



Mid-Atlantic Fishery Management Council

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MEMORANDUM

Date: August 30, 2021
To: Chris Moore, Executive Director
From: Julia Beaty, staff
Subject: 2022 specifications for Atlantic chub mackerel

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 the previously approved 2022 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 2021 Chub Mackerel Fishery Information Document and the 2021 Chub Mackerel Fishery Performance Report developed by advisors.¹

The Council approved 2020-2022 catch and landings limits for Atlantic chub mackerel (Table 1) in March 2019 based on the SSC's acceptable biological catch (ABC) recommendations. These measures were implemented through Amendment 21 to the MSB Fishery Management Plan (FMP) and became effective in September 2020 (85 Federal Register 47103). The SSC, Monitoring Committee, and Council reviewed these measures in the fall of 2020 and recommended no changes for 2021.

During their September 2021 meeting, the SSC will review their previously recommended 2022 ABC and consider if revisions are necessary. The Monitoring Committee will then meet to review and, if appropriate, recommend changes to the previously approved 2022 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 October 2021 to review the recommendations of the SSC and Monitoring Committee, as well as input from advisors. They will then consider revising their previously approved catch and landings limits for 2022, and any other management measures which can be modified through the annual specifications process.

Pending additional input provided by advisors during their meeting on September 1, Council staff recommend no revisions to the previously approved 2022 specifications for chub mackerel.

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

Table 1. Previously approved 2020-2022 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	A conservative estimate based on the 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 total dead discards, ME-NC	0.29	130	6% of ACT based on based on the commercial discard rate during 2003-2017 according to 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 2020, 56,925 pounds of chub mackerel were landed by commercial fishermen from Maine through North Carolina. Recreational chub mackerel landings are variable and averaged 105,062 pounds per year during 2016-2020. In 2020, recreational fishermen harvested an estimated 149,578 pounds of chub mackerel (Table 2).

Table 2. Commercial and recreational chub mackerel landings, in pounds, 2001-2020, 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
2001	4,384	0	4,384
2002	471	0	471
2003	488,316	0	488,316
2004	126	0	126
2005	0	0	0
2006	0	0	0
2007-2009	21,039	0	21,039
2010-2011	192,301	355	192,656
2012	164,867	0	164,867
2013	5,249,686	0	5,249,686
2014	1,230,411	48,087	1,278,498
2015	2,108,337	0	2,108,337
2016	610,783	2,093	612,876
2017	2,202	14,831	17,033
2018	22,357	128,949	151,306
2019	60,522	74,462	134,984
2020	56,925	149,578	206,503
2001-2020 avg	600,749	24,609	625,358

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. In July 2018, the SSC 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 current 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 and recommended no changes.

Annual Catch Limit

The ACL for chub mackerel is derived by subtracting expected catch from South Carolina through the east coast of Florida from the ABC (Figure 1). When the Council adopted 2020-2022 specifications in March 2019, they approved a value of 84,500 pounds of expected catch from South Carolina through the east coast of Florida. This represents about 2% of the ABC and was intended to be a conservative estimate based on the highest annual South Atlantic landings shown in commercial dealer and Marine Recreational Information Program (MRIP) data through 2017 (i.e., 76,835 pounds in 2011), increased by about 10% to account for discards. Chub mackerel discards in the South Atlantic are highly uncertain.

As previously stated, when the Council approved a value of 84,500 pounds of expected South Atlantic catch, they considered data through 2017. MRIP data for 2018-2020 show no estimated recreational chub mackerel harvest from South Carolina through the east coast of Florida.

Atlantic Coastal Cooperative Statistics Program data show commercial landings amounts that are confidential, but less than 200 pounds in total during 2018-2020.

Staff recommend no changes to the 2021 chub mackerel ACL of 4.99 million pounds (2,262 mt).

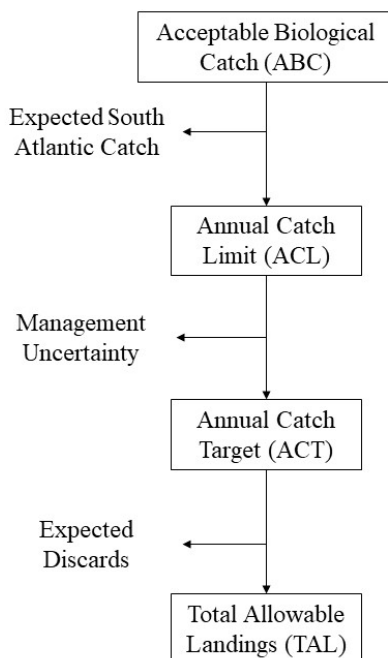


Figure 1. Flowchart summarizing chub mackerel catch and landings limits.

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. Considered in combination with the in-season commercial fishery closure regulations described on the next page, this was expected to be a reasonable buffer between the ACL and ACT to prevent ACL overages.

Council staff recommend no changes to the previously implemented ACT of 4.79 million pounds (2,171 mt).

Discards

Expected commercial and recreational discards in weight are subtracted from the ACT to derive the TAL (Figure 1). 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 Council selected this as a preferred alternative because it was based on 15 years of data. It does not explicitly 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. The previously implemented catch and landings limits are based loosely on years with targeted commercial fishing effort.

There are currently no expanded estimates of total chub mackerel commercial dead discards. Discard percentages based on observer and vessel trip report (VTR) data through 2020 are shown in Table 3. The most recent 5 years of observer data show that 43% of total observed chub

mackerel catch was discarded, considerably higher than the 6% assumed discard rate previously used to set specifications. As shown in Table 2, 2016-2020 were years with comparatively low commercial landings. As previously stated, the 2022 ABC is loosely based on the historic high for chub mackerel catch (2013). The average percentages over longer time periods are approximately 3% - 7%, depending on the time period and dataset (Table 3).

Staff recommend no changes to the previously implemented 2021 TAL of 4.50 million pounds (2,041 mt) at this time.

Table 3. Percent of total commercial chub mackerel catch that was discarded, based on northeast fisheries observer and VTR data, 2006-2020, with associated number of trips.

Years	Observer Discard %	VTR Discard %
2006-2020 (15 years)	7% (337 trips)	3% (869 trips)
2011-2020 (10 years)	6% (301 trips)	3% (854 trips)
2016-2020 (5 years)	43% (193 trips)	4% (582 trips)
2013-2015 (top 3)	4% (95 trips)	3% (282 trips)
2013 (historic high)	3% (27 trips)	1% (63 trips)

Possession Limits

Under the currently implemented specifications, there is no recreational chub mackerel possession limit. 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 is in effect. Once 100% of the TAL is projected to be landed, commercially permitted vessels are limited to a 10,000 pound (4.5 mt) possession limit. When setting 2020-2022 specifications, the Council agreed that commercial fishery possession limits prior to in-season closure were unnecessary as the preferred in-season AMs were likely sufficient to constrain the fishery to prevent ACL overages.

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 2020 dollars on average during 2001-2020), 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 was selected as the possession limit to be implemented in-season after the TAL is projected to be fully landed because it is approximately the average trip-level landings of chub mackerel based on northeast commercial fishery data for 1998-2017. A small number of vessels are responsible for most chub mackerel landings. If those vessels are excluded from the calculation, about 99% of the trips which landed chub mackerel during 1998-2017 landed less than 10,000 pounds. Trip-level landings for 2011-2020 show very similar patterns (i.e., about 11,000 pounds per trip on average and 99% of trips landing less than 12,000 pounds).

As previously stated, unless modified, the 2021 TAL will be 4.50 million pounds (2,041 mt). Therefore, a commercial possession limit will 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).

Council staff recommend no changes to the commercial or recreational chub mackerel possession limits for 2022.

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, 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 done 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.

At this point in time, Council staff do not recommend that the Council implement new chub mackerel management measures such as minimum fish sizes, closed seasons, or gear restrictions.

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.