



Mid-Atlantic Fishery Management Council

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MEMORANDUM

Date: April 28, 2023
To: Chris Moore, Executive Director
From: Julia Beaty, staff
Subject: 2024 Atlantic chub mackerel specifications review

Executive Summary

This memorandum includes information to assist the Mid-Atlantic Fishery Management Council's (Council's) Scientific and Statistical Committee (SSC) and Mackerel, Squid, and Butterfish (MSB) Monitoring Committee in reviewing 2024 catch and landings limits for Atlantic chub mackerel (*Scomber colias*), as well as the other management measures which can be modified through the annual specifications process.

Additional information on fishery performance and past management measures can be found in the 2023 Chub Mackerel Fishery Information Document and the 2023 Chub Mackerel Fishery Performance Report developed by advisors.¹

The Council approved 2023-2025 catch and landings limits for Atlantic chub mackerel in June 2022. All catch and landings limits and other management measures have been unchanged since 2020, when Amendment 21 added chub mackerel to the MSB Fishery Management Plan (FMP). The SSC, Monitoring Committee, and Council reviewed these measures in 2020, 2021, and 2022 and recommended no changes.

During their May 2023 meeting, the SSC will consider whether revisions are needed to the previously adopted 2024 acceptable biological catch (ABC) limit. The Monitoring Committee will then meet to consider if changes are needed to the previously adopted 2024 annual catch limit (ACL), annual catch target (ACT), and total allowable landings limit (TAL), and other management measures which can be modified through the annual specifications process.

The Council will meet in June 2023 to review the recommendations of the SSC, Monitoring Committee, and staff, as well as input from advisors. They will then determine if revisions are needed to the previously implemented catch and landings limits and other management measures for 2024.

Council staff recommend no changes to the previously adopted catch and landings limits and other management measures for 2024. There is no new information to suggest that these measures should be modified. In addition, advisors recommended no changes.

¹ Both documents will be posted to <https://www.mafmc.org/fishery-performance-reports>.

Table 1. 2020-2025 catch and landings limits for Atlantic chub mackerel.

Measure	mil lb	mt	Basis
ABC	5.07	2,300	SSC recommendation
Expected SC-FL catch	0.08	38	Highest annual SC-FL landings shown in commercial dealer and MRIP data, increased by about 10% to account for discards, which are not well quantified.
ACL	4.99	2,262	ABC minus expected SC-FL catch.
ACT	4.79	2,171	ACL reduced by a 4% management uncertainty buffer.
Expected dead discards	0.29	130	6% of ACT based on based on the commercial discard rate during 2003-2017 from northeast observer data.
TAL	4.50	2,041	ACT minus expected total dead discards.

Recent Catch and Landings

After remaining below 0.5 million pounds per year for many years, commercial chub mackerel landings spiked to 5.25 million pounds in 2013, but decreased to pre-2013 levels by 2016. In 2022, 18,015 pounds of chub mackerel were landed by commercial fishermen from Maine through North Carolina. Recreational chub mackerel landings are variable and averaged 121,998 pounds per year during 2018-2022. In 2022, recreational fishermen from Maine through North Carolina harvested an estimated 62,232 pounds of chub mackerel (Table 2).

Over the past 20 years, commercial and recreational landings were less than half the 2020-2025 TAL of 4.50 million pounds in every year except 2013. During 2017-2022, commercial and recreational landings did not exceed 7% of the TAL in any year (Table 2).

Table 2. Commercial and recreational chub mackerel landings, in pounds, 2003-2022, from Maine through North Carolina. Landings in some years are combined to protect confidential data associated with fewer than three vessels and/or dealers.

Year	Commercial Landings	Recreational Landings	Total Landings
2003	493,368	0	493,368
2004-2005	138	0	138
2006	0	0	0
2007-2009	21,040	0	21,040
2010-2011	197,020	355	197,375
2012	644,153	0	644,153
2013	5,250,139	0	5,250,139
2014	1,231,646	48,087	1,279,733
2015	2,110,707	0	2,110,707
2016	611,199	2,092	613,291
2017	4,309	14,831	19,140
2018	35,308	128,946	164,254
2019	87,942	74,459	162,401
2020	141,728	149,578	291,306
2021	39,245	194,773	234,018
2022	18,015	62,232	80,247

Stock Status and Biological Reference Points

The stock status of chub mackerel in the western Atlantic Ocean is unknown as there have been no quantitative assessments of this species in this region. Since July 2018, the SSC has assumed that biomass is currently at or above biomass at maximum sustainable yield, as described in more detail in the following section.

Review of Prior SSC Recommendations

The SSC recommended the first chub mackerel ABC during their July 2018 meeting. They concluded that insufficient information exists to assess the status and trends of chub mackerel in the northwest Atlantic. They concluded that an overfishing limit could not be specified and recommended an ABC of 2,300 mt (5.07 million pounds) based on expert judgement. Their ABC recommendation is based loosely on the historic high for commercial and recreational landings (around 5.25 million pounds in 2013) and assumptions about discards. This level of ABC will prevent the fishery from achieving its historic high, but will allow landings to exceed those in every other year over at least the past 20 years (Table 2). The SSC agreed that this level of catch is unlikely to result in overfishing given the general productivity of this species in fisheries throughout the world combined with the relatively low fishery capacity in U.S. Atlantic waters. Based on their recommendations, the ABC applies to total dead catch (i.e., commercial and recreational landings and dead discards) from Maine through the east coast of Florida.

The SSC determined the following to be the most significant sources of scientific uncertainty associated with the ABC:

- Stock size and productivity cannot be determined, there is no information to determine reference points for stock biomass levels, and little information exists to determine reference points for fishing mortality rates.
- There is no information on the source of recruits; it is unknown whether chub mackerel are episodic in the Mid-Atlantic, whether this is a range expansion with localized spawning, or neither.
- There is no information on predation mortality, or on the role of chub mackerel in predator diets.
- There is very high uncertainty in recreational landings and discards. Observer coverage on fisheries likely to catch chub mackerel may be low (*Illex* fleet, Mid-Atlantic small mesh bottom trawl).

The SSC reviewed their recommendations in September 2020, September 2021, and May 2022 and recommended no changes.

Annual Catch Limit

The ACL for chub mackerel is derived by subtracting expected catch in the South Atlantic (in this case, referring to South Carolina through the east coast of Florida) from the ABC (Figure 1). An 84,500 pound buffer for expected South Atlantic catch was used when setting the chub mackerel ACL for 2020-2025. This represents about 2% of the ABC and was intended to be a conservatively high estimate based on the highest annual South Atlantic landings through 2017 as shown in commercial dealer and Marine Recreational Information Program (MRIP) data (i.e., 76,835 pounds of landings in 2011, the vast majority of which were recreational landings), increased by about 10% to account for dead discards. Chub mackerel discards in the South Atlantic are highly uncertain.

Commercial and recreational fishery data through 2022 suggest that 84,500 pounds remains higher than past annual South Atlantic catch. For example, MRIP data for 2018-2022 show no estimated recreational chub mackerel catch from South Carolina through the east coast of Florida. Atlantic Coastal Cooperative Statistics Program data show commercial landings amounts that are confidential in some years, but less than 400 pounds in total across 2018-2022 combined.

Staff recommend no changes to the previous rationale and methodology for setting this buffer and no changes to the 2024 ACL of 4.99 million pounds (2,262 mt).

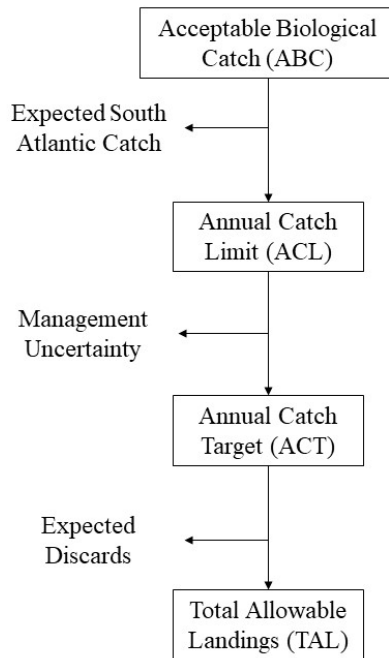


Figure 1. Flowchart summarizing chub mackerel catch and landings limits.

Annual Catch Target

As defined in the FMP, the ACT can be set less than or equal to the ACL to account for management uncertainty (Figure 1). The Council adopted a 4% management uncertainty buffer when they set the 2020-2022 specifications in March 2019. The Council agreed to maintain this same buffer for 2023-2025 specifications. They did not recommend this buffer based on a quantitative methodology. This buffer was assumed to be sufficient to prevent ACL overages when used in combination with the in-season commercial fishery closure regulations described on the next page. Landings have remained well below the TAL. The 4% management uncertainty buffer has not been problematic for the fishery as catch has been very low due to other factors (e.g., a focus on other commercial target species).

Staff recommend no changes to the previously implemented management uncertainty buffer of 4% and no changes to the previously adopted 2024 ACT.

Discards

Expected commercial and recreational discards in weight are subtracted from the ACT to derive the TAL (Figure 1). There are currently no expanded estimates of total chub mackerel commercial dead discards. MRIP provides estimates of recreational discards in numbers of fish.

When setting 2020-2022 specifications in March 2019, the Council agreed to reduce the ACT by 6% to account for expected discards. This was based on the commercial discard rate during 2003-2017 according to northeast observer data. The discard rate was defined as the total amount of observed chub mackerel discards compared to the total amount of observed chub mackerel catch across all trips combined during this time period. Given that the analysis combined data across multiple years, the years with the highest catch have the greatest influence in the resulting percentage.

This analysis does not account for recreational data; however, based on information available at the time, the volume of recreational chub mackerel discards was assumed to be low compared to commercial discards, especially in years with targeted commercial fishing effort.

An update of this analysis with data through 2020 (Table 3) shows higher discard percentages in more recent years; however, this does not account for the few years with much higher landings and higher levels of targeted fishing effort (Table 2). As previously stated, the ABC is loosely based on the historic high for chub mackerel catch (2013). The Monitoring Committee and Council reviewed this information in 2022 and did not recommend a change to the buffer between the ACT and the TAL to account for discards for 2023-2025 specifications.

Although this analysis has not been updated with 2021 or 2022 data, given the very low commercial landings in those years (Table 2), and given the rationale behind using multiple years that incorporate the years of highest landings, staff recommend no changes to the 2024 discards buffer or the previously implemented 2024 TAL of 4.50 million pounds (2,041 mt).

Table 3. Percent of total commercial chub mackerel catch that was discarded, based on northeast fisheries observer data, 2007-2021, with associated number of trips.

Years	Observer Discard %
2006-2020 (15 years)	7% (337 trips)
2011-2020 (10 years)	6% (301 trips)
2016-2020 (5 years)	43% (193 trips)
2013-2015 (top 3 years for landings)	4% (95 trips)
2013 (historic high for landings)	3% (27 trips)

Possession Limits

Currently, there is no commercial possession limit until 90% of the TAL is projected to be landed. At that point, a 40,000 pound (18 mt) possession limit would be in effect. Once 100% of the TAL is projected to be landed, a 10,000 pound (4.5 mt) possession limit would be in effect. The Council agreed that these in-season AMs are likely sufficient to prevent ACL overages and, therefore, no possession limits are needed prior to 90% of the TAL being landed. As previously stated, commercial and recreational landings, and presumably dead discards, have been well below the ACL, ACT, and TAL since they were first implemented in 2020.

According to stakeholder input provided during development of the Unmanaged Forage Omnibus Amendment, 40,000 pounds is approximately the amount of chub mackerel needed to fill a bait truck. Given the low value of chub mackerel (e.g., \$0.51 per pound in 2022 dollars on average during 2003-2022), fishermen may not target chub mackerel when restricted to a 40,000 pound possession limit; however, they would have an incentive to land chub mackerel caught incidentally. A 40,000 pound possession limit could, therefore, discourage discards. The number of trips which landed more than 40,000 pounds of chub mackerel over the past 20 years is confidential as it is associated with fewer than three vessels and/or dealers.

Ten thousand pounds is approximately the average trip-level landings of chub mackerel based on northeast commercial fishery data for 1998-2017. During 2020-2022, 99.8% of commercial trips which landed any amount of chub mackerel landed less than 10,000 pounds of chub mackerel.

Under the previously approved 2024 TAL of 4.50 million pounds (2,041 mt), a commercial possession limit would be triggered once 4.05 million pounds (1,837 mt) of chub mackerel are projected to be landed by commercial and recreational fishermen. This level of landings has been reached only once over the past 20 years (i.e., in 2013, Table 2).

To date, the Council has not implemented a recreational chub mackerel possession limit.

Council staff recommend no changes to the commercial or recreational chub mackerel possession limits for 2024.

Other Management Measures

There are no commercial or recreational minimum fish size limits for chub mackerel in federal waters. Minimum fish size limits are typically used to reduce fishing mortality on immature fish; however, the Council agreed that a commercial minimum size limit for chub mackerel may provide little additional biological benefits considering current fishery selectivity. According to an analysis of observer data for Amendment 21, about 88% of the chub mackerel caught in bottom otter trawls are at least 20 cm in length. As suggested in Daley and Leaf (2019)² and supported by comments from fishermen, it is possible that chub mackerel's fast swimming speed reduces the potential for capture of larger individuals in the commercial fishery. Several scientific studies have documented the length at maturity for chub mackerel in various regions. The length at maturity varies by study. Daley (2018)³ examined chub mackerel caught in commercial fisheries in the Mid-Atlantic and Southern New England and found that 50% of females reached maturity at about 27 cm. According to observer data, about 73% of the chub mackerel caught in bottom trawls are at least 27 cm.

Given that chub mackerel are predominantly caught with bottom otter trawls in commercial fisheries off the U.S. east coast, it can be assumed that most discarded chub mackerel would not survive. Therefore, a minimum fish size likely would increase mortality on this species without notable benefits of protecting immature fish.

Most chub mackerel landed on the U.S. east coast over the past 20 years were caught on bottom trawl vessels which also participate in the *Illex* squid fishery. Regulations for that fishery specify gear requirements (see 50 CFR 648.23), including gear restrictions for specific regulated mesh areas (50 CFR 648.80). The Council did not see a need to develop additional gear restrictions for chub mackerel beyond what vessels are currently subject to in other fisheries. There are also no recreational gear restrictions for chub mackerel in federal waters.

Staff do not recommend that the Council implement new chub mackerel management measures such as minimum fish sizes, closed seasons, or gear restrictions for 2024. These measures have not been used in the past and catch has remained well below the ABC.

² Daley, T. T. and R. T. Leaf. 2019. Age and growth of Atlantic chub mackerel (*Scomber colias*) in the Northwest Atlantic. *Journal of Northwest Atlantic Fisheries Science*. 50: 1-12.

³ Daley, T. 2018. Growth and reproduction of Atlantic chub mackerel (*Scomber colias*) in the Northwest Atlantic. Master's thesis. University of Southern Mississippi.