Mid-Atlantic Fishery Management Council
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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: December 2, 2020

To: Chris Moore, Executive Director

From: Kiley Dancy, Karson Coutre, and Julia Beaty, Staff

Subject: Approval of Public Hearing Document and Commission Draft Amendment Document for the Summer Flounder, Scup, and Black Sea Bass Commercial/Recreational Allocation Amendment

On Wednesday, December 16, the Council and Board will review and possibly approve a joint public hearing document for the Summer Flounder, Scup, and Black Sea Bass Commercial/Recreational Allocation Amendment. In addition, the Board will review and possibly approve the Commission's draft amendment document, which must be approved and released to the public 30 days prior to the first public hearing. Public hearings should be completed in February 2021 to ensure that any changes implemented through this action can be in place by January 1, 2022.

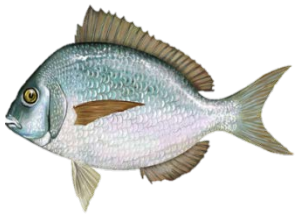
The briefing materials for this meeting include:

1) Draft joint public hearing document
2) FMAT meeting summary from November 5, 2020
3) White paper: Potential Effects of Alternative Allocation of Catch to Recreational and Commercial Sectors on the Probability of Overfishing
4) Action plan

The Commission's draft amendment document will be posted as supplemental on the meeting page.

Summer Flounder, Scup, and Black Sea Bass Commercial/Recreational Allocation Amendment

DRAFT PUBLIC HEARING DOCUMENT


December 2020

Prepared by the
Mid-Atlantic Fishery Management Council
and the
Atlantic States Marine Fisheries Commission

1.0 Contents

2.0 INSTRUCTIONS FOR PROVIDING PUBLIC COMMENTS

The Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission (Commission), through its Summer Flounder, Scup and Black Sea Bass Management Board (Board), are seeking public comment on the Summer Flounder, Scup, and Black Sea Bass Commercial/Recreational Allocation Amendment. **Specifically, the Council and Board are asking commenters to identify their preferred allocation alternatives by species under Section 4, and their preferred quota transfer process and caps alternatives under Section 5. Additionally, comments are sought regarding whether future changes to these measures can be made through the framework/addendum process versus the amendment process.**

The Council and Commission work cooperatively to develop fishery regulations for summer flounder, scup, and black sea bass from Maine through North Carolina (north of Cape Hatteras for scup and black sea bass). The National Marine Fisheries Service (NMFS) serves as the federal implementation and enforcement entity. This cooperative management endeavor was developed because a significant portion of the catch is taken from both state (0-3 miles offshore) and federal waters (3-200 miles offshore, also known as the Exclusive Economic Zone, or EEZ).

Comment may be submitted at *[# TBD*] public hearings to be held [*time frame*], or via written comment 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 "Fluke, Scup, Sea Bass Allocation Amendment" on the outside of the envelope. If sending comments through email or fax, please write "Fluke, Scup, Sea Bass Allocation 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/webinar details

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

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3.0 INTRODUCTION AND AMENDMENT PURPOSE

3.1 Amendment Purpose

The purposes of this amendment are to:

1) Consider modifications to the current allocations between the commercial and recreational sectors for summer flounder, scup, and black sea bass (Section 4.0). The commercial and recreational allocations for all three species are currently based on historical proportions of landings (for summer flounder and black sea bass) or catch (for scup) from each sector. The current allocations were set in the mid-1990s and have not been revised since that time.
2) Consider the option to transfer a portion of the allowable landings each year between the commercial and recreational sectors, in either direction, based on the needs of each sector (Section 5.0). The current Fishery Management Plan (FMP) does not allow for such transfers.
3) Consider whether modifications to the commercial/recreational allocation and/or transfer provisions can be considered through a future FMP addendum/framework action, as opposed to an amendment (Section 6.0).

Several other issues identified during scoping for this action were considered by the Council and Board but have since been removed from further consideration in this amendment. Some of those issues will be further considered through other initiatives or actions. For more information, see the documents associated with past meetings for this amendment, available at: https://www.mafmc.org/actions/sfsbsb-allocation-amendment.

3.2 Need for Action

The commercial and recreational allocations for all three species are currently based on historical proportions of landings (for summer flounder and black sea bass) or catch (for scup) from each sector. Recent changes in how recreational catch is estimated has resulted in a discrepancy between the current levels of estimated recreational harvest and the allocations of summer flounder, scup, and black sea bass to the recreational sector.

Recreational catch and harvest data are estimated by the Marine Recreational Information Program (MRIP). In July 2018, MRIP released revised time series of catch and harvest estimates based on adjustments to its angler intercept methodology (used to estimate catch rates) and its 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.

The revised MRIP estimates were incorporated into the stock assessments for summer flounder in 2018 and for scup and black sea bass in 2019. This impacted the estimated stock biomass and

resulting catch limits for these species. In general, because the revised MRIP data showed that more fish were caught than previously thought, the stock assessment models estimated that there were more fish available to catch, which in turn impacted the biomass estimates derived from the stock assessments. However, for each species, the revised MRIP data were one of many factors that impacted the stock assessments and the resulting catch limits. Other factors such as the addition of data on recent recruitment also impacted the assessment model results.

- For summer flounder, the revised MRIP estimates were 30% higher on average compared to the previous estimates for 1981-2017. The differences between the previous and revised estimates tended to be greater in more recent years compared to earlier years. Increased recreational catch resulted in increased estimates of stock size compared to past assessments. The higher biomass projections resulted in a 49% increase in the commercial quota and recreational harvest limit (RHL) for 2019. Expected recreational harvest in the new MRIP currency was close to the revised RHL; therefore, recreational measures could not be liberalized in 2019 despite the 49% increase in the RHL.
- For scup, the revised MRIP recreational catch estimates were, on average, 18% higher than the previous estimates for 1981-2017. The differences between the previous and revised estimates tended to be greater in more recent years compared to earlier years. The MRIP data have a lesser impact in the scup stock assessment model, with the 2019 operational stock assessment showing minor increases in biomass estimates compared to the 2015 assessment. Due to below-average recruitment in recent years, the scup catch and landings limits decreased slightly as a result of biomass projections provided with the 2019 operational stock assessment.
- For black sea bass, the revised MRIP recreational catch estimates increased the 1981-2017 total catch by an average of 73%, ranging from +9% in 1995 to +161% in 2017. As with summer flounder and scup, the differences between the previous and revised estimates tended to be greater in more recent years compared to earlier years. These increased catch estimates combined with an above average 2015 year class contributed to a notable scaling up of the spawning stock biomass estimates from the previous assessment. As a result, the 2020 black sea bass acceptable biological catch (ABC) increased by 69% compared to 2019. Although this led to an increase in the RHL, recent harvest under the new MRIP data was higher than the 2020 RHL, therefore, recreational management measures could not be liberalized.

Some changes have also been made to commercial catch data since the allocations were established. For example, the time series of commercial scup discard estimates was revised through the 2015 scup stock assessment. For the 1988-1992 allocation base years, the current estimates of scup commercial catch are on average 8% lower than the estimates used to set the allocations under Amendment 8.

The commercial and recreational data revisions not only impact catch accounting, but also significantly affected our understanding of the population levels for all three fish stocks. This has management implications due to the fixed commercial/recreational allocation percentages defined in the FMP for all three species. These allocation percentages do not reflect the current understanding of the recent and historic proportions of catch and landings from the two sectors. These allocation percentages are defined in the Council and Commission FMPs; therefore, they

can only be modified through an FMP amendment. This amendment will consider whether the allocations are still appropriate and meeting the objectives of the FMP.

3.3 What Happens Next?

This document is intended to solicit public comment via public hearings and through written input during the public comment period [*January/February 2021*]. Following this period, 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 Spring 2021. While the Commission's actions are final for state waters (0-3 miles from shore) upon approval of the amendment, the Council's recommendations are not final until they are approved by the Secretary of Commerce through the National Marine Fisheries Service. Therefore, 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 COMMERCIAL/RECREATIONAL ALLOCATION ALTERNATIVES AND IMPACTS

This section describes the alternatives under consideration for the commercial/recreational allocation percentages for summer flounder, scup, and black sea bass (Section 4.1), along with their expected impacts (Section 4.2). The basis for each alternative is described in more detail in Appendix B. The range of allocation alternatives for each species includes options that would maintain the current allocations as well as options to revise them based on updated data using the same or modified base years. Section 4.3 describes options to phase in any allocation changes over multiple years, as well as the expected impacts of these phase-in provisions.

Alternatives for both catch-based and landings-based allocations are under consideration for all three species. As described in more detail in Appendix A, the same types of catch and landings limits are required under both catch and landings-based allocations (i.e., commercial and recreational annual catch limits and annual catch targets, commercial quota, and RHL). Dead discards (discarded fish that are assumed to die)[1] must be accounted for in the catch limits under both allocation approaches. Under both approaches, dead discards are subtracted from the catch limits to arrive at the sector-specific landings limit. **The main difference between these approaches is the step in the calculations which applies the commercial/recreational allocation percentage.** This has implications for how those dead discards are factored into the calculations.

Catch-based allocations (currently in place for scup) apply the commercial/recreational allocation at the ABC level, meaning the entire amount of allowable catch (including landings and dead discards) would be split based on the commercial/recreational allocation percentage defined through the alternatives listed below. Under a landings-based allocation (currently in place for summer flounder and black sea bass), the ABC is first split into the amount expected to come from

[1] The current discard mortality rates assumed in the stock assessments and catch and landings limits calculations are: 10% for recreational summer flounder discards and 80% for commercial summer flounder discards; 15% for scup recreational discards and 100% for commercial scup discards; 15% for recreational black sea bass discards, 15% for commercial non-trawl black sea bass discards, and 100% for commercial trawl black sea bass discards. These discard mortality rates are used in all aspects of the management program which utilize estimates of dead discards.

landings and the amount expected to come from dead discards. The expected landings amount is then split according to the commercial/recreational allocation percentage defined through the alternatives listed below.

It is important to note that **because expected dead discards are handled differently under catch and landings-based approaches, the allocation percentages under these two approaches are not directly comparable**. To allow for comparison across all alternatives, example resulting commercial quotas and RHLs for each species are provided in Section 4.2 (see Appendix C for additional detail on example measures). Actual resulting commercial quotas and RHLs will vary based on annual considerations.

Table 1 provides a summary comparison of the key differences and similarities between catch- and landings-based allocations. The implications of catch vs. landings-based allocations are further discussed in Appendix A and in Section 4.2.

Table 1: Summary of the differences and similarities between catch- and landings-based allocations.

Catch-based allocations	Landings-based allocations
• Currently in place for scup. • **Allocation at ABC level:** total catch (**landings + dead discards**) split into recreational and commercial ACLs based on allocation percentage defined in FMP. • The entire ABC is always split among the sectors based on the allocation defined in the FMP, regardless of recent trends in landings and discards by sector. Because of this, changes in landings and dead discards in one sector do not influence the other sector's ACL. • Dead discards must be projected for each sector to subtract from the sector ACLs to determine the sector landings limits	• Currently in place for summer flounder and black sea bass. • ABC is first split into the amount expected to come from landings (Total Allowable Landings, or TAL) and the amount expected to come from dead discards. The methodology for this split is not pre-defined and is usually based on recent trends in landings and dead discards, as well as stock assessment projections where possible. • **Allocation at TAL level:** TAL is allocated among the commercial and recreational sectors based on the allocation percentage defined in the FMP. • Total expected dead discards are split by sector based on different methods, usually recent trends in discards by sector. • Changes in landings and dead discards in one sector over time can impact the catch and landings limits in both sectors by impacting the division of the ABC into expected landings and expected dead discards.
Under Both Approaches: • Commercial and recreational ACLs, ACTs, and landings limits (i.e., commercial quota and RHL) are required. • Dead discards must be projected and accounted for by sector. • Only **dead** discards (discarded fish that are assumed to die) are accounted for in setting and evaluating catch limits. Neither allocation approach includes consideration of released fish that are assumed to survive. • Accountability measures are still required for each sector and tied to sector-specific ACLs. Each sector is held separately accountable for any ACL overages. **The main difference between approaches is the step in the calculations at which the commercial/recreational allocation percentages are applied, which has implications for how dead discards are projected and divided by sector.**	

4.1 Commercial/Recreational Allocation Alternatives

4.1.1 Summer Flounder Allocation Alternatives

Table 2 lists the alternatives under consideration for the commercial/recreational summer flounder allocation percentages. The current allocations for summer flounder are landings-based and are represented by the no action/status quo alternative (alternative 1a-4). As described above, both catch- and landings-based alternatives are considered. The percentages under these alternatives are not directly comparable due to differences in how dead discards are addressed under catch-based allocations and landings-based allocations. Appendix C provides examples of potential commercial quotas and RHLs under each alternative to allow for more direct comparisons between the catch and landings-based alternatives. Appendix A provides more details on the differences between catch- and landings-based allocations and the potential implications of each approach. The rationale behind each allocation alternative is described in more detail in Appendix B.

The alternatives in this section are mutually exclusive, meaning the Council and Board can only choose one of the alternatives from 1a-1 through 1a-7.

Table 2: Summer flounder commercial/recreational allocation alternatives. The current allocations are highlighted in green.

Summer Flounder Catch-based Allocation Percentages	
Alternative	**Basis (see Appendix B for details)**
1a-1: 44% commercial, **56%** recreational	2004-2018 base years
1a-2: 43% commercial, **57%** recreational	Supported by multiple approaches: 2009-2018 base years, approximate status quo harvest per sector compared to 2017/2018, and average of other approaches approved by Council/Board in June 2020
1a-3: 40% commercial, **60%** recreational	2014-2018 base years
Summer Flounder Landings-based Allocation Percentages	
Alternative	**Basis (see Appendix B for details)**
1a-4: 60% commercial, **40%** recreational	No action/status quo (1980-1989)
1a-5: 55% commercial, **45%** recreational	Same base years, new data (1981-1989; 1980 data unavailable)
1a-6: 45% commercial, **55%** recreational	Multiple approaches: 2004-2018 and 2009-2018 base years
1a-7: 41% commercial, **59**% recreational	2014-2018 base years

4.1.2 Scup Allocation Alternatives

Table 3 lists the alternatives under consideration for the commercial/recreational scup allocation percentages. The current allocations for scup are catch-based and are represented by the no action/status quo alternative (alternative 1b-1). As described above, both catch- and landings-based alternatives are considered. The percentages under these alternatives are not directly comparable due to differences in how dead discards are addressed under catch- and landings-based allocations. Appendix C provides examples of potential commercial quotas and RHLs under each alternative to allow for more direct comparisons between the catch and landings-based alternatives. Appendix A provides more details on the differences between catch and landings-based allocations and the potential implications of each approach. The rationale behind each allocation alternative is described in more detail in Appendix B.

The alternatives in this section are mutually exclusive, meaning the Council and Board can only choose one of the alternatives from 1b-1 through 1b-7.

Table 3: Scup commercial/recreational allocation alternatives. The current allocations are highlighted in green.

Scup Catch-based Allocation Percentages	
Alternative	**Basis (see Appendix B for details)**
1b-1: 78% commercial, **22%** recreational	No action/status quo
1b-2: 65% commercial, **35%** recreational	Same base years, new data (1988-1992)
1b-3: 61% commercial, **39%** recreational	Multiple approaches: 2009-2018 base years and average of other approaches approved by Council/Board in June 2020
1b-4: 59% commercial, **41%** recreational	Approximate status quo harvest per sector compared to 2018/2019
Scup Landings-based Allocation Percentages	
Alternative	**Basis (see Appendix B for details)**
1b-5: 57% commercial, **43**% recreational	Multiple approaches: Same base years, new data; 2014-2018 base years; 2009-2018 base years
1b-6: 56% commercial, **44%** rec	2004-2018 base years
1b-7: 50% commercial, **50%** recreational	Approximate status quo harvest per sector compared to 2018/2019

4.1.3 Black Sea Bass Allocation Alternatives

Table 4 lists the alternatives under consideration for the commercial/recreational black sea bass allocation percentages. The current allocations for black sea bass are landings-based and are represented by the no action/status quo alternative (alternative 1c-4). As described above, both catch- and landings-based alternatives are considered. The percentages under these alternatives are not directly comparable due to differences in how dead discards are addressed under catch-based allocations and landings-based allocations. However, appendix C provides examples of potential commercial quotas and RHLs under each alternative to allow for more direct comparisons between the catch and landings-based alternatives. Appendix A provides more details on the differences between catch- and landings-based allocations and the potential implications of each approach. The rationale behind each allocation alternative is described in more detail in Appendix B.

The alternatives in this section are mutually exclusive, meaning the Council and Board can only choose one of the alternatives from 1c-1 through 1c-7.

Table 4: Black sea bass commercial/recreational allocation alternatives. The current allocations are highlighted in green.

Black Sea Bass Catch-based Percentages	
Alternative	**Basis (see Appendix B for details)**
1c-1: 32% commercial, **68%** recreational	Approximate status quo harvest per sector compared to 2018/2019
1c-2: 28% commercial, **72%** recreational	2004-2018 base years
1c-3: 24% commercial, **76%** recreational	2009-2018 base years
Black Sea Bass Landings-based Percentages	
Alternative	**Basis (see Appendix B for details)**
1c-4: 49% commercial, **51%** recreational	No action/status quo
1c-5: 45% commercial, **55%** recreational	Same base years, new data (1983-1992)
1c-6: 29% commercial, **71%** recreational	Multiple approaches: Approximate status quo harvest per sector compared to 2018/2019and average of other approaches approved by Council/Board in June 2020
1c-7: 22% commercial, **78%** recreational	2009-2018 and 2014-2018 base years

4.2 Impacts of Commercial/Recreational Allocation Alternatives

As described in more detail below, the impacts of these alternatives are expected to be mostly socioeconomic in nature. Potential biological impacts on the summer flounder, scup, and black sea bass stocks are also briefly discussed below. A more complete impacts analysis, including consideration of the potential impacts on other components of the environment such as non-target species, habitat, marine mammals, and species listed as threatened or endangered under the

Endangered Species Act, will be included in the Environmental Assessment prepared after the Council and Board select their final preferred alternatives.

This section contains example projected RHLs and commercial quotas for each allocation alternative to demonstrate potential impacts to the recreational and commercial fisheries. The 2020 ABC was used to project landings limits that reflect recent stock size and to allow for comparison to recent fishery performance. The methodology used to develop the example landings limits differs from the methodology that was used to develop the actual landings limits that were implemented for management use in 2020. Use of a different method was necessary to account for several assumptions that must be made about how dead discards by sector would be projected, including the effect that changing allocations could have on each sector's fishing effort and dead discards. As such, the use of one method for projecting landings limits across all allocation alternatives, including the status quo allocation alternative, is necessary for a true side-by-side comparison of impacts. A more detailed description of the methodology used to generate example RHLs and quotas can be found in Appendix C.

4.2.1 General Impacts of Allocation Changes on All Three Species

Socioeconomic Impacts

Aside from the no action/status quo alternatives, all alternatives for all three species would result in an increased recreational allocation. This 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 would 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 all three species. Increased access could take the form of more fish to take home (under higher possession limits or lower minimum fish sizes) and more opportunities to target these species (under longer open seasons), while decreased access could mean the ability to retain fewer fish and reduced opportunities to target these 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.

At the community level, these 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.

Aside from the no action/status quo alternatives, all the alternatives for all three species would result in reduced allocation to the commercial sector, which is expected to decrease commercial quotas compared to the current allocations. The commercial sector may experience a loss in revenue due to corresponding decreased quotas and a reduction in potential landings of summer flounder and black sea bass. For scup, this will depend on the degree of the decrease in the quota as the commercial scup quota has not been fully harvested since 2007 due to other factors such as market demand. For all three species, the loss in revenue associated with the reduction in quota is not expected to be linear, as the relationship between price and volume landed in the fishery is not linear and is variable by species. Other factors such as variation in costs can also affect revenue.

Some negative impacts associated with quota reductions might be partially offset by the potential for increased prices paid by dealers if decreased quotas result in decreased supply. However, the degree to which this happens depends on the relationship between demand and price.

Impacts from a reduction in commercial quota will not be felt equally across all commercial industry participants. The coastwide commercial quota is divided into state quotas for summer flounder and black sea bass, and seasonal quota periods for scup. Of the three scup quota periods, only the summer period quota is further allocated among states. Some states fully utilize their quota year after year, while other states tend to underutilize their quota. Commercial fishermen[2] from states that fully utilize quota are more likely to experience loss 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.

Lower commercial quotas resulting from lower allocations could result in lower trip limits and shorter seasons. Lower trip limits can incentivize high-grading whereby smaller fish are discarded to allow for more landings of larger fish that fetch a higher price per pound. Shorter seasons could result in market instability through greater fluctuations in price, as well as "race to fish" conditions if shortened substantially. A reduction in commercial quotas would not just impact commercial fishermen, it would also reduce the availability of these species to consumers. Changes in commercial allocation of these three species also affects the economic health of communities with notable participation in these commercial fisheries through employment in the harvesting, processing, distribution, and retail aspects of the commercial fisheries. The scale of the impacts will depend on the scale of the change and the degree of local economic dependence on these commercial fisheries.

There are also impacts for both sectors associated with switching from a landings-based allocation (currently implemented for summer flounder and black sea bass) to a catch-based allocation (currently implemented for scup). It could be perceived as a benefit that the catch and landings limits for each sector can be calculated independently from each other under a catch-based allocation. As described in more detail in Appendix A, under a catch-based allocation, changes in landings and dead discards in one sector do not influence the other sector's allocation as the entire ABC is always split among the sectors based on the allocation defined in the FMP, regardless of recent trends in landings and discards by sector. In theory, this can allow each sector to see the benefits of a reduction in their own dead discards to a greater extent than under a landings-based allocation. Under a catch-based allocation, a reduction in dead discards in one sector can result in an increase in that sector's landings limit in a future year. This was part of the rationale for implementing the current catch-based allocation for scup as it was expected to incentivize a reduction in commercial dead discards, which were of concern during development of Amendment 8. Under a landings-based allocation, changes in landings and dead discards in one sector can influence the catch and landings limits in both sectors; therefore, the benefits of a reduction in dead

[2] The term fishermen applies to all people who fish, regardless of gender.

discards (or the negative impacts of an increase in dead discards) in one sector can also be felt by the other sector.

Under all alternatives considered in this action, the commercial and recreational sectors will continue to be held separately accountable for overages of their catch and landings limits. There will be no changes to the accountability measures for either sector.[3]

Biological Impacts to Summer Flounder, Scup, and Black Sea Bass Stocks

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.

As described in more detail in the species-specific sections below, some alternatives which would increase the recreational allocation may still require additional restrictions in the recreational fisheries compared to the measures used in recent years due to the mismatch between the revised MRIP data and the RHLs which could result from the allocations under many alternatives.

Depending on the scale of the change, a decrease in the commercial quota or additional restrictions on the recreational fishery could lead to increased regulatory discards of these species compared to recent levels. Actual changes in discards will depend on many factors. For example, fishing behavior in both sectors is influenced by many factors in addition to the regulations (e.g., weather, availability of other target species, market demand). Discards are also influenced by availability of each species, both overall abundance and by size class. For example, a new large year class can lead to high availability of fish smaller than the 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.

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 for any of the three species.

Landings and discards in the commercial and recreational sectors are monitored and estimated in different ways. A preliminary analysis taking into account the different levels of precision of the estimates of landings and dead discards in each sector for all three species suggests that the risk of exceeding the ABC does not vary greatly under a wide range of different proportions of total dead catch from each sector. This suggests that changes in the commercial/recreational allocation, especially changes within the range currently under consideration, may not have notably different impacts on the risk of exceeding the ABC.

4.2.2 Summer Flounder Allocation Impacts

Many stakeholders across regions and fishing modes view the summer flounder recreational minimum size and bag limit to be overly restrictive. Shore-based anglers in particular are concerned about the high minimum size. Depending on the alternative selected and annual considerations through the specifications process, an increase in allocation to the recreational sector may allow for a liberalization of these measures and could increase access to anglers. A

[3] A summary of the current accountability measures for summer flounder, scup, and black sea bass can be found at: https://www.mafmc.org/s/AMs-description_SF_scup-BSB_Dec2020.pdf.

reduction in the minimum size may be particularly impactful to those who fish from shore and typically encounter smaller fish. Allowing more fish to be retained increases angler satisfaction and provides greater access to fish to bring home to eat.

Table 5 provides a comparison of 2018-2019 average landings and example RHLs and commercial quotas associated with each allocation alternative that were derived from the analysis in Appendix C using the 2020 ABC. All alternatives represent an increase in allocation to the recreational sector relative to the no action/status quo alternative (1a-4). The example RHL associated with the no action/status quo alternative is 4% lower than average 2018-2019 harvest, suggesting that recreational harvest could remain similar to recent levels under this alternative if ABC remains at levels similar to 2020. All other allocation alternatives project RHLs that are higher than 2018-2019 average landings. The projected RHLs for alternatives 1a-1, 1a-2, 1a-3, 1a-6, and 1-a7 exceed 2018-2019 recreational landings by more than 30% which indicates that a liberalization of recreational measures may be possible, depending on actual future RHLs as well as current and future harvest trends, under the aforementioned allocation alternatives.

As previously stated, all the summer flounder alternatives would reduce the allocation to the commercial sector, with the exception of the no action/status quo alternative (1a-4). Table 5 demonstrates that the 2018-2019 average landings value is less than the projected commercial quotas under all alternatives. However, the 2018-2019 landings were restricted by quotas that were below-average for the time series, and it is likely that the commercial allocation reductions under non-status-quo alternatives would be limiting on the commercial fishery's effort and revenues for summer flounder.

Starting January 1, 2021, as the result of Amendment 21 to the FMP,[4] the commercial allocations of the summer flounder quota among the states will vary based on the overall coastwide commercial quota amount. When the quota is below 9.55 million pounds, it will be allocated among states based on the allocations that have been in place since Amendment 2 (1993). Any surplus quota above 9.55 million pounds will be allocated differently. As shown in Table 5, some of the example quotas (using the 2020 ABC as an example for future quotas under recent biomass levels) would fall above that threshold while some would fall below. Therefore, some of these alternatives could have implications for how the summer flounder quota is allocated among states.

Along with summer flounder commercial landings potentially varying under the various allocation alternatives, ex-vessel prices may also change (Figure 1). Using the equation in Figure 1, prices can be estimated under different landed quantities. For example, assuming full utilization of the example commercial quota in alternative 1a-7 (7.65 million pounds under a 25.03 mil pound ABC), the average ex-vessel price is predicted to be $2.75 per pound and would yield $21.0 million in total ex-vessel revenue (both in 2019 dollars). If the same process is followed for the alternative 1a-4 example quota (11.10 million pounds), the average ex-vessel price would fall to $1.82 per pound and revenues would actually decrease to $20.2 million. These are rough estimates, and price is influenced by many other factors aside from landings, such as changes in consumer preferences or product substitution. This simplified example does offer some limited support that full utilization of the quota under the highest commercial quota alternative may not maximize fishery-wide revenues.

[4] See https://www.mafmc.org/actions/summer-flounder-amendment for additional information on this amendment.

Table 5: Comparison of 2018-2019 summer flounder landings to example RHLs and commercial quotas for each allocation alternative under the 2020 ABC (25.03 million pounds) and the assumptions outlined in Appendix C. (Landings and limits in millions of pounds; 2018-2019 landings provided by the Northeast Fisheries Science Center or NEFSC).

Alternative	1a-1	1a-2	1a-3	1a-4	1a-5	1a-6	1a-7
	Catch-based			Landings-based			
Com. allocation	44%	43%	40%	60%	55%	45%	41%
Rec. allocation	56%	57%	60%	40%	45%	55%	59%
Example commercial quota	8.79	8.57	7.92	11.10	10.20	8.38	7.65
2018-2019 avg comm. landings	7.60						
% Difference from 2018-2019 Com Landings	16%	13%	4%	46%	34%	10%	1%
Example RHL	10.24	10.47	11.15	7.40	8.34	10.25	11.02
2018-2019 avg rec. landings	7.70						
% Difference from 2018-2019 Rec Landings	33%	36%	45%	-4%	8%	33%	43%

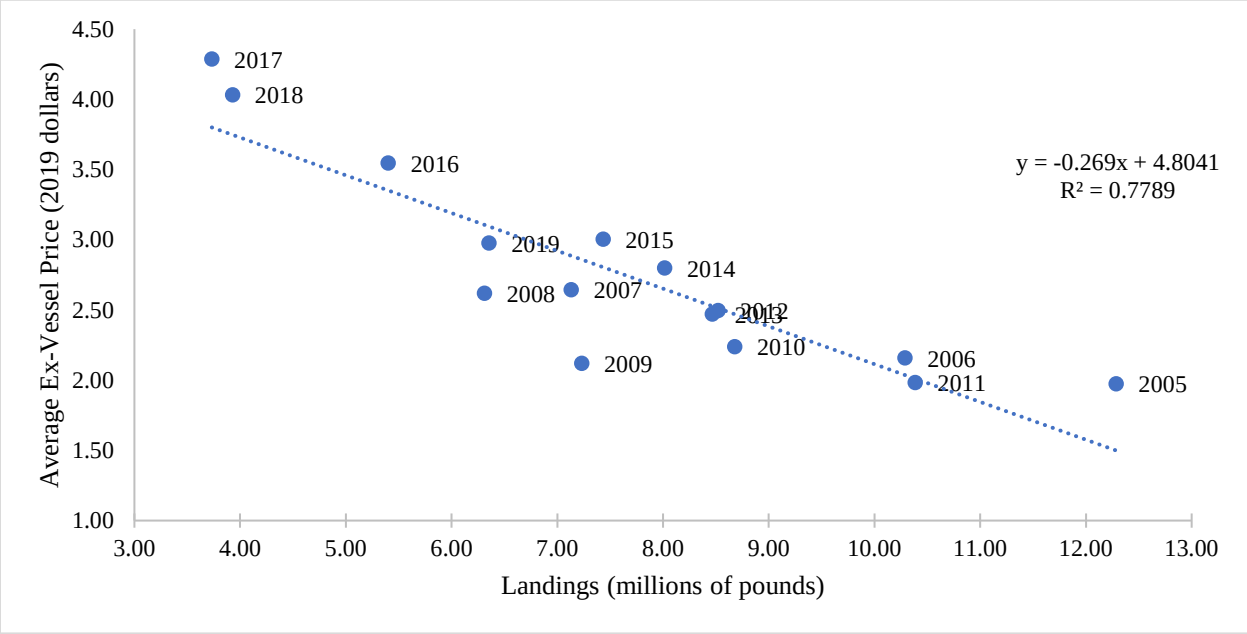


Figure 1: Commercial summer flounder landings and average ex-vessel prices, 2005-2019, in 2019 dollars. Source: NEFSC Social Sciences Branch, personal communication.

4.2.3 Scup Allocation Impacts

Table 6 provides a comparison of 2017-2019 average landings and example RHLs and commercial quotas associated with each allocation alternative that were derived from the analysis in Appendix C using the 2020 ABC. Under the no action/status quo alternative for scup (alternative 1b-1), restrictions to the bag limit, minimum size, and/or season would need to be implemented to prevent exceeding the RHL. This is because the revised MRIP harvest estimates for recent years are notably higher than the RHLs that result from the current allocation (assuming recent ABC levels;

Table 6). Alternatives 1b-2 through 1b-7 would increase the recreational allocation; however, 1b-7 is the only alternative that projects an example RHL that is higher than 2017-2019 average recreational harvest. Therefore, alternative 1b-7 would provide the most benefit to the recreational sector in the form of higher angler satisfaction, greater economic opportunity, more revenue to the for-hire sector compared to the other allocation alternatives.

Alternatives 1b-2 through 1b-7 include lower commercial allocations than the no action/status quo alternative (1b-1). The commercial sector has not fully utilized its quota since 2007 so a decrease in allocation would not necessarily lead to a decrease in commercial landings or revenues compared to recent levels. Recent landings fall below the example quotas shown in Table 6 for all alternatives. However, alternatives 1b-2 through 1b-7 may limit the potential for market expansion and future increases in landings and ex-vessel revenue compared to the no action/status quo alternative (1b-1).

In 2018, the scup stock was at 198% of the biomass target level and trending down to the target. The compounding effects of reductions in allocation to the commercial sector combined with a reduction in the overall ABC could result in lower commercial quotas in the future. The reduction in commercial quota under alternatives 1b-2 through 1b-7 may not constrain harvest on a coastwide basis but may negatively impact commercial industry members in states that fully utilize their state quota during the summer scup quota period. Impacts may be felt more equally across states in the winter 1 and 2 period scup fishery with the coastwide trip limit.

Along with scup commercial landings potentially varying under the different allocation alternatives, ex-vessel prices may also change (Figure 2). Using the equation in Figure 2, prices can be estimated under different landed quantities. For example, assuming full utilization of the example commercial quota in alternative 1b-7 (14.81 million pounds under a 35.77 million pound ABC), the average ex-vessel price is predicted to be $0.54 per pound and would yield $7.9 million in total ex-vessel revenue. Full utilization of the quota under some of the higher quota alternatives, such as 1b-1, would decrease revenues following these methods. Average scup landings over the last three years are 14.20 million pounds, meaning full utilization of the quota would appear unlikely under a number of the allocation alternatives and the current ABC. Based on the price responses to changes in quantity, achieving full utilization of the quota may not be economically desirable for the scup harvesting fleet as a whole.

Table 6: Comparison of 2017-2019 scup landings to example RHLs and commercial quotas for each allocation alternative under the 2020 ABC (35.77 million pounds) and the assumptions outlined in Appendix C. (Landings and limits in millions of pounds; 2017-2019 landings provided by NEFSC).

Alternative	1b-1	1b-2	1b-3	1b-4	1b-5	1b-6	1b-7
	Catch-based				Landings-based		
Com. allocation	78%	65%	61%	59%	57%	56%	50%
Rec. allocation	22%	35%	39%	41%	43%	44%	50%
Example commercial quota	22.91	16.90	15.92	15.44	16.85	16.56	14.81
2017-2019 avg comm. landings	14.20						
% Difference from 2017-2019 Com Landings	61%	19%	12%	9%	19%	17%	4%
Example RHL	6.46	11.04	13.04	13.04	12.71	13.01	14.81
2017-2019 avg rec. landings	13.55						
% Difference from 2017- 2019 Rec Landings	-52%	-19%	-4%	-4%	-6%	-4%	9%

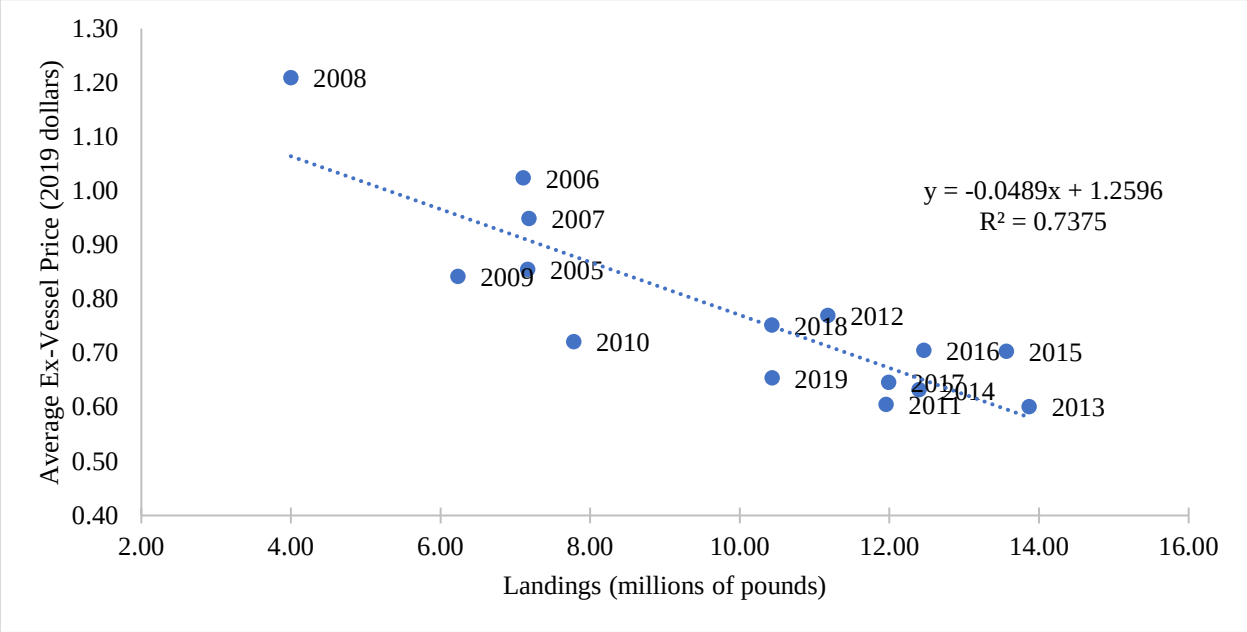


Figure 2. Commercial scup landings and average ex-vessel prices, 2005-2019, in 2019 dollars. Source: NEFSC Social Sciences Branch, personal communication.

4.2.4 Black Sea Bass Allocation Impacts

All black sea bass alternatives, with the exception of the no action/status quo alternative (1c-4) would increase the recreational allocation and decrease the commercial allocation. Table 7 compares average 2018-2019 landings to example commercial quotas and RHLs under each

allocation alternative calculated based on the analysis described in Appendix C. As shown in Table 7, alternatives 1c-3 and 1c-7 result in example RHLs that are greater than average 2018-2019 recreational harvest; therefore, these alternatives could allow for some liberalizations in recreational management measures if ABCs remain at levels similar to 2020. This could result in increased angler satisfaction and increased revenues for for-hire businesses and other businesses that support recreational fisheries, compared to 2018-2019. Under alternatives 1c-2, 1c-4, and 1c-5, the example RHLs are lower than average 2018-2019 recreational harvest. Therefore, these alternatives could require reductions in the bag limit, shorter open seasons, or increases to the minimum fish size to prevent future RHL overages. These restrictions would be expected to have negative socioeconomic impacts for the recreational sector due to reduced angler satisfaction, reduced demand for for-hire trips, and reduced revenues for for-hire businesses and other recreational fishery support businesses.

As shown in Table 7 , under the assumptions described in Appendix C, alternatives 1c-2, 1c-3, and 1c-7 result in example commercial quotas that are 15%, 24%, and 25% lower, respectively, than average 2018-2019 commercial landings. Therefore, they would be expected to result in a reduction in commercial landings and revenues compared to recent fishery conditions. Alternatives 1c-1 and 1c-6 result in example quotas that are 5% and 3% lower, respectively, than 2018-2019 average commercial landings. Therefore, depending on annual considerations, these alternatives could result in commercial landings and revenues that are either similar or slightly lower than recent levels. Alternatives 1c-4 and 1c-5 result in example quotas that are 55% and 44% higher, respectively, than average 2018-2019 commercial landings; therefore, they could result in increased commercial landings and revenues compared to recent conditions.

It is important to note that all example quotas assume that the ABC is similar to the 2020 ABC, which was higher than any previous ABC for black sea bass. The commercial quotas for 2020 (5.58 million pounds) and 2021 (6.09 million pounds) are 59% and 73% higher than 2018-2019 (3.52 million pounds in both years); therefore, it is useful to compare the example commercial quotas not only to average 2018-2019 commercial landings, but also to the 2020 and 2021 commercial quotas. The commercial black sea bass fishery has landed close to the quota for many years. Although commercial landings in 2020 and 2021 are unknown (and will likely be atypical due to the impacts of Covid-19 on market demand), it can be assumed that all alternatives except the no action/status quo alternative (alternative 1c-4) could require a reduction in allowable commercial landings compared to 2020-2021, as they would result in a lower quota than the quota implemented for 2020-2021, assuming the same ABC level. However, as stated above, they would not require a reduction in landings compared to 2018-2019. This reduction in potential commercial landings could be considered a negative socioeconomic impact.

None of the alternatives project landings limits that would prevent a need for restrictions in both the recreational and commercial sectors, based on the assumptions described in Appendix C. Alternatives 1c-1 and 1c-6 represent roughly equal and relatively small potential restrictions needed in both sectors compared to average 2018-2019 landings.

Ex-vessel prices for commercial landings may also change in response to the different potential quota levels under each alternative (Figure 3). Using the equation in Figure 3, prices can be estimated under different landed quantities. For example, assuming full utilization of the example commercial quota in alternative 1c-7 (2.61 million pounds under a 15.07 million pound ABC) the average ex-vessel price is estimated to be $3.25 per pound and would yield $8.5 million in ex-

vessel revenue. If the same process is followed for the alternative 1c-4 example quota (5.43 million lbs.), the average ex-vessel price would fall to $2.48 per pound. Despite this reduced average price, revenues would continue to increase to $13.5 million. These are rough estimates, and price is influenced by many other factors aside from landings, such as changes in consumer preferences or product substitution. These results, however, do suggest that black sea bass commercial revenues would increase under higher quotas with full utilization.

Table 7: Comparison of 2018-2019 black sea bass landings to example RHLs and commercial quotas for each allocation alternative under the 2020 ABC (15.07 million pounds) and the assumptions outlined in Appendix C. (Landings and limits in millions of pounds; 2018-2019 landings provided by the NMFS Greater Atlantic Regional Fisheries Office).

Alternative	1c-1	1c-2	1c-3	1c-4	1c-5	1c-6	1c-7
	Catch-based			**Landings-based**			
Com. allocation	32%	28%	24%	49%	45%	29%	22%
Rec. allocation	68%	72%	76%	51%	55%	71%	78%
Example commercial quota	**3.31**	**2.99**	**2.66**	**5.43**	**5.04**	**3.38**	**2.61**
2018-2019 avg com. landings	**3.50**						
% Difference from 2018-2019 com. Landings	**-5%**	**-15%**	**-24%**	**55%**	**44%**	**-3%**	**-25%**
Example RHL	**8.16**	**8.65**	**9.14**	**5.65**	**6.15**	**8.28**	**9.27**
2018-2019 avg rec. landings	**8.73**						
% Difference from 2018- 2019 rec. landings	**-7%**	**-1%**	**5%**	**-35%**	**-30%**	**-5%**	**6%**

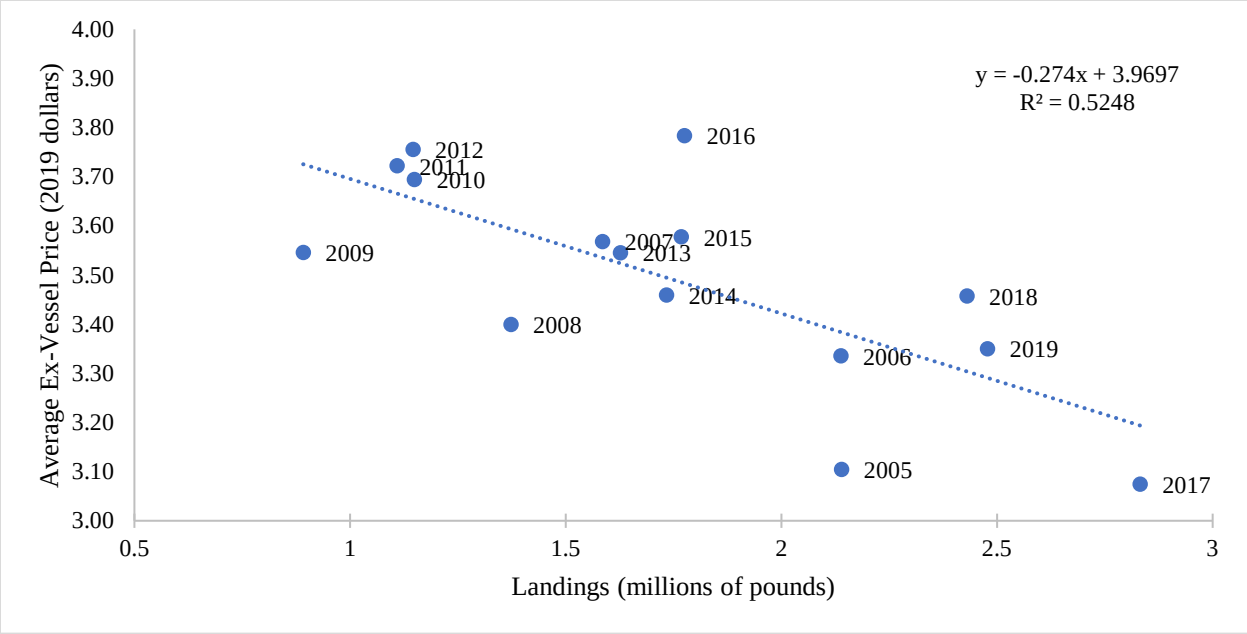


Figure 3. Commercial black sea bass landings and average ex-vessel prices, 2005-2019, in 2019 dollars. Source: NEFSC Social Sciences Branch, personal communication.

4.3 Allocation Change Phase-In

4.3.1 Allocation Change Phase-In Alternatives

The alternatives listed in Table 8 consider if any changes to the allocation percentages considered through alternative sets 1a, 1b, and 1c should occur in a single year (alternative 1d-1, no phase in) or if the change should be spread over 2, 3, or 5 years (alternatives 1d-2 through 1d-4). The Council and Board agreed that 5 years is a reasonable maximum phase-in time frame as longer transition periods may not adequately address the issue an allocation change is attempting to address. The choice of whether to use a phase-in approach, and the length of the phase-in, 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. Larger allocation changes may be less disruptive to fishing communities if they are phased in over several years.

These phase-in alternatives could apply to any of the three species. The Council and Board may choose to apply different phase-in alternatives (including no phase-in) to each species if desired.

Table 8: Allocation change phase-in alternatives.

Phase-in Alternatives
1d-1: No phase-in
1d-2: Allocation change evenly spread over 2 years
1d-3: Allocation change evenly spread over 3 years
1d-4: Allocation change evenly spread over 5 years

4.3.2 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 things: 1) the difference between the status quo allocation

percentage and the allocation percentage selected, and 2) the duration of the phase-in period. Based on the range of allocation percentages across the three species (Section 4.1), the commercial and recreational sector allocations could shift by as much as 13.5% per year, or as little as 0.8% per year under the above phase-in timeframes of 2-5 years. Sections 4.3.2.1 through 4.3.2.3 describe the associated percent shifts per year for each species, and the impacts of these phase-in approaches.

Both catch- and landings-based allocation alternatives are being considered for all three species. As previously stated, summer flounder and black sea bass are currently managed under a landings-based allocation and scup is currently managed under a catch-based allocation. It is straightforward to calculate the annual percent shift in allocation under each phase-in alternative if the allocation remains landings-based for summer flounder and black sea bass or catch-based for scup.

The phase-in transition is more complicated when transitioning from a landings-based to a catch-based allocation or vice versa. Under a landings-based allocation, the division of expected dead discards to each sector is typically calculated using a moving average of recent trends, and usually varies from the landings-based allocation percentage. As a result, under a landings-based allocation, the percentage of ABC (landings + dead discards) assigned to each sector typically varies from year to year and does not usually match the landings-based allocation percent. To illustrate this, the 2021 percent split of landings, dead discards, and sector Annual Catch Limits (ACLs) for each species are shown in Table 9. As described below, when transitioning from a landings-based to a catch-based allocation or vice versa, the total and annual phase-in amounts should not be calculated starting from the existing FMP allocation, as the actual split of catch does not match the landings-based allocation for summer flounder and black sea bass, and the actual split of landings does not match the catch-based allocation for scup. The phase-in amounts for each alternative can instead be calculated by using the 2021 measures as a starting point since these are the implemented measures that the transition would be away from. This includes the actual division of catch (for transition to a catch-based allocation) or landings (for transition to a landings-based allocation) in 2021. Additional details for each species are discussed below.

Table 9: The currently implemented recreational/commercial split for total landings, dead discards, and total dead catch for 2021 specifications. The current FMP-specified allocations for each species are highlighted in yellow.

Currently landings-based allocations						
	Comm. % of TAL (allocation)	**Rec. % of TAL (allocation)**	**Comm. % of discards in 2021**	**Rec. % of discards in 2021**	**Comm ACL % of ABC in 2021**	**Rec ACL % of ABC in 2021**
Summer flounder	60	40	34	66	54	46
Black sea bass	49	51	68	32	55	45
Currently catch-based allocation						
	Comm. % of TAL in 2021	**Rec. % of TAL in 2021**	**Comm. % of discards in 2021**	**Rec. % of discards in 2021**	**Comm ACL % of ABC (allocation)**	**Rec ACL % of ABC (allocation)**
Scup	74	23	81	19	78	22

NEFSC Social Sciences Branch crew survey results (Table 10) suggest that while a limited number of crew from the summer flounder, scup, and black sea bass fisheries were surveyed, the majority of those surveyed agreed that it was hard to keep up with changes in regulations. A phase-in approach to reallocation would still involve regulatory change, though limiting year-to-year change in allocation could possibly make it easier for industry members to adapt to these changes. However, phase-in approaches may also require more frequent changes in management measures such as open seasons and possession limits during the phase-in period. Therefore, consideration should be given to balancing regulatory stability and economic stability.

Table 10. NEFSC Social Sciences Branch Crew Survey results for reactions to the statement "the rules and regulations change so quickly it is hard to keep up." Results presented for crew primarily involved in the summer flounder, scup, and black sea bass fisheries over the 2012-2013 survey, 2018-2019 survey, and the combined results.

Survey Wave	2012-13	2018-19	Total
Strongly agree	3 (27%)	10 (45%)	13 (39%)
Agree	4 (36%)	7 (32%)	11 (33%)
Neutral	1 (9%)	2 (9%)	3 (9%)
Disagree	3 (27%)	3 (14%)	6 (18%)
Strongly disagree	0 (0%)	0 (0%)	0 (0%)
Total	11 (100%)	22 (100%)	33 (100%)

4.3.2.1 Summer Flounder Phase-In Impacts

If the summer flounder allocation is modified but a landings-based allocation system is maintained (alternatives 1a-5 through 1a-7), the annual percent shift amounts are easily calculated by taking the difference between the starting and ending allocations for each sector and evenly dividing that percentage among the 2, 3, or 5 years of phase-in depending on the phase-in alternative (Table 11).

Under a transition from a landings-based to a catch-based allocation approach (alternatives 1a-1 through 1a-3), dead discards would first need to be incorporated into the current baseline to determine the total and annual percent shift. Because any allocation changes adopted are meant to take effect starting in 2022, the specifications for 2021 can serve as this baseline for the current split of catch by sector. Specifically, the percentage of the ABC that each sector will receive in 2021 as a sector ACL should be used as the starting point for calculating transition percentages.

For summer flounder, in 2021, the commercial ACL represents 54% of the ABC and the recreational ACL represents 46% of the ABC. From these starting percentages, the total amount of catch-based allocation shift can be calculated, and evenly divided among the 2, 3, or 5 years depending on the phase-in alternative (Table 11).

Table 11: Percent shift in summer flounder allocation per year for 2, 3, and 5 year phase-in options for all summer flounder allocation change alternatives.

Catch-Based Alternatives	**Total amount of allocation percent shift needed[a]**	**1d-2: 2 year phase-in**	**1d-3: 3 year phase-in**	**1d-4: 5 year phase -in**
1a-1: 44% commercial, **56%** recreational	**10%**	**5%** shift per year	**3.3%** shift per year	**2%** shift per year
1a-2: 43% commercial, **57%** recreational	**11%**	**5.5%** shift per year	**3.7%** shift per year	**2.2%** shift per year
1a-3: 40% commercial, **60%** recreational	**14%**	**7%** shift per year	**4.7%** shift per year	**2.8%** shift per year
Landings-Based Alternatives	**Total amount of allocation percent shift needed[b]**	**1d-2: 2 year phase-in**	**1d-3: 3 year phase-in**	**1d-4: 5 year phase -in**
1a-4 (status quo): 60% commercial, **40%** recreational	**0%**	**N/A**	**N/A**	**N/A**
1a-5: 55% commercial, **45%** recreational	**5%**	**2.5%** shift per year	**1.7%** shift per year	**1%** shift per year
1a-6: 45% commercial, **55%** recreational	**15%**	**7.5%** shift per year	**5%** shift per year	**3%** shift per year
1a-7: 41% commercial, **59%** recreational	**19%**	**9.5%** shift per year	**6.3%** shift per year	**3.8%** shift per year

[a] For catch-based alternatives, the starting point for this calculation is the current (2021) split of the sector-specific ACLs (which incorporates dead discards) instead of the landings limit allocation. Here, this shift is calculated by starting from the 2021 specifications which includes a commercial ACL that is 54% of the ABC, and a recreational ACL that is 46% of the ABC.

[b] For landings-based alternatives, the starting point for this calculation is the specified landings-based allocation (60% commercial/40% recreational). This does not account for dead discards, which would continue to be split using different methods with the resulting percentages varying depending on the year.

Across all summer flounder alternatives, the total allocation shift needed (if allocations are modified) from the commercial to the recreational fishery would range from 5-19% from current measures, and the annual phase-in would range from 1.7% per year to 9.5% per year depending on the allocation change and the phase-in alternative selected.

As described in Section 4.2, a decline in commercial allocation is expected to lead to a decline in landings and revenue, especially in states where the commercial allocation is fully utilized. The potential decline in landings may result in higher ex-vessel prices, potentially tempering declines in ex-vessel revenue. The recreational sector is expected to experience positive social and economic impacts under any of the allocation changes proposed in alternatives 1a-1 through 1a-7 (with the exception of the no action/status quo alternative 1a-4). However, the positive impacts may be partially offset by an inability to meaningfully liberalize measures under a higher allocation given the transition to revised MRIP estimates. The phase-in option selected would affect how quickly these negative and positive impacts are felt by each sector, which could influence how well sector participants are able to adapt to any changes.

For the commercial industry, a more abrupt transition to a revised allocation (alternative 1d-1 and to a lesser extent 1d-2) may result in a sudden loss of income and jobs due to a more sudden drop in revenue in the commercial fishery. Commercial sector participants who are highly dependent on summer flounder may have more difficulty remaining in business while evaluating options for maintaining revenue streams, such as shifting effort to other target species. Alternatives 1d-3 and 1d-4 (a 3- or 5-year phase-in, respectively), would provide a longer transition time for the commercial industry to adapt to loss of fishing opportunity for summer flounder. This could allow for a smoother transition to modified business models such as diversifying target species.

For the recreational fishery, a more abrupt transition to a revised allocation (alternative 1d-1 and to a lesser extent 1d-2) is expected to have positive social and economic benefits as this allows for a faster transition to an allocation that matches the recent recreational harvest under the revised MRIP data. This has implications for recreational management measures, which may be able to be liberalized more quickly if a faster transition to a revised allocation occurs. For summer flounder recent recreational harvest under the revised MRIP estimates are at similar levels as recent RHLs, so it is possible that recreational measures could be liberalized in the coming years if allocation to the recreational sector is increased. However, this is also dependent on future projections of stock biomass, trends in recreational catch and effort, and other factors. If recreational measures are able to be liberalized, this could result in a decrease in recreational discards. Alternatives 1d-3 and 1d-4 (a 3- or 5-year phase-in, respectively), would provide a longer transition to an increased recreational allocation for summer flounder. This may mean that recreational measures and fishing opportunities could be maintained at current levels for longer, or liberalized more slowly, though it is important to note that possible liberalizations depend on many different factors and are not guaranteed.

4.3.2.2 Scup Phase-In Impacts

For scup, the current allocation is catch-based. If the allocation is modified but a catch-based allocation system is maintained (alternatives 1b-2 through 1b-4), the annual percent shift amounts are easily calculated by taking the difference between the starting and ending allocations for each sector and evenly dividing that percentage among the 2, 3, or 5 years of phase-in depending on the phase-in alternative (Table 12).

Under a transition from a catch-based to a landings-based allocation approach (alternatives 1b-5 through 1b-7), dead discards would first need to be separated from the current baseline to determine the total and annual percent allocation shift. Because any allocation changes adopted are meant to take effect starting in 2022, the specifications for 2021 can serve as this baseline for the current split of landings by sector. Specifically, the percentage of the total allowable landings (TAL) that each sector will receive in 2021 as sector landings limits (commercial quota and RHL) should be used as the starting point for calculating transition percentages.

For scup, in 2021, the commercial quota represents 77% of the TAL and the RHL represents 23% of the TAL. From these starting percentages, the total amount of landings-based allocation shift can be calculated, and evenly divided among the 2, 3, or 5 years depending on the phase-in alternative (Table 12).

Table 12: Percent shift in scup allocation per year for 2, 3, and 5 year phase-in options for all scup allocation change alternatives.

Catch-Based Alternatives	**Total amount of allocation percent shift needed[a]**	**1d-2: 2 year phase-in**	**1d-3: 3 year phase-in**	**1d-4: 5 year phase -in**
1-b1 (status quo): 78% commercial, **22%** recreational	**0%**	**N/A**	**N/A**	**N/A**
1b-2: 65% commercial, **35%** recreational	**13%**	**6.5%** shift per year	**4.3%** shift per year	**2.6%** shift per year
1b-3: 61% commercial, **39%** recreational	**17%**	**8.5%** shift per year	**5.7%** shift per year	**3.4%** shift per year
1b-4: 59% commercial, **41%** recreational	**19%**	**9.5%** shift per year	**6.3%** shift per year	**3.8%** shift per year
Landings-Based Alternatives	**Total amount of allocation percent shift needed[b]**	**1d-2: 2 year phase-in**	**1d-3: 3 year phase-in**	**1d-4: 5 year phase -in**
1b-5: 57% commercial, **43%** recreational	**20%**	**10%** shift per year	**6.7%** shift per year	**3.4%** shift per year
1b-6: 56% commercial, **44%** recreational	**21%**	**10.5%** shift per year	**7%** shift per year	**4 %** shift per year
1b-7: 50% commercial, **50%** recreational	**27%**	**13.5%** shift per year	**9%** shift per year	**5.4%** shift per year

[a] For catch-based alternatives, the starting point for this calculation is the FMP-specified allocation percentage (78% commercial/22% recreational).

[b] For landings-based alternatives, the starting point for this calculation is the current (2021) split of the sector-specific landings limits (commercial quota and RHL). Here, this shift is calculated by starting from the 2021 specifications which includes a commercial quota that is 77% of the total allowable landings, and an RHL that is 23% of the total allowable landings. This does not account for dead discards, which going forward would be split using different methods with the resulting percentages varying depending on the year.

Across all of the alternatives for scup, the total allocation shift needed (if allocations are modified) from the commercial to the recreational fishery would range from 13-27% from current measures, and the annual phase-in would range from 2.6% per year to 13.5% per year depending on the allocation change and the phase-in alternative selected.

As described in Section 4.2, a decline in commercial allocation is expected to lead to loss of revenue especially in states where the commercial allocation is fully utilized. However, the potential loss in revenue may be partially offset by the increase in demand due to reduced commercial allocations across the management unit. In addition, for scup, the commercial quota has not been fully utilized in recent years, which is expected to help offset negative impacts to the commercial sector. The recreational sector is expected to experience positive social and economic impacts under any of the allocation changes proposed in alternatives 1b-1 through 1b-7 (with the exception of the no action/status quo alternative 1b-1). However, the positive impacts may be partially offset by an inability to meaningfully liberalize measures under a higher allocation given the transition to revised MRIP estimates. The phase-in option selected would affect how quickly these negative and positive impacts are felt by each sector, which could influence how well sector participants are able to adapt to any changes.

For the commercial industry, a more abrupt transition to a revised allocation (alternative 1d-1 and to a lesser extent 1d-2) may result in a more sudden loss of income and jobs due to a more sudden drop in revenue. Commercial sector participants who are highly dependent on scup may have more difficulty remaining in business while evaluating options for maintaining revenue streams, such as shifting effort to other target species. Alternatives 1d-3 and 1d-4 (a 3- or 5-year phase-in, respectively), would provide a longer transition time for the commercial industry to adapt to loss of fishing opportunity for scup. This could allow for a smoother transition to modified business models such as diversifying target species.

For the recreational fishery, a more abrupt transition to a revised allocation (alternative 1d-1 and to a lesser extent 1d-2) is expected to have positive social and economic benefits as this allows for a faster transition to an allocation that matches the recent recreational harvest under the revised MRIP data. This has implications for recreational management measures, which for scup, are currently resulting in harvest levels higher than the current RHL. Under the current allocation, this should require more restrictive measures to be implemented for the recreational fishery. However, under an increased allocation to the recreational fishery, it is possible that recreational scup measures could remain the same (avoiding severe restrictions that would otherwise be taken). Recreational measures are also dependent on factors such as future projections of stock biomass, trends in recreational catch and effort, and other trends. It is possible that if scup biomass is projected to increase in the coming years, recreational measures may be able to be liberalized under an increased allocation. Alternatives 1d-3 and 1d-4 (a 3- or 5-year phase-in, respectively), would provide a longer transition to an increased recreational allocation for scup. This is likely to mean that recreational measures and fishing opportunities will need to be restricted during the transition years, possibly severely given recent MRIP estimates, though it is important to note that adjustments to recreational measures depend on many different factors.

4.3.2.3 Black Sea Bass Phase-In Impacts

If the black sea bass allocation is modified but a landings-based allocation system is maintained (alternatives 1c-5 through 1c-7), the annual percent shift amounts are easily calculated by taking

the difference between the starting and ending allocations for each sector and evenly dividing that percentage among the 2, 3, or 5 years of phase-in depending on the phase-in alternative (Table 13).

Under a transition from a landings-based to a catch-based allocation approach (alternatives 1c-1 through 1c-3), dead discards would first need to be incorporated into the current baseline to determine the total and annual percent shift. Specifications for 2021 can serve as this baseline for the current split of catch by sector. Specifically, the percentage of the ABC that each sector will receive in 2021 as a sector ACL should be used as the starting point for calculating transition percentages.

For black sea bass, in 2021, the commercial ACL represents 55% of the ABC and the recreational ACL represents 45% of the ABC. From these starting percentages, the total amount of allocation shift can be calculated, and evenly divided among the 2, 3, or 5 years depending on the phase-in alternative (Table 13).

Table 13: Percent shift in black sea bass allocation per year for 2, 3, and 5 year phase-in options for all black sea bass allocation change alternatives.

Catch-Based Alternatives	**Total amount of allocation percent shift needed[a]**	**1d-2: 2 year phase-in**	**1d-3: 3 year phase-in**	**1d-4: 5 year phase -in**
1c-1: 32% commercial, **68%** recreational	**23%**	**11.5%** shift per year	**7.7%** shift per year	**4.6%** shift per year
1c-2: 28% commercial, **72%** recreational	**27%**	**13.5%** shift per year	**9.0%** shift per year	**5.4%** shift per year
1c-3: 24% commercial, **76%** recreational	**31%**	**15.5%** shift per year	**10.3%** shift per year	**6.2%** shift per year
Landings-Based Alternatives	**Total amount of allocation percent shift needed[b]**	**1d-2: 2 year phase-in**	**1d-3: 3 year phase-in**	**1d-4: 5 year phase -in**
1-c4 (status quo): 49% commercial, **51%** recreational	**0%**	**N/A**	**N/A**	**N/A**
1c-5: 45% commercial, **55%** recreational	**4%**	**2%** shift per year	**1.3%** shift per year	**0.8%** shift per year
1c-6: 29% commercial, **71%** recreational	**20%**	**10%** shift per year	**6.7%** shift per year	**4%** shift per year
1c-7: 22% commercial, **78%** recreational	**27%**	**13.5%** shift per year	**9%** shift per year	**5.4%** shift per year

[a] For catch-based alternatives, the starting point for this calculation is the current (2021) split of the sector-specific ACLs (which incorporates dead discards) instead of the landings limit allocation. Here, this shift is calculated by starting from the 2021 specifications which includes a commercial ACL that is 55% of the ABC, and a recreational ACL that is 45% of the ABC for black sea bass.

[b] For landings-based alternatives, the starting point for this calculation is the specified landings-based allocation (49% commercial/51% recreational). This does not account for dead discards, which would continue to be split using different methods with the resulting percentages varying depending on the year.

Across all of the alternatives for black sea bass, the total allocation shift needed (if allocations are modified) from the commercial to the recreational fishery would range from 4-31%, compared to the current allocations, and the annual phase-in would range from 0.8% per year to 15.5% per year depending on the allocation change and the phase-in alternative selected.

As described in Section 4.2, a decline in commercial allocation is expected to lead to loss of revenue, especially in states where the commercial allocation is fully utilized. However, the potential loss in revenue may be partially offset by the increase in demand due to reduced commercial allocations across the management unit. The recreational sector is expected to experience positive social and economic impacts under any of the allocation changes proposed in alternatives 1c-1 through 1c-7 (with the exception of the no action/status quo alternative 1c-4). However, the positive impacts may be partially offset by an inability to meaningfully liberalize measures under a higher allocation given the transition to revised MRIP estimates. The phase-in option selected would affect how quickly these negative and positive impacts are felt by each sector, which could influence how well sector participants are able to adapt to any changes.

For the commercial industry, a more abrupt transition to a revised allocation (alternative 1d-1 and to a lesser extent 1d-2) may result in a sudden loss of income and jobs due to a more sudden drop in revenue in the commercial fishery. Commercial sector participants who are highly dependent on black sea bass may have more difficulty remaining in business while evaluating options for maintaining revenue streams, such as shifting effort to other target species. Alternatives 1d-3 and 1d-4 (a 3- or 5-year phase-in, respectively), would provide a longer transition time for the commercial industry to adapt to loss of fishing opportunity for black sea bass. This could allow for a smoother transition to modified business models such as diversifying target species.

For the recreational fishery, a more abrupt transition to a revised allocation (alternative 1d-1 and to a lesser extent 1d-2) is expected to have positive social and economic benefits as this allows for a faster transition to an allocation that matches the recent recreational harvest under the revised MRIP data. This has implications for recreational management measures, which for black sea bass, are currently resulting in harvest levels much higher than the current RHL. Under the current allocation, this should require more restrictive measures to be implemented for the recreational fishery. However, under an increased allocation to the recreational fishery, it is possible that recreational black sea bass measures could remain the same (avoiding severe restrictions that would otherwise be taken). Recreational measures are also dependent on factors such as future projections of stock biomass, trends in recreational catch and effort, and other trends. It is possible that if black sea bass biomass is projected to increase in the coming years, recreational measures may be able to be liberalized under an increased allocation. Alternatives 1d-3 and 1d-4 (a 3- or 5-year phase-in, respectively), would provide a longer transition to an increased recreational allocation for black sea bass. This is likely to mean that recreational measures and fishing opportunities will need to be restricted during the transition years, possibly severely given recent MRIP estimates, though it is important to note that adjustments to recreational measures depend on many different factors.

5.0 QUOTA TRANSFER ALTERNATIVES AND IMPACTS

5.1 Quota Transfer Provision Alternatives

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). This process is similar to that currently used for bluefish, although the options below would allow transfers in either direction between sectors. Section 5.1.1 discusses quota transfer process alternatives while Section 5.1.2 addresses options for a cap on the total amount of a transfer.

5.1.1 Quota Transfer Process Alternatives

Table 14 lists the alternatives under consideration for quota transfer provisions.

Table 14: Alternatives for annual transfer of quota between the commercial and recreational sectors.

Annual Quota Transfer Alternatives
2a: No action/status quo (do not modify the FMP to allow transfers of annual quota between the commercial and recreational sectors.)
2b: 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 2a, transfers would not be allowed between the commercial and recreational sectors, consistent with past practice and the current FMP requirements for these species.

Under alternative 2b, each year during the setting or review of annual catch limits, the Board and Council would have the ability to recommend that a portion of the total ABC be transferred between the recreational and commercial sectors as a landings limit transfer, 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. If a transfer cap is adopted via one of the sub-alternatives under alternative 2c, the transfer amount could not exceed this cap.

Table 15 describes how the process of transfers would work within the Council and Board's current specifications process under alternative 2b.

Table 15: Proposed quota transfer process during a typical specifications cycle under alternative 2b.

July: **Assess the need for a transfer**	Staff and the Monitoring Committee (MC) would assess the potential need for a transfer and develop recommendations to the Council and Board as part of the specifications process. The MC would consider 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 will have very limited data for the current year and would not be able to develop precise current year projections of landings** for each sector. The MC could also consider 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 would consider how these factors might have different impacts on the commercial and recreational sectors. The effects of these considerations can be difficult to quantify and there is currently **no methodology that would allow the MC to quantitatively determine the need for a transfer with a high degree of precision**. **The MC would use their best judgement to recommend whether a transfer would further the Council and Board's policy objectives.**
August: **Council and Board consider whether to recommend a transfer**	The Council and Board would consider MC recommendations on transfers while setting or reviewing annual catch and landings limits. The Council and Board would need to jointly agree on a transfer direction, amount of transfer, and if setting multi-year specifications, whether the transfer would apply for one year or multiple years.
October: **Council staff submits specifications package to NMFS**	Council staff would prepare and submit supporting documents to modify catch limits or implement or revise transfers. During a multi-year specifications review year, if a transfer is newly adopted or revised, a regulatory package may need to be developed even if catch limits do not change.
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 would be based on the expected post-transfer RHL which likely would not yet be implemented via final rule.**
Late December: **Final specifications published**	NMFS approves and publishes the final rule for the following year's catch and landings limits (if new or modified limits are needed), including any new or revised transfers. During a multi-year specifications review year, if a transfer is newly adopted or revised, rulemaking will likely need to occur even if catch limits do not change.
January 1: **Fishing year specifications effective, including any transfers**	Fishing year specifications including any transfers would be effective January 1. **No post-implementation reviews and adjustments to the transfer amount would occur** given that 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.

Note that while the transfer would occur at the landings limit level (commercial quota and RHL), for the purposes of maintaining accurate accounting and accountability at the ACL level, both sector's ACLs would be adjusted to reflect the transfer at the landings limit level.

If transfer provisions under alternative 2b are adopted, some changes to the accountability measures (AMs) may also need to be considered. For example, AMs could specify that if the MC determines that a transfer caused the donating fishery's ACL, or the combined ABC, to be exceeded, the transfer amount could be deducted from the receiving fishery in a subsequent year. The Council and Board could consider a follow-on action to make these changes if desired. These specific changes are not considered through this amendment.

5.1.2 Transfer Cap Alternatives

Table 16 lists the alternatives under consideration for a cap on the total transfer amount (if any). These alternatives would only be considered if transfer provisions were adopted under alternative 2b above, and would specify a maximum percent of the ABC that could be transferred from one sector to another each year in the form of a landings limit transfer.

Table 16: Alternatives for annual transfer of quota between the commercial/recreational sectors.

Annual Quota Transfer Cap Alternatives
2c-1: No transfer cap specified; the Council and Board can recommend any amount of the ABC be transferred between fisheries.
2c-2: Maximum transfer amount set at 5% of the ABC.
2c-3: Maximum transfer amount at 10% of the ABC.
2c-4: Maximum transfer amount set at 15% of the ABC.

5.1 Impacts of Quota Transfer Provision Alternatives

The current FMP does not allow for the annual transfer of landings between the commercial and recreational sectors. Transfers are being considered as a way to address situations where landings limits in one sector exceed recent landings but fall below recent landings in the other sector. In short, transfers could provide flexibility when a landings limit is restrictive in one sector and the other sector is experiencing a surplus. However, the process for determining when a transfer is needed and how much to transfer could be complex for these species, as described below.

Under alternative 2a (no action), there would be no change to the FMP to allow for transfers. Lacking this flexibility, the result when one sector is underachieving its limits and another sector is in need of additional allowable landings may be that limits remain set so that one sector is more likely to have an overage of catch, and the other sector may underutilize their allowable catch. This may negatively impact the ability to achieve the Council and Boards' policy and FMP objectives on a short-term basis. If these trends persist, longer-term solutions could be needed to make necessary adjustments to the allocation, such as an FMP amendment (or framework/addendum if these provisions, as discussed in Section 6.0, are adopted by the Council and Board).

The short-term impacts of not allowing transfers would be similar to current conditions, where in the event that there is surplus allocation to one sector and the other needs allocation, negative socioeconomic impacts could be expected for the sector in need of allocation. This sector would not be able to receive additional quota and may need restrictive management measures to constrain

catch and may experience reduced revenues and/or reduced angler satisfaction as a result. The sector determined to have a surplus allocation would most likely experience no impacts under the no action alternative, however in some cases where conditions such as market factors or participation differ from what is predicted, this sector may experience slight positive impacts due to the opportunity to fish for their full allocation. These impacts may be less positive in practice if this sector is not able to fully utilize this quota.

Under **alternative 2b**, there are impacts associated with the proposed transfer process as well as impacts associated with the transfers themselves, as described below.

5.2.1 Impacts of the Proposed Process

A major disadvantage of the process proposed in Section 5.1.1 is that it requires an annual evaluation of the need for a transfer in the upcoming year using data from the previous year (and potentially older data). Because in-year landings projections are not feasible with this timeline, this would cause at least a two-year disconnect in the timing of the data used to evaluate the need for transfer and the year that the transfer would actually occur. This could result in a mismatch between the recommended transfer amount and direction and the reality of the fishery conditions and needs for the upcoming year.

The need for a transfer in any given year may be inherently difficult to determine, due to several factors in addition to the timing of the data availability described above. These fisheries (particularly summer flounder and black sea bass) tend to fully or mostly utilize their allocation and sometimes experience overages. Frequent changes in management are often needed (especially in the recreational fisheries), and the effects of these changes on expected harvest must be considered in determining a transfer amount (both past and expected future changes to measures). It is also difficult to predict changes in market factors that may influence whether the commercial fishery would utilize additional quota or has quota to spare.

Past sector performance for these fisheries is not likely to be very informative when it comes to determining how often transfers will be needed. Because the recreational data currency has recently changed, pre-revision MRIP performance relative to the RHLs is not likely to be useful since the changes were not a simple linear scaling. In addition, any allocation changes implemented through this action may reduce the need for transfers. For these reasons, predicting the need for a transfer may be more straightforward in the future after additional years of evaluating harvest against catch and landings limits set in the new MRIP currency, and after any allocation changes implemented through this action have been in place for a few years. In this way, the ability to use transfers may be a useful “tool in the toolbox” for future years, as opposed to an option that is likely to be used in the more immediate future.

Looking solely at past trends in sector performance, it is thought that transfer provisions may be more useful for the scup fishery (given that the fishery has not been fully utilized in recent years), but again, it is difficult to determine future transfer needs given the many uncertainties discussed here.

The MC recommendations for a transfer amount and direction would be based on an expected set of landings limits which would not yet have been reviewed or adopted by the Council and Board. If these landings limits are modified by either the Council and Board or the NMFS Greater Atlantic Regional Fisheries Office (GARFO), the MC’s transfer recommendation may no longer be

appropriate. It could be difficult for the Council and Board to adopt a modified transfer amount during this meeting if needed.

The conclusion about whether or not a transfer is needed is likely to result in increased political discussion and potentially increased tensions between sectors during the specifications setting or review process.

As described in Section 5.1.1, recreational measures (typically determined in December) would need to be set using the expected post-transfer RHL. While typically there are no changes to the Council and Board's adopted RHL during the implementation process, it is possible that NMFS may change the RHL if circumstances require such modifications, such as if a recreational payback for an ACL overage is required. In practice, this may not represent a problem, since recreational measures are typically set based on the expected RHL. However, the use of transfers may further complicate this process if NMFS modifies or does not adopt the Council and Board recommendation for transfer.

The intent is that any transfer would be implemented before January 1 of the relevant fishing year, meaning that a mid-year quota change due to a transfer is not expected.

If the Council and Board determine that the ability to use transfers during specifications is not desired, they could consider allowing for temporary transfers via FMP frameworks/addenda instead. This could be specified through alternative set 3 (Section 6.0). Annual transfers though a framework/addendum process would provide some additional flexibility in adapting to changing sector needs but would not allow for as timely of a response as would be possible through the specifications process.

5.2.2 Socioeconomic Impacts of Transfers

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 would 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 would experience positive socioeconomic 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. As described in Section 4.2, average ex-vessel price for each species tends to decrease with increasing landings. This relationship depends on the magnitude of the change in quota as well as other market factors in addition to total landings, so this relationship is difficult to predict. The relationship is also stronger for summer flounder and scup compared to black sea bass, so positive impacts of the commercial sector receiving a transfer are likely to be greater for black sea bass.

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. For these species, particularly for summer flounder and black sea bass, many stakeholders are of the opinion that recreational measures are currently overly restrictive. Because 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. Therefore, it may be less likely that a recreational to commercial transfer would actually occur.

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 1. 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.

As described above, the impacts of transfers may differ by state or region. For the commercial industry, the negative impacts associated with losing quota or the positive impacts associated with receiving a transfer are influenced by the method of quota allocation for each species. For summer flounder, commercial quota allocation will be revised as of January 1, 2021, and the state allocations are will then be tied to the overall coastwide commercial quota amount. This means that a transfer to or from the commercial quota could influence whether the coastwide commercial quota is above or below the quota threshold for modified allocations, which is currently specified at 9.55 million pounds. For black sea bass, a management action to potentially revise state commercial allocations is currently in development but a preferred alternative has not been identified, so it is difficult to predict the state or regional impacts of proposed quota transfers in combination with potential state allocation changes.

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.

Availability of a target species in a given year can also affect the outcome of a transfer, in the sense that availability influences catch rates and search costs associated with commercial and recreational trips. In general, it has been more difficult to calibrate recreational measures to constrain catch below the target level when availability for a species is high. This could drive managers to adopt commercial-to-recreational transfers more frequently under high availability conditions in order to avoid recreational overages.

5.2.3 Impacts of Transfer Cap Alternatives

Alternative set 2c (Section 5.1.2) contains options for setting a cap on the total amount of transfer between sectors, as a percentage of the ABC.

Alternative 2c-1 would specify that there is no transfer cap, meaning the Council and Board could recommend any amount of the ABC be transferred between sectors during the annual specifications process. This allows for maximum flexibility in changing the effective allocation in each year; however, this is also associated with a higher likelihood of politically contentious discussions during the annual specifications setting process. The Council and Board could effectively consider large temporary reallocations on an annual basis. No transfer cap could also mean a very wide range of potential transfer amounts to consider and analyze. This could lead to less predictability and more frequent fluctuations in sector-specific landings limits from year to year, which could be amplified by changes in overall catch limits resulting from fluctuating stock projections. This could partially negate some of the positive impacts experienced by the sector receiving transfers, given that it could mean their adjustments in the following year may be more severe than if a transfer did not occur the prior year.

Alternatives 2c-2, 2c-3, and 2c-4 provide options for transfer caps set at 5%, 10%, and 15% of the ABC, respectively. This would provide less flexibility in adapting to circumstances where there may be a surplus of allocation in one sector but a deficit in the other. However, a transfer cap also limits consideration of larger allocation transfers through the specifications process and would limit the politically contentious nature of this discussion. Transfer caps would limit the allocation changes that could occur from year to year. Transfer caps would somewhat streamline the process of transfer consideration given that it would limit the range of what could be considered. A lower transfer cap (alternative 2c-2) would accomplish this more so than a larger cap (alternative 2c-4).

Under all alternatives, potential fluctuation in allocation from year to year can partially negate the positive impacts from a transfer even if a cap is in place, although transfer caps under alternatives 2c-2 through 2c-4 would lower the likelihood or severity of this, particularly if the cap is lower.

Under all transfer alternatives, if larger and/or more frequent transfers are adopted, this may indicate that the allocation is not properly specified in the FMP. This would indicate that longer-term adjustments through an action to modify the FMP may be needed.

Table 17 shows what a 5%, 10%, and 15% transfer cap would look like in millions of pounds under the 2017-2021 high and low ABCs for each species. This is meant to provide an example of the amounts that could have been transferred between sectors under recent high and low ABCs. This does not represent a theoretical minimum or maximum amount of quota transfer in pounds, given that the transfer cap alternatives are specified as a percent of the ABC and will vary as ABCs rise and fall.

Between 2017-2021, alternative 2c-2 (5% cap) would have resulted in a cap between 0.45 and 1.96 million pounds depending on the species and year. Alternative 2c-3 (10% cap) would have resulted in a cap between 0.89 and 3.91 million pounds depending on the species and year. Alternative 2c-4 (15% cap) would have resulted in a cap between 1.34 and 5.87 million pounds depending on the species and year. Over this time period, scup would have had the highest average transfer cap given the highest average ABC, followed by summer flounder and then black sea bass.

Table 17: Example transfer caps under alternatives 2c-2 through 2c-4 for the 2017-2021 high and low ABCs for each species, in millions of pounds. Note that these are only examples using recent ABCs and do not represent a theoretical maximum or minimum transfer amount in pounds.

		Summer Flounder	Scup	Black Sea Bass
ABC for comparison	**2017-2021 Low ABC**	11.30	28.40	8.94
	2017-2021 High ABC	27.11	39.14	17.45
2c-2: 5% of ABC	**2017-2021 Low Transfer Cap**	0.57	1.42	0.45
	2017-2021 High Transfer Cap	1.36	1.96	0.87
2c-3: 10% of ABC	**2017-2021 Low Transfer Cap**	1.13	2.84	0.89
	2017-2021 High Transfer Cap	2.71	3.91	1.75
2c-4: 15% of ABC	**2017-2021 Low Transfer Cap**	1.70	4.26	1.34
	2017-2021 High Transfer Cap	4.07	5.87	2.62

6.0 FRAMEWORK/ADDENDUM PROVISION ALTERNATIVES AND IMPACTS

6.1 Framework/Addendum Provision Alternatives

The alternatives in Table 18 consider whether the Council and Board should have the ability to make future changes related to certain issues considered through this amendment through a framework action (under the Council's FMP) or an addendum (for the Commission's FMP). Frameworks/addenda are modifications to the FMPs that are typically (though not always) more efficient than a full amendment. While amendments may take several years to complete and may be more complex, frameworks/addenda can usually be completed in 5-8 months. Both types of management actions include multiple opportunities for public input; however, scoping and public hearings are required for amendments, but are optional for frameworks/addenda. Frameworks/ addenda can only modify existing measures and/or those that have been previously considered in an FMP amendment.

The framework/addenda provisions would apply to commercial/recreational allocation changes (alternative set 1) and quota transfer provisions between the commercial and recreational sectors (alternative set 2). The ability to revise commercial/ recreational allocations through a framework or addendum could make future allocation reviews simpler and less time consuming. The Council adopted an allocation review policy in 2019[5], where each relevant allocation will be reviewed at least every 10 years; however, the Council may choose to conduct reviews more frequently based on substantial public interest or other factors (including changes in ecological, social, and economic conditions). Framework/addendum provisions are also considered for transfers of quota between sectors, as this may allow for a more efficient management response to changes in the needs of the commercial and recreational fisheries for these species than if these changes needed to be considered through an FMP amendment, as is currently the case.

Allowing such changes through a framework/addendum **does not require or guarantee that this mechanism can be used for future changes**. The Council and Board can always choose to initiate an amendment rather than a framework/addendum if more thorough evaluation or additional public

[5] https://www.mafmc.org/s/MAFMC-Fishery-Allocation-Review-Policy_2019-08.pdf

comment opportunities are desired. In addition, if the specific changes under consideration are especially controversial or represent a significant departure from previously considered measures, an amendment may be required, even if the type of change is identified in the FMP as a change that can be made through a framework/addendum.

Table 18: Framework/addendum provision alternatives.

Framework/addendum provision alternatives
3a: No action/status quo (no changes to framework/addendum provisions; changes to commercial/recreational allocations must be made through an amendment)
3b: Allow changes to commercial/recreational allocations, annual quota transfers, and other measures included in this amendment to be made through framework actions/addenda

6.2 Impacts of Framework/Addendum Provision Alternatives

In general, the framework/addendum alternatives considered in this action are primarily procedural in nature and are intended to simplify and improve the efficiency of future actions to the extent possible. The purpose of modifying the list of "frameworkable items" in the FMP is to demonstrate that the concepts included on the list have previously been considered in an amendment (i.e., they are not novel). The impacts of alternatives 3a and 3b are briefly described below.

Alternative 3a would make no changes to the current list of framework provisions in the Council's FMP and no changes to the current list of measures subject to change under adaptive management in the Commission's FMP. Any future proposed modifications to the commercial/recreational allocations or proposed allocation transfer systems would likely require a full FMP amendment. The timeline and complexity of such an amendment would depend on the nature of the specific options considered.

Alternative 3b would allow changes to commercial/recreational allocations and sector allocation transfer provisions to be implemented through a framework action (for the Council) or an FMP addendum (for the Commission) and would not have any direct impacts on the environment or human communities as this alternative is primarily procedural. As previously stated, under alternative 3b, the Council and Board could still decide it is more appropriate to use an amendment if significant changes are proposed. The impacts of any specific changes to the commercial/ recreational allocations or transfers between the sectors considered through a future framework/ addendum would be analyzed through a separate process with associated public comment opportunities and a full description of expected impacts.

7.0 APPENDICES

APPENDIX A: Catch vs. Landings-Based Allocations

This appendix provides additional clarification on the differences between catch and landings-based allocations. These allocations are used to derive a set of required annual catch and landings limits for both sectors, including commercial and recreational annual catch limits and annual catch targets (ACLs and ACTs[6], which both account for landings and dead discards), and landings limits (commercial quota and RHL, both of which only account for landings). The same types of catch

[6] ACTs are set equal to or lower than the ACLs to account for management uncertainty. For these species, ACTs have typically been set equal to the ACLs in recent years.

and landings limits are all required under both catch and landings-based allocations. These limits are calculated through the annual specifications process. The commercial/recreational allocations are not used in other parts of the management process; they are only used in the specifications process to derive the sector-specific catch and landings limits.

In both cases, all catch and landings limits are derived from the overall ABC, which applies to all dead catch and is set based on the best scientific information available. The main difference between catch and landings-based allocations is the step in the process at which the commercial/recreational allocation is applied and how dead discards are factored into the calculations.

A **catch-based** allocation allocates the total ABC (which accounts for both landings and dead discards) between the two sectors as commercial and recreational ACLs, based on the allocation percentages defined in the FMP (catch-based step 1 in the figures below). Dead discards are then estimated for each sector and subtracted from the sector ACLs to derive the annual sector landings limits (commercial quota and RHL).

A **landings-based** allocation applies the allocation percentage defined in the FMP to only the portion of the ABC that is expected to be landed (landings-based steps 1 and 2 in the figures below). This requires first calculating the amount of expected dead discards from both sectors combined and subtracting that from the ABC (landings-based step 1), so that the allocation percentage can be applied to the total allowable landings (landings-based step 2). Dead discards are still projected for each sector and incorporated into the ACLs under a landings-based allocation, but the process is more complex due to the need to separate out total landings first to apply the allocation. This process evolved because management of summer flounder and black sea bass was previously based on landings limits only and did not consider dead discards. When dead discards were first incorporated into management, the allocation percentages continued to be applied to landings only and it was determined that other methods were needed to split expected dead discards by sector.

As described in more detail below, in both cases, sector-specific dead discards are generally estimated based on recent trends in the fisheries. Therefore, **under a landings-based allocation, recent trends in dead discards in one sector have more of an impact on the catch and landings limits in the other sector. Under a catch-based allocation, the calculations of sector-specific catch and landings limits are more separate and recent trends in landings and dead discards in one sector have a lesser impact on the limits in the other sector**. This can have important implications due to sector-specific differences in factors such as how landings and discards are estimated, the factors influencing discards (e.g., regulations, market demand, catch and release practices), and discard mortality rates.

Under both allocation approaches, the commercial/recreational allocation percentages are fixed (until modified through an FMP action) and do not vary based on recent trends in the fisheries. They would be defined based on one of the alternatives listed in Section 4.0 of this document.

More details, including a description of the subsequent steps to arrive at the commercial quota and RHL are included below. Examples of the implications of each approach are included at the end of this section.

Projected Discards Under Both Allocation Approaches

For scup and summer flounder, the total amount of the ABC expected to come from dead discards can be projected using the stock assessment model. These projections account for variations in the size of different year classes (i.e., the fish spawned in a given year) and catch at age information from the commercial and recreational sectors. The current stock assessment model for black sea bass does not allow for these projections, so alternative methods such as recent year average proportions need to be used.

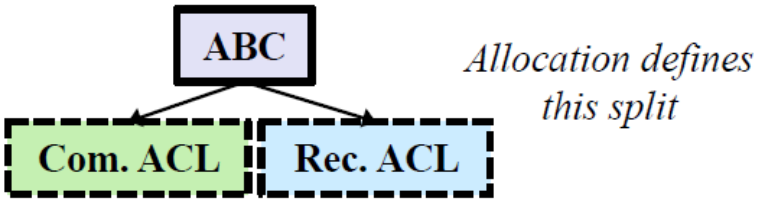
Regardless of the allocation approach, the methodology for calculating sector-specific dead discards (as opposed to total dead discards) is not defined in the FMP and can vary based on annual considerations. The Monitoring Committee provides advice on this decision.

Under both approaches, only **dead** discards are factored into the allocation percentages and the catch and landings limits calculations. Discarded fish which are presumed to survive do not factor into these calculations.

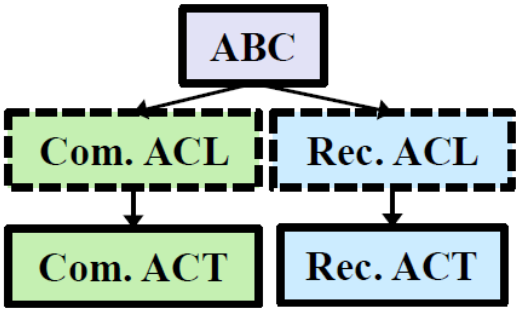
Catch-based Allocation Process

The allocation percentages under consideration are listed in Section 4.1. Those allocation percentages are then used in the specifications process as described below.

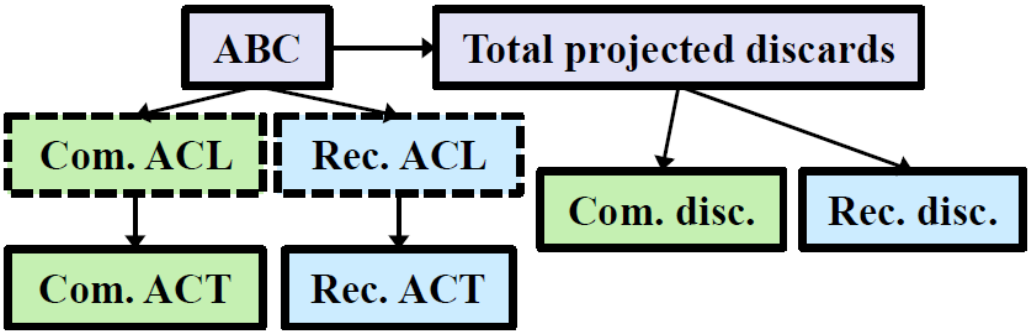
Catch-based Step 1. The ABC is divided into commercial and recreational ACLs based on the allocation percentages defined in the FMP.



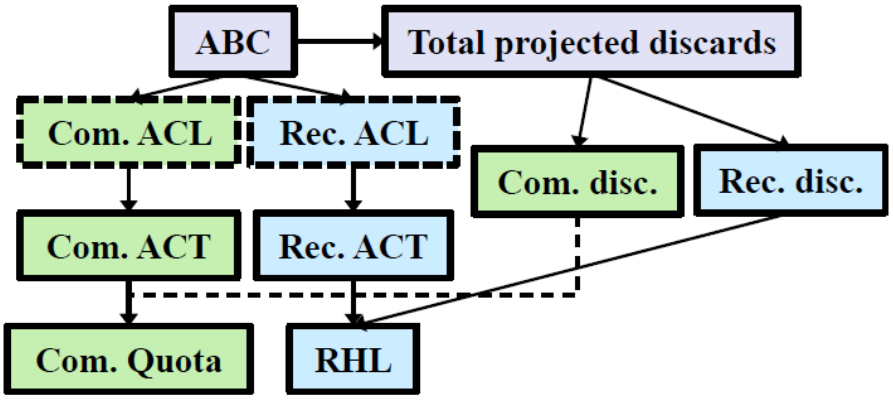
Catch-based Step 2. Commercial and recreational ACTs are set less than or equal to their respective ACLs to account for management uncertainty. The appropriate deduction for management uncertainty (if any) is not pre-defined and is based on annual considerations, including the advice of the Monitoring Committee.



Catch-based Step 3. Expected dead discards are calculated for each sector to derive the commercial quota and RHL from the sector-specific ACTs.



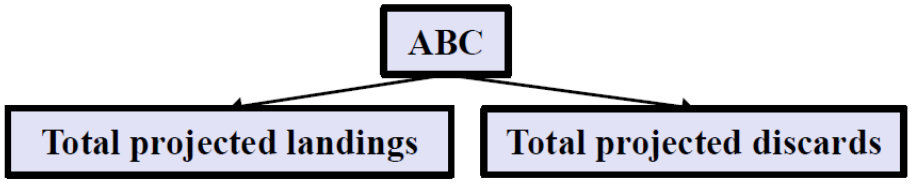
Catch-based Step 4. Commercial quotas and RHLs are determined by subtracting the sector-specific dead discards (see catch-based step 3) from the sector-specific ACTs.



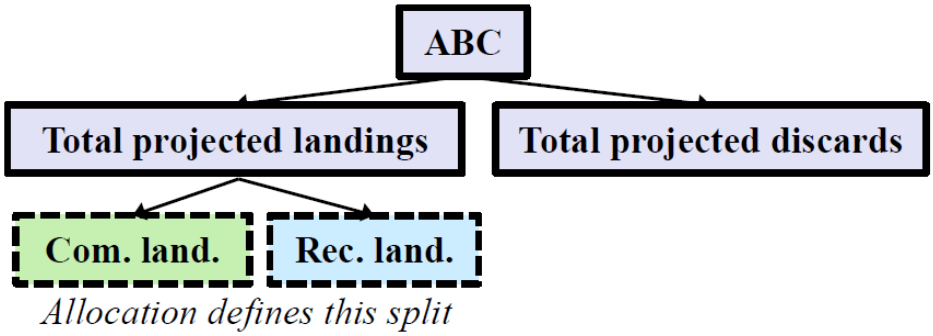
Landings-Based Allocation Process

Landings-based Step 1. The ABC is first divided into the amount expected to come from landings (total projected landings) and the amount expected to come from dead discards (total projected dead discards). The methodology for this calculation is not defined in the FMP and can vary based on annual considerations. The Monitoring Committee provides advice on this decision.

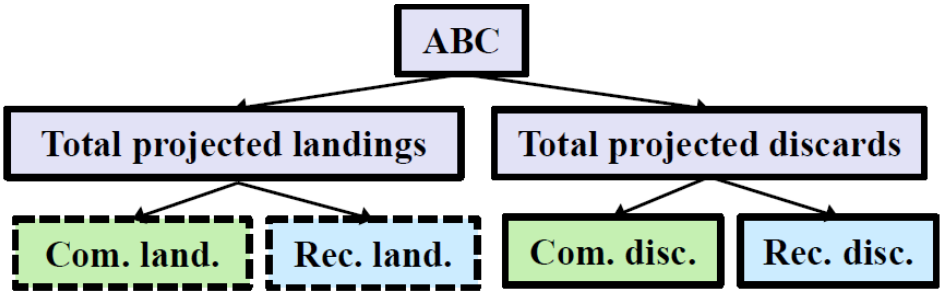
As previously stated, for scup and summer flounder, these calculations can be informed by stock assessment projections. The current black sea bass stock assessment does not model landings and dead discards separately; therefore, calculations of total projected landings and dead discards for black sea bass cannot be informed by stock assessment projections. Instead, other methods, such as those based on recent year average proportions, must be used.



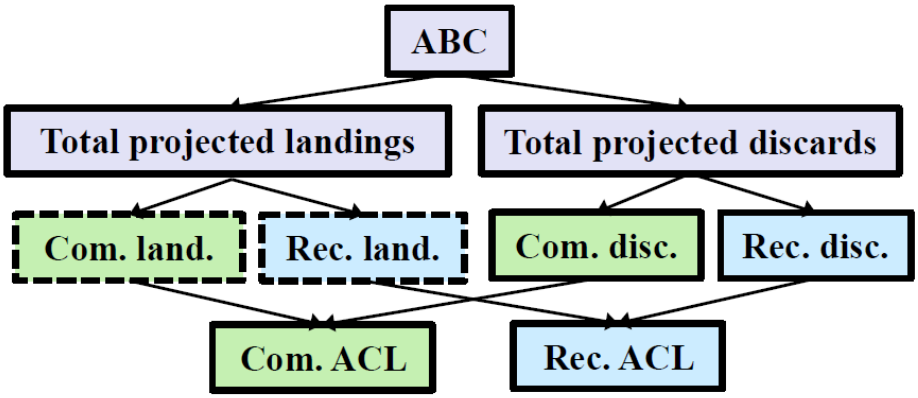
Landings-based Step 2. The total projected landings are allocated to the commercial and recreational sectors based on the allocation percentages defined in the FMP.



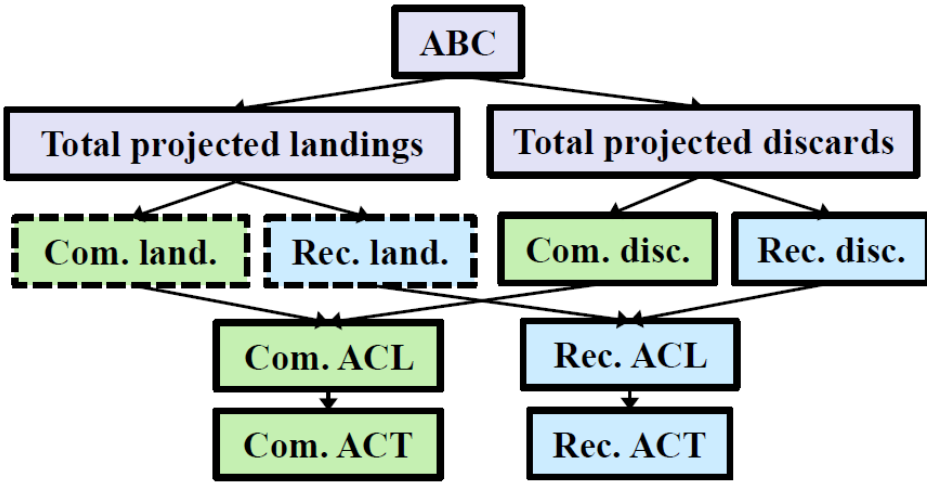
Landings-based Step 3. The total projected dead discards are split into projected commercial dead discards and projected recreational dead discards. The methodology for calculating sector-specific dead discards is not defined in the FMP and can vary based on annual considerations. The Monitoring Committee provides advice on this decision.



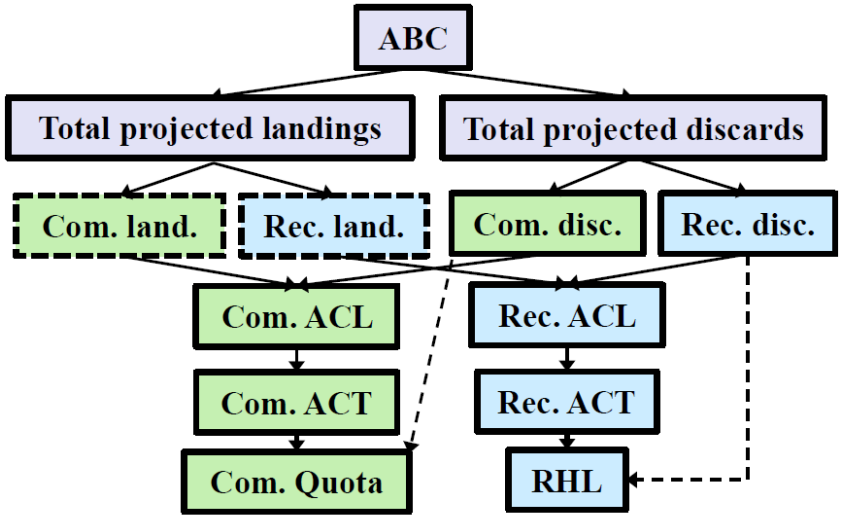
Landings-based Step 4. Commercial and recreational ACLs are calculated by adding the landings amount allocated to each sector and the sector-specific projected dead discards (see Steps 2 and 3 above).



Landings-based Step 5. Commercial and recreational ACTs are set less than or equal to their respective ACLs to account for management uncertainty. The appropriate deduction for management uncertainty (if any) is not pre-defined and is based on annual considerations, including the advice of the Monitoring Committee.



Landings-based Step 6. Commercial quotas and RHLs are determined by subtracting sector-specific discards from the sector-specific ACTs.



Implications of Catch vs. Landings-Based Allocation Approaches

One of the major differences between catch-based and landings-based allocations is at which step in the process the commercial/recreational allocation is applied to derive catch and landings limits. Under a catch-based allocation, the commercial/recreational allocation is applied in the first step of the process after the ABC is determined. Under a landings-based allocation, decisions about the total amount of expected landings and dead discards must be made before the commercial/ recreational allocation is applied. The commercial/recreational allocation is then applied to the total amount of expected landings (Figure 4).

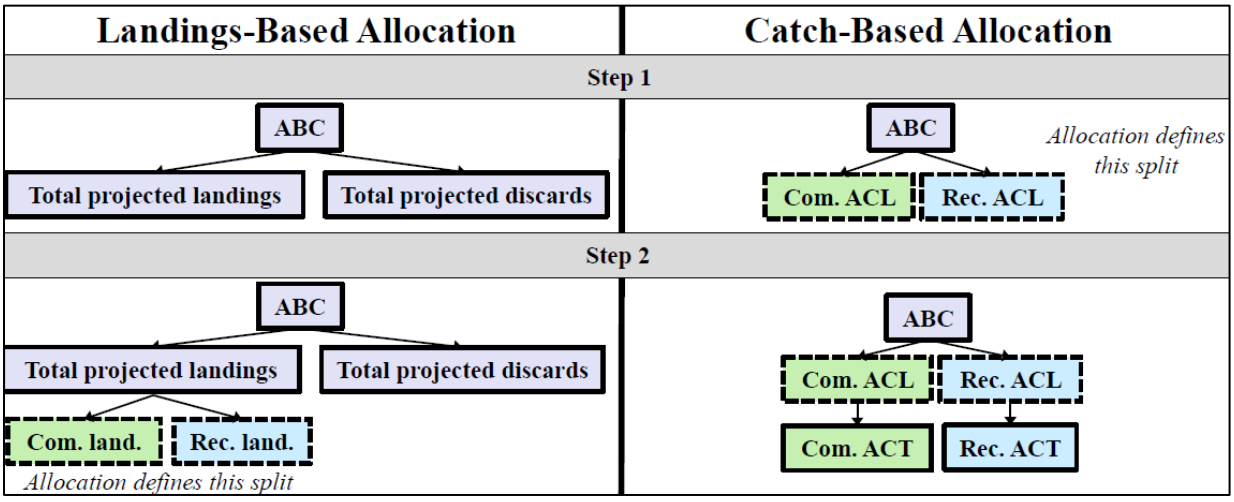


Figure 4: Comparison of first two steps of calculating commercial and recreational catch and landings limits under catch and landings-based allocations.

The method for determining total expected landings and dead discards under a landings-based approach is not specified in the FMP and can vary based on annual considerations. In practice, this

typically involves consideration of stock assessment projections and/or recent trends in landings and dead discards, depending on the species. In this way, considerations of recent trends in the stock and discard trends in either the commercial or recreational fishery impacts both sector's catch and landings limit under a landings-based allocation to a greater extent than under a catch-based allocation.

Under a catch-based allocation, the total ABC is always allocated among the commercial and recreational sectors in the same way (i.e., based on the allocation percentages defined in the FMP) regardless of recent trends in year classes or landings and dead discards in each sector. Put another way, under a catch-based allocation, changes in landings and dead discards in one sector do not influence the other sector's ACL as the entire ABC is always split among the sectors based on the allocation defined in the FMP, regardless of recent trends in landings and discards by sector. In theory, this can allow each sector to see the benefits of a reduction in their own dead discards to a greater extent than under a landings-based allocation. Under a catch-based allocation, a reduction in dead discards in one sector can result in an increase in that sector's landings limit in a future year. This was part of the rationale for implementing the current catch-based allocation for scup as it was expected to incentivize a reduction in commercial dead discards, which were of concern during development of Amendment 8. Under a landings-based allocation, changes in landings and dead discards in one sector can influence the catch and landings limits in both sectors; therefore, the benefits of a reduction in dead discards (or the negative impacts of an increase in dead discards) in one sector can also be felt by the other sector.

Although catch- and landings-based allocations may create different incentives for reducing dead discards in each sector, in reality, this may be a long-term impact. With the exception of the no action alternatives, all the allocation alternatives under consideration through this amendment are based on historical patterns in the fisheries considering the best available recreational and commercial data, either using the original base years or considering data through 2018 or 2019, depending on the alternative (Section 4.1). Therefore, the catch or landings-based allocations under many of the alternatives may not create an immediate notable incentive for change compared to recent operating conditions. Selection of catch versus landings-based allocations does have an immediate effect on each sector's landings limit. Appendix C presents a methodology for projecting landings limits under the catch- and landings-based allocation alternatives, and Section 4.2 compares recent trends in landings data to the projected landings limits under each allocation alternative.

APPENDIX B: Supplemental Information on Basis for Allocation Alternatives

This appendix describes the rationale behind each of the commercial/recreational allocation percentage alternatives listed in alternative sets 1a-1c (Table 19). These alternatives were initially developed by the FMAT (Fishery Management Action Team) and approved by the Council and Board for inclusion in this amendment.

Table 19. Alternatives considered through this amendment for commercial/recreational allocation percentages (i.e., alternative sets 1a – summer flounder, 1b - scup, and 1c – black sea bass) grouped according to the approach used to derive the alternatives.

Approach	Description	Associated Alternatives
A	No action/status quo	1a-4, 1b-1, 1c-4
B	Same base years as current allocations (varies by species) but with new data	1a-5, 1b-2, 1b-5*, 1c-5
C	2004-2018 base years	1a-1, 1a-6*, 1b-6, 1c-2
D	2009-2018 base years	1a-2*, 1a-6*, 1b-3*, 1b-5*, 1c-3, 1c-7*
E	2014-2018 base years	1a-3, 1a-7, 1b-5*, 1c-7*
F	Approximate status quo harvest per sector compared to 2017/2018 (summer flounder) or 2018/2019 (scup, black sea bass)	1a-2*, 1b-4, 1b-7, 1c-1, 1c-6*
G	Average of other approaches approved by Council/Board in June 2020	1a-2*, 1b-3*, 1c-6*

*indicates an alternative supported by multiple approaches.

Approach A (no action/status quo)

The no action/status quo alternatives consider the consequences of taking no action and retaining the current commercial/recreational allocations. It is required that all Council and Commission amendments consider no action/status quo alternatives.

Approach B (same base years as current allocations but with new data)

This approach would use updated recreational and commercial data from the same base years as the current allocations to inform new allocation percentages. This is the basis (or, depending on the alternative, part of the basis) for alternatives 1a-5, 1b-2, 1b-5, and 1c-5.

Both catch and landings-based alternatives using this approach are considered for scup (alternatives 1b-2 and 1b-5, respectively). However, for summer flounder and black sea bass, only landings-based alternatives using this approach are considered (alternative 1a-5 for summer flounder and 1c-5 for black sea bass). This is because dead discard estimates in weight are not available for all the current base years for summer flounder (i.e., 1980-1989) and black sea bass (i.e., 1983-1992). Estimates of landings and dead discards in weight in both sectors are available for all the current base years for scup (i.e., 1988-1992).

MRIP does not provide estimates of recreational catch or harvest prior to 1981; therefore, the full 1980-1989 base years for summer flounder cannot be re-calculated for the recreational fishery. Instead, alternative 1a-5 uses 1981-1989 as the base years.

The rationale behind the selection of the current base years for each species is not explicitly defined in the FMP amendments that first implemented the commercial/recreational allocations. The current base years for scup and black sea bass are all years prior to Council and Commission management. For summer flounder, the Commission FMP was adopted in 1982 but contained mostly management guidelines rather than required provisions. The joint Council and Commission FMP was adopted in 1988, toward the end of the 1980-1989 base year period used to develop allocations. The management program for summer flounder was quite limited until Amendment 2 was implemented in 1993. The current base years for each species were likely chosen based on a desire to use as long of a pre-management time period as possible considering the limitations of the relevant data sets.

The approach of revising the commercial/recreational allocations using the same base years and new data allows for consideration of fishery characteristics in years prior to influence by the commercial/recreational allocations, while also using what is currently the best scientific information available to understand the fisheries in those base years.

Approach C (2004-2018 base years), approach D (2009-2018 base years), and approach E (2014-2018 base years)

Under approaches C, D, and E, the commercial/recreational allocation for each species would be based on the proportion of catch or landings from each sector during the most recent 15, 10, or 5 years through 2018, respectively. Final 2019 data from both sectors were not available during initial development of these alternatives; therefore, this amendment only considers catch and landings data through 2018.

The fisheries have changed notably since the commercial/recreational allocations were first implemented in 1993 for summer flounder, 1997 for scup, and 1998 for black sea bass. Most notably, all three species were under rebuilding programs when these allocations were first implemented. According to the most recent stock assessment information, none of the three species are currently overfished or experiencing overfishing. Black sea bass and scup biomass levels are particularly high, at 237% and 198% of the target levels in 2018, respectively. Summer flounder biomass was at 78% of the target level in 2017.[7]

Other characteristics of the fisheries have also changed. Limited access programs for the commercial fisheries were implemented after the initial allocation base years. Possession limits and required minimum fish sizes in both sectors were implemented and have constrained both commercial and recreational harvest. Reporting and monitoring systems and requirements in both sectors have improved. Socioeconomic conditions such as demand for seafood and the demographics and number of both commercial and recreational fishermen have also shifted.

For these reasons, this amendment will consider allocation percentages based on more recent trends in the fisheries compared to the initial base years. The FMAT, Council, and Board agreed that the most recent 15, 10, and 5 years (through 2018) are reasonable time periods to consider.

During these time periods, the fisheries were theoretically constrained by the current allocations. However, the commercial fisheries were generally held closer to their allocations than the recreational fisheries, even when measuring recreational harvest with the pre-calibration MRIP

[7] Stock assessment reports for these species can be found at: https://www.fisheries.noaa.gov/resource/publication-database/northeast-stock-assessment-documents-search-tool.

data available prior to 2018. Due to the nature of these fisheries, the commercial fisheries have been much more comprehensively monitored in a more timely manner than recreational fisheries during these time periods. All federally permitted commercial fishermen are required to sell their catch to federally permitted dealers, and those dealers must submit landings reports on a weekly basis. If commercial fisheries are projected to land their full quota prior to the end of the year or quota period, they can be shut down. The commercial fisheries have rarely exceeded their quotas by notable amounts over the past 15 years due to close monitoring and reporting.

Recreational harvest is monitored through a combination of voluntary responses to MRIP surveys and VTR data from federally permitted for-hire vessels. Preliminary MRIP data are provided in two month "wave" increments and are not released until approximately two months after the end of the wave. Final recreational data are generally not available until the spring of the following year. Due to the delay in data availability, in-season closures are not used for these recreational fisheries. Recreational fisheries are primarily managed with a combination of possession limits, minimum fish sizes, and open/closed seasons that are projected to constrain harvest to a certain level. However, recreational harvest is influenced by a number of external factors, and the level of harvest associated with a specific combination of possession limits, minimum fish sizes, and open/closed seasons can be difficult to accurately predict. Compared to commercial effort, recreational effort is more challenging to manage, especially considering the recreational sector is an open access fishery. For these reasons, recreational harvest is not as tightly controlled and monitored as commercial landings.

In summary, there are tradeoffs associated with allocations based on recent fishery performance. These allocations could better reflect the current needs of the fisheries and be more responsive to changes in the fisheries and stocks compared to allocations using the initial base years. However, these alternatives would reallocate based on time periods when the recreational fishery was effectively less constrained to their limits than the commercial fishery. The implications may be different for each of the three species, and the issues should be carefully considered. From 2004-2018, scup tended to have more consistent quota and RHL underages in both sectors than summer flounder and black sea bass, and black sea bass had much more consistent RHL overages than the other two species (in all cases considering the pre-calibration MRIP data available prior to 2018).

Approach F: Approximate status quo harvest per sector compared to 2017/2018 (summer flounder) or 2018/2019 (scup, black sea bass)

Rationale

The intent behind this approach is to modify the percentage allocations to allow for roughly status quo landings in both sectors under the 2020-2021 ABCs for all three species compared to year(s) prior to the recent catch limit revisions based on the most recent stock assessments. This approach was developed prior to the August 2020 Council and Board meeting when both groups agreed to revise the 2021 ABCs for all three species; therefore, this approach considers the previously implemented 2021 ABCs. Compared to the previously implemented 2021 ABCs, the revisions approved by the Council and Board in August 2020 represent an increase of 8% for summer flounder, 13% for scup, and 9% for black sea bass.

The most recent stock assessments for all three species incorporated the revised MRIP data as well as updated commercial fishery data and fishery-independent data through 2017 for summer flounder and 2018 for scup and black sea bass. Catch and landings limits based on these

assessments were implemented in 2019-2021 for summer flounder and 2020-2021 for scup and black sea bass. Identical catch and landings limits across each year were implemented for summer flounder and black sea bass. For scup, the catch and landings limits varied across 2020-2021.

For summer flounder, these changes resulted in a 49% increase in the commercial quota and RHL in 2019 compared to 2018. Despite the increase in the RHL, recreational management measures could not be liberalized because the revised MRIP data showed that the recreational fishery was already harvesting close to the increased RHL. The increased commercial quota allowed for an increase in commercial landings.

For black sea bass, these changes resulted in a 59% increase in the commercial quota and RHL for 2020 compared to 2019. Status quo recreational measures for black sea bass were expected to result in an overage of the increased 2020 RHL; however, the Council, Board, and NMFS agreed to maintain status quo recreational management measures for 2020 to allow more time to consider how to best modify recreational management in light of the new MRIP data. Commercial landings appear to have increased in response to the increase in the quota; however, they are not likely to increase by the full 59% due to the impacts of the COVID-19 pandemic on market demand.

For scup, these changes resulted in a decrease in the commercial quota (-7%) and RHL (-12%) in 2020 compared to 2019. Status quo recreational measures for scup in 2020 were maintained based on similar justifications described above for black sea bass as well as the expectation that the commercial fishery would continue to under-harvest their quota due to market reasons.

Given these circumstances, an attempt was made to calculate revised commercial/recreational allocations for all three species such that harvest in each sector could remain similar to pre-2019 levels for summer flounder and pre-2020 levels for scup and black sea bass (i.e., the years prior to implementation of the most recent stock assessments for all three species), at least on a short-term basis under the current ABCs. This would require lower commercial quotas than those currently implemented for all three species. However, the Council and Board agreed that this approach warrants further consideration given that the commercial quotas for summer flounder and black sea bass increased by 49% and 59% respectively as a result of the most recent stock assessments, the commercial scup quota has been under-harvested for over 10 years. The recreational black sea bass and scup fisheries are facing the potential for severe restrictions based on a comparison of the revised MRIP data in recent years to the current RHLs under the existing allocations.

Defining status quo for each species and sector

Due to unique circumstances in each fishery, the status quo harvest target under this approach was not defined the same way across all species and sectors. Recreational harvest can vary notably from year to year, even under similar management measures. For this reason, recreational status quo for all three species was defined as average recreational harvest in pounds during the two years prior to the most recent catch limit revisions (i.e., 2017-2018 for summer flounder and 2018-2019 for scup and black sea bass). Commercial scup landings are also variable and have been below the quota since 2007 for market reasons. Therefore, status quo for the commercial scup fishery was also defined as a recent two-year average of harvest (2018-2019). For summer flounder and black sea bass, commercial status quo was defined as landings in the last year prior to revisions based on the most recent assessments (i.e., 2018 for summer flounder and 2019 for black sea bass). This reflects the fact that commercial summer flounder and black sea bass landings are generally close to the quotas.

Status quo levels of discards for each species and sector were defined using the same years described above for landings. At the time that this approach was developed, discard estimates in weight for 2019 were not available for either sector; therefore, it was assumed that 2019 discards would be equal to the 2016-2018 average for all species and sectors. Because the Council and Board approved specific allocation alternatives in August 2020, this analysis was not updated with the 2019 discard data that has since become available.

Methodology for calculating allocations

This approach considers the 2020 - 2021 ABCs (or, in the case of scup, the average of the 2020 and 2021 ABCs). Because this approach would modify the commercial/recreational allocation percentages, expected harvest and discards in each sector could not be calculated with the same methods used for setting the 2020-2021 specifications. Instead, initial values for expected dead discards by sector were calculated by dividing the 2020-2021 ABCs into expected total (i.e., both sectors combined) landings and total dead discards based on the average proportion of total landings and dead discards during 2017-2019 (see note above about 2019 discards). The expected total amount of dead discards was then divided into commercial and recreational discards based on the average contribution of each sector to total dead discards during 2017-2019. Initial expected harvest was defined as the status quo level of landings in each sector described above. These were the target commercial quotas and RHLs. As described below, these initial values for both harvest and dead discards were modified during subsequent steps of the analysis.

For summer flounder, total expected catch was 18% below the 2020-2021 ABC. This surplus allowable catch was split evenly among the two sectors. The resulting catch and landings limits, including expected dead discards in each sector, were modified to account for this surplus. For scup, total expected catch was 9% above the 2020-2021 average ABC. For black sea bass, total expected catch was 2% above the 2020-2021 ABC. For both scup and black sea bass, the catch reduction necessary to prevent an ABC overage was evenly split between the two sectors. Thus, true status quo was not be maintained for any of the three species under this example. For summer flounder, both sectors were able to slightly liberalize compared to the definition of status quo described above. For scup and black sea bass, both sectors had to be slightly restricted. The resulting catch and landings limits were then used to define the allocation percentages in Table 20. These are the allocation percentages for consideration under this approach.

Table 20. **Allocations aiming to allow approximately status quo landings in each sector under the 2020-2021 ABCs compared to recent years prior to catch limit revisions based on the most recent stock assessments.**

Sector	Catch-based			Landings-based		
	Summer flounder	Scup	Black sea bass	Summer flounder	Scup	Black sea bass
Commercial	43%	59%	32%	43%	50%	29%
Recreational	57%	41%	68%	57%	50%	71%

Approach G (average of other approaches approved by Council/Board in June 2020)

The FMAT developed several allocation alternatives during May and June 2020. Many of these approaches resulted in very similar allocation percentages. The Council and Board refined the list of alternatives under consideration in June 2020 and agreed that it would be appropriate to consider

an option for each species that averages the other alternatives in recognition of the similarities in outcomes across many alternatives.

Although this approach does not have a quantitative basis that is distinct from the other alternatives, the FMAT agreed that this is appropriate. They also emphasized that there is not necessarily a clear, objective scientific basis for a single best way to approach these allocations, and that the final decision will be a policy and judgement call between a number of defensible options.

APPENDIX C: Example Quotas and RHLs Under Each Allocation Alternative

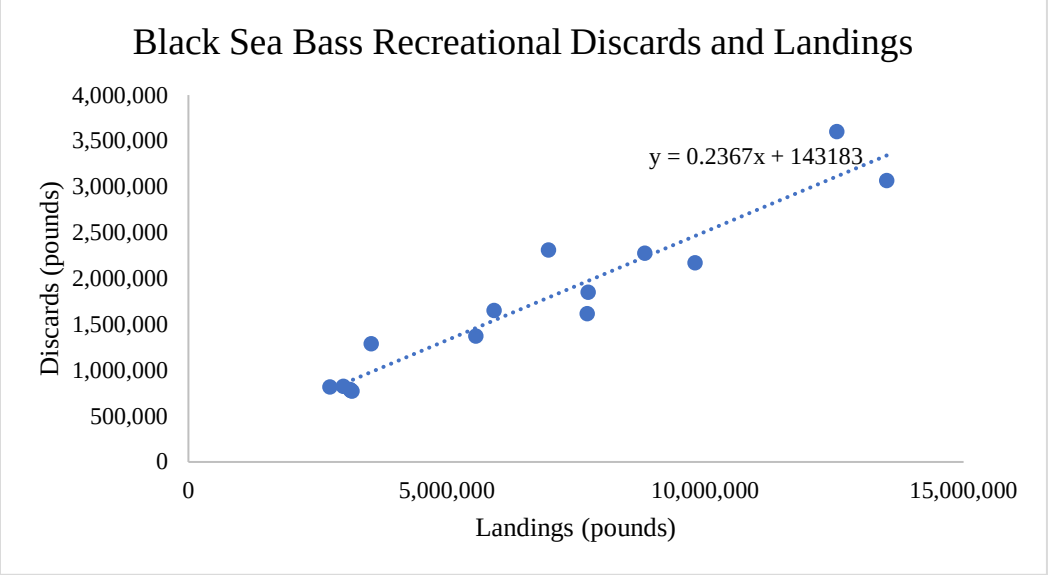
This appendix provides examples of potential quotas and RHLs for each of the commercial/recreational allocation percentage alternatives listed in alternative sets 1a-1c (Table 19). Commercial quotas and RHLs are developed or reviewed annually through consultation with the MC and approved upon Council and Board review. As described below, given several assumptions that need to be made about how dead discards are handled, it is not possible to precisely predict what quotas and harvest limits would be under each allocation. This analysis provides the best approximation of possible limits available at this time.

Dead Discard Projection Methodology

Projecting dead discards is a key component in developing landings limits. Typically, summer flounder and scup total dead discards are based on the stock assessment projections and black sea bass total dead discards are based on a 3-year average of dead discards as a percent of total dead catch. The MC then takes into consideration recent trends and other relevant factors to split the total projected dead discards into dead discards by sector. Projecting expected future commercial quotas and RHLs under revised allocations is complicated because large shifts in allocations are expected to impact recreational and commercial effort, which may result in changes in dead discards for each sector in addition to changes in landings. As such, under modified allocations there would be a transition period where recent trends in dead discards by sector would not be particularly informative for projecting what sector discards would be under new allocations. Expected dead discards by sector under revised allocations are thus better predicted by modeling the relationship between dead catch, landings and discards. This can then be used to project dead discards under example catch and landings limits for each allocation alternative. The modeling process involves assumptions and like any model it is imperfect, but hopefully informative as well. This method is not necessarily the method that the MC will have to use in future specifications development, and they will still have the opportunity to adjust the dead discard projections based on expected changes in stock size, or year class strength, recent changes in management measures, and recent changes in fishing effort.

The following methodology for producing dead discard projections was based on the assumption that there is a relationship between dead discards and catch/landings. Examination of recent trends in black sea bass dead discards and catch/landings reveals a strong positive linear relationship in both the recreational and the commercial fisheries. This is to be expected for catch which is comprised of both landings and discards, but the positive relationship between landings and dead discards is informative for the projection of dead discards. As an example, Figure 5 displays a scatterplot of black sea bass recreational discards and landings for reference. The positive relationship between dead discards was also present in the commercial and recreational scup and summer flounder fisheries.

Figure 5: Scatterplot of black sea bass recreational discards and landings (2004-2018).



Deriving Landings Limits for Catch-based Allocation Shares

Projecting discards for catch-based allocations relies upon simple linear regression with catch as the dependent variable and discards as the independent variable. As such, discards were regressed on catch for the years 2004-2018 for all three species by sector. While the coefficients for catch were not statistically significant at the 90% confidence interval for all species and sectors, in all instances the regression analyses revealed a positive linear relationship. The regression output provides an understanding of how discards scale with catch. By combining this understanding with an example ABC and a specific allocation share, it becomes possible to project a RHL and commercial quota for each allocation alternative.

Deriving Landings Limits for Landings-Based Allocations

Projecting landings limits for landings-based allocations also relies upon simple linear regression, but with landings as the independent variable and discards as the dependent variable. Discards were regressed on landings for the years 2004-2018 for all three species by sector. Although the coefficients for landings were not all statistically significant at the 90% the regression analyses did reveal a positive linear relationship for all three species. The use of regression analysis provides a model for how discards may potentially scale with landings. Through algebraic manipulation, it is possible to solve for the RHL and commercial quota given a specific allocation share and an example ABC.

Example RHLs and Quotas Under Allocation Alternatives

The following tables provide the example commercial quotas and RHLs for each species under each allocation alternative using the methodology described above. As previously stated, the regressions were based on landings and discards data from 2004-2018. In addition, the 2020 ABC value was used. For the status quo allocation alternatives, the regression approach was used to determine the example commercial quota and RHL rather than using the actual implemented 2020 limits in order to make these values more comparable to the other alternatives.

When interpreting these tables, it may be helpful to also reference the basis for each alternative as described in more detail in Appendix B, an explanation of the implications of catch versus landings-based allocations in Appendix A, and view a comparison of recent landings trends to the projected landings limits for each allocation alternative (including status quo which is highlighted) in Section 4.2.

Table 21: Black sea bass example quotas and RHLs in millions of pounds, under an ABC of 15.07 million pounds.

Black Sea Bass							
2020 ABC: 15.07 mil lb.	CATCH-BASED			LANDINGS-BASED			
Alternative	**1c-1**	**1c-2**	**1c-3**	**1c-4**	**1c-5**	**1c-6**	**1c-7**
Com. allocation	**32%**	**28%**	**24%**	**49%**	**45%**	**29%**	**22%**
Rec. allocation	**68%**	**72%**	**76%**	**51%**	**55%**	**71%**	**78%**
Commercial ACL	4.82	4.22	3.62	7.94	7.32	4.69	3.47
Commercial discards	1.51	1.23	0.95	2.51	2.28	1.31	0.85
Commercial quota	**3.31**	**2.99**	**2.66**	**5.43**	**5.04**	**3.38**	**2.61**
Recreational ACL	10.25	10.85	11.45	7.13	7.75	10.38	11.60
Recreational discards	2.08	2.20	2.32	1.48	1.60	2.10	2.34
RHL	**8.16**	**8.65**	**9.14**	**5.65**	**6.15**	**8.28**	**9.27**

Table 22: Scup example quotas and RHLs in millions of pounds, under an ABC of 35.77 million pounds.

Scup							
2020 ABC: 35.77 mil lb.	CATCH-BASED				LANDINGS-BASED		
Alternative	**1b-1**	**1b-2**	**1b-3**	**1b-4**	**1b-5**	**1b-6**	**1b-7**
Com. allocation	**78%**	**65%**	**61%**	**59%**	**57%**	**56%**	**50%**
Rec. allocation	**22%**	**35%**	**39%**	**41%**	**43%**	**44%**	**50%**
Commercial ACL	28.12	23.25	21.82	21.10	21.49	21.18	19.27
Commercial discards	5.21	6.35	5.90	5.67	4.65	4.62	4.46
Commercial quota	**22.91**	**16.90**	**15.92**	**15.44**	**16.85**	**16.56**	**14.81**
Recreational ACL	7.65	12.52	13.95	14.67	14.28	14.59	16.50
Recreational discards	1.18	1.48	1.58	1.62	1.57	1.59	1.70
RHL	**6.46**	**11.04**	**13.04**	**13.04**	**12.71**	**13.01**	**14.81**

Table 23: Summer flounder example quotas and RHLs in millions of pounds, under an ABC of 25.03 million pounds.

Summer Flounder							
2020 ABC: 25.03 mil lb.	CATCH-BASED			LANDINGS-BASED			
Alternative	**1a-1**	**1a-2**	**1a-3**	**1a-4**	**1a-5**	**1a-6**	**1a-7**
Com. allocation	**44%**	**43%**	**40%**	**60%**	**55%**	**45%**	**41%**
Rec. allocation	**56%**	**57%**	**60%**	**40%**	**45%**	**55%**	**59%**
Commercial ACL	11.01	10.76	10.01	13.67	12.69	10.72	9.92
Commercial discards	2.22	2.19	2.10	2.58	2.49	2.33	2.26
Commercial quota	**8.79**	**8.57**	**7.92**	**11.10**	**10.20**	**8.38**	**7.65**
Recreational ACL	14.02	14.27	15.02	11.36	12.34	14.31	15.11
Recreational discards	3.77	3.80	3.87	3.96	3.99	4.07	4.10
RHL	**10.24**	**10.47**	**11.15**	**7.40**	**8.34**	**10.25**	**11.02**

APPENDIX D: Acronyms and Abbreviations

ABC	Acceptable Biological Catch
ACL	Annual Catch Limit
ACT	Annual Catch Target
AM	Accountability Measure
Board	The Commission's Summer Flounder, Scup, and Black Sea Bass Management Board
Commission	Atlantic States Marine Fisheries Commission
Council	Mid-Atlantic Fishery Management Council
FMP	Fishery Management Plan
MC	Monitoring Committee
MRIP	Marine Recreational Information Program
NEFSC	Northeast Fisheries Science Center
NMFS	National Marine Fisheries Service
RHL	Recreational Harvest Limit
TAL	Total Allowable Landings

Summer Flounder, Scup, Black Sea Bass
Commercial/Recreational Allocation Amendment

FMAT Meeting Summary

November 5, 2020, 9:00 AM-11:00 AM

Attendees

FMAT members: Greg Ardini, Julia Beaty, Dustin Colson-Leaning, Karson Coutre, Kiley Dancy, Marianne Ferguson, Emily Keiley, Gary Shepherd, Caitlin Starks, Mark Terceiro, Tony Wood, Savannah Lewis

Others: Paul Rago, Mike Waine, Joe Cimino, Greg DiDomenico, Dewey Hemilright, Michelle Duval, Tony DiLernia

Meeting objectives

The objectives of this meeting were for the Fishery Management Action Team (FMAT) to 1) review and discuss the analysis performed by Paul Rago in response to the Council and Board's request to evaluate impacts of allocation changes on the risk of exceeding the ABC/OFL and 2) review and provide preliminary feedback on a partial draft of the public hearing document .

Meeting summary

Sector variability analysis provided by Dr. Paul Rago

The FMAT received a draft white paper and presentation from Dr. Rago summarizing an analysis of the potential risk of exceeding the catch target (e.g., ABC or OFL) under different commercial/recreational allocations given the inherent variability of the catch data for each sector. This included a theoretical example of a fishery with two sectors, one sector having higher variability in the catch component data than the other. It also included examples for each of the three species using the actual coefficients of variation (CV) for commercial and recreational landings and dead discards in recent years using the same data included in the stock assessments. This analysis evaluated the probability of exceeding the catch target by different amounts under a range of different proportions of total dead catch coming from the commercial versus recreational sectors.

FMAT members discussed that this analysis does not address the efficacy of management in constraining landings and dead discards in either sector. The analysis assumes that each catch component matches its allocation exactly, and only evaluates the effects of the uncertainty associated with the inherent variability of the harvest and discard data for each sector. It also does not assess whether the estimates are biased or not. It will be important to clearly communicate the limited scope of this analysis to the Council, Board, and public. One FMAT member said his impression of Council and public perception is that the estimates are incorrect or there is a large bias, and this analysis does not address those concerns. He also noted that it would be hard to quantify this perceived bias and it would require a lot of assumptions.

The FMAT discussed that the white paper provides a theoretical example with more extreme variability in order to illustrate the extremes of possible impacts, however these CVs are much higher than the actual CVs for these three species. One FMAT member noted that the results of the analysis with the actual CVs will be helpful for the Council and Board to see, because it shows that for both sectors, the catch components are fairly well estimated. However, the FMAT and Dr. Rago also noted that for black sea bass, commercial discards had a higher CV than recreational harvest or discards. If the precision estimates for each of the three species are taken at face value, the risk of exceeding the ABC does not vary greatly under a wide range of different proportions of total dead catch from each sector. This suggests that changes in the commercial/recreational allocation, especially changes within the range currently under consideration, may not have notably different impacts on the risk of exceeding the ABC. One FMAT member said the issue is more that people do not believe the recreational estimates, not that they are not precise. There may be a bias that is not captured, but that is hard to quantify and whether any exists is unknown at this time.

Multiple FMAT members felt that the species-specific analysis would be helpful to include in the environmental assessment for this action and some of the broad conclusions could be included in the Public Hearing Document (PHD). Multiple FMAT members discussed concerns over including the hypothetical more extreme example in amendment documents because it does not necessarily reflect the fisheries and it might be confusing for the public and decision makers trying to understand the impacts of the alternatives. Dr. Rago noted that the theoretical example is more of a teaching tool to help explain how the exercise worked and agreed that it is probably not worth including in a PHD because readers may miss the important sections or get stuck on something that is hypothetical. He added that this analysis diffuses a potential topic that might otherwise take center stage because it suggests that the variability of the estimates is not of major concern; rather, separate issues such as the believability of the estimates and controllability of the fisheries are of greater concern for some managers and stakeholders.

The FMAT agreed to move forward working with Dr. Rago to draft a document that focuses on the species-specific examples of the analysis using less technical language. This document would be included in the December briefing materials for the Council and Board to decide if they want some or part of it included in the PHD.

Draft Public Hearing Document

The FMAT reviewed the draft PHD, provided general feedback, and discussed future deadlines for the document. Staff highlighted planned socioeconomic analyses, recent rewrites of the sector transfer section, and the draft explanation of catch- and landings-based allocations. The FMAT did not discuss the draft in detail but focused on certain sections for specific feedback.

FMAT members reiterated concerns about data availability and timing of sector transfers, noting that while they are not impossible to implement, they could turn into an annual allocation argument and may put the sector giving up quota in jeopardy of an overage. One FMAT member said that although she has concerns about the feasibility of transfers between the sectors, it would be useful to solicit public comments on this topic. It will be important to outline the caveats associated with these alternatives in the PHD.

One FMAT member recommended that the price and landings figures included in the PHD be produced at a coastwide level since this action is not expected to have notable geographic differences in impacts.

The FMAT also discussed the catch versus landings-based allocation explanation sections in the document. One FMAT member liked the flow charts and said that it is good to illustrate that the steps are the same, they just occur in a different order between the two types of allocation. There was one suggestion to consider including simplified numeric examples with the flowcharts. Staff noted they were working with a few stakeholders to get feedback on the descriptions of this issue that are intended for the PHD. One member of the public asked several clarifying questions and setup a time to discuss them in detail in a separate meeting with staff.

Potential Effects of Alternative Allocation of Catch to Recreational and Commercial Sectors on the Probability of Overfishing

White Paper for MAFMC Summer Flounder, Scup, Black Sea Bass Commercial/Recreational Allocation Amendment FMAT

Analyses by Dr. Paul Rago

Document developed by Paul Rago and Council and Commission Staff

November 2020

Summary

The Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission (ASMFC) are in the process of considering whether and how to revise the allocations of total allowable catch or landings between the commercial and recreational sectors for summer flounder, scup, and black sea bass. This document examines the question of how the potential allocation changes might impact variance in the estimates of total catch and how this might impact the likelihood of exceeding the acceptable biological catch (ABC) level for each species. This approach could help inform choices among alternatives but would not be sufficient as the sole basis of selecting a preferred alternative.

The commercial and recreational sectors for summer flounder, scup, and black sea bass have varying degrees of precision in the estimates of total landings and dead discards (see Table 1 below). Catch and harvest limits for each sector are allocated without regard to precision of the estimates. At higher levels of variability (i.e., lower precision) the likelihood of an estimate exceeding a target catch level (e.g., the ABC) due to this variability in the data will increase. Similarly, it also true that at higher levels of variability, there is a higher likelihood of catch falling below the target catch level (underachieving the ABC). However, the Council and ASMFC have raised concerns that changes in the allocation may result in an increased probability of overfishing, and as preventing overfishing is a primary goal of management, that is what is evaluated here.

The evaluation below describes the overall probability of exceeding a target catch level as a function of the component allocations and the precision of the estimates. It is important to note that this analysis assumes that each catch component exactly meets its specified allocation, meaning that this analysis considers only impacts related to variances in the catch estimates for the commercial and recreational sectors and does not consider factors such as the efficacy of the management program in constraining catch in either sector.

This analysis considers the implications of different proportions of total dead catch (i.e., landings and dead discards) from the two sectors. These proportions are only the same as the commercial/recreational allocations if the allocations are catch-based and catch in both sectors exactly matches the allocations. While it is theoretically possible to do this analysis for landings-based allocations, this would require several assumptions about how discards should be allocated to each sector, and landings-based allocations were not evaluated for this exercise.

As described below, the results of this exercise demonstrate that if the precision estimates for each of the three species are taken at face value**, the risk of exceeding the ABC does not vary greatly under a wide**

range of different proportions of total dead catch from each sector. This suggests that changes in the commercial/recreational allocation, especially changes within the range currently under consideration, may not have notably different impacts on the risk of exceeding the ABC.

Background

Sustainable fisheries management relies on a fundamental principle of preventing overfishing by preventing catch from exceeding the Overfishing Limit (OFL), a catch level derived from stock assessments. To reduce the probability of overfishing, annual catch limits for each species are set to a level known as the Acceptable Biological Catch (ABC) that is below the OFL by some appropriate buffer. For Council managed stocks, this level is set by the Scientific and Statistical Committee (SSC) by accounting for both the estimated level of uncertainty in the OFL and a desired or acceptable level of risk by the Council. Given that the results of any single model are likely to underestimate the variation in the OFL, the SSC assigns a level of uncertainty (i.e., a CV of 60%, 100%, or 150%) to the OFL using a set of criteria that examine the model, the underlying data, the history of the fishery, and other factors.

Managers monitor fishery catch relative to the ABC by assembling catch estimates in as timely a manner as possible. Commercial landings are most readily available, and this data set is an assumed census given the commercial reporting and monitoring systems in place. Commercial discards, recreational landings, and recreational discards are all estimated quantities derived from sampling programs. Recreational landings and discards are estimated in two-month waves, with about a month lag after the wave for final estimation. Commercial discards can be approximated during the season, but the final estimates of total discards and their variances, are generally not available until after the fishing season is complete. Thus the realized catch that actually occurs given this ABC guidance is uncertain because of uncontrollable factors and expected sampling variation. For example, commercial discards may vary due to influence of strong but not fully recruited year classes. Recreational landings and discards are the products of a complex statistical survey that relies on estimation of total fishing effort and random sampling of angler trips at fishing locations.

Allocation is not a matter of science because it involves a complex set of social, historical and economic issues and is ultimately a policy decision. The SSC sets the ABC without consideration of the proportional allocation of catches to sectors. Moreover, the catches are monitored without consideration of the uncertainty of estimation. Consider two example scenarios with equal estimated catch. A catch estimate with a 10% CV is used in management in the same manner as a less precise estimate with a 100% CV, despite the fact that the confidence interval of the latter ensures a higher probability that the true catch may be substantially higher (or lower) than measured. The following sections outline some of the implications of the underlying variability in catches among fishery types and describe a general procedure along with examples using species-specific CVs for summer flounder, scup and black sea bass.

Species Examples

The following examples use the methodology described in Appendix A to assess the probability of exceeding a catch target (e.g., ABC) by varying amounts under different proportions of total catch from each sector. The varying proportions of catch from each sector are expressed as “fraction of catch to the commercial fishery” and the ranges used represent the allocation percentages considered in the amendment. The fraction of catch from the recreational fishery is equal to 1 minus the fraction from the

commercial fishery. As previously stated, these fractions are only the same as the commercial/recreational allocations if catch in both sectors exactly meets the allocations under a catch-based allocation approach. The examples use CVs associated with the commercial and recreational landings and dead discards in each sector over the past 10 years (Table 1).

Table 1: Summary of average commercial and recreational landings and dead discards by species with associated CVs. Data provided by NEFSC and MRIP (MRIP for black sea bass recreational only).

		Commercial (mt)		***Recreational (mt)***		
Species	***Quantity***	***Landings***	***Discards***	***Landings***	***Discards***	***Total***
Summer flounder, 2010-2019	***mt***	4,813.3	1,151.4	5,766.6	1,873.6	13,604.9
	CV	**0.01**	**0.127**	**0.089**	**0.078**	
Scup, 2010-2019	***mt***	6,797.4	2,250.9	5,298.7	671.3	15,018.3
	CV	**0.01**	**0.104**	**0.134**	**0.127**	
Black Sea Bass, 2010-2019[a]	***mt***	1,156	464[a]	3,847.3	974.4	6,441.7
	CV	**0.01**	**0.31**[a]	**0.126**[b]	**0.102**[b]	

[a] Commercial black sea bass dead discards are for 2010-2018 as final 2019 dead discard estimates are not currently available.

[b] For black sea bass, recreational harvest and dead discard CVs are based on numbers of fish which are closely correlated with the CVs for weight estimates.

Summer Flounder

For summer flounder, a range of 40% to 60% of the catch allocated to the commercial fishery is considered based on the summer flounder alternatives in the amendment. Assuming a normal distribution of each catch component, and assuming that the catch for each component matches its allocation, the theoretical probability of exactly meeting the ABC, as opposed to exceeding (or underachieving) the ABC by any amount, due to variance in the data is 50%. The probability of exceeding the ABC by a specified percentage gets lower as that specified percentage increases. For example, it is much less likely that the ABC will be exceeded by 10% based on variance in the catch component data than it is that the ABC will be exceeded by 5%.

The probability of a 5% ABC overage (or underage) varies based on the allocation percent to the commercial fishery, from about 12% under a 40% allocation to the commercial fishery to 6% under a 60% allocation to the commercial fishery. The probability of exceeding the ABC by 10% or more given the variance in the underlying data is 1% or less over the range of allocations considered for summer flounder.

Table 2: Probability of exceeding the summer flounder ABC by varying amounts under varying levels of total catch coming from the commercial fishery based on the methodology described in Appendix A and the CVs shown in Table 1. The remainder of the total catch comes from the recreational fishery. The fraction of total catch from the commercial fishery is only the same as the commercial allocation if commercial catch exactly meets the commercial allocation under a catch-based allocation approach. The range of fractions of total catch from the commercial fishery is based on the range of allocation percentages currently under consideration through the Commercial/Recreational Allocation Amendment.

Fraction of total catch from com. fishery	Probability of Exceeding Summer Flounder ABC by X%						
	0% ABC overage	5% ABC overage	10% ABC overage	15% ABC overage	20% ABC overage	25% ABC overage	30% ABC overage
40%	50.00%	12.33%	1.03%	0.03%	0.00%	0.00%	0.00%
41%	50.00%	12.00%	0.94%	0.02%	0.00%	0.00%	0.00%
42%	50.00%	11.66%	0.85%	0.02%	0.00%	0.00%	0.00%
43%	50.00%	11.32%	0.78%	0.01%	0.00%	0.00%	0.00%
44%	50.00%	10.98%	0.70%	0.01%	0.00%	0.00%	0.00%
45%	50.00%	10.64%	0.64%	0.01%	0.00%	0.00%	0.00%
46%	50.00%	10.30%	0.57%	0.01%	0.00%	0.00%	0.00%
47%	50.00%	9.97%	0.51%	0.01%	0.00%	0.00%	0.00%
48%	50.00%	9.63%	0.46%	0.00%	0.00%	0.00%	0.00%
49%	50.00%	9.30%	0.41%	0.00%	0.00%	0.00%	0.00%
50%	50.00%	8.96%	0.36%	0.00%	0.00%	0.00%	0.00%
51%	50.00%	8.63%	0.32%	0.00%	0.00%	0.00%	0.00%
52%	50.00%	8.31%	0.28%	0.00%	0.00%	0.00%	0.00%
53%	50.00%	7.99%	0.25%	0.00%	0.00%	0.00%	0.00%
54%	50.00%	7.67%	0.21%	0.00%	0.00%	0.00%	0.00%
55%	50.00%	7.36%	0.19%	0.00%	0.00%	0.00%	0.00%
56%	50.00%	7.05%	0.16%	0.00%	0.00%	0.00%	0.00%
57%	50.00%	6.74%	0.14%	0.00%	0.00%	0.00%	0.00%
58%	50.00%	6.45%	0.12%	0.00%	0.00%	0.00%	0.00%
59%	50.00%	6.16%	0.10%	0.00%	0.00%	0.00%	0.00%
60%	50.00%	5.88%	0.09%	0.00%	0.00%	0.00%	0.00%

Scup

For scup, a range of 50% to 80% of the catch allocated to the commercial fishery is considered based on the scup alternatives in the amendment. Assuming a normal distribution of each catch component, and assuming that the catch for each component matches its allocation, the theoretical probability of exactly meeting the ABC, as opposed to exceeding (or underachieving) the ABC by any amount, due to variance in the data is 50%. The probability of exceeding the ABC by a specified percentage gets lower as that specified percentage increases. For example, it is much less likely that the ABC will be exceeded by 10% based on variance in the catch component data than it is that the ABC will be exceeded by 5%.

The probability of a 5% ABC overage (or underage) varies based on the allocation percent to the commercial fishery, from about 21% under a 50% allocation to the commercial fishery to 6% under an 80% allocation to the commercial fishery. The probability of exceeding the ABC by 10% or more given the variance in the underlying data is 5% or less over the range of allocations considered for scup.

Table 3: Probability of exceeding the scup ABC by varying amounts under varying levels of total catch coming from the commercial fishery based on the methodology described in Appendix A and the CVs shown in Table 1. The remainder of the total catch comes from the recreational fishery. The fraction of total catch from the commercial fishery is only the same as the commercial allocation if commercial catch exactly meets the commercial allocation under a catch-based allocation approach. The range of fractions of total catch from the commercial fishery is based on the range of allocation percentages currently under consideration through the Commercial/Recreational Allocation Amendment.

Fraction of total catch to com. fishery	Probability of Exceeding Scup ABC by X%						
	0% ABC overage	5% ABC overage	10% ABC overage	15% ABC overage	20% ABC overage	25% ABC overage	30% ABC overage
50%	50.00%	20.77%	5.17%	0.73%	0.06%	0.00%	0.00%
52%	50.00%	20.13%	4.70%	0.60%	0.04%	0.00%	0.00%
53%	50.00%	19.47%	4.26%	0.49%	0.03%	0.00%	0.00%
55%	50.00%	18.79%	3.82%	0.39%	0.02%	0.00%	0.00%
56%	50.00%	18.09%	3.41%	0.31%	0.01%	0.00%	0.00%
58%	50.00%	17.37%	3.01%	0.24%	0.01%	0.00%	0.00%
59%	50.00%	16.64%	2.64%	0.18%	0.01%	0.00%	0.00%
61%	50.00%	15.89%	2.28%	0.14%	0.00%	0.00%	0.00%
62%	50.00%	15.12%	1.96%	0.10%	0.00%	0.00%	0.00%
64%	50.00%	14.34%	1.66%	0.07%	0.00%	0.00%	0.00%
65%	50.00%	13.56%	1.39%	0.05%	0.00%	0.00%	0.00%
67%	50.00%	12.76%	1.14%	0.03%	0.00%	0.00%	0.00%
68%	50.00%	11.96%	0.93%	0.02%	0.00%	0.00%	0.00%
70%	50.00%	11.16%	0.74%	0.01%	0.00%	0.00%	0.00%
71%	50.00%	10.37%	0.58%	0.01%	0.00%	0.00%	0.00%
73%	50.00%	9.58%	0.45%	0.00%	0.00%	0.00%	0.00%
74%	50.00%	8.82%	0.34%	0.00%	0.00%	0.00%	0.00%
76%	50.00%	8.07%	0.26%	0.00%	0.00%	0.00%	0.00%
77%	50.00%	7.36%	0.19%	0.00%	0.00%	0.00%	0.00%
79%	50.00%	6.68%	0.13%	0.00%	0.00%	0.00%	0.00%
80%	50.00%	6.04%	0.10%	0.00%	0.00%	0.00%	0.00%

Black Sea Bass

For black sea bass, a range of 20% to 50% of the catch allocated to the commercial fishery is considered based on the black sea bass alternatives in the amendment. Assuming a normal distribution of each catch component, and assuming that the catch for each component matches its allocation, the theoretical probability of exactly meeting the ABC, as opposed to exceeding (or underachieving) the ABC by any amount, due to variance in the data is 50%. The probability of exceeding the ABC by a specified percentage gets lower as that specified percentage increases. For example, it is much less likely that the ABC will be exceeded by 10% based on variance in the catch component data than it is that the ABC will be exceeded by 5%.

For example, the probability of a 5% ABC overage (or underage) varies based on the allocation percent to the commercial fishery, from about 24% under a 20% allocation to the commercial fishery to 1% under a 50% allocation to the commercial fishery. The probability of exceeding the ABC by 10% or more given the variance in the underlying data is 8% or less over the range of allocations considered for black sea bass.

Table 4: Probability of exceeding the black sea bass ABC by varying amounts under varying levels of total catch coming from the commercial fishery based on the methodology described in Appendix A and the CVs shown in Table 1. The remainder of the total catch comes from the recreational fishery. The fraction of total catch from the commercial fishery is only the same as the commercial allocation if commercial catch exactly meets the commercial allocation under a catch-based allocation approach. The range of fractions of total catch from the commercial fishery is based on the range of allocation percentages currently under consideration through the Commercial/Recreational Allocation Amendment.

Fraction of total catch to com. fishery	Probability of Exceeding Black Sea Bass ABC by X%						
	0% ABC overage	5% ABC overage	10% ABC overage	15% ABC overage	20% ABC overage	25% ABC overage	30% ABC overage
20%	50.00%	24.02%	7.91%	1.71%	0.24%	0.02%	0.00%
22%	50.00%	22.83%	6.82%	1.28%	0.15%	0.01%	0.00%
23%	50.00%	21.55%	5.76%	0.91%	0.08%	0.00%	0.00%
25%	50.00%	20.17%	4.73%	0.61%	0.04%	0.00%	0.00%
26%	50.00%	18.69%	3.76%	0.38%	0.02%	0.00%	0.00%
28%	50.00%	17.11%	2.88%	0.22%	0.01%	0.00%	0.00%
29%	50.00%	15.44%	2.09%	0.11%	0.00%	0.00%	0.00%
31%	50.00%	13.67%	1.43%	0.05%	0.00%	0.00%	0.00%
32%	50.00%	11.84%	0.90%	0.02%	0.00%	0.00%	0.00%
34%	50.00%	9.98%	0.51%	0.01%	0.00%	0.00%	0.00%
35%	50.00%	8.13%	0.26%	0.00%	0.00%	0.00%	0.00%
37%	50.00%	6.36%	0.11%	0.00%	0.00%	0.00%	0.00%
38%	50.00%	4.76%	0.04%	0.00%	0.00%	0.00%	0.00%
40%	50.00%	3.41%	0.01%	0.00%	0.00%	0.00%	0.00%
41%	50.00%	2.37%	0.00%	0.00%	0.00%	0.00%	0.00%
43%	50.00%	1.66%	0.00%	0.00%	0.00%	0.00%	0.00%
44%	50.00%	1.24%	0.00%	0.00%	0.00%	0.00%	0.00%
46%	50.00%	1.06%	0.00%	0.00%	0.00%	0.00%	0.00%
47%	50.00%	1.10%	0.00%	0.00%	0.00%	0.00%	0.00%
49%	50.00%	1.20%	0.00%	0.00%	0.00%	0.00%	0.00%
50%	50.00%	1.29%	0.00%	0.00%	0.00%	0.00%	0.00%

Appendix A: Methods

The balance of catch components has important implications for the variance of the overall catch since the components have different degrees of variation. Assuming that there are no additional buffers for management uncertainty or other reasons, total catch for these species is written as:

Total dead catch = Comm landings + Comm dead discards + Rec landings + Rec dead discards

Or

$$C_T = L_C + D_C + L_R + D_R. \qquad (1)$$

If each of the components on the right-hand side are considered to be independent random variables, then the expected value (E) of C_T is simply equal to the sum of the expected values (2). Similarly, the variance (V) of C_T is the sum of the variances of the right-hand side variables (3).

Thus

$$E(C_T) = E(L_C) + E(D_C) + E(L_R) + E(D_R) \qquad (2)$$

and

$$V(C_T) = V(L_C) + V(D_C) + V(L_R) + V(D_R). \qquad (3)$$

The probability that $E(C_T)$ exceeds some target value C* can now be computed by estimating the cumulative distribution function of a normally distributed variable $Y \sim N(m, s^2) = 1 - Q(C^* | E(C_T), V(C_T))$, where Q(.) is the cumulative normal distribution evaluated at C* with parameters $m = E(C_T)$ and $s^2 = V(C_T)$ set equal to the sample estimates. Alternatively, one could assume that the components of total catch have a skewed distribution, such as a lognormal distribution.

Effect of an Alternative Allocation

The current allocation scheme can be written as

$$C_T = p\,C_T + (1-p)\,C_T \qquad (4)$$

where

$$p = (L_C + D_C) / C_T \qquad (5)$$

$$(1-p) = (L_R + D_R) / C_T \qquad (6)$$

The effect of a new allocation scheme, say p' is simply obtained by multiplying the original values by p'/p for $L_C + D_C$ and (1-p')/(1-p) for $(L_R + D_R)$.

Thus the revised values are defined as follows.

$$L'_C = (p'/p) L_C \qquad (7)$$

$$D'_C = (p'/p) D_C \qquad (8)$$

$$L'_R = ((1-p')/(1-p)) L_R \qquad (9)$$

$$D'_R = ((1-p')/(1-p))\, D_R. \qquad (10)$$

Using standard methods of pluggation, it can be shown that

$$C_T = L'_C + D'_C + L'_R + D'_R. \quad (11)$$

by substituting Equation 5 into Eq 7 and 8 and Equation 6 into Eq 9 and 10. Since $0< p'<1$ then Equation 11 becomes

$$C_T = p' C_T + (1-p') C_T \quad (12)$$

In general, the coefficients of variation (CVs) for landings and discards are typically constant, which implies the variances increase with the mean. More specifically, $V(X)^{0.5} /E(X) = g$. Or $V(X)=(g E(X))^2$. Assuming that the CV is invariant with scale, then the variance estimates for the revised allocation scheme can be expressed as

$$V(C_T |p') = (g_1 L'_C)^2 + (g_2 D'_C)^2 + ((g_3 L'_R)^2 + (g_4 D'_R)^2 \quad (13)$$

Where the g_i refer to the original CV for each component of catch. Thus the relationship between the mean and variance of the catch component is maintained irrespective of the revised scale induced by the choice of the allocation parameter p'.

Now of course the real estimate of interest is the probability that the OFL will be exceeded given an original $ABC=C_T$ under the current allocation scheme p versus the comparable probability induced by the choice of an alternative allocation scheme p'. Generalizing from the above, the probability that that $C_T>OFL$ given p can be written as

$$Prob(C_T>OFL|p) = 1- Q(OFL| p, E(C_T), V(C_T |p)) \quad (14)$$

The comparable value for the alternative allocation scheme p' is

$$Prob(C_T>OFL|p') = 1- Q(OFL| p', E(C_T), V(C_T |p')) \quad (15)$$

Note that the expected total $E(C_T)$ is the same in both Equation 14 and 15; the choice of p' does not alter the total expected catch, only the magnitude of the variances.

The concepts described in Equations 1 to 15 are very simple but the notation gets a bit complicated. In a nutshell, the choice of allocation does not alter the overall total catch, but it does alter the estimated variance of the total. If the alternative allocation results in an overall increase in the variance of the total (i.e., Eq. 13) then the probability of C_T exceeding the OFL will increase. Note also that the OFL can be expressed as any alternative scalar of the ABC. For example, the FMAT might wish to consider allocations that have a probability of exceeding 120% of the ABC to be less than 5%. The inverse problem could also be addressed such that a p' is chosen such that the probability of exceeding the OFL is equal to or less than the Council's risk policy given the state of the stock.

Action Plan for Commercial/Recreational Allocation Amendment to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan
Draft as of 10/19/2020

http://www.mafmc.org/actions/sfsbsb-allocation-amendment

Amendment Goal: The purpose of this amendment is to review and consider revisions to the commercial/recreational sector allocations for the summer flounder, scup, and black sea bass fisheries. This action aims to address the allocation-related impacts of the revised data on catch and landings for the recreational and commercial sectors. This is a joint amendment of the Mid-Atlantic Fishery Management Council and Atlantic States Marine Fisheries Commission.

Type of NEPA Analysis Expected: Environmental Assessment (EA)

Additional Expertise Sought: The Council's Fishery Management Action Team (FMAT) for this action will be composed of Council and Commission staff and management partners from the Greater Atlantic Regional Fisheries Office (GARFO) and Northeast Fisheries Science Center (NEFSC), with input from other organizations as appropriate.

Agency	FMAT Role	Person(s)
MAFMC	Council staff (summer flounder)	Kiley Dancy
MAFMC	Council staff (scup)	Karson Coutré
MAFMC	Council staff (black sea bass)	Julia Beaty
ASMFC	Commission staff (summer flounder and scup)	Dustin Colson Leaning
ASMFC	Commission staff (black sea bass)	Caitlin Starks/Savannah Lewis
NMFS GARFO	Sustainable fisheries	Emily Keiley
NMFS GARFO	NEPA	Marianne Ferguson
NMFS NEFSC	Socioeconomics	Greg Ardini
NMFS NEFSC	Stock assessment/population dynamics (consult as needed)	Gary Shepherd
NMFS NEFSC	Stock assessment/population dynamics (consult as needed)	Mark Terceiro
NMFS GARFO	General counsel (consult as needed)	John Almeida

Types of Measures Expected to be Considered: The Council and Board will review and consider revisions to the commercial/recreational sector allocations for summer flounder, scup, and black sea bass. The types of alternatives currently under consideration include:

- No action/*status quo;*
- Updating the current allocation percentages using the existing base years but with revised MRIP data;
- Using alternative base years to derive new allocation percentages;
- Using different allocation approaches which do not rely on base years;
- Considering whether each allocation should be catch based or landings based;
- Considering whether a transfer of allocation from one sector to another should be allowed through specifications;
- Considering whether future allocation changes or allocation transfer provisions could be implemented through a framework/addendum rather than an amendment;
- Other approaches to be determined.

Applicable laws/issues:

Magnuson-Stevens Act	Yes
National Environmental Policy Act	Yes
Administrative Procedures 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, if necessary, depends on the actions taken
Marine Mammal Protection Act	Possibly; depends on 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
Essential Fish Habitat	Possibly
Information Quality Act	Yes

Expected Amendment Timeline (as of July 2020; assuming EA; subject to change):

October 2019	Amendment initiated
Early 2020	FMAT formed
December 2019	Council and Board approve a scoping and public information document for public comment
February-March 2020	Scoping hearings and comment period
April 2020	APs review scoping comments and provide input to Council and Board
April 2020	FMAT reviews scoping comments and provides recommendations to Council and Board on scope of action and possible approaches

May 2020	Council and Board review scoping comments and FMAT and AP recommendations; define scope of action
May 2020	FMAT begins to develop draft alternatives
June 2020	Council and Board meeting to refine draft alternatives
June-July 2020	Continued FMAT development and analysis of alternatives; Advisory Panel input on draft alternatives
August 2020	Council and Board approve final range of alternatives for inclusion in a public hearing document/Commission draft amendment document
Fall 2020	Development of public hearing document/Commission draft amendment document,
December 2020	Council and Board approve public hearing document; Board approves draft amendment document for public comment; hearing schedule developed
Early 2021	Public hearings
Spring 2021	Advisory Panel meeting to provide input on preferred alternatives
Spring 2021	Final action
Summer 2021	EA finalized and submitted; NMFS and other agencies review; final edits completed
Summer/Fall 2021	Rulemaking and comment periods (4-7 months from after EA finalized)
January 1, 2022	Expected effective date