic Mackerel, OY is the quantity of catch that is less than or equal to the ABC in U.S. waters.”

The management goals and objectives, as described in the current FMP are listed below.

1. Enhance the probability of successful (i.e., the historical average) recruitment to the fisheries.
2. Promote the growth of the U.S. commercial fishery, including the fishery for export.
3. Provide the greatest degree of freedom and flexibility to all harvesters of these resources consistent with the attainment of the other objectives of this FMP.
4. Provide marine recreational fishing opportunities, recognizing the contribution of recreational fishing to the national economy.
5. Increase understanding of the conditions of the stocks and fisheries.
6. Minimize harvesting conflicts among U.S. commercial, U.S. recreational, and foreign fishermen.

The Council recently updated the goals and objectives of the FMP through another action but that action has not yet been implemented:



## **The updated MSB FMP objectives will be:**

Goal 1: Maintain sustainable MSB stocks.

Objective 1.1: Prevent overfishing and maintain sustainable biomass levels that achieve optimum yield in the MSB fisheries.

Objective 1.2: Consider and, to the extent practicable, account for the roles of MSB species/fisheries in the ecosystem.

Goal 2: Acknowledging the difficulty in quantifying all costs and benefits, achieve the greatest overall net benefit to the Nation, balancing the needs and priorities of different user groups and effects of management on fishing communities.

Objective 2.1: Provide the greatest degree of freedom and flexibility to harvesters and processors (including shoreside infrastructure) of MSB resources consistent with attainment of the other objectives of this FMP, including minimizing additional restrictions.

Objective 2.2: Allow opportunities for commercial and recreational MSB fishing, considering the opportunistic nature of the fisheries, changes in availability that may result from changes in climate and other factors, and the need for operational flexibility.

Objective 2.3: Consider and strive to balance the social and economic needs of various sectors of the MSB fisheries (commercial including shoreside infrastructure and recreational) as well as other fisheries or concerns that may be ecologically linked to MSB fisheries.

Objective 2.4: Investigate opportunities to access international/shared resources of MSB species.

Goal 3: Support science, monitoring, and data collection to enhance effective management of MSB fisheries.

Objective 3.1: Improve data collection to better understand the status of MSB stocks, the role of MSB species in the ecosystem, and the biological, ecological, and socioeconomic impacts of management measures, including impacts to other fisheries.

Objective 3.2: Promote opportunities for industry collaboration on research.

Objective 3.3: Encourage research that may lead to practicable opportunities to further reduce bycatch in the MSB fisheries.

## **4.6 Management Unit and Geographic Scope**

The management unit (fish stock definition) in the MSB FMP for Atlantic mackerel (*Scomber scombrus*) includes all mackerel under U.S. jurisdiction in the Northwest Atlantic, with a core fishery management area from Maine to North Carolina. The FMP also includes a deduction for mackerel caught by Canada - the U.S. assessment provides catch advice for the entire mackerel stock in the Northwest Atlantic (including Canadian waters), which is considered one unit stock.

## 5.0 WHAT ALTERNATIVES ARE CONSIDERED IN THIS DOCUMENT?

**Notes:** All of the rebuilding alternatives in this document utilize the peer reviewed and accepted 2021 Management Track Assessment (MTA) and associated projection methods. The Council’s SSC also reviewed these specific projections in March 2022 and endorsed them as constituting the best available scientific information (for full report see <https://www.mafmc.org/ssc-meetings/2022/march-15-16>). All specifications will be reviewed and potentially revised annually and a MTA should be available in 2023 to set 2024-2025 specifications. The first alternative uses only 2009-2019 recruitments so it requires very low catches to rebuild. Options 2-5 utilize recruitment draws constrained to lower 2009-2019 estimates unless spawning stock biomass is above 50% of the target (then 1975-2019 recruitments, which the reference points are based on, are used). The SSC identified these two recruitment approaches as “defensible and supported by the data” at its September 2021 SSC Meeting (MAFMC SSC 2021b). The results of each rebuilding scenario are contingent on the assumed recruitment dynamics for the projection time period, which makes it difficult to compare Alternative 1 to the other alternatives. All alternatives assume less recruitment than the original mackerel rebuilding plan.

There will be Mackerel MTAs in 2023 and 2025 that both could result in revised rebuilding plans (they will be the new best available scientific information). Because the 2025 Mackerel MTA should consider catch through 2024, one way to compare across all alternatives in terms of relative probability of leading to stock growth by the 2025 Mackerel MTA is to just consider 2023-2024 combined catch. The higher the combined 2023 and 2024 combined catch, the relatively less likely stock growth will occur. The Action Alternatives 1-5 have been ordered from least to most 2023-2024 combined catch to facilitate comparison (“no-action” would result in the highest catch however, as described below). Conversely, the near-term socioeconomic effects would be most severe with Alternative 1 and least severe with Alternative 5. Longer term considerations are also discussed in the impacts section.

This action would only set specifications for 2023 given an MTA is expected in 2023, which should use data through 2022. Using the 2023 MTA to set 2024 specifications would only involve a two-year data lag from the 2023 MTA data (2022 to 2024). Using the 2021 MTA to set 2024 specifications would involve a five-year data lag (2019 to 2024). If the assessment or subsequent specifications were delayed, then the 2023 specifications would roll-over into 2024 until new specifications were published. The MSB Monitoring Committee recommended this approach given the high degree of uncertainty involved in setting 2024 specifications based on 2019 data. Setting 2024 specifications now is likely to convey more stability about 2023/2024 than warranted given the scale of changes observed in the 2021 Mackerel MTA versus the initial rebuilding plan projections.

## NO ACTION ALTERNATIVE

For comparison purposes, “no action” would result in a return to the 2021/2022 published specifications for 2023 given the roll-over provisions in the regulations. Tied to the original rebuilding plan, these specifications would have a total catch of 29,184 MT, which would now result in overfishing in 2023 and fail to rebuild the mackerel stock in 10 years if maintained. While the stock is estimated to have nearly tripled in size from 2014 to 2019 (from about 8% of rebuilt to 24% of rebuilt), it has not increased enough to support the projected catch levels from the initial rebuilding plan. Due to the early January 2023 expiration of the current emergency rule, this is a rare case for MSB fisheries where no action does not equal status quo. The status quo catch (2022) is expected to be about 12,055 MT or less, but that would not be continued once the emergency rule expires in early January 2023. The no-action specifications that would re-commence in early January 2023 are detailed in the table below.

Table 2. No Action Specifications

Specification	Mackerel 2021-2022 (MT)
(a) Overfishing Limit (OFL)	Not available
(b) Acceptable Biological Catch (ABC)	29,184
(c) Canadian Deduction (10,000 MT)	10,000
(d) U.S. ABC = ACL (Canadian catch deducted)	19,184
(e) Recreational Allocation	1,270
(f) Commercial Allocation (rest of ACL)	17,914
(g) Management Uncertainty Buffer = 3%	537
(h) Commercial ACT (97% of allocation)	17,377
(i) DAH (0.37% set aside for discards)	17,312
(j) River Herring and Shad (RH/S) Cap	129

The mackerel fishery also operates under a river herring and shad catch cap (RH/S), which closes the directed mackerel fishery and implements a 20,000 pound trip limit for all permits once 129 MT of RH/S has been projected to be caught in the directed mackerel fishery. 129 MT was the amount of RH/S if the ratio of cap to all catch on mackerel trips (i.e. accounting for other species as well, mostly Atlantic herring) was about 0.53% and the mackerel quota was 17,371 MT (or 0.74% applied to just the mackerel quota). Given the challenges with monitoring a very small cap, including potentially closing the fishery based on a few observed trips, the Council has kept the cap at 129 MT at the current lower mackerel quotas.

## 5.1 ALTERNATIVE 1 – 10-year Rebuilding with Persistent Low Recruitment.

Alternative 1 assumes lower, post-2009 recruitment persists, which makes it nearly impossible to rebuild because the reference point “goal” rebuilding target is based on higher, typical recruitment (post-1975). The SSC identified this as one of two recruitment approaches that are “defensible and supported by the data” at its September 2021 SSC Meeting. With the low recruitment entering the population for the entire rebuilding period, only minimal catches allow rebuilding, based on a fishing mortality rate (“F”) of 0.01. While one could argue this Alternative could be outright rejected given Canadian catches, incidental U.S. commercial catches, and state-waters recreational catches will easily exceed the proposed rebuilding catches, it illustrates the dependence on actually getting typical recruitment when trying to rebuild to a target that is based on typical recruitment. With the catches in this projection, and if lower recruitment persists, the probability of rebuilding by 2032 would be 57%, and the median probability is for rebuilding to occur in 2031. Because this probability is conditional on recruitment being similar to 2009+ recruitment, it is not directly comparable to the other alternatives, but because its catches are so low, Alternative 1 would have the highest overall probability of rebuilding regardless of the recruitments that actually end up occurring. This alternative would also have the highest probability of increasing stock size by the 2025 Mackerel MTA Because it leads to the lowest 2023-2024 catches.

The projected rebuilding period catches (which would be the Acceptable Biological Catches - ABCs) and biomasses under Alternative 1 are described in the table below.

Table 3. Rebuilding Alternative 1 ABCs and Biomass

	Catch (MT)	Biomass (MT)
2023	703	83,692
2024	865	101,492
2025	1,025	118,979
2026	1,169	133,914
2027	1,296	146,932
2028	1,406	158,172
2029	1,497	167,354
2030	1,574	175,260
2031	1,639	181,670
2032	1,692	187,093

In terms of setting specifications for 2023, Alternative 1 appears impracticable given the existing management framework. With a 2023 ABC of 703 MT, the U.S. ABC would be negative given just likely Canadian catches (see additional discussion regarding Canada catches in Alternatives 4 and 5). A complete EEZ closure would come closest to holding to the ABC.

## 5.2 ALTERNATIVE 2 – P\* deduction applied to 50% Rebuilding Probability

Alternatives 2-5 utilize recruitment draws constrained to lower 2009-2019 estimates unless spawning stock biomass during the rebuilding period is above 50% of the target (then the higher 1975-2019 recruitments, which the rebuilding goal is based on, are used). The SSC identified this as one of two recruitment approaches that are “defensible and supported by the data” at its September 2021 SSC Meeting (see Alternative 1 for the other approach). Because the projection model selects the lower or higher recruitment stanza based on biomass in each year of each of 2000 runs, there is a transition toward higher median recruitment through the rebuilding period depending on the exact trajectory of each run.

Alternative 2 uses the Council's standard P\* risk policy deduction applied to the 0.14 rebuilding F from Alternative 5, effectively treating a rebuilding F of 0.14 as an overfishing mortality rate (and then imposing a risk-policy deduction). The P\* risk policy requires higher certainty in avoiding overfishing at lower biomasses. For example in 2023 the P\* risk policy requires an 85.5% probability of not overfishing (or in this case of not exceeding  $F = 0.14$ ) due to the low projected 2023 stock size, and catch is lowered accordingly. Higher certainty about avoiding exceeding even the rebuilding F means lower catches, which allows rebuilding by 2029 in this alternative. F starts at 0.04 and as biomass nears the rebuilding target, higher fishing mortality is allowed, but never rises above  $F = 0.13$ . The 10-year rebuilding probability for Alternative 2 given all 10 years of catches is 62.3% given the recruitments used. This alternative would also have the 2<sup>nd</sup> highest probability of increasing stock size by the 2025 Mackerel MTA because it leads to the 2<sup>nd</sup> lowest 2023-2024 catches.

The projected rebuilding period catches (which would be the Acceptable Biological Catches - ABCs) and biomasses under Alternative 3 are described in the table below.

Table 4. Rebuilding Alternative 2 ABCs and Biomass

	Catch (MT)	Biomass (MT)
2023	2,976	82,832
2024	4,168	98,752
2025	5,879	116,414
2026	8,127	134,870
2027	10,978	154,147
2028	14,519	172,753
2029	18,487	188,964
2030	21,394	202,302
2031	23,034	213,674
2032	24,459	222,817

In terms of setting specifications for 2023, Alternative 2 appears impracticable given the existing management framework. With a 2023 ABC of 2,976 MT, the U.S. ABC would be near zero, and the commercial quota would be negative given likely recreational catches (see additional discussion regarding Canada and recreational catches in Alternatives 4 and 5). A complete EEZ closure would come closest to holding to the ABC.

### 5.3 ALTERNATIVE 3 – P\* approach with return to normal recruitment.

Alternatives 2-5 utilize recruitment draws constrained to lower 2009-2019 estimates unless spawning stock biomass during the rebuilding period is above 50% of the target (then the higher 1975-2019 recruitments, which the rebuilding goal is based on, are used). The SSC identified this as one of two recruitment approaches that are “defensible and supported by the data” at its September 2021 SSC Meeting (see Alternative 1 for the other approach). Because the projection model selects the lower or higher recruitment stanza based on biomass in each year of each of 2000 runs, there is a transition toward higher median recruitment through the rebuilding period depending on the exact trajectory of each run.

Alternative 3 uses the Council's standard P\* risk policy as a rebuilding plan. The P\* risk policy requires higher certainty in avoiding overfishing at lower biomasses. For example in 2023 the P\* risk policy requires an 85.5% probability of not overfishing due to the low projected 2023 stock size, and catch is lowered accordingly. For a fully rebuilt stock, the risk policy requires a 55% probability of not overfishing, which causes the stock size to stabilize above the rebuilding target. Higher certainty about avoiding overfishing means lower catches (especially initially), which allows rebuilding by 2031 in this alternative. As biomass nears the rebuilding target, higher fishing mortality is allowed (slowing stock growth). The 10-year rebuilding probability given all 10 years of catches for Alternative 3 is 51.5% given the recruitments used. This alternative would also have the 3<sup>rd</sup> highest probability of increasing stock size by the 2025 Mackerel MTA because it leads to the 3<sup>rd</sup> lowest 2023-2024 catches.

The projected rebuilding period catches (which would be the Acceptable Biological Catches - ABCs) and biomasses under Alternative 3 are described in the table below.

Table 5. Rebuilding Alternative 3 ABCs and Biomass

	Catch (MT)	Biomass (MT)
2023	4,539	82,205
2024	6,207	96,378
2025	8,455	111,512
2026	11,245	126,811
2027	14,558	142,214
2028	18,391	156,433
2029	22,337	168,344
2030	25,981	177,517
2031	29,014	183,446
2032	30,564	186,886

As detailed above, this action would only set specifications for 2023 given a Mackerel MTA is expected in 2023, which can inform 2024-2025 specifications.

The SSC recommended the P\* approach with the maximum fishing mortality threshold (MFMT) equal to the Fmsy proxy (Alternative 3). This alternative, (1) fulfills rebuilding plan requirements; (2) is the most responsive to new information on changes in stock status; (3) produces the highest rebuilding plan 10-year catch yield; (4) is fully consistent with the Council’s P\* risk policy; and (5) would avoid “break points” in catch limit advice, which would reduce year-to-year changes in the ABC.

The SSC also noted that this alternative provides lower initial catches (ABCs) than some other alternatives. In terms of setting specifications for 2023, Alternative 3 may be impracticable given the existing management framework and the needed Canadian and recreational deductions. Even if a relatively low deduction is made for Canada (2,197 MT as described below in Alternatives 4/5), the U.S. ABC would be 2,342 MT. With 2,195 MT being the smallest reduction for recreational catch recommended by the Monitoring Committee given the bag/possession limit options (see additional discussion regarding recreational deductions in Alternatives 4 and 5), there would be negligible catch for U.S. landings or discards. Discards could also increase if minimal retention is allowed. Accordingly, the P\* approach does not appear practicable for 2023. However, at slightly higher stock sizes and ABCs the P\* approach could be practicable, and is worth revisiting after the next Mackerel MTA. A complete EEZ commercial closure would come closest to holding to the ABC.

#### **5.4 ALTERNATIVE 4 – 61% Rebuilding Probability in 10 Years**

Alternatives 2-5 utilize recruitment draws constrained to lower 2009-2019 estimates unless spawning stock biomass during the rebuilding period is above 50% of the target (then the higher 1975-2019 recruitments, which the rebuilding goal is based on, are used). The SSC identified this as one of two recruitment approaches that are “defensible and supported by the data” at its September 2021 SSC Meeting (see Alternative 1 for the other approach). Because the projection model selects the lower or higher recruitment stanza based on biomass in each year of each of 2000 runs, there is a transition toward higher median recruitment through the rebuilding period depending on the exact trajectory of each run.

Alternative 4 uses an F of 0.12, which would be predicted to have a 61% probability of rebuilding the mackerel stock in 10 years given the recruitments used. The median rebuilt year is 2031. F stays the same for all 10 years, and as biomass increases, so does catch. This alternative would also have the 4<sup>th</sup> highest probability of increasing stock size by the 2025 Mackerel MTA. Because it leads to the 4<sup>th</sup> lowest 2023-2024 catches.

The projected rebuilding period catches (which would be the Acceptable Biological Catches - ABCs) and biomasses under Alternative 4 are described in the table below.

Table 6. Rebuilding Alternative 4 ABCs and Biomass

	Catch (MT)	Biomass (MT)
2023	8,094	80,745
2024	9,274	91,738
2025	10,540	103,756
2026	11,906	116,857
2027	13,408	131,291
2028	15,004	146,553
2029	16,631	162,239
2030	18,261	177,731
2031	19,814	192,045
2032	21,215	204,796

As detailed above, this action would only set specifications for 2023 given a Mackerel MTA is expected in 2023, which can inform 2024-2025 specifications. Selecting this alternative would also modify the Council’s risk policy for the purposes of beginning this rebuilding plan. The existing risk policy would otherwise cap the 2023 ABC at the standard P\* catch calculation (4,539 MT).

The FMP accounts for Canadian landings, recreational catch, and commercial discards by deductions from the total ABC, with options described below.

#### Canadian Landings

Canada closed its fishery for 2022 so may have minimal landings in 2022. With a 2023 Canadian assessment pending, 2023 Canadian landings are still challenging to predict. This action explores two options for deducting Canadian landings in 2023: Deducting their 2021 landings (4,395 MT) or half that amount (2,197 MT). Given the uncertainty for 2023 and because under-specification of Canadian landings in 2023 would slow rebuilding, 2,197 MT is the lowest value considered.

#### Recreational Catch Restriction Alternatives

For 2022, 2,582 MT of recreational catch was deducted, the 2017-2021 average. 2017, with more catch than 2018-2021, was included to capture some of the historically-observed variability. Analysis of Marine Recreational Information Program (MRIP) and Vessel Trip Report (VTR) data suggest that replacing trips that caught higher numbers with the following bag/possession limits could result in the following harvest reductions, based on pooled available 2018-2021 MRIP/VTR data (2021 preliminary).



Table 7. Theoretical Bag Limit Reductions by Mode

Bag Limit	% Harvest Reduction		
	Private	Shore	For-Hire
10 fish	39%	27%	35%
15 fish	28%	19%	22%

Accounting for the proportion of each mode’s harvest (77% private, 20% shore, 3% for hire), and that harvest is 83% of catch, then the calculated reductions in recreational catch would be (assuming that Maine, New Hampshire, and Massachusetts mirrored the Federal regulations):

Table 8. Theoretical Combined Bag Limit Reductions

Bag Limit	% Catch Reduction
	Combined
10 fish	30%
15 fish	22%

These bag limits appear to represent a reasonable range of initial restriction alternatives for the recreational sector for 2023. There have not been recreational limits for mackerel before, so angler responses may be difficult to predict. To avoid under-accounting for recreational catch the MSB Monitoring Committee recommended either maintaining 2022’s 2,582 MT deduction for recreational catch, or only taking half credit for any calculated theoretical savings, which would result in deducting the amounts in the following table for recreational catch in each scenario. The “Recreational Deduction” is the amount of catch set-aside for anticipated recreational catch when commercial quotas are calculated:

Table 9. Theoretical Alternative Recreational Catch Deductions and Savings

Bag Limit	Recreational Deduction	Savings (MT)
	Combined (MT)	
10 fish	2,195	387
15 fish	2,298	284

The “Savings (MT)” column is the amount of fish less than the current 2,582 MT deduction each bag limit might entail. If less recreational catch is deducted, the commercial quota increases by the same amount.

The following specifications calculations assume that either the current approach of 2,582 MT of recreational catch is deducted (i.e. potential savings from recreational bag limits would not be assumed in 2023) or take the deductions from the above table. Staying with 2,582 MT could help account for the variability that can occur with recreational catch estimates – recreational catch (numbers of fish) has been stable from 2018-2021, but has varied substantially year to year in the past. It must be reiterated that these estimates are rough approximations given there is no history of bag limits in this fishery. Staff explored using a log regression to consider different increments

given the apparent digit bias (at 5 and 10 fish increments) in the reported harvest data. While a log regression fit the data quite well, there did not appear reason to investigate further given there is already limited certainty about potential angler responses to a new bag limit for mackerel and subsequent effects on overall catch. Utilizing the digit bias could also simplify communications of regulations.

### Commercial Discards

No changes are proposed to the averaging approach used by the NEFSC for 2022 projected catch – 115 MT is assumed for 2023 commercial mackerel discards.

### Closure Approach

Averaging 2018-2021, the fishery landed 805 MT after April 1, and these were times when the directed limited access fishery was not active (range was 618 MT to 1,037 MT). As such, this time period should represent landings rates that could occur during a closure of the directed fishery. The proposed “first” closure approach is to buffer this performance by 10% and one month, so that before May 1 the directed fishery would close with 886 MT left in the quota, and from May 1 on, the directed fishery would close with 443 MT left in the quota. NMFS would also have the discretion to not close the fishery in November and December if performance suggests that a quota overage is unlikely. While it is possible that an early closure in January could result in more than 886 MT in additional landings, and it is possible that a closure in late April could result in unused quota remaining, this proposed system likely strikes a reasonable balance between achieving OY and regulatory simplicity. At this threshold for the “first” closure, additional trip limits would be implemented: 40,000 pounds for Tier 1-3 directed permits and 5,000 pounds for incidental/open access permits. There would be a final closure with 100 MT left in the quota where all permits were subject to a 5,000 pound trip limit to minimize any potential overages. With these trip limits any possible overages should be minimal, and would be deducted from subsequent years’ quotas if an overall ACL overage occurs.

### Specifications Summary

Based on the above proposed approaches to handle Canadian landings, recreational catch, commercial discards, and quota closures, the following specifications are possible for Alternative 4 – at the time of final action, the Council would need to identify the recommended Canadian landings and recreational catch deductions to determine the final quotas.

Table 10. Alternative 4 2023 Specifications Summary

Alternative 4 - 2023 Specifications (MT)						
ABC	8,094					
Canadian Catch Options	2,197			4,395		
Rec Catch Options (10, 15, na)	2,195	2,298	2,582	2,195	2,298	2,582
Commercial Discards	115	115	115	115	115	115
Commercial Quota	3,587	3,484	3,200	1,389	1,286	1,002
Before May 1 First Closure Threshold (-886 MT)	2,701	2,598	2,314	Insufficient quota for directed fishing - begin closed		
May 1/after First Closure Threshold (-443 MT)	3,144	3,041	2,757			
Final Closure Threshold (-100 MT)	3,487	3,384	3,934	1,289	1,186	902

“First” closure = 40,000 pound trip limit for Tier 1-3 directed permits and 5,000 pounds for incidental/open access permits. “Final” closure = 5,000 pounds for all permits.

For example following arrows to the left, with an 8,094 ABC (=ACL), if 2,197 MT was deducted for Canada, 2,195 MT was deducted for recreational catch (10-fish bag limit), and 115 MT was deducted for commercial discards, the commercial quota would be 3,587 MT. At 2,701 MT before May 1 or 3,144 MT on/after May 1, the first closure trip limits would be implemented. At 3,487 MT the final closure trip limit of 5,000 pounds for all permits would be implemented.

#### Commercial Minimum Mesh Add-On Alternative

The Council has also requested inclusion of a 3-inch minimum mesh requirement that mirrors a similar requirement in the butterfish fishery. The regulatory wording would be: “Owners or operators of trawl vessels possessing more than 5,000 lb (2.27 mt) of mackerel harvested in or from the EEZ may only fish with nets having a minimum codend mesh of 3 inches (7.62 cm) diamond or square mesh, as measured by methods specified in § 648.80(f), applied throughout the codend for at least 100 continuous meshes forward of the terminus of the net, or for codends with less than 100 meshes, the minimum mesh size codend shall be a minimum of one-third of the net, measured from the terminus of the codend to the headrope.

Unfortunately there are not gear selectivity studies for Atlantic mackerel that allow quantitative analysis of this alternative. Casey et al 1992 examined an experimental midwater trawl codend of 60 mm polypropylene knotless square netting fished against a similar trawl fitted with a codend constructed from 40 mm knotted nylon mesh rigged in the conventional diamond configuration in the western English Channel. The size composition of the mackerel caught ranged from 18 to 37 cm (roughly almost age 1s to age 7s in our fishery) and a comparison of the length-frequency distributions indicated that there was no difference in the size composition, and hence selection, of fish taken by the two gears. Various studies on horse mackerel, a jack species of roughly similar size and shape of Atlantic mackerel have shown expected selectivity patterns. For

example Campos and Fonseca 2003 saw small but significant effects on size selectivity across 65mm (2.6 inches) to 70mm (2.8 inches) and 80 mm (3.1 inches) meshes. The direct applicability to Atlantic mackerel would be uncertain, but the general literature on selectivity would support that some additional escapement of small mackerel should occur (e.g. <https://www.conservationevidence.com/actions/2697#>). Most Atlantic mackerel catch observations (raw data) in the observer data in the last 10 years occur from 48mm (1.9 inches) to 60mm (2.5 inches), with less than 10% of observations by weight occurring with mesh over 60mm (2.5 inches), making the observer data of limited use for exploring a mesh increase.

### River Herring and Shad Cap

#### Sub-Option 1 (No-action / Status Quo for RH/S Cap)

Given the small 2023 directed fishery, the Council could simply retain the current 129 MT river herring and shad (RH/S) catch cap, which closes the directed mackerel fishery and implements a 20,000 pound trip limit for all permits once 129 MT of RH/S has been projected to be caught in the directed mackerel fishery. 129 MT was the amount of RH/S if the ratio of cap to all catch on mackerel trips was about 0.53% and the mackerel quota was 17,371 MT (or 0.74% applied to just the mackerel quota). Given the challenges with estimating and monitoring a very small cap, including potentially closing the fishery based on a few observed trips, the Council has kept the cap at 129 MT at the current lower mackerel quotas.

#### Sub-Option 2

The Council could also scale the RH/S cap with the quota selected in this Alternative, which would range the RH/S cap from 27 MT to 7 MT.

### Permitting Option

There is some ambiguity in the current regulations regarding possession of Atlantic mackerel in federal waters (beyond 3 miles). If the prohibitions list is modified to include possession by commercial and for-hire vessels without an appropriate permit, any reporting loopholes would be closed, especially including possession of previously-caught or purchased Atlantic mackerel bait as triggering a permit requirement. Purchased Atlantic mackerel would not need to be reported, but all catch on all trips must be reported on vessel trip reports (VTRs) once in possession of a permit (regardless of the target species on a particular trip). This could add VTR reporting for a substantial number of vessels with Highly Migratory Species (HMS) permits (possibly 1,000-2,000 HMS for hire vessels and 1,000-2,000 HMS Atlantic Tunas General category vessels) if they wanted to possess mackerel in federal waters. The 1,000-2,000 vessel range is based on the total count of HMS permits and existing limited permit overlap.

## 5.5 ALTERNATIVE 5 – 53% Rebuilding Probability in 10 Years

Alternatives 2-5 utilize recruitment draws constrained to lower 2009-2019 estimates unless spawning stock biomass during the rebuilding period is above 50% of the target (then the higher 1975-2019 recruitments, which the rebuilding goal is based on, are used). The SSC identified this as one of two recruitment approaches that are “defensible and supported by the data” at its September 2021 SSC Meeting (see Alternative 1 for the other approach). Because the projection model selects the lower or higher recruitment stanza based on biomass in each year of each of 2000 runs, there is a transition toward higher median recruitment through the rebuilding period depending on the exact trajectory of each 2000 model runs.

Alternative 5 uses an F of 0.14, which would be predicted to have a 53.4 % probability of rebuilding the mackerel stock in 10 years given the recruitments used. The median rebuilt year is 2032. F stays the same for all 10 years, and as biomass increases, so does catch. Other than no action, this alternative would also have the lowest probability of increasing stock size by the 2025 Mackerel MTA Because it leads to the highest 2023-2024 catches.

The projected rebuilding period catches (which would be the Acceptable Biological Catches - ABCs) and biomasses under Alternative 5 are described in the table below.

Table 11. Rebuilding Alternative 5 ABCs and Biomass

	Catch (MT)	Biomass (MT)
2023	9,371	80,215
2024	10,591	89,949
2025	11,883	100,486
2026	13,252	111,737
2027	14,764	124,305
2028	16,365	137,457
2029	18,001	151,050
2030	19,665	164,694
2031	21,257	177,355
2032	22,672	188,731

As detailed above, this action would only set specifications for 2023 given a Mackerel MTA is expected in 2023, which can inform 2024-2025 specifications. Selecting this alternative would also modify the Council’s risk policy for the purposes of beginning this rebuilding plan. The existing risk policy would otherwise cap the 2023 ABC at the standard P\* catch calculation (4,539 MT).

The FMP accounts for Canadian landings, recreational catch, and commercial discards by deductions from the total ABC, with options described below.

## Canadian Landings

Canada closed its fishery for 2022 so may have minimal landings in 2022. With a 2023 Canadian assessment pending, 2023 Canadian landings are still challenging to predict. This action explores two options for deducting Canadian landings in 2023: Deducting their 2021 landings (4,395 MT) or half that amount (2,197 MT). Given the uncertainty for 2023 and because under-specification of Canadian landings in 2023 would slow rebuilding, 2,197 MT is the lowest value considered.

## Recreational Catch Restriction Alternatives

For 2022, 2,582 MT of recreational catch was deducted, the 2017-2021 average. 2017 was included to capture some of the historically-observed variability. Analysis of Marine Recreational Information Program (MRIP) and Vessel Trip Report (VTR) data suggest that replacing trips that caught higher numbers with the following bag/possession limits could result in the following harvest reductions, based on pooled available 2018-2021 MRIP/VTR data (2021 preliminary).

Table 12. Theoretical Bag Limit Reductions by Mode

Bag Limit	% Harvest Reduction		
	Private	Shore	For-Hire
10 fish	39%	27%	35%
15 fish	28%	19%	22%

Accounting for the proportion of each mode's harvest (77% private, 20% shore, 3% for hire), and that harvest is 83% of catch, then the calculated reductions in recreational catch would be (assumes that discards stayed similar and that Maine, New Hampshire, and Massachusetts mirrored the Federal regulations):

Table 13. Theoretical Combined Bag Limit Reductions

Bag Limit	% Catch Reduction
	Combined
10 fish	30%
15 fish	22%

These bag limits appear to represent a reasonable range of initial restriction alternatives for the recreational sector for 2023. There have not been recreational limits for mackerel before, so angler responses may be difficult to predict. To avoid under-accounting for recreational catch the MSB Monitoring Committee recommended either maintaining 2022's 2,582 MT deduction for

recreational catch, or only taking half credit for any calculated theoretical savings, which would result in deducting the amounts in the following table for recreational catch in each scenario. The “Recreational Deduction” is the amount of catch set-aside for anticipated recreational catch when commercial quotas are calculated:

Table 14. Theoretical Alternative Recreational Catch Deductions and Savings

	Recreational Deduction	
Bag Limit	Combined (MT)	Savings (MT)
10 fish	2,195	387
15 fish	2,298	284

The “Savings (MT)” column is the amount of fish less than the current 2,582 MT deduction each bag limit might entail. If less recreational catch is deducted, the commercial quota increases by the same amount.

The following specifications calculations assume that either the current approach of 2,582 MT of recreational catch is deducted (i.e. potential savings from recreational bag limits would not be assumed in 2023) or take the deductions from the above table. Staying with 2,582 MT could help account for the variability that can occur with recreational catch estimates – recreational catch (numbers of fish) has been stable from 2018-2021, but has varied substantially year to year in the past. It must be reiterated that these estimates are rough approximations given there is no history of bag limits in this fishery. Staff explored using a log regression to consider different increments given the apparent digit bias (at 5 and 10 fish increments) in the reported harvest data. While a log regression fit the data quite well, there did not appear reason to investigate further given there is already limited certainty about potential angler responses to a new bag limit for mackerel and subsequent effects on overall catch. Utilizing the digit bias could also simplify communications of regulations.

### Commercial Discards

No changes are proposed to the averaging approach used by the NEFSC for 2022 projected catch – 115 MT is assumed for 2023 commercial mackerel discards.

### Closure Approach

Averaging 2018-2021, the fishery landed 805 MT after April 1, and these were times when the directed limited access fishery was inactive (range was 618 MT to 1,037 MT). As such, this time period should represent landings rates that could occur during a closure of the directed fishery. The proposed “first” closure approach is to buffer this performance by 10% and one month, so that before May 1 the directed fishery would close with 886 MT left in the quota, and from May

1 on, the directed fishery would close with 443 MT left in the quota. NMFS would also have the discretion to not close the fishery in November and December if performance suggests that a quota overage is unlikely. While it is possible that an early closure in January could result in more than 886 MT in additional landings, and it is possible that a closure in late April could result in unused quota remaining, this proposed system likely strikes a reasonable balance between achieving OY and regulatory simplicity. At this threshold for the “first” closure, additional trip limits would be implemented: 40,000 pounds for Tier 1-3 directed permits and 5,000 pounds for incidental/open access permits. There would be a final closure with 100 MT left in the quota where all permits were subject to a 5,000 pound trip limit to minimize any potential overages. With these trip limits any possible overages should be minimal, and would be deducted from subsequent years’ quotas if an overall ACL overage occurs.

### Specifications Summary

Based on the above proposed approaches to handle Canadian landings, recreational catch, commercial discards, and quota closures, the following specifications are possible for Alternative 5 – at the time of final action, the Council would need to identify the recommended Canadian landings and recreational catch deductions to determine the final quotas.

Table 15. Alternative 5 2023 Specifications Summary

Alternative 5 - 2023 Specifications (MT)						
ABC	← 2,197 ← 9,371 ← 4,395 →					
Canadian Catch Options						
Rec Catch Options (10, 15, na)	2,195	2,298	2,582	2,195	2,298	2,582
Commercial Discards	115	115	115	115	115	115
<b>Commercial Quota</b>	<b>4,864</b>	<b>4,761</b>	<b>4,477</b>	<b>2,666</b>	<b>2,563</b>	<b>2,279</b>
Before May 1 First Closure Threshold (-886 MT)	3,978	3,875	3,591	1,780	1,677	1,393
May 1/after First Closure Threshold (-443 MT)	4,421	4,318	4,034	2,223	2,120	1,836
Final Closure Threshold (-100 MT)	4,764	4,661	4,377	2,566	2,463	2,179

“First” closure = 40,000 pound trip limit for Tier 1-3 directed permits and 5,000 pounds for incidental/open access permits. “Final” closure = 5,000 pounds for all permits.

For example following arrows to the left, with a 9,371 ABC (=ACL), if 2,197 MT was deducted for Canada, 2,195 MT was deducted for recreational catch (10-fish bag limit), and 115 MT was deducted for commercial discards, the commercial quota would be 4,864 MT. At 3,978 MT before May 1 or 4,421 MT on/after May 1, the first closure trip limits would be implemented. At 4,764 MT the final closure trip limit of 5,000 pounds for all permits would be implemented.



## Commercial Minimum Mesh Add-On Alternative

The Council has also requested inclusion of a 3-inch minimum mesh requirement that mirrors a similar requirement in the butterfish fishery. The regulatory wording would be: “Owners or operators of trawl vessels possessing more than 5,000 lb (2.27 mt) of mackerel harvested in or from the EEZ may only fish with nets having a minimum codend mesh of 3 inches (7.62 cm) diamond or square mesh, as measured by methods specified in § 648.80(f), applied throughout the codend for at least 100 continuous meshes forward of the terminus of the net, or for codends with less than 100 meshes, the minimum mesh size codend shall be a minimum of one-third of the net, measured from the terminus of the codend to the headrope.

Unfortunately there are not gear selectivity studies for Atlantic mackerel that allow quantitative analysis of this alternative. Casey et al 1992 examined an experimental midwater trawl codend of 60 mm polypropylene knotless square netting fished against a similar trawl fitted with a codend constructed from 40 mm knotted nylon mesh rigged in the conventional diamond configuration in the western English Channel. The size composition of the mackerel caught ranged from 18 to 37 cm (roughly almost age 1s to age 7s in our fishery) and a comparison of the length-frequency distributions indicated that there was no difference in the size composition, and hence selection, of fish taken by the two gears. Various studies on horse mackerel, a jack species of roughly similar size and shape of Atlantic mackerel have shown expected selectivity patterns. For example Campos and Fonseca 2003 saw small but significant effects on size selectivity across 65mm (2.6 inches) to 70mm (2.8 inches) and 80 mm (3.1 inches) meshes. The direct applicability to Atlantic mackerel would be uncertain, but the general literature on selectivity would support that some additional escapement of small mackerel should occur (e.g. <https://www.conservationevidence.com/actions/2697#>). Most Atlantic mackerel catch observations (raw data) in the observer data in the last 10 years occur from 48mm (1.9 inches) to 60mm (2.5 inches), with less than 10% of observations by weight occurring with mesh over 60mm (2.5 inches), making the observer data of limited usefulness for exploring an increase to a 3-inch mesh.

## River Herring and Shad Cap

### Sub-Option 1 (No-action / Status Quo for RH/S Cap)

Given the small 2023 directed fishery, the Council could simply retain the current 129 MT river herring and shad (RH/S) catch cap, which closes the directed mackerel fishery and implements a 20,000 pound trip limit for all permits once 129 MT of RH/S has been projected to be caught in the directed mackerel fishery. 129 MT was the amount of RH/S if the ratio of cap to all catch on mackerel trips (accounting for mostly Atlantic herring) was about 0.53% and the mackerel quota

was 17,371 MT (or 0.74% applied to just the mackerel quota). Given the challenges with estimating and monitoring a very small cap, including potentially closing the fishery based on a few observed trips, the Council has kept the cap at 129 MT at the current lower mackerel quotas.

### Sub-Option 2

The Council could also scale the RH/S cap with the quota selected in this Alternative, which would range the RH/S cap from 36 MT to 17 MT.

### Permitting Option

There is some ambiguity in the current regulations regarding possession of Atlantic mackerel in federal waters (beyond 3 miles). If the prohibitions list is modified to include possession by commercial and for-hire vessels without an appropriate permit, any reporting loopholes would be closed, especially including possession of previously-caught or purchased Atlantic mackerel bait as triggering a permit requirement. Purchased Atlantic mackerel would not need to be reported, but all catch on all trips must be reported on vessel trip reports (VTRs) once in possession of a permit (regardless of the target species on a particular trip). This could add VTR reporting for a substantial number of vessels with Highly Migratory Species (HMS) permits (possibly 1,000-2,000 HMS for hire vessels and 1,000-2,000 HMS Atlantic Tunas General category vessels) if they wanted to possess mackerel in federal waters. The 1,000-2,000 vessel range is based on the total count of HMS permits and existing limited permit overlap.

## **5.6 Considered but Rejected Alternatives**

Given the extremely low catches required for even a 50% probability of rebuilding when lower recruitment is assumed for the whole rebuilding period (i.e. #1 above), higher probability options combined with the persistent low recruitment appeared redundant.

Even with the two phase recruitment scenario, achieving a 75% probability of rebuilding would require very low catches, and appeared redundant with remaining options that also required very low catches.

Given the unknown discard mortality, and potential enforcement issues related to chub mackerel mis-identification, minimum size options were “Considered but Rejected.”

## 6.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND FISHERIES

### 6.1 Description of the Managed Resource and Non-Target Species

#### Mackerel

Unless otherwise indicated, the information in this section is taken from the mackerel EFH source document at <http://www.nefsc.noaa.gov/nefsc/habitat/efh/> and the recent mackerel MTA.

Atlantic mackerel is a semi-pelagic/semi-demersal (may be found near the bottom or higher in the water column) schooling fish species primarily distributed between Labrador (Newfoundland, Canada) and North Carolina. Based on the work of Sette (1943, 1950) and confirmed in the recent assessment, the stock is considered to comprise two spawning contingents: a northern contingent spawning primarily in the southern Gulf of St. Lawrence and a southern contingent spawning in the Mid-Atlantic Bight, Southern New England and the western Gulf of Maine. The two contingents mix during winter months on the Northeast U.S. shelf; however, the degree of mixing and natal homing is unknown. Mackerel in the northwest Atlantic were modeled as one stock for the recent assessment. The Canadian fishery likely primarily catches the northern contingent while the U.S. fishery likely catches both contingents.

Mackerel spawning occurs during spring and summer and progresses from south to north as the surface waters warm. Atlantic mackerel are serial, or batch spawners. Eggs are pelagic. Post-larvae gradually transform from planktonic to swimming and schooling behavior at about 30-50 mm. Approximately 50% of fish are mature at age 2 and about 99% were mature at age 3 from 2007-2016 according to the 2018 Benchmark Assessment (NSFSC 2018).

Atlantic mackerel are opportunistic feeders that can ingest prey either by individual selection of organisms or by filter feeding.

A wide variety of fish and other animals are predators of mackerel. Predator food habits on the Northeast US Shelf have been systematically sampled during the NEFSC bottom trawl surveys since 1973. In the recent benchmark assessment, these food habits data were evaluated for the top 17 mackerel predators based on the percent occurrence of mackerel in predator diets (NEFSC 2018, Appendix A4). The presence of Atlantic mackerel in fish stomachs was generally low from 1973-2016. A total of 1,284 out of 619,637 stomachs (~0.2%) contained mackerel, including unidentified mackerel Scombridae and Scomber spp. Spiny dogfish was the most dominant mackerel predator sampled by the trawl surveys, but the frequency of occurrence for mackerel in spiny dogfish diets only average 1%.

Additional potentially important predators of mackerel are not sampled in the NEFSC trawl surveys, including highly migratory species, marine mammals, and seabirds. Consumption from these predators is more difficult to estimate due to incomplete information on population levels and annual diet information. Furthermore, predator food habits were not available for the months the northern contingent was outside of the area sampled by the NEFSC trawl survey. Given this incomplete sampling, the low occurrence of mackerel in predator stomachs, and the resulting interannual variability in consumption estimates, the final model did not incorporate predator diets as an index of abundance. The temporal trends in consumption were consistent with trends from the range-wide egg index as well as abundance estimates.

Additional life history information is detailed in the Essential Fish Habitat (EFH) document for the species, located at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>.

The 2021 Mackerel MTA found mackerel continue to be overfished with overfishing occurring, as described previously.

### **Mackerel Non-Target Species**

There have been very few recent observed directed mackerel trips due to the low directed effort toward mackerel in recent years. Various species will be caught incidentally to any mackerel fishing and will be impacted to some degree by the prosecution of the fishery. On the mackerel trips identified in this analysis, the 2017-2019 overall discard rate was 1%. For non-target species that are managed under their own FMP, incidental catch/discards are also considered as part of the management of that fishery. Data beyond 2019 was not analyzed due to potential Covid-19 impacts.

The primary database used to assess discarding is the NMFS Observer Program database, which includes data from trips that had trained observers onboard to document discards. One critical aspect of using this database to describe discards is to correctly define the trips that constitute a given directed fishery. A flexible criteria of what captains initially intend to target, how they may adjust targeting over the course of a trip, and what they actually catch would be ideal but is impracticable. The case with mackerel is further complicated by the small size of the fishery recently and the few observed trips. However from 2017-2019 there were on average 7 observed trips annually where mackerel accounted for at least 50% of retained catch, and those trips form the basis of the following analysis. These trips made 65 hauls of which 89% were observed. Hauls may be unobserved for a variety of reasons, for example transfer to another vessel without an observer, observer not on station, haul slipped (dumped) in the water before observing, etc.

The observed mackerel kept on these trips accounted for approximately 7% of the total mackerel landed (this is the overall coverage rate based on weight). While a very rough estimate, especially given non-accounting for spatial and temporal trends, one can use the information in the table immediately following and the fact that about 6,920 mt of mackerel were caught annually 2017-2019 to roughly estimate annual incidental catch and discards for the species in the table. Readers are strongly cautioned that while this is a reasonable approach for a quick, rough, and relative estimate given the available data, it is highly imprecise and does not follow the protocol used for official discard estimates. As a minimum threshold, only species estimated to be caught at a level more than 10,000 pounds per year are included (captures 95% of all discards). Species with a “\*” are overfished, subject to overfishing, or otherwise considered depleted.

Table 16. Incidental Catch and Discards in the Mackerel Fishery

NE Fisheries Science Center Common Name	Pounds Observed Caught	Pounds Observed Discarded	Of all discards observed, percent that comes from given species	Percent of given species that was discarded	Pounds of given species caught per mt mackerel Kept	Pounds of given species discarded per mt mackerel Kept	Rough Annual Catch (pounds) based on 3-year (2017-2019) average of mackerel landings (6,920 mt)	Rough Annual Discards (pounds) based on 3-year (2017-2019) average of mackerel landings (6,920 mt)
MACKEREL, ATLANTIC *	3,207,485	585	1%	0%	2,205	0	15,258,755	2,785
HERRING, ATLANTIC *	626,320	4,639	9%	1%	431	3	2,979,549	22,068
HERRING, BLUEBACK *	28,805	9,570	19%	33%	20	7	137,031	45,529
FISH, NK	22,101	22,101	43%	100%	15	15	105,137	105,137
DOGFISH, SPINY	13,912	10,048	20%	72%	10	7	66,181	47,799
ALEWIFE *	7,580	1,793	3%	24%	5	1	36,061	8,531
HAKE, SILVER (WHITING	2,187	23	0%	1%	2	0	10,402	108

The observer program creates individual animal records for some fish species of interest, mostly larger pelagics and/or elasmobranchs, as well as tagged fish. There was only one such record for these trips, an unknown shark species.

## 6.2 Human Communities and Economic Environment

This section describes the performance of the mackerel fishery to allow the reader to understand the socio-economic importance of the mackerel fishery. The recent squid and butterfish specifications EA (MAFMC 2021) can be consulted for information on those species, but those fisheries are not expected to be impacted by this action. Recent Amendments to the MSB FMP contain additional information about the MSB fisheries, especially demographic information on ports that land MSB species. See Amendments 11 and 14 at <http://www.mafmc.org/msb/> for more information or visit NMFS’ communities page at: [http://www.nefsc.noaa.gov/read/socialsci/community\\_profiles/](http://www.nefsc.noaa.gov/read/socialsci/community_profiles/). In general, the MSB fisheries saw high foreign landings in the 1970s followed by a domestication of the fishery, and domestic landings have been variable, but lower than the peak foreign landings. The current regulations

for the MSB fisheries are summarized by NMFS at <https://www.fisheries.noaa.gov/species/atlantic-mackerel#commercial>, and detailed in the Federal Register at <https://www.ecfr.gov/current/title-50/chapter-VI/part-648>.

The most obvious way that human communities are affected by the MSB fisheries are from the revenues generated by the fisheries, and the jobs created. The affected communities include both individuals directly involved in harvesting and processing as well as indirect support services (e.g. vessel maintenance, insurance, ice, etc.). While the direct data points that are most available are landings and revenues, it is important to keep in mind that by contributing to the overall functioning of and employment in coastal communities, the MSB fisheries have indirect social impacts as well. Social impacts are strongly aligned with changes to fishing opportunities and while difficult to measure can include impacts to families from income changes/volatility, safety-at-sea (related to changes in fishery operations due to regulation changes), job satisfaction, and general frustration by individuals due to management's impacts especially if they perceive management actions to be unreasonable or ill-informed.

Descriptive information on the fisheries is included, and where possible, quantitative commercial fishery and economic information is presented. This section establishes a descriptive baseline for the fishery with which to compare actual and predicted future socio-economic changes that result from management actions.

#### Commercial Fishery Measures and Total Catches

There are four categories of mackerel permits. When the fishery starts each year, the various commercial mackerel permit categories start with different trip limits. Tier 1 has an unlimited trip limit, Tier 2 has a 135,000 pound trip limit, and Tier 3 has a 100,000 pound trip limit. An open access/incidental permit has a 20,000 pound trip limit. When 90% of the DAH is projected to be landed, trip limits of 40,000 pounds are implemented for Tier 1-3 directed permits and 5,000 pounds for incidental/open access permits. When 100% of the DAH is projected to be landed, a 5,000 pound trip limit would be implemented for all permits for the rest of the fishing year to cover remaining incidental catches.

Foreign catches dominated the fishery during the 1960s and 1970s, with total catch peaking at over 432,000 MT in 1973. Foreign catches declined and then were eliminated by the MSA, though there was also some joint venture activity from the mid-1980s through 1991. From 1992 through 2001, total catches (including Canada) averaged just under 36,000 MT before increasing to peaks over 112,000 MT in 2004 and 2006. Total catch then declined from 2011-2021 averaging just under 17,000 MT per year. It has been estimated by Canadian DFO staff that there could be between 2,000 and 5,000 metric tons of unreported historical catches per year<sup>5</sup> (not included in US assessments or catch accounting), which includes fishing mortality from various sources, notably recreational and some unreported commercial (including bait) harvests, discards, and other mortalities. Unreported Canadian commercial harvest may be lower in the most recent years due to stock concerns and additional focus on catch reporting.

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<sup>5</sup> <https://www.gazette.gc.ca/rp-pr/p2/2021/2021-05-26/html/sor-dors100-eng.html>

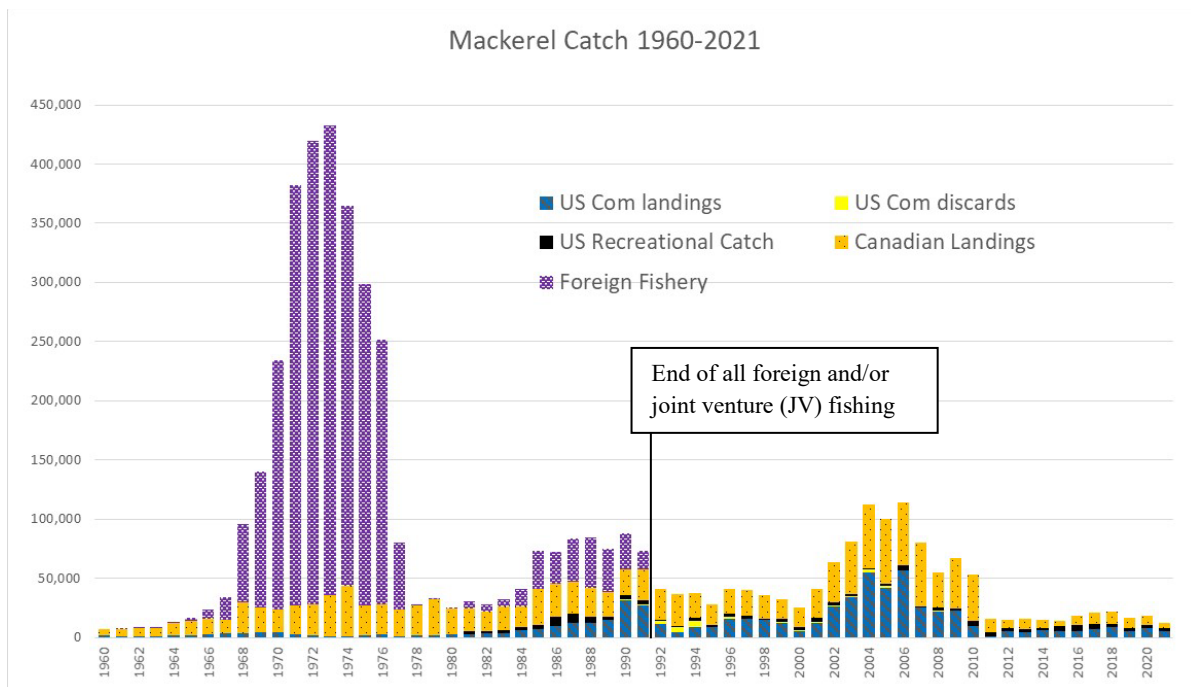


Figure 3. Recorded NW Atlantic mackerel catch (mt) 1960-2021.

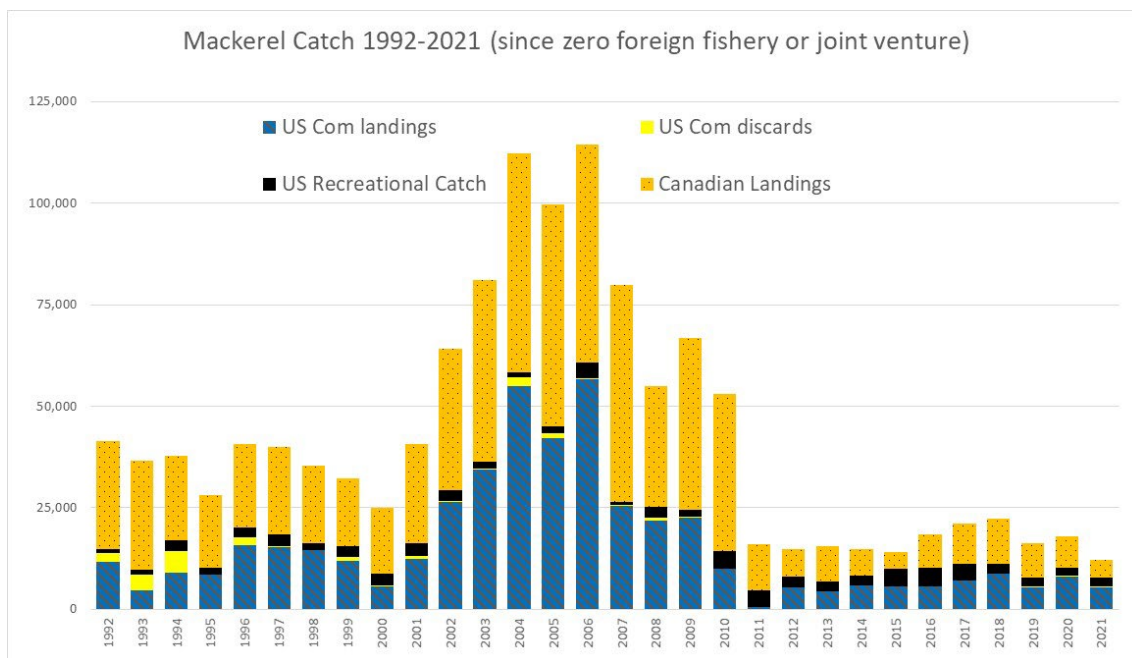


Figure 4. Recorded NW Atlantic mackerel catch (mt) 1992-2021.  
(foreign fishery ended fully - note different scale and time period from Figure 3)

The figures below provides more detail on U.S. Commercial landings, ex-vessel revenues (in 2021 inflation-adjusted dollars), and prices per MT since 1996, when reporting was improved.

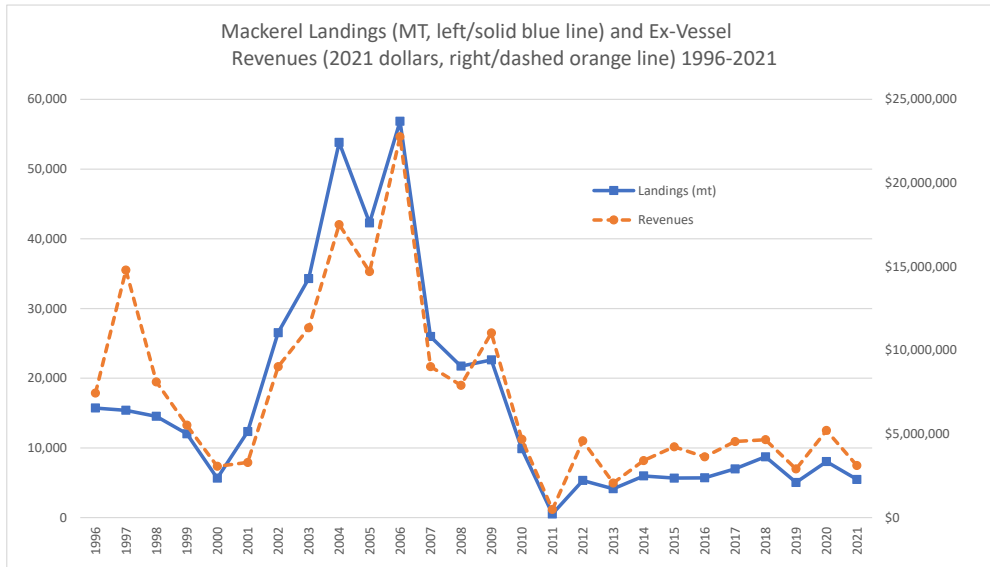


Figure 5. U.S. Commercial Landings and Ex-Vessel Revenues 1996-2021 Adjusted to 2021 Dollars Source: NMFS unpublished dealer data.

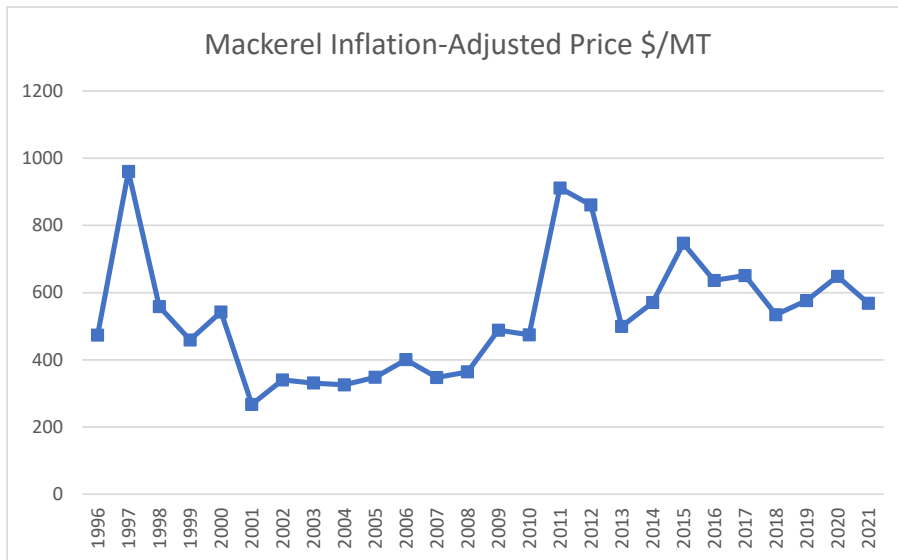


Figure 6. Ex-Vessel Mackerel Prices 1996-2021 Adjusted to 2021 Dollars Source: NMFS unpublished dealer data. [PRELIMINARY]



The mackerel fishery takes place in shelf waters as in the figures below. Landings were reported via dealer reports matched to a vessel trip report (VTR) when possible. From 2007-2011 80% of landings had location data, from 2012-2016 84% of landings had location information, and more recent years have also had a high percentage of landings with location information.

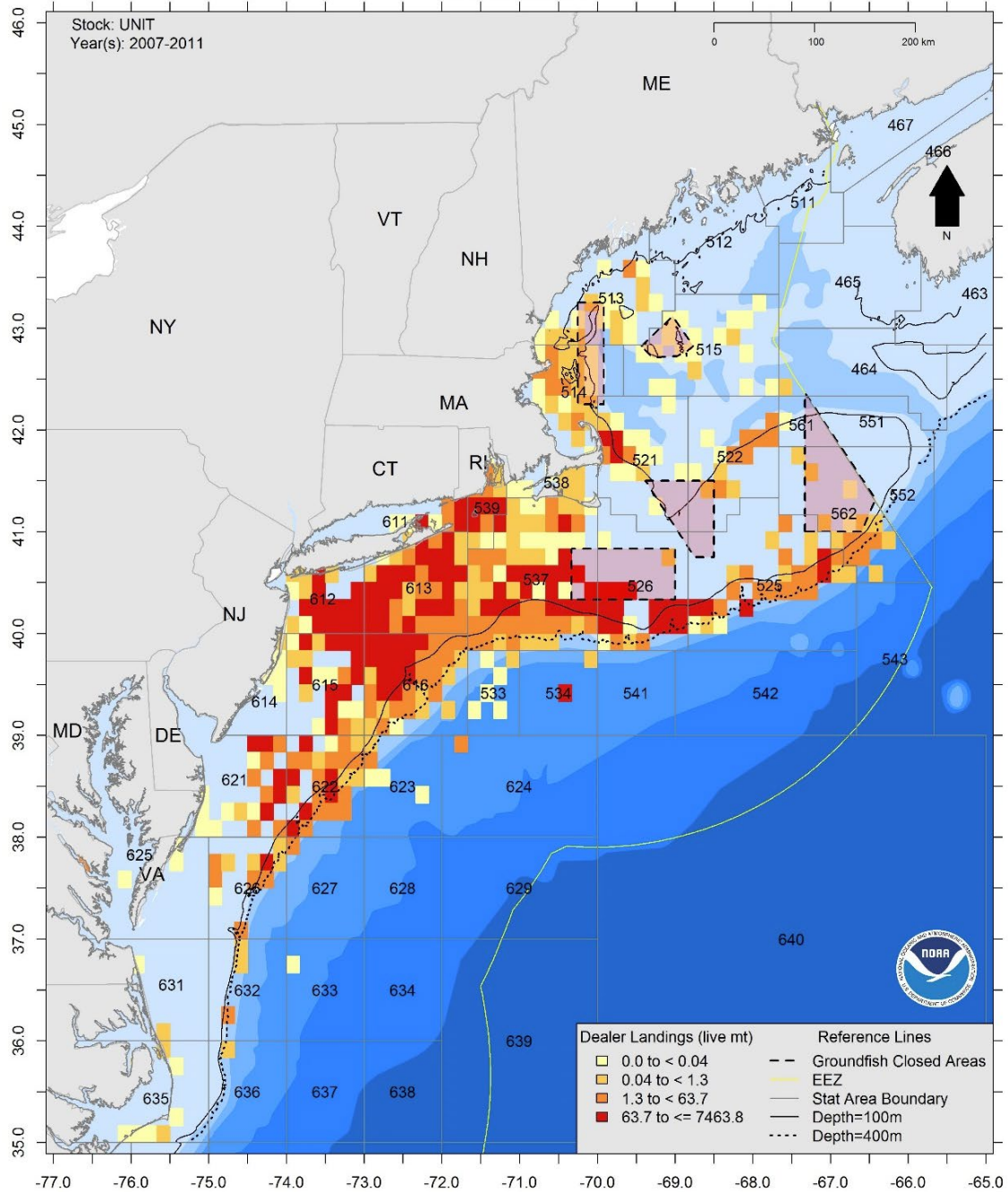


Figure 7. Spatial distribution of landings (mt) by ten-minute square, during 2007-2011.

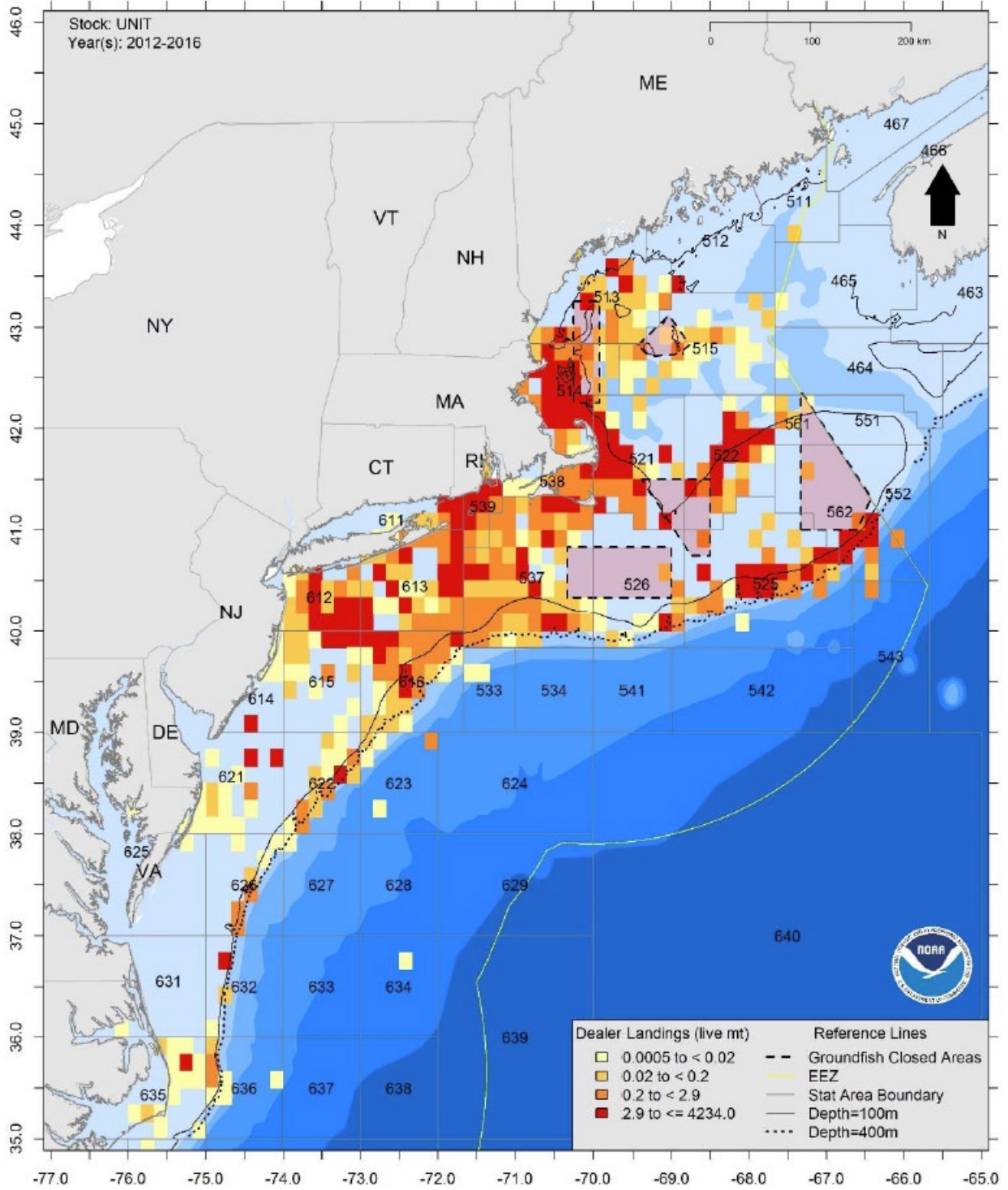


Figure 8. Spatial distribution of landings (mt) by ten-minute square, during 2012-2016.

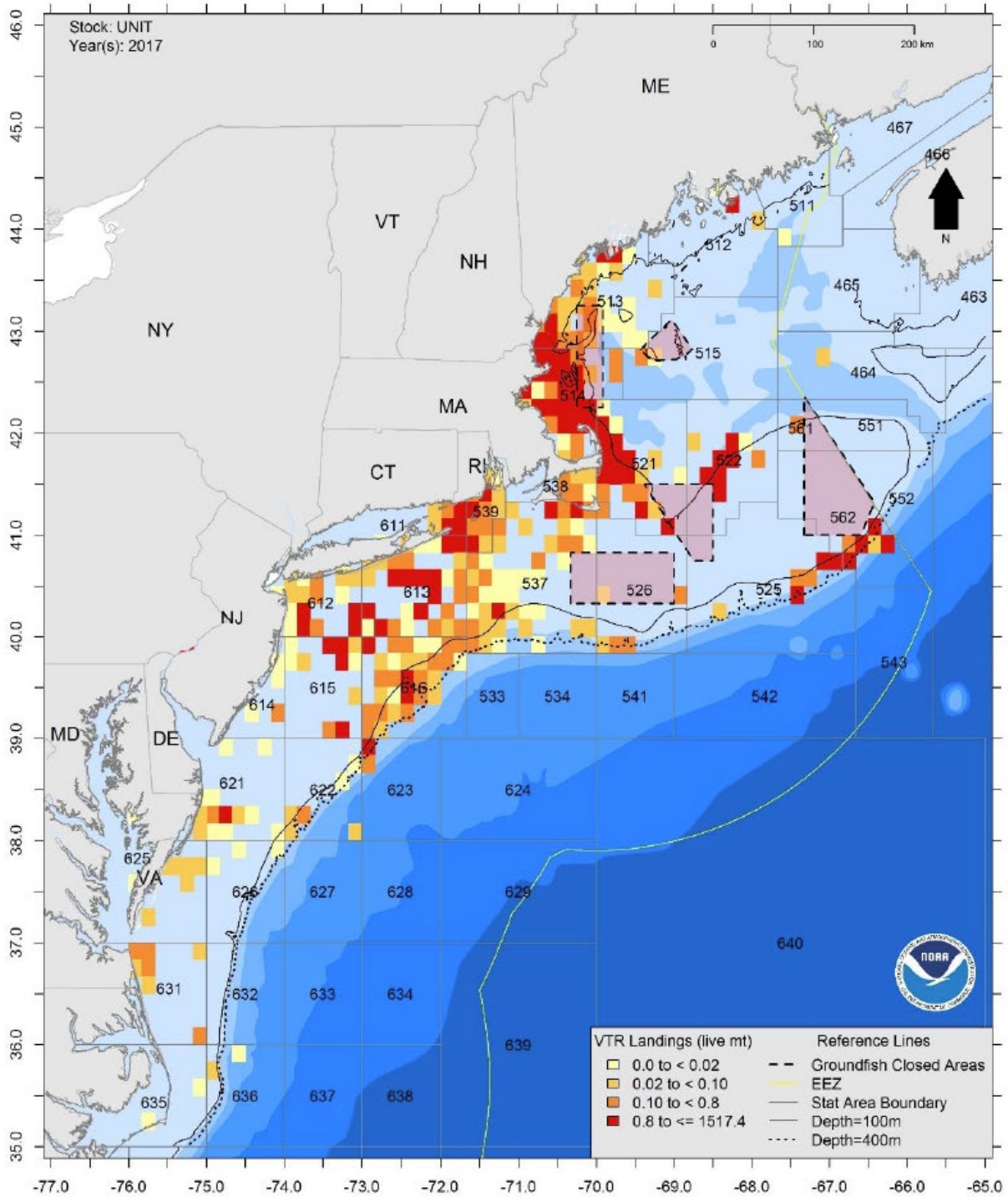


Figure 9. Approximate Primary 2018 Mackerel Catch Locations (from VTR data)

# Atlantic Mackerel

*Scomber scombrus*

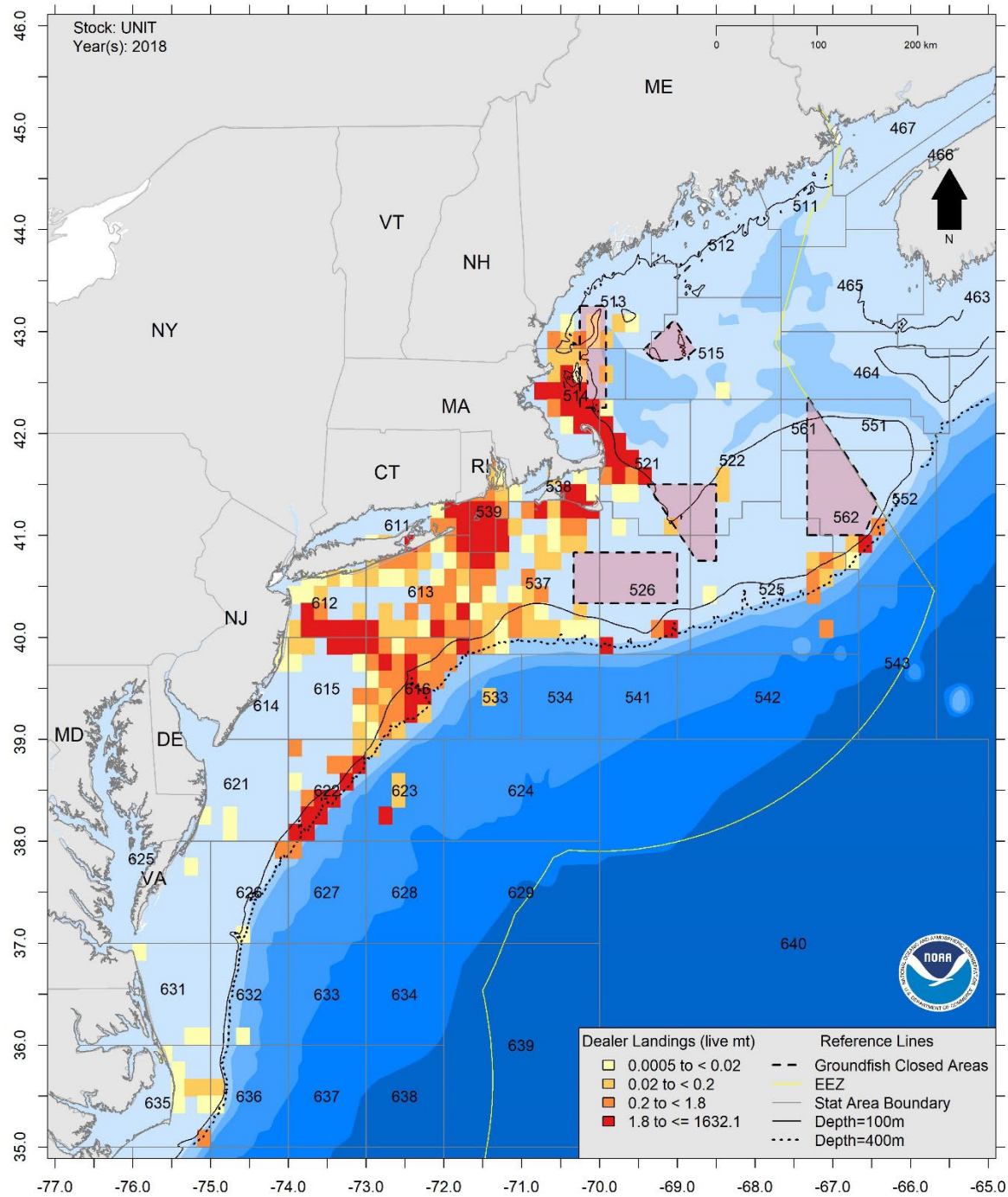


Figure 10. Approximate Primary 2018 Mackerel Catch Locations (from dealer and VTR data)

# Atlantic Mackerel

*Scomber scombrus*

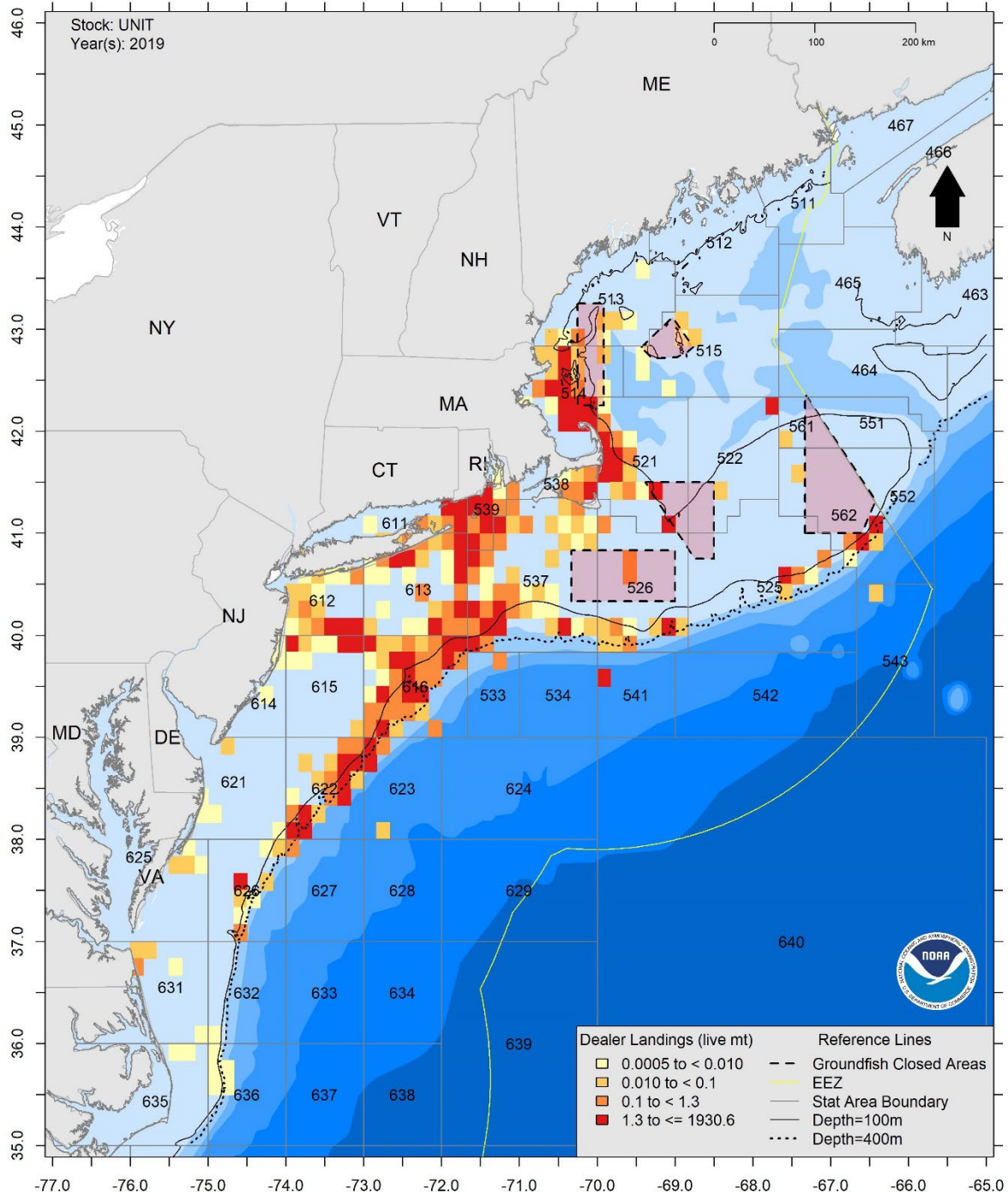


Figure 11. Approximate Primary 2019 Mackerel Catch Locations (from dealer and VTR data)

Updated maps are not available for 2020 and 2021, but the following tables bin mackerel landings by the same statistical areas noted on the figures above for 2020 and 2021, and the areas accounting for most 2020 and 2021 landings were not atypical. Area 514 is difficult to see on the above maps, but is just east of Massachusetts.

Table 17. Commercial mackerel landings by statistical area in 2020. Source: NMFS unpublished VTR data.

Stat Area	Metric Tons
613	2,900
521	1,164
612	1,152
616	806
615	738
514	705
Other/CI	580
Total	8,045

Table 18. Commercial mackerel landings by statistical area in 2021. Source: NMFS unpublished VTR data.

Stat Area	Metric Tons
522	2,023
521	1,854
612	992
514	450
Other/CI	332
Total	5,652

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In recent years (2017-2021) most mackerel landings have occurred in Massachusetts and New Jersey (see table below). There is more confidential information at the port level, but aggregate 2017-2021 landings and nominal revenues are also provided for major ports where possible.

Table 19. 2017-2021 Total Mackerel Landings by State

State	MT
MA	18,043
NJ	9,931
RI	3,979
ME	2,066
Other	254

Table 20. 2017-2021 Total Mackerel Landings by Port

PORT	MT
Cape May, NJ	9,849
Gloucester, MA	7,702
New Bedford, MA	7,108
Portland, ME	2,018
Point Judith, RI	1,703
Marshfield, MA	1,311
Chatham, MA	972
Other/CI	3,610

Table 21. 2017-2021 Total Mackerel Revenues by Port

Port	\$ (Millions)
Cape May, NJ	4.3
Gloucester, MA	3.6
New Bedford, MA	3.5
Marshfield, MA	1.5
Portland, ME	1.3
Point Judith, RI	1.0
Chatham, MA	0.7
Other/CI	3.4

Table 22. Numbers of vessels that actively fished for mackerel, by landings (lbs) category, 1982-2021.

YEAR	Vessels 1 mil +	Vessels 100,000 - 1mil	Vessels 50,000 - 100,000	Vessels 10,000 - 50,000	Total
1982	0	10	10	43	63
1983	0	10	5	26	41
1984	0	11	14	29	54
1985	0	12	10	28	50
1986	1	10	5	37	53
1987	1	15	8	31	55
1988	2	20	8	40	70
1989	6	17	8	27	58
1990	6	16	7	39	68
1991	13	18	1	38	70
1992	9	17	13	48	87
1993	0	16	11	55	82
1994	2	27	14	44	87
1995	4	24	11	50	89
1996	7	45	15	53	120
1997	6	30	20	46	102
1998	9	16	6	39	70
1999	6	15	9	37	67
2000	5	3	0	26	34
2001	5	3	2	20	30
2002	12	3	1	22	38
2003	14	6	5	23	48
2004	18	6	1	14	39
2005	15	11	4	17	47
2006	20	12	5	10	47
2007	16	12	2	20	50
2008	15	5	1	17	38
2009	15	6	6	18	45
2010	10	9	2	14	35
2011	0	3	3	17	23
2012	3	9	1	9	22
2013	4	3	3	13	23
2014	6	5	1	13	25
2015	5	9	10	12	36
2016	3	16	7	26	52
2017	6	7	14	27	54
2018	8	6	3	24	41
2019	3	11	4	38	56
2020	7	9	1	10	27
2021	4	9	3	6	22



## Recreational Fishery

The figure below describes total Atlantic mackerel recreational catch (numbers of fish) from 1981 to 2021 (2021 preliminary). Estimates before 2018 use calibration factors to account for substantial survey changes that were fully implemented in 2018, including the mail-based fishing effort survey and changes to the MRIP site-intercept survey (APAIS). Catch since 2018 has been relatively stable, but the time series includes substantial year to year variability.

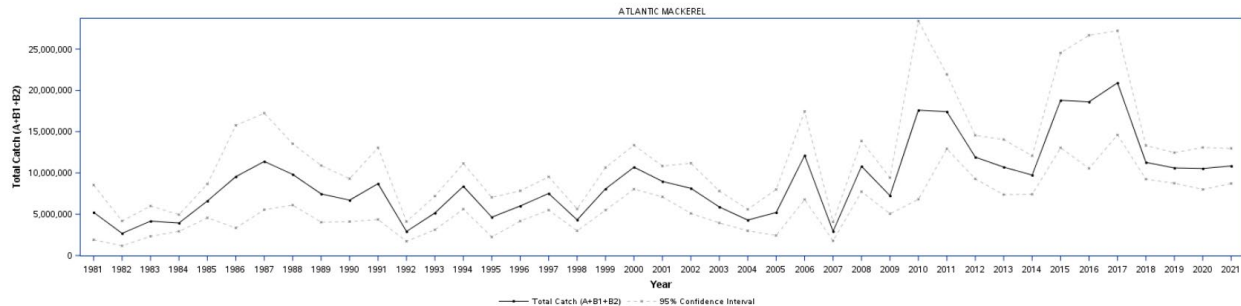


Figure 12. MRIP mackerel time series 1981-2021, total catch, numbers of fish.

The following more detailed discussion of recent catch focuses on data since 2018 to avoid any concerns about the effects of the calibration for pre-2018 data. Earlier discussions have highlighted that for-hire operators are not interviewed about trip catches but their anglers/customers could be, if they are at a site that is included on the MRIP site register. Anglers are to be asked about all fish caught and their disposition (available to be measured, harvested but not available, and/or released). PSE, or proportional standard error, expresses the standard error of an estimate as a percentage of the estimate and is a measure of precision.

Table 23. 2018-2021 MRIP Mackerel Estimates (#s) by Catch Type

Estimate Status	Year	Common Name	Observed Harvest (A)	PSE	Reported Harvest (B1)	PSE	Released Alive (B2)	PSE
FINAL	2018	ATLANTIC MACKEREL	2,330,587	23.3	7,164,214	11.3	1,782,338	19.9
FINAL	2019	ATLANTIC MACKEREL	2,646,784	16.3	5,913,593	12.6	2,041,877	18.8
FINAL	2020	ATLANTIC MACKEREL	3,136,063	19.6	6,439,192	17.6	964,581	15.2
PRELIMINARY	2021	ATLANTIC MACKEREL	705,745	18	8,663,790	12	1,473,430	19.5

Table 24. 2018-2021 MRIP Mackerel Estimates (#s) by State

Estimate Status	Year	State	Common Name	Total Catch (A+B1+B2)	PSE	** Contribution of Imputed Data to Total Catch Rate
FINAL	2018	CONNECTICUT	ATLANTIC MACKEREL	63	71.6	0%
FINAL	2018	MAINE	ATLANTIC MACKEREL	2,851,922	21	0%
FINAL	2018	MASSACHUSETTS	ATLANTIC MACKEREL	6,396,674	11.9	0%
FINAL	2018	NEW HAMPSHIRE	ATLANTIC MACKEREL	1,961,169	18.9	0%
FINAL	2018	RHODE ISLAND	ATLANTIC MACKEREL	21,119	71.5	0%
FINAL	2019	MAINE	ATLANTIC MACKEREL	3,275,535	20.8	0%
FINAL	2019	MASSACHUSETTS	ATLANTIC MACKEREL	5,647,588	10.5	0%
FINAL	2019	NEW HAMPSHIRE	ATLANTIC MACKEREL	1,637,111	16.9	0%
FINAL	2019	RHODE ISLAND	ATLANTIC MACKEREL	11,262	79.5	0%
FINAL	2020	CONNECTICUT	ATLANTIC MACKEREL	11,283	69.1	0%
FINAL	2020	MAINE	ATLANTIC MACKEREL	3,628,454	18.5	1%
FINAL	2020	MASSACHUSETTS	ATLANTIC MACKEREL	5,318,596	20.1	1%
FINAL	2020	NEW HAMPSHIRE	ATLANTIC MACKEREL	1,525,643	19.3	10%
FINAL	2020	RHODE ISLAND	ATLANTIC MACKEREL	1,420	62.5	77%
PRELIMINARY	2021	CONNECTICUT	ATLANTIC MACKEREL	1,311	92.3	0%
PRELIMINARY	2021	MAINE	ATLANTIC MACKEREL	3,913,997	17.6	1%
PRELIMINARY	2021	MASSACHUSETTS	ATLANTIC MACKEREL	5,384,078	14.5	0%
PRELIMINARY	2021	NEW HAMPSHIRE	ATLANTIC MACKEREL	1,317,292	13.1	0%
PRELIMINARY	2021	RHODE ISLAND	ATLANTIC MACKEREL	218,882	113	0%

PSE, or proportional standard error, expresses the standard error of an estimate as a percentage of the estimate and is a measure of precision. A PSE value greater than 50 indicates a very imprecise estimate and occurrences are highlighted in pink.

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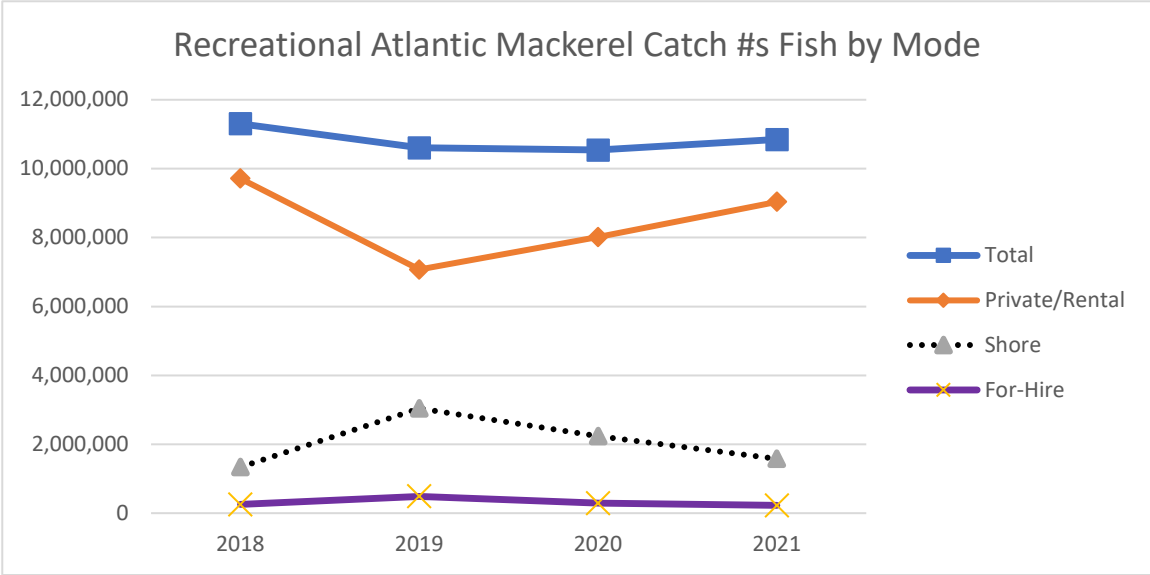


Figure 13. 2018-2021 MRIP Mackerel Estimates (#s) by Mode

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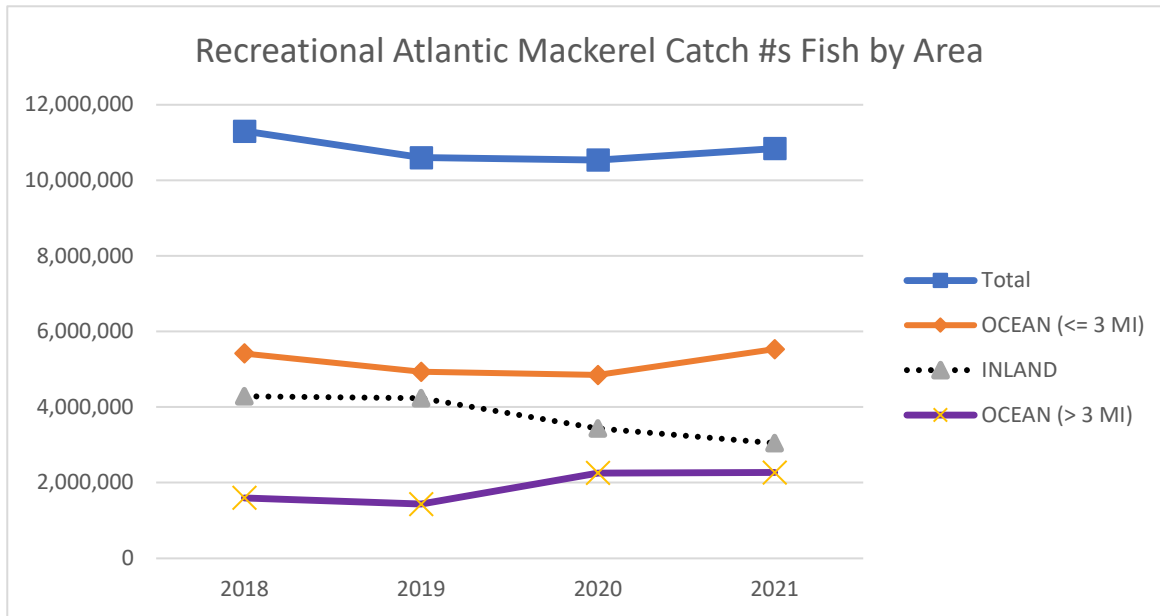


Figure 14. 2018-2021 MRIP Mackerel Estimates (#s) by Area

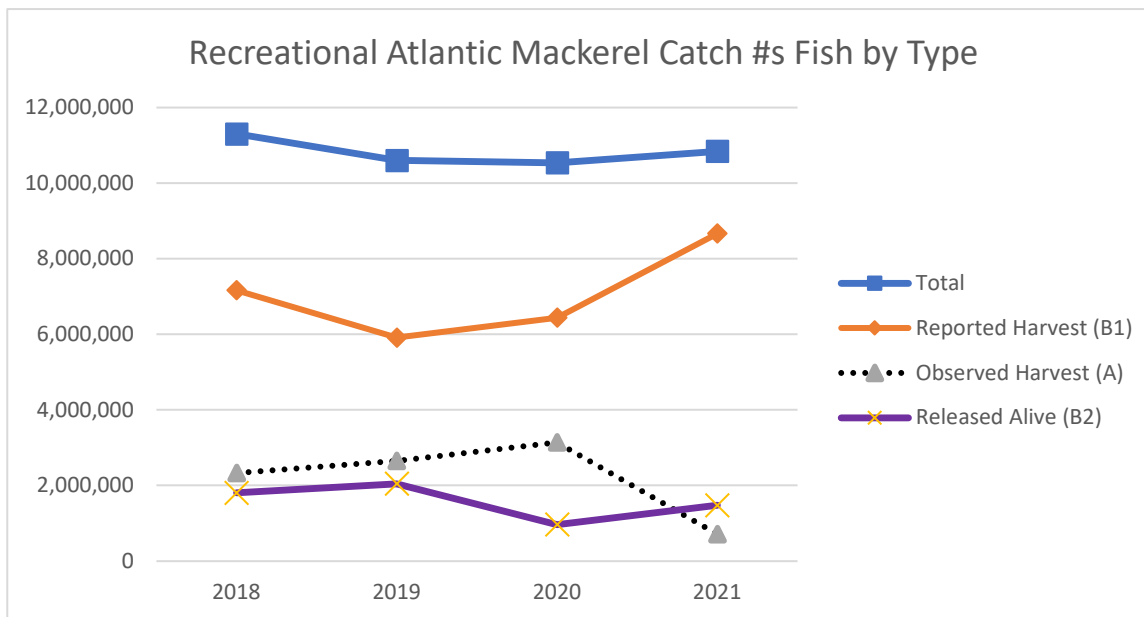


Figure 15. 2018-2021 MRIP Mackerel Estimates (#s) by Catch Type

## 6.4 Protected Species

Protected species are those afforded protections under the Endangered Species Act (ESA; species listed as threatened or endangered under the ESA) and/or the Marine Mammal Protection Act (MMPA). The Table below provides a list of protected species that occur in the affected environment of the MSB fisheries and the potential for the fishery to impact the species, specifically via interactions with MSB fishing gear (i.e., mid-water trawl and bottom trawl gear). The EA for this action will further describe interactions and impacts with these species, but all of the alternatives would decrease quotas compared to either no action (which would substantially increase quotas) or the status quo, so the action alternatives would not be likely to lead to increased effort or additional negative impacts on protected resources.

Table 25. Species Protected Under the ESA and/or MMPA that May Occur in the Affected Environment of the MSB FMP

Species	Status <sup>2</sup>	Potential to interact with MSB fishing gear?
<b>Cetaceans</b>		
<i>North Atlantic right whale (Eubalaena glacialis)</i>	<i>Endangered</i>	<i>No</i>
Humpback whale, West Indies DPS, ( <i>Megaptera novaeangliae</i> )	Protected (MMPA)	No
<i>Fin whale (Balaenoptera physalus)</i>	<i>Endangered</i>	<i>No</i>
<i>Sei whale (Balaenoptera borealis)</i>	<i>Endangered</i>	<i>No</i>
<i>Blue whale (Balaenoptera musculus)</i>	<i>Endangered</i>	<i>No</i>
<i>Sperm whale (Physeter macrocephalus)</i>	<i>Endangered</i>	<i>No</i>
Minke whale ( <i>Balaenoptera acutorostrata</i> )	Protected (MMPA)	Yes
Pilot whale ( <i>Globicephala</i> spp.) <sup>3</sup>	Protected (MMPA)	Yes
Pygmy sperm whale ( <i>Kogia breviceps</i> )	Protected (MMPA)	No
Dwarf sperm whale ( <i>Kogia sima</i> )	Protected (MMPA)	No
Risso's dolphin ( <i>Grampus griseus</i> )	Protected (MMPA)	Yes

Species	Status <sup>2</sup>	Potential to interact with MSB fishing gear?
Atlantic white-sided dolphin ( <i>Lagenorhynchus acutus</i> )	Protected (MMPA)	Yes
Short Beaked Common dolphin ( <i>Delphinus delphis</i> )	Protected (MMPA)	Yes
Atlantic Spotted dolphin ( <i>Stenella frontalis</i> )	Protected (MMPA)	No
Striped dolphin ( <i>Stenella coeruleoalba</i> )	Protected (MMPA)	No
Beaked whales ( <i>Ziphius and Mesoplodon spp</i> ) <sup>4</sup>	Protected (MMPA)	No
<b>Bottlenose dolphin (<i>Tursiops truncatus</i>)<sup>5</sup></b>	<b>Protected (MMPA)</b>	<b>Yes</b>
Harbor porpoise ( <i>Phocoena phocoena</i> )	Protected (MMPA)	Yes
<b>Pinnipeds</b>		
Harbor seal ( <i>Phoca vitulina</i> )	Protected (MMPA)	Yes
Gray seal ( <i>Halichoerus grypus</i> )	Protected (MMPA)	Yes
Harp seal ( <i>Phoca groenlandicus</i> )	Protected (MMPA)	Yes
Hooded seal ( <i>Cystophora cristata</i> )	Protected (MMPA)	No
<b>Sea Turtles</b>		
Leatherback sea turtle ( <i>Dermochelys coriacea</i> )	Endangered	Yes
Kemp's ridley sea turtle ( <i>Lepidochelys kempii</i> )	Endangered	Yes
Green sea turtle, North Atlantic DPS ( <i>Chelonia mydas</i> )	Threatened	Yes
Loggerhead sea turtle ( <i>Caretta caretta</i> ), Northwest Atlantic Ocean DPS	Threatened	Yes
Hawksbill sea turtle ( <i>Eretmochelys imbricate</i> )	Endangered	No
<b>Fish</b>		
Atlantic salmon ( <i>Salmo salar</i> )	Endangered	Yes
Atlantic sturgeon ( <i>Acipenser oxyrinchus</i> )		

Species	Status <sup>2</sup>	Potential to interact with MSB fishing gear?
<i>Gulf of Maine DPS</i>	Threatened	Yes
<i>New York Bight DPS, Chesapeake Bay DPS, Carolina DPS &amp; South Atlantic DPS</i>	Endangered	Yes
Cusk ( <i>Brosme brosme</i> )	Candidate	Yes
Giant manta ray ( <i>Manta birostris</i> )	Threatened	Yes
<b>Critical Habitat</b>		
Northwest Atlantic DPS of Loggerhead Sea Turtle	ESA (Protected)	No
North Atlantic Right Whale Critical Habitat	ESA (Protected)	No
<p><i>Notes:</i> Marine mammal species (cetaceans and pinnipeds) italicized and in bold are considered MMPA strategic stocks. Shaded rows indicate species who prefer continental shelf edge/slope waters (i.e., &gt;200 meters).</p> <p><sup>1</sup> A strategic stock is defined under the MMPA as a marine mammal stock for which: (1) the level of direct human-caused mortality exceeds the potential biological removal level; (2) based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; and/or (3) is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA (Section 3 of the MMPA of 1972).</p> <p><sup>2</sup> Status is defined by whether the species is listed under the ESA as endangered (i.e. at risk of extinction) or threatened (i.e. at risk of endangerment), or protected under the MMPA. Marine mammals listed under the ESA are also protected under the MMPA. Candidate species are those species for which ESA listing may be warranted.</p> <p><sup>3</sup> There are 2 species of pilot whales: short finned (<i>G. melas melas</i>) and long finned (<i>G. macrorhynchus</i>). Due to the difficulties in identifying the species at sea, they are often referred to as <i>Globicephala spp.</i></p> <p><sup>4</sup> There are multiple species of beaked whales in the Northwest Atlantic. They include the cuvier's (<i>Ziphius cavirostris</i>), blainville's (<i>Mesoplodon densirostris</i>), gervais' (<i>Mesoplodon europaeus</i>), sowerbys' (<i>Mesoplodon bidens</i>), and trues' (<i>Mesoplodon mirus</i>) beaked whales. Species of <i>Mesoplodon</i> are difficult to identify at sea, therefore, much of the available characterization for beaked whales is to the genus level only.</p> <p><sup>5</sup> This includes the Western North Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal Stocks of Bottlenose Dolphins.</p>		

Cusk is a NMFS "candidate species" under the ESA. Candidate species are those petitioned species for which NMFS has determined that listing may be warranted under the ESA and those species for which NMFS has initiated an ESA status review through an announcement in the Federal Register. If a species is proposed for listing the conference provisions under Section 7 of the ESA apply (see 50 CFR 402.10); however, candidate species receive no substantive or procedural protection under the ESA. NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed action. Additional information on cusk can be found at: <https://www.fisheries.noaa.gov/endangered-species-conservation/candidate-species-under-endangered-species-act> .

## 7.0 Biological and Human Community Impacts

For habitat and non-target species impacts, the key determinant is not so much the catch itself but the amount and character of the related effort, and the impact of that effort on stock status and the quality/quantity of habitat (see Table 26). The table immediately below illustrates that the availability of the target species can drive effort as much as any quota change, and as effort changes so would impacts on habitat, protected resources, and non-target species. Since limits on catch do cap effort, measures that limit catch are considered a factor related to changes in effort.<sup>6</sup>

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<sup>6</sup> National Oceanic and Atmospheric Administration Administrative Order 216-6A and the Companion Manual contains criteria for determining the significance of the impacts of a proposed action and it includes the possibility of introducing or spreading a nonindigenous species. This potential impact does not fit into the sections below so it is addressed in this introduction. There is no evidence or indication that these fisheries have ever resulted or would ever result in the introduction or spread of nonindigenous species.



Table 26. Changes in effort as a result of adjustments to quota and/or fish availability.

Change in quota	Fish abundance/availability		
	Decrease in availability	No change in availability	Increase in availability
Decrease in quota	<u>Fishing effort may decrease, increase, or stay the same depending on a combination of factors<sup>7</sup>.</u>	<u>Effort likely to decrease or stay the same.</u> If per trip catch stays the same, the fishery will be closed earlier with fewer trips taken (reducing effort). However managers may reduce trip limits or adjust regulations that extend the fishing season (keeping effort the same).	<u>Effort likely to decrease or stay the same.</u> A lower quota plus higher catch per unit of effort (CPUE) from higher availability should decrease effort. However, managers may reduce trip limits or adjust regulations that extend the fishing season which may keep effort relatively even.
No change in quota	<u>Effort may increase or decrease.</u> Even with no change, fishermen may take more trips to catch the same amount of fish (increasing effort) or may stop targeting a stock of fish if availability is low enough to decrease profitability (decreasing effort).	Fishing effort may remain the same given the quota has not changed and availability is expected to be similar.	<u>Effort should decrease.</u> While the quota has not changed, fishermen should be able to take fewer trips to catch the same amount of fish (decreasing effort).
Increase in quota	<u>Fishing effort likely to increase or stay the same.</u> A higher quota plus lower catch per unit of effort from lower availability should increase effort. However, managers may increase trip limits or adjust regulations to allow more efficient fishing (keeping effort the same).	<u>Effort likely to increase or stay the same.</u> If per trip catch stays the same, the fishery will be closed later with more trips taken (increasing effort). However managers may increase trip limits or adjust regulations to allow more efficient fishing (keeping effort the same).	<u>Fishing effort may decrease, increase, or stay the same depending on a combination of factors.</u>

<sup>7</sup> Factors affecting fishing effort include other species abundance, availability of other opportunities, weather, climate, fish movements/availability, variable productivity, and market forces/price changes.

Environmental impacts are described both in terms of their direction (negative, positive, or no impact) and their magnitude (slight, moderate, or high). The table below summarizes the guidelines used for each VEC to determine the magnitude and direction of the impacts described in this section.

Table 27. General definitions for impacts and qualifiers relative to resource condition (i.e., baselines)

General Definitions				
VEC	Resource Condition	Impact of Action		
		Positive (+)	Negative (-)	No Impact (0)
Target and non-target Species	Overfished status defined by the MSA	Alternatives that maintain or are projected to result in a stock status above an overfished condition*	Alternatives that maintain or are projected to result in a stock status below an overfished condition*	Alternatives that do not impact stock / populations
ESA-listed protected species (endangered or threatened)	Populations at risk of extinction (endangered) or endangerment (threatened)	Alternatives that contain specific measures to ensure no interactions with protected species (i.e., no take)	Alternatives that result in interactions/take of listed species, including actions that reduce interactions	Alternatives that do not impact ESA listed species
MMPA protected species (not also ESA listed)	Stock health may vary but populations remain impacted	Alternatives that maintain takes below PBR and approaching the Zero Mortality Rate Goal	Alternatives that result in interactions with/take of marine mammals that could result in takes above PBR	Alternatives that do not impact MMPA protected species
Physical environment / habitat / EFH	Many habitats degraded from historical effort	Alternatives that improve the quality or quantity of habitat	Alternatives that degrade the quality/quantity or increase disturbance of habitat	Alternatives that do not impact habitat quality
Human communities (socioeconomic)	Highly variable but generally stable in recent years (see condition of the resources table for details)	Alternatives that increase revenue and social well-being of fishermen and/or communities	Alternatives that decrease revenue and social well-being of fishermen and/or communities	Alternatives that do not impact revenue and social well-being of fishermen and/or communities
Impact Qualifiers				
A range of impact qualifiers is used to indicate any existing uncertainty	Negligible		To such a small degree to be indistinguishable from no impact	
	Slight (sl), as in slight positive or slight negative		To a lesser degree / minor	
	Moderate (M) positive or negative		To an average degree (i.e., more than "slight", but not "high")	
	High (H), as in high positive or high negative		To a substantial degree (not significant unless stated)	
	Significant (in the case of an EIS)		Affecting the resource condition to a great degree, see 40 CFR 1508.27.	
	Likely		Some degree of uncertainty associated with the impact	
*Actions that will substantially increase or decrease stock size, but do not change a stock status may have different impacts depending on the particular action and stock. Meaningful differences between alternatives may be illustrated by using another resource attribute aside from the MSA status, but this must be justified within the impact analysis.				

## 7.1 Managed Resource - Mackerel

Taking no action would lead to overfishing in 2023 and expected failure to rebuild due to the high catches that could be implemented without taking action and a reversion to previous specifications. This would be a high negative impact on mackerel, and highly negative compared to the action alternatives.

All of the action alternatives are predicted to rebuild mackerel within 10 years. Given the imprecision of 10-year projections, quantitatively comparing the relatively small changes in probability of rebuilding is likely to be uninformative and possibly misleading. The 4-fold error in the last 3-year projection estimate for 2019 SSB illustrates the degree of uncertainty. 2023 specifications alone require a 4-year projection from 2019, and projecting out to 2032 is really a 13-year projection (2019 to 2032). The probabilities of rebuilding are also dependent on the underlying recruitment assumptions, which makes comparing Alternative 1 to Alternatives 2-5 challenging in terms of the calculated probabilities, but the very low catches in Alternative 1 will create the highest probability of rebuilding in reality. Finally, the likely iterative nature of mackerel rebuilding with MTAs expected in 2023, 2025, 2027, and 2029 greatly complicates interpreting the probability of rebuilding. For example, if one were to lock in the projected catch trajectories for 10 years, Alternative 4 appears to have a higher probability of rebuilding (60.5%) than Alternative 3 (51.5%). However, the higher later catches in Alternative 3 that reduce its probability of rebuilding to near 50% would only occur if rebuilding is actually on track, and the initially lower catches of Alternative 3 mean that early rebuilding would be more likely with Alternative 3 than with Alternative 4. So while the overall rebuilding probability of Alternative 4 is calculated as higher with the full series of catches, Alternative 3 is in fact the more risk averse option (in terms of avoiding a failure to rebuild) due to the lower catches.

Accordingly, a simpler and probably better way to consider the impacts of the alternatives on mackerel is qualitatively based on allowed catches in years that would be considered in the 2025 Mackerel MTA, 2023 and 2024. The 2025 Mackerel MTA should consider catch through 2024, so one way to compare across all alternatives in terms of relative probability of leading to stock growth by the 2025 Mackerel MTA is to just consider 2023-2024 combined catch for each rebuilding path. The higher the combined 2023 and 2024 combined catch, the relatively less likely stock growth will occur. The Action Alternatives 1-5 have been ordered from least to most 2023- 2024 combined catch, so that is the same order from most likely stock rebuilding to least likely stock rebuilding by the 2025 MTA. Accordingly, that would also be the order of most to least positive impact on mackerel, though all are generally moderate in positive impacts given the predicted moderate stock growth predicted in the next few years.

## 7.2 Habitat/Protected Resources/Non-Target Species

The EA for this action will address these impacts in greater detail, but generally for these valued ecosystem components, there are relatively greater negative effects with more effort, and relatively less negative effects with less effort. Compared to no action, which would lead to substantially higher quotas, all of the action alternatives would be expected to have less negative effects. For 2023, the only year that this action proposes to set specifications, even Alternative 5, which would lead to the highest commercial quotas among the action alternatives, would also have quotas similar or less than the status quo, so negative impacts to Habitat/Protected Resources/Not Target Species would be expected to remain similar to or less than the status quo, and less than no action.

## 7.3 Socioeconomic Impacts

This action would primarily affect the mackerel fishery. As discussed above, the availability of the targeted species may drive effort (and catch and revenues) as much as any regulations.

### Mackerel Commercial Fishery Current Condition:

Due to the year-to-year variation in catch and effort in the fishery, it is difficult to fully quantify human community impacts but the current fishery supports a number of vessels, as described in Section 6.3, and provides a variety of jobs related directly to fishing and also in associated support services. 22 vessels landed over 10,000 pounds of mackerel in 2021, with total mackerel landings valued at \$3.1 million. From 2019-2021 mackerel ex-vessel revenues varied from \$2.9-\$5.2 million, averaging \$3.7 million. The Council has received input from commercial tuna fishermen that commercial tuna fishing could be impacted by limitations on mackerel, but commercial vessels can get open access commercial incidental mackerel permits that would allow retention of up to 5,000 pounds of mackerel as bait (catch would need to be reported on Vessel Trip Reporting linked to that permit). Given the overfished status of mackerel and reduced productivity, the socioeconomic contributions of mackerel are reduced compared to historical levels.

### Socioeconomic Mackerel Commercial Fishery Impacts:

Socioeconomic impacts related to commercial mackerel fishing are likely directly related to the quotas that are set. In the short run, the Alternatives sorted in order of 2023 quotas from most to least are No action, Alternative 5, Alternative 4, Alternative 3, Alternative 2, Alternative 1. Alternatives 1-3 would result in negative or near zero commercial quotas and do not appear practicable. All of the Alternatives would result in substantially lower quotas than no action, but the more relevant comparison is to the 2022 quota of 4,963 MT. Depending on Canadian and recreational deductions, Alternative 5 would result in a 2% to 54% reduction in quota. Depending on Canadian and recreational deductions, Alternative 4 would result in a 28% to 80%

reduction in quota. These ranges will be able to be refined at the time of final action. While no action would implement much higher quotas, it would not be a legal option given it would result in substantial overfishing. Over the 10 years in the rebuilding plan, total summed catches, in order of most to least would be Alternative 3, Alternative 5, Alternative 4, Alternative 2, Alternative 1. However, given the large error observed in the first iteration of projecting mackerel biomass even 3 years into the future, it is not clear what the meaningfulness of comparing summed 10-year catches would actually be. In the long run, rebuilding mackerel should result in high positive impacts due to achieving optimum yield, in a similar fashion among all the action alternatives.

Mackerel Recreational Fishery Current Condition:

Mackerel catch was relatively stable from 2019-2021, very close to the average of 10.7 million fish. The majority of fish are harvested, but are not made available to MRIP dockside interviewers – rather the majority of catch estimates result from “reported harvest” by interviewees. These fish may have been used for bait or the interviewee just doesn’t want to show the fish to the MRIP interviewer. MRIP interviews are conducted with anglers by state staff, who also ask about fish that are discarded/released. These reported discards represented on average 14% of catch from 2019-2021. Almost all catch in recent years has been in Maine, New Hampshire, and Massachusetts. Private (and rental) boat catch is responsible for most catch, with about 20% from shore and a very small amount (5% or less) from the for-hire sector.

NMFS estimated the 2017 economic effects of recreational fishing in states including Maine, New Hampshire, and Massachusetts (Lovell et al 2020). The following describes their findings. Mackerel is not a frequent directed target, for example in 2021 only 5% of the 17.1 million marine fishing trips in New England targeted mackerel as a primary or secondary species, but mackerel has been reported as an important bait component for other fisheries, including striped bass and tuna.

Marine recreational fishing trips in Maine supported 714 full or part-time jobs, and contributed \$75 million in sales, \$27 million in income, and \$45 million in gross domestic product (GDP) to the state’s economy.

Table 28. Maine Marine Recreational Fishing Trips Economics

<b>Fishing Mode</b>	<b>Expense (\$1,000’s)</b>	<b># Jobs</b>	<b>Sales (\$1,000’s)</b>	<b>Income (\$1,000’s)</b>	<b>Value Added (\$1,000’s)</b>
<b>For-Hire</b>	\$2,863	52	\$4,725	\$1,644	\$2,747
<b>Private Boat</b>	\$15,322	138	\$15,957	\$5,353	\$9,009
<b>Shore</b>	\$40,223	524	\$54,603	\$20,012	\$32,799
<b>Total Trip</b>	\$58,408	714	\$75,285	\$27,009	\$44,555

Marine recreational fishing trips in New Hampshire supported 378 full or part-time jobs, and contributed \$37 million in sales, \$15 million in income, and \$25 million in gross domestic product (GDP) to the state's economy.

Table 29. New Hampshire Marine Recreational Fishing Trips Economics

<b>Fishing Mode</b>	<b>Expense (\$1,000's)</b>	<b># Jobs</b>	<b>Sales (\$1,000's)</b>	<b>Income (\$1,000's)</b>	<b>Value Added (\$1,000's)</b>
<b>For-Hire</b>	\$6,168	100	\$9,393	\$3,593	\$5,680
<b>Private Boat</b>	\$12,176	93	\$9,555	\$4,371	\$6,376
<b>Shore</b>	\$14,107	185	\$18,166	\$7,249	\$12,569
<b>Total Trip</b>	\$32,451	378	\$37,114	\$15,213	\$24,625

Marine recreational fishing trips in Massachusetts supported 2,784 full or part-time jobs, and contributed \$326 million in sales, \$156 million in income, and \$225 million in gross domestic product (GDP) to the state's economy.

Table 30. Massachusetts Marine Recreational Fishing Trips Economics

<b>Fishing Mode</b>	<b>Expense (\$1,000's)</b>	<b># Jobs</b>	<b>Sales (\$1,000's)</b>	<b>Income (\$1,000's)</b>	<b>Value Added (\$1,000's)</b>
<b>For-Hire</b>	\$30,563	463	\$49,737	\$19,342	\$31,838
<b>Private Boat</b>	\$181,933	1,118	\$139,187	\$68,344	\$95,335
<b>Shore</b>	\$100,756	1,203	\$136,898	\$68,646	\$97,822
<b>Total Trip</b>	\$313,252	2,784	\$325,822	\$156,332	\$224,995

While there is some overlap with the above for-hire estimates, NMFS has also separately estimated the economic impacts of fishing for Highly Migratory Species (HMS) like tunas (Hutt and Silva 2019). These trips could be indirectly affected by limits on mackerel fishing due to use of mackerel as bait. Non-tournament HMS Angling Trips (Tournament trips were only estimated from Maine through Texas) in 2016 were estimated to have the following impacts:

Table 31. Total expenditures and economic contributions generated by New England non-tournament Atlantic HMS Angling trips, registered HMS tournament operations, and HMS tournament participating teams from Maine to Texas in 2016. Non-tournament trip expenditures are reported by region and nationally, while tournament-related expenditures are only reported nationally.

<b>Type and Region</b>	<b>Total Expenditures</b>	<b>Employment (jobs)</b>	<b>Income</b>	<b>Value Added</b>	<b>Total Sales Output</b>
Non-tournament Angling Trips					
New England	\$5,172,293	37	\$2,061,493	\$3,056,170	\$4,867,047
Tournament Angling <sup>1</sup>	\$37,544,910	532	\$26,153,290	\$46,180,928	\$84,671,666
Tournament Operation <sup>2</sup>	\$20,170,466	295	\$15,120,988	\$26,099,884	\$43,970,942

### Recreational Impacts

There would be some reduction in the positive impacts the public currently derives from recreational mackerel fishing under the proposed bag limits. While it cannot be directly estimated what proportion of value would be lost if access to mackerel is limited (related to directed fishing or harvest for bait), the Council hopes to get additional public input on this issue. The Council has received input that a bag limit in the range of 10-15 fish per person should mitigate most of the potential negative effects of being limited in using mackerel for bait for the striped bass and/or tuna fisheries. In the short term, one would expect more negative effects from a 10 fish bag limit versus a 15 fish bag limit, and both would be more negative than the currently unrestricted fishery (i.e. no action). Given the expected catch reductions are moderate, one would expect the negative impacts to also be moderate. In the long term, there should be positive impacts as these restrictions contribute to mackerel rebuilding, allowing higher catches in the future.

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