



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

MEMORANDUM

Date: July 31, 2024
To: Council and Board
From: Julia Beaty, Council Staff
Subject: 2025 Black Sea Bass Specifications

On Wednesday, August 14, 2024, the Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Management Board (Board) will set 2025 black sea bass catch and landings limits after reviewing the recommendations of the Scientific and Statistical Committee (SSC), Monitoring Committee, Advisory Panel, and staff. They will also consider if changes are needed to the commercial management measures that can be modified through the specifications process. Recreational measures will be discussed at future meetings later in 2024.

Materials listed below are provided for the Council and Board's consideration of this agenda item. Please note that some documents are behind separate tabs.

- 1) Executive summary of the July 2024 Scientific and Statistical Committee meeting (*behind Tab 16*)
- 2) Staff memo on 2025 black sea bass specifications dated July 16, 2024
- 3) Draft 2024 Black Sea Bass Management Track Assessment Report
- 4) July 2024 Advisory Panel Fishery Performance Report and associated additional AP comments received through July 15, 2023 (*behind Tab 10*)
- 5) 2024 Black Sea Bass Fishery Information Document

To be posted separately once available:

- 1) Full report of the July 2024 Scientific and Statistical Committee meeting
- 2) Summary of August 1, 2024 Monitoring Committee meeting
- 3) Summary of August 5, 2024 Advisory Panel meeting
- 4) Any additional public comments received after July 31, if applicable



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MEMORANDUM

Date: July 16, 2024
To: Chris Moore, Executive Director
From: Julia Beaty, staff
Subject: 2025 Black Sea Bass Specifications

Executive Summary

This memorandum includes information to assist the Mid-Atlantic Fishery Management Council's (Council's) Scientific and Statistical Committee (SSC) and Monitoring Committee in recommending 2025 commercial and recreational catch and landings limits for black sea bass. The Monitoring Committee will also consider if changes are needed to any of the commercial management measures for 2025. Additional information on fishery performance and past management measures can be found in the 2024 Black Sea Bass Fishery Information Document and the 2024 Summer Flounder, Scup, and Black Sea Bass Fishery Performance Report developed by advisors.¹

The Magnuson-Stevens Fishery Conservation and Management Act requires the Council's SSC to provide scientific advice for fishery management decisions, including recommendations for Acceptable Biological Catch limits (ABCs), prevention of overfishing, and achieving maximum sustainable yield. The Council's catch limit recommendations for the upcoming fishing year(s) cannot exceed the ABCs recommended by the SSC.

A management track stock assessment for black sea bass was peer reviewed in June 2024. According to the draft 2024 Management Track Assessment report,² the black sea bass stock was not overfished and overfishing was not occurring in 2023. Spawning stock biomass in 2023 was estimated at about 2.19 times the target level. Fishing mortality in 2023 was estimated to be 23% below the threshold level that defines overfishing (Figure 2).

The SSC is tasked with recommending a 2025 Acceptable Biological Catch (ABC) limit during their meeting on July 24, 2023. The Northeast Fisheries Science Center (NEFSC) has provided overfishing limit (OFL) and ABC projections based on the 2024 Management Track Assessment. Depending on the OFL coefficient of variation (CV) used, the projected 2025 ABCs are 19-20% lower than the 2024 ABC. This decrease is likely due to a combination of factors, including projections which are intended to bring biomass down towards the target over time, an assumption that recruitment in the projection years will be equal to the 2000-2023 average, and potentially other changes in the assessment model as well. The staff recommendations for catch and landings limits summarized in this memo assume the SSC will maintain their previous OFL

¹ Once finalized, these documents will be available at: <https://www.mafmc.org/fishery-performance-reports>.

² Available at <https://apps-nefsc.fisheries.noaa.gov/saw/sasi.php>.

CV recommendation of 100% based on the projections provided by the NEFSC. If the SSC adopts a different ABC, the other catch and landings limit values will be updated.

During their August 1, 2024 meeting, the Monitoring Committee is tasked with recommending commercial and recreational ACLs and ACTs, a commercial quota, and RHL for 2025. Staff recommend setting the 2024 commercial and recreational ACLs and ACTs equal to the respective values implemented for 2023. Following the same methods for calculating projected dead discards when setting the 2023 and 2024 specifications, this would result in a 2025 commercial quota of 4.81 million pounds, about 20% lower than the 2024 commercial quota due to the decrease in the ABC. The resulting 2025 recreational harvest limit (RHL) is 4.49 million pounds, due to the decrease in the ABC and little change in the projected recreational dead discards (Table 1).

The Monitoring Committee will also review the commercial management measures which can be modified through the specifications process, including the in-season closure buffer, the federal waters minimum fish size, minimum mesh size, and mesh exemption programs. Council staff recommend use of a 5% in-season closure buffer and no revisions to the other commercial management measures which can be modified through specifications as there is no new information to suggest a change is needed.

The Council will meet jointly with the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Management Board (Board) in August 2024 to review the recommendations of the SSC and Monitoring Committee, as well as input from the Advisory Panel, before adopting 2025 specifications, including consideration of changes to the 2025 commercial management measures. Recreational bag, size, and season limits for 2025 will be considered through separate meetings later this year.

Table 1: Implemented 2024 specifications for black sea bass and staff recommendations for 2025 specifications, assuming the SSC adopts the ABC projections provided by the NEFSC with a 100% OFL CV. The values below may be updated if the SSC or Monitoring Committee adopt different recommendations. Numbers may not add precisely due to unit conversions and rounding.

Measure	2024 (implemented)		Basis	2025 (staff recommendation)		Basis
	mil lb	mt		mil lb	mt	
OFL	17.01	7,716	SSC recommendation based on 2021 Management Track Assessment projections and Council risk policy	13.65	6,193	Projections provided by NEFSC
ABC	16.66	7,557		13.37	6,065	Projections provided by NEFSC with 100% OFL CV
Com. ACL	7.50	3,401	45% of ABC (commercial allocation in FMP)	6.02	2,729	45% of ABC (commercial allocation in FMP)
Com. ACT	7.50	3,401	Monitoring Committee recommendation; no deduction from ACL for mgmt. uncertainty	6.02	2,729	No deduction from ACL for mgmt. uncertainty
Projected com. dead discards	1.50	680	3-year avg. proportion of commercial dead catch that was discarded applied to the com. ACL (i.e., 20% based on 2020-2022)	1.20	546	3-year avg. proportion of commercial dead catch that was discarded applied to the com. ACL (i.e., 20% based on 2021-2023)
Com. quota	6.00	2,721	Com. ACT minus projected com. dead discards	4.81	2,184	Com. ACT minus projected com. dead discards
Rec. ACL	9.16	4,156	55% of ABC (recreational allocation in FMP)	7.35	3,336	55% of ABC (recreational allocation in FMP)
Rec. ACT	9.16	4,156	Monitoring Committee recommendation; no deduction from ACL for mgmt. uncertainty	7.35	3,336	No deduction from ACL for mgmt. uncertainty
Projected rec. dead discards	2.89	1,311	Average of average 2020-2022 rec. dead discards and results using commercial method summarized above	2.86	1,297	Average 2021-2023 rec. dead discards
RHL	6.27	2,845	Rec. ACT minus projected rec. dead discards	4.49	2,039	Rec. ACT minus projected rec. dead discards

Stock Status and Biological Reference Points

A management track stock assessment for black sea bass was peer reviewed in June 2024. According to the draft 2024 Management Track Assessment report, the black sea bass stock was not overfished and overfishing was not occurring in 2023 (Table 2). Spawning stock biomass in 2023 was estimated at about 2.19 times the target level (Figure 1). Fishing mortality in 2023 was estimated to be 23% below the threshold level that defines overfishing (Figure 2).

Recruitment (i.e., the number of age 1 fish) has fluctuated over time. The estimated number of age 1 fish in 2023 is higher than the prior several years (Figure 3).

Table 2: Black sea bass biological reference points from the draft 2024 Management Track Stock assessment report.

	Spawning stock biomass	Fishing mortality rate (F)
Target	24.75 mil lb (11,225 mt)	N/A
Threshold	12.38 mil lb (5,613 mt)	1.071
Terminal year estimate (2023)	54.17 mil lb (24,572 mt) 2.19 times target level	0.82 23% below threshold level
Status	Not overfished	Overfishing not occurring

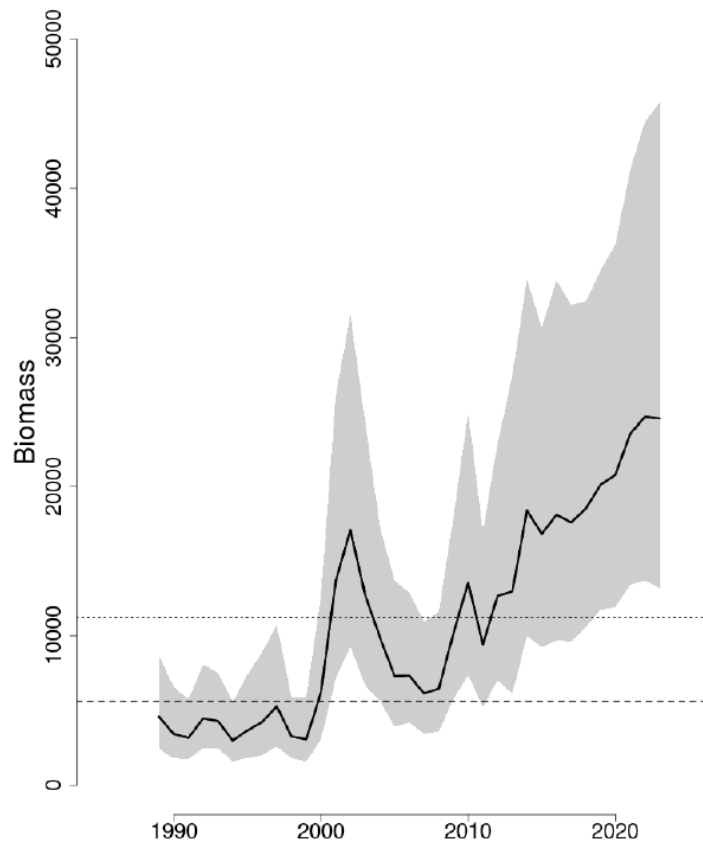


Figure 1: Black sea bass spawning stock biomass, 1989-2023 based on the draft 2024 Management Track Stock Assessment. The gray shading represents 95% confidence intervals. The horizontal dotted line is the updated biomass target and the horizontal dashed line is the updated biomass threshold. When biomass is above the threshold, the stock is not overfished.

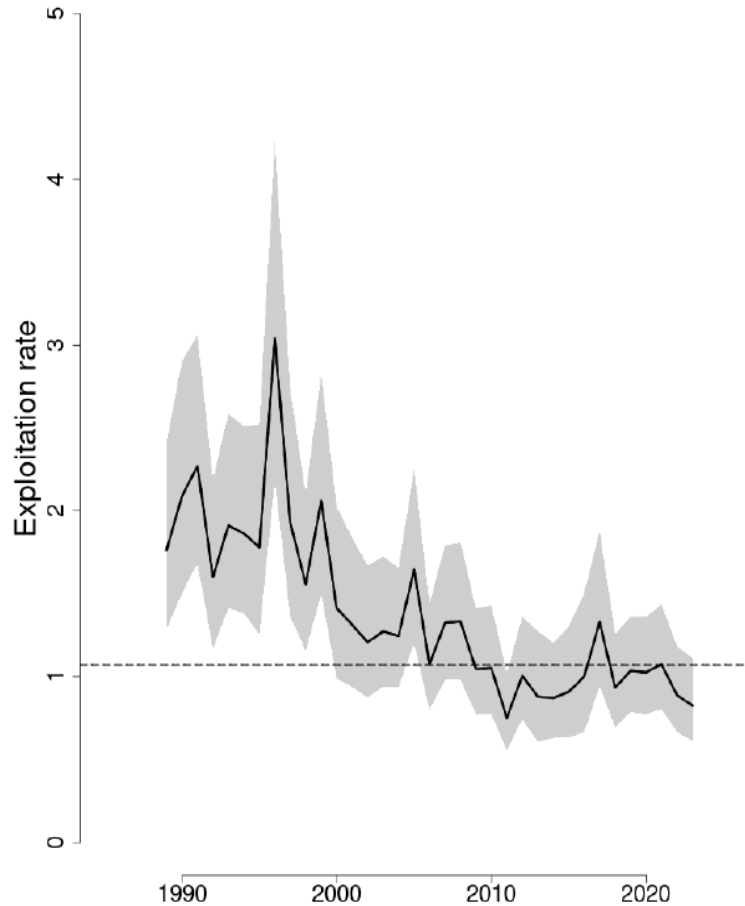


Figure 3: Trends in fully selected fishing mortality for black sea bass, 1989-2023 based on the draft 2024 Management Track Stock Assessment. The gray shading represents 95% confidence intervals. The horizontal dotted line is the updated fishing mortality reference point. When fishing mortality is below the reference point, overfishing is not occurring.

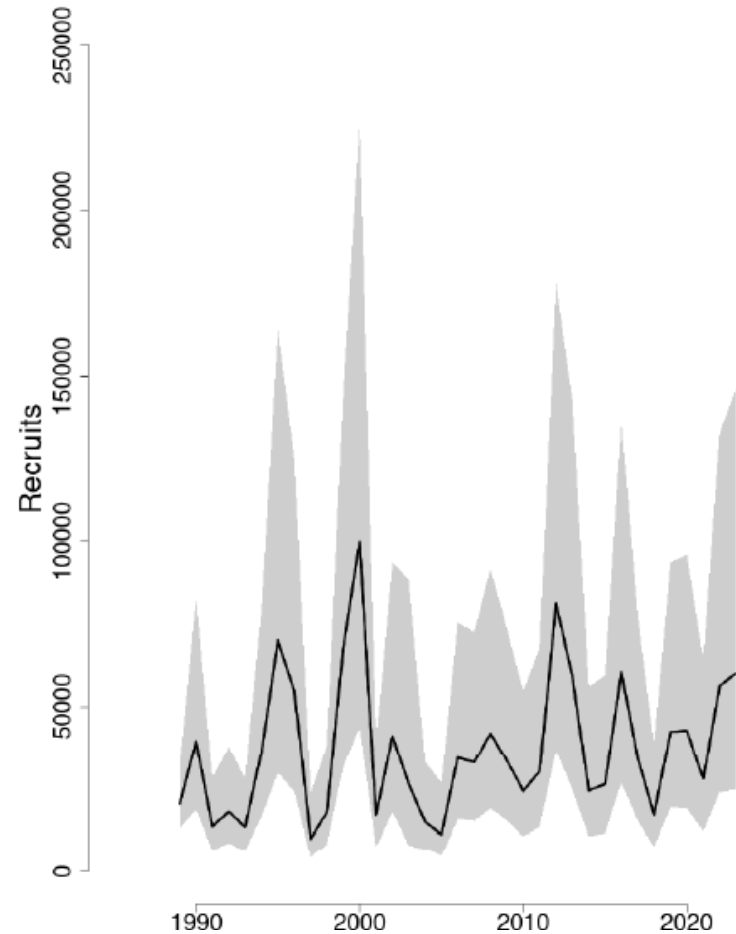


Figure 2: Trends in black sea bass recruitment (i.e., age 1 fish), 1989-2023. Estimates from the draft 2024 Management Track Stock Assessment are shown as the solid line with 95% confidence intervals in gray shading.

Recent Catch and Fishery Performance

Total Dead Catch

Table 3 shows the black sea bass ABCs from 2014 through 2024, as well as the OFL, from which the ABC is derived when possible. The ABC is set less than or equal to the OFL to account for scientific uncertainty. As shown in Table 3, ABC overages occurred in many years; however, OFL overages have been rare. Depending on the year, the ABC overages were driven by higher than anticipated discards in one or both of the commercial and recreational sectors and/or recreational harvest exceeding the RHL (Table 4, Table 5). The Council and Board have taken steps in recent years to better account for discards when setting catch and landings limits. Changes have also been made to the process for setting recreational measures, as described in more detail below.

Table 3: Total dead catch (i.e., commercial and recreational landings and dead discards) compared to the OFL and ABC, 2014-2024. All values are in millions of pounds. The recreational contribution to total dead catch is based on data in the “old” MRIP units through 2019 and the revised MRIP data starting in 2020. Catch limits did not account for the revised MRIP data until 2020.

Year	Total dead catch^a	OFL^b	OFL overage/underage	ABC^b	ABC overage/underage
2014	7.92	NA	NA	5.5	+44%
2015	7.81	NA	NA	5.5	+42%
2016	10.24	NA	NA	6.67	+53%
2017	11.57	12.05	-4%	10.47	+10%
2018	9.85	10.29	-4%	8.94	+10%
2019	9.54	10.29	-7%	8.94	+7%
2020	17.33	19.39	-11%	15.07	+15%
2021	21.36	17.68	+21%	17.45	+22%
2022	18.62	19.56	-5%	18.86	-1%
2023	16.94	17.01	0%	16.66	+2%
2024	--	17.01	--	16.66	--

^a See Table 4 and Table 5 for the commercial and recreational data contributing to the total catch estimates.

^bAn OFL was not used and the ABC was set based on a constant catch approach during 2010-2015 due to the lack of a peer reviewed and accepted stock assessment. The 2016 ABC was set based on a data limited methodology. Starting with 2017, the ABC has been set based on a peer reviewed and approved stock assessment.

Commercial Catch

In 2023, about 4.67 million pounds of black sea bass were landed in the commercial fishery, a 13% decrease compared to 2022. This decline was likely largely driven by a 26% decrease in the coastwide commercial quota (Table 4).

Commercial quota overages have been rare; however, commercial ACL overages occurred each year for several years through 2019 based on higher than expected commercial dead discards. The method for calculating projected dead discards was revised starting with the 2021 specifications in an attempt to address this issue. In addition, the commercial ACL increased by about 60% from 2019 to 2020 (Table 4). Likely due to a combination of these factors, the commercial ACL has not been exceeded since 2019.

Based on data reported through July 10, 2024, 2.51 million pounds of black sea bass have been landed by commercial fishermen from Maine through Cape Hatteras, NC in 2024, corresponding to about 42% of the 2024 commercial quota of 6.00 million pounds. Landings in 2023 to date are very close to 2023 landings at the same time of year.³

Table 4: Black sea bass commercial landings, dead discards, and dead catch compared to the commercial quota, projected commercial dead discards, and commercial ACL, 2014-2023. All values are in millions of pounds.

Year	Com. landings ^a	Com. quota	Quota over/under	Com. dead discards ^b	Projected com. dead discards	Disc. over/under	Com dead catch	Com. ACL	ACL over/under
2014	2.43	2.17 ^c	+12%	0.99	0.36	+175%	3.41	2.60	+31%
2015	2.33	2.21	+5%	0.87	0.39	+123%	3.20	2.60	+23%
2016	2.59	2.71	-4%	1.24	0.44	+182%	3.84	3.15	+22%
2017	4.04	4.12	-2%	2.10	0.97	+116%	6.14	5.09	+21%
2018	3.41	3.52	-3%	1.52	0.83	+83%	4.93	4.35	+13%
2019	3.56	3.52	+1%	2.02	0.83	+143%	5.58	4.35	+28%
2020	4.22	5.58	-24%	1.00	1.40	-29%	5.23	6.98	-25%
2021	4.81	6.09	-21%	1.04	3.43	-70%	5.85	9.52	-39%
2022	5.38	6.47	-17%	1.40	3.63	-61%	6.78	10.10	-33%
2023	4.67	4.80	-3%	1.26	2.70	-53%	5.93	7.50	-21%
2024	--	6.00	--	--	1.50	--	--	7.50	--

^a CAMS data.

^b Discards from 2014-2019 are from the draft 2024 black sea bass Management Track Assessment. Values for 2020-2023 are from CAMS.

^c The 2014 commercial quota reflects a 3% deduction for Research Set Aside.

Recreational Catch

Total recreational catch (i.e., harvest plus live and dead releases) from Maine through Cape Hatteras, North Carolina has exceeded 40 million fish each year for the most recent three years. Due to fishery regulations and other factors, most of these fish are released, with about 4.55 million fish harvested in the recreational fishery in 2023. Total recreational harvest in weight in 2023 was about 7.49 million pounds (Table 5).

As shown in Table 5, RHL and recreational ACL overages have been common in recent years. When considering the scale of these overages, it is important to note that the catch and landings limits for both sectors were not set based on a peer reviewed and accepted stock assessment until 2017. Previous RHLs were likely lower than they could have been had an approved stock assessment been available to set catch and landings limits that were reflective of biomass levels at that time. In addition, the notable 2020 and 2021 RHL overages were the result of the Council and Board leaving the bag, size, and season limits unchanged despite expected overages. This was a short-term approach to prevent major negative impacts to the recreational sector while changes to management were considered through the Commercial/Recreational Allocation Amendment (Amendment 22) and the Recreational Harvest Control Rule Framework/Addenda (Framework 17).

³ Based on data available at <https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region>

Framework 17 implemented a new process for setting recreational measures called the Percent Change Approach. Unlike the previous process, recreational measures no longer aim to achieve but not exceed the RHL. Instead, measures aim to achieve a different level of harvest, which varies based on estimated harvest in the upcoming year(s) compared to the RHL as well as biomass compared to target level. The target level of harvest is defined as a percentage change from the expectation of harvest in the upcoming year(s) if the current measures were to remain in place.⁴

Following the Percent Change Approach, for 2023, state waters measures were restricted with the goal of achieving 7.14 million pounds of coastwide harvest. The final 2023 MRIP harvest estimate is 7.49 million pounds, about 5% higher than the target of 7.14 million pounds. Harvest in 2023 was about 14% higher than the RHL; however, it is important to note that under the Percent Change Approach, measures did not aim to achieve the RHL, they instead aimed to achieve 7.14 million pounds of harvest.

MRIP estimates for 2024 are currently only available through wave 2 (March/April). These data do not provide meaningful insights into the 2024 recreational black sea bass fishery given that, with the exception of a special February opening in Virginia, the recreational fishery was closed through at least May 15 in all states except New Hampshire.

⁴ Additional information on the Percent Change Approach is available at <https://www.mafmc.org/actions/hcr-framework-addenda>.

Table 5: Black sea bass recreational landings, dead discards, and dead catch compared to the RHL, projected recreational dead discards, and recreational ACL, 2014-2024. Values are provided in the “old” MRIP units for 2014-2019 and the “new” MRIP units for 2020-2023 as 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	Version of MRIP data	Rec. harvest ^a	RHL	RHL over/under	Rec. dead disc. ^b	Projected rec. dead discards	Rec. discards overage/underage	Rec. dead catch	ACL	ACL over/under
2014	Old MRIP (pre-revision)	3.67	2.26 ^c	+62%	0.84	0.50	+68%	4.51	2.9	+56%
2015		3.79	2.33	+63%	0.82	0.57	+44%	4.61	2.9	+59%
2016		5.19	2.82	+84%	1.21	0.57	+112%	6.40	3.52	+82%
2017		4.16	4.29	-3%	1.27	0.57	+123%	5.43	5.38	+1%
2018		3.82	3.66	+4%	1.10	0.70	+57%	4.92	4.59	+7%
2019		3.46	3.66	-5%	0.50	1.09	-54%	3.96	4.59	-14%
2020 ^d	New MRIP (post-revision)	9.05	5.81	+56%	3.05	0.93	+228%	12.10	8.09	+50%
2021		11.97	6.34	+89%	3.55	0.93	+282%	15.52	7.93	+96%
2022		8.14	6.74	+21%	3.69	2.02	+83%	11.84	8.76	+35%
2023		7.49	6.57	^e	3.52	2.59	+36%	11.01	9.16	+20%
2024		--	6.27	--	--	--	2.89	--	--	9.16

^a Based on MRIP data for all years except 2018 and 2019. Estimates in the “old” MRIP units were not available for those years, but were necessary for comparing against the RHL. Therefore, NMFS used alternative methods to calculate the 2018 and 2019 estimates shown here.

^b Estimates for 2014-2017 are from a data update provided by the NEFSC in 2018 (most recent data from NEFSC in “old” MRIP units; NEFSC 2018). Estimates in the “old” MRIP units were not available for 2018-2019, but were necessary for comparing against the ACL. Therefore, NMFS used alternative methods to calculate the 2018 and 2019 estimates shown here. Estimates for 2020 – 2023 are from the draft 2024 Management Track Assessment report.

^c The 2014 RHL reflects a 3% deduction for Research Set Aside.

^d Recreational harvest estimates for 2020 were impacted by temporary suspension of shoreside intercept surveys due to COVID-19. NMFS used imputation methods to fill gaps in 2020 catch data with data collected in 2018 and 2019. For black sea bass, the 2020 harvest estimate for Maine-Virginia relied on approximately 17% imputed data. For more information on imputation methods see: <https://www.mafmc.org/s/1-2020-Marine-Recreational-Catch-Estimates-QA-52121.pdf>.

^e2023 was the first year recreational measures were set using the Percent Change Approach, as implemented through Framework 17. Under this new process, measures are no longer set with the primary goal of allowing harvest to meet but not exceed the RHL. Instead, 2023 measures were set with the goal of achieving a 10% reduction in harvest compared to the expectation of 2023 harvest if 2022 measures had remained in place. Specifically, the recreational measures implemented in 2023 aimed to achieve a target of 7.14 million pounds of harvest.

Review of Prior SSC Recommendations

In July 2021, the SSC recommended 2022 and 2023 ABCs for black sea bass based the Council's ABC control rule and risk policy, using stock projections provided with the 2021 Management Track Assessment. The SSC reviewed their 2023 ABC recommendation in July 2022 and agreed that no changes were needed. In 2023, the SSC agreed to set the 2024 ABC equal to the 2023 ABC as no updated stock assessment information was available at the time.

During their July 2024 meeting, the SSC will recommend an ABC for 2025 after considering the 2024 Management Track Assessment and associated stock projections. The SSC's recommendations and key considerations regarding the 2022-2023 ABCs are summarized below. Given the many changes in the stock assessment since the 2022-2023 ABCs were recommended, the SSC's recommendations and considerations for the 2025 ABC may differ from those summarized below.

In setting the 2022-2023 ABCs, the SSC maintained use of a 100% OFL coefficient of variance (CV). The following text was copied directly from the SSC's July 2021 meeting summary⁵ and describes their rationale for applying a 100% OFL CV:

- There is a strong retrospective bias present in the assessment results and this pattern differs between the two spatial sub-areas.
- The fishery has a large recreational component (~60-80% of total harvest in recent years), and thus a substantial reliance on MRIP. Updated MRIP numbers differ substantially from the old estimates, and the updated estimate for one year (2016) was considered implausible owing to high variance in wave-specific data.
- Spatially explicit models were implemented in the 2016 benchmark assessment, and there were detailed efforts to explore the consequences of the misspecification of the spatial resolution of these models on perceptions of stock status.
- There were broadly consistent patterns in the fishery independent indices.

The SSC determined the following to be the most significant sources of scientific uncertainty associated with determination of the 2022-2023 OFLs and ABCs in July 2021:

- The retrospective pattern was large enough to need the corrections (outside the 90% confidence intervals), and the additional uncertainty caused by applying the correction is unclear. The model for the northern sub-area has a larger retrospective pattern than the model for the southern sub-area.
- The natural mortality rate (M) used in the assessment — because of the unusual life history strategy, the current assumption of an equal M in the assessment model for both sexes — may not adequately capture potential sex-based differences in M.
- The spatial distribution of productivity within the stock range.
- The level, temporal pattern, and spatial distribution of recreational catches.
- The nature of exchanges between the spatial regions defined in the assessment model.
- The extent to which the spatial structure imposed reflects the dynamics within the stock.
- The combination of the values from the northern and southern sub-areas is conducted without weighting based on landings or biomass. It is unclear whether or how the uncertainty should be treated when the biological reference points are combined using simple addition.

⁵ Available at: <https://www.mafmc.org/ssc-meetings/2021/july21-23>

- Future effects of temperature on stock productivity and range are highly uncertain.
- Estimates of 2020 harvest and dead discards in both the recreational and commercial sectors are highly uncertain because of COVID-related pauses in observer coverage and MRIP intercept surveys.

The SSC recommended variable ABCs across 2022-2023 because the averaged ABC approach resulted in a greater than 50% probability of overfishing in one year. The 2022-2024 ABCs recommended by the SSC are shown in Table 6.

Table 6: 2022-2024 black sea bass OFLs and ABCs recommended by the SSC. Associated fishing mortality rates (F), probability of overfishing (p*), spawning stock biomass (SSB), and projected biomass compared to target level (SSB/SSB_{MSY}) are shown for 2022-2023 only as the 2024 OFL and ABC were set equal to 2024 without updated stock projections.

Year	OFL		ABC		ABC	ABC	SSB		SSB/
	MT	Mil. lb	MT	Mil. lb	F	p*	MT	Mil. lb	SSB _{MSY}
2022	8,735	19.56	8,555	18.86	0.41	0.49	22,637	49.91	1.57
2023	7,716	17.01	7,557	16.66	0.41	0.49	19,538	43.07	1.35
2024	7,716	17.01	7,557	16.66	--	--	--	--	--

2025 ABC

The SSC will recommend a 2025 black sea bass ABC during their July 2024 meeting. The NEFSC provided stock projections for 60%, 100%, and 150% OFL CVs (Table 7). These projections are based on the 2024 Management Track Stock Assessment model and assume catch in 2024 is equal to the 2024 ABC of 7,557 mt (16.66 mil lb). The autoregressive random effects on recruitment, numbers at age, selectivity, and environmental covariate (winter bottom temperature) used in the Management Track Assessment are continued into the projection years. The projections use the mean recruitment since 2000 and the mean environmental covariate since 1959. Values for 2026 are provided for informational purposes and the average ABC approach was not used because specifications are being set only for 2025. Specifications for 2026-2027 will be set based on a 2025 management track assessment.

Depending on the OFL CV used, the projected 2025 ABCs are 19-20% lower than the 2024 ABC. This decrease is likely due to a combination of factors. Given that black sea bass biomass is well above the target level, OFL projections assuming fishing mortality is equal to the F_{MSY} proxy would be expected to bring biomass down towards the target over time. Given that the ABC scales with biomass, this reduces the ABCs over time. In addition, as stated above, it is assumed that recruitment in the projection years will be equal to the 2000-2023 average, which results in lower projected recruitment than the peaks seen in some recent years (Figure 3). Many changes to the assessment model were made as a result of the 2023 Research Track Assessment.⁶ Some of these changes may also be impacting the scale of the projected biomass used to set the 2024 ABC compared to the 2025 ABC.

⁶ The 2023 Black Sea Bass Research Track Assessment Working Group Report and peer review summaries are available at <https://www.mafmc.org/ssc-meetings/july-2024>.

Table 7: Black sea bass stock projections using a 60%, 100%, and 150% OFL CVs provided by the NEFSC. The OFLs, ABCs, and SSB are in metric tons. Projections for 2026 are provided for informational purposes only as specifications will be set only for 2025. Future years’ specifications to be set based on a 2025 management track assessment.

OFL CV 60%						
Year	OFL	ABC	ABC p*	F	SSB	SSB/SSB_{MSY}
2025	6,193	6,108	0.49	1.05	17,489	1.87
2026	4,941	4,872	0.49	1.05	14,120	1.56
OFL CV 100%						
Year	OFL	ABC	ABC p*	F	SSB	SSB/SSB_{MSY}
2025	6,193	6,065	0.49	1.04	17,512	1.87
2026	4,953	4,850	0.49	1.04	14,167	1.56
OFL CV 150%						
Year	OFL	ABC	ABC p*	F	SSB	SSB/SSB_{MSY}
2025	6,193	6,027	0.49	1.04	17,533	1.87
2026	4,964	4,830	0.49	1.04	14,210	1.56

Sector Specific Catch and Landings Limits

Recreational and Commercial ACLs

The commercial/recreational allocations for black sea bass were revised via Amendment 22 to the Fishery Management Plan (FMP), effective in 2023. Under the revised allocations, the commercial ACL is now 45% of the ABC and the recreational ACL is 55% of the ABC (Figure 4).

If the SSC maintains their previous 100% OFL CV recommendation and uses the projections shown in Table 7, this would result in a 2025 commercial ACL of 6.02 million pounds (2,729 mt) and a recreational ACL of 7.35 million pounds (3,336 mt). Both ACLs are 20% lower than the respective values in 2024 due to a 20% decrease in the ABC.

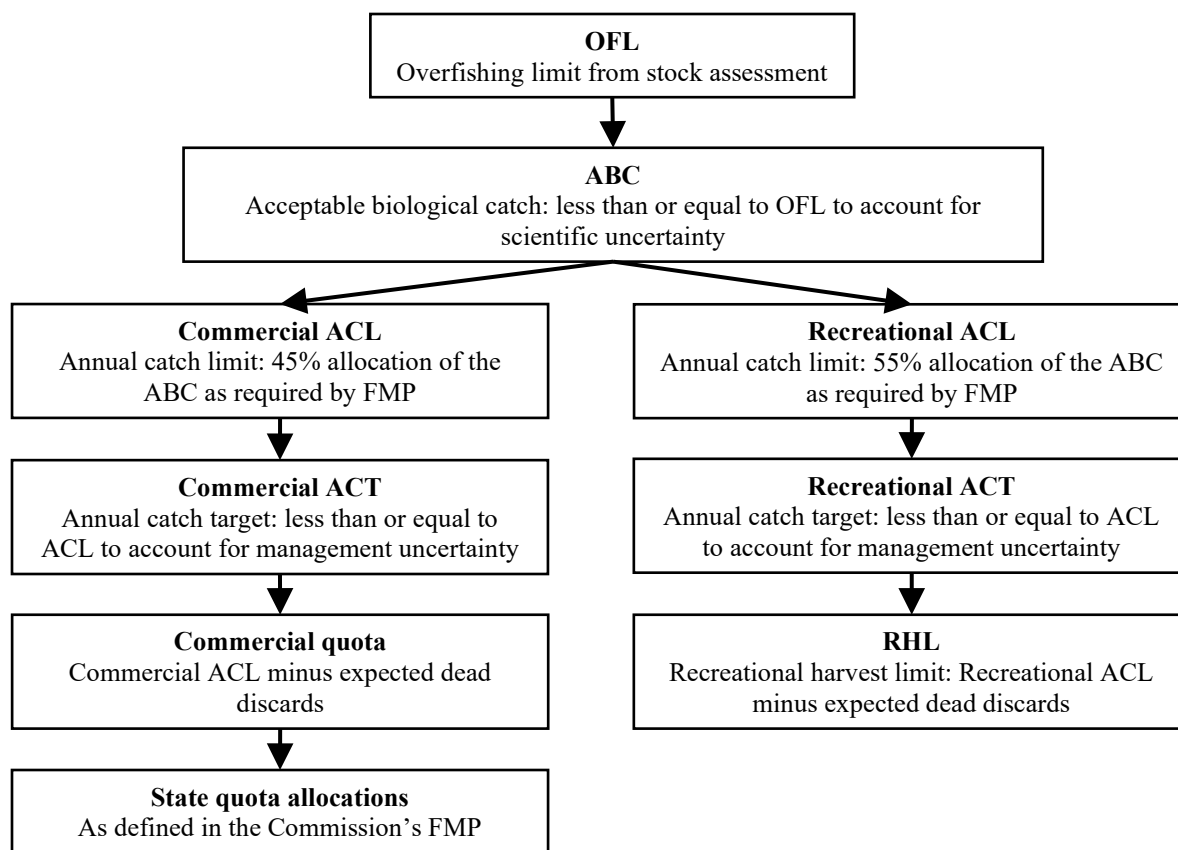


Figure 4: Black sea bass catch and landings limits, reflecting the revised commercial/recreational allocations which became effective in 2023.

Recreational and Commercial ACTs

ACTs are set less than or equal to the sector-specific ACLs to account for management uncertainty (Figure 4). Management uncertainty is comprised of two parts: uncertainty in the ability of managers to control catch and uncertainty in quantifying the true catch (i.e., estimation errors). Management uncertainty can occur due to a lack of sufficient information about catch (e.g., due to late reporting, underreporting, and/or misreporting of landings or discards) or due to a lack of management precision (i.e., the ability to constrain catch to desired levels). The Monitoring Committee should consider all relevant sources of management uncertainty in the black sea bass fishery when recommending ACTs. Based on the considerations described below for each sector, staff recommend no deduction from the 2025 commercial and recreational ACLs to the ACTs to account for management uncertainty.

Recreational harvest is estimated through a statistical survey design (i.e., the MRIP program), as opposed to mandatory vessel and dealer reporting in the commercial fishery which is more of a census of the entire commercial fishery. The commercial fisheries are also mostly limited access (with some exceptions at the state level) and the commercial fisheries can be closed in-season when landings approach the quota. The recreational fisheries for these species are all open access and there is no in-season closure authority due to the timing of recreational data availability. For these reasons, recreational landings can be more difficult to constrain and predict than commercial landings.

The commercial quota monitoring system has largely been successful in preventing quota overages. As shown in Table 4, commercial landings have not exceeded the quota by more than

1% since 2015. Commercial ACL overages for several years through 2019 were the result of higher than projected commercial dead discards. Revisions to the projected discard methodology were made starting with the 2021 specifications to address this issue. Commercial ACL overages have not occurred since 2019 due to both landings falling below the quotas, which increased by about 59% in 2020, and discards falling below the projected amount.

When considering the scale of the RHL overages and underages shown in Table 5, it is important to note that, as previously stated, the catch and landings limits for both sectors were not set based on a peer reviewed and accepted stock assessment until 2017. Previous RHLs were likely lower than they could have been had an approved stock assessment been available to set catch and landings limits that were reflective of biomass levels at that time. In addition, the notable 2020 and 2021 RHL overages were the result of the Council and Board leaving the bag, size, and season limits unchanged despite expected overages. This was a short-term approach to prevent major negative impacts to the recreational sector while changes to management were considered through the Commercial/Recreational Allocation Amendment (Amendment 22) and the Recreational Harvest Control Rule Framework/Addenda (Framework 17).

The Percent Change Approach and the use of a new recreational harvest estimation model (the Recreational Demand Model) were both applied to the development of recreational black sea bass measures in 2023 for the first time. This required changes in the black sea bass measures to achieve a 10% reduction in harvest compared to predicted 2023 harvest under 2022 measures. Specifically, measures aimed to achieve 7.14 million pounds of harvest in 2023. The final 2023 harvest estimate of 7.49 million pounds is 5% higher than the target of 7.14 million pounds.

The Percent Change Approach considers the RHL in the upcoming year(s) as well as biomass compared to the target level when setting measures. In some cases, RHL and ACL overages are permitted under the Percent Change Approach. In other cases, this approach requires more restrictive measures than would be needed to prevent RHL and ACL overages.

In 2023, the Monitoring Committee noted a disconnect between the consideration of management uncertainty buffers and the Percent Change Approach. Management uncertainty buffers are intended to prevent overages of the ACL; however, the Percent Change Approach by design partially decouples recreational bag, size, and season limits from the RHL and ACL. A reduction from the recreational ACL to ACT to account for management uncertainty ultimately decreases the RHL, which in some cases could modify the resulting percent change needed under the Percent Change Approach, but in other cases would not impact the result. The Monitoring Committee also expressed concern that in general, any buffer that results in a lower target (whether the RHL or a target under the Percent Change Approach) could increase discards in the recreational fishery. The Percent Change Approach will sunset at the end of 2025. The ongoing Recreational Measures Setting Framework/Addenda considers the appropriate process for setting recreational measures for 2026 and beyond.⁷ The role of management uncertainty in the setting of recreational measures may be modified through this action.

Additionally, a separate amendment is under development to consider managing for-hire recreational fisheries separately from other recreational fishing modes (referred to as sector separation) and improvements to recreational catch accounting.

⁷ More information is available at <https://www.mafmc.org/actions/rec-measures-framework-addenda>.

Given these ongoing management actions, staff recommend no buffer for management uncertainty in the recreational fishery, consistent with past practice for this fishery.

Projected Commercial Dead Discards and Commercial Quota

Projected commercial dead discards are subtracted from the commercial ACT to derive the commercial quota (Figure 4). The methodology to calculate projected dead discards is not prescribed in the FMP and can be modified on an annual basis.

Starting with the 2021 specifications, commercial black sea bass dead discards have been projected based on an assumption that commercial dead discards as a proportion of total dead commercial catch would be equal to the average proportion during the most recent three years of available data. This method aimed to address the issue of past under-prediction of commercial discards (Table 4) and reduce the frequency of ACL overages due to discards. As previously stated, the commercial ACL has not been exceeded since 2019 due to a combination of landings falling below the quota, which increased by about 59% in 2020, and discards falling below the projected amounts.

Updated landings and discards information indicate that on average during 2021-2023, 20% of commercial dead catch was discarded (Table 4). This is the same proportion as was used when setting 2024 specifications based on 2020-2022 data. Applying this percentage to the 2025 commercial ACL assumed in the previous section results in 1.20 million pounds of projected commercial dead discards, which is very close to the average commercial discards during 2021-2023 (i.e., 1.23 million pounds, Table 4). This level of projected discards results in a 2025 commercial quota of 4.82 million pounds. This represents a 20% decrease in the commercial quota compared to 2024 due to the 20% decrease in the ABC.

Projected Recreational Dead Discards and Recreational Harvest Limit

Projected recreational dead discards are subtracted from the recreational ACT to derive the RHL (Figure 4). The methodology to calculate projected dead discards is not prescribed in the FMP and can be modified on an annual basis.

When setting the 2023 specifications, the Council and Board agreed to use a different method for projecting recreational dead discards compared to commercial dead discards. The method adopted for the recreational fishery aimed to address concerns that the previous method underestimates recreational dead discards and to avoid the assumption that recreational catch will be equal to the ACL. Given recent levels of recreational dead catch compared to the ACL (Table 5) and the new process used to set recreational measures (i.e., the Percent Change Approach), the Council and Board agreed that it may not be reasonable to assume that recreational catch will be equal to the ACL.

The Council and Board considered input from the Monitoring Committee on two potential methods for projecting recreational dead discards and ultimately agreed to use an average of the two approaches. The first method would have set projected recreational dead discards to the most recent three-year average. The second method is the same as described above for the commercial fishery. The three-year average approach does not rely on an assumption that catch will be equal to the ACL and results in a higher estimate than the second method. Some Monitoring Committee members thought the three-year average approach was more appropriate given recent trends in dead discards; however, at the time, other Monitoring Committee members thought discards may decrease below recent levels given the increased ACL in 2023. They also supported maintaining the prior method for an additional year given that it was not possible at the time to evaluate how well it predicted discards given that it was first used in 2021 and dead

discard estimates in weight were only available through 2019. The Council and Board agreed that both approaches recommended by the Monitoring Committee had logical rationales. They also agreed that discards in 2023 could fall between these two estimates; therefore, they decided to use an average of these two approaches. This same method was continued for the 2024 RHL. It is now possible to evaluate the performance of this method in 2023. As shown in Table 5, 2023 recreational discards were 36% higher than the projected amount under this new method.

Updated recreational discards projections based on all these methods are shown in Table 8. As shown in Table 8, the method used for 2023-2024 specifications (i.e., the average of the two methods described above) results in 2.86 million pounds of projected recreational dead discards in 2025. The method used for the commercial fishery results in 2.13 million pounds of projected recreational dead discards in 2025. Both of these projections are lower than recreational discards over the past 5 years (i.e., 2.90 – 3.69 mil lb during 2019-2023). The Monitoring Committee should carefully consider the appropriate assumptions for recreational discards in the 2025.

If the Monitoring Committee, Council, and Board wish to maintain the 2023-2024 method for projecting recreational dead discards, this would result in 2.86 million pounds of projected recreational discards in 2025 and a 2025 RHL of 4.49 million pounds. This RHL is 28% lower than the 2024 RHL due to the 20% decrease in the ABC and projected dead discards that are similar in scale to those used when setting the 2024 RHL.

Table 8: Projected recreational dead discards and resulting RHL based on the ABC projections shown in Table 7 with a 100% OFL CV using various methods considered for projecting recreational black sea bass discards in recent years. All values are in millions of pounds.

Measure	Projected discards set to most recent 3-yr avg. discards	Discards as proportion of catch based on most recent 3-yr avg. proportion (same method as commercial)	Average of other two methods (method used for 2023-2024)
Rec. ACL	7.35	7.35	7.35
Projected rec. dead discards	3.59	2.13 (29% of ACL)	2.86
RHL	3.77	5.22	4.49

Commercial Management Measures

Federal regulations include several commercial management measures which can be modified through the annual specifications process. These measures are summarized below. Council staff recommend a 5% in-season closure buffer for 2025 and no other changes to the commercial measures for 2025 as there is no new information to suggest changes are needed. Advisors did not recommend any changes for 2025.

On August 2, 2023, the Council Chair received a letter indicating that the National Marine Fisheries Service (NMFS) had partially approved Amendment 23.⁸ The approved component of this amendment modified the in-season closure trigger for the commercial black sea bass fishery. A final rule has not yet published, but this change may be effective for 2025. As such, the Monitoring Committee should consider the appropriate in-season closure buffer for 2025. The appropriate buffer for the upcoming year is set through the specifications process. The

⁸ Available at <https://www.mafmc.org/s/20230802-Pentony-to-Luisi-re-BSB-A23-0648-BL45-Decision.pdf>.

Monitoring Committee should provide advice on the appropriate buffer based on considerations such as stock status, the quota level, and recent fishery trends.

Under the approved (but not yet implemented) revisions to the regulations, the entire commercial fishery would close in-season for all federally permitted vessels and dealers, regardless of state, once landings are projected to exceed the coastwide quota plus an additional buffer of up to 5%. Under the previous regulations, this closure would occur when the full quota was projected to be landed, without an additional buffer. The intent behind allowing an additional buffer is to help minimize negative economic impacts of coastwide closures on states that have not fully harvested their allocations. The commercial fishery has not closed in-season to date as states have effectively monitored and controlled their landings and used transfers to address minor state-level overages. The additional buffer is not expected to create an incentive for quota overages as the Commission's FMP still requires states to close when their allocations are reached. In addition, states are still required to pay back their contributions to coastwide quota overages.

An in-season closure is not anticipated in 2025 given recent trends in landings (Table 4) and the process in place to prevent quota overages. Staff recommend use of the full 5% in-season closure buffer for 2025 as this is not expected to negatively impact the stock due to the current stock status (i.e., biomass more than double the target level and overfishing not occurring based on the most recent assessment) and could provide some socioeconomic benefits in the unlikely event that it is needed. Under the assumed 2025 commercial quota of 4.81 million pounds (which could be modified based on the upcoming SSC and Monitoring Committee meetings), a 5% buffer would result in the fishery closing in-season when 5.05 million pounds are projected to be landed.

The commercial minimum fish size in federal waters is 11 inches. This measure has remained unchanged since 2002.

Trawl vessels which possess 500 pounds or more of black sea bass from January 1 through March 31, or 100 pounds or more from April 1 through December 31, must fish with nets that have a minimum mesh size of 4.5-inch diamond mesh throughout the codend for at least 75 continuous meshes forward of the terminus of the net. For codends with less than 75 meshes, the entire net must have a minimum mesh size of 4.5-inch diamond mesh. These measures have been unchanged since 2002. Hasbrouck et al. (2018) confirmed that the current minimum mesh sizes are effective at releasing most fish smaller than the commercial minimum size. This study also considered the potential for a common minimum mesh size for black sea bass, scup, and summer flounder. The results were not able to identify an effective common mesh size for all three species at the current size limits; however, the authors concluded that a common mesh size of 4.5 or 5 inches diamond for scup and black sea bass would be effective at releasing undersized fish.⁹ Further consideration of a shared minimum mesh size has not been prioritized by the Council and Board in recent years.

Pot/trap regulations include minimum vent sizes of 2.5 inches in diameter if circular, 1.375 inches x 5.75 inches for rectangular vents, and 2 inches for square vents remained unchanged. In

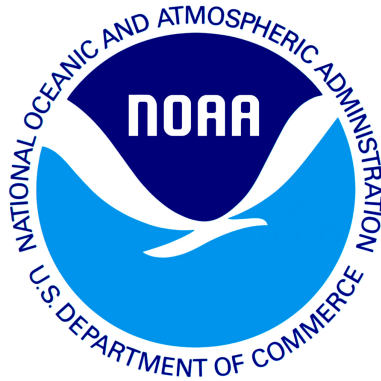
⁹ Hasbrouck, E., S. Curatolo-Wagemann, T. Froelich, K. Gerbino, D. Kuehn, P. Sullivan, J. Knight. 2018. Determining Selectivity and Optimum Mesh Size to Harvest Three Commercially Important Mid-Atlantic Species - A Report to the Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission. Available at: http://www.mafmc.org/s/Tab08_SFSBSB-Mesh-Selectivity-Study-Apr2018.pdf

addition, two vents are required in the parlor portion of the pot/trap. These regulations have been unchanged since 2007.

Recreational Management Measures

Recreational management measures for 2025 will be developed later this fall, using the Percent Change Approach. The Monitoring Committee will meet in the fall of 2024 to review available recreational data and Recreational Demand Model estimates of recreational harvest under current measures, and to make recommendations for any adjustments that may be needed to recreational bag, size, and season limits.

draft working paper for peer review only



Black Sea Bass

2024 Management Track Assessment Report

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Science Center
Woods Hole, Massachusetts

Compiled 06-11-2024

This assessment of the Black Sea Bass (*Centropristis striata*) stock is a Level-2 2024 management track assessment which updates the 2023 research track assessment model using the WHAM framework to fit a spatially explicit model specified for two regions, North or South of Hudson Canyon. Prior to the 2023 research track, the last management track assessment for this stock was in 2021, using data through 2019 (NEFSC 2022). Based on the 2021 management track assessment the stock was not overfished, and overfishing was not occurring. Stock status was not part of the terms of reference for the 2023 research track. This assessment updates commercial and recreational fishery catch data, survey indices of abundance, weights and maturity at age, and the spatially explicit WHAM assessment model and reference points through 2023. Additionally, stock projections have been updated through 2026. This report reflects recommendations made during the research track peer review December 5-7, 2023.

State of Stock: Based on the management track assessment, the Black Sea Bass (*Centropristis striata*) stock is not overfished and overfishing is not occurring (Figures 1-2). Spawning stock biomass (SSB) in 2023 was estimated to be 24,572 (mt) which is 219% of the biomass target (SSB_{MSY} proxy = 11,225; Figure 1). The 2023 fully selected fishing mortality was estimated to be 0.82 which is 77% of the overfishing threshold proxy (F_{MSY} proxy = 1.071; Figure 2).

Table 1: Catch and status table for Black Sea Bass. All weights are in (mt) recruitment is in (000s) and F_{Full} is the fishing mortality on fully selected individuals (age 8). Model results are from the current management track assessment.

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
	<i>Data</i>									
Commercial catch in North	1,008	1,097	1,389	2,346	1,903	1,986	1,712	1,777	2,439	2,079
Recreational catch in North	3,332	4,341	5,964	5,063	3,375	4,148	4,069	4,521	3,310	2,666
Commercial catch in South	486	368	309	368	301	512	584	695	634	608
Recreational catch in South	827	637	832	1,579	1,160	1,078	1,426	2,524	2,059	2,330
Catch for Assessment	5,653	6,444	8,494	9,355	6,739	7,724	7,790	9,518	8,442	7,683
	<i>Model Results</i>									
Spawning Stock Biomass	18,394	16,825	18,112	17,606	18,532	20,128	20,789	23,512	24,680	24,572
F_{Full}	0.871	0.908	1	1.328	0.934	1.034	1.025	1.074	0.888	0.825
Recruits (age 1)	24,438	26,400	60,657	34,300	17,069	42,494	42,800	28,143	56,405	60,230

Table 2: Comparison of reference points estimated in the 2021 management track assessment and the current management track assessment. An $F_{40\%}$ proxy was used for the overfishing threshold and was based on average recruitment since 1999. It is difficult to compare the $F_{40\%}$ between the two models because of how fundamentally differently they were calculated. In this management track assessment, F is the fully selected fishing mortality summed across regions and fleets and reflects a maximum value.

	2021	2024
F_{MSY} proxy	0.46	1.07
SSB_{MSY} (mt)	14,092	11225 (8273 - 15229)
MSY (mt)	4,773	3649 (2681 - 4966)
Median recruits (age 1) (000s)	32,088	33,571
<i>Overfishing</i>	No	No
<i>Overfished</i>	No	No

Projections: Short term (three year) projections were conducted in WHAM, which propagates uncertainty in the fleet selectivity, numbers at age, and environmental covariates. For projection specifications, recruitment was averaged for years after 1999 and the most recent 5-year average of age specific maturity, weight-at-age, fleet selectivity, and natural mortality estimates were used, and the ABC catch was used in the first projection year followed by F_{MSY} proxy in subsequent years.

Table 3: Short term projections of total fishery catch and spawning stock biomass for Black Sea Bass based on a harvest scenario of ABC as an interim catch for 2024 and F_{MSY} proxy for 2025-2026. Catch in 2024 was assumed to be 7557 (mt).

Year	Catch (mt)	SSB (mt)	F_{Full}
2024	7557	20987 (9701 - 45407)	1.036
Year	Catch (mt)	SSB (mt)	F_{Full}
2025	6193	17442 (6043 - 50338)	1.071
2026	4916	14024 (4195 - 46882)	1.071

Special Comments:

- What are the most important sources of uncertainty in this stock assessment? Explain, and describe qualitatively how they affect the assessment results (such as estimates of biomass, F, recruitment, and population projections).

The largest source of uncertainty is the NEFSC bottom trawl survey data in spring 2023, which only surveyed on Georges Bank and therefore lacked index information for the Gulf of Maine, Southern New England, or the Southern region between Hudson Canyon to Cape Hatteras. The bottom trawl survey is only one of several that inform the model-based index time series used in assessment (VAST), but its spatial (area weighting = 0.8) and temporal (60 year) coverage make it highly influential. The VAST index value in the South for 2023 was the greatest in the time series, likely driving the upward trend in the most recent years. Sensitivity tests were done to exclude the VAST index in either the South or from both regions but neither changed the stock status. Another source of uncertainty stemmed from the fact that no length information on individuals in the unclassified market category have been sampled since 2020. Calculating the catch at length for 2021-2023 necessitated borrowing information from before 2020 which introduces additional uncertainty. The 2023 research track peer review panel requested sensitivity tests on the natural mortality rate (fixed at 0.4), the estimated initial fishing mortality rate and the influence of individual indices on the model results. These sensitivity tests were performed for the accepted research track model and the updated 2024 management track model. The results of sensitivity tests are included in the supplemental materials.

- Does this assessment model have a retrospective pattern? If so, is the pattern minor, or major? (A major retrospective pattern occurs when the adjusted SSB or F_{Full} lies outside of the approximate joint confidence region for SSB and F_{Full}).

The 7-year Mohn's ρ , relative to SSB, was -0.462 in the North and 0.155 in the South in the 2021 assessment and was 0.042 in the North and -0.167 in the South in 2023. The 7-year Mohn's ρ , relative to F, was 0.615 in the North and -0.156 in the South in the 2021 assessment and was -0.02 in the North and 0.117 in the South in 2023. There was not a major retrospective pattern for this assessment because the ρ adjusted estimates of 2023 SSB ($SSB_{\rho}=26433$) and 2023 F ($F_{\rho}=0.808$) were inside the approximate 90% confidence regions around SSB (18,392 - 38,212) and F (0.575 - 1.14). No retrospective adjustment of spawning stock biomass or fishing mortality in 2023 was required.

- Based on this stock assessment, are population projections well determined or uncertain? If this stock is in a rebuilding plan, how do the projections compare to the rebuilding schedule?

Population projections for Black Sea Bass are reasonably well determined. The projected biomass from the

2021 management track assessment was within the 95% confidence bounds of the biomass estimated in the current assessment. This stock is not in a rebuilding plan.

- Describe any changes that were made to the current stock assessment, beyond incorporating additional years of data and the effect these changes had on the assessment and stock status.

No changes were made to the accepted 2023 research track assessment, other than the incorporation of 2022-2023 data. However, because the research track assessment is not used to determine stock status, the comparisons of reference points, biomass, fishing mortality, and recruitment herein are made to the 2021 management track assessment results which may explain some of the discrepancy in results.

- If the stock status has changed a lot since the previous assessment, explain why this occurred.

The stock status of Black Sea Bass did not change since the previous assessment (the 2021 management track assessment).

- Provide qualitative statements describing the condition of the stock that relate to stock status.

The Black Sea Bass stock shows consistently strong levels of recruitment that have sustained a high spawning stock biomass in the North and have increased the spawning stock biomass in the South. This pattern influences the age structure in the North and South, with a higher percentage of older age classes (6-8) in the previous 10 years than is observed earlier in the time series.

- Indicate what data or studies are currently lacking and which would be needed most to improve this stock assessment in the future.

The Black Sea Bass assessment could be improved with sampling the length composition of the unclassified market category. Care should be taken to continue the existing sampling regime of the NEFSC Bottom Trawl survey as these data are an invaluable source of fisheries-independent information to inform abundance. The research track assessment in 2023 strongly recommended additional research on the recreational catch-per-angler survey to test for hyperstability and investigate the development of a commercial CPUE index.

- Are there other important issues?

*The review panel requested several sensitivity runs related to natural mortality, initial exploitation rate, and influence of individual surveys that are available on the Stock Assessment Supplementary Information website (*SASINF*).*

References:

Northeast Fisheries Science Center (NEFSC). 2022. Management Track Assessment June 2021. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 22-10, 79 p. <https://doi.org/10.25923/4m8f-2g46>

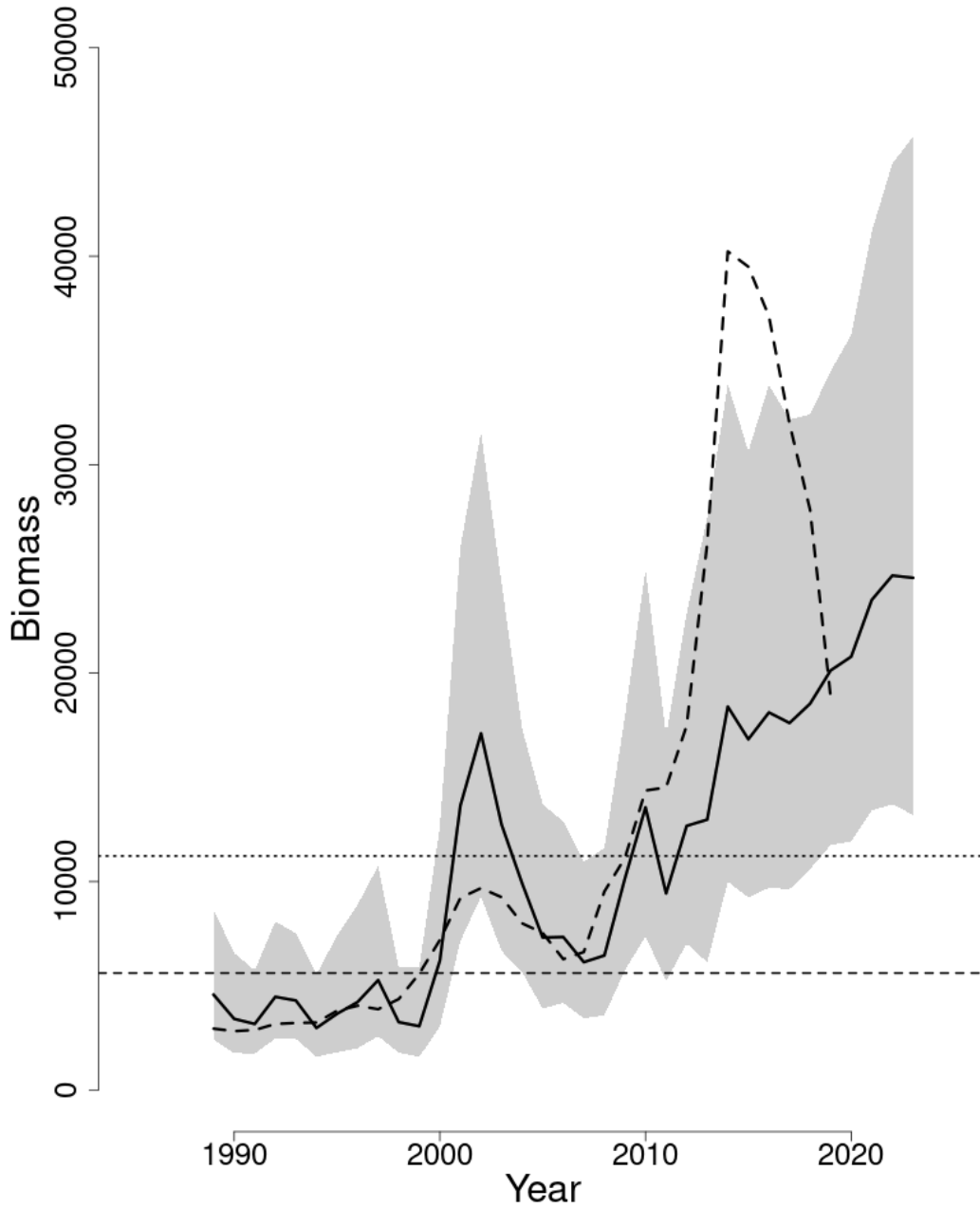


Figure 1: Trends in spawning stock biomass of Black Sea Bass between 1989 and 2023 from the current (solid line) and previous (dashed line) 2021 management track assessment and the corresponding $SSB_{Threshold} = 5,612$ ($\frac{1}{2} SSB_{MSY}$ proxy; horizontal dashed line) as well as SSB_{Target} (SSB_{MSY} proxy = 11,225; horizontal dotted line) based on the 2024 assessment. The approximate 95% lognormal confidence intervals are shown.

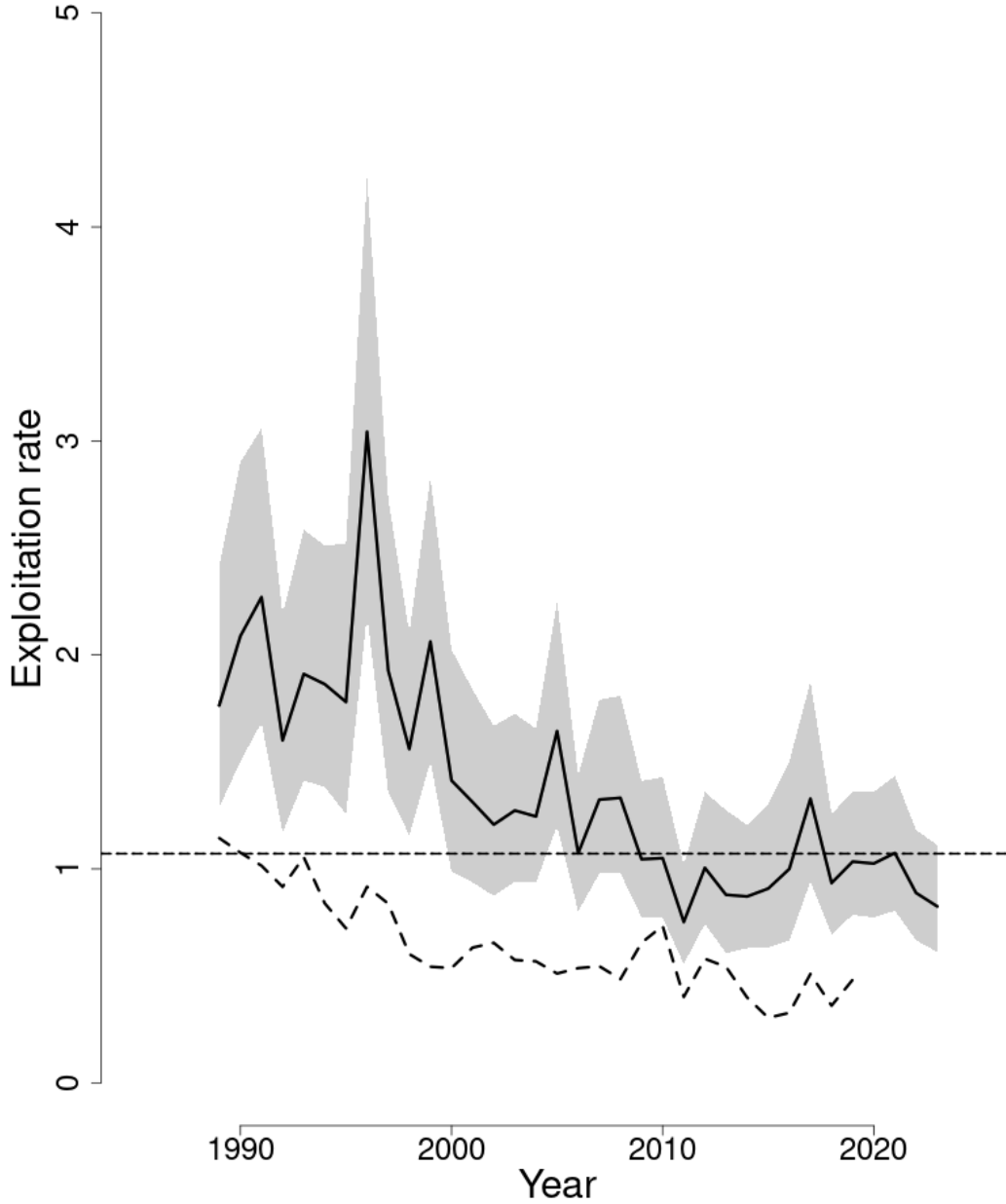


Figure 2: Trends in the fully selected fishing mortality (F_{Full}) of Black Sea Bass between 1989 and 2023 from the current (solid line) and previous (dashed line) assessment and the corresponding $F_{Threshold}$ ($F_{MSY proxy}=1.071$; horizontal dashed line) based on the 2024 assessment. The approximate 95% lognormal confidence intervals are shown. It is difficult to compare the $F_{40\%}$ between the two models because of how fundamentally differently they were calculated. In this management track assessment, F is the fully selected fishing mortality summed across regions and fleets and reflects a maximum value.

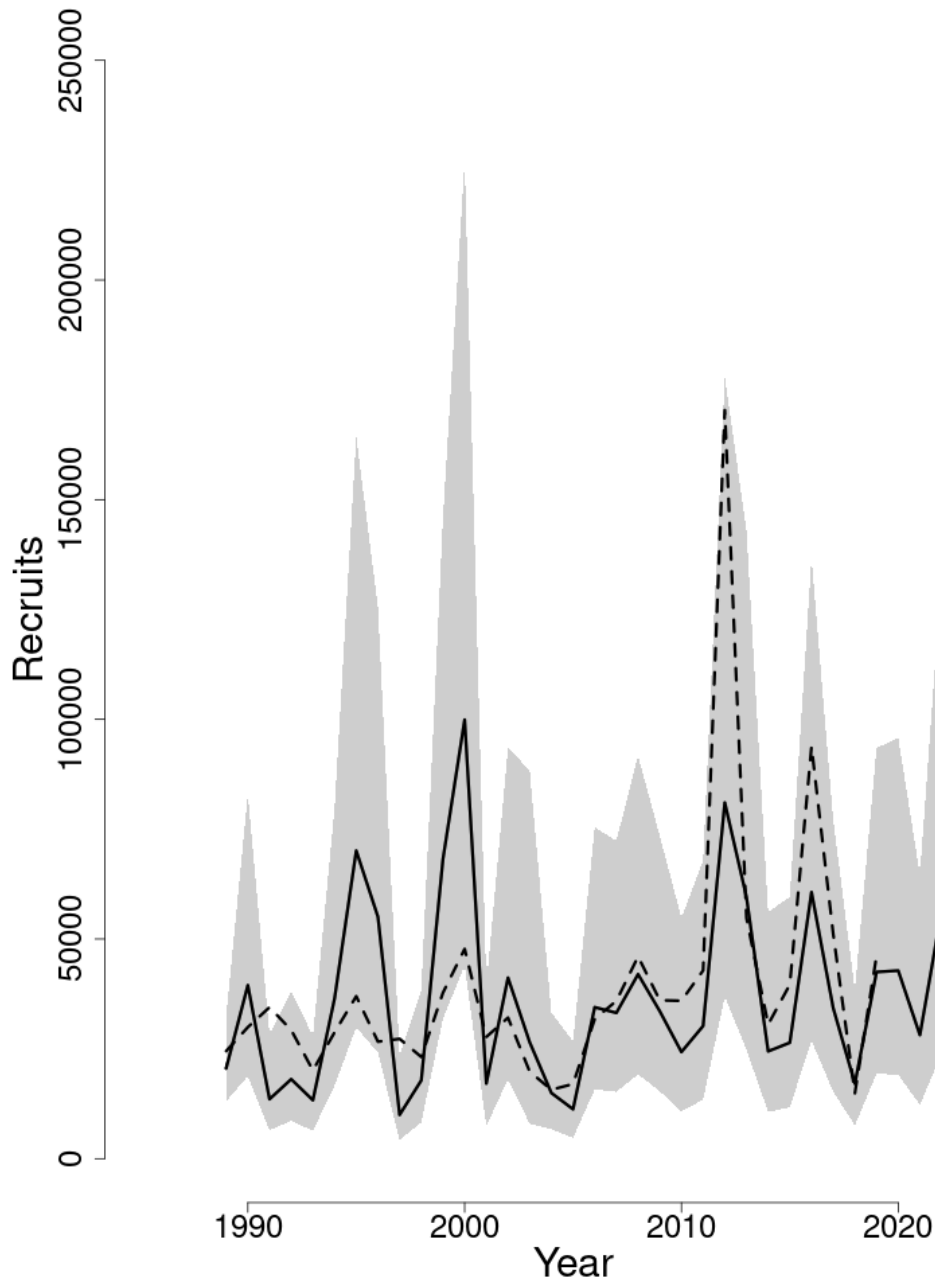


Figure 3: Trends in Recruits (age 1) (000s) of Black Sea Bass between 1989 and 2023 from the current (solid line) and previous (dashed line) assessment. The approximate 95% lognormal confidence intervals are shown.

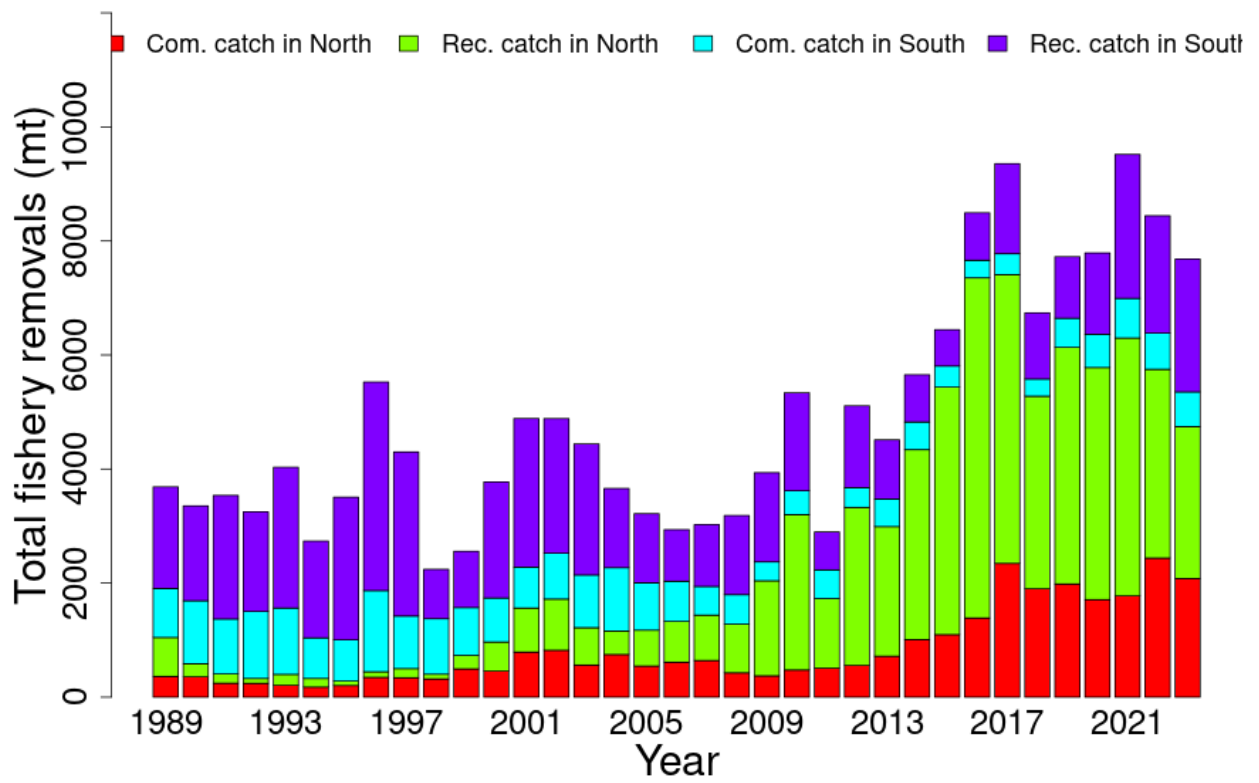


Figure 4: Total catch of Black Sea Bass between 1989 and 2023 by fleet (commercial or recreational) and region (North or South).

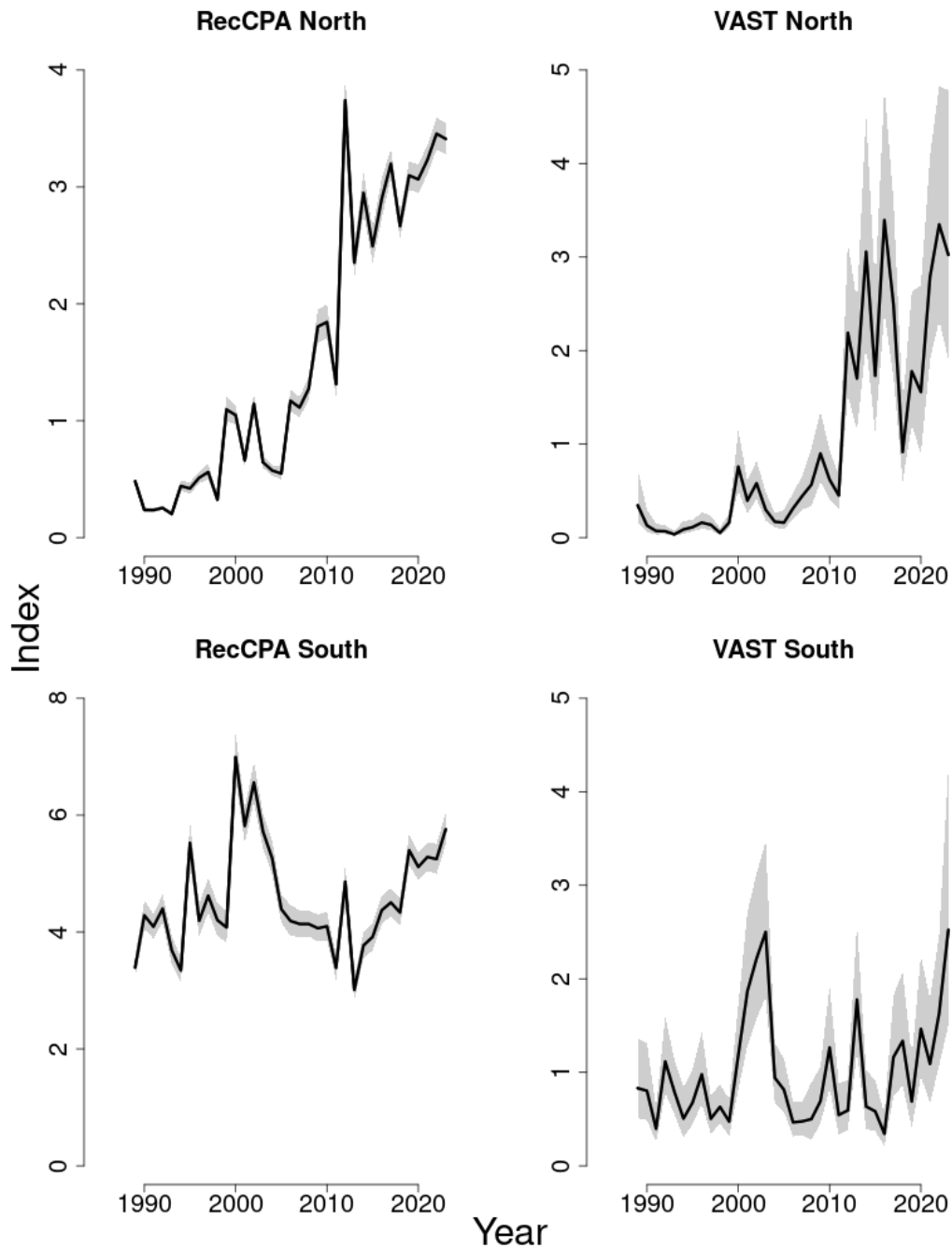


Figure 5: Indices of abundance for Black Sea Bass between 1989 and 2023 for the recreational catch-per-angler (RecCPA) and the Vector Autoregressive Spatio-Temporal Model (VAST) model in the North and South regions. The approximate 95% lognormal confidence intervals are shown.



Black Sea Bass Fishery Information Document June 2024

This document provides an overview of the biology, stock condition, management system, and fishery performance for black sea bass (*Centropristis striata*), with an emphasis on 2023. Data sources include unpublished National Marine Fisheries Service (NMFS) Catch Accounting and Monitoring System (CAMS) data,¹ permit data, Northeast Fisheries Observer Program data, Marine Recreational Information Program (MRIP) data,² and stock assessment information. All 2023 data should be considered preliminary. Due to adjustments and corrections to the data over time, some values may differ from those used in previous years and from the values used for final catch accounting.

More information on black sea bass management, including previous Fishery Information Documents, is available at <http://www.mafmc.org/sf-s-bsb>.

Key Facts

- Black sea bass are not overfished and overfishing is not occurring, according to the draft 2024 management track stock assessment. Spawning stock biomass in 2023 was estimated to be about 2.19 times the target level and fishing mortality was 23% below the threshold level.
- In 2023, about 4.67 million pounds of black sea bass were landed in the commercial fishery, a 13% decrease compared to 2022.
- Commercial fish dealers paid an average of \$2.66 per pound of black sea bass in 2023.
- Recreational anglers harvested an estimated 7.49 million pounds of black sea bass in 2023, an 8% decrease from 2022.
- Anglers fishing from private/rental boats accounted for 90% of recreational black sea bass harvest in numbers of fish in 2023.

Basic Biology

Black sea bass are distributed from the Gulf of Maine through the Gulf of Mexico. Genetic studies have identified three stocks within that region. This document focuses on the stock from the Gulf of Maine through Cape Hatteras, North Carolina.

¹ CAMS includes commercial dealer data, including federal and state permitted dealers, as well as federal VTR data and expanded estimates of commercial dead discards. More information on CAMS is available at <https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/cams/index.html>.

² 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). The revised estimates of catch and landings are higher than the previous estimates for shore and private boat modes. The recreational estimates in this document reflect revised MRIP estimates except where otherwise noted.

Adult and juvenile black sea bass are mostly found on the continental shelf. Young of the year (i.e., fish less than one year old) can be found in estuaries. Adults show strong site fidelity during the summer and prefer to be near structures such as rocky reefs, coral patches, cobble and rock fields, mussel beds, and shipwrecks. Black sea bass migrate to offshore wintering areas starting in the fall. During the winter, young of the year are distributed across the shelf and adults and juveniles are found near the shelf edge. During the fall, adults and juveniles off New York and north move offshore and travel along the shelf edge to as far south as Virginia. Most return to northern inshore areas by May. Black sea bass off New Jersey to Maryland travel southeast to the shelf edge during the late fall. Black sea bass off Virginia and Maryland travel a shorter distance due east to the shelf edge, which is closer to shore than in areas to the north (Drohan et al. 2007, NEFSC 2017).

Black sea bass are protogynous hermaphrodites, meaning they are born female and some later transition to males, usually around 2-5 years of age. About 25% of 15 cm (about 6 inches) black sea bass are males, with increasing proportions of males at larger sizes until about 50 cm, when about 70-80% of black sea bass are male. Male black sea bass are either of the dominant or subordinate type. Dominant males are larger than subordinate males and develop a bright blue nuchal hump during the spawning season. Results from a simulation model highlight the importance of subordinate males in spawning success. This increases the resiliency of the population to exploitation compared to other species with a more typical protogynous life history. About half of black sea bass are sexually mature by 2 years of age and 21 cm (about 8 inches) in length. Black sea bass reach a maximum size of about 60 cm (about 24 inches) and a maximum age of about 12 years (Blaylock and Shepherd 2016, NEFSC 2017).

Black sea bass in the Mid-Atlantic spawn in nearshore continental shelf areas at depths of 20-50 meters. Spawning usually takes place between April and October. During the summer, adult black sea bass share habitats with tautog, hakes, conger eel, sea robins and other migratory fish species. Essential fish habitat for black sea bass includes pelagic waters, structured habitat, rough bottom, shellfish, sand, and shell, from the Gulf of Maine through Cape Hatteras, North Carolina. Juveniles and adults mostly feed on crustaceans, small fish, and squid. The Northeast Fisheries Science Center (NEFSC) food habits database lists spiny dogfish, Atlantic angel shark, skates, spotted hake, summer flounder, windowpane flounder, and monkfish as predators of black sea bass (Drohan et al. 2007).

Status of the Stock

A management track stock assessment for black sea bass was peer reviewed in June 2024. According to the draft 2024 management track assessment report (NEFSC 2024), the black sea bass stock was not overfished and overfishing was not occurring in 2023 (Table 1). Spawning stock biomass in 2023 was estimated at about 2.19 times the target level (Figure 1). Fishing mortality in 2023 was estimated to be 23% below the threshold level that defines overfishing (Figure 2).

Recruitment (i.e., the number of age 1 fish) has fluctuated over time. The estimated number of age 1 fish in 2023 is higher than the prior several years (Figure 3).

Table 1: Black sea bass biological reference points from the draft 2024 management track stock assessment report (NEFSC 2024).

	Spawning stock biomass	Fishing mortality rate (F)
Target	24.75 mil lb (11,225 mt)	N/A
Threshold	12.38 mil lb (5,613 mt)	1.071
Terminal year estimate (2023)	54.17 mil lb (24,572 mt) 2.19 times target level	0.82 23% below threshold level
Status	Not overfished	Overfishing not occurring

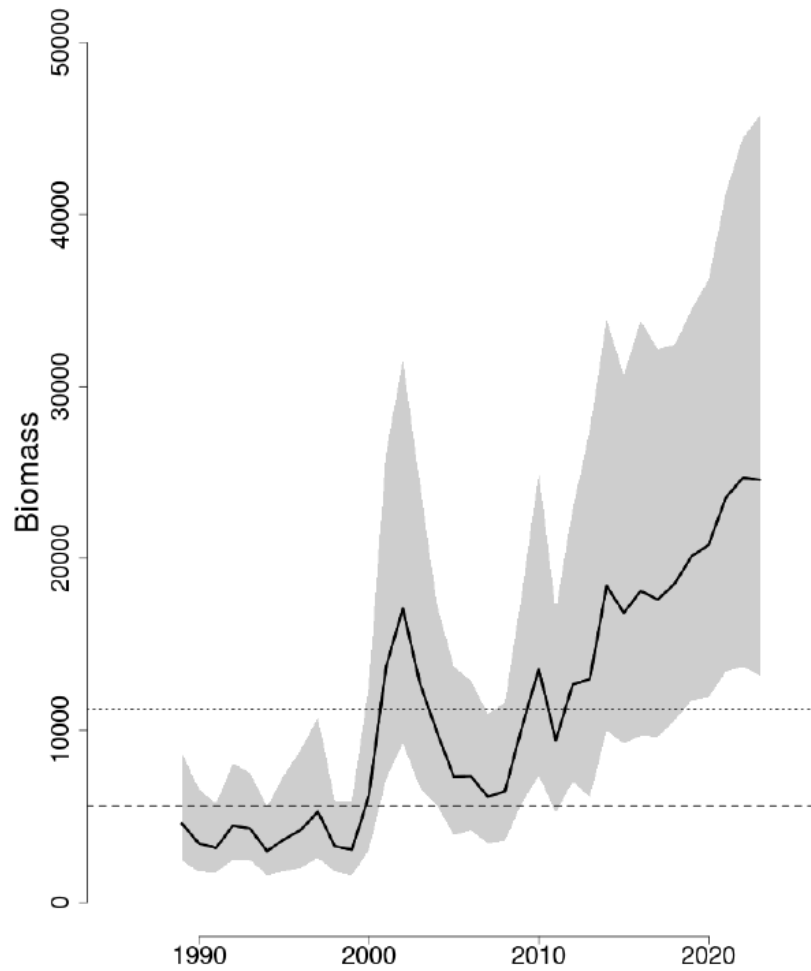


Figure 1: Black sea bass spawning stock biomass, 1989-2023 based on the draft 2024 management track stock assessment (NEFSC 2024). The gray shading represents 95% confidence intervals. The horizontal dotted line is the updated biomass target and the horizontal dashed line is the updated biomass threshold. When biomass is above the threshold, the stock is not overfished.

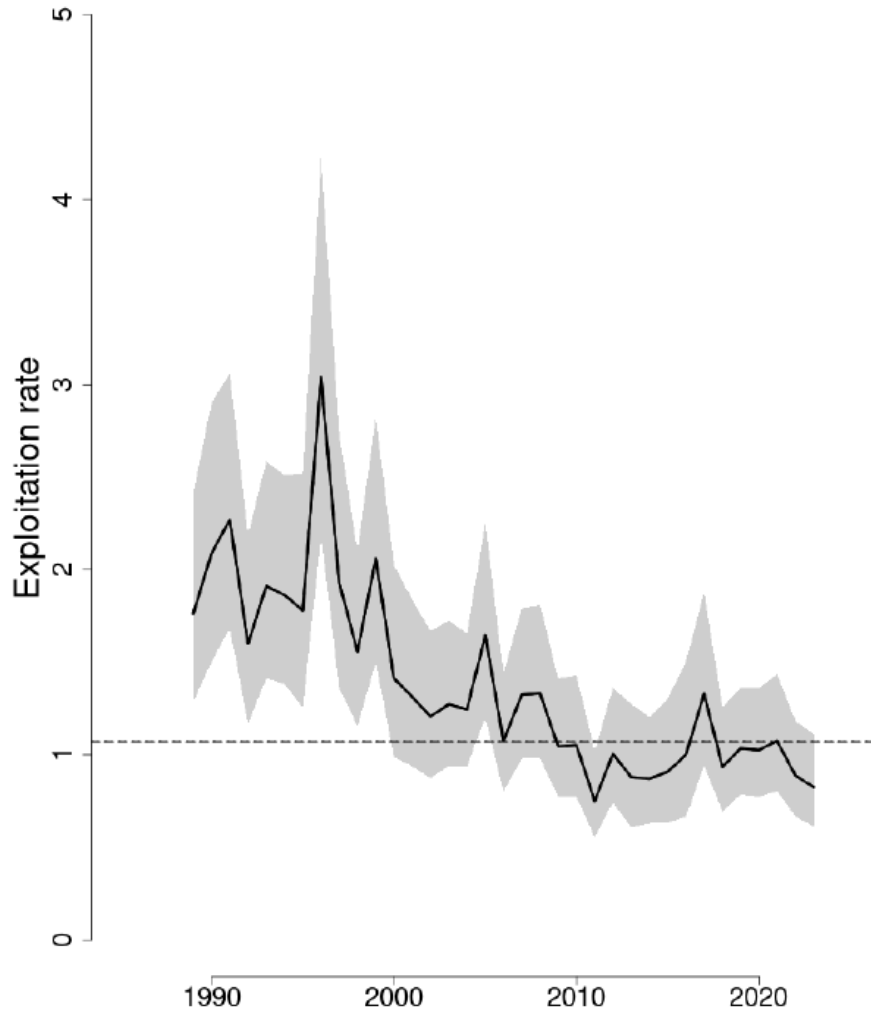


Figure 2: Trends in fully selected fishing mortality for black sea bass, 1989-2023 based on the draft 2024 management track stock assessment (NEFSC 2024). The gray shading represents 95% confidence intervals. The horizontal dotted line is the updated fishing mortality reference point. When fishing mortality is below the reference point, overfishing is not occurring.

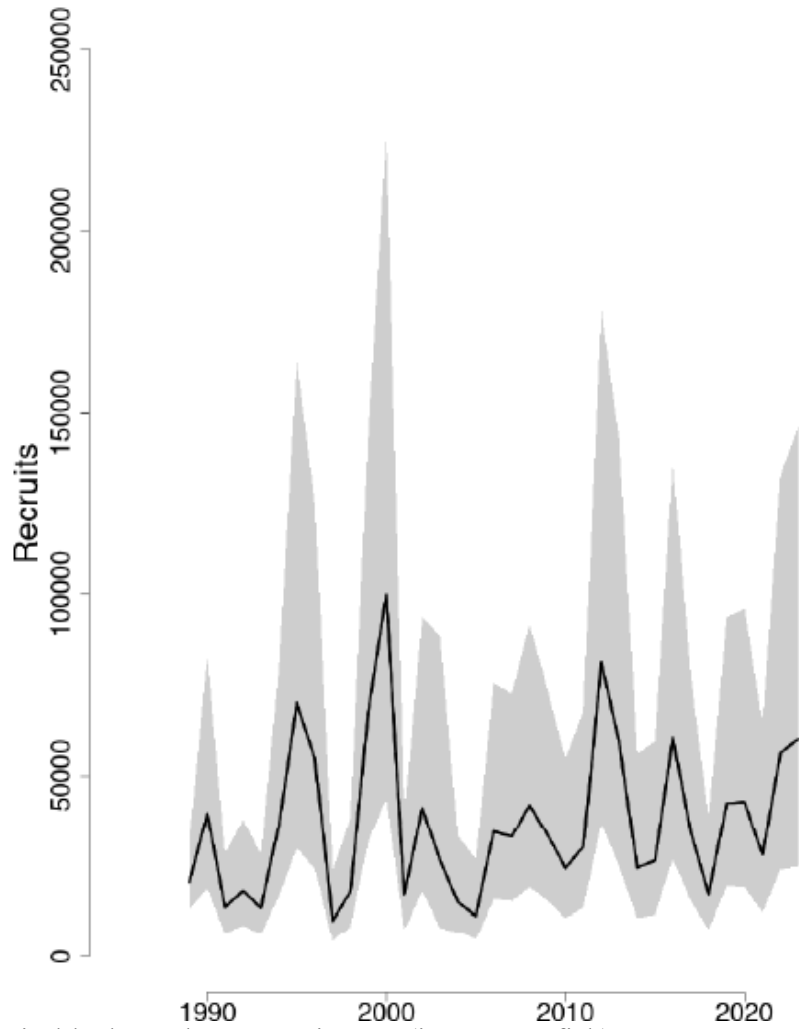


Figure 3: Trends in black sea bass recruitment (i.e., age 1 fish), 1989-2023. Estimates from the draft 2024 management track stock assessment (NEFSC 2024) are shown as the solid line with 95% confidence intervals in gray shading.

Management System and Fishery Performance

Management

The Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission (Commission) work cooperatively to develop commercial and recreational fishery regulations for black sea bass from Maine through Cape Hatteras, North Carolina. The Council and Commission work with NMFS, which serves as the federal implementation and enforcement entity. This cooperative management system was developed because a significant portion of the catch is taken from both state waters (0-3 miles offshore) and federal waters (3-200 miles offshore). The joint management program began in 1996 with the approval of Amendment 9 to what became the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan (FMP). The original FMP and subsequent amendments and framework adjustments are available at: www.mafmc.org/fisheries/fmp/sf-s-bsb.

Commercial and recreational black sea bass fisheries are managed using catch and landings limits, minimum fish sizes, open and closed seasons, gear regulations, permit requirements, and other regulations.

The Council's Scientific and Statistical Committee (SSC) recommends annual Acceptable Biological Catch (ABC) levels for black sea bass (Table 2). The Council must either approve the ABC recommended by the SSC or a lower ABC. Through 2022, 49% of the total allowable landings (calculated by subtracting total expected dead discards from the ABC) were allocated to the commercial fishery as a commercial quota and 51% was allocated to the recreational fishery as an RHL. Starting with 2023, the ABC is now allocated 45% to the commercial fishery as a commercial annual catch limit (ACL) and 55% to the recreational fishery as a recreational ACL.³

The Council and Commission also approve commercial and recreational annual catch targets (ACTs), which are set equal to or less than the respective ACLs to account for management uncertainty. To date, the black sea bass ACTs have always been set equal to the ACLs. The ABC, ACLs, and ACTs are catch limits which account for both landings and discards, while the commercial quota and recreational harvest limit (RHL) are landing limits. The commercial quota and RHL are calculated by subtracting expected discards from the respective ACTs (Figure 4).

³ For more information on the commercial/recreational allocation revisions, see <https://www.mafmc.org/actions/sfsbsb-allocation-amendment>.

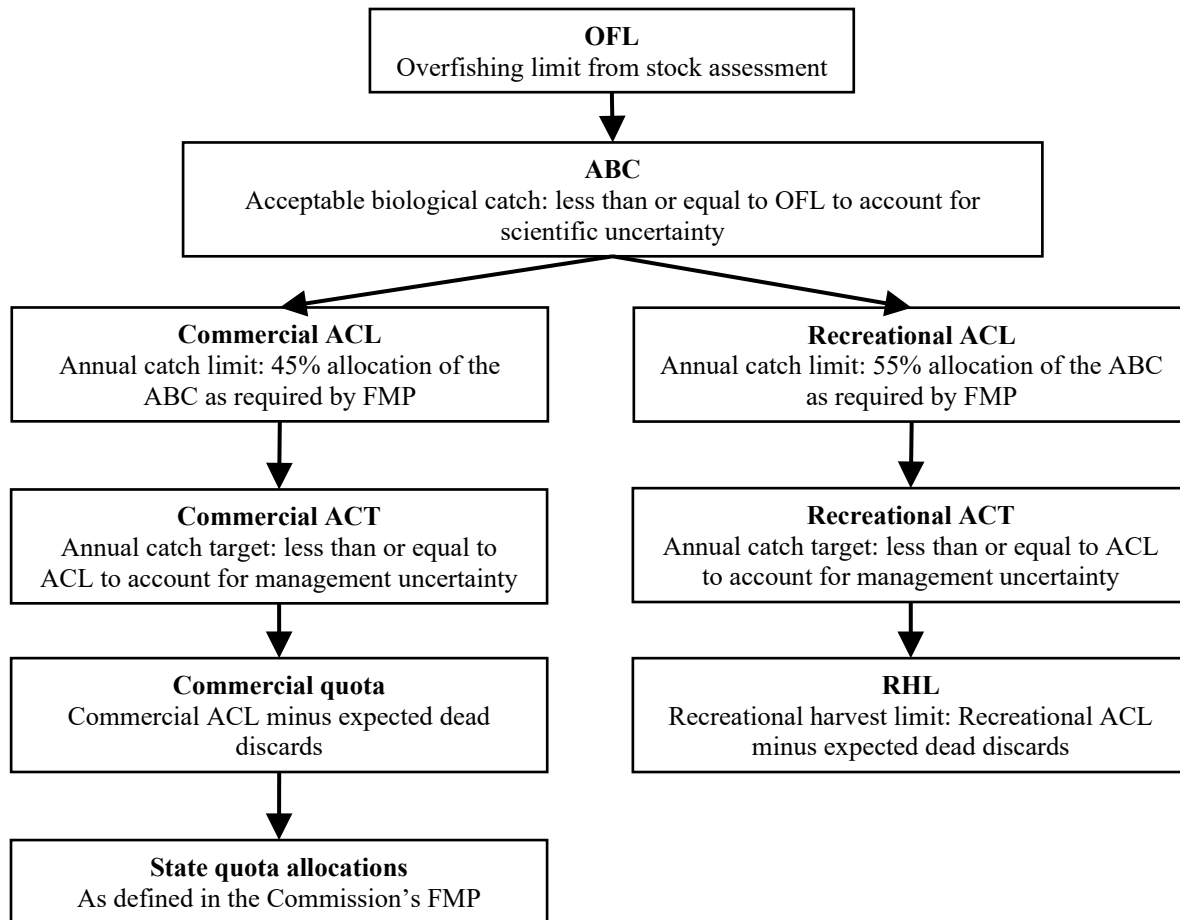


Figure 4: Black sea bass catch and landings limits, reflecting the revised commercial/ recreational allocations which became effective in 2023.

Fishery Catch Summary

Table 2 shows the black sea bass ABCs from 2014 through 2024, as well as the overfishing limit (OFL), from which the ABC is derived when possible. The ABC is set less than or equal to the OFL to account for scientific uncertainty. As shown in Table 2, ABC overages occurred in many years; however, OFL overages have been rare. Depending on the year, the ABC overages were driven by higher than anticipated discards in one or both of the commercial and recreational sectors and/or recreational harvest exceeding the RHL (Table 3, Table 9). The Council and Commission have taken steps in recent years to better account for discards when setting catch and landings limits. Changes have also been made to the process for setting recreational measures, as described in more detail below.

Figure 5 shows commercial and recreational black sea bass landings and dead discards from 1996 through 2023. Total dead catch (landings and dead discards) have generally been increasing over the past decade, with peaks in 2016, 2017, and 2021 largely driven by recreational landings. Total catch in 2023 decreased by about 9% compared to 2022.

Table 2: Total dead catch (i.e., commercial and recreational landings and dead discards) compared to the OFL and ABC, 2014-2024. All values are in millions of pounds. The recreational contribution to total dead catch is based on data in the “old” MRIP units through 2019 and the revised MRIP data starting in 2020. Catch limits did not account for the revised MRIP data until 2020.

Year	Total dead catch ^a	OFL ^b	OFL overage/underage	ABC ^b	ABC overage/underage
2014	7.92	NA	NA	5.5	+44%
2015	7.81	NA	NA	5.5	+42%
2016	10.24	NA	NA	6.67	+53%
2017	11.57	12.05	-4%	10.47	+10%
2018	9.85	10.29	-4%	8.94	+10%
2019	9.54	10.29	-7%	8.94	+7%
2020	17.33	19.39	-11%	15.07	+15%
2021	21.36	17.68	+21%	17.45	+22%
2022	18.62	19.56	-5%	18.86	-1%
2023	16.94	17.01	0%	16.66	+2%
2024	--	17.01	--	16.66	--

^a See Table 3 and Table 9 for the commercial and recreational data contributing to the total catch estimates.

^bAn OFL was not used and the ABC was set based on a constant catch approach during 2010-2015 due to the lack of a peer reviewed and accepted stock assessment. The 2016 ABC was set based on a data limited methodology. Starting with 2017, the ABC has been set based on a peer reviewed and approved stock assessment.

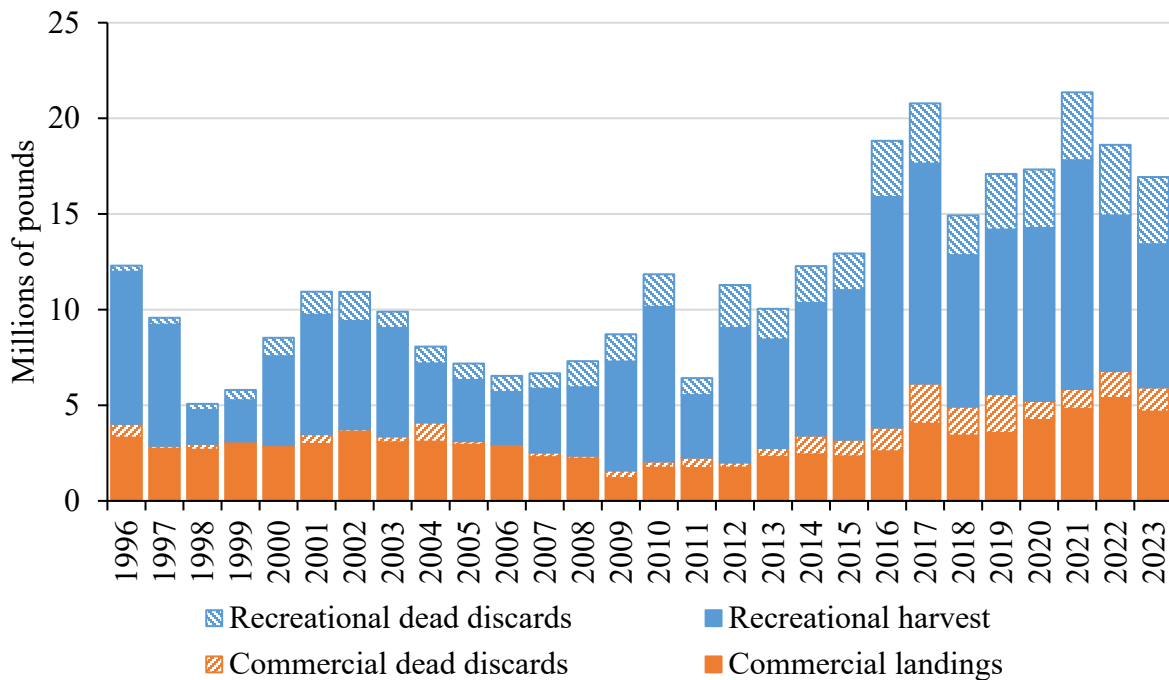


Figure 5: Commercial and recreational black sea bass landings and dead discards in millions of pounds, Maine – Cape Hatteras, North Carolina, 1996-2023. Commercial landings are from CAMS. Commercial dead discards are from the draft 2024 management track assessment report (NEFSC 2024) for 1996-2019 and from CAMS for 2020-2024. Recreational harvest is from MRIP. Recreational dead discards are from the draft 2024 management track assessment report.

Commercial Fishery

In 2023, about 4.67 million pounds of black sea bass were landed in the commercial fishery, a 13% decrease compared to 2022. This decline was likely largely driven by a 26% decrease in the coastwide commercial quota (Table 3).

Commercial quota overages have been rare; however, commercial ACL overages occurred each year during 2012-2019 based on higher than expected commercial dead discards. The method for calculating projected dead discards was revised starting with the 2021 specifications in an attempt to address this issue. In addition, the commercial ACL increased by about 60% from 2019 to 2020 (Table 3). Likely due to a combination of these factors, the commercial ACL has not been exceeded since 2019.

Black sea bass are a valuable commercial species. In 2023, total ex-vessel value was \$11.83 million and the average price per pound was \$2.66. Commercial landings have generally been increasing since 2017 due to increases in the quota. As landings have increased, the average annual coastwide price per pound has generally decreased from a high of \$4.46 in 2016 (adjusted to 2023 dollars) to a recent low of \$2.66 in 2023 (Figure 6). Prices are impacted by many factors in addition to landings. The relationship between landings and price varies at the regional, state, and sometimes port level based on market demand, state-specific regulations (e.g., seasonal openings), or individual trawl trips with high landings, all of which can be inter-related.

Over 200 commercial fish dealers from Maine through North Carolina purchased black sea bass in 2023. More dealers purchased black sea bass in New York than in any other state (Table 4).

According to CAMS data, statistical area 616 was responsible for the largest percentage (18%) of commercial black sea bass commercial landings in 2023, followed by statistical areas 538 (14%), 539 (12%), and 611 (11%). All other statistical areas accounted for less than 10% of 2023 commercial black sea bass catch in 2023 (Figure 7). When excluding trips with less than 50 pounds of black sea bass landings, likely representing mostly incidental landings, statistical area 611 had the highest number of trips with commercial black sea bass landings in 2023 (2,478 trips), followed by statistical areas 538 (2,343 trips) and 539 (1,765 trips; Table 5).

Most commercial black sea bass landings in 2022 occurred in New Jersey (22%), followed by Massachusetts (18%), Virginia (15%), Rhode Island (14%), and New York (12%). All other states from Maine through North Carolina each accounted for less than 10% of commercial landings in 2023. The percentage of landings by state is driven by the state commercial quota allocations. States set measures to achieve their state-specific commercial quotas. These allocations were first implemented in 2003 and were recently revised such that they are now based partially on the original state allocations and partially on recent biomass distribution information. The revised allocations were first effective in 2022.⁴

At least 100,000 pounds of black sea bass were landed in 13 ports in 6 states from Maine through North Carolina in 2023. These 13 ports collectively accounted for over 60% of all commercial black sea bass landings in 2023 (Table 6).

⁴ The revised commercial state allocations were implemented through Addendum XXXIII to the Commissions FMP, available at <https://asmfc.org/species/black-sea-bass>.

Since 1997, a moratorium permit has been required to fish commercially for black sea bass in federal waters. In 2023, 646 of these permits were issued.

A minimum commercial black sea bass size limit of 11 inches total length has been in place in federal waters since 2002. Any federally-permitted vessel using otter trawl gear and catching more than 500 pounds of black sea bass from January through March, or more than 100 pounds from April through December, must use nets with a minimum mesh size of 4.5-inch diamond mesh applied throughout the codend for at least 75 continuous meshes forward of the end of the net. There is no federal waters black sea bass possession limit for trawl gear with mesh greater than 4.5-inches; however, many states have set possession limits for state waters. Pots and traps used to commercially harvest black sea bass must have two escape vents with degradable hinges in the parlor. The escape vents must measure 1.375 inches by 5.75 inches if rectangular, 2 inches by 2 inches if square, or have a diameter of 2.5 inches if circular.

According to CAMS data, about 41% of commercial black sea bass landings in 2023 were caught with bottom otter trawl gear, 40% with pots/traps, and 17% with hand lines. All other gear types combined accounted for about 2% of 2023 commercial landings.

The most commonly caught non-target species in the commercial black sea bass fishery were identified based on raw data from Northeast Fisheries Observer Program observed trips from 2019-2023 where black sea bass made up at least 75% of the landings by weight. Using this definition of a directed trip, the most common non-target species in the black sea bass fishery include spiny dogfish, scup, sea robins (northern and striped), and little skate (Table 7).

Table 3: Black sea bass commercial landings and dead catch compared to the commercial quota and commercial ACL, 2014-2023. All values are in millions of pounds.

Year	Com. landings ^a	Com. quota ^b	Quota overage/ underage	Com. dead discards ^c	Com. dead catch	ACL	ACL overage/ underage
2014	2.43	2.17	+12%	0.99	3.41	2.60	+31%
2015	2.33	2.21	+5%	0.87	3.20	2.60	+23%
2016	2.59	2.71	-4%	1.24	3.84	3.15	+22%
2017	4.04	4.12	-2%	2.10	6.14	5.09	+21%
2018	3.41	3.52	-3%	1.52	4.93	4.35	+13%
2019	3.56	3.52	+1%	2.02	5.58	4.35	+28%
2020	4.22	5.58	-24%	1.00	5.23	6.98	-25%
2021	4.81	6.09	-21%	1.04	5.85	9.52	-39%
2022	5.38	6.47	-17%	1.40	6.78	10.10	-33%
2023	4.67	4.80	-3%	1.26	5.93	7.50	-21%
2024	--	6.00	--	--	--	7.50	--

^a CAMS data.

^b The 2014 commercial quota reflects a 3% deduction for Research Set Aside.

^c Discards from 2014-2019 are from the draft 2024 black sea bass management track assessment (NEFSC 2024). Values for 2020-2023 are from CAMS.

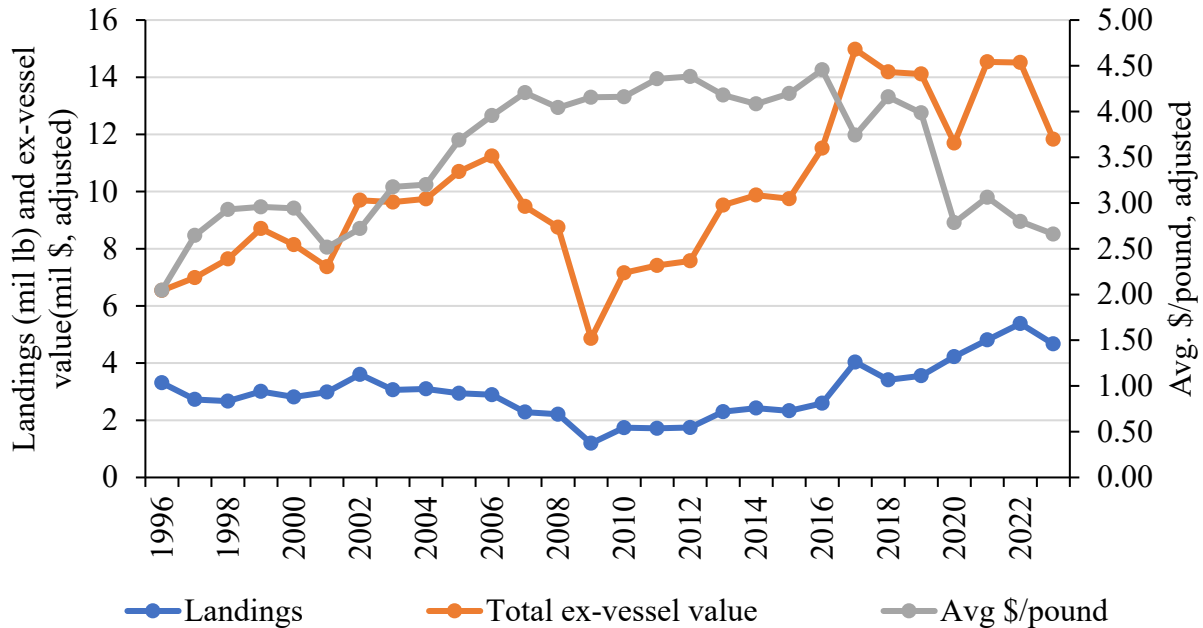


Figure 6: Landings, ex-vessel value, and average price per pound for black sea bass, Maine – North Carolina, 1996-2023 based on CAMS data. Ex-vessel value and price are inflation-adjusted to 2023 dollars using the Gross Domestic Product Price Deflator.

Table 4: Number of commercial dealers, by state, reporting purchases of black sea bass in 2023.

State	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC
Number of dealers	C	0	38	34	15	59	21	3	5	11	17

Table 5: Statistical areas that accounted for at least 5% of the total commercial black sea bass landings in 2023 with associated number of trips, based on CAMS data, which includes both state and federal dealer data as well as federal VTR data. For number of trips only, the values shown are for trips with at least 50 pounds of black sea bass landings to exclude trips with low amounts of what are likely mostly incidental landings.

Statistical Area	Percent of 2023 Commercial Black Sea Bass Landings	Number of Trips
616	18%	330
538	14%	2,343
539	12%	1,765
611	11%	2,478
621	8%	225
537	7%	630
615	6%	144
613	5%	704
612	5%	234

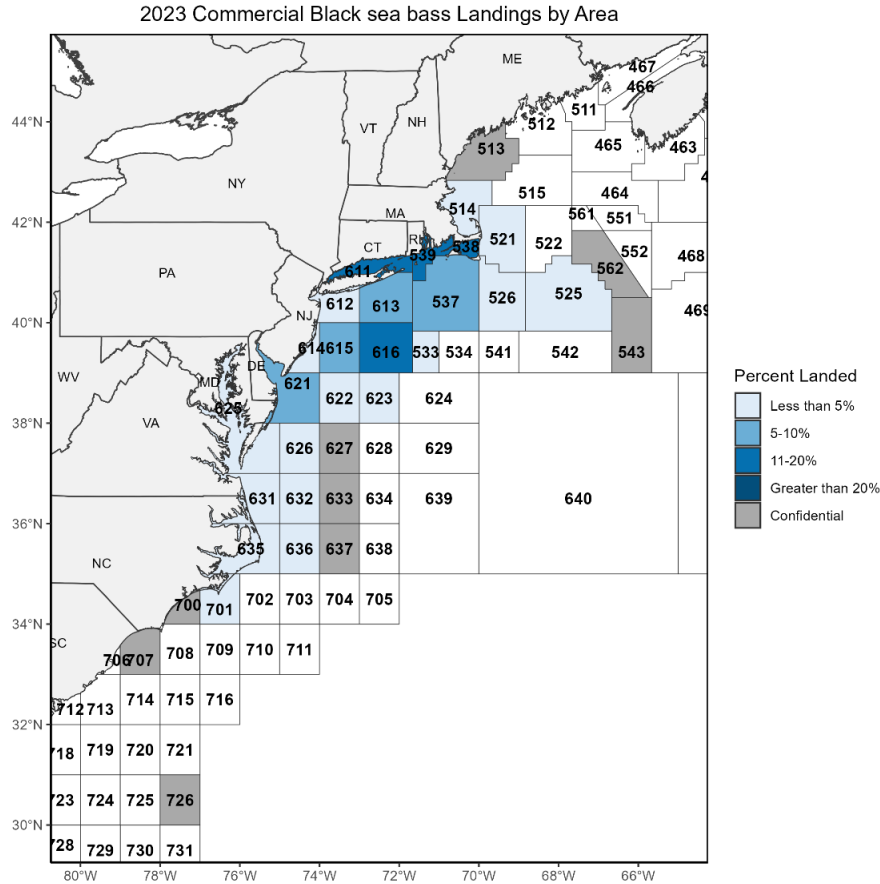


Figure 7: Proportion of black sea bass commercial landings by statistical area in 2023 based on CAMS data, which includes both state and federal dealer data as well as federal VTR data.

Table 6: Ports reporting at least 100,000 pounds of black sea bass landings in 2023, associated number of vessels, and percentage of total commercial landings. Two additional ports in Virginia and one port in Delaware also had more than 100,000 pounds of commercial black sea bass landings; however, the values are confidential as they are associated with fewer than three vessels and/or dealers.

Port name	Pounds of black sea bass landed	% of total commercial black sea bass landed	Number of vessels landing black sea bass
Point Pleasant, NJ	518,120	11%	36
Point Judith, RI	473,173	10%	328
Ocean City, MD	307,050	7%	11
Montauk, NY	303,686	6%	199
New Bedford, MA	289,240	6%	229
Hampton, VA	190,671	4%	21
Sea Isle City, NJ	189,681	4%	6
Cape May, NJ	159,330	3%	30
Barnegat Light, NJ	144,217	3%	9
Newport News, VA	130,828	3%	13

Table 7: Percent of non-target species caught in observed trawls where black sea bass made up at least 75% of the observed landings, 2019-2023. Only those non-target species comprising at least 2% of the aggregate catch are listed.

Species	% of total catch on black sea bass observed directed trips, 2019-2023 ^a
Spiny dogfish	12%
Scup	6%
Northern sea robin	3%
Striped sea robin	3%
Little skate	2%

^a Percentages are aggregate totals over 2019-2023 and do not reflect the percentages of non-target species caught on individual trips. This analysis describes only observed trips and has not been expanded to the fishery as a whole.

Recreational Fishery

Black sea bass are a popular recreational fish. Total recreational catch (i.e., harvest plus live and dead releases) from Maine through Cape Hatteras, North Carolina has exceeded 40 million fish each year for the most recent three years. Due to fishery regulations and other factors, most of these fish are released, with about 4.55 million fish harvested in the recreational fishery in 2023. Total recreational harvest in weight in 2023 was about 7.49 million pounds (Figure 8).

Recreational bag, size, and season limits (also referred to as recreational measures) for black sea bass remained virtually unchanged from 2018-2021. Measures were restricted in 2022, and again in 2023. In 2024, recreational measures were left unchanged with the exception of a few minor season adjustments. State waters recreational measures for 2023-2024 are shown in Table 10. Federal waters recreational measures have been waived since 2022 following the process implemented through Framework 14 to the FMP.

Framework 17 implemented a new process for setting recreational measures called the Percent Change Approach. Unlike the previous process, recreational measures no longer aim to achieve but not exceed the RHL. Instead, measures aim to achieve a different level of harvest, which varies based on estimated harvest in the upcoming year(s) compared to the RHL as well as biomass compared to target level. The target level of harvest is defined as a percentage change from the expectation of harvest in the upcoming year(s) if the current measures were to remain in place.⁵

Following the Percent Change Approach, for 2023, state waters measures were restricted with the goal of achieving 7.14 million pounds of coastwide harvest. The final 2023 MRIP harvest estimate is 7.49 million pounds, about 5% higher than the target of 7.14 million pounds. Harvest in 2023 was about 14% higher than the RHL; however, it is important to note that under the Percent Change Approach, measures did not aim to achieve the RHL, they instead aimed to achieve 7.14 million pounds of harvest.

In 2023, 36% of black sea bass harvested by recreational fishermen from Maine through Cape Hatteras, North Carolina (in numbers of fish) were caught in state waters and 64% in federal waters

⁵ Additional information on the Percent Change Approach is available at <https://www.mafmc.org/actions/hcr-framework-addenda>.

(Table 11). Most of the recreational harvest in numbers of fish in 2023 was landed in New Jersey (36%), followed by New York (18%; Table 12).

For-hire vessels carrying passengers in federal waters must obtain a federal party/charter permit. In 2023, 942 vessels held a federal party/charter black sea bass permit.

About 90% of the recreational black sea bass harvest in numbers of fish in 2023 came from anglers fishing on private or rental boats, about 9% from anglers aboard party or charter boats, and 1% from anglers fishing from shore (Table 13).

Brust et al. (2023) used a species guild approach to identify other species commonly caught with black sea bass in the recreational fishery. The top five species with highest correlations with black sea bass in Maine – New York during 2010-2021 were scup, smooth dogfish, unclassified dogfish, northern puffer, and sea robins. The top five correlated species in New Jersey – North Carolina were gray triggerfish, scup, red hake, pigfish, and cunner.

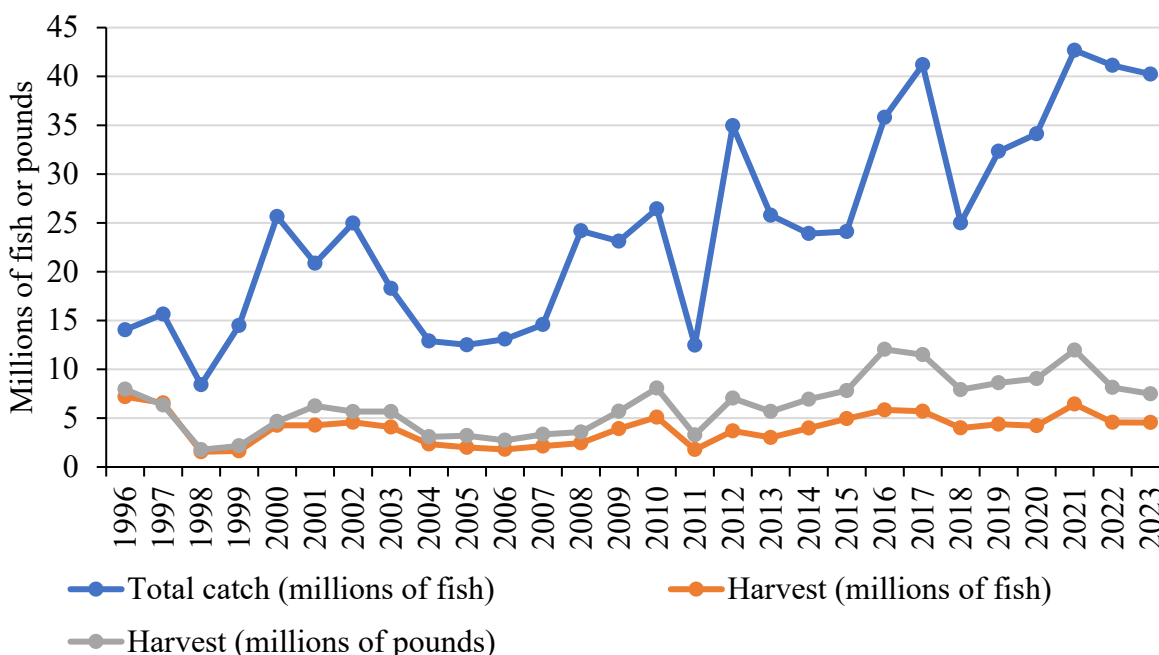


Figure 8: Estimated recreational black sea bass catch (harvest and live and dead discards) and harvest from Maine through Cape Hatteras, North Carolina, 2014-2023.

Table 8: Black sea bass recreational landings, dead discards, and dead catch compared to the RHL, projected recreational dead discards, and recreational ACL, 2014-2023. Values are provided in the “old” MRIP units for 2014-2019 and the “new” MRIP units for 2020-2023 as 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	MRIP version	Rec. harvest ^a	RHL	RHL over/ under	Rec. dead disc. ^c	Rec. dead catch	ACL	ACL over/ under
2014	Old MRIP (pre-revision)	3.67	2.26 ^b	+62%	0.84	4.51	2.9	+56%
2015		3.79	2.33	+63%	0.82	4.61	2.9	+59%
2016		5.19	2.82	+84%	1.21	6.40	3.52	+82%
2017		4.16	4.29	-3%	1.27	5.43	5.38	+1%
2018		3.82	3.66	+4%	1.10	4.92	4.59	+7%
2019		3.46	3.66	-5%	0.50	3.96	4.59	-14%
2020 ^d	New MRIP (post-revision)	9.05	5.81	+56%	3.05	12.10	8.09	+50%
2021		11.97	6.34	+89%	3.55	15.52	7.93	+96%
2022		8.14	6.74	+21%	3.69	11.84	8.76	+35%
2023		7.49	6.57	^e	3.52	11.01	9.16	+20%
2024		--	6.27	--	--	--	9.16	--

^a Based on MRIP data for all years except 2018 and 2019. Estimates in the “old” MRIP units were not available for those years, but were necessary for comparing against the RHL. Therefore, NMFS used alternative methods to calculate the 2018 and 2019 estimates shown here.

^b The 2014 RHL reflects a 3% deduction for Research Set Aside.

^c Estimates for 2014-2017 are from a data update provided by the NEFSC in 2018 (most recent data from NEFSC in “old” MRIP units; NEFSC 2018). Estimates in the “old” MRIP units were not available for 2018-2019, but were necessary for comparing against the ACL. Therefore, NMFS used alternative methods to calculate the 2018 and 2019 estimates shown here. Estimates for 2020 – 2023 are from the draft 2024 management track assessment report (NEFSC 2024).

^d Recreational harvest estimates for 2020 were impacted by temporary suspension of shoreside intercept surveys due to COVID-19. NMFS used imputation methods to fill gaps in 2020 catch data with data collected in 2018 and 2019. For black sea bass, the 2020 harvest estimate for Maine-Virginia relied on approximately 17% imputed data. For more information on imputation methods see: <https://www.mafmc.org/s/1-2020-Marine-Recreational-Catch-Estimates-QA-52121.pdf>.

^e2023 was the first year recreational measures were set using the Percent Change Approach, as implemented through Framework 17. Under this new process, measures are no longer set with the primary goal of allowing harvest to meet but not exceed the RHL. Instead, 2023 measures were set with the goal of achieving a 10% reduction in harvest compared to the expectation of 2023 harvest if 2022 measures had remained in place. Specifically, the recreational measures implemented in 2023 aimed to achieve a target of 7.14 million pounds of harvest.

Table 9: State waters black sea bass recreational measures in 2023 and 2024. Measures in all states remained the same across the two years with the exception of Massachusetts and Connecticut which implemented minor adjustments to maintain a Saturday opening, as well as Virginia which modified their season due to their special February opening.

State	Size Limit	Bag Limit	Open Season
Maine	13"	10 fish	May 19-Sept 21; Oct 18-Dec 31
New Hampshire	16.5"	4 fish	Jan-Dec 31
Massachusetts	16.5"	4 fish	2023: May 20-Sept 7 2024: May 18-Sept 3
Rhode Island private & shore	16.5"	2 fish	May 22-Aug 26
		3 fish	Aug 27-Dec 31
Rhode Island for-hire	16"	2 fish	Jun 18-Aug 31
		6 fish	Sept 1-Dec 31
Connecticut private & shore	16"	5 fish	2023: May 19-Jun 23; Jul 8-Dec 1 2024: May 18-June 28; Jul 8-Nov 28
CT authorized for-hire monitoring program vessels		5 fish	2023: May 19-Aug 31 2024: May 18 – Aug 31
		7 fish	2023 and 2024: Sept 1-Dec 31
New York	16.5"	3 fish	Jun 23-Aug 31
		6 fish	Sept 1-Dec 31
New Jersey	12.5"	10 fish	May 17-Jun 19
		1 fish	Jul 1-Aug 31
		10 fish	Oct 1- 31
		15 fish	Nov 1-Dec 31
Delaware	13"	15 fish	May 15-Sept 30; Oct 10-Dec 31
Maryland	13"	15 fish	May 15-Sept 30; Oct 10-Dec 31
Virginia	13"	15 fish	2023: Feb 1-28, May 15-Jul 6; Aug 9-Dec 31 2024: Feb 1-29, May 15-Jul 15, Aug 4-Dec 31
North Carolina North of Cape Hatteras (35° 15'N)	13"	15 fish	May 15-Sept 30; Oct 10-Dec 31

Table 10: Estimated percentage of black sea bass recreational harvest (in numbers of fish) in state and federal waters, from Maine through Cape Hatteras, North Carolina, 2014-2023.

Year	State waters	Federal waters
2014	72%	28%
2015	73%	27%
2016	61%	39%
2017	42%	58%
2018	61%	39%
2019	64%	36%
2020	57%	43%
2021	52%	48%
2022	54%	46%
2023	36%	64%
2014-2023 avg	57%	43%

Table 11: State contribution to total recreational harvest of black sea bass (in number of fish), Maine through Cape Hatteras, North Carolina, 2021 – 2023.

State	2021	2022	2023	2021-2023 average
Maine	0%	0%	<1%	<1%
New Hampshire	<1%	<1%	0%	<1%
Massachusetts	19%	8%	9%	12%
Rhode Island	8%	6%	6%	7%
Connecticut	13%	8%	6%	9%
New York	14%	28%	18%	20%
New Jersey	30%	32%	36%	33%
Delaware	6%	4%	7%	6%
Maryland	3%	3%	5%	4%
Virginia	7%	8%	12%	9%
North Carolina	<1%	1%	2%	1%

Table 12: Percent of total recreational black sea bass harvest (in numbers of fish) by fishing mode, Maine through North Carolina, 2014-2023. Some percentages do not add to 100% due to rounding.

Year	Shore	Party/charter	Private/rental	Total number of fish (millions)
2014	3%	19%	78%	3.97
2015	0%	22%	78%	4.94
2016	4%	9%	88%	5.84
2017	1%	9%	90%	5.70
2018	1%	12%	87%	3.99
2019	3%	18%	79%	4.38
2020 ^a	2%	11%	87%	4.23
2021	4%	11%	84%	6.44
2022	0%	9%	91%	4.57
2023	1%	9%	90%	4.55
2014-2023 avg	2%	13%	85%	4.86

^a Party and charter fishing was restricted in all states for part of 2020 due to the COVID-19 pandemic.

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