



Mid-Atlantic Fishery Management Council
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MEMORANDUM

Date: November 10, 2022
To: Chris Moore, Executive Director
From: Julia Beaty, staff
Subject: Black Sea Bass Recreational Management Measures for 2023

Summary

This memo provides information to assist the Monitoring Committee (MC), Advisory Panels, the Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission's (Commission) Summer Flounder, Scup, and Black Sea Bass Management Board (Board) in developing recommendations for 2023 recreational black sea bass measures (i.e., bag, size, and season limits).

2023 will be the first year that measures will be set using the Percent Change Approach, which is pending implementation through the Recreational Harvest Control Rule Framework/Addenda. Under the Percent Change Approach, recreational measures will no longer aim to achieve but not exceed the recreational harvest limit (RHL). Instead, measures will aim to achieve a different level of harvest, which will be defined based on expectations of 2023 harvest under 2022 measures compared to the 2023 RHL, as well as considerations about stock biomass.

For black sea bass, the MC is tasked with recommending either use of coastwide measures (i.e., identical measures in all states and federal waters) or conservation equivalency (state- or region-specific measures in state waters, and "non-preferred" coastwide measures that are waived in favor of the state measures). Under conservation equivalency, the Council and the Board must adopt non-preferred coastwide and precautionary default measures (described in more detail below). The combination of state/regional measures must achieve the same level of expected harvest as the non-preferred coastwide measures. The appropriate level of harvest will be defined through the Percent Change Approach. State/regional measures will be determined through the Commission process in early 2023.

Improved statistical modeling tools are available for setting 2023 measures, including the Recreational Demand Model (RDM) and the Recreational Fleet Dynamics Model (RFDM). Under both models, the 2023 RHL is below five of six potential confidence intervals (CIs) around estimated 2023 harvest under 2022 measures. Given that the most recent estimate of spawning stock biomass is more than 150% of the target level, this requires a 10% reduction in harvest for 2023 under the Percent Change Approach. This reduction is applied to the estimate of 2023 harvest under 2022 measures.

Staff recommend continued use of conservation equivalency to waive federal waters recreational black sea bass measures in 2023. Given the 10% reduction in harvest required under the Percent Change Approach, modifications to the non-preferred coastwide measures are needed. Based on the RDM, a one-inch increase in the minimum size limit under the non-preferred coastwide measures would not achieve the full reduction needed; therefore, **the staff recommendation for the non-preferred coastwide measures is to increase the minimum size limit by one inch with additional restrictions made to the possession limit and/or open season.** Given time constraints, additional model runs were not carried out to further refine this recommendation prior to completion of this memo. Additional model runs may be carried out prior to or shortly after the MC meeting. Given the restrictions needed in 2023, staff also recommend that the current **precautionary default measures be modified to a 16 inch minimum size limit, a two fish possession limit, and an open season of June 1 – August 31.** The 2022 non-preferred coastwide measures are likely not restrictive enough to serve their intended purpose for 2023.

In addition, staff recommend using either the RDM or the RFD for all steps of the recreational black sea bass measures setting process for 2023. The same model should be used for all relevant steps, including determining the appropriate overall percent change in harvest, setting the non-preferred coastwide measures under conservation equivalency, and developing state waters measures.

Overview of Percent Change Approach

In June 2022, the Council and the Policy Board approved a new process for setting recreational measures called the Percent Change Approach.¹ They agreed to use this approach for summer flounder, scup, and black sea bass starting with 2023 measures. Under this approach, measures will aim to achieve a specified percent change in harvest compared to the expectation of harvest in the upcoming year(s) under current measures. Unlike the previous process, recreational measures will no longer aim to achieve but not exceed the RHL. Instead, measures will aim to achieve a different level of harvest, which will vary based on the following two factors:

- 1) A CI around an estimate of expected harvest in the upcoming two years under current measures compared to the average RHL for the upcoming two years and
- 2) Biomass compared to the target level, as defined by the most recent stock assessment.

The resulting percent change in harvest that measures should aim to achieve is summarized in Table 1. Information about how to apply this process for 2023 black sea bass measures is described in more detail in later sections of the document.

The Percent Change Approach is intended to allow recreational measures to remain unchanged across two years, aligned with the timing of updated management track stock assessments, which are expected to be available every other year. However, measures will be set on a one-year cycle for 2023 given that 2023 is an interim year for the management track assessments. This process will be used for a two-year cycle starting with 2024-2025.

¹ Additional information is available at <https://www.mafmc.org/actions/hcr-framework-addenda>.

Table 1: Process for determining appropriate percent change in expected harvest when developing measures under the Percent Change Approach.

<i>Column 1</i> Future RHL vs Estimated Harvest	<i>Column 2</i> Biomass compared to target level (SSB/SSB _{MSY})	<i>Column 3</i> Change in Harvest
Future 2-year average RHL is greater than the upper bound of the harvest estimate CI (harvest expected to be lower than the RHL)	Very high (greater than 150% of target)	Liberalization percent equal to difference between harvest estimate and 2-year avg. RHL, not to exceed 40%
	High (at least the target, but no higher than 150% of target)	Liberalization percent equal to difference between harvest estimate and 2-year avg. RHL, not to exceed 20%
	Low (below target stock size)	Liberalization: 10%
Future 2-year average RHL is within harvest estimate CI (harvest expected to be close to the RHL)	Very high (greater than 150% of target)	Liberalization: 10%
	High (at least the target, but no higher than 150% of target)	No liberalization or reduction: 0%
	Low (below target stock size)	Reduction: 10%
Future 2-year average RHL is less than the lower bound of the harvest estimate CI (harvest is expected to exceed the RHL)	Very high (greater than 150% of target)	Reduction: 10%
	High (at least the target, but no higher than 150% of target)	Reduction percent equal to difference between harvest estimate and 2-year avg. RHL, not to exceed 20%
	Low (below target stock size)	Reduction percent equal to difference between harvest estimate and 2-year avg. RHL, not to exceed 40%

Past Management Measures

Joint Council and Commission management of the recreational black sea bass fishery began in 1998. Until 2010, identical measures were used in state and federal waters, as dictated by the Fishery Management Plan (FMP) at the time. From 2011 through 2018, the Commission developed a series of addenda to enable state-specific and regional measures to be used in state waters under a process referred to as “ad hoc regional management.” With approval of the Commission’s Addendum XXXII in 2018, an addendum is no longer needed to modify the state measures.

Under the ad hoc approach, Delaware through North Carolina (north of Cape Hatteras) set measures that were generally consistent with federal measures while Massachusetts through New Jersey set state-specific measures that were more restrictive than the federal waters measures.

State and federal waters measures remained unchanged during 2018-2021 with the exception of minor season adjustments in Massachusetts, Virginia, and North Carolina which were intended to maintain status quo levels of harvest (Table 2, Table 3).

The Council and Board agreed to leave the recreational black sea bass measures in all states and federal waters unchanged in 2020 and 2021 despite expected RHL overages. This was viewed as a temporary solution to allow more time to consider how to fully transition the management system to use of the revised Marine Recreational Information Program (MRIP) data (see next section), including further development of the then ongoing Commercial/Recreational Allocation Amendment and the Recreational Harvest Control Rule Framework/Addenda. Given the resulting RHL and annual catch limit (ACL) overages (Table 5), and expected continued overages under status quo measures, the Council and Board required that states restrict their measures in 2022 to collectively achieve a 20.8% reduction in harvest compared to 2018-2021 average harvest with the goal of preventing an overage of the 2022 RHL (Table 4).

The conservation equivalency process for waiving federal waters measures was used for black sea bass for the first time in 2022. Under conservation equivalency, the Council and Board must adopt two associated sets of measures: the non-preferred coastwide measures, and the precautionary default measures. The **non-preferred coastwide measures** are a set of measures that would be expected to constrain harvest to the appropriate coastwide target² if implemented on a coastwide basis (i.e., the same measures in all states and in federal waters). The coastwide measures are included in the federal regulations but waived in favor of state waters measures if the combination of state measures can be demonstrated to collectively constrain harvest to the same coastwide target as the non-preferred coastwide measures. The non-preferred coastwide measures for 2022 include a 14-inch minimum size limit, a 5 fish possession limit, and an open season of May 15-October 8.

The **precautionary default measures** would be implemented in any state or region that failed to develop adequate measures to constrain landings as required by the conservation equivalency guidelines. The precautionary default measures in 2022 include a 16-inch minimum size, a 3 fish possession limit, and an open season of June 24-December 31.

Starting in 2018, the Council and Board provided states the opportunity to open their recreational black sea bass fisheries during February for the first time since 2013 under specific constraints. Participating states may need to adjust their measures during the rest of the year to account for February harvest to help ensure that participation in this opening does not increase the chances of the coastwide target level of harvest being exceeded. Proposals for February openings must be reviewed by the Commission's Technical Committee and approved by the Board. To date, only Virginia and North Carolina have participated in the February opening. North Carolina ended their participation after 2020 and has indicated that they do not intend to participate in future years. Virginia participated every year except 2022 and has expressed an interest in participating in 2023.

² Through 2022, the target level of harvest was the RHL. Starting with 2023, the target level of harvest will be defined by the Percent Change Approach.

Table 2: Federal waters black sea bass recreational management measures, 2007-2021.

Year	Min. size	Bag limit	Open season
2007-2008	12"	25	Jan 1 - Dec 31
2009	12.5"	25	Jan 1 - Oct 5
2010-2011	12.5"	25	May 22 - Oct 11; Nov 1 - Dec 31
2012	12.5"	25	May 19 - Oct 14; Nov 1 - Dec 31
2013	12.5"	20	Jan 1 - Feb 28; May 19 - Oct 14; Nov 1 - Dec 31
2014	12.5"	15	May 19 - Sept 18; Oct 18 - Dec 31
2015-2017	12.5"	15	May 15 - Sept 21; Oct 22 - Dec 31
2018-2021	12.5"	15	Feb 1 - 28; May 15 - Dec 31
2022	Federal waters measures waived through conservation equivalency		

Table 3: State waters black sea bass recreational measures in 2018-2021. Measures were the same across all years unless otherwise noted. All changes were intended to maintain similar levels of harvest.

State	Min. Size	Bag Limit	Open Season
Maine	13"	10	May 19 - Sept 21; Oct 18 - Dec 31
New Hampshire	13"	10	Jan 1 - Dec 31
Massachusetts	15"	5	2018: May 19 - Sept 12
			2019 & 2020: May 18 - Sept 8
			2021: May 18 - Sept 8
Rhode Island	15"	3	Jun 24 - Aug 31
		7	Sept 1 - Dec 31
Connecticut private & shore	15"	5	May 19 - Dec 31
CT authorized party/charter monitoring program vessels	15"	5	May 19 - Aug 31
		7	Sept 1 - Dec 31
New York	15"	3	Jun 23 - Aug 31
		7	Sept 1 - Dec 31
New Jersey	12.5"	10	May 15 - Jun 22
		2	Jul 1 - Aug 31
		10	Oct 8 - Oct 31
	13"	15	Nov 1 - Dec 31
Delaware	12.5"	15	May 15 - Dec 31
Maryland	12.5"	15	May 15 - Dec 31
Virginia	12.5"	15	2018: Feb 1 - 28; May 15 - Dec 31
			2019: Feb 1-28; May 15-31; June 22-Dec 31
			2020: Feb 1 - 29; May 29 - Dec 31
			2021: Feb 1-28; May 15-May 31; Jun 16-Dec 31
North Carolina, North of Cape Hatteras (35° 15'N)	12.5	15	2018: Feb 1 - 28; May 15 - Dec 31
			2019: Feb 1 - 28; May 17 - Dec 31
			2020: Feb 1 - 29; May 17 - Nov 30
			2021: May 15 - Dec 31

Table 4: 2022 state waters black sea bass recreational measures.

State	Min. Size	Bag Limit	Open Season
Maine	13"	10 fish	May 19-September 21; October 18-December 31
New Hampshire	13"	10 fish	January-December 31
Massachusetts	16"	4 fish	May 21-September 4
Rhode Island private & shore	16"	2 fish	May 22-August 31
Rhode Island for-hire		3 fish	September 1-December 31
		2 fish	June 18-August 31
		6 fish	September 1-December 31
Connecticut private & shore	16"	5 fish	May 19-December 1
CT authorized party/charter monitoring program vessels		5 fish	May 19-August 31
		7 fish	September 1-December 31
New York	16"	3 fish	June 23-August 31
		6 fish	September 1-December 31
New Jersey	13"	10 fish	May 17-June 19
		2 fish	July 1-August 31
		10 fish	October 7-October 26
		15 fish	November 1-December 31
Delaware	13"	15 fish	May 15-December 11
Maryland			
Virginia			
North Carolina, North of Cape Hatteras (35° 15'N)			

Table 5: Black sea bass recreational landings, dead discards, and dead catch compared to the RHL and ACLs, 2012-2021. The ACLs and RHLs did not account for the revised MRIP data until 2020. Therefore, overage/underage evaluations must be based in the old MRIP units through 2019 and the new MRIP units starting in 2020. All values are in millions of pounds.

Year	Rec. harvest		RHL	RHL overage/underage ^b	Rec. dead discards		Rec. dead catch		ACL	ACL overage/underage ^b
	Old MRIP units	New MRIP units			Old MRIP units ^a	New MRIP units ^c	Old MRIP units	New MRIP units		
2012	3.26	7.04	1.32	+147%	0.80	2.31	4.07	9.35	1.86	+119%
2013	2.64	5.69	2.26	+17%	0.65	1.65	3.29	7.34	2.9	+13%
2014	3.85	7.24	2.26	+70%	0.84	1.85	4.69	9.09	2.9	+62%
2015	4.11	9.06	2.33	+76%	0.82	2.17	4.93	11.23	2.9	+70%
2016	5.19	12.05	2.82	+84%	1.21	3.07	6.40	15.12	3.52	+82%
2017	4.50	11.50	4.29	+5%	1.27	3.60	5.77	15.10	5.38	+7%
2018	3.82	7.92	3.66	+4%	1.1	2.28	4.92	10.20	4.59	+7%
2019	3.46	8.61	3.66	-5%	0.5	3.24	3.96	11.85	4.59	-14%
2020	NA	9.05	5.81	+56%	NA	3.46	NA	12.51	8.09	+55%
2021	NA	11.97	6.34	+89%	NA	4.20	NA	16.17	7.93	+104%

^a Based on the data update provided by the NEFSC in 2018 (most recent data from NEFSC in “old” MRIP units). Values for 2018 and 2019 were provided by GARFO.

^b Based on a comparison with old MRIP data through 2019 and new MRIP data starting in 2020.

^c Values through 2019 are from the 2021 management track stock assessment. Values for 2020-2021 were provided by GARFO. GARFO generated 2020-2021 estimates of dead discards in weight by applying the average weight of discarded fish in 2019 (0.77 lb) to the proportion of MRIP live discards in number of fish (MRIP “B2s”) that are assumed to die after being discarded (15% for black sea bass).

Recreational Catch and Landings Trends

In July 2018, MRIP released revisions to their time series of recreational catch and landings estimates based on adjustments for a revised angler intercept methodology and a new effort estimation methodology (i.e., a transition from a telephone-based effort survey to a mail-based effort survey). Recreational data included in this memo reflect revised MRIP data except where otherwise stated.

MRIP estimates for 2020 were impacted by the COVID-19 pandemic due to temporary suspension of the Access Point Angler Intercept Survey (APAIS) and headboat sampling. Some minor impacts continued into 2021. The National Marine Fisheries Service (NMFS) used imputation methods to fill gaps in 2020-2021 data with data collected in 2018 and 2019. For example, the 2020 black sea bass harvest estimate for Maine through Virginia combined was developed using approximately 17% imputed data and the 2021 estimate used 1% imputed data. For additional information, see the information on 2020 recreational harvest estimates posted at: <https://www.mafmc.org/council-events/2021/sfsbsb-mc-july27>.

Table 5 in the previous section shows a recent time series of recreational black sea bass harvest, dead discards, and dead catch in weight. Recreational black sea bass harvest in 2021 (the most recent complete year of data) totaled 11.97 million pounds, the second highest harvest estimate in the time series of MRIP data starting in 1981.

MRIP data for 2022 are currently incomplete and preliminary. Preliminary estimates for the first four waves (January - August) of 2022 are currently available. These data suggest that 5.36 million pounds of black sea bass were harvested from Maine through Cape Hatteras, North Carolina during January - August 2022. This preliminary estimate is 31% lower than 2021 wave 1-4 harvest; however, 2021 wave 1-4 harvest was higher than prior years. The preliminary 2022 wave 1-4 harvest estimate is within 1% of average 2018-2020 wave 1-4 harvest.

On average over the past three years (2019-2021), New York accounted for the greatest proportion of recreational black sea bass harvest (27%), followed by Massachusetts (19%), New Jersey (16%), Connecticut (14%), Rhode Island (13%), Virginia (7%), Delaware (2%), Maryland (2%), and North Carolina (less than 1%; Figure 1).

Most recreational black sea bass harvest in Massachusetts through New York occurs in state waters, while most harvest in New Jersey through North Carolina occurs in federal waters (Table 6).

Across all states from Massachusetts through North Carolina combined, most recreational black sea bass harvest in 2021 occurred in wave 3 (May-June), followed by wave 5 (September-October). However, the proportions of harvest by wave varied by state (Table 7), influenced in part by the varying regulations by state and wave (Table 3).

On average, over the past 10 years through 2021, 84% of black sea bass harvest from Maine through North Carolina in numbers of fish occurred on private/rental boats, followed by 14% on party/charter boats, and 25 from shore.

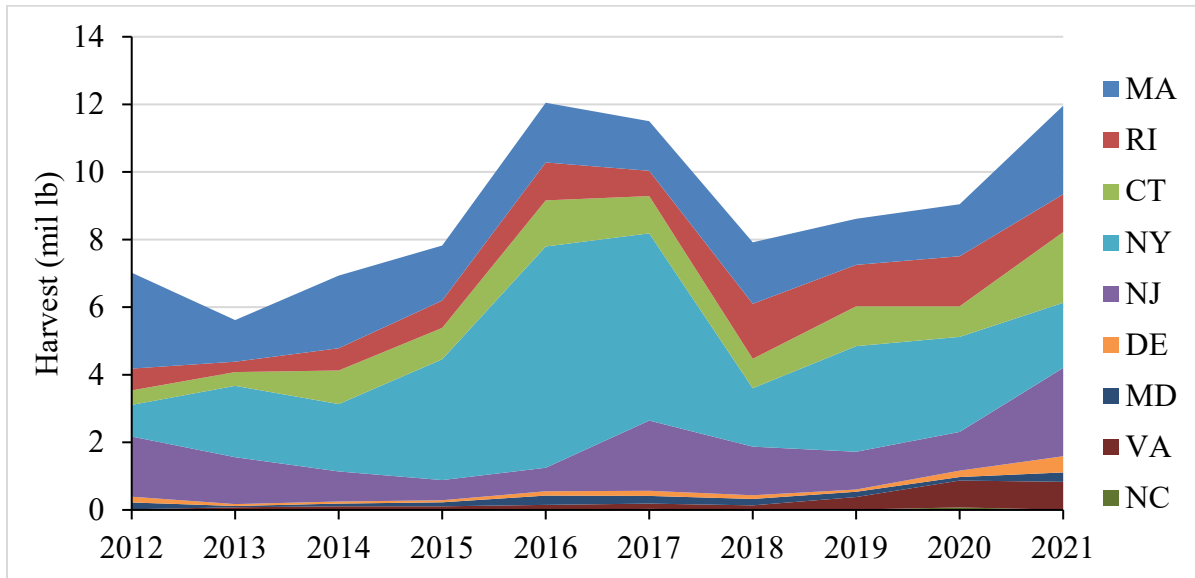


Figure 1: Recreational black sea bass harvest by state, 2012-2021.

Table 6: Average proportion of black sea bass recreational harvest in weight from federal and state waters, 2019-2021.

State	Federal waters	State waters
MA	6%	94%
RI	27%	73%
CT	21%	79%
NY	41%	59%
NJ	68%	32%
DE	96%	4%
MD	99%	1%
VA	88%	12%
NC	83%	17%

Table 7: Proportion of recreational black sea bass harvest in weight by wave within each state in 2021. North Carolina is the only state in the management unit which conducts MRIP sampling during wave 1 (Jan/Feb).

State	Wave 1 Jan/Feb	Wave 2 Mar/Apr	Wave 3 May/June	Wave 4 Jul/Aug	Wave 5 Sept/Oct	Wave 6 Nov/Dec
MA	0%	0%	89%	8%	3%	0%
RI	0%	0%	2%	46%	40%	12%
CT	0%	0%	35%	14%	50%	2%
NY	0%	0%	13%	29%	31%	27%
NJ	0%	0%	58%	13%	14%	15%
DE	0%	0%	19%	18%	15%	48%
MD	0%	0%	54%	13%	25%	9%
VA	0%	0%	52%	17%	10%	22%
NC	3%	10%	34%	30%	16%	6%
ME-NC	0%	0%	46%	18%	23%	13%

Percent Change in Harvest Needed for 2023

Comparison of 2023 RHL to Expected 2023 Harvest Under 2022 Measures

As previously stated 2023 recreational black sea bass measures will be set using the Percent Change Approach. The first step will be to generate an estimate of expected 2023 harvest under 2022 measures, with a CI, and comparing that estimate to the 2023 RHL (i.e., 6.74 million pounds).

In the past, expected harvest under status quo measures was typically estimated by projecting harvest for the current year³ and assuming harvest in the following year would be similar if measures remained unchanged. Improved methods of estimating harvest are now available. Specifically, the Council and Commission have supported development of two statistical models to predict the impacts of measures on recreational harvest and discards of summer flounder, scup, and black sea bass.

The Northeast Fisheries Science Center has developed the **Recreational Demand Model (RDM)** for these species. The black sea bass component of this model currently accounts for the impacts of regulations and angler preferences on harvest and discards. It also predicts how the summer flounder and scup measures impact black sea bass harvest and discards. Angler preferences are based on a 2022 survey of anglers from Massachusetts through Virginia. Catch-per-trip is derived from 2021 MRIP data and catch-at-length distributions are derived from 2019-2021 MRIP and angler logbook data. The model may be updated in the near future to account for projected 2023 numbers-at-age from the stock assessment model. Additional information about this model can be found in this overview document: <https://www.mafmc.org/s/fluke-RDM-overview-final-report.pdf>.

³ Staff typically project current year harvest using preliminary wave 1-4 data and assuming the same proportion of catch and landings by wave as in the previous year or a multi-year average (with some adjustments to this methodology as appropriate).

The **Recreational Fleet Dynamics Model (RFDM)** is being developed by scientists at the Rhode Island Department of Environmental Management and uses a shape constrained additive model to predict harvest and discards based on management measures. Covariates in the model include year, minimum size, wave, state, bag limit, a lagged recruitment variable, and the RHL. An R Shiny App is being developed to allow the MC to modify management measures and view the resulting predicted harvest and discards. Additional information about this model can found in this overview document:

https://www.mafmc.org/s/RFDM_CompleteModel_WriteUps_Oct2022_FinalDraftclean.pdf

Both models allow for consideration of varying management measures at the state and wave level. Both models were reviewed by the Council’s Scientific and Statistical Committee in September 2021⁴ and have been improved since that time based on their recommendations.

Table 8 shows RDM and RFDM estimates of 2023 black sea bass harvest under 2022 measures, as well as associated CIs. **The 2023 RHL (6.74 mil lb) is below the lower bound of all but one of the six CIs** in Table 8.

Council staff recommend use of the 80% CI and caution against use of the higher percentage CIs shown in Table 8. The Recreational Harvest Control Rule Framework/Addenda Fishery Management Action Team/Plan Development Team (FMAT/PDT) recommended use of an 80% CI under the Percent Change Approach based on an analysis of several years of MRIP data for each species. The FMAT/PDT agreed that an 80% CI would be appropriate in this context given variability in MRIP data from year to year, even under unchanged measures. A higher percentage CI would result in a wider range of values, which may not be appropriate given how the CI would be used in management under the Percent Change Approach. The FMAT/PDT made this recommendation prior to availability of preliminary results from the RDM and RFDM. Considerations about variability and uncertainty in projections of future harvest may differ under these models (e.g., as more variables are incorporated); however, because MRIP is a primary data source in these models, the rationale behind the 80% CI is still appropriate. In addition, the RDM and RFDM are expected to generate more accurate predictions of harvest compared to past methods, as they use a statistical modeling approach to account for more variables than the MC has traditionally been able to consider when using only MRIP data. Therefore, it would not be appropriate to use a CI resulting in a wider range of values than the 80% CI recommended by the FMAT/PDT based on their analysis of MRIP data.

Under a higher percent CI, the wider range of values is more likely to encompass the “true” harvest, but this also creates a range around a harvest estimate which is less meaningful for management. For example, the very wide ranges of expected harvest under the 95% CIs may not be realistic estimates of 2023 harvest. This creates a higher likelihood of ending up in a Percent Change Approach bin which is inappropriate for the “true” harvest. This could result in a required liberalization when a reduction is more appropriate, or vice versa, depending on the circumstances. A lower percentage CI would represent a more precautionary approach in this context, which may be especially appropriate for 2023 given this is the first year of using these models and applying the Percent Change Approach.

⁴ The final report from the SSC review is available at https://www.mafmc.org/s/05_Rec-Model-Peer-Review-Reports.pdf.

Based on how the values shown in Table 8 would be used under the Percent Change Approach (Table 1), five of the six CIs would result in the same outcome for black sea bass in 2023 (i.e., a 10% reduction).

For all these reasons, **staff recommend using an 80% CI in the Percent Change Approach for 2023.** Staff recommend use of the same percentage CI across summer flounder, scup, and black sea bass for 2023. In addition, staff recommend the MC have additional discussions in 2023 to develop a more consistent approach to application of CIs under the Percent Change Approach for all applicable species in future years.

Table 8: RDM and RFDM estimates of 2023 harvest under 2022 measures and associated CIs. All values are in millions of pounds. The RFDM provides estimates in numbers of fish, which were converted to pounds based on the average weight of harvested fish in 2019 from MRIP data.

Model	Estimated 2023 harvest under 2022 measures	95% CI	90% CI	80% CI	2023 RHL
RDM (median)	11.05	9.17 – 13.29	9.53 – 12.67	10.00 – 11.96	6.74
RFDM (median)	12.47	6.29 – 21.91	7.25 – 20.60	8.43 – 18.82	

Black Sea Bass Stock Status

As shown in Table 1, the second step under the Percent Change Approach is to consider the most recent estimate of spawning stock biomass compared to the target level. According to the 2021 management track stock assessment,⁵ black sea bass is 210% of the target stock size. This puts black sea bass in the “very high” stock size category for the Percent Change Approach (Table 1, Column 2).

Resulting Percent Change and Harvest Target

Based on the information summarized above, the Percent Change Approach would require a **10% reduction** in harvest for 2023 (Table 1, Column 3) under five of the six CIs shown in Table 8, including under the staff recommended CI. This change in harvest is relative to estimated 2023 harvest under 2022 measures. As such, this would result in a **harvest target of 9.95 million pounds based on the RDM results or 11.22 million pounds based on the RFDM results** shown in Table 8.

The MC should provide recommendations to the Council and Board on which harvest target is most appropriate. This should include a recommendation for a preferred model for 2023 (i.e., the RDM or RFDM), if appropriate. In making these recommendations, the MC should consider how the models may be used in subsequent steps of the measures setting process for 2023. Given that the two models produce slightly different results, staff recommend using the same model for all relevant steps of the process, including determining the appropriate overall percent change in

⁵ Available at: https://apps-nefsc.fisheries.noaa.gov/saw/reviews_report_options.php.

harvest, setting the non-preferred coastwide measures under conservation equivalency, and developing state waters measures.

As described in the staff recommendation section below, further model runs are needed to evaluate the management measures which may be appropriate to achieve these target levels of harvest. Additional information may be available prior to the November 15, 2022 MC meeting.

Accountability Measures

Federal regulations include reactive accountability measures (AMs) for when the recreational black sea bass ACL is exceeded. This can include paybacks of ACL overages depending on stock status and the magnitude of the overage, as described below. ACL overages in the recreational fishery are evaluated by comparing the most recent 3-year average recreational ACL to the most recent 3-year average of recreational dead catch (i.e., landings and dead discards). If average dead catch exceeds the average ACL, then the appropriate AM is determined based on the criteria listed below. This reflects minor revisions to the AMs made through the Recreational Harvest Control Rule Framework/Addenda.

1. If the stock is overfished ($B < \frac{1}{2} B_{MSY}$), under a rebuilding plan, or the stock status is unknown: The exact amount, in pounds, by which the most recent year's recreational ACL has been exceeded, will be deducted in the following fishing year, or as soon as possible once catch data are available. This payback may be evenly spread over two years if doing so allows for use of identical recreational management measures across the upcoming two years.
2. If biomass is above the threshold, but below the target ($\frac{1}{2} B_{MSY} < B < B_{MSY}$), and the stock is not under a rebuilding plan:
 - If only the recreational ACL has been exceeded, then adjustments to the recreational management measures (bag, size, and seasonal limits) would be made in the following year, or as soon as possible once catch data are available. These adjustments would take into account the performance of the measures and the conditions that precipitated the overage.
 - If the most recent estimate of total fishing mortality exceeds F_{MSY} (or the proxy), then an adjustment to the recreational ACT will be made as soon as possible as a payback that will be scaled based on stock biomass. The calculation for the payback amount in this case is: (overage amount) * $(B_{msy}-B)/\frac{1}{2} B_{msy}$. This payback may be evenly spread over two years if doing so allows for use of identical recreational measures across the upcoming two years. If an estimate of total fishing mortality is not available for the most recent complete year of catch data, then a comparison of total catch relative to the ABC will be used.
3. If biomass is above the target ($B > B_{MSY}$): Adjustments to the recreational management measures (bag, size, and seasonal limits) would be considered for the following year, or as soon as possible once catch data are available. These adjustments would take into account the performance of the measures and the conditions that precipitated the overage.

Based on a comparison of 2019-2021 average recreational dead catch to the 2019-2021 average ACLs, recreational AMs have been triggered for black sea bass (Table 9). Given that black sea bass is above the biomass target, the regulations require adjustments to the recreational measures. The regulations do not specify how the measures should be modified.

As previously stated, recreational measures for black sea bass were restricted in 2022 with the goal of preventing an overage of the 2022 RHL. These restrictions were made in response to RHL and recreational ACL overages in prior years. These restrictions are not accounted for in the 2019-2021 comparisons which triggered an AM for 2023. The impacts of the 2022 restrictions on harvest cannot be fully evaluated with currently available preliminary partial year MRIP data. It is also worth noting that several states did not implement the restrictions until mid-year in 2022; therefore, the restrictions may not have their full intended effect in 2022.

On October 20, 2022, the NMFS Greater Atlantic Regional Fisheries Office (GARFO) Regional Administrator sent a letter to the Council⁶ stating that given actions taken by the Council and Commission over the past year, including revisions to the commercial/recreational allocation, the restrictions in recreational measures implemented for 2022, and final action on the Recreational Harvest Control Rule Framework/Addenda, no additional action, beyond changes which may be required through the Percent Change Approach, is needed to address the triggering of an AM for black sea bass.

As noted above, based on the results of the RDM and RFDM, the Percent Change Approach will likely require a 10% reduction in black sea bass harvest in 2023 compared to estimated 2023 harvest under 2022 measures. **Given all these considerations, Council staff recommend that no additional restrictions beyond this 10% reduction be implemented for black sea bass in 2023 due to the triggering of an AM.**

As previously noted, only one of the six CIs shown in Table 8 results in the 2023 RHL falling within the CI and Council staff caution against using this CI. In addition to the concerns previously described, use of this CI would result in a 10% liberalization under the Percent Change Approach, which may not be justifiable given the triggering of AMs.

Table 9: AM evaluation for the recreational black sea bass fishery, comparing recreational dead catch to the ACLs. The ACLs through 2019 did not account for the revised MRIP data and therefore must be compared to dead catch estimates based on the old MRIP estimates. All values are in millions of pounds.

Year	Rec. ACL	Rec. harvest	Rec. dead discards	Rec. dead catch	% Over (+) or Under (-) ACL
2019 old MRIP	4.59	3.46 ^a	0.50 ^a	3.96 ^a	-14%
2020 new MRIP	8.09	9.05	3.46 ^b	12.50	+55%
2021 new MRIP	7.93	11.97	4.20 ^b	16.16	+104%
2019-2021 avg	6.87	8.16	2.72	10.87	+58%

^a 2019 recreational harvest, dead discards in weight, and total dead catch in weight in “old” MRIP units were provided to the NMFS Greater Atlantic Regional Fisheries Office by the NEFSC.

^b Recreational dead discards in weight are typically provided by the NEFSC and are calculated using the same methods as the stock assessments for each species. These estimates are not currently available for 2020-2021; therefore, GARFO generated estimates of recreational dead discards in weight by applying the average weight of discarded fish in 2019 from the 2021 management track assessment to the MRIP estimate of dead discards in

⁶ Available at: https://www.mafmc.org/s/GARFO-2020-21-FSB-Catch-Accounting-Letter-and-Report_Oct-2022.pdf

numbers of fish in 2020 and 2021 (i.e., the MRIP estimate of total discards, i.e., MRIP B2s, in numbers of fish multiplied by the dead discard mortality rates used in the assessments for each species –15% for black sea bass).
° 2019 recreational harvest, dead discards in weight, and total dead catch in weight were provided by the NMFS Greater Atlantic Regional Fisheries Office.

Staff Recommendations for 2023 Measures

Staff recommend continued use of regional conservation equivalency for black sea bass in 2023. As previously described, under conservation equivalency, the Council and Board must adopt a set of non-preferred coastwide measures. If implemented on a coastwide basis, the non-preferred coastwide measures should be expected to achieve the target level of coastwide harvest defined through the Percent Change Approach. Under conservation equivalency, these measures are written into the federal regulations, but waived in favor of the state- or region-specific measures if the combination of state/regional measures can be demonstrated to also achieve the same harvest target.

As previously stated, the current non-preferred coastwide measures include a 14 inch minimum size limit, a 5 fish possession limit, and an open season of May 15 - October 15. The RDM suggests these measures would result in 12.72 million pounds of harvest in 2023 if implemented in all states. This is higher than the 9.95 million pound harvest target based on the RDM to achieve the required 10% reduction in harvest under the Percent Change Approach.

The RDM suggests that modifying the non-preferred coastwide measures by increasing the minimum size limit by one inch (to 15 inches) and leaving the season and possession limits unchanged would result in 10.61 million pounds of harvest in 2023 if implemented in all states. This is 7% higher than the aforementioned 2023 harvest target of 9.95 million pounds.

Due to timing constraints, additional model runs were not carried out prior to completion of this memo. As such, staff recommend a one inch increase in the minimum size limit under the non-preferred coastwide measures, with additional restrictions in the season and/or bag limit to achieve the target level of harvest for 2023. The MC should discuss which additional changes are preferred. Additional model runs may be carried out prior to or shortly after the MC meeting to support these recommendations.

Given time constraints, it was not possible to use the RFDM to analyze the current non-preferred coastwide measures or modifications to these measures prior to completion of this memo. However, this may also be possible prior to or shortly after the MC meeting to help inform the MC recommendations.

Staff also recommend modifications to the precautionary default measures. The precautionary default measures are intended to be a deterrent against states/regions implementing measures inconsistent with the conservation equivalency guidelines and are not associated with any particular harvest target. They are intended to be more restrictive than the measures any state or region would consider implementing. The 2022 precautionary default measures consist of a 16 inch minimum size limit, a 3 fish possession limit, and an open season of June 24 – December 31.

At this time, it is not known how states/regions will adjust their measures to achieve the 10% reduction in harvest required under the Percent Change Approach for 2023. The Board may consider requiring all states to adjust their measures to achieve an equal proportional reduction in harvest (e.g., all states reduce their own expected harvest values by 10%). States will put forward

proposals for adjustments in measures consistent with guidelines agreed to by the Board. Considering the current state measures (Table 4) and the need for further restrictions in 2023, the current precautionary default measures may not be sufficiently restrictive. For example, the 2022 measures in Massachusetts include a 16 inch minimum size limit, a four fish possession limit, and an open season of May 21 – September 4. For these reasons, **staff recommend revised precautionary default measures consisting of a 16 inch minimum size limit, a two fish possession limit, and an open season of June 1 – August 31.**