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
Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: January 20, 2021

To: Council and Board

From: Matthew Seeley, Council staff

Subject: Bluefish Allocation and Rebuilding Amendment

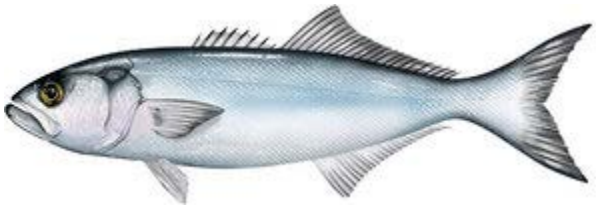
The Council and Board are developing an amendment to the Bluefish Fishery Management Plan to address several issues in the bluefish fisheries. The Council and Board approved a final range of alternatives for public hearings at the 2020 joint October meeting. The Fishery Management Action Team (FMAT) then met in January 2021 to complete the draft public hearing document. The goal for the February 10th meeting (1:00 – 4:00 p.m.) is to approve the draft public hearing document for public comment.

The following briefing materials are enclosed on this topic:

1) Bluefish Allocation and Rebuilding Amendment Draft Public Hearing Document – dated for February 2021.
2) FMAT Meeting Summary – dated January 20, 2021.
3) Action Plan – updated as of September 2020.

Atlantic Bluefish Allocation and Rebuilding Amendment

DRAFT PUBLIC HEARING DOCUMENT



February 2021

Prepared by the
Mid-Atlantic Fishery Management Council (MAFMC or Council)
and the
Atlantic States Marine Fisheries Commission (ASMFC or Commission)

1.0 CONTENTS

2.0 INSTRUCTIONS FOR PROVIDING PUBLIC COMMENTS

The Mid-Atlantic Fishery Management Council (MAFMC or Council) and the Atlantic States Marine Fisheries Commission (ASMFC or Commission) will collect public comments on the Bluefish Allocation and Rebuilding Amendment during *[# TBD*] public hearings to be held [*time frame*], and during a written public comment period extending until [*date TBD*]. Written comments may be sent by any of the following methods:

1. **Online** at [*link to be added*]
2. **Email** to the following address: [*email TBD*]
3. **Mail or Fax** to:

   Chris Moore, Ph.D., Executive Director
   Mid-Atlantic Fishery Management Council
   800 North State Street, Suite 201
   Dover, DE 19901
   FAX: 302.674.5399

If sending comments through the mail, please write "Bluefish Allocation and Rebuilding Amendment" on the outside of the envelope. If sending comments through email or fax, please write "Bluefish Allocation and Rebuilding Amendment" in the subject line.

All comments, regardless of submission method, will be compiled for review and consideration by both the Council and Commission. **It is not necessary to separately submit comments to the Council and Commission or submit the same comments through multiple channels.**

Interested members of the public are encouraged to attend any of the following [*# TBD*] public hearings and to provide oral or written comments at these hearings.

Date and Time	**Location**
Day, Date Time	**Location** Address

For additional information and updates, please visit: https://www.mafmc.org/actions/bluefish-allocation-amendment. If you have any questions, please contact either:

Council contact
Matthew Seeley, Mid-Atlantic Fishery Management Council
mseeley@mafmc.org
302-526-5262

Commission contact
Dustin Colson Leaning, Atlantic States Marine Fisheries Commission
dleaning@asmfc.org
703-842-0714

3.0 INTRODUCTION AND AMENDMENT PURPOSE

3.1 Amendment Purpose and Next Steps

The purpose of this amendment is to consider modifications to the Fishery Management Plan (FMP) goals and objectives, current allocations between the commercial and recreational sectors,

current commercial allocations to the states, initiate a rebuilding plan, revise the quota transfer processes, revise how the FMP accounts for management uncertainty, and revise de minimis provisions in the Commission's plan.

The current sector-based and commercial state-to-state allocations were set in 2000 using data from 1981-1989 and have not been revised since that time. Recreational catch and harvest data are provided by the Marine Recreational Information Program (MRIP). In July 2018, MRIP released revisions to their time series of catch and harvest estimates based on adjustments for a revised angler intercept methodology (used to estimate catch rates) and a new effort estimation methodology (namely, a transition from a telephone-based effort survey to a mail-based effort survey). These revisions resulted in much higher recreational catch estimates compared to previous estimates, affecting the entire time series of data going back to 1981. These data revisions have management implications due to the fixed commercial/recreational allocation percentages defined in the FMP. These allocation percentages do not reflect the current understanding of the recent and historic proportions of catch and landings from the two sectors. Since these allocation percentages are defined in the Council and Commission FMPs, they cannot be modified without an FMP amendment. This amendment will consider whether the allocations are still appropriate and meeting the objectives of the FMP. In reviewing/adjusting the allocations, the need for transfers may be reduced, however, improvements to the transfer processes will also be reviewed.

Bluefish was deemed overfished with overfishing not occurring as a result of the 2019 Operational Assessment. Therefore, the Council is mandated to initiate a rebuilding plan within two years of notice by the Greater Atlantic Regional Fisheries Office (GARFO) Regional Administrator. Under a rebuilding plan, the stock will be considered rebuilt once spawning stock biomass reaches the target biomass (spawning stock biomass maximum sustainable yield proxy) of 198,717 mt. The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires the overfished stock to be rebuilt within ten years once the regional office notifies the Council of the overfished state. Under the current amendment timeline, the rebuilding plan would be implemented at the beginning of 2022.

Several other issues identified during scoping for this action were considered by the Council and Board for inclusion in this amendment but have since been removed. Some of those issues will be taken up through other initiatives or actions. More information on removed issues is available in past meeting documents and meeting summaries for this amendment, available at: https://www.mafmc.org/actions/bluefish-allocation-amendment.

What Happens Next?

This document supports a series of public hearings and a public comment period scheduled to take place during [March/April 2021]. Following public hearings, written and oral comments will be compiled and provided to the Council and Board for review. These comments will be considered prior to taking final action on the amendment, which is tentatively scheduled for May/June 2021. The Council's recommendations are not final until they are approved by the Secretary of Commerce through the National Marine Fisheries Service, so the timing of full implementation of this action will depend on the federal rulemaking timeline. This rulemaking process is expected to occur in 2021, with the intent for revised measures (if applicable) to be effective at the start of the 2022 fishing year.

4.0 FISHERY MANAGEMENT PLAN GOALS AND OBJECTIVES

The Council and Board are considering revisions to the existing FMP goals and objectives for bluefish through this amendment. The no action/status quo option keeps the existing FMP goals and objectives that were developed in 1991. The proposed FMP goals and objectives include revisions based on input provided by the public, bluefish advisory panel members, and Council and Board members.

Please note: While these revisions are not included as an explicit alternative within this amendment, the proposed revisions are not final until approved by the Council and Board. **The Council and Board are seeking feedback from the public on the proposed revisions during the public hearing process.**

4.1.1 Current Fishery Management Plan Goals and Objectives

Goal: Conserve the bluefish resource along the Atlantic coast.

Objective 1: Increase understanding of the stock and of the fishery.
Objective 2: Provide the highest availability of bluefish to U.S. fishermen while maintaining, within limits, traditional uses of bluefish.
Objective 3: Provide for cooperation among the coastal states, the various regional marine fishery management councils, and federal agencies involved along the coast to enhance the management of bluefish throughout its range.
Objective 4: Prevent recruitment overfishing.
Objective 5: Reduce the waste in both the commercial and recreational fisheries.

4.1.2 Impacts of Maintaining Current Fishery Management Plan Goals and Objectives

Under the status quo option, the Bluefish FMP goals and objectives would remain unchanged. According to the summary of public comments submitted during the scoping hearing process, only 10% of submitted comments were in support of the status quo. More than half (55%) of submitted comments were in favor of re-evaluating and/or revising the FMP goals and objectives. About 13% of comments did support maintaining one or more of the current goals and objectives, but not the entirety of those listed under the status quo option.

4.2.1 Proposed Fishery Management Plan Goals and Objectives

Goal 1: Conserve the bluefish resource through stakeholder engagement to maintain sustainable recreational fishing and commercial harvest.

Objective 1.1: Achieve and maintain a sustainable spawning stock biomass and rate of fishing mortality.
Objective 1.2: Promote practices that reduce discard mortality within the recreational and commercial fishery.
Objective 1.3: Maintain effective coordination between the National Marine Fisheries Service, Council, Commission, and member states by promoting compliance and to support the development and implementation of management measures.
Objective 1.4: Promote compliance and effective enforcement of regulations.
Objective 1.5: Promote science, monitoring, and data collection that support and enhance effective ecosystem-based management of the bluefish resource.

Goal 2: Provide fair and equitable access to the fishery across all user groups throughout the management unit.

Objective 2.1: Ensure the implementation of management measures provides fair and equitable access to the resource across to all groups along the coast.
Objective 2.2: Consider the economic and social needs and priorities of all groups that access the bluefish resource in the development of new management measures.
Objective 2.3: Maintain effective coordination with stakeholder groups to ensure optimization of economic and social benefits.

4.2.2 Impacts of Revising the Fishery Management Plan Goals and Objectives

The proposed changes and additions to the Bluefish FMP goals and objectives are anticipated to have neutral to positive social impacts [1] to bluefish fishery stakeholders. The majority of comments submitted during the scoping process were in support of revising the goals and objectives altogether and an even larger majority supported revising at least some of the current goals and objectives. The proposed Goal 1 commits to stakeholder engagement in the interest of maintaining sustainable recreational fishing and commercial harvest. A commitment to stakeholder engagement is likely to improve attitudes about the FMP among bluefish fishery stakeholders. The proposed Goal 2 ensures fair and equitable access to the fishery across all user groups. According to Crew Survey results in 2012 and 2018, the majority of commercial crew and hired captains reported that they believe the regulations in their primary fishery are too restrictive and fewer than half agree that the fines associated with breaking the rules are fair. For at least the commercial harvest user group, the proposed Goal 2, ensuring fair and equitable access, would likely have positive impacts on their attitudes towards the FMP and its objectives. There may be positive or negative social impacts to the various recreational angling sectors as the Council and Board consider mode-specific regulations.

5.0 COMMERCIAL/RECREATIONAL ALLOCATION ALTERNATIVES AND IMPACTS

Section 5.1 describes the alternatives for commercial and recreational allocations for bluefish, along with their expected impacts. The range of allocation alternatives includes options that would maintain the current allocations, as well as options to revise allocations based on updated data using modified base years. Section 5.2 describes options to phase in any allocation changes over multiple years, and the expected impacts of these phase-in provisions.

Under the current FMP for bluefish, the Acceptable Biological Catch (ABC) equals the fishery level Annual Catch Limit (ACL), which is then divided into a commercial and recreational Annual Catch Target (ACT) based on the allocation percentages defined in the FMP. Sector-specific expected discards are subtracted from the sector-specific ACTs to derive a commercial quota and a Recreational Harvest Limit (RHL).

Commercial discards are considered negligible within the bluefish fishery (NEFSC 2015). Recreational discards are estimates based on the MRIP B2s (released alive). Managers assume a 15% mortality rate on the released alive fish (NEFSC 2015). The number of fish are converted to

[1] Social impacts are impacts that directly affect the human communities with focus outside of the economics (Appendix A).

weight by multiplying by the average weight of landed fish coastwide in a given year. This approach assumes that the weight of released fish is equal to the weight of landed fish.

Aside from the status quo option (alternative 2a-1), the following approaches revise the allocation percentages based on modified base years or different data sets.

5.1 Commercial/Recreational Allocations

5.1.1 Commercial/Recreational Allocation Alternatives

Table 1 lists the alternatives under consideration for the commercial and recreational bluefish allocation percentages based on both catch and landings data. The current allocations for bluefish are based on commercial and recreational landings data from 1981-1989 that have not been updated with a renewed understanding of historic fishery performance. The current allocations for bluefish are represented by the no action/status quo alternative (alternative 2a-1, highlighted in green in Table 1).

Table 1: Bluefish commercial/recreational allocation alternatives. The current allocations are highlighted in green.

Allocation Percentages	
Alternative	**Basis**
2a-1: 83% recreational, **17%** commercial	No action/status quo (1981-1989 landings data)
2a-2: 89% recreational, **11%** commercial	Multiple approaches: 2014-2018 and 2009-2018 catch data
2a-3: 87% recreational, **13%** commercial	1999-2018 catch data
2a-4: 86% recreational, **14%** commercial	Multiple approaches: 1981-2018 catch data; 2014-2018 and 2009-2018 landings data
2a-5: 84% recreational, **16%** commercial	Multiple approaches: 1981-2018 and 1999-2018 landings data

5.1.2 Impacts of Commercial/Recreational Allocation Alternatives

Alternatives 2a-2 through 2a-5 result in lower commercial allocations and higher recreational allocations compared to the no action/status quo alternative (2a-1). Table 2 compares the commercial and recreational allocation alternatives by displaying the percent change in allocation share from the status quo alternative. The relative percent change to each sector's allocation differs notably. Since the commercial sector's share of the fishery-level ACL is much smaller by comparison to the recreational sector's share, any changes to the allocation percentages have a larger impact on the commercial sector relative to the impact on the recreational sector.

Table 2: Percent change (in green and red) of commercial and recreational allocations for each alternative relative to status quo. The grey boxes refer to the status quo alternative.

Alternative	2a-1	2a-2	2a-3	2a-4	2a-5
Proposed Recreational Allocation	**83%**	**89%**	**87%**	**86%**	**84%**
% Change from Status Quo	**0%**	**+7%**	**+5%**	**+4%**	**+1%**
Proposed Commercial Allocation	**17%**	**11%**	**13%**	**14%**	**16%**
% Change from Status Quo	**0%**	**-35%**	**-24%**	**-18%**	**-6%**

An increase in the recreational allocation would result in increased RHLs compared to the current allocations. RHLs are tied to recreational measures such as possession limits, fish size restrictions, and open/closed seasons. These measures are adjusted as needed to allow the RHL to be achieved, but not exceeded. Depending on the magnitude of the increase, an increased recreational allocation may not allow for liberalized recreational management measures compared to recent years in all cases. In some cases, recreational restrictions may still be needed if the allocation increase is not enough to account for recent increases in the MRIP harvest estimates.

Liberalizing or restricting recreational measures can impact angler access to bluefish. Increased access could take the form of more fish to take home (under higher possession limits and/or lower minimum fish sizes) and more opportunities to target the species (under longer open seasons), while decreased access could mean the ability to retain fewer fish and reduced opportunities to target the species. This can affect angler satisfaction, revenues for for-hire businesses (e.g., by impacting demand for for-hire trips), and revenues for support businesses such as bait and tackle shops.

With respect to the commercial sector, alternatives other than status quo will result in lower quotas relative to status quo with impacts described below.

Social Impacts

Alternative 2a-1 is anticipated to have positive social impacts for commercial stakeholders in general due in part to the support for the status quo from written and oral comments received during the amendment scoping process. The plurality of comments (41%) supported the status quo on Issue 2: Commercial/Recreational Allocation (MAFMC et al 2020). Moreover, the majority of commercial crew surveyed in both the 2012 and 2018 Crew Surveys reported that the rules and regulations change so quickly that it can be hard to keep up. While these results are not necessarily representative of bluefish commercial crew in general, they do align with the overall sentiment supporting the status quo among those who provided comment during the scoping process.

Alternative 2a-2 would increase the recreational fishery allocation by 6 percentage points and reduce the commercial allocation by the same amount using 2014-2018 and 2009-2018 catch data. Results from the Commercial Crew Survey indicate that the majority of crew and hired captains believe the rules and regulations in their respective commercial fisheries are too restrictive. An increase in allocation to the recreational sector could allow for a liberalization of measures, potentially providing positive social impacts. Further reducing the commercial allocation could lead to negative impacts with respect to commercial fishers' attitudes towards management, as

well as detrimental impacts on the ability of some fishers to continue to participate in the fishery. According to the Social Performance Indicators[2], the five most highly engaged communities in the commercial bluefish fishery from 2004 to 2019 are: 1) Montauk, NY; 2) Narragansett/Point Judith, RI; 3) Hampton Bays/Shinnecock, NY; 4) Hatteras, NC; and 5) Wanchese, NC (Figure 1). For commercial bluefish stakeholders located in these ports, the reduction in allocation to the commercial fishery may have the most substantial negative social impacts.

Relative to the status quo alternative, alternative 2a-2 would have positive impacts for recreational user groups, and in particular for those groups in communities that are highly engaged in and reliant upon recreational fisheries. The top fifteen communities in recreational fishing engagement and reliance are displayed in Figure 2 and Figure 3. For a more thorough introduction of community fishing engagement and social vulnerability indicators please reference Appendix A.

These communities are likely to benefit from Alternative 2a-2, but some may see greater positive social impacts based on relative social vulnerabilities and reliance on the recreational industry. Communities in NC in particularly, such as Topsail Beach, Hatteras, and throughout the Outer Banks, have high reliance on recreational fisheries while at the same time moderate to high poverty, labor force vulnerability, and housing vulnerability. Increasing recreational allocations for bluefish could improve economic opportunities and result in positive social outcomes for these communities in particular.

Alternative 2a-3 proposes to set the recreational allocation at 87% and adjust the commercial allocation down to 13%, based on the 1999 to 2018 catch data. Under alternative 2a-4, the recreational allocation would be set to 86% and the commercial allocation would be 14%, based on multiple approaches including 1981-2018 catch data, 2014-2018 landings data, and 2009-2018 landings data. The commercial and recreational impacts described for alternative 2a-2 likely apply to a lesser degree to alternatives 2a-3 and 2a-4 considering that the shifts in allocation from the commercial to the recreational sector are smaller than what is proposed in alternative 2a-2.

Under alternative 2a-5, the recreational allocation would increase slightly from the status quo to 84% and the commercial allocation would correspondingly decrease slightly to 16%. These allocation determinations would be based on multiple approaches using the 1981-2018 and 1999-2018 landings data. Alternative 2a-5 is expected to have neutral to low positive social impacts on the recreational bluefish fishery relative to the status quo, whereas 2a-5 would likely produce neutral to low negative impacts on the commercial fishery as compared to the status quo. While the allocations would change, the increases and decreases for each user group are comparatively minimal to alternatives 2a-2, 2a-3, or 2a-4.

At the community level, impacts may be greatest for communities with or near recreational fishing sites, communities where for-hire businesses are based, and communities with tourism that is impacted by recreational fishing.

[2] https://apps-nefsc.fisheries.noaa.gov/socialsci/pm/index.php.

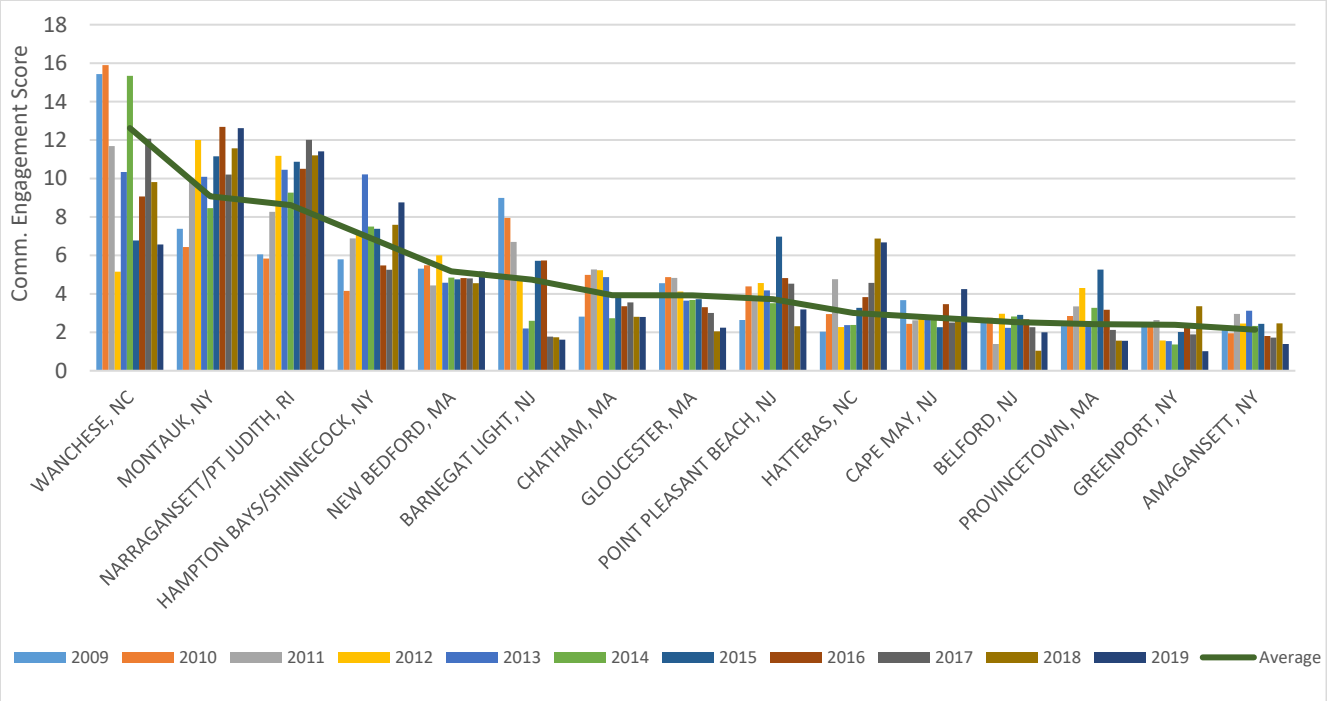


Figure 1: Commercial Bluefish Engagement Scores by Community: Top Fifteen Communities in Average Engagement from 2009-2019.

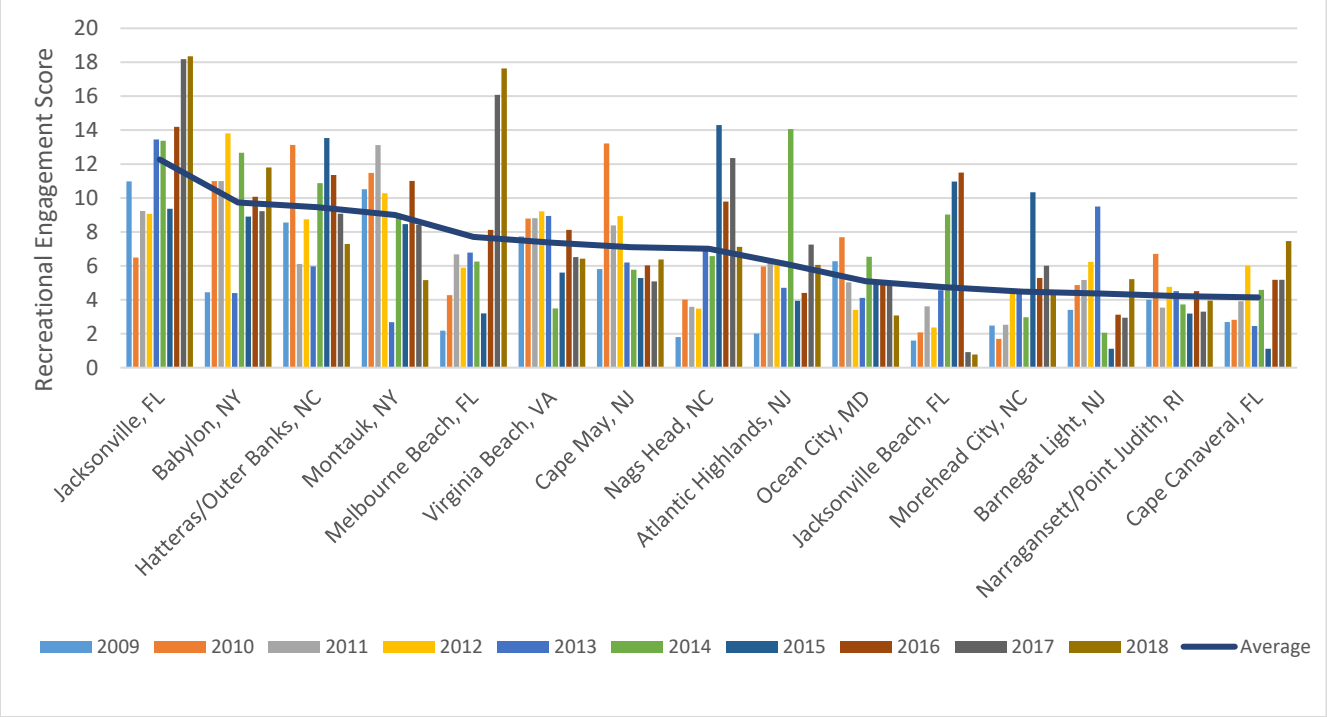


Figure 2: Recreational Fishing Engagement Scores by Community: Top Fifteen Communities in Average Engagement from 2009-2018.

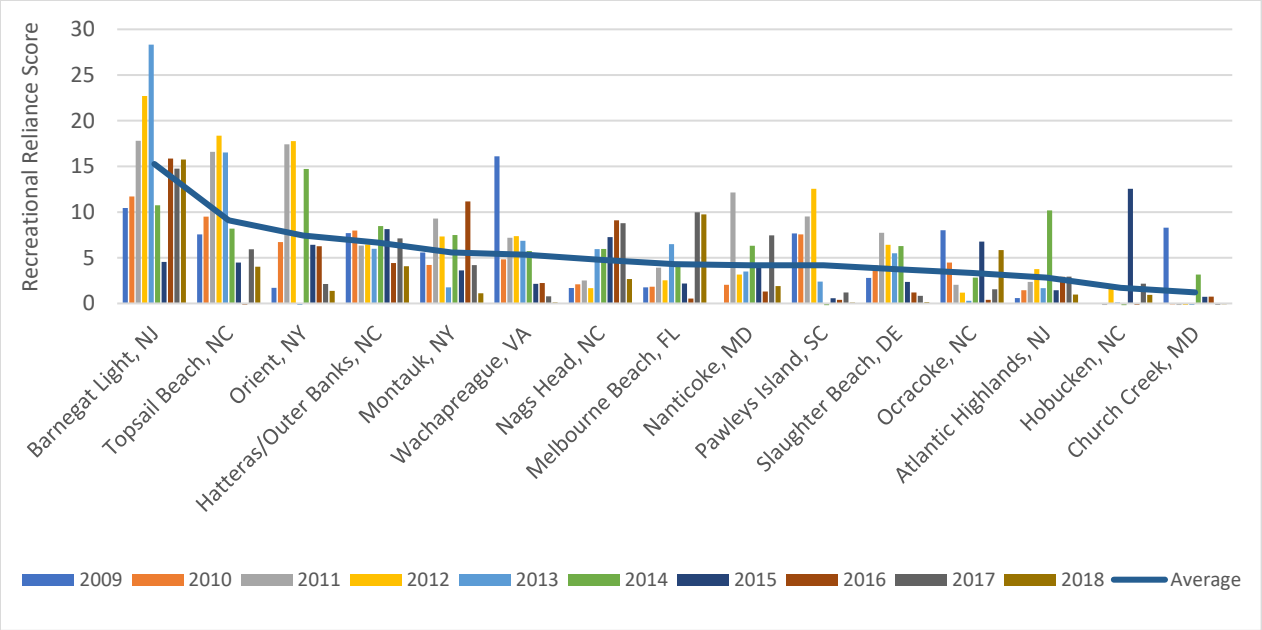


Figure 3: Recreational Fishing Reliance Scores by Community: Top Fifteen Communities in Average Reliance from 2009-2018.

Economic Impacts

Aside from the no action/status quo alternatives, all alternatives result in a reduced allocation to the commercial sector, which is expected to decrease commercial quotas compared to the current allocations. The commercial sector could experience a loss in revenue due to corresponding decreased quotas and a reduction in potential landings of bluefish. However, with the exception of 2020, the commercial sector has not fully utilized its post transfer quota in over a decade, so a decrease in allocation may not necessarily lead to a decrease in commercial landings or revenues in the long term. The economic analysis discussed below looks at historical landings to inform the potential future economic impacts of a reduction in the commercial allocation.

The economic impacts stemming from alterations in the commercial pre-transfer bluefish allocations were assessed using historical realized and predicted bluefish landings for the commercial sector. The time series used spans from 1999-2019[3] where realized landings are compared to pre-transfer landings across the various proposed sub-alternatives, allocating 17% (i.e., the status quo), 11%, 13%, 14%, or 16% of the ACL to the commercial sector (sub-components 2a-1 to 2a-5, respectively) (Figure 4). A key assumption of this analysis is that all the allocated quota is landed. When comparing the pre-transfer allocated quota to the total realized landings, there are 14 of 95 cases where the pre-transfer quotas exceed the realized landings quantities. Each allocation sub-alternative (2a-1 to 2a-5) contains at least one year in which the pre-transfer commercial allocation exceeds the realized annual commercial landings, suggesting that in these years, the pre-transfer allocation would not have been a limiting factor in landing bluefish. Ultimately, losses in landings resulting from smaller pre-transfer quota allocations

[3] Regulations and catch limits for this fishery are not clearly defined until Amendment 1 (approved in 1999). The year of 2019 was the last full year of data on record when this economic assessment was drafted.

relative to realized landings becomes relevant if transfers from the recreational sector to the commercial sector are discontinued.

Post transfer, projected quotas exceed the realized commercial landings for all alternatives each year except in for 2a-2 and 2a-3 in 2001, 2015 (2a-2 only) and 2016. However, if MRIP recalibration was factored into these years when transfers occurred, the commercial sector may not have actually received any transfers (or the transfers may have been much smaller). Ultimately, if sector transfers are to continue and are not substantially lower than previous years, changes in landings stemming from the pre-sector transfer quota allocations are expected to be minimal.

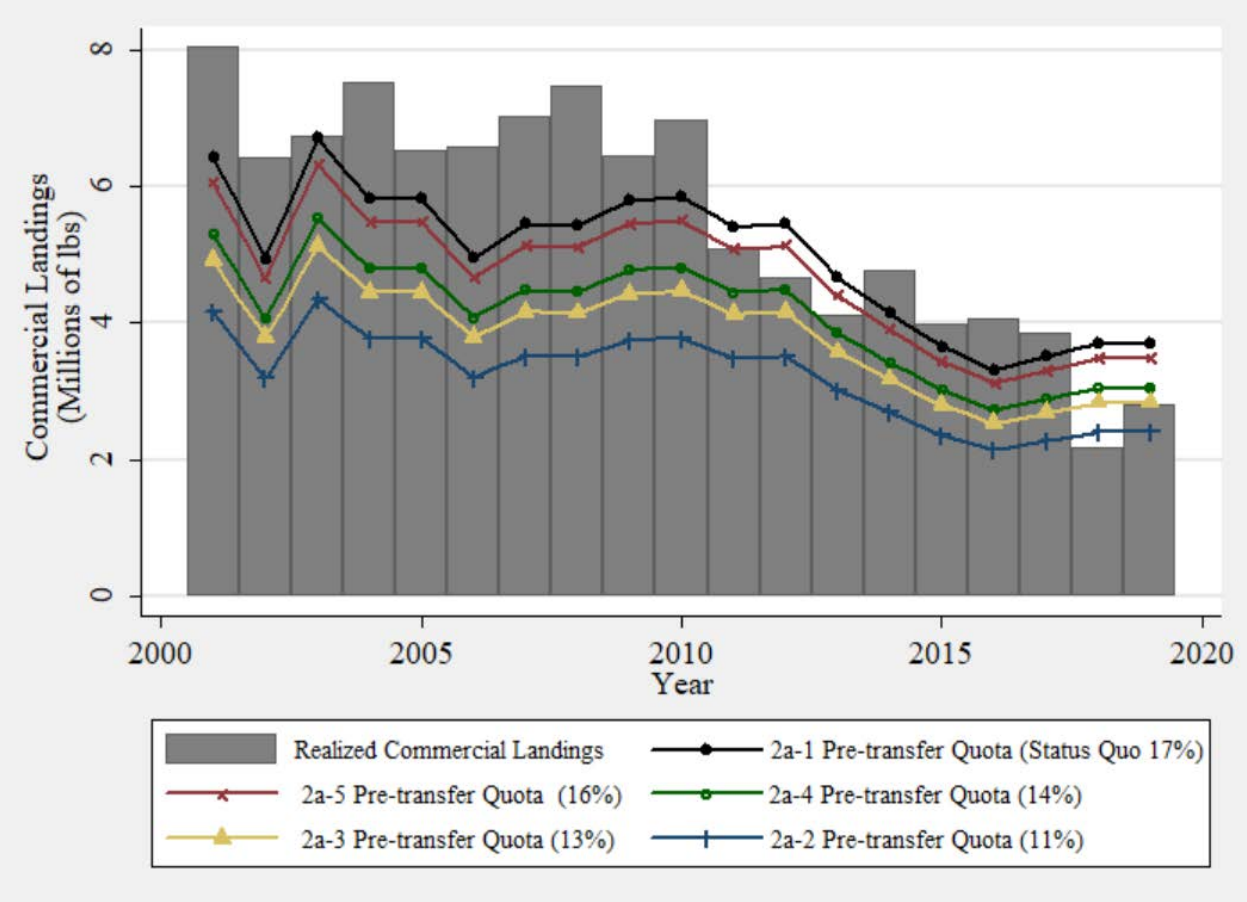


Figure 4: Realized commercial bluefish landings and proposed pre-transfer commercial landings (Millions of lbs.) by sub-allocation alternative and year (2001-2019).

For this analysis, commercial revenues are estimated for allocations under the status quo of pre-transfer quota (i.e.,17% of the ACL) and are compared to revenues estimated under the four additional proposed allocation sub-alternatives (2a-2 – 2a-5, 11%,13%,14%, and 16% of the ACL) to provide insight into how allocation changes could impact revenue. Revenues are estimated using the allocated pre-transfer quota percentage and all quota is assumed to be landed. The price model described in Appendix B is used to generate average annual ex-vessel bluefish prices at the various landings levels. The pre-transfer landings are multiplied by the predicted price and presented in 2020 constant dollars as the estimated revenue. Average differences in revenues between the status

quo (17% of the ACL) and the additional proposed allocation percentages are presented in Table 3. Over 1999-2019, annual revenues decrease by an average of $200K (6%), $590K (18%), $790K (29%) and $1.19M (35%) under the 16%, 14%, 13% and 11% commercial allocations relative to the 17% allocation, respectively. Average differences in annual revenues decrease in magnitude when averaged over the last 10 years and further decrease when compared to the 5-year average annual revenue differences driven by relatively lower historical ABC's from 2010-2019. This analysis is informative in the potential average reduction in revenue that may be experienced under each allocation alternative. However, it is important to remember that this analysis assumes that the entire commercial quota be landed, which may not always be the case, especially when considering that commercial quotas will increase substantially as the stock rebuilds back to the biomass target.

Table 3: Average differences in estimated commercial bluefish revenues by pre-transfer alternative relative to the pre-transfer quota status quo (2a-1 vs. 2a-2-5).

Time Series	Average Differences in Estimated Revenues (Millions of 2020 Constant Dollars)			
	11% Commercial Quota (2a-2) vs 17% Status Quo (2a-1)	**13% Commercial Quota (2a-3) vs 17% Status Quo (2a-1)**	**14% Commercial Quota (2a-4) vs 17% Status Quo (2a-1)**	**16% Commercial Quota (2a-5) vs 17% Status Quo (2a-1)**
Averaged over Entire Time Series (1999-2019)	-$1.19M	-$0.79M	-$0.59M	-$0.20M
Standard Deviation	*0.14*	*0.09*	*0.07*	*0.02*
Averaged over Past 10 Years (2010-2019)	-$1.09M	-$0.72M	-$0.54M	-$0.18M
Standard Deviation	*0.12*	*0.08*	*0.06*	*0.02*
Averaged over Past 5 Years (2015-2019)	-$0.98M	-$0.65M	-$0.49M	-$0.16M
Standard Deviation	*0.03*	*0.02*	*0.01*	*0.00*
Average Percent Decrease Relative to Annual Status Quo Revenues (1999-2019)	35%	24%	18%	6%

Note: This calculation does not consider transfers from the recreational sector and is based solely on the full utilization of the pre-transfer quota.

Impacts from a reduction in commercial quota will not be uniform across all states and commercial industry participants. Commercial fishermen from states that fully utilize quota are more likely to experience losses in revenue, restrictive trip limits, and seasonal closures to account for the reduced

commercial quota. States that have historically underutilized their quota may still be impacted in the medium- to long-term; reduced access to quota may inhibit the ability for market expansion in the future. These states could also be impacted in the near-term depending on the magnitude of allocation reduction. If the commercial allocation is reduced substantially, quotas in some states may drop below what is currently being utilized. Again, the impacts across states are also dependent upon the state commercial allocation alternative selected in section 6.

Ultimately, alternatives 2a-2 through 2a-5 may limit the potential for market expansion and future increases in landings and ex-vessel revenue compared to the status quo alternative (2a-1).

Currently, accountability measures (AM)[4] are implemented when the fishery-level ACL is exceeded, and a transfer was deemed not the cause of the overage. When there has been a sector transfer to the commercial fishery that is larger than the overage, there will be no transfer allowed in the following fishing year unless the transfer amount is smaller than the overage. However, given the bluefish stock is currently overfished, a combination of management measures and a pound for pound payback may be implemented.

Under section 9, management uncertainty is discussed. If alternative 6b is selected, which creates sector-specific ACLs, AMs will be modified to ensure overages by one sector do not affect the other sector, unless a transfer has occurred and was the cause of an overage.

It is difficult to identify and quantify the economic impacts stemming from increases in recreational bluefish quota. Without a demand model, it is impossible to estimate the changes in angler effort and expenditures resulting from quota increases. Qualitatively, increases in recreational bluefish quota is expected to have neutral or slightly positive economic impacts which may result from increases in recreational sector quota. Increases in bag limits might increase angler satisfaction as well as recreational for-hire and independent angler trips which would result in increased expenditures and effort. However, the economic impacts resulting from increases in recreational quota could be neutral given the high catch and release nature of the sector—where the same number of trips may occur despite the changes in quota.

Biological Impacts

As described above, all but the no action/status quo alternatives would reduce the commercial allocations, which would in turn result in lower commercial quotas than the no action/status quo alternatives.

Depending on the scale of the change, a decrease in the commercial quota or additional restrictions on the recreational fishery could lead to altered fishing behavior and increased regulatory discards compared to recent levels. Actual changes will depend on many factors such as weather, availability of other target species, and market demand. Discards are also influenced by availability of bluefish, both overall abundance and by size class. For example, a new large year class can lead to high availability of fish smaller than some states' minimum size for a few years, which can lead to increased regulatory discards. Lower availability of legal-sized fish can lead to decreased discards. For these reasons, it is challenging to predict future discards based on changes in allocations.

[4] Current accountability measures for bluefish can be found in Amendment 4: Bluefish Accountability Measures.

In all cases, total dead catch will continue to be constrained by the overall ABC, which is set based on the best scientific information available and is intended to prevent overfishing. In this way, none of the alternatives are expected to change patterns in landings, discards, or fishing effort in such a way that they negatively impact stock status.

In 2019, the operational stock assessment indicated that the bluefish stock was at 46% of the biomass target level. The stock will begin a rebuilding program in 2022 with the goal of reaching the biomass target within ten years or less.

5.2 Allocation Change Phase-In

5.2.1 Allocation Change Phase-In Alternatives

The alternatives listed in Table 4 consider if any changes to the allocation percentages considered through alternative sets 2a should occur in a single year (alternative 2b-1, no phase-in) or if the change should be spread out over 4, 5, or 7 years (alternatives 2b-2). The Council and Board agreed that if alternative 2b-2 is selected, the duration over which new allocations will be phased in will match the duration of the selected rebuilding plan (alternatives 4a-4d). The choice of whether to use a phase-in approach, and the phase-in approach duration, may depend on the magnitude of allocation change proposed. *A phase-in period may not be desired if the overall allocation change is relatively small.* However, larger allocation changes may be less disruptive to fishing communities if they are phased in over several years (Table 5).

Table 4: Bluefish commercial/recreational allocation change phase-in alternatives.

Phase-in Alternatives
2b-1: No phase-in
2b-2: Allocation change spread evenly over the same duration as the selected rebuilding plan

Table 5: Percent shift in bluefish commercial/recreational allocation per year for 4, 5, and 7-year phase-in options for all allocation change alternatives.

Bluefish Allocation Change Phase-In			
Current allocation (2a-1): 83% recreational, 17% commercial			
Allocation Alternatives	**4-year phase-in**	**5-year phase-in**	**7-year phase-in**
2a-2: 89% Rec., **11%** Comm.	**1.5%** change per year	**1.2%** change per year	**0.86%** change per year
2a-3: 87% Rec., **13%** Comm.	**1%** change per year	**0.8%** change per year	**0.57%** change per year
2a-4: 86% Rec., **14%** Comm.	**0.75%** change per year	**0.6%** change per year	**0.43%** change per year
2a-5: 84% Rec., **16%** Comm.	**0.25%** change per year	**0.2%** change per year	**0.14%** change per year

5.2.2 Impacts of Allocation Change Phase-In Alternatives

The biological, social, and economic impacts of the phase-in alternatives under consideration in this amendment are dependent on two main factors: 1) the difference between the status quo allocation percentage and the allocation percentage selected, and 2) the duration of the phase-in period, which will be the same duration as the preferred rebuilding plan. Based on the range of allocation percentages for bluefish (Section 5.2.1), the commercial and recreational sector

allocations could shift by as much as 1.5% per year, or as little as 0.2% per year under the above phase-in timeframes of 4-7 years. Ideally, minimal transfers will occur while phasing-in allocations considering reallocation will reflect more up-to-date landings history.

Considering the small range that the phased-in allocations would change over 4-7 years, minimal impacts are expected for the recreational fishery, which already holds the larger share of the ACL. However, a 1.5% shift in allocation away from the commercial sector is a much larger annual impact to the commercial sector relative to its smaller initial allocation. As such, a phase-in approach may slightly reduce the economic burden on commercial stakeholders. A phase-in would most likely have short-term economic benefits in the form of increased landings and revenues over the non-phase in alternative if all else was held constant.

Under Alternative 2b-1, the preferred allocation selected from the 2a set of alternatives will occur in a single year upon implementation. This will likely have a range of social impacts depending upon the alternative selected from the 2a allocation set. Alternative 2b-1 will likely have neutral to low negative impacts on the commercial fishery if alternatives 2a-4 or 2a-5 are selected, but the negative impacts increase substantially if alternatives 2a-2 or 2a-3 are selected due to the abrupt and sizeable change in allocations to the commercial fishery. However, this remains contingent on the continuation of sector transfers and if the transfers decrease in relation to historical transfers given the MRIP update.

By contrast, an abrupt shift from alternative 2b-1 in concert with 2a-2 or 2a-3 could have substantial short-term positive social impacts on the recreational fishery user group. A single year increase of 4-6% in the recreational allocation could provide additional employment and income opportunities, especially in communities most highly engaged in and/or reliant upon recreational fisheries in general (Figure 2 and Figure 3).

Under alternative 2b-2, the new allocation selected from the 2a set of alternatives will be phased in over the period of time that matches the selected rebuilding plan. The phase-in approach of alternative 2b-2 will likely have the most substantial social impacts if alternative 2a-2 is selected, with diminishing impacts across the other alternatives with smaller percent changes in allocations. The 7-year phase-in approach may reduce the negative impacts to the commercial industry the most, with less than a one percent reduction in the commercial allocation per year. For communities that are the most highly engaged in commercial bluefish (Figure 1) a prolonged phase-in approach may buffer against negative social impacts that accompany abrupt employment and income losses that result from the allocation reductions associated with alternatives 2a-2 through 2a-5.

6.0 COMMERCIAL ALLOCATIONS TO THE STATES ALTERNATIVES AND IMPACTS

The sections below describe alternatives for commercial allocations of bluefish to the states, along with their expected impacts. The range of allocation alternatives includes options that would maintain the current allocations as well as options to revise them based on updated data using modified base years. Only landings data were used to develop allocation alternatives since commercial discards are considered negligible. Section 6.2 describes options to phase in any allocation changes over multiple years, and the expected impacts of these phase-in provisions. Section 6.3 describes options to implement quota-based triggers that would reallocate any

commercial quota that exceeds a specified threshold, and the expected impacts of those trigger provisions. Section 6.4 describes options to implement minimum default allocations, and the expected impacts of these provisions.

The alternatives in section 6 are mutually exclusive, meaning the Council and Board can only choose one of the alternatives from set 3a, 3b, 3c, and 3d. Considering section 6 contains multiple moving parts, the Fishery Management Action Team (FMAT) recommends that the Council and Board select either a trigger approach or minimum default allocation, but not both. Using too many management tools at once can overcomplicate the process and reduce the benefits associated with just using one approach.

6.1 Commercial Allocations to the States

6.1.1 Commercial Allocations to the States Alternatives

Table 6 lists the alternatives under consideration for the bluefish commercial allocations to the states using only landings data since commercial discards are considered negligible. The percent allocations represent the share of coastwide quota that is annually allocated to each state. The current allocations are represented by the no action/status quo alternative (alternative 3a-1, highlighted in green in Table 6), which was set through Amendment 1 using General Canvass Data.

Table 6: State-by-state commercial bluefish allocations along the U.S. Atlantic coast using different proposed time series. Percentages sum to > 100% due to rounding; actual allocations will not exceed 100% of quota.

Landings-Based Allocation Alternatives				
State	**3a-1**	**3a-2**	**3a-3**	**3a-4**
	No action/ Status quo (1981-1989)	**5 year (2014-2018)**	**10 year (2009-2018)**	**1/2 '81-'89 1/2 '09-'18**
ME	0.67%	0.00%	0.01%	0.49%
NH	0.41%	0.03%	0.12%	0.33%
MA	6.71%	10.64%	10.16%	7.66%
RI	6.80%	11.81%	9.64%	7.59%
CT	1.26%	1.18%	1.00%	1.19%
NY	10.37%	20.31%	19.94%	13.01%
NJ	14.79%	11.23%	13.94%	14.57%
DE	1.88%	0.58%	0.40%	1.47%
MD	3.00%	1.50%	1.84%	2.68%
VA	11.86%	4.62%	5.85%	10.26%
NC	32.01%	32.06%	32.38%	32.13%
SC	0.10%	0.00%	0.00%	0.03%
GA	0.10%	0.00%	0.00%	0.01%
FL	10.04%	6.07%	4.75%	8.59%
Total	**100.00%**	**100.01%**	**100.03%**	**100.00%**

6.1.2 Impacts of Commercial Allocations to the States Alternatives

Under alternative 3a-1, no changes to the commercial allocations would be made, meaning this alternative would result in impacts to the bluefish stock, non-target species, habitat, protected resources, and human communities that are generally similar to conditions in recent years. Bluefish landings and effort would continue to be constrained by the annual quotas and associated management measures. States would continue to be constrained to their existing state allocation, and the distribution of landings by state would remain similar to the generally stable levels observed since allocations were implemented in 2000 (Figure 5). Typically, landings by state as a percentage of coastwide landings do not fluctuate much from year to year since allocations are constant and most states land or come close to landing their quota. Exceptions do occur, as bluefish often display an idiosyncratic nature in movements into deeper waters offshore and up the coast, and states often receive transfers of quota from other states. Commercial landings from ME, NH, SC, and GA are minimal if they occur at all, since directed fisheries for bluefish do not exist in these states. The majority of landings in these states are incidental.

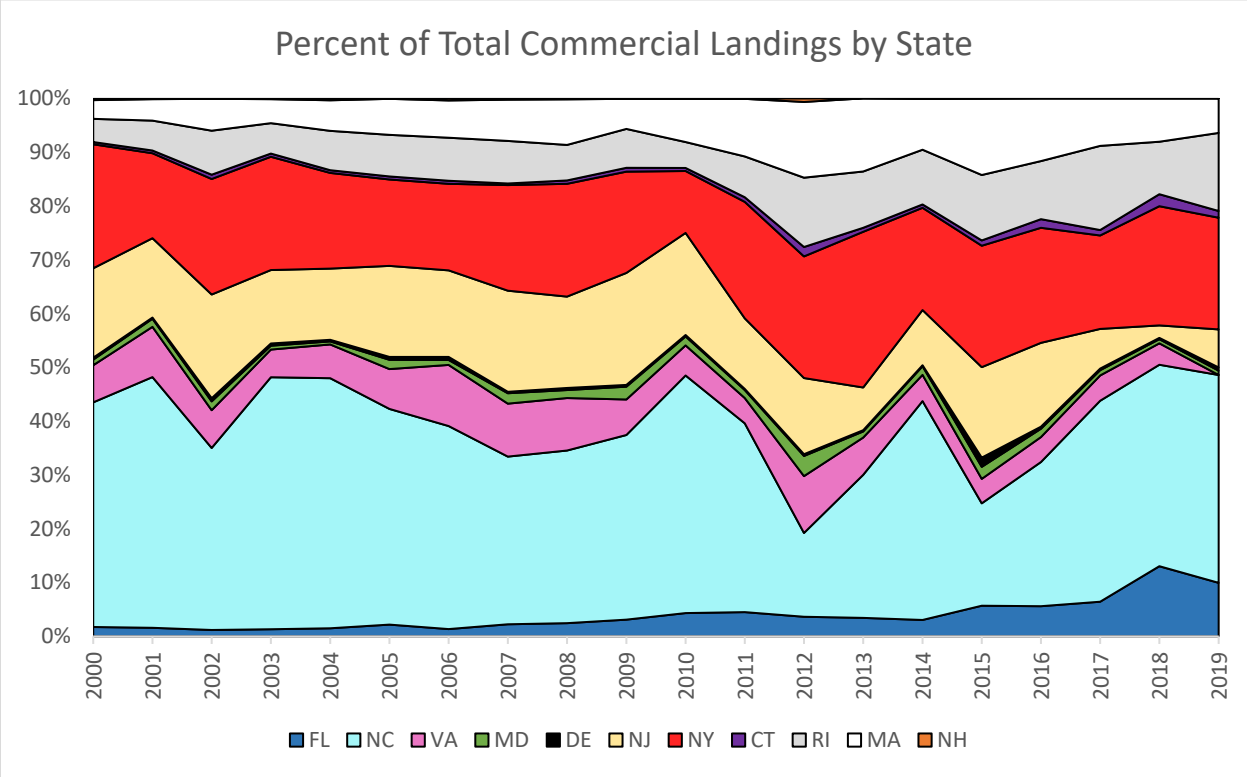


Figure 5: Percentage of coastwide landings by state from 2000-2019 (Atlantic coast excluding ME, SC and GA). ME, SC, and GA each account for less than 0.1% of landings each year.

Alternatives 3a-2 and 3a-3 are both based on recent time series (most recent 5 and 10-year time series, respectively) Therefore, the allocations are relatively similar given both time series reflect more recent landings. In contrast, alternative 3a-4 is based on the average of one recent time series (2009-2018) and one historic time series (1981-1989) to encompass the recent state of the commercial fishery as well as historical fishery performance. In capturing recent and historical fishery performance, the allocations associated with alternative 3a-4 equally weigh both time series

resulting in allocations that are closer to the status quo (3a-1) alternative than alternatives 3a-2 and 3a-3. Table 7 displays the four alternatives and the resulting percentage increase (blue) or decrease (red) relative to the current allocations (3a-1) for each state.

Table 7: State-by-state commercial bluefish allocations along the U.S. Atlantic coast including the percent change (negative in red; positive in blue) from status quo for each alternative.

Allocation Alternatives Based on Landings Data							
	3a-1	3a-2		3a-3		3a-4	
State	Status quo (1981-1989)	5 year (2014-2018)		10 year (2009-2018)		1/2 '81-'89 1/2 '09-'18	
ME	**0.67%**	0.00%	***-100%***	0.01%	***-99%***	0.49%	***-27%***
NH	**0.41%**	0.03%	***-93%***	0.12%	***-71%***	0.33%	***-20%***
MA	**6.71%**	10.64%	***59%***	10.16%	***51%***	7.66%	***14%***
RI	**6.80%**	11.81%	***74%***	9.64%	***42%***	7.59%	***12%***
CT	**1.26%**	1.18%	***-6%***	1.00%	***-21%***	1.19%	***-6%***
NY	**10.37%**	20.31%	***96%***	19.94%	***92%***	13.01%	***25%***
NJ	**14.79%**	11.23%	***-24%***	13.94%	***-6%***	14.57%	***-1%***
DE	**1.88%**	0.58%	***-69%***	0.40%	***-79%***	1.47%	***-22%***
MD	**3.00%**	1.50%	***-50%***	1.84%	***-39%***	2.68%	***-11%***
VA	**11.86%**	4.62%	***-61%***	5.85%	***-51%***	10.26%	***-13%***
NC	**32.01%**	32.06%	***0%***	32.38%	***1%***	32.13%	***0%***
SC	**0.10%**	0.00%	***-100%***	0.00%	***-100%***	0.03%	***-70%***
GA	**0.10%**	0.00%	***-100%***	0.00%	***-100%***	0.01%	***-90%***
FL	**10.04%**	6.07%	***-40%***	4.75%	***-53%***	8.59%	***-14%***
Total	**100.00%**	**100.01%** [5]		**100.03%**		**100.00%**	

Social Impacts

The socioeconomic impacts of the existing allocations vary from state to state. Some states report negative economic impacts associated with current allocations due to a mismatch between their current allocation and their fishery capacity and/or bluefish availability in their waters. Commercial fishermen that land bluefish within a state that consistently harvests less than its quota have the benefit of operating within an unconstrained fishery. Future fluctuations in stock size are less likely to restrict fishing effort and mitigate revenue losses within that state. Each state manages their fishery differently in terms of total number of participants, trip limits, seasons, and other measures. A restriction in one or more of these measures is the driver of the social and economic impacts to industry participants. For example, a restriction in the daily trip limit will likely have an outsized impact on larger vessels compared to smaller vessels which may already harvest bluefish under the newly imposed daily trip limit.

The proposed allocation alternatives incorporate more recent data that are reflective of current state-specific performance and have the potential to increase economic efficiency. Nonetheless, any reduction in allocation may limit a state's potential for market expansion and future increases

[5] Some percentages exceed 100% due to rounding but will be adjusted by the regional office upon implementation.

in landings and ex-vessel revenue compared to the no action alternative. Revenue is also variable in nature and is influenced by fluctuations in costs and prices.

Under alternative 3a-1, impacts are likely negative for commercial fishery stakeholders located in states with smaller proportions of allocations relative to what commercial stakeholders believe should be their states' allocations. The submitted scoping comments were divided roughly in half, with 52% of commenters supporting status quo and 48% in favor of altering the commercial allocations to the states. Among the commercial stakeholders who submitted comments opposed to altering the state allocations were those from NJ (and other states where reductions would take place) who were opposed to reductions in the NJ allocation. Others supported the status quo so long as flexibility remained to transfer quotas between states when necessary. On the other hand, roughly half of the submitted comments were in favor of revisiting state commercial allocations.

Alternative 3a-2 would set allocations using a five-year time series of landings data (2014-2018). MA, RI, and NY would see the most substantial increases in allocations using this approach, whereas NJ, VA, and FL would see the largest reductions in commercial allocations under this approach. NY has two of the top five (Montauk and Hampton Bays/Shinnecock) and four of the fifteen most highly engaged communities in the commercial bluefish fishery (Figure 3). Relative to status quo, alternative 3a-2 would likely result in positive social impacts for these NY communities given the substantial increase in allocations to the state. While FL and VA do not have any communities among the top fifteen in commercial bluefish engagement, four of the fifteen highest in engagement are located in NJ. Therefore, while FL and VA may not experience substantial negative impacts from the reductions in commercial allocations, NJ communities and user groups will likely experience negative social impacts from alternative 3a-2.

Under alternative 3a-3, a 10-year time series of landings data would inform the distribution of state allocations of commercial bluefish. This scenario would increase the allocations for RI (~3%), MA (~3%), and NY (~9%) considerably, but reduce allocations for VA and FL by a similarly substantial amount (~6%). Unlike alternative 3a-2, however, this alternative would only reduce the NJ allocation by less than one percent. Relative to the status quo, alternative 3a-3 would likely result in positive social impacts for commercial stakeholders in MA, RI, and NY, while at the same time limiting the negative impacts of reducing the allocation to NJ. As discussed under alternative 3a-2, communities in FL and VA do not feature among the most highly engaged in commercial bluefish activity (Figure 3), whereas MA, RI, NY, and NJ all have several communities with relatively high engagement in commercial bluefish fishery activities. Alternative 3a-3 provides relative benefits to most of the north Mid-Atlantic and New England user groups without affecting stakeholders in NJ as dramatically as alternative 3a-2.

Under alternative 3a-4, state allocations would be redistributed based partially on landings data from the 1981-1989 time series and partially on the 2009-2018 time series. This approach provides the most limited change in state allocations among other alternatives to the status quo. Northern states such as MA, RI, and NY would see modest increases in allocations (under 3%), while southern states such as NJ, VA, and FL would only see minor decreases in allocations (~2% or less). Alternative 3a-4 would likely result in neutral to low positive social impacts for the northern states and neutral to low negative impacts for the southern states relative to the status quo alternative. Among all state allocation alternatives, alternative 3a-4 would likely produce the least impactful changes to the social factors among commercial bluefish fishery stakeholders and communities.

Economic Impacts

The current state-level commercial allocations consider landings data from 1981-1989. Through transfers, states which predict to land bluefish quantities above their allocated quota can request additional quota from states which are not expected to land their allocation. This transfer increases the requesting state's landings and revenues, overall. In addition, no incentives are given to the state transferring out quota. In theory, this transaction could be classified as a Pareto improvement, where the transfer of quota does not negatively impact either participating party. Given that these state-to-state transfer channels exist, the economic impacts of the proposed reallocations at the state-level are expected to be marginal during years of higher bluefish population levels given that 1) allocations are based on realized landings/catch data and 2) states can transfer quota depending on their predicted performance in any given year. However, in years when the coastwide commercial quota is low resulting from an overfished stock, there may not be a sufficient number of states with additional quota available to cover other states' needs. During these years, states with a small allocation relative to their share of recent coastwide landings are likely to be negatively impacted the most. In addition, there is opportunity cost in the form of time and effort associated with transfers. There is a decrease in economic efficiency linked with the processing and approving of transfer requests. If transfers continue, the maximum economic benefits are associated with the reallocation plan which accurately captures each states' quota needs and minimizes the need for quota transfers .

To highlight how each allocation alternative relates to decreases in state quota transfers, both realized landings and average reallocation quantities by sub-alternative are depicted in Figure 6. Here, the distribution of each state's annual bluefish landings are summarized by box and whisker plots. The interquartile range of state-level bluefish landings are portrayed by the gray boxes and the whiskers, which indicate the maximum and minimum annual bluefish landing quantity for each state from 1999-2019.[6] Average annual allocations are calculated using the percentages presented in 3a-1 to 3a-4 which include the status quo of allocations determined using the 1981-1989 time series of landings data, allocations based on the previous five years of state landings, allocations based on landings from the previous 10 years, and allocations based on landings from 1981-89 and 2009-18. State allocations by sub-alternative are calculated using the historical commercial sector quota and each allocation plan's corresponding quota percentage from 1999-2019. The average allocations by state and plan are plotted against realized bluefish landings for comparison.

There is no consistent trend in impacts stemming from each reallocation sub-alternative when compared across states. For example, under status-quo, quota allocations for FL would be much greater than the state's median landings value (above the state's maximum annual landings value); however, for NY, quota allocated under the status quo alternative would be much less than the state's median realized landings. When comparing which sub-alternative is closest in value to the median realized landings of each state, plan 3a-3 (ten-year) performs the best, with landings predictions closest to 38% of state median landings values and furthest from only 9% of state median landings.[7] The 3a-2 plan (five-year) is second in performance based on this metric, which is closest to the median landings for 31% of states but furthest from the median value for 27% of states. The status quo (3a-1) plan had average allocations most similar to the median landings

[6] The 1999-2019 time series is used to show how the proposed allocations align with realized landings over the past two decades.

[7] This analysis excludes Georgia and South Carolina because each plan had an equal average allocation estimate.

values for 23% of states but is furthest from the median landings value for 64% of states. Lastly, 3a-4 (1989-91 & 2009-18 based allocations) is nearest to 8% of state median landings values but furthest from the median value of 0% of the states. It should be reiterated that landings and revenues may not be impacted by the state-level reallocations if transfer requests continue to be issued and approved. However, by determining the plan which best predicts state landings, the need for transfers will decrease—increasing efficiency within the commercial sector. A slight economic advantage is expected for states which are allocated quota above their historic median landings value, as these states will have the ability to land above their expected median landings without requesting additional quota from another state, while states which are allocated a quota slightly below their annual median may need to request quota on an annual basis.

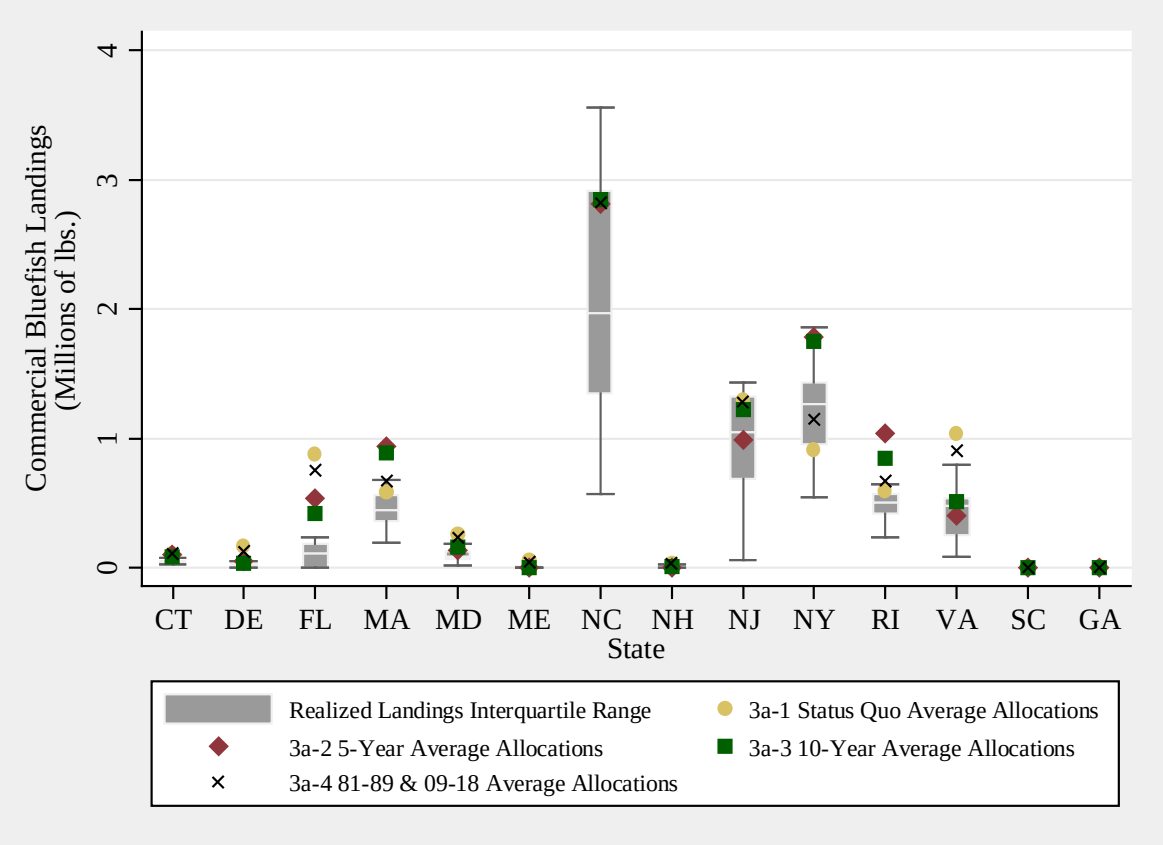


Figure 6: Realized annual commercial bluefish landings box and whisker plots (1999-2019) and average annual allocations (1999-2019) by proposed state-level allocation sub-alternative by state. Median landings represented by white horizontal line within box and whisker.

Biological Impacts

Currently, bluefish discards in the commercial fishery are considered negligible. Depending on the scale of the allocation change, a decrease in the commercial quota or additional restrictions on the commercial fishery could lead to increased regulatory discards compared to recent levels. Actual changes in discards will depend on many factors such as fishing behavior, weather, availability of other target species, and market demand. Discards are also influenced by availability of bluefish,

both overall abundance and by size class. Therefore, it is challenging to predict future discards based on changes in allocations.

6.2 Commercial Allocation Change Phase-In

6.2.1 Commercial Allocation Change Phase-In Alternatives

The alternatives listed in Table 8 consider if any changes to the allocation percentages considered through alternative set 3a should occur in a single year (alternative 3b-1, no phase-in) or if the change should be spread out over 4, 5, or 7 years (alternative 3b-2). The Council and Board agreed that if alternative 3b-2 is selected, the duration over which new allocations will be phased in will match the duration of the selected rebuilding plan (section 7). The choice of whether to use a phase-in approach may depend on the magnitude of allocation change proposed. Larger allocation changes may be less disruptive to fishing communities if they are phased in over several years as identified by the percent point change (Table 9).

Table 8: Bluefish state commercial allocation change phase-in alternatives

Phase-in Alternatives
3b-1: No phase-in
3b-2: Allocation change spread evenly over the same duration as the selected rebuilding plan

Table 9: Percentage point shifts in bluefish state commercial allocation per year for 4, 5, and 7-year phase-in options for all allocation change alternatives

		5 year (2014-2018) See 3a-2			**10 year (2009-2018)** See 3a-3			**1/2 '81-'89 1/2 '09-'18** See 3a-4		
State	**Current Allocations**	**4-year**	**5-year**	**7-year**	**4-year**	**5-year**	**7-year**	**4-year**	**5-year**	**7-year**
ME	0.67%	-0.17%	-0.13%	-0.10%	-0.17%	-0.13%	-0.09%	-0.05%	-0.04%	-0.03%
NH	0.41%	-0.10%	-0.08%	-0.05%	-0.07%	-0.06%	-0.04%	-0.02%	-0.02%	-0.01%
MA	6.71%	0.98%	0.79%	0.56%	0.86%	0.69%	0.49%	0.24%	0.19%	0.14%
RI	6.80%	1.25%	1.00%	0.72%	0.71%	0.57%	0.41%	0.20%	0.16%	0.11%
CT	1.26%	-0.02%	-0.02%	-0.01%	-0.07%	-0.05%	-0.04%	-0.02%	-0.01%	-0.01%
NY	10.37%	2.49%	1.99%	1.42%	2.39%	1.91%	1.37%	0.66%	0.53%	0.38%
NJ	14.79%	-0.89%	-0.71%	-0.51%	-0.21%	-0.17%	-0.12%	-0.06%	-0.04%	-0.03%
DE	1.88%	-0.33%	-0.26%	-0.19%	-0.37%	-0.30%	-0.21%	-0.10%	-0.08%	-0.06%
MD	3.00%	-0.38%	-0.30%	-0.21%	-0.29%	-0.23%	-0.17%	-0.08%	-0.06%	-0.05%
VA	11.86%	-1.81%	-1.45%	-1.03%	-1.50%	-1.20%	-0.86%	-0.40%	-0.32%	-0.23%
NC	32.01%	0.01%	0.01%	0.01%	0.09%	0.07%	0.05%	0.03%	0.02%	0.02%
SC	0.10%	-0.03%	-0.02%	-0.01%	-0.03%	-0.02%	-0.01%	-0.02%	-0.01%	-0.01%
GA	0.10%	-0.03%	-0.02%	-0.01%	-0.03%	-0.02%	-0.01%	-0.02%	-0.02%	-0.01%
FL	10.04%	-0.99%	-0.79%	-0.57%	-1.32%	-1.06%	-0.76%	-0.36%	-0.29%	-0.21%

Section 6.3 discusses alternatives related to the trigger approach. The trigger approach requires baseline quotas to determine the allocation of the quota greater than the trigger threshold. By

design, the phase-in approach alters each state's baseline quota on a yearly basis, which greatly complicates the calculation of each state's additional quota. The various combinations of phase-in and trigger alternatives would require numerous tables to display each state's allocation for each year during the phase-in period. *As such, examples are not included in this document and the combination of these approaches is not recommended.*

Section 6.4 discusses alternatives related to minimum default allocations. If the Council and Board decide to select both phase-in and a minimum default allocation, the percentage point shifts in Table 9 will be slightly smaller (see Appendix C).

6.2.2 Impacts of Commercial Allocation Change Phase-In Alternatives

The impacts described in section 5.2.2 largely apply here to the commercial allocations to the states. The biological, social, and economic impacts of the phase-in alternatives for the commercial allocations to the states under consideration in this amendment are dependent on three main factors: 1) the difference between the status quo allocation percentage and the allocation percentage selected, 2) the duration of the phase-in period, which will be the same duration as the preferred rebuilding plan (section 7), and 3) the continuation of state-to-state transfers (section 8). Based on the range of allocation percentages in Section 5.1.1, the commercial allocations to the states could shift by as much as 2.49 percentage points per year (NY), or as little as 0.01 percentage points (NH, SC, GA) per year under the above phase-in timeframes of 4-7 years. Table 7 (red/blue showing change in section 6.1.2) presents the percent change that would be associated with each alternative.

In summary, under alternative 3b-1, the state allocations selected from among the 3a set of alternatives would occur in a single year upon implementation. The social impacts of alternative 3b-1 will align with whichever 3a alternative is selected for determining the future of state allocations of commercial bluefish.

Under alternative 3b-2, both the positive and negative social impacts discussed in section 6.1.2 would still apply, but they would be phased in over time. This could mitigate to an extent the negative social impacts by providing a buffer through smaller percentage changes over time, but also slow the realization of some states' increases in quota and their associated positive social impacts.

6.3 Commercial Quota Triggers

6.3.1 Commercial Quota Trigger Alternatives

This alternative set would create state allocations that vary with overall stock abundance and resulting coastwide commercial quotas (Table 10). The selection of alternative 3c-1 would implement no trigger, which is consistent with the current FMP. Alternative 3c-2 would implement a trigger level equal to the average of the initial commercial quota for each time series associated with alternative set 3a that do not include transfers from the recreational to commercial fishery. Alternative 3c-3 would implement a trigger level equal to the average of the final commercial quota that includes transfers from the recreational to the commercial fishery. Ultimately, the commercial quota time series selected will correspond with the time series associated with the alternative selected in section 6.1.1.

Please note, no trigger threshold was developed under the status quo state commercial allocations because no formal commercial quotas existed prior to the implementation of Amendment 1 in 2000. As such, the trigger approach is not able to be implemented under status quo commercial allocations to the states (alternative 3a-1).

Table 10: Trigger threshold levels for additional quota allocations.

Commercial Quota Time Series	**No Trigger** Alternative: **3c-1**	**Pre-Transfer** Alternative: **3c-2**	**Post Transfer** Alternative: **3c-3**
No Action/Status quo [3a-1]	No trigger approach implemented	N/A	N/A
5-year (2014-2018) [3a-2]		3.67 M lbs	6.67 M lbs
10-year (2009-2018) [3a-3]		4.31 M lbs	8.21 M lbs
½ 1981-1989 and ½ 2009-2018 [3a-4]		4.31 M lbs*	8.21 M lbs*

*No formal commercial quota existed before the implementation of Amendment 1 in 2000; the average represents the quota for available years only.

For all years when the annual commercial quota is at or below a specified annual commercial quota trigger level, the state allocations would be specified by the selected option from alternative set 3a. In years when the annual coastwide quota exceeds the specified trigger level, quota up to the trigger amount would be distributed according to the chosen allocation alternative from alternative set 3a, and the distribution of quota over the trigger would be set according to the allocations listed in Table 11.

Table 11: Bluefish commercial state allocations applying a trigger threshold for all commercial allocation time series.

Allocation of additional quota greater than the trigger threshold.				
State	**Status quo (1981-1989)**	**5 year (2014-2018)**	**10 year (2009-2018)**	**1/2 '81-'89 1/2 '09-'18**
ME	0.10%	0.10%	0.10%	0.10%
NH	0.10%	0.10%	0.10%	0.10%
MA	7.50%	16.60%	19.60%	7.50%
RI	7.50%	16.60%	7.50%	7.50%
CT	3.00%	3.00%	0.10%	3.00%
NY	15.12%	16.60%	19.60%	17.03%
NJ	15.12%	16.60%	19.60%	17.03%
DE	3.00%	0.10%	0.10%	3.00%
MD	3.00%	3.00%	3.00%	3.00%
VA	15.12%	3.00%	7.50%	17.03%
NC	15.12%	16.60%	19.60%	17.03%
SC	0.10%	0.10%	0.10%	0.10%
GA	0.10%	0.10%	0.10%	0.10%
FL	15.12%	7.50%	3.00%	7.50%
Total	100%	100%	100%	100%

The allocations in Table 11 were developed by using the tiered approach displayed in Table 12 where the baseline quota allocations selected from alternative set 3a determine how the quota greater than the trigger will be allocated to each state. In summary, the trigger threshold level and the associated additional quota allocation are all informed by the time series selected in alternative set 3a.

Table 12: Range of baseline quotas and the associated additional quota allocation once a trigger threshold is surpassed.

Range of Baseline Quota Tiers	Associated Additional Quota Allocations
<=1%	0.10%
>1-5%	3.00%
>5-10%	7.50%
>10%	Remainder

Section 6.4 discusses alternatives related to minimum default allocations. If the Council and Board decide to select both a trigger approach and minimum default allocations, the percentages in Table 11 will shift slightly. On occasion, specific state allocations in the proposed time series will cross a threshold into a different percentage of associated additional quota (see Appendix C).

6.3.2 Impacts of Commercial Quota Trigger Alternatives

Between alternatives 3c-2 and 3c-3, the trigger thresholds associated with 3c-2 are more likely to be exceeded given the thresholds are much lower. These thresholds are approximately half those associated with alternative 3c-3 because they account for the commercial quotas prior to incorporating historical transfers from the recreational to commercial fishery. Figure 7 displays the four potential trigger thresholds and the post-transfer commercial quotas as well as total coastwide commercial landings for the years 2000-2018. Both of the potential pre-transfer trigger thresholds associated with alternative 3c-2 would have been exceeded by the commercial quota every year going back to 2000. By comparison, both of the potential post-transfer trigger thresholds associated with alternative 3c-3 would have been exceeded by the commercial quota for every year except 2015 and 2016 when the commercial quota was much lower. The trigger approach only impacts states directly in years when the trigger threshold level is exceeded. Following this logic, the impacts discussed in the economic impacts section are experienced to a greater degree under the lower pre-transfer trigger (3c-2) compared to the higher post-transfer trigger (3c-3).

The trigger approach could also provide additional beneficial social impacts or buffers against negative impacts, for states that are either receiving increased allocations or having allocations reduced. Therefore, alternatives 3c-2 and 3c-3 are likely to have a range of social impacts from neutral to low positive varying state-to-state, depending upon the alternative selected from the 3a set. Ultimately, the impacts are difficult to ascertain because of the number of combinations that can arise under the trigger option. Some states will experience neutral to positive impacts, others neutral to negative, and those impacts might change when quotas are below the trigger vs above the trigger. In summary, it is difficult to know what the impacts are, and the impacts will depend on other decisions made in this document.

Considering the bluefish FMP will be going through rebuilding starting at the end of this year, the FMAT concluded that it is unlikely the initial ABCs will be large enough to exceed the trigger threshold.

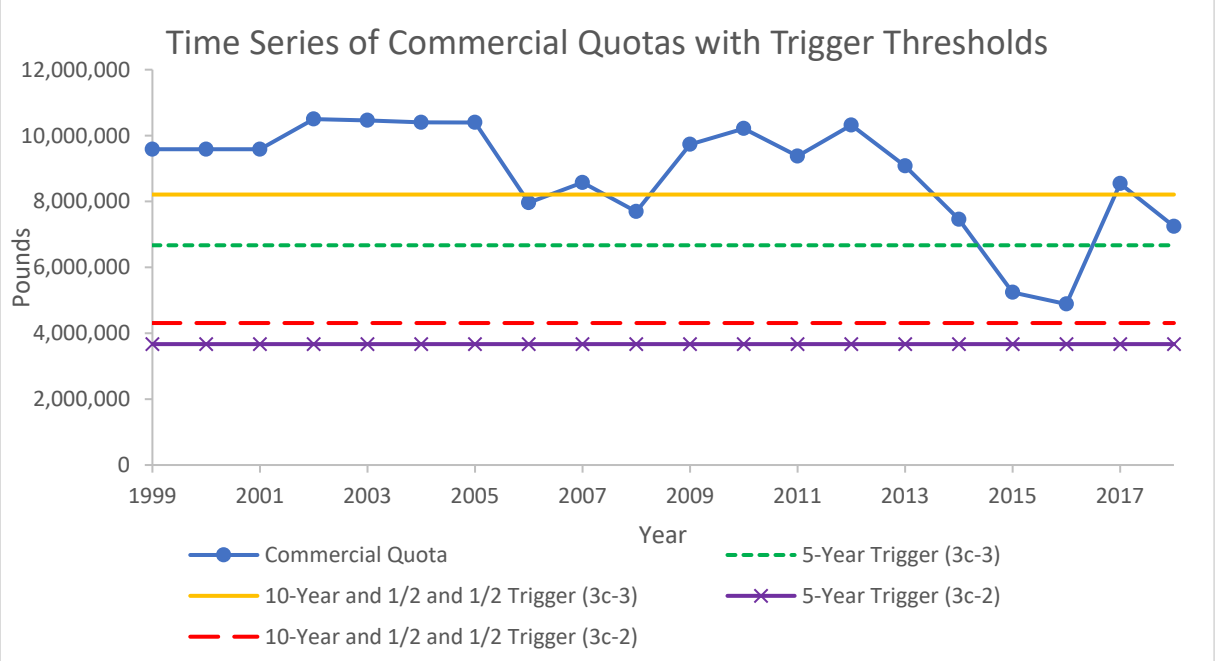


Figure 7: Trigger thresholds for additional quota compared to commercial quotas.

Economic Impacts

Section 6.3 would allocate quota differently above a specified pre- or post-transfer threshold (i.e., the trigger) than the allocation method described in section 6.1.1. To analyze the economic impacts of this difference in allocation, a commercial quota 100,000 lbs. above both the pre- and post-transfer threshold levels is used.[8] Revenues are calculated at the state-level using allocations under the trigger scheme. The revenues generated from the trigger-allocated quota are compared to revenues generated under a no-trigger allocation scenario across the various commercial sector allocations proposed in section 6.3 (i.e., 3a-1 through 3a-4). Since ex-vessel bluefish prices are needed at the state-level and a state-level price model has yet to be developed, annual state ex-vessel bluefish prices, averaged over 1996-2019, are used for the calculation of revenues and reported in 2020 constant dollars. One limitation of this analysis is that average state prices omit the inverse relationship between ex-vessel prices and estimated landing quantities. Average state prices reflect landing quantities closer to that of the pre-transfer trigger threshold amounts, as bluefish landings have never reached the proposed post-transfer trigger threshold levels.

[8] Average total realized bluefish landings from 1999-2019 equal 5.68 M lbs. which also informs the average price data used calculate revenues. Given that the post-transfer trigger quantities exceed the average realized landings, a minimum overage quantity of 100,000 lbs. was chosen to highlight the possible economic impacts of the trigger-induced allocation process of additional quota.

Conceptually, when the trigger is activated, states will receive greater quantities of quota if they are grouped into an allocation category which results in higher allocations than the non-trigger alternative allocation method. The opposite is true for a state that is allocated a higher percentage of quota under the non-trigger allocation but is grouped in an allocation bracket lower than its original allocation. For example, ME is allocated 0.67% under the status quo (i.e., 17% of the ABC for commercial sector pre-transfer allocations) with no trigger. With a trigger, the allocation of additional quota to ME would be set at 0.1% given that it falls in the ≤1% allocation range, resulting in less allocated quota than would be received under the state's baseline allocation percentage. The state of MA, on the other hand, would be allocated 6.71% of the additional quota under the status quo with no trigger, but quota allocation after the trigger threshold would increase to 7.50% under the trigger sub-alternative.

When an additional 100,000 lbs. is allocated under the trigger vs. the non-trigger status quo, average revenues decrease for NC, ME and NH, when averaged across all state allocation alternatives (Figure 8). On average, NC revenues would decrease by $7,904, ME by $167, and NH by $101. It should be noted, however, that whether a state earns increases or decreases in revenues varies across the allocation alternatives. For example, RI would earn a revenue increase of $2,854 under 3a-2 (i.e., the five-year allocation) but a decrease in revenues (-$1,275) under 3a-3 (i.e., the ten-year allocation). The highest increases in revenues when averaged across the alternatives are earned by MA, NJ and VA with increases of $3,432, $2,514, and $1,382, respectively.

This analysis highlights the variation in economic outcomes and their dependence on the allocation sub-alternatives proposed in section 6.3. Though triggers would impact the initial allocation of the quota, this analysis assumes that each state will fully utilize their allocated quota with no state-to-state transfers. If additional allocations resulting from the trigger method are not utilized and transfers are to continue, there may be little change in landings/revenues and the burden of transfers will be the main economic consequence of this sub-alternative.

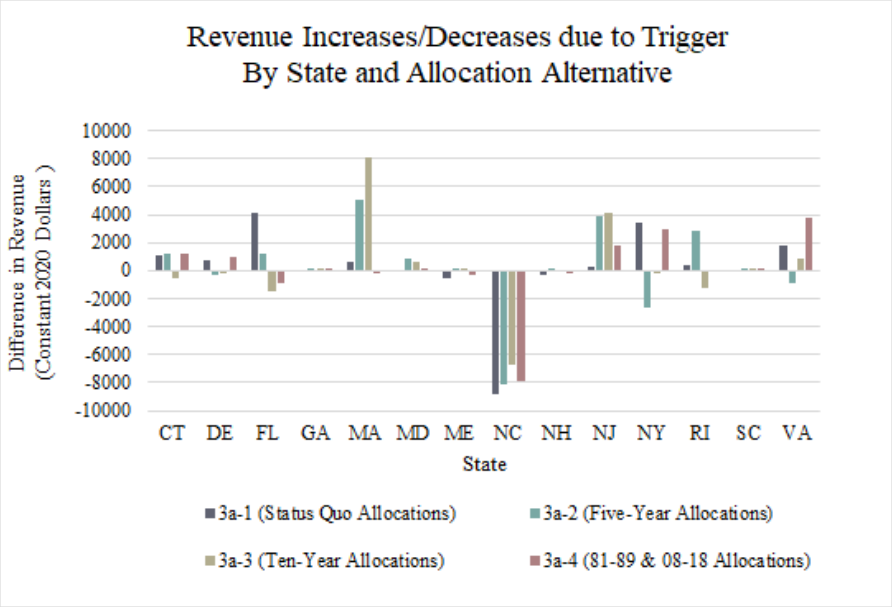


Figure 8: Differences in commercial bluefish revenues (2020 constant dollars) resulting from trigger-induced allocations by state and state-level allocation sub-alternative.

6.4 Minimum Default Allocations

6.4.1 Minimum Default Allocation Alternatives

This alternative set would establish minimum default commercial quota allocations for each state within the bluefish management unit. A minimum default allocation provides each state with a fixed minimum percentage allocation of the coastwide commercial quota, and the remainder would be allocated based on the commercial allocation alternative selected from section 6.1.1. The minimum default allocation alternatives are presented in Table 13. If 0.1% (3d-2) is selected, 1.4% of the allocation would be evenly distributed amongst the 14 states within the bluefish management unit. Then, the remaining 98.6% of the commercial quota would be distributed in accordance with the preferred alternative in section 6.1.1. If 0.25% (3d-3) is selected, 3.5% of the allocation would be evenly distributed to the 14 states. Then, the remaining 96.5% of the commercial quota would be distributed following the preferred alternative in section 6.1.1. Table 14 and Table 15 present the final state allocations with the incorporated minimum default allocations of 0.10% and 0.25%, respectively.

Table 13: Minimum default allocation alternatives.

Minimum Default Allocation Alternatives	
3d-1	No Action/Status quo: No Minimum Default Allocation
3d-2	0.10% Minimum Default Allocation
3d-3	0.25% Minimum Default Allocation

Table 14: State-by-state commercial bluefish allocations along the U.S. Atlantic coast using different proposed time series and a minimum default allocation of 0.10%.

3d-2		0.10% Minimum Default Allocation			
State	**No Action 1981-1989**	**Status quo 1981-1989**	**5-year 2014-2018**	**10-year 2009-2018**	**1/2 '81-'89 1/2 '09-'18**
ME	0.67%	0.76%	0.10%	0.11%	0.58%
NH	0.41%	0.51%	0.13%	0.22%	0.42%
MA	6.71%	6.72%	10.59%	10.12%	7.65%
RI	6.81%	6.81%	11.74%	9.61%	7.58%
CT	1.27%	1.35%	1.26%	1.09%	1.28%
NY	10.38%	10.33%	20.12%	19.76%	12.93%
NJ	14.81%	14.70%	11.17%	13.85%	14.46%
DE	1.88%	1.95%	0.67%	0.49%	1.55%
MD	3.00%	3.06%	1.57%	1.92%	2.75%
VA	11.94%	11.88%	4.65%	5.87%	10.22%
NC	32.03%	31.68%	31.71%	32.03%	31.78%
SC	0.04%	0.13%	0.10%	0.10%	0.13%
GA	0.01%	0.11%	0.10%	0.10%	0.11%
FL	10.06%	10.02%	6.08%	4.78%	8.57%

Table 15: State-by-state commercial bluefish allocations along the U.S. Atlantic coast using different proposed time series and a minimum default allocation of 0.25%.

3d-3		0.25% Minimum Default Allocation			
State	No Action 1981-1989	Status quo 1981-1989	5-year 2014-2018	10-year 2009-2018	1/2 '81-'89 1/2 '09-'18
ME	0.67%	0.89%	0.25%	0.26%	0.72%
NH	0.41%	0.65%	0.28%	0.36%	0.56%
MA	6.71%	6.73%	10.52%	10.05%	7.64%
RI	6.81%	6.82%	11.65%	9.56%	7.57%
CT	1.27%	1.47%	1.39%	1.22%	1.40%
NY	10.38%	10.26%	19.85%	19.49%	12.80%
NJ	14.81%	14.54%	11.09%	13.70%	14.31%
DE	1.88%	2.06%	0.81%	0.64%	1.67%
MD	3.00%	3.15%	1.69%	2.03%	2.84%
VA	11.94%	11.78%	4.71%	5.89%	10.16%
NC	32.03%	31.16%	31.19%	31.50%	31.25%
SC	0.04%	0.28%	0.25%	0.25%	0.28%
GA	0.01%	0.26%	0.25%	0.25%	0.26%
FL	10.06%	9.95%	6.10%	4.83%	8.54%

6.4.2 Impacts of Minimum Default Allocation Alternatives

Minimum default allocations were proposed to ensure states currently allocated a small share of the coastwide commercial quota do not lose their entire allocation through the re-allocation process. ME, NH, SC, and GA stand to benefit most from the implementation of a minimum default commercial allocation. All four of these states are currently allocated less than 1% of the coastwide quota. Furthermore, the allocation alternatives under consideration in Section 6.1.1 would provide these states with allocations close to 0%. The commercial fisheries in these states are quite small, but bluefish are still occasionally landed. Without a sufficient share of the commercial quota, fishermen operating within ME, NH, SC, and GA waters may be forced to discard incidental bluefish catch or travel further to offload landings in another state. The adoption of a minimum default allocation may reduce these negative biological and economic impacts. In addition, bluefish are historically a cyclical species and highly migratory. States like Maine and New Hampshire may encounter bluefish more in the future due to distribution shifts in the bluefish population. If this occurs, these two northern states would be afforded a small allocation that would allow some harvest of bluefish.

Alternatives 3d-2 and 3d-3 provide for minimum default allocations to states of 0.10% and 0.25%, respectively. Relative to the status quo/no action alternative, 3d-1, these minimum default allocations may result in neutral to low positive social impacts on state commercial bluefish stakeholders, depending upon the alternative selected from the 3a set. The difference between 3d-2 and 3d-3, however, is relatively small in terms of default percentages and thus the difference in social impacts between these two alternatives is anticipated to be neutral or negligible.

Economic Impacts

Differences in state bluefish revenues resulting from allocations with minimum defaults vs. allocations without the minimum defaults are calculated across the various state-allocation alternatives proposed (3a-1 through 4). Revenues are estimated and compared across both of the proposed minimum defaults (0.10% and 0.25%). Landings for each allocation series (3a-1 to 3a-4) are simulated using historic pre-sector transfer quota quantities given that pre-sector transfer allocations are closer to realized landings relative to post-transfer quantities (1999-2019) and the assumption that all allocated quota is landed is necessary for the analysis. The simulated allocated quota, and therefore estimated landings, for each series is multiplied by the average state ex-vessel bluefish price. Average annual state bluefish prices ($/lb) are used rather than an econometric model as a peer-reviewed state-level annual price model has yet to be developed. The use of average state bluefish prices omits the inverse relationship between price and quantity of bluefish landed, which is a limitation of this specific analysis. The average difference in revenues under minimum default allocations and their non-minimum default counterparts are presented in Figure 9.

In terms of revenue gains or losses, NC's revenues decrease the most under the minimum default allocation, with average losses of $55K and $137K for the 0.10% and 0.25% minimum defaults, respectively (Figure 9). This is followed by NY and NJ where revenues decrease by $30K and $19K under the 0.10% minimum default and $80K and $46K under the 0.25% minimum default for NY and NJ, respectively. The states with the highest increases in revenues are NH, ME, GA and SC. This is not surprising given that these states have the lowest allocations across all of the state-level reallocation plans, all of which are allocated under 1% of the commercial quota on when averaged across the non-minimum default allocations. SC, GA, ME and NH earn average annual revenue increases of $20K, $21K, $25K and $26K under the 0.10% minimum default and $52K, $52K $63K and $61K under the 0.25% minimum default, respectively. Revenues for the states not mentioned previously range from an average decrease of $7K to average increase of $16K for the 0.10% minimum default and an average decrease of $21K to average gain of $44K under the 0.25% minimum default when summarized across all proposed state-level allocation alternatives. Lastly, if transfers are to occur and if the states receiving minimum allocations are not projected to land their quota, it is possible for quota transfers to counteract the decreases in revenue stemming from minimum default allocations.

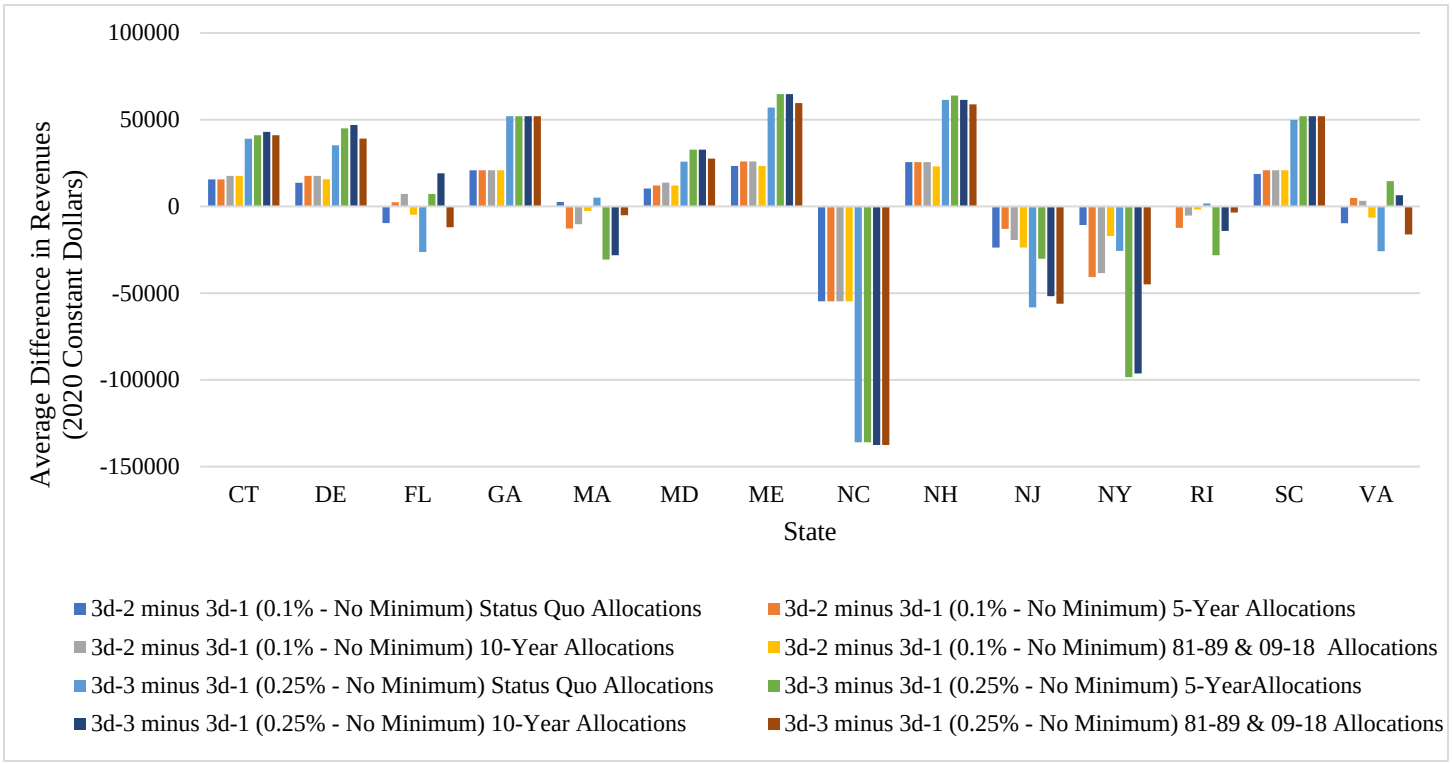


Figure 9: Average difference in commercial bluefish revenues under minimum default allocations and no minimum default allocations (1999-2019) by commercial allocation alternative and state.

7.0 REBUILDING PLAN ALTERNATIVES AND IMPACTS

The 2019 operational stock assessment indicates that the bluefish stock is overfished, but overfishing was not occurring in 2019[9]. Section 304(e)(3) of the MSA states: "Within 2 years after…notification…the appropriate Council…shall prepare and implement a fishery management plan, plan amendment, or proposed regulations…to end overfishing immediately in the fishery and to rebuild affected stocks of fish…" Furthermore, the MSA states that 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."

Spawning stock biomass (SSB) was estimated to be 91,041 metric tons in 2018, or 46% of the SSB target. The biomass target is the SSB associated with the fishing mortality proxy (F) that achieves maximum sustainable yield (MSY) or SSB_{MSY} proxy. Under a rebuilding plan, the stock will be considered rebuilt once SSB reaches the SSB_{MSY} proxy equal to 198,717 mt (Figure 10). Once rebuilt, the MSYproxy is estimated to be 26,677 mt. Total fishing mortality is also available for reference (Figure 11). Again, MSA requires the overfished stock to be rebuilt within 10 years once the regional office notifies the Council of the overfished state. Under the current amendment timeline, the rebuilding plan would be implemented at the beginning of 2022.

[9] 2019 Bluefish Operational Stock Assessment Report

In mid-2021, a management track assessment will be conducted to re-assess the bluefish stock. As a result of this assessment, the biological reference points may shift. Moreover, rebuilding projections will be rerun to reflect the updated status of the stock. Then, Council and Commission staff will work with the NOAA Fisheries regional office and the Scientific and Statistical Committee (SSC) to identify how these new projections will be translated into future specifications.

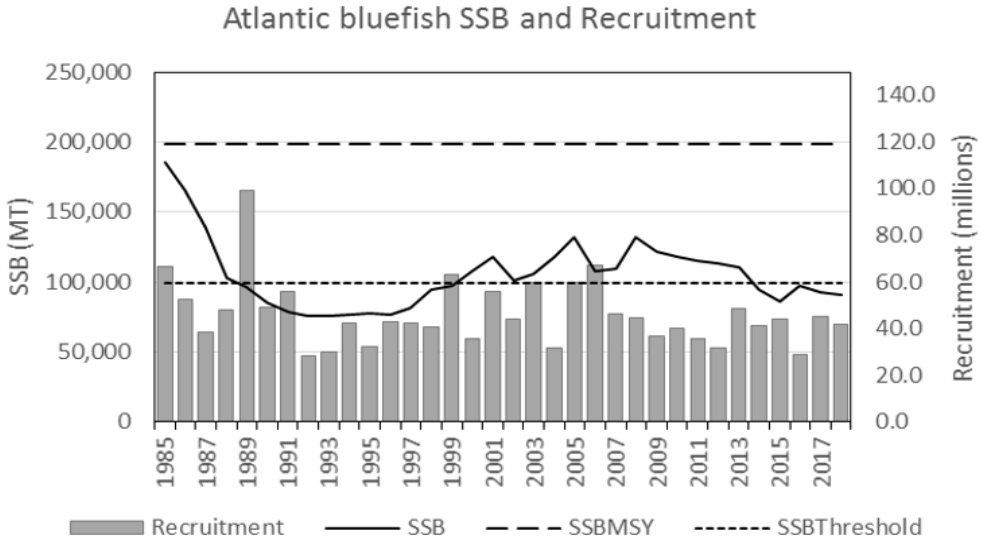


Figure 10: Atlantic bluefish SSB and recruitment at age 0 (R; gray vertical bars) by calendar year. The horizontal dashed line is the updated SSBMSY proxy = SSB40% = 198,717 mt.

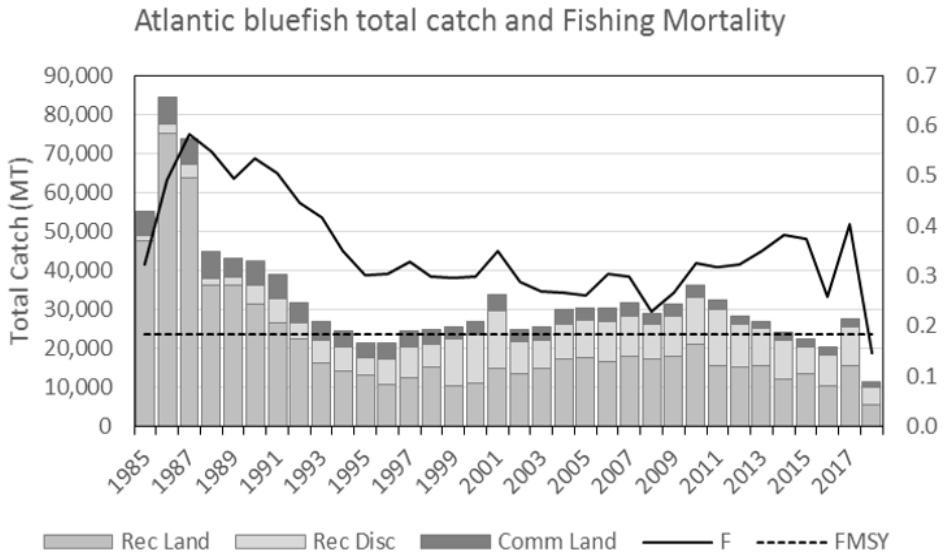


Figure 11: Total fishery catch (metric tons; mt; solid line) and fishing mortality (F, peak at age 3; squares) for Atlantic bluefish. The horizontal dashed line is the updated FMSY proxy = F35% = 0.183.

7.1 Rebuilding Plan Alternatives

This section introduces the four rebuilding plan alternatives under consideration, including status quo (Table 16). SSB values and catch projections are provided for reference for each of the three rebuilding plans. The proposed rebuilding plans assume all the projected catch will be caught. Regardless of which alternative is selected, the stock assessment scientist will perform assessment updates and rerun projections every two years. Each projection is based on current stock status information, meaning the catch values are subject to change depending upon the latest assessment. The SSC will then use the projections to develop recommendations for the specification packages that remain in line with the goals of the rebuilding plan.

Table 16: Rebuilding projection alternatives and the duration until rebuilt.

Alternative	Rebuilding Plan	Duration	Adjustment to Council Risk Policy
4a	No Action/ Status Quo	N/A	N/A
4b	Constant Harvest	4 years	No
4c	P* (Council Risk Policy)	5 years	N/A
4d	Constant Fishing Mortality	7 years	Yes

All rebuilding alternative sections contain tables detailing the biomass levels, fishing mortality, catch, SSB_{MSY} proxy, and $SSB_{Threshold}$. The P* approach includes all the same metrics, but in terms of the projected ABCs. Table 17, Table 18, and Table 19 all begin in 2019 despite the rebuilding plans beginning in 2022. These data are presented for reference to display the assumed catch values when the projection was run in 2020.

7.1.1 No Action/Status quo (Alternative 4a)

The no action/status quo alternative would not initiate a rebuilding plan, no changes to the current risk policy would occur, and the current specifications would remain in place, as described in the proposed rule for the 2021 specifications package[10].The Council is legally bound to develop a rebuilding pan and this alternative is included as a formality.

7.1.2 Constant Harvest – 4-year Rebuilding Plan (Alternative 4b)

The 4-year constant harvest rebuilding alternative specifies that the stock be rebuilt by the end of 2025. The rebuilding plan projection presented in Table 17 and Figure 12 demonstrates that the projected catch and SSB values remains constant across the four years. However, as previously mentioned, the stock assessment scientist will conduct assessment updates and rerun projections every 2 years, which means the catch values may be adjusted up or down depending upon the assessment results. This alternative does not require an adjustment to the Council's risk policy because the catches are less than those described under the P* approach. In 2022, fishing mortality rates peak at F=0.064, but still remains below the overfishing threshold (MSY Proxy above 0.183). Rebuilding projections indicate that this alternative would be expected to rebuild bluefish to slightly above the SSB_{MSY} proxy as defined in the recent bluefish operational assessment (198,717 mt) by 2025.

[10] https://www.federalregister.gov/documents/2020/11/05/2020-24364/fisheries-of-the-northeastern-united-states-atlantic-bluefish-fishery-2021-bluefish-specifications.

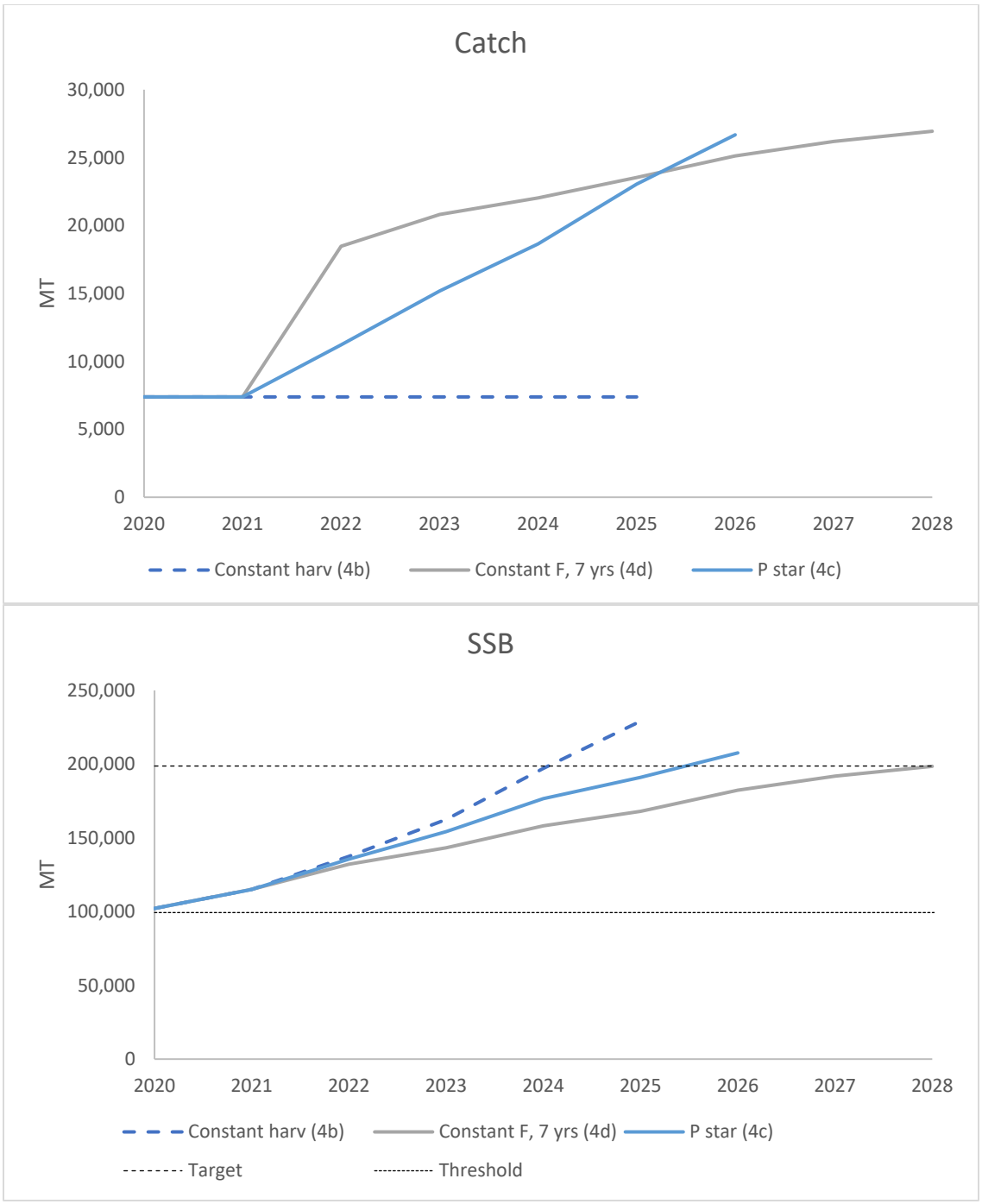


Figure 12: Rebuilding plan projections including catch (top) and SSB (bottom) for alternatives 4b, 4c, and 4c.

Table 17: Constant harvest projection to rebuild over 4 years.

Year	SSB (MT)	Recruits (000s)	F	Catch (MT)	SSBMSY (MT)	SSBthreshold (MT)
2019	92,779	43,282	0.279	22,614	198,717	99,359
2020	102,165	43,455	0.087	7,385	198,717	99,359
2021	115,085	43,428	0.075	7,385	198,717	99,359
2022	137,450	43,460	0.064	7,385	198,717	99,359
2023	162,495	43,353	0.052	7,385	198,717	99,359
2024	197,141	43,239	0.045	7,385	198,717	99,359
2025	229,121	43,379	0.039	7,385	198,717	99,359

7.1.3 P* Council Risk Policy – 5-year Rebuilding Plan (Alternative 4c)

The 5-year P* Council risk policy rebuilding alternative specifies that the stock be rebuilt by the end of 2026. The catch values shown in Table 18 are in accordance with the ABC control, which is guided by the Council's risk policy. Figure 12 provides a visual of catch and SSB rebuilding over the 5-year period. In 2022, the probability of overfishing is 29%. This coincides with a projected fishing mortality rate of F=0.098, which remains below the overfishing threshold (FMSY proxy = F35% = 0.183). Rebuilding projections indicate that this alternative would be expected to rebuild bluefish to slightly above the SSB_{MSY} proxy as defined in the recent bluefish operational assessment (198,717 mt) by 2026. As previously stated, the ABC values presented in Table 18 are based on the 2019 operational assessment and are subject to revision following each stock assessment update.

Table 18: Rebuilding projection based on P* using the Council's risk policy to rebuild over 5-years.

Year	OFL Total Catch (MT)	ABC Total Catch (MT)	ABC F	ABC Pstar	ABC SSB (MT)	SSBMSY (MT)	SSBthreshold (MT)
2019	15,368	22,614	0.280	0.183	92,732	198,717	99,359
2020	16,212	7,385	0.087	0.207	102,174	198,717	99,359
2021	17,205	7,385	0.075	0.239	115,012	198,717	99,359
2022	20,237	11,222	0.098	0.291	135,586	198,717	99,359
2023	23,998	15,181	0.113	0.338	154,257	198,717	99,359
2024	26,408	18,653	0.127	0.394	176,619	198,717	99,359
2025	28,807	23,048	0.144	0.431	191,063	198,717	99,359
2026	30,848	26,677	0.157	0.450	207,619	198,717	99,359

7.1.4 Constant Fishing Mortality – 7-year Rebuilding Plan (Alternative 4d)

The 7-year constant fishing mortality rebuilding plan alternative specifies that the fishing mortality rate be set constant across the duration of the rebuilding period with a rebuilt date set for 2028. Table 19 presents the project catch and SSB values associated with the rebuilding plan and Figure 12 presents catch and SSB over time. Starting in 2022 and for the duration of the rebuilding plan,

the fishing mortality rate is projected to be at F=0.166, which remains below the overfishing threshold. However, because these catches are higher than the P* catches described in 4c, the Council would also adjust its risk policy for this rebuilding plan. The Council's current risk policy states that the SSC should provide ABCs that are the lesser of rebuilding ABCs or standard risk policy (P*) ABCs (4c follows the current P* approach). The P* catches in 4c are lower than 4d. In absence of a risk policy adjustment, ABCs prescribed under alternative 4c would override those in 4d. The adjustment to the Council risk policy would be limited to only bluefish for this specific rebuilding alternative. Approval of this adjustment to the risk policy is necessary for the implementation of any rebuilding plan exceeding five years with the associated higher catches. Rebuilding projections indicate that this alternative would be expected to rebuild bluefish to slightly above the SSB_{MSY} proxy as defined in the recent bluefish operational assessment (198,717 mt) by 2028. As previously discussed, the catch values produced by the projection are subject to change following new stock assessment information.

Table 19: Constant 7-year F rebuilding projection.

Year	SSB (MT)	Recruits (000s)	F	Catch (MT)	SSBMSY (MT)	SSBthreshold (MT)
2019	92,755	43,320	0.279	22,614	198,717	99,359
2020	102,186	43,531	0.087	7,385	198,717	99,359
2021	115,073	43,310	0.075	7,385	198,717	99,359
2022	132,150	43,390	0.166	18,477	198,717	99,359
2023	143,271	43,292	0.166	20,813	198,717	99,359
2024	158,152	43,272	0.166	22,033	198,717	99,359
2025	168,006	43,395	0.166	23,532	198,717	99,359
2026	182,311	43,336	0.166	25,121	198,717	99,359
2027	191,855	43,578	0.166	26,191	198,717	99,359
2028	198,520	43,411	0.166	26,939	198,717	99,359

7.2 Impacts of Rebuilding Plan Alternatives

All proposed alternatives, with the exception of no action, are projected to rebuild the stock to the SSB_{MSY} proxy biomass target of 198,717 by 2028 or earlier. The catch values associated with each rebuilding plan scale up with the duration of the rebuilding period. The recreational and commercial sectors are likely to experience significantly different impacts from each rebuilding plan considering the varied duration and projected catch values.

When comparing impacts of the three rebuilding plans, individuals need to consider how a longer rebuilding timeline will affect ABCs, fishing mortality rates, and the resulting ACL, which may be constrained with various management measures, if necessary.

Social Impacts

Alternative 4a is the status quo alternative under which no action would be taken to initiate a rebuilding plan and therefore the bluefish stock would remain in an overfished state. It is likely that there would be negative social impacts from the no action alternative due to the negligence of the MAFMC to comply with its legal obligation to develop a rebuilding plan when a stock is overfished. This would likely lead to an erosion of trust and confidence among stakeholders across

user groups in the ability of the MAFMC to handle its responsibilities to ensure the equitable sustainability of the bluefish resource. According to the written and oral comments provided during the scoping process, about 40% of commenters supported some type of rebuilding plan. By contrast, about 21% doubted the overfished status of the stock or viewed the stock status as "cyclical," and 17% reported that they believed the stock to be affected by environmental factors and more research is needed on those issues. These stakeholder perspectives indicate that a plurality of resource users would prefer the MAFMC take action on rebuilding the stock, but the approach in doing so would need to be carefully considered in terms of its impacts and equitability for stakeholders across user groups.

Under alternative 4b, a constant harvest approach would be utilized until the stock is rebuilt. The projected date for the stock to be rebuilt under this scenario is the end of 2025 (4 years). This approach applies perhaps the most constraining rebuilding plan given that catch would be set at a constant level of 7,385 mt over the four-year period. Relative to the no action alternative, alternative 4b would have positive social impacts due to the MAFMC implementing a rebuilding plan as it is legally required to do, but this approach may have neutral to negative social impacts relative to the other rebuilding plan alternatives under consideration. Most commercial crew and hired captains reported through Crew Survey results that they believed the rules and regulations in their primary fisheries have been too restrictive. If the projection holds and the stock is rebuilt in four years, however, the potential negative impacts may be offset by an improved stock status and likely increases in catch thereafter, subject to constraining fishing mortality below the threshold.

Alternative 4c would utilize the MAFMC risk policy (P*) to rebuild the stock. This approach is projected to rebuild the stock by the end of 2026 (i.e., a 5-year rebuilding plan). Under this alternative, there would likely be positive social impacts relative to the no action alternative and positive impacts relative to alternative 4b, the four-year rebuilding plan. Alternative 4c provides for more catch over the course of the rebuilding plan, thus allowing more flexibility for stakeholders across user groups to continue to access the resource and potentially preserve employment and income opportunities in the short term as the stock is being rebuilt.

Under alternative 4d, the rebuilding plan would follow a constant fishing mortality approach through which the stock is projected to be rebuilt by the end of the year in 2028 (i.e., a 7-year rebuilding plan). This alternative would likely produce positive social impacts relative to the no action alternative and alternative 4b but might result in only neutral to low positive impacts relative to alternative 4c. While the amount of allowable catch is higher in the short term than under alternative 4c, the additional time to rebuild the stock might reduce the opportunities for employment and income from the bluefish resource over the longer-term relative to a shorter rebuilding plan target. However, if alternative 4d provides the greatest probability of rebuilding the stock then the potential negative impacts relative to alternative 4c might be negated by the benefits of a rebuilt stock for stakeholders to utilize across the spectrum of resource user groups. Additionally, most crew and hired captains interviewed through the Crew Surveys reported that the rules and regulations change so quickly that it can be hard to keep up. A longer rebuilding period with more gradual changes to allowable catch might reduce the amount of uncertainty in fishing business decisions and thus mitigate potential negative social impacts of a rebuilding plan.

Economic Impacts

Forecasted bluefish commercial landings and revenues are compared across the 4-year (alternative 4b), 5-year (alternative 4c), and 7-year (alternative 4d) rebuilding schedules. Landings and

revenues are estimated from 2019 to 2028 for each rebuilding plan with the expectation that each plan will be implemented in 2022. Landings and revenues for 2019 and 2020 in this analysis were based off of the values used in the projections and likely differ from 2019 and 2020 realized values because the projections were conducted before final data for these years were made available Moreover, rebuilding projections will continue to be revised every two years as the assessment is updated. For plans which indicate the stock will be rebuilt in less than 7 years, the ABC upon rebuilding the stock is assumed to equal 26,677 mt (58.8M lbs.)[11] for the remaining years in the time series, allowing for meaningful comparison between rebuilding schedules. For each plan, a minimum and maximum commercial allocation percentage was used to simulate allocations (11% and 17%, respectively, as proposed by alternatives 2a-1 and 2a-2). This analysis assumes that all allocated commercial quota is landed in each forecasted year. Revenue streams are estimated using the predicted landings and ex-vessel bluefish prices are predicted using the modeling methods and parameters specified in Appendix B. Once estimated, future revenues streams are discounted to obtain present values for each rebuilding plan. Discounting revenue streams accounts for the time value of money when assessing future benefits. We present three different discount rates (0%, 3% and 7%) which are applied to the forecasted revenue streams.[12] The 0% discount rate serves as a baseline, while the 3% and 7% discount rates are suggested by NOAA's Social Rate of Time Preference (NOAA 1999) and the Executive Branch's Office of Management and Budget Circular No. A-94 discounting recommendations, respectively.

Trends in landings by rebuilding plan are shown in Figure 13 while average landings are summarized in Figure 14, where A and B represents the 11% and 17% commercial allocations for each figure, respectively. Alternative 4b (i.e., the 4-year plan) had the lowest overall landings in terms of average landings (3.6 M lbs and 5.5 M lbs under the 11% and 17% commercial allocations, respectively). Alternative 4d had the highest average annual landings with averages of 4.9 M lbs and 7.5 M lbs under the 11% and 17% commercial allocations, respectively.

Discounted revenue streams across the various rebuilding timelines are shown in Figure 15, where the three discount rates (0%, 3% and 7%) are applied to the 11% commercial quota allocations for panels A-C and to the 17% commercial allocations in panels D-F. Additionally, average revenues by plan are presented in Figure 16 where panels A and B refer to the 11% and 17% commercial quota allocations, respectively. The highest average annual revenues by rebuilding plan follow trends similar to those of the landings results. Average annual revenues for alternative 4b range from \$1.8M-\$2.7M and \$2.8M-\$4.2M across the discounted revenue streams under the 11% and 17% commercial allocations, respectively. The highest average annual revenues range from \$2.2M-\$3.3M and \$3.5M-\$5.1M across the three discount rates under the 11% and 17% commercial allocations, respectively. Overall, alternative 4c (i.e., 7-year schedule) has the highest economic benefits and alternative 4b (i.e., 4-year schedule) the lowest, in terms of average annual bluefish landings and revenues.

Without a demand model, it is unclear how the proposed rebuilding plans will impact recreational bluefish fishing effort. However, given the high catch and release nature of the fishery, there is likely to be little shift in the demand for recreational fishing given the changes in proposed ABCs

[11] The 26,677 lbs. quantity is the terminus year of the 5-year rebuilding projection based on P* using the Mid-Atlantic Fishery Management Council's rebuilding risk policy.

[12] The discount rate is a highly disputed topic in the field of economics. The discount rates presented are used to ensure that a low and high discount rate is accounted for when presenting results.

by the rebuilding plans. Any increases in recreational TAL may have a slight positive economic impact in possibly more for-hire trips which may have higher value on catching and retaining fish. It is overall unclear to what degree recreational effort and angler expenditures will be impacted by the proposed rebuilding plans.

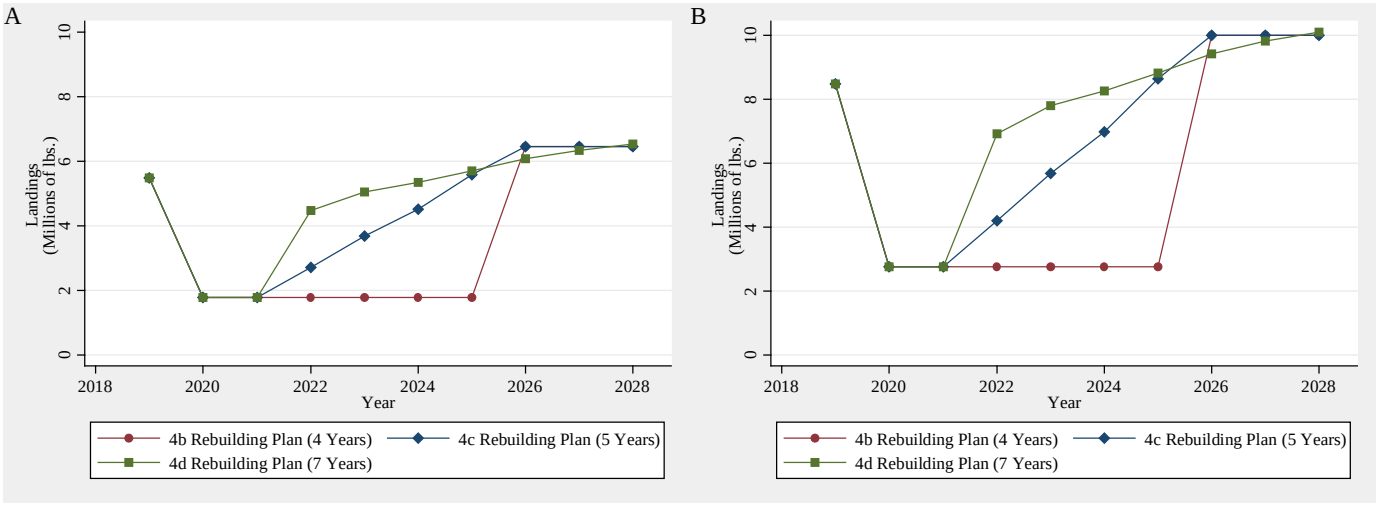


Figure 13: Projected commercial bluefish landings under an 11% and 17% commercial sector allocation (A and B, respectively) by rebuilding plan for years 2019-2028.

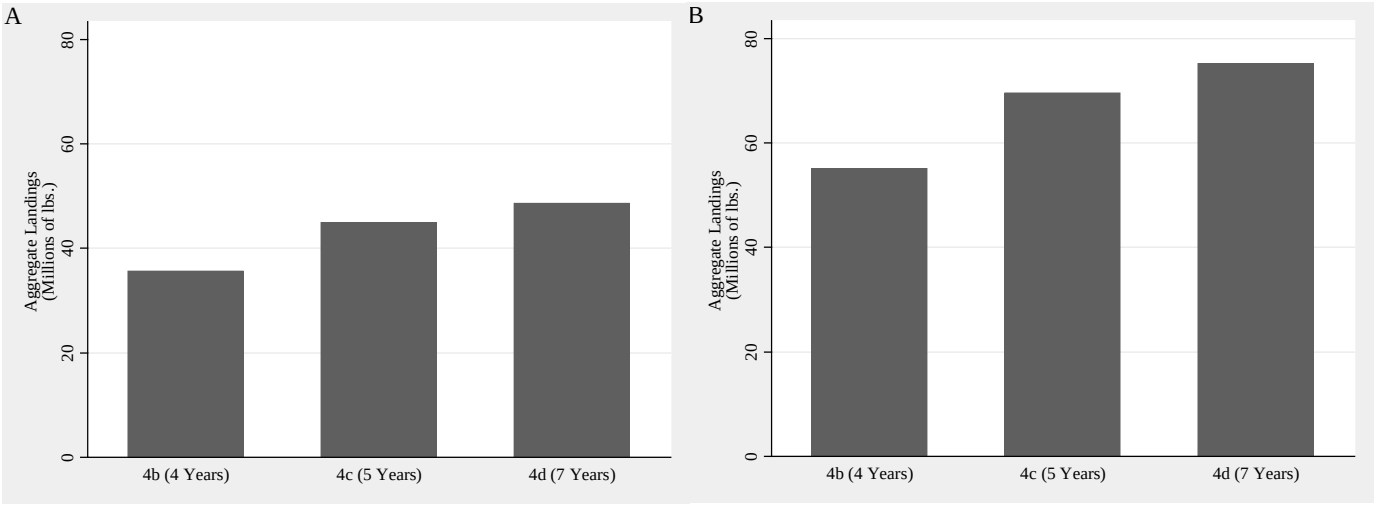


Figure 14: Average projected commercial bluefish landings (2019-2028) under an 11% and 17% commercial sector allocation (A and B, respectively) by rebuilding plan.

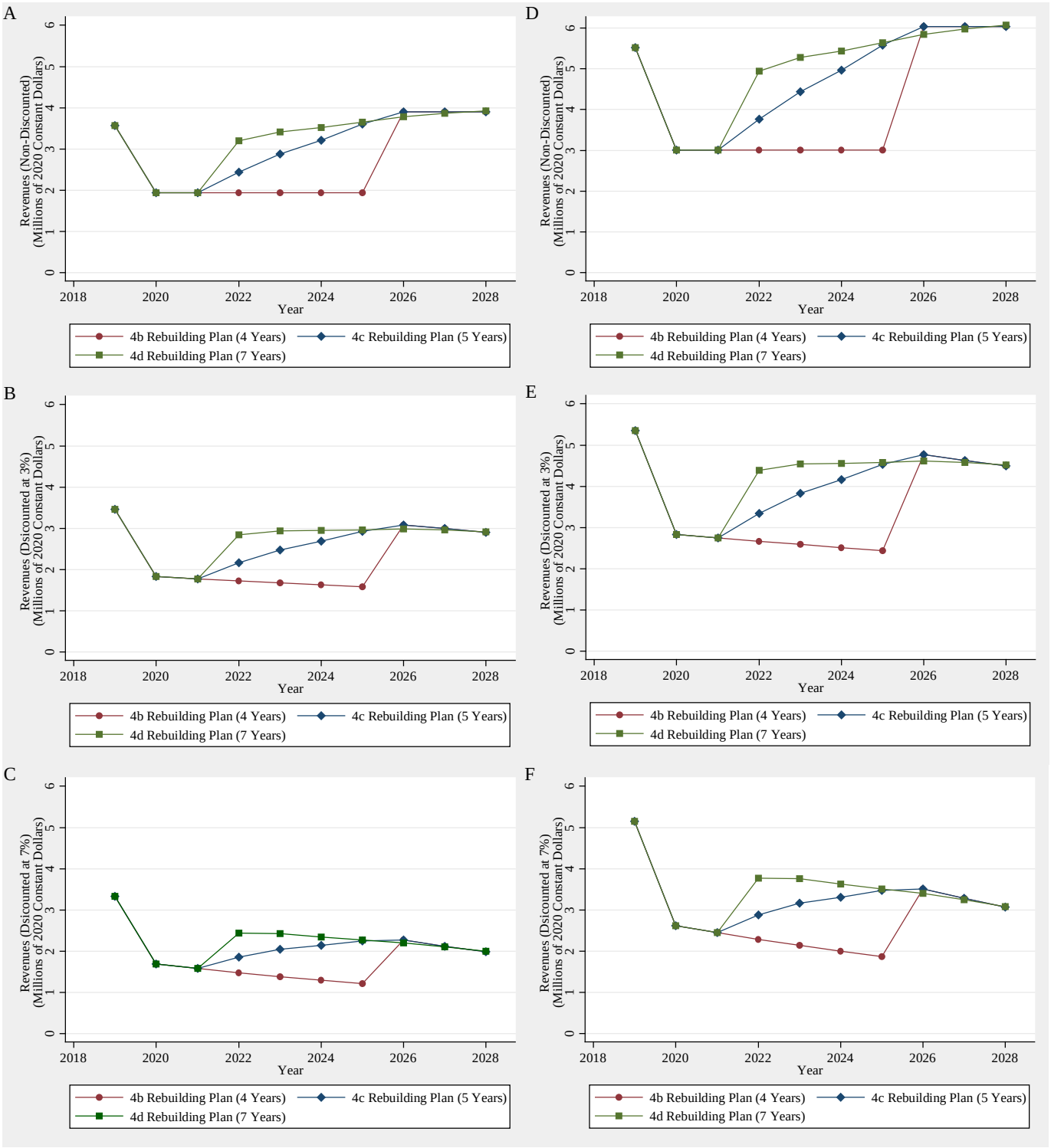


Figure 15: Estimated commercial bluefish revenues under 11% (A-C) and 17%(D-F) commercial allocations and discounted at 0%, 3%, and 7% by rebuilding plan and year (2019-2028).

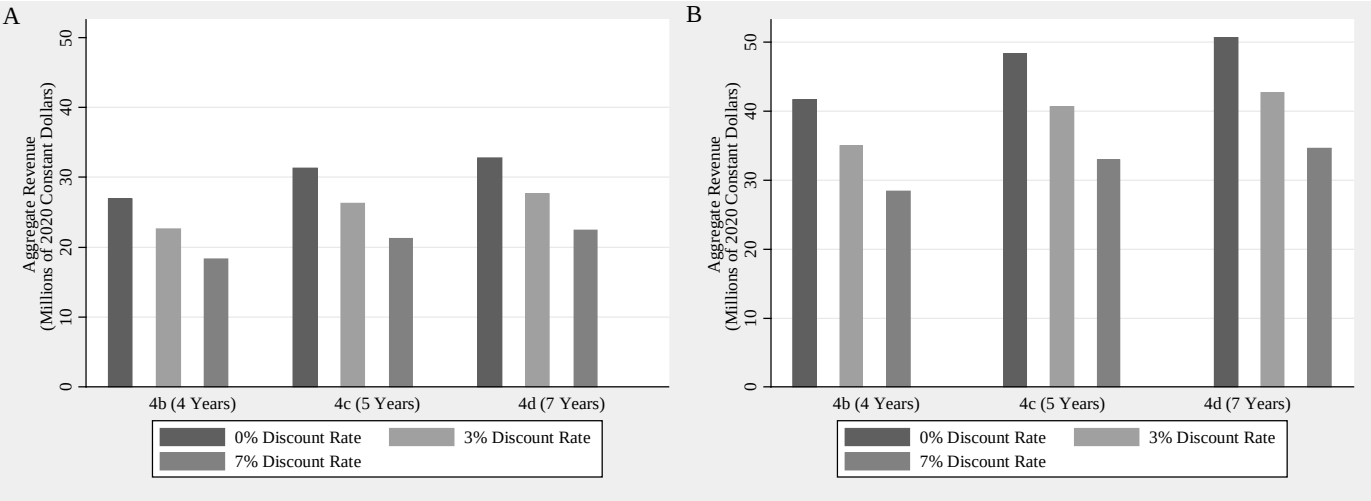


Figure 16: Average annual commercial bluefish revenues (2019-2028) discounted at 0%, 3% and 7% by rebuilding alternative and under 11% (A) and 17% (B) commercial quota allocations.

8.0 QUOTA TRANSFER ALTERNATIVES AND IMPACTS

The following alternatives describe options for allowing annual transfer of quota between the commercial and recreational sectors as part of the specifications setting process (i.e., the annual process of setting or reviewing catch and landings limits for the upcoming fishing year). Section 8.1 discusses quota transfer process alternatives while Section 8.2 addresses options for a cap on the total amount of a transfer.

8.1 Sector Transfer Provision Alternatives

8.1.1 Sector Transfer Provision Alternatives

Alternatives under consideration for quota transfer provisions are presented in Table 20.

Table 20: Alternatives for annual transfer of quota between the commercial and recreational sectors.

Alternatives	Annual Quota Transfer Alternatives
5a-1	No Action/Status Quo
5a-2	Allow for optional bi-directional transfers through the annual specifications process with pre-defined guidelines and process. The transfer would consist of a portion of the total ABC in the form of a landings limit (i.e., commercial quota and RHL) transfer. Transfers would not occur if the stock is overfished or overfishing is occurring.

Under alternative 5a-1, transfers from the recreational to the commercial sector could continue but transfers from the commercial to the recreational sector would not be included as an option in the FMP.

Under alternative 5a-2, each year during the setting or review of annual catch limits, the Council and Board would have the ability to recommend a transfer of quota between the recreational and commercial sectors, affecting the final commercial quota and RHL. The Council and Board could recommend a transfer from the commercial fishery to the recreational fishery or from the recreational fishery to the commercial fishery. The transfer amount would not exceed the cap adopted via one of the sub-alternatives under alternative set 5b. Table 21 describes how the process of transfers works within the Council and Board's current specifications process under alternative 5a-1 and would work under alternative 5a-2.

Table 21: Quota transfer process during a typical specifications cycle under alternative 5a-1. The quota transfer process would differ slightly under alternative 5a-2 as described in the green shaded rows.

July: **Assess the need for a transfer**	Staff and the Monitoring Committee (MC) assesses the potential need for a transfer and develop recommendations to the Council and Board as part of the specifications setting or review process. The MC considers the expected commercial quota and RHL (pending Council and Board review/approval) in the coming year, and each sector's performance relative to landings limits in recent years. The MC has very limited data for the current year and is not able to develop precise current year projections of landings for each sector. The MC also considers factors including but not limited to: • Projected changes in stock size, availability, or year class strength; • Recent or expected changes in management measures; • Recent or expected changes in fishing effort; The MC considers how these factors might have different impacts on the commercial and recreational sectors. The effects of these considerations are largely difficult to quantify and there is currently no methodology that allows the MC to quantitatively determine the need for a transfer with a high degree of precision. The MC uses their best judgement to recommend whether a transfer furthers the Council and Board's policy objectives, using mostly recent trends by sector.
August: **Council and Board consider whether to recommend a transfer**	The Council and Board considers MC recommendations on transfers while setting or reviewing annual catch and landings limits. Similar to the process for jointly setting catch limits, the Council and Board needs to jointly agree on the transfer amount .
August: **Alternative 5a-2**	In addition to the steps described in the row above, the Council and Board would also need to jointly consider the direction of transfer if alternative 5b-2 were to be adopted.
October: **Council staff submits specifications package to NOAA Fisheries**	Council staff prepares and submits supporting documents if needed to modify catch limits or implement transfers.

Mid-December: **Recreational measures adopted***	The Council and Board would adopt federal waters recreational measures and a general strategy for coastwide recreational management including any reductions or liberalizations needed in state waters. These recommendations are based on the expected post-transfer RHL which are not always implemented via final rule but have usually been recommended by the Council and Board and proposed to the public.
Late December: **Final specifications published**	NOAA Fisheries approves and publishes the final rule for the following year's catch and landings limits (if new or modified limits are needed), including any transfers.
January 1: **Fishing year specifications effective, including any transfers**	Fishing year specifications including any transfers would be effective January 1.
February: **NOAA Fisheries post-implementation review and adjustment**	NOAA Fisheries compares the estimate of recreational landings for the previous year to the RHL to make any necessary adjustments before finalizing the amount of quota transferred. The adjustment notice with final specifications is usually published in March/April.
February: **Alternative 5a-2**	No post-implementation reviews and adjustments to the transfer amount would occur given the final rule would recently have published, and recreational measures would have already been considered based on expected post-transfer RHLs.

*While this step is not directly part of the quota transfer process, the timing of the recreational measures setting process influences the necessary timeline of transfer-related decisions.

If transfer provisions under alternative 5a-2 are adopted, some changes to the AMs may need to be considered. The AMs indicate that if the MC determines that a transfer from the recreational to commercial sector caused the fishery-level ACL to be exceeded, the transfer amount could be deducted from the receiving fishery in a subsequent year. The Council and Board could consider whether to include these changes in this amendment or develop a follow-up action.

8.1.2 Impacts of Sector Transfer Alternatives

The impacts of transfers depend on the frequency of transfer, the amount transferred in each year, the direction of transfer between sectors, and to what extent each sector has been or is expected to achieve their limits. The impacts of a transfer are also dependent on the marginal economic value of additional allowable landings for each sector (in terms of commercial and for-hire revenues and revenues for associated commercial and recreational businesses), as well as the positive or negative impacts on angler satisfaction that may arise from modifying or maintaining recreational measures. As described below, many additional factors can influence how the commercial and recreational fisheries may be impacted by a transfer, including market conditions, overall availability of the species, availability of substitute species, and trends in effort driven by external factors.

Commercial to Recreational Transfers

If the recreational fishery receives a transfer, they will experience positive socioeconomic impacts due to outcomes such as the potential for liberalized measures, the ability to maintain measures when a reduction may otherwise be needed, and a reduced risk of an RHL or ACL overage that

may impose negative consequences in a future year. These outcomes are likely to result in maintained or increased revenues for recreational businesses as well as improved or maintained levels of angler satisfaction, compared to if no commercial to recreational transfer occurred.

In this scenario, the commercial sector would give up quota that is not expected to be fully utilized. In theory, if the decision to transfer is based on a pattern of underutilization in the commercial sector, the economic impacts to the commercial sector from such a transfer would be neutral. However, the commercial sector could experience a loss in revenue if the potential for underutilization is incorrectly evaluated. This could be due to a disconnect in the data used to evaluate the transfer and conditions in the relevant fishing year, possibly driven by changes in market conditions or fishery participation and effort.

Impacts to the commercial fisheries are not likely to be felt equally across states given different commercial quota management systems and differing quota utilizations by state. While coastwide commercial landings can frequently fall short of the total commercial quota, individual states vary considerably in utilizing or underutilizing their individual quotas. A coastwide projected underutilization could occur even if one or more states would be expected to fully utilize their quota in the upcoming year. This could have negative economic impacts to the commercial industries in states that regularly achieve their quotas.

Recreational to Commercial Transfers

If the commercial fishery receives a transfer, they will experience positive social and economic impacts in the year of the transfer due to increased revenue earning potential associated with higher potential landings. In general, quota increases tend to result in higher revenues, although some of these benefits may be partially offset by decreases in price per pound that can be associated with higher quotas. All else held constant, transfers from the recreational to commercial sector would lead to positive impacts for the commercial sector.

In theory, if the decision to transfer is based on a pattern of underutilization by the recreational sector, negative socioeconomic impacts to the recreational sector from such a transfer may not be realized. However, this would limit the potential for liberalizing recreational management measures. Since recreational harvest is more difficult to predict and control than commercial harvest, recreational management measures are frequently adjusted in order to strike an appropriate balance between conservation and angler satisfaction.

Impacts of Transfers in Either Direction

The impacts of transfers should be considered in combination with the short-term and long-term impacts associated with commercial/recreational allocation modifications under alternative set 2. However, it is difficult to do so quantitatively given the uncertainties about allocation changes as well as the uncertainties in the frequency, amount, and direction of potential transfers. In general, any annual transfers away from a sector can compound the negative impacts experienced due to a reduction in that sector's total allocation, or in the short term could partially offset the positive impacts of an increase in allocation. Annual transfers to a sector can simultaneously create additional positive impacts on top of the positive impacts of reallocation from the perspective of the receiving sector, and also exacerbate negative impacts of a loss in allocation for the donating sector.

The impacts of transfers would also be influenced by annual reductions or increases in the overall ABC based on changes in projected stock biomass and the application of the Council's risk policy. The recipient of a transfer could have some negative socioeconomic impacts from ABC reductions mitigated by receiving a transfer, while the transferring sector may experience exacerbated negative economic impacts from ABC reductions. Conversely, if the ABC were increasing, this could offset negative impacts to the transferring sector and provide additional benefits to the sector receiving the transfer.

The impacts of transfers can also be impacted by the availability and management of substitute species for a particular sector. High availability and access to recreational or commercial substitute species would help mitigate negative impacts of a transfer away from a given sector, while lower availability and access would compound these negative effects.

Social Impacts

Under alternative 5a-1, the status quo would remain, and no action would be taken to allow for bi-directional sector quota transfers. This might result in neutral to low-negative social impacts. Some stakeholders may desire and could benefit from the flexibility to transfer unused quota across sectors in both directions whenever the need or oversupply might arise.

Under alternative 5a-2, bi-directional transfers of quota across sectors would be permissible. This alternative is anticipated to have low positive social impacts relative to the no action alternative. Allowing for bi-directional transfers across sectors might improve flexibility for stakeholders throughout the fluid and changing quota needs of various stakeholders across user groups, sectors, and state lines. This may be especially helpful for some stakeholders in light of new rebuilding plans and allocation changes, which might have disparate impacts on stakeholders depending upon their initial positions and access to the resource prior to the change in allocations and implementation of a rebuilding plan.

Economic Impacts

The economic impacts of 5a-1 (status quo, recreational to commercial sector transfers, only) are expected to continue to be more or less neutral for the recreational sector and positive for the commercial sector. The commercial sector has historically utilized a portion of the additional transferred quota by increasing landings above the initial pre-transfer commercial allocation. The additional quota transferred from the recreational sector to the commercial sector may also contribute to increases in job opportunities and/or higher paying trips for crew members along with increases in revenues. A bi-directional transfer, suggested by alternative 5a-2, would only provide positive economic impacts to the recreational sector if a future quota transfer were large enough to allow for a liberalization of recreational measures. In the absence of an increase in the bag limit resulting from a higher post-transfer RHL, the recreational sector is likely to experience negligible economic impacts. Within the commercial sector, there is a slight negative economic impact associated with a bi-directional transfer which could result from miscalculations in projected commercial landings which could limit the quantity landed by the commercial sector.

8.2 Transfer Caps

8.2.1 Transfer Cap Alternatives

The no action/status quo transfer cap alternative 5b-1 keeps the existing commercial sector transfer cap in place. If the pre-transfer commercial share of the ACL is less than 10.5 million and the Council and Board determines the need for a transfer from the recreational sector to the commercial sector, the commercial quota may be allocated up to 10.5 million lb as its quota. If the Council and Board selects alternative 5b-1 along with alternative 5a-2, which allows for bi-directional transfers, no transfer cap would be implemented for the recreational sector. Specifically, if the Council and Board determines the need for a transfer from the commercial sector to the recreational sector, the transfer amount and the RHL would not be subject to any cap.

Under alternative 5b-2, any transfer from one sector to the other would be capped at 10% of the ABC (Table 22). This approach allows quota transfers to scale with biomass. The size of the transfer cap will increase and decrease with changes in the acceptable biological catch that are associated with changes in the stock size. Unlike 5b-1, transfers could still occur even when the commercial quota is above 10.5 million pounds.

Table 22: Proposed transfer caps for sector-based transfers.

Alternatives	Transfer Cap
5b-1	No Action/Status Quo
5b-2	Up to 10% of the ABC

8.2.2 Impacts of Transfer Cap Alternatives

Alternative 5b-1 10.5 million lb cap was set through Amendment 1 and was based on the average commercial landings for the period 1990-1997. The existing transfer cap was specifically designed for one-way transfers, and as such, selecting bi-directional transfers with no action on the transfer cap does not cap transfers from the commercial sector to the recreational sector. However, due to the smaller commercial allocation it is highly unlikely that the commercial sector would ever transfer more than 10.5 million lb to the recreational sector, meaning a 10.5 million lb cap on commercial to recreational transfers would not be restrictive anyway.

Alternative 5b-2 would implement a maximum transfer cap of up to 10% of the ABC. Considering a recent time series of ABCs (Table 23), 10% of the average of ABCs from 2000-2019 would result in a sector transfer of 2.97 M lbs. This estimate is smaller than the average transfer over the same time period (4.30 M lbs). However, since alternative 5b-2 is a percentage of the total ABC, future transfer amounts would scale with biomass as bluefish continues through the rebuilding plan. By comparison, the status quo alternative will result in no transfers if the commercial quota exceeds 10.5 M lbs.

Table 23: Recreational to commercial sector transfer amounts, ABCs in million lb, and estimates of retroactive 10% transfer caps from 2000-2019.

Year	Sector Transfer Amount	ABC	10% Transfer Cap
2000	0	36.840	3.684
2001	3.150	37.840	3.784
2002	5.933	29.100	2.910
2003	4.161	39.500	3.950
2004	5.085	34.215	3.422
2005	5.254	34.215	3.422
2006	5.367	29.150	2.915
2007	4.780	32.033	3.203
2008	4.088	31.887	3.189
2009	4.838	34.081	3.408
2010	5.387	34.376	3.438
2011	4.772	31.744	3.174
2012	5.052	32.044	3.204
2013	4.686	27.472	2.747
2014	3.340	24.432	2.443
2015	1.579	21.544	2.154
2016	1.577	19.456	1.946
2017	5.033	20.642	2.064
2018	3.535	21.815	2.182
2019	4.000	21.820	2.182

Economic Impacts

The economic impact of sector transfer caps on the commercial bluefish sector are investigated by comparing realized landings data to predicted landings under a 10% ABC cap transfer scenario over 2001-2019.[13] Revenues are also estimated under these two scenarios. Ex-vessel bluefish prices are estimated using the price model and methods described in Appendix B. Revenues are estimated as opposed to incorporating realized revenues in order to establish an equal comparison between the status quo transfer cap alternative (5b-1) and the 10% ABC transfer cap alternative (5b-2) and their economic implications. Quotas under alternative 5b-2 are estimated using the historic ABC's for each year and for each of the sector allocation sub-alternatives presented in section 5.1.1 (i.e., 2a-1 to 2a-5). Then 10% of the ABC is added to the pre-transfer quantities to produce the post-transfer values. Similar to previous economic analyses, it is assumed that all allocated quota is landed when comparing the projected commercial quotas under alternative 5b-2 to the realized landings. It should be noted that in every year in the time series, realized landings have been less than the full allocation generated under the 5b-2 scenario (Figure 17). If the proposed transfer cap had been implemented over the time series, and all else was held constant, landings would not have been restricted by the transfer cap. Further, in some years (2001, 2015, and 2016) the realized post-transfer quantities are less than the 5b-2 scenario[14] such that a transfer

[13] Sector transfers occurred on an annual basis from 2001-2019.
[14] The realized sector transfer was less than 10% of the ABC.

cap equal to 10% of the ABC would not have impacted landings in these years even if the full historic post transfer landings had been fully utilized.

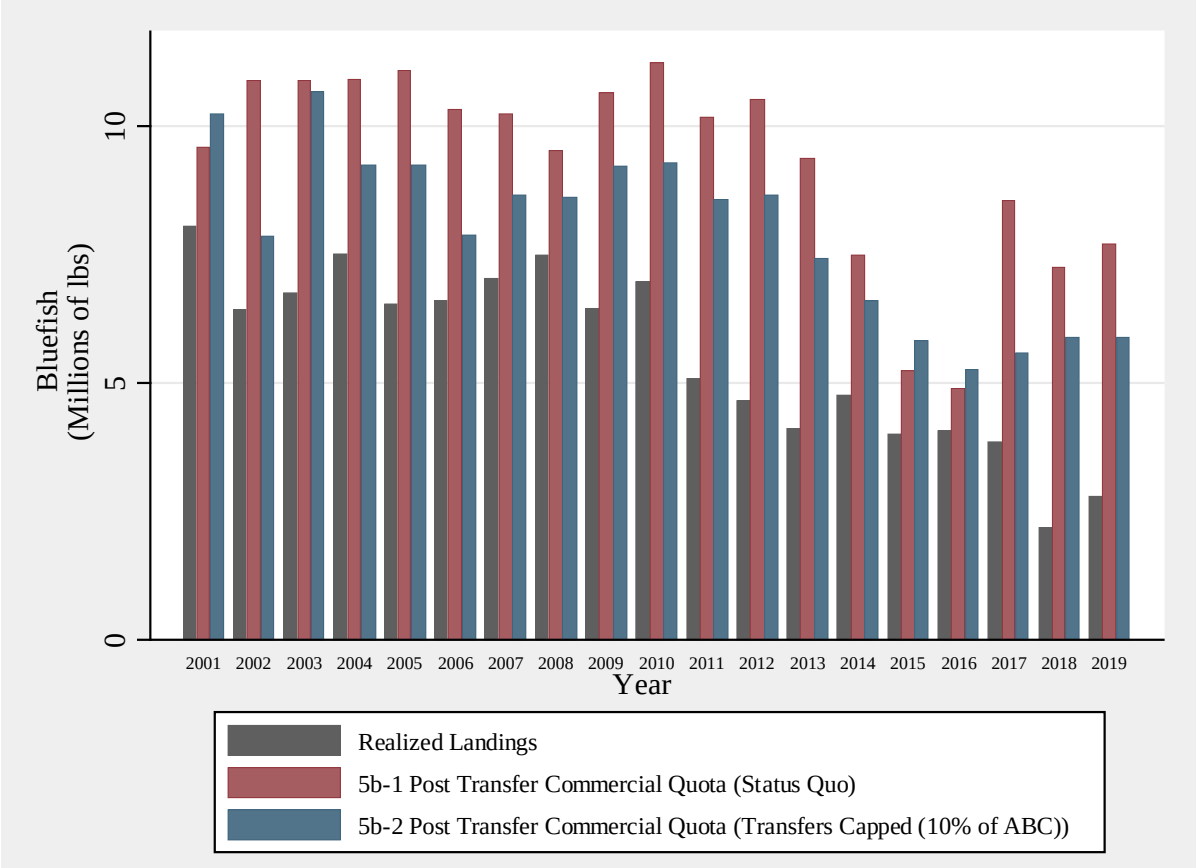


Figure 17: Realized bluefish landings, historical post-transfer commercial bluefish quotas under the status quo alternative 5b-1, and post-transfer commercial bluefish quota with a transfer cap of 10% of the ABC (5b-2) applied over 2001 to 2019.

There are only a handful of years where predicted landings under the 5b-2 transfer scenario are less than realized landings when investigated across the proposed commercial allocations described in section 5.1.1 (Figure 18). Specifically, there are only six years where predicted landings are less than realized landings, all occurring under the 2a-2 (11% commercial allocation) alternative.

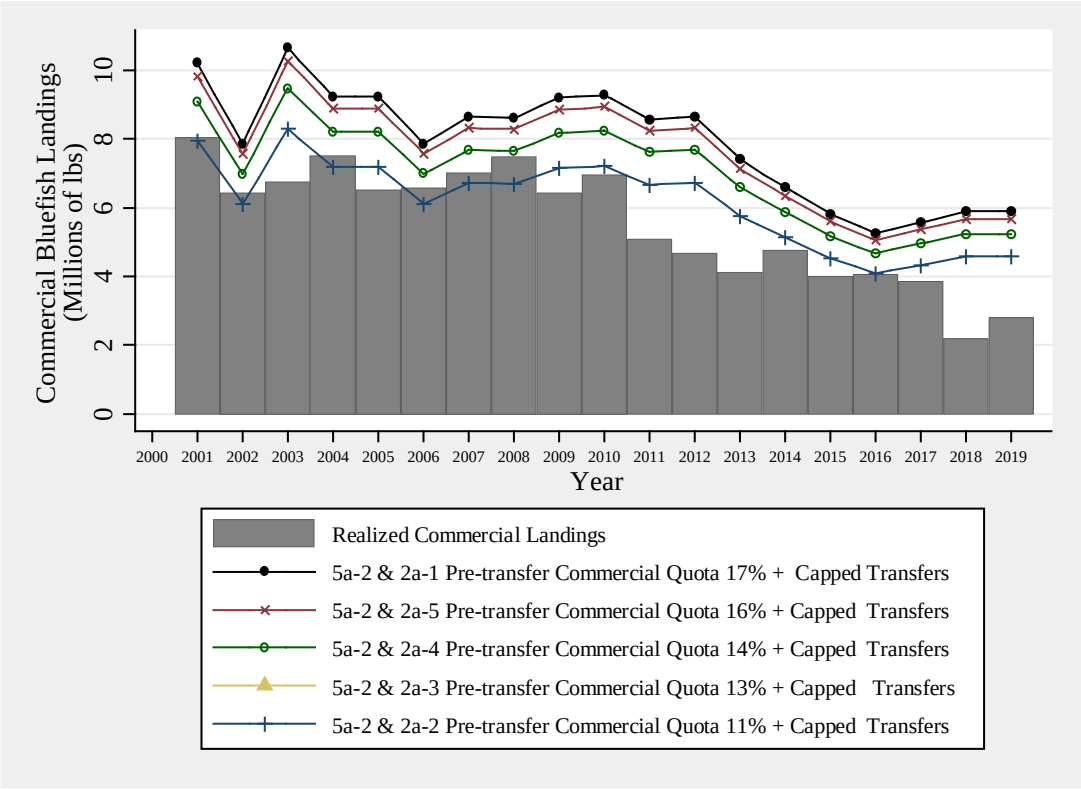


Figure 18: Realized commercial bluefish landings and predicted commercial landings under the 10% ABC cap transfer scenario across proposed commercial allocation alternatives from 2001-2019.

Despite the few instances where realized landings are less than landings predicted under the 5b-2 scenario, estimated revenues are higher under all 5b-2 landings scenarios relative to revenues estimated under the realized landings scenario (Figure 19). This result is driven by the inverse relationship between ex-vessel price and landings (described further in Appendix B). However, higher revenues under the 5b-2 transfer scenario are heavily reliant on the price model which only describes about 68% of the variability in annual prices and is informed by a limited sample size.

In summary, realized commercial bluefish landings are almost always less than the possible landings under the 5b-2 transfer scenario. In the six cases where realized landings *do* exceed landings from the capped transfer scenarios, the differences in revenue are marginal. Overall, there are few cases where bluefish landings/revenues are expected to be impacted by the implementation of a sector transfer cap of 10% of the ABC.

The economic impacts of implementing a 10% cap on sector transfers on the recreational sector of the bluefish fishery are expected to be negligible. Although, these caps would limit the transfer quantities from the commercial sector to the recreational sector, recreational harvest, effort, and expenditures are not expected to be impacted by this sub-alternative unless a sector transfer resulted in the need to adjust recreational measures. In reverse, transfers from the recreational to the commercial sector only occur when the recreational sector is predicted to harvest quantities below the recreational RHL, such that the existence of a transfer cap should not impact recreational harvest, effort, or expenditures.

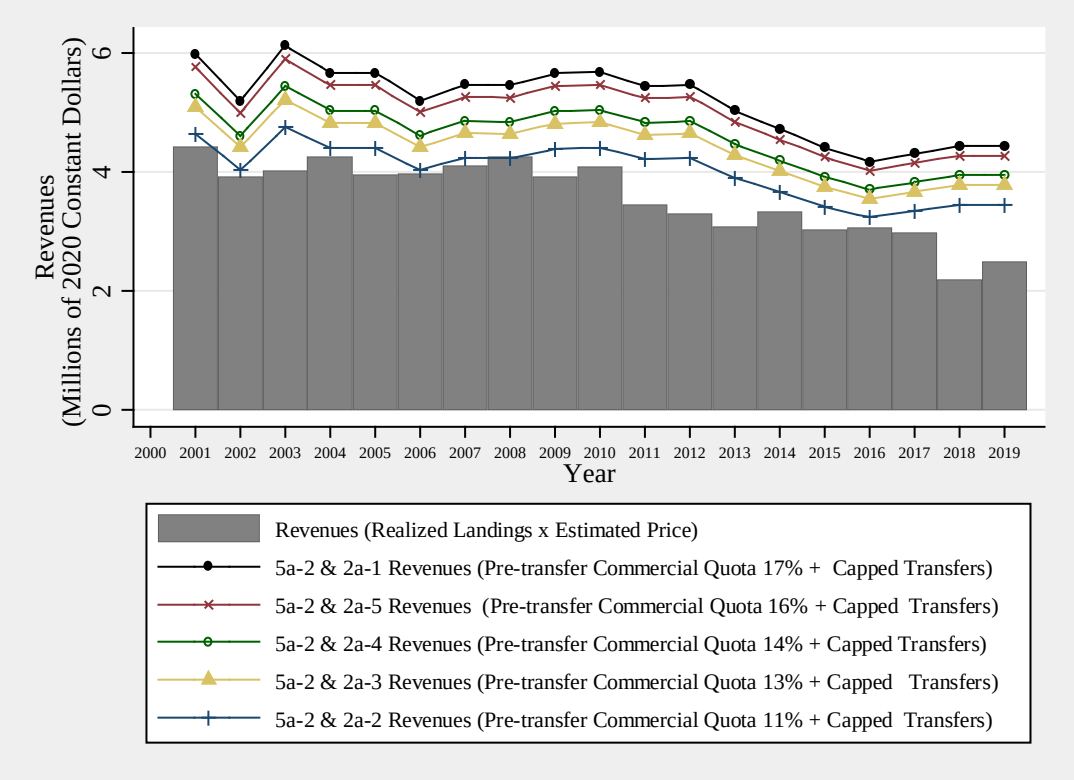


Figure 19: Estimated commercial bluefish revenues (realized landings multiplied by estimated ex-vessel bluefish price) and estimated commercial revenues under the 10% ABC cap sector transfer scenarios across proposed sector allocation alternatives from 2001-2019.

9.0 MANAGEMENT UNCERTAINTY ALTERNATIVES AND IMPACTS

9.1 Management Uncertainty Alternatives

This alternative set is included to modify how the Monitoring Committee accounts for management uncertainty (Table 24). In the current FMP, the fishery-level ACL may be reduced by a buffer to account for sources of management uncertainty. The ACL minus the management uncertainty buffer equals the ACT as displayed in the bluefish flowchart (Figure 20). The Monitoring Committee annually identifies and reviews the relevant sources of management uncertainty to recommend ACTs for the commercial and recreational fishing sectors as part of the bluefish specification process. The status quo option (alternative 6a) would maintain the bluefish flowchart as displayed in Figure 20, which demonstrates that any uncertainty buffer applied to the fishery-level ACL applies to both sector specific ACTs equally. Alternative 6b would provide greater flexibility by establishing ACLs and ACTs for each sector as displayed in the bluefish flow chart in Figure 21. Specifically, the proposed flowchart allows for management uncertainty to be

accounted for within each sector. This targeted approach would allow for the identification of sources of management uncertainty that are specific to one sector and are not present in the other.

Table 24: Proposed management uncertainty alternatives.

Alternatives	Management Uncertainty Alternatives
6a	No Action/Status Quo
6b	Post-Sector Split

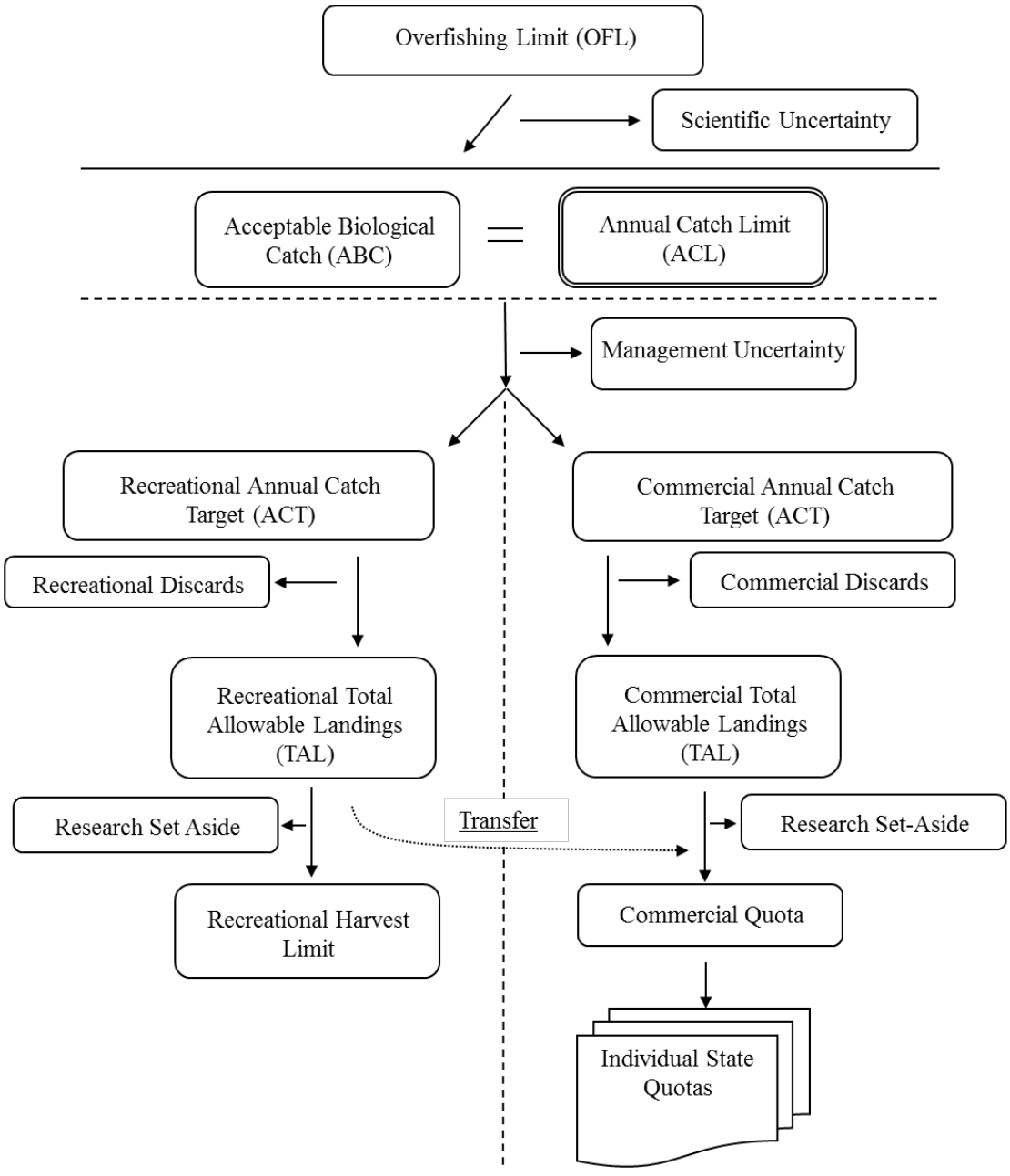


Figure 20: Current bluefish flow chart representing a reduction for management uncertainty prior to the sector split.

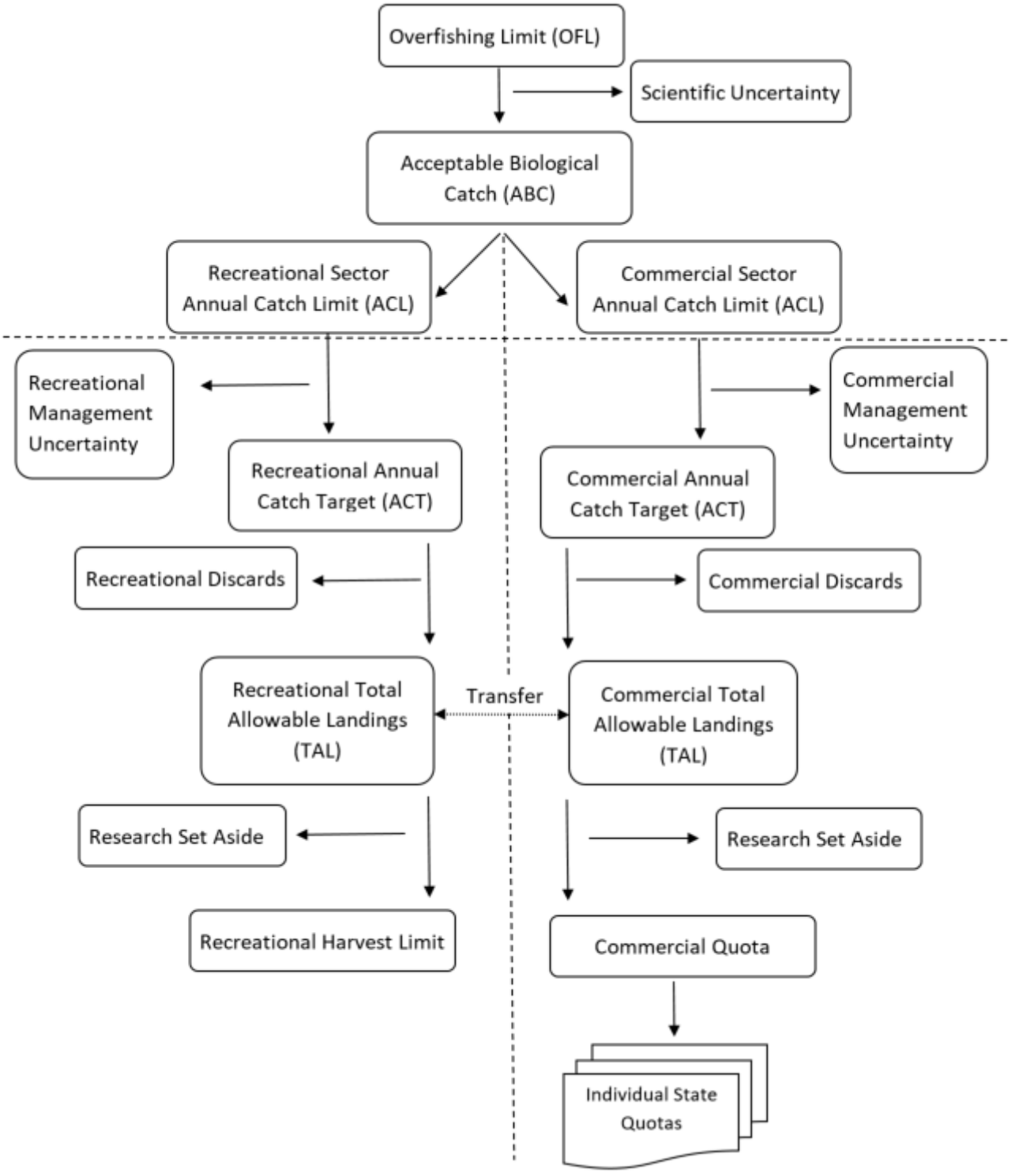


Figure 21: Proposed bluefish flow chart including sector specific management uncertainty.

9.2 Impacts of Management Uncertainty Alternatives

Identifying sources of management uncertainty and applying a buffer to reduce the probability of exceeding an ACL is a helpful tool in the management toolkit. However, the status quo alternative (6a) is lacking in its inability to specifically target sources of uncertainty that are present in one sector and not the other. In the current FMP, the management uncertainty buffer is applied to the fishery-level ACL prior to the sector split and as such has the unintended consequence of reducing both sector's ACLs regardless of the source of management uncertainty. Alternative 6b allows for a more targeted approach, where management uncertainty can be addressed by reducing one sector's ACL to the ACT while leaving the other sector unaffected.

The following example is used for demonstrative purposes only. Under alternative 6a, if the Council and Board are concerned about the lack of data on commercial discards and believe this to be a source of management uncertainty, the fishery-level ACL may be reduced by an agreed upon buffer. According to the flowchart in Figure 20, this reduction trickles down to both the commercial and recreational sectors' ACTs. This negatively impacts the recreational sector's catch and landings limits despite the fact that the source of the management uncertainty was the commercial sector. To avoid these cascading effects, the Council and Board could decide to not implement management uncertainty despite the associated greater potential risk of exceeding the ABC. Using this same example under alternative 6b, the Council and Board has the ability to reduce the commercial sector's ACT through the application of a management uncertainty buffer to the commercial sector ACL. This would leave the recreational sector's ACL unaffected and would not negatively impact the recreational sector's catch or landings limits.

Without the ability to apply sector specific management uncertainty buffers, Council and Board members are faced with the difficult decision of applying management uncertainty to both sectors indiscriminately, or not applying management uncertainty at all and risking potential overages in the fishery-level ACL or ABC.

Ultimately, alternative 6b might have neutral to low positive impacts for resource user groups. If management uncertainty disproportionately affects one sector over another, keeping the process in its current order could continue to frustrate and constrain some stakeholders who might otherwise benefit from determining uncertainties after dividing out sector catch targets. Furthermore, alternative 6b is expected to have minimal to no economic impacts on the commercial and recreational bluefish sectors.

The adoption of alternative 6b would require adjustments to the AMs as currently written. The evaluation of catch overages would transition from the fishery-level ACL to sector specific ACLs. The adoption of sector specific ACLs also has implications for the transfer process. For the purpose of maintaining accurate accounting and accountability of the ACL, both sector's ACLs would be adjusted to reflect the transfer at the landings limit level. If alternative 6b is selected by the Council and Board, the AM regulations would be updated through the federal rule making process for this amendment.

10.0 DE MINIMIS PROVISIONS

Under the Commission's current FMP, states which land less than 0.1% of the coastwide commercial landings in the year prior are exempt from fishery independent monitoring

requirements for the following year. However, the federal plan does not require states to submit fishery independent monitoring reports, and as such has no de minimis provision.

10.1 De Minimis Provision Alternatives

The de minimis alternative set is presented in Table 25. Under the no action/status quo alternative (7a), de minimis status would remain excluded from the Federal Bluefish Amendment and maintain the status quo de minimis provision in the Commission Amendment.

Alternative 7b expands upon the Commission's current de minimis provision. A state's three-year average of combined recreational and commercial landings compared against coastwide landings for the same period with a 1% threshold would be used to determine status. A de minimis determination would exempt the state from recreational measures in addition to the existing exemption of the requirement to conduct fishery independent monitoring. Since de minimis states would be exempt from coastwide recreational measures in state waters, there is potential for recreational effort to shift to de minimis states and for landings to become substantial before adequate action can be taken. To mitigate this de minimis states are encouraged to implement recreational bag limits which would deter shifts in effort to their state.

Alternative 7c provides that a state would be granted de minimis status if the three-year average of the state's combined recreational and commercial landings were less than 1% of coastwide landings during the same period. A de minimis determination would allow a state to maintain a set of minimum default recreational measures in addition to the existing exemption of the requirement to conduct fishery independent monitoring. At the October 2020 meeting, the Board and Council agreed that the fixed set of minimum default measures would consist of a bag limit of 3 fish for anglers fishing from shore or private vessels and 5 fish for anglers fishing on a for-hire trip, no minimum size, and an open season all year. These measures are consistent with the coastwide measures that were implemented in 2020.

Table 25: Proposed de minimis provision alternatives.

Alternatives	De Minimis Alternatives
7a	No Action/Status Quo
7b	Recreational De Minimis
7c	Recreational De Minimis with Default Plan Provisions

10.2 Impacts of De Minimis Provision Alternatives

Alternative 7a is anticipated to have neutral social impacts to the majority of stakeholders to the bluefish resource across user groups and sectors. Taking no action on the de minimis provision is expected to have low negative social impacts to recreational anglers that fish within state waters of de minimis states. These anglers would be subject to the coastwide recreational measures, which as of winter 2021 consist of a 3-fish bag limit for private anglers and a 5-fish bag limit for for-hire party and charter vessels. During the scoping process, the Georgia Department of Natural Resources provided a written request to alter the de minimis provision to allow for an exemption of restrictive recreational measures. GA, along with SC and ME have historically qualified for de minimis status. In the short term, alternative 7b would likely provide more liberalized recreational

measures for anglers operating within these states' waters as well as any states that meet the requirements of de minimis status in the future.

Alternatives 7b and 7c complicate coastwide management of bluefish from an enforcement perspective. Anglers will need to be cognizant of the differing regulations between state and federal waters, as well as differing regulations when crossing state lines from a non de minimis state to a de minimis state. However, these concerns are already at play when states implement recreational measures within state lines under the Commission's conservation equivalency policy that differ from the coastwide measures. Alternative 7b would allow for a greater variety of state measures compared to alternative 7c, which would maintain just one default set of de minimis measures.

From a catch accounting perspective, the proposed de minimis provision in alternative 7b would reduce a state's accountability for its recreational harvest in the short term. Currently, the plan ensures that all states are held accountable by annually evaluating the need to adjust recreational measures to insure coastwide recreational catch does not exceed the RHL. A state that meets the de minimis criteria would not be held accountable in the same way, which raises questions about fairness and equity across state user groups. However, if a de minimis states' recreational landings increase significantly due to an unforeseen increase in angler effort, the state may exceed the 1% coastwide landings threshold and no longer be afforded de minimis status in the coming year. As such, that state will be held accountable and be required to implement recreational measures through the standard specifications process. By comparison, alternative 7c requires more restrictive measures, which has a greater likelihood of constraining de minimis states to low levels of catch.

Ultimately, the de minimis alternative 7b-2 would result in minor economic benefits for states that meet the de minimis criteria. Currently, there is an opportunity cost associated with abiding to the coastwide bluefish recreational regulations, such that relieving a state from adhering to these regulations would give a slight economic advantage to these low-landing states.

11.0 REFERENCES

Bloznelis, D. (2018). Short-term salmon price forecasting. Journal of Forecasting, 37(2), 151-169. DOI: 10.1002/for.2482 http://onlinelibrary.wiley.com/doi/10.1002/for.2482/epdf *(1) (PDF) Short-term salmon price forecasting*. Available from: [accessed Oct 16 2020].

Burdge, R. J. (2003). The practice of social impact assessment background. Impact Assessment and Project Appraisal, 21(2), 84-88.

Colburn, L. L., & Jepson, M. (2012). Social indicators of gentrification pressure in fishing communities: a context for social impact assessment. *Coastal Management*, *40*(3), 289-300.

Gordon, D.V., 2020. A Short-Run ARDL-Bounds Model for Forecasting and Simulating the Price of Lobster. *Marine Resource Economics*, *35*(1), pp.43-63.

Henry, A. E., & Olson, J. A. (2014). An overview of the survey on the socio-economic aspects of commercial fishing crew in the northeast. NOAA Technical Memorandum. NMFS-NE-230.

Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission. (2020). Bluefish Allocation and Rebuilding Amendment Scoping Comments

Summary. https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5ef373a9d57bcf1ee8f3bfff/1593013179226/3_BF+scoping+comment+summary_Final.pdf.

Northeast Fisheries Science Center (NEFSC). 2015. Bluefish Benchmark Stock Assessment. 60th SAW Assessment Report. 870 p. Available at: http://www.asmfc.org/uploads/file/55d2392c2015BluefishBenchmarkStockAssessment.pdf.

National Oceanic and Atmospheric Administration (NOAA). 1999. *Discounting and the Treatment of Uncertainty in Natural Resource Damage Assessment: Technical Paper 99-1*. Silver Spring, MD. Available at: https://casedocuments.darrp.noaa.gov/northeast/athos/pdf/NOAA%201999.pdf.

National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS). 2007. "NOAA/NMFS Council Operational Guidelines – Fishery Management Process. Appendix 2(g) Guidelines for Assessment of the Social Impact of Fishery Management Actions." NATIONAL MARINE FISHERIES SERVICE INSTRUCTION 01-111-02. https://media.fisheries.noaa.gov/dam-migration/01-111-02.pdf.

Silva, Angela, Gentile, Lauren E., Cutler, Matthew J., and Colburn, Lisa L. (Forthcoming). A Comparison of Waves I (2012/2013) and II (2018/2019) of the Survey on the Socio-economic Aspects of Commercial Fishing Crew in the Northeast U.S." NOAA Technical Memorandum.

Tai, T.C., Cashion, T., Lam, V.W., Swartz, W. and Sumaila, U.R., 2017. Ex-vessel fish price database: Disaggregating prices for low-priced species from reduction fisheries. *Frontiers in Marine Science*, *4*, p.363.

12.0 APPENDIX A SUPPLEMENTAL SOCIAL IMPACTS

Social Impacts

National Standard 8 (NS8) requires the Council to consider the importance of fishery resources to affected communities and provide those communities with continuing access to fishery resources, but it does not allow the Council to compromise the conservation objectives of the management measures. Thus, continued overall access to fishery resources is a consideration, but not a guarantee that fishermen would be able to use a particular gear type, harvest a particular species of fish, fish in a particular area, or fish during a certain time of the year.

A fundamental difficulty exists in forecasting social change relative to management alternatives, since communities or other societal groups are constantly evolving in response to external factors (e.g., market conditions, technology, alternate uses of waterfront, tourism). Certainly, fishery regulations influence the direction and magnitude of social change, but attribution is difficult with the tools and data available.

While the focus here is on the social impacts of the alternatives, external factors may also influence change, both positive and negative, in the affected communities. External factors may also lead to unanticipated consequences of a regulation, due to cumulative impacts. These factors contribute to a community's ability to adapt to new regulations. When examining potential social impacts of management measures, it is important to consider impacts on the following: the fishing fleet (vessels grouped by fishery, primary gear type, and/or size); vessel owners and employees (captains and crew); bluefish dealers and processors; final users of bluefish; community cooperatives; fishing industry associations; cultural components of the community; and fishing families. While some management measures may have a short-term negative impact on some communities, these should be weighed against potential long-term benefits to all communities which can be derived from a sustainable bluefish fishery.

Social Impact Factors

The social impact factors outlined below can be used to describe the Atlantic bluefish fishery, its sociocultural and community context, and its participants. These factors or variables are considered relative to the management alternatives and used as a basis for comparison between alternatives. Use of these kinds of factors in social impact assessment is based on NOAA Fisheries guidance (NMFS 2007) and other texts (e.g., Burdge 1998). Longitudinal data describing these social factors region-wide and in comparable terms is limited. Qualitative discussion of the potential changes to the factors characterizes the likely direction and magnitude of the impacts.

The social impact factors fit into five categories:

1. *Size and Demographic Characteristics* of the fishery-related workforce residing in the area; these determine demographic, income, and employment effects in relation to the workforce as a whole, by community and region.
2. The *Attitudes, Beliefs, and Values* of fishermen, fishery-related workers, other stakeholders and their communities; these are central to understanding the behavior of fishermen on the fishing grounds and in their communities.
3. The *Social Structure and Organization*; that is, changes in the fishery's ability to provide necessary social support and services to families and communities, as well as effects on the community's social structure, politics, etc.

4. The *Non-Economic Social Aspects* of the fishery; these include lifestyle, health, and safety issues, and the non-consumptive and recreational uses of living marine resources and their habitats.
5. The *Historical Dependence on and Participation in* the fishery by fishermen and communities, reflected in the structure of fishing practices, income distribution, and rights (NMFS 2007).

Community Fishing Engagement and Social Vulnerability Indicators

In addition to traditional economic indicators such as landings and revenue, fishing communities can also be understood in terms of overall engagement in the commercial and recreational fishery and other social and economic community conditions. NOAA Fisheries social scientists produce indicators of commercial and recreational fishing engagement, reliance, and other community characteristics for virtually all fishing communities throughout the United States, referred to as the Social Indicators of Fishing Community Vulnerability and Resilience (Colburn and Jepson 2012). The Social Indicators are composite indices of factors that comprise community-level latent constructs, such as commercial fishing engagement or social vulnerability. The strength of these indicators is that they provide greater depth and contextualization to our understanding of fishing communities than the more commonly utilized landings and revenue statistics. The Social Indicators provide a more comprehensive view of fishing communities by including social and economic conditions that can influence the viability of commercial and recreational fishing activities, such as gentrification pressure, poverty, and housing characteristics, among other factors.

2009-2018 Recreational Engagement and Reliance

The Recreational Engagement Indicator is a numerical index that reflects the level of a community's engagement in recreational fisheries relative to other communities in the Northeast and Mid-Atlantic. This index was generated using a principal components factor analysis (PCFA) of variables related to recreational fishing activity from the NOAA Fisheries MRIP datasets. PCFA is a common statistical technique used to identify factors that are related, yet linearly independent, and likely represent a latent or unobservable concept when considered together, such as factors that contribute to the level of a community's social vulnerability or engagement in commercial fishing. The variables that were identified to best reflect community engagement in recreational fisheries included; 1) the total number of shore trips per community for each year; 2) the total number of charter trips per community for each year; and 3) the total number of private recreational trips per community for each year. The Recreational Reliance Indicator is calculated by dividing these three variables by the total community population obtained from the U.S. Census Bureau's American Community Survey (ACS). It should be noted that a high engagement score does not necessarily mean that a community or its fishery participants are solely dependent upon recreational fishing activities. There may be other fishing or economic activities that may sustain the livelihoods of individuals or entities within these communities that have relied on recreational fishing historically.

Figure 2 displays the factor scores for the Recreational Engagement Indicator for the fifteen communities that have the highest average recreational engagement between 2009 and 2018. The index factor scores are commonly categorized from low to high based on the number of standard deviations from the mean, which is set at zero. Categories rank from 0.00 or below as "low", 0.00 – 0.49 as "medium," and 0.50 – 0.99 as "medium-high," and 1 standard deviation or above as

"high." All of the ports displayed in Figure 1 have "high" recreational engagement. However, there has also been substantial year-to-year variability in recreational engagement for many of these ports. For example, communities in Florida with high average engagement have seen large increases in engagement in recent years relative to the earlier part of the time series, whereas communities in New York and New Jersey have experienced wide fluctuations over time in their extent of recreational fishing engagement.

Figure 3 shows the factor scores for the Recreational Reliance Indicator for the fifteen communities that have the highest average recreational reliance between 2009 and 2018. A comparison of Figure 2 and Figure 3 reveals that some highly engaged communities may not be as highly reliant on recreational fisheries due to the size of those communities and the accompanying opportunities for other social and economic activities. Among the five most highly reliant communities on recreational fisheries over the period of 2009 to 2018 were Barnegat Light, NJ, Topsail Beach, NC, Orient, NY, Hatteras (and all other communities throughout the Outer Banks), NC, and Montauk, NY. In recent years, Nags Head, NC, and Melbourne Beach, FL, have increased considerably in their reliance on recreational fisheries.

Community Social Vulnerability Indicators

The Community Social Vulnerability Indicators (CSVI) include indices of labor force structure, housing characteristics, poverty, population composition, and personal disruption. The labor force structure index measures the makeup of the labor force and is reversed scored so that a higher factor score represents fewer employment opportunities and greater labor force vulnerability. The housing characteristics index measures vulnerability related to infrastructure and home and rental values. It is also reversed score so that a higher score represents more vulnerable housing infrastructure. The poverty index captures multiple different factors that contribute to an overall level of poverty in a given area. A higher poverty index score would indicate a greater level of vulnerability due to a higher proportion of residents receiving public assistance and below federal poverty limits. The population composition index measures the presence of vulnerable populations (i.e., children, racial/ethnic minorities, and/or single-parent, female-headed households) and a higher score would indicate that a community's population is composed of more vulnerable individuals. Finally, the personal disruption index considers variables that affect individual-level vulnerability primarily and include factors such as low individual-level educational attainment or unemployment. Higher scores of personal disruption likely indicate greater levels of individual vulnerability within a community, which can in turn impact the overall level of community social vulnerability.

Gentrification Pressure Indicators include housing disruption, urban sprawl, and retiree migration. The Housing Disruption Index combines factors that correspond to unstable or shifting housing markets in which home values and rental prices may cause residents to become displaced. The Urban Sprawl Index indicates the extent of population increase due to migration from urban centers to suburban and rural areas, which often results in cost of living increases and gentrification in the destination communities. The Retiree Migration Index characterizes communities by the concentration of retirees or individuals above retirement age whose presence often raises the home values and rental rates, as well as increase the need for health care and other services. These

components of gentrification pressure influence the degree to which the current residents, communities, and local economies can remain in place, generally, and the extent to which those in the fishing industry in these communities are able to withstand or overcome changes to fisheries conditions and management, specifically. As places go through the process of gentrification, housing becomes less available and/or unaffordable for the existing population and the historically significant local fishing businesses and industries that had once thrived become displaced or replaced by new and emerging industries, such as tourism, finance, real estate, and service.

Data used to develop these indices come from multiple secondary data sources, but primarily the U.S. Census ACS at the place level (Census Designated Place and Minor Civil Division). More information about the data sources, methods, and other background details can be found online at https://www.st.nmfs.noaa.gov/humandimensions/social-indicators/. Table 27A displays the CSVI categorical scores for all of the highly engaged and/or reliant communities on recreational fishing activities. Table 28A displays CSVI categorical scores for all highly engaged communities in commercial bluefish fishery activities.

Socio-Economic Survey of Hired Captains and Crew in New England and Mid-Atlantic Commercial Fisheries (Crew Survey)

The Socio-Economic Survey of Hired Captains and Crew in New England and Mid-Atlantic Commercial Fisheries (hereafter referred to as the Crew Survey) is an ongoing effort conducted by the Social Sciences Branch of the National Oceanic and Atmospheric Administration Fisheries Northeast Fisheries Science Center intended to gather general information about the characteristics and experiences of commercial fishing crew members (including hired captains) because little is known about this critical segment of the commercial fishing industry. Information collected by the survey include demographic information, wage calculations systems, well-being, fishing practices, job satisfaction, job opportunities, and attitudes towards fisheries management, among other subjects. There have been two waves of Crew Survey data collection thus far – Wave 1 in 2012-13 and Wave 2 in 2018-19.

Table 26A: 2018 Community Social Vulnerability Indicator Categorical Scores for Recreational Fishing Communities.

Community	Poverty	Labor Force	Housing Characteristics	Population Composition	Personal Disruption	Housing Disruption	Retiree Migration	Urban Sprawl
Slaughter Beach, DE	Low	High	Low	Low	Low	High	High	Low
Cape Canaveral, FL	Low	Med-High	Med-High	Low	Low	Med-High	Med-High	Low
Jacksonville, FL	Medium	Low	Medium	Medium	Medium	Low	Low	Low
Jacksonville Beach, FL	Low	Low	Low	Low	Low	High	Low	Low
Melbourne Beach, FL	Low	Medium	Low	Low	Low	Medium	Med-High	Low
Church Creek, MD	Low	Low	Medium	Low	Medium	Medium	Low	Low
Nanticoke, MD	Low	Med-High	Low	Low	Low	Low	High	Low
Ocean City, MD	Low	Medium	Med-High	Low	Low	Med-High	Med-High	Low
Hatteras/Outer Banks, NC	Med-High	Low	Medium	Low	Med-High	Med-High	Medium	Low
Hobucken, NC	High	Low	Low	Low	Medium	Low	Med-High	Low
Morehead City, NC	Medium	Medium	Med-High	Low	Medium	Medium	Medium	Low
Nags Head, NC	Low	Low	Low	Low	Low	High	Low	Low
Ocracoke, NC	Med-High	Med-High	Low	Medium	High	Low	Med-High	Low
Topsail Beach, NC	Medium	Med-High	Low	Low	Low	Low	Med-High	Low
Atlantic Highlands, NJ	Low	Low	Low	Low	Low	Medium	Low	Medium
Barnegat Light, NJ	Low	High	Low	Low	Low	High	High	Med-High
Cape May, NJ	Low	Med-High	Low	Low	Low	High	High	Medium
Babylon, NY	Low	Low	Low	Low	Low	Med-High	Low	High
Montauk, NY	Low	Medium	Low	Low	Low	High	Med-High	Med-High
Orient, NY	Low	High	Low	Low	Low	High	High	Med-High
Narragansett/Point Judith, RI	Low	Medium	Low	Low	Low	Med-High	Medium	Low
Pawleys Island, SC	Low	High	Low	Low	Low	Medium	High	Low
Virginia Beach, VA	Low	Low	Low	Medium	Low	Medium	Low	Low
Wachapreague, VA	Low	Med-High	Medium	Low	Low	Low	Med-High	Low

Table 27A: 2018 Community Social Vulnerability Indicator Categorical Scores for Commercial Bluefish Fishing Communities.

Community	Poverty	Labor Force	Housing Characteristics	Population Composition	Personal Disruption	Housing Disruption	Retiree Migration	Urban Sprawl
Chatham, MA	Low	High	Low	Low	Low	High	High	Medium
Gloucester, MA	Low	Low	Low	Low	Low	Medium	Low	Medium
New Bedford, MA	High	Low	Medium	Med-High	Med-High	Medium	Low	Med-High
Provincetown, MA	Low	Medium	Low	Low	Low	High	Med-High	Med-High
Hatteras, NC	Low	High	Low	Low	Low	Low	High	Low
Wanchese, NC	Low	Low	Med-High	Medium	Low	Medium	Low	Low
Barnegat Light, NJ	Low	High	Low	Low	Low	High	High	Med-High
Belford, NJ	Low	Low	Low	Low	Low	High	Low	Medium
Cape May, NJ	Low	Med-High	Low	Low	Low	High	High	Medium
Point Pleasant Beach, NJ	Low	Medium	Low	Low	Low	High	Medium	Med-High
Amagansett, NY	Low	Med-High	Low	Low	Low	High	Med-High	High
Greenport, NY	Low	Medium	Low	Medium	Medium	High	Medium	Med-High
Hampton Bays/Shinnecock, NY	Low	Low	Low	Medium	Low	High	Medium	Med-High
Montauk, NY	Low	Medium	Low	Low	Low	High	Med-High	Med-High
Narragansett/Pt Judith, RI	Low	Medium	Low	Low	Low	Med-High	Medium	Low

13.0 APPENDIX B PRICE MODEL

To assess the economic impacts of the various rebuilding alternatives as well as estimation of revenues under various landing scenarios, ex-vessel bluefish prices require estimation. In lieu of well-developed market supply and demand models, an inverse-demand based price model is used to estimate ex-vessel bluefish prices. Though price and quantity demanded are jointly determined such that Gauss Markov assumptions of exogeneity are violated, here, we assume harvest is weakly exogenous to ex-vessel price given the quota allocations and seasonal constraints which cause fishermen to maximize catch in order to maximize profits (Gordon 2020). This specification implies that the decision to fish is independent of ex-vessel prices. This assumption, as well as ex-vessel price models, are not uncommon in fishery economics literature. [15]

The Generalized Least Squares bluefish price model is given as:

$$(\log)\text{Ex-vessel Price}_t = \alpha + \beta_1 (\log)\text{Landings}_t + \text{AR}_t \qquad \text{(Equation A)}$$

where the dependent variable is the natural logarithm of average annual ex-vessel bluefish price [16] ($/lb.) and the dependent variable is the natural log of total annual bluefish landings, t is time (i.e., years) and AR is an autoregressive error term. The dependent and independent variables are logged because the relationship between ex-vessel prices and landings is not expected to be strictly linear such that the slope of the regression is not assumed to be constant. The logged GLS model was implemented in place of a logged OLS model as the error term is suggested to be serially correlated over time with a Durbin-Watson d statistic of 0.72. After the implementation of the Prais–Winsten GLS estimator, the Durbin-Watson statistic was transformed to 1.67. It should be noted that additional models were taken into consideration after autocorrelation was detected, including a Cochrane-Orcutt AR(1) regression, linear autoregressive integrated moving-average (ARIMA) specified models with AR(2-5), an OLS regression with the inclusion of a lagged ex-vessel price, and a separate OLS regression with a lagged landings variable. Given the dependence of the lagged OLS regression on the previous year's price, the lack of significance on the AR(n) coefficients when the lag is greater than one [17], along with the consideration of RMSE's, the Prais-Winsten GLS with an AR(1) error term was chosen. The Prais-Winsten was selected over the Cochrane-Orcutt given a lower RMSE and a Durbin-Watson statistic closer to 2. The Prais-Winsten GLS model parameters and results are shown in Table 29B.

[15] Gordon (2020), Bloznelis (2018) and Tai (2017) offer thorough reviews of various price models and their respective methods.

[16] Prices were adjusted to 2020 constant dollars using the Annual, Seasonally Adjusted, Gross Domestic Implicit Price Deflator (2012=100) https://fred.stlouisfed.org/series/GDPDEF.

[17] $\alpha = 0.01$

Table 28B: Prais-Winsten Generalized Least Squares (GLS) logged ex-vessel bluefish price model results.

Variable	Coefficient	Standard Error	t	P>t	95% Confidence Interval	
Ln Landings	-0.543	0.0951	-5.71	0	-0.74	-0.35
Constant	7.753	1.435	5.40	0	4.78	10.73
ρ	0.688		**Durbin-Watson Statistic (original)**			0.72
R-squared	0.68		**Durbin-Watson Statistic (transformed)**			1.67
Number of Obs.	24		**Root Mean Square Error**			0.08

Both price and landings data were retrieved from the Commercial Fisheries Database (CFDERS) from 1996 to 2019. About 68% of the variability in logged average ex-vessel bluefish prices are explained by logged total annual landings. Modeling the inverse relationship between prices and landings aids in more precisely estimating revenues given various expected landing quantities. The logged price variables are retransformed using Duan's smearing method to avoid inciting heteroskedastic errors. Average realized ex-vessel prices and estimated prices by year are shown in Figure 24B. Average annual predicted ex-vessel prices range from $0.55 to $0.98 per lb with an average price of $0.66/lb. Average realized prices range from $0.46 to $1.03/lb and average $0.66/lb across the time series.

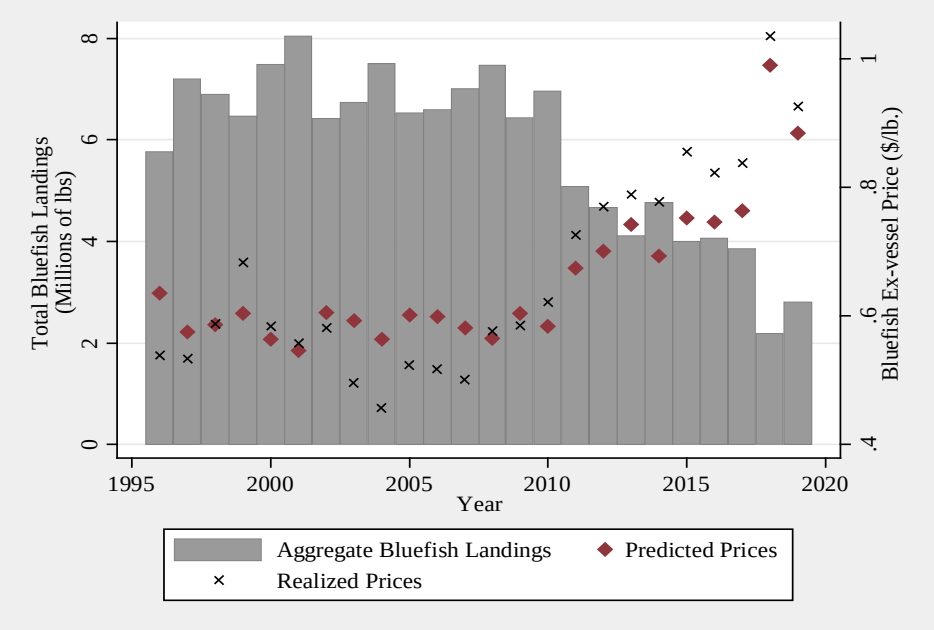


Figure 22B: Realized and predicted ex-vessel bluefish prices and realized commercial bluefish landings by year (1996-2019).

14.0 APPENDIX C SUPPLEMENTAL MINIMUM DEFAULT TABLES

Table 29C: Bluefish state-by-state allocation percentage point shift along the U.S. Atlantic coast using different proposed time series and a minimum default allocation of 0.10% while incorporating a phase-in approach.

0.1% Minimum Default Allocation		**Min. Def. Status quo**			**5 year (2014-2018)** - 3a-2			**10 year (2009-2018)** - 3a-3			**1/2 '81-'89 1/2 '09-'18** - 3a-4		
State	**Current Allocations**	**4-year**	**5-year**	**7-year**	**4-year**	**5-year**	**7-year**	**4-year**	**5-year**	**7-year**	**4-year**	**5-year**	**7-year**
ME	0.67%	0.02%	0.02%	0.01%	-0.14%	-0.11%	-0.08%	-0.14%	-0.11%	-0.08%	-0.02%	-0.02%	-0.01%
NH	0.41%	0.02%	0.02%	0.01%	-0.07%	-0.06%	-0.04%	-0.05%	-0.04%	-0.03%	0.00%	0.00%	0.00%
MA	6.71%	0.00%	0.00%	0.00%	0.97%	0.78%	0.55%	0.85%	0.68%	0.49%	0.24%	0.19%	0.13%
RI	6.80%	0.00%	0.00%	0.00%	1.24%	0.99%	0.71%	0.70%	0.56%	0.40%	0.20%	0.16%	0.11%
CT	1.26%	0.02%	0.02%	0.01%	0.00%	0.00%	0.00%	-0.04%	-0.03%	-0.02%	0.00%	0.00%	0.00%
NY	10.37%	-0.01%	-0.01%	-0.01%	2.44%	1.95%	1.39%	2.35%	1.88%	1.34%	0.64%	0.51%	0.37%
NJ	14.79%	-0.02%	-0.02%	-0.01%	-0.90%	-0.72%	-0.52%	-0.24%	-0.19%	-0.13%	-0.08%	-0.07%	-0.05%
DE	1.88%	0.02%	0.01%	0.01%	-0.30%	-0.24%	-0.17%	-0.35%	-0.28%	-0.20%	-0.08%	-0.07%	-0.05%
MD	3.00%	0.01%	0.01%	0.01%	-0.36%	-0.29%	-0.20%	-0.27%	-0.22%	-0.15%	-0.06%	-0.05%	-0.04%
VA	11.86%	0.00%	0.00%	0.00%	-1.80%	-1.44%	-1.03%	-1.50%	-1.20%	-0.86%	-0.41%	-0.33%	-0.23%
NC	32.01%	-0.08%	-0.07%	-0.05%	-0.07%	-0.06%	-0.04%	0.00%	0.00%	0.00%	-0.06%	-0.05%	-0.03%
SC	0.10%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.00%
GA	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
FL	10.04%	-0.01%	0.00%	0.00%	-0.99%	-0.79%	-0.57%	-1.32%	-1.05%	-0.75%	-0.37%	-0.29%	-0.21%

Table 30C: Bluefish state-by-state allocation percentage point shift along the U.S. Atlantic coast using different proposed time series and a minimum default allocation of 0.25% while incorporating a phase-in approach.

0.25% Minimum Default Allocation		Min. Def. Status quo			5 year (2014-2018) - 3a-2			10 year (2009-2018) - 3a-3			1/2 '81-'89 1/2 '09-'18 - 3a-4		
State	**Current Allocations**	**4-year**	**5-year**	**7-year**	**4-year**	**5-year**	**7-year**	**4-year**	**5-year**	**7-year**	**4-year**	**5-year**	**7-year**
ME	0.67%	0.06%	0.04%	0.03%	-0.10%	-0.08%	-0.06%	-0.10%	-0.08%	-0.06%	0.01%	0.01%	0.01%
NH	0.41%	0.06%	0.05%	0.03%	-0.03%	-0.03%	-0.02%	-0.01%	-0.01%	-0.01%	0.04%	0.03%	0.02%
MA	6.71%	0.00%	0.00%	0.00%	0.95%	0.76%	0.54%	0.84%	0.67%	0.48%	0.23%	0.19%	0.13%
RI	6.80%	0.00%	0.00%	0.00%	1.21%	0.97%	0.69%	0.69%	0.55%	0.39%	0.19%	0.15%	0.11%
CT	1.26%	0.05%	0.04%	0.03%	0.03%	0.03%	0.02%	-0.01%	-0.01%	-0.01%	0.04%	0.03%	0.02%
NY	10.37%	-0.03%	-0.02%	-0.02%	2.37%	1.90%	1.35%	2.28%	1.82%	1.30%	0.61%	0.49%	0.35%
NJ	14.79%	-0.06%	-0.05%	-0.04%	-0.93%	-0.74%	-0.53%	-0.27%	-0.22%	-0.16%	-0.12%	-0.10%	-0.07%
DE	1.88%	0.05%	0.04%	0.03%	-0.27%	-0.21%	-0.15%	-0.31%	-0.25%	-0.18%	-0.05%	-0.04%	-0.03%
MD	3.00%	0.04%	0.03%	0.02%	-0.33%	-0.26%	-0.19%	-0.24%	-0.19%	-0.14%	-0.04%	-0.03%	-0.02%
VA	11.86%	-0.02%	-0.02%	-0.01%	-1.79%	-1.43%	-1.02%	-1.49%	-1.19%	-0.85%	-0.43%	-0.34%	-0.24%
NC	32.01%	-0.21%	-0.17%	-0.12%	-0.20%	-0.16%	-0.12%	-0.13%	-0.10%	-0.07%	-0.19%	-0.15%	-0.11%
SC	0.10%	0.05%	0.04%	0.03%	0.04%	0.03%	0.02%	0.04%	0.03%	0.02%	0.04%	0.04%	0.03%
GA	0.10%	0.04%	0.03%	0.02%	0.04%	0.03%	0.02%	0.04%	0.03%	0.02%	0.04%	0.03%	0.02%
FL	10.04%	-0.02%	-0.02%	-0.01%	-0.98%	-0.79%	-0.56%	-1.30%	-1.04%	-0.74%	-0.37%	-0.30%	-0.21%

Table 31C: Bluefish state allocations under a trigger threshold for all commercial allocation time series and a minimum default allocation of 0.10%.

Allocation of additional quota beyond the trigger threshold with a Minimum Default Allocation of 0.10%.				
State	**Status quo (1981-1989)**	**5 year (2014-2018)**	**10 year (2009-2018)**	**1/2 '81-'89 1/2 '09-'18**
ME	0.10%	0.10%	0.10%	0.10%
NH	0.10%	0.10%	0.10%	0.10%
MA	7.50%	16.60%	18.88%	7.50%
RI	7.50%	16.60%	7.50%	7.50%
CT	3.00%	3.00%	3.00%	3.00%
NY	15.12%	16.60%	18.88%	17.03%
NJ	15.12%	16.60%	18.88%	17.03%
DE	3.00%	0.10%	0.10%	3.00%
MD	3.00%	3.00%	3.00%	3.00%
VA	15.12%	3.00%	7.50%	17.03%
NC	15.12%	16.60%	18.88%	17.03%
SC	0.10%	0.10%	0.10%	0.10%
GA	0.10%	0.10%	0.10%	0.10%
FL	15.12%	7.50%	3.00%	7.50%
Total	100%	100%	100%	100%

Table 32C: Bluefish state allocations under a trigger threshold for all commercial allocation time series and a minimum default allocation of 0.25%.

Allocation of additional quota beyond the trigger threshold with a Minimum Default Allocation of 0.25%.				
State	**Status quo (1981-1989)**	**5 year (2014-2018)**	**10 year (2009-2018)**	**1/2 '81-'89 1/2 '09-'18**
ME	0.10%	0.10%	0.10%	0.10%
NH	0.10%	0.10%	0.10%	0.10%
MA	7.50%	16.60%	18.88%	7.50%
RI	7.50%	16.60%	7.50%	7.50%
CT	3.00%	3.00%	3.00%	3.00%
NY	17.03%	16.60%	18.88%	17.03%
NJ	17.03%	16.60%	18.88%	17.03%
DE	3.00%	0.10%	0.10%	3.00%
MD	3.00%	3.00%	3.00%	3.00%
VA	17.03%	3.00%	7.50%	17.03%
NC	17.03%	16.60%	18.88%	17.03%
SC	0.10%	0.10%	0.10%	0.10%
GA	0.10%	0.10%	0.10%	0.10%
FL	7.50%	7.50%	3.00%	7.50%
Total	100%	100%	100%	100%

15.0 APPENDIX D ACRONYMS AND ABBREVIATIONS

ABC	Acceptable Biological Catch
ACL	Annual Catch Limit
ACS	American Community Survey
ACT	Annual Catch Target
AM	Accountability Measure
Board	The Commission's Bluefish Management Board
Commission	Atlantic States Marine Fisheries Commission
Council	Mid-Atlantic Fishery Management Council
CSVI	Community Social Vulnerability Indicators
FMAT	Fishery Management Action Team
FMP	Fishery Management Plan
GARFO	Greater Atlantic Regional Fisheries Office
MC	Monitoring Committee
MRIP	Marine Recreational Information Program
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NOAA	National Oceanic and Atmospheric Administration
NEFSC	Northeast Fisheries Science Center
NMFS	National Marine Fisheries Service
PCFA	Principal Components Factor Analysis
RHL	Recreational Harvest Limit
SSB	Spawning Stock Biomass
SSC	Scientific and Statistical Committee
TAL	Total Allowable Landings

Bluefish Allocations and Rebuilding Amendment

FMAT Meeting: January 12, 2021 from 9:00 - 11:00 a.m.
Meeting Summary (Dated: January 20, 2021)

Attendees

FMAT members: Matt Seeley, Dustin Colson-Leaning, Cynthia Ferrio, Michael Celestino, Samantha Werner, Ashleigh McCord, Tony Wood, and Matt Cutler

Meeting objectives

The objectives of this meeting were for the Fishery Management Action Team (FMAT) to review and discuss the social and economic impacts of each alternative and to review and provide preliminary feedback on a first draft of the public hearing document (PHD). The draft PHD will be presented to the Council and Board for approval on February 10, 2021 from 1:00 – 4:00 p.m.

Meeting summary

The FMAT began by reviewing the amendment action plan and next steps. A question was raised concerning whether the Bluefish Committee still plans to meet prior to final action, and whether this would be a joint meeting with the Bluefish Management Board (Board). Staff acknowledged that this is typically a step taken in the amendment process, but a date and the specifics have yet to be confirmed. Nonetheless, any meeting of the Committee would be done jointly with the Board.

The FMAT then provided general feedback on the draft PHD, and the main highlights are covered below.

- FMAT members suggested that the impacts of the proposed goals and objectives should include a discussion of equitability across recreational angler modes (for-hire, private, etc.)
- The FMAT discussed the importance of defining the differences between percentage changes, percent point differences, and percentage shifts in the PHD tables.
- FMAT members indicated that there should be more discussion on the allocation change impacts to the recreational sector, even if the impacts are discussed qualitatively.
- The FMAT recommended additional discussion of the interplay between the different alternative sets in the impacts section of each management approach. Many of the alternatives are intertwined and have trickle down effects which should be highlighted for the general public to consider when providing comments.
- The draft PHD contained a table that compared projected landings limits for 2021 under each rebuilding plan. The FMAT removed the table due to the numerous assumptions and high probability that the 2021 landings limits may differ substantially from the projections.
- The FMAT suggested adding a figure that displays all three rebuilding plans.

Bluefish Allocation and Rebuilding Amendment - Action Plan

(Updated as of September 2020)

Amendment Goal

The goal of this amendment is to review and possibly revise the allocation between the commercial and recreational fisheries and the commercial allocations to the states. This action is needed to rebuild the bluefish stock, avoid overages, achieve optimum yield, prevent overfishing, and reduce the need for quota transfers off the U.S. east coast.

Fishery Management Action Team

The Council will form a team of technical experts, known as a Fishery Management Action Team (FMAT) to develop and analyze management alternatives for this amendment. The FMAT is led by Council staff and includes management partners from the National Marine Fisheries Service (NMFS) Greater Atlantic Regional Fisheries Office (GARFO), the Northeast Fisheries Science Center (NEFSC), the Southeast Fishery Management Council (SAFMC), and the Atlantic States Marine Fisheries Commission (ASMFC). The FMAT will work with other experts to address specific issues, as needed.

FMAT Membership

Name	Role/Expertise	Agency
Matthew Seeley	FMAT Chair	MAFMC
Danielle Palmer	Protected Resources	NMFS GARFO
David Stevenson	Habitat Conservation	NMFS GARFO
Cynthia Ferrio	Sustainable Fisheries	NMFS GARFO
Ashleigh McCord	NEPA	NMFS GARFO
Tony Wood	Population Dynamics	NEFSC
Matthew Cutler	Social Sciences	NEFSC
Samantha Werner	Economist	NEFSC
Dustin Colson Leaning	Plan Coordinator	ASMFC
Mike Celestino	Bluefish Technical Committee	NJDFW

Applicable Laws

Magnuson-Stevens Act	Yes
National Environmental Policy Act	Yes – will require an Environmental Assessment or Environmental Impact Statement
Administrative Procedure Act	Yes
Regulatory Flexibility Act	Yes
Paperwork Reduction Act	Possibly; depends on data collection needs
Coastal Zone Management Act	Possibly; depends on effects of the action on the resources of the coastal states in the management unit
Endangered Species Act	Possibly; level of consultation will depend on the actions taken
E.O. 12866 (Regulatory Planning and Review)	Yes
E.O. 12630 (Takings)	Possibly; legal review will confirm
E.O. 13123 (Federalism)	Possibly; legal review will confirm
E.O. 13771 (Reducing Regulation and Controlling)	Possibly; legal review will confirm
Essential Fish Habitat	Possibly
Social Impact Analysis	Possibly
Information Quality Act	Yes

Expected Document

Acronym	NEPA Analysis	Requirements
EA	**Environmental Assessment**	**NEPA applies, no scoping required, public hearings required under MSA**
EIS	Environmental Impact Statement	NEPA applies, scoping required, public hearings required

Draft Timeline for Amendment Development and Implementation

Task Description	Date (subject to change)
Initiation and request of FMAT participants	December 2017
Formation of FMAT	January 2018
Initial FMAT discussion	March 2018
ASMFC meeting - review scoping plan and document	May 2018
Scoping hearings / scoping comment period	June-July 2018
Council Meeting - review scoping comments and FMAT, Advisory Panel (AP), and Monitoring Committee recommendations; discuss next steps	August 2018
AP Meeting - review amendment goals and objectives, FMAT recommendations, develop recommendations for alternatives; any amendment issues?	July 2019
FMAT Meeting – review comments and develop draft alternatives	August 2019
Joint Council and Board Meeting – discuss incorporating rebuilding and review the issues to be covered in the Amendment	October 2019
Joint Council and Board Meeting – approve supplemental scoping document for additional scoping hearings	December 2019
Supplemental scoping hearings / scoping comment period	February-March 2020
FMAT Meeting – review comments and provide recommendations for the scope of the action	April 2020
Joint Council & Board Meeting - review scoping comments and FMAT recommendations; identify potential alternatives to consider	May 2020
FMAT Meeting – develop draft alternatives	May 2020
AP Meeting – provide recommendations on draft alternatives	June 2020
Joint Bluefish Committee and Board Meeting - review and refine draft alternatives	June 2020
FMAT Meeting – refine draft alternatives for the August Joint Council Board Meeting	July 2020
Joint Council & Board Meeting – review and refine draft alternatives	August 2020
FMAT Meeting – finalize draft alternatives for the October Joint Council Board Meeting	September 2020
Joint Council & Board Meeting – review and approve alternatives for public hearing document	October 2020

Development of public hearing document and hearing schedule	October 2020-January 2021
Joint Council & Board Meeting – approve public hearing document	February 2021
Public hearings	March/April 2021
AP Meeting - recommendations for final action	March/April 2021
Bluefish Committee Meeting - recommendations for final action	Spring 2021
Joint Council & Board Meeting - final action	May/June 2021
Submission of draft EA/EIS to GARFO	Summer 2021
Draft EA/EIS revisions and resubmission	Summer/Fall 2021
Rulemaking (proposed rule)	Fall 2021
Rulemaking (final rule)	Winter 2021