



Mid-Atlantic Fishery Management Council
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MEMORANDUM

Date: August 3, 2021
To: Council and Board
From: Kiley Dancy and Karson Coutre, Staff
Subject: Summer Flounder 2022-2023 Specifications

On Monday, August 9, the Council and Board will consider summer flounder specifications for 2022-2023 after reviewing the recommendations of the SSC, Monitoring Committee, and Advisory Panel. Measures to be considered include 2022-2023 commercial and recreational catch and landings limits, as well as any changes to the commercial management measures desired for 2022. Materials listed below are provided for the Council and Board's consideration of this agenda item.

Please note that one document is behind a separate tab.

- 1) Monitoring Committee meeting summary from July 27, 2021
- 2) Advisory Panel meeting summary from July 29, 2021
- 3) July 2021 Scientific and Statistical Committee meeting report (*behind Tab 14*)
- 4) Staff memo on 2022-2023 summer flounder specifications dated July 8, 2021
- 5) Summer Flounder Management Track Assessment for 2021
- 6) June 2021 Advisory Panel Fishery Performance Report and associated additional AP comments received through July 6, 2021
- 7) Additional public comments received through July 29, 2021
- 8) 2021 Summer Flounder Fishery Information Document



**Summer Flounder, Scup, and Black Sea Bass Monitoring Committee
Webinar Meeting Summary
July 27, 2021**

Monitoring Committee Attendees: Julia Beaty (MAFMC), Peter Clarke (NJ F&W), Dustin Colson Leaning (ASMFC), Karson Coutré (MAFMC), Kiley Dancy (MAFMC), Lorena de la Garza (NC DMF), Steve Doctor (MD DNR), Sandra Dumais (NY DEC), Alexa Galvan (VMRC), Emily Keiley (GARFO), Savannah Lewis (ASMFC), Mike Schmidtke (SAFMC), Mark Terceiro (NEFSC), Corinne Truesdale (RI DEM), Sam Truesdell (MA DMF), Greg Wojcik (CT DEP), Rich Wong (DNREC)

Additional Attendees: Bonnie Brady (Long Island Commercial Fishing Association; AP member), Joe Cimino (Council and Board member), Kiersten Curti (NEFSC), Greg DiDomenico (Lund's Fisheries; AP member), Tony DiLernia (Council member), James Fletcher (United National Fisherman's Association; AP member), John Foster (NMFS), Jeff Kaelin (Lund's Fisheries), June Lewis (AP member), David Stormer (Council member), Mike Waine (American Sportfishing Association; AP member)

The Summer Flounder, Scup, and Black Sea Bass Monitoring Committee (MC) met via webinar on Monday July 27, 2021 to discuss several topics. The MC reviewed management track assessment information as well as recent fishery performance and management measure recommendations from the Advisory Panel, the Scientific and Statistical Committee (SSC), and Council staff. The MC recommended 2022-2023 commercial and recreational Annual Catch Limits (ACLs), Annual Catch Targets (ACTs), commercial quotas, and recreational harvest limits (RHLs) for summer flounder, scup, and black sea bass. In addition, they reviewed commercial management measures for all three species, and the February recreational black sea bass opening, to consider whether changes were needed for 2022.

Briefing materials considered by the Monitoring Committee are available at:
<https://www.mafmc.org/council-events/2021/sfsbsb-mc-july27>.

2020 Recreational Harvest Estimates

John Foster (NMFS Office of Science and Technology) presented on the methods used to develop 2020 Marine Recreational Information Program (MRIP) estimates in the context of missing shoreside intercept and head boat sampling data due to COVID-19.

As described in the staff memos, the COVID-19 pandemic disrupted the Access Point Angler Intercept Survey (APAIS) in 2020. All New England and Mid-Atlantic states suspended APAIS sampling starting in late March or April 2020, and resumed sampling between May and August 2020, depending on the state. In addition, head boat sampling was suspended in all states throughout the entirety of 2020. NMFS used imputation methods to fill gaps in 2020 catch data with data collected in 2018 and 2019. These proxy data match the time, place, and fishing mode combinations that would have been sampled had the APAIS continued uninterrupted. Proxy data were combined with observed data and 2020 fishing effort survey data (which was not impacted by COVID-19) to produce 2020 catch estimates using the standard estimation methodology.

During the presentation it was noted that differences in the timing of when surveys resumed by state resulted in differences in the effects of imputation by state. For example, there was a much bigger effect of imputation on the data for Connecticut, which was the last state to resume sampling on August 1, compared to the minimal effects of imputation in Massachusetts. It is also important to note that the imputation methods were applied to *catch rate* data (catch per unit effort), not to estimates of total catch, which are derived after incorporating effort data. Some notable changes in wave and state estimates for 2020 appear to be driven primarily by changes in effort (for which estimation methods continued as usual in 2020). Thus, a higher percent of imputed catch rate data used does not necessarily imply a large difference in the absolute estimates of catch with and without use of imputed data.

NMFS has indicated that when complete 2021 recreational data become available in 2022, they will evaluate the effects of including 2021 data (for example, alongside 2019 data and instead of 2018 data) in the imputation. One MC member asked about the timing of this evaluation and whether it would begin in 2021 given that 2021 data for time periods missing from 2020 should soon be available. Mr. Foster responded that they will likely start this evaluation in fall 2021, once complete wave 4 estimates are available. However, they are unlikely to make conclusions about 2020 estimate revisions by the end of this year, and this will more likely occur in 2022.

The group also discussed the apparent increase in the proportion of harvest (in numbers of fish) from federal waters for all three species in 2020. Mr. Foster confirmed that area fished information for private and shore mode comes from APAIS. Any shift in the percent from federal waters compared to 2018-2019 would be driven by available 2020 observed data, as opposed to imputed data, which matches 2018 and 2019. More investigation would be needed to confirm this, but it is expected that this trend may be coming from wave 5, which had complete 2020 data in all states and saw an increase in effort.

One MC member noted the apparent increase in New Jersey Wave 4 summer flounder harvest and asked about possible explanations. The contribution of imputed catch rate data for that wave 4 estimates is about 9%, so the imputation did not appear to make a large difference. The difference appears to come from the effort estimates, with New Jersey effort estimates increasing notably in 2020.

The MC discussed that while dead discard estimates in numbers of fish can be derived from the 2020 MRIP data (by applying the assumed discard mortality rate to the MRIP B2s or released alive fish), estimates of dead discards in weight are not available for 2020. The NEFSC uses additional data streams to inform length frequency distributions for discarded fish, along with length-weight equations, to estimate the weight of discarded fish. Some of the data typically used are not yet available for 2020, and estimation in weight has not been attempted at this time.

Summer Flounder 2022-2023 Specifications

The MC agreed with the staff recommendations for 2022-2023 ACLs, ACTs, and landings limits based on the SSC's Acceptable Biological Catch (ABC) recommendations for both the annually varying and constant approach (Table 1). **The MC preferred the constant approach over the varying approach** due to increased simplicity and stability over the two years. However, the MC acknowledged the potential for 2023 limits to be modified based on any changes via the ongoing commercial/recreational allocation amendment.

The recommended ACLs under both the varying and constant approaches are based on the MC's typical dead discard projections methodology, where total expected discards are estimated from the ABC projections received from the Northeast Fisheries Science Center (NEFSC) and apportioned to the commercial and recreational fisheries based on a 3-year moving average of dead discards by sector. In this case, 2017-2019 dead discard data indicate that 41% of dead discards came from the commercial sector and 59% from the recreational sector. This was the most recent 3-year period available since 2020 dead discard estimates in weight are not currently available. The MC discussed that different dead discard projection methodologies are used for each of the three species in this FMP, due to differing allocation structures and differing "fleets" modeled in the stock assessments (i.e., commercial and recreational landings and discards are modeled separately for summer flounder and scup, but not black sea bass). The group believed that it would be worth re-evaluating these methods in the future, but did not recommend changes at this time for summer flounder as the current methods have estimated future discards fairly well. In addition, the MC believed any such re-evaluation should occur after final action on the Commercial/Recreational Allocation Amendment, which could require changes to the process of estimating discards in the event of a switch to a catch-based allocation for summer flounder.

The MC recommendations also include no deductions from the commercial or recreational ACLs to ACTs to account for management uncertainty. The MC agreed with the rationale in the staff memo, including that the commercial fishery is well controlled with in-season closure authority and commercial discard overages observed in 2017-2018 are less of a concern under higher quotas since mid-2019. For the recreational fishery, recreational Accountability Measures (AMs) are evaluated on a 3-year moving average comparison of dead recreational catch to the average recreational ACL, and were not triggered for application in 2021. It is unclear whether an estimated 31% RHL overage in 2020 would contribute to an AM being triggered for 2022, as 2020 recreational dead discard estimates in weight are not currently available. The MC noted that for 2022 recreational measures, both an expected increase in the RHL and preliminary 2021 estimates will be taken into account to determine how 2022 measures may need to be modified. The MC also acknowledged the importance of both the ongoing Recreational Reform Initiative and the Commercial/Recreational Allocation Amendment to future management of the recreational fishery including some aspects of recreational management uncertainty.

The resulting commercial quotas and RHLs under the MC recommendations are shown in Table 1. Under the annually varying limits, the commercial quota and RHL would increase by approximately 27% between 2021 and 2022, and then would decline by about 4.5% between 2022 and 2023. Under the constant limits, the commercial quota would increase by about 24% between 2021 and 2022 and remain at the same level for 2023.

The MC agreed with the staff recommendation that no changes be made to the commercial minimum fish size (14-inch total length), commercial gear requirements, and exemption programs for 2022. However, the MC continues to support further analysis and future consideration of modifications for several issues related to the mesh size regulations and exemptions. These issues have been discussed over the past several years, but additional evaluation has been identified as a lower priority by the Council and Board given other ongoing management actions and priorities. The MC was supportive of potentially hiring an external contractor to facilitate additional analysis of these measures due to current constraints on Council and Commission staff time.

Current regulations specify a minimum mesh size of 5.5" diamond or 6.0" square mesh throughout

the net. As described in the staff memo, the MC has previously identified some concerns with the 6.0" square mesh option for the commercial trawl fishery given that based on a recent study, it appears that this mesh releases less than 50% of fish at or below the minimum size, and its selectivity appears more similar to a 5.0" diamond mesh. The MC has previously recommended that further analysis and industry input be conducted before changes are proposed.

The MC previously identified concerns with the recent increase in the percent of observed trips using the Small Mesh Exemption Program and discarding more than 10% of their summer flounder catch. However, the group believed that recent increases in the commercial quota for 2019-2021 should reduce the rates of discarding in general, including under this exemption. The rates of discarding under this exemption appear to have decreased somewhat during the relevant 2019-2020 period; however, due to COVID-19 restrictions, observer data are only available through mid-March 2020 and thus cannot necessarily provide an apples to apples comparison to previous years.

The MC considered an Advisory Panel member's request to modify the Small Mesh Exemption Program. Specifically, this advisor requested that the small mesh exemption line be completely removed and that vessels be allowed to possess up to 1,000 pounds of summer flounder with small mesh no matter where they are fishing. Additionally, for directed summer flounder trips with possession limits over 1,000 pounds, a 5" minimum mesh size should be used. The MC noted that this modification would essentially remove the small mesh exemption program as well as require modifications to the seasonal possession limits triggering the minimum mesh size requirement (currently 200 pounds from November through April and 100 pounds May through October). Some MC members raised concerns with this proposal, indicating that raising the possession limit triggering the minimum mesh size to 1,000 pounds could cause substantial changes in fishery dynamics, potentially increased difficulty in controlling fishery landings, and would likely conflict with some state possession limits. However, the MC was supportive of further evaluation of this exemption program in general and the placement of the line in particular, and agreed with the advisor's statement that fishery distribution and dynamics have changed since the exemption program was first implemented. **The MC recommends including this exemption program in the list of commercial measures to be further analyzed for future consideration.**

The MC also discussed the flynet exemption issues raised in the staff memo. In 2020, a comment from a commercial fisherman asserted that the flynet exemption is used more commonly in states other than North Carolina with "high rise nets." This individual also requested an expansion of the regulatory definition of flynet to include four-seam nets in addition to the currently specified two-seam nets. Last year, the MC noted that there is a need to better understand the use and configuration of flynet and high rise trawl nets as they relate to this exemption. Because the use of two-seam nets is said to be rare in the Mid-Atlantic and Southern New England winter offshore trawl fishery, this may indicate a possible compliance and enforcement issue if vessels that don't meet the regulatory definition (which specifies a two-seam net) believe they are fishing under the flynet exemption. The MC previously recommended additional evaluation of this issue including seeking input from gear experts, industry, and enforcement. Similar to other commercial measures, staff resources have not been available to address this in 2021. **The MC recommends no changes to the flynet exemption for 2022 but remains supportive of further evaluation of these issues for potential future changes.**

Table 1: Monitoring Committee recommendations for 2022-2023 catch and landings limits for summer flounder, under both annually varying and constant ABC approaches.

Measure	Current		Varying ABCs				Constant ABCs (MC Recommended)				Basis for 2022-2023 Measures
	2021		2022		2023		2022		2023		
	mil lb	mt	mil lb	mt	mil lb	mt	mil lb	mt	mil lb	mt	
OFL	31.67	14,367	36.28	16,458	34.74	15,759	36.28	16,458	34.98	15,865	Assessment projections/SSC recommendations
ABC	27.11	12,297	33.96	15,403	32.27	14,639	33.12	15,021	33.12	15,021	SSC recommendations
ABC Landings Portion	20.81	9,439	26.48	12,009	25.29	11,470	25.89	11,743	25.89	11,743	ABC projections for varying and averaged 2022-2023 ABC approaches; average approach includes averaged 2022-2023 expected landings
ABC Dead Discards Portion	6.30	2,858	7.48	3,394	6.99	3,169	7.23	3,279	7.23	3,279	ABC projections for varying and averaged 2022-2023 ABC approaches; average approach includes averaged 2022-2023 expected dead discards
Expected Commercial Dead Discards	2.14	972	3.05	1,383	2.85	1,292	2.95	1,336	2.95	1,336	41% of ABC dead discards portion, based on 2017-2019 average % dead discards by sector
Expected Recreational Dead Discards	4.16	1,886	4.43	2,011	4.14	1,877	4.28	1,942	4.28	1,942	59% of ABC dead discards portion, based on 2017-2019 average % dead discards by sector
Commercial ACL	14.63	6,635	18.94	8,589	18.02	8,174	18.48	8,382	18.48	8,382	60% of ABC landings portion (FMP allocation) + expected commercial dead discards
Commercial ACT	14.63	6,635	18.94	8,589	18.02	8,174	18.48	8,382	18.48	8,382	MC recommendation: Maintain no deduction from ACL for management uncertainty
Commercial Quota	12.49	5,663	15.89	7,205	15.17	6,882	15.53	7,046	15.53	7,046	Commercial ACT, minus expected commercial dead discards
Recreational ACL	12.48	5,662	15.02	6,814	14.25	6,465	14.64	6,639	14.64	6,639	40% of ABC landings portion (FMP allocation) + expected recreational dead discards
Recreational ACT	12.48	5,662	15.02	6,814	14.25	6,465	14.64	6,639	14.64	6,639	MC: Maintain no deduction from ACL for management uncertainty
RHL	8.32	3,776	10.59	4,804	10.12	4,588	10.36	4,697	10.36	4,697	Recreational ACT, minus expected recreational dead discards

Scup 2022-2023 Specifications

The MC agreed with the staff recommendation for 2022-2023 ACLs, ACTs, and landings limits based on the SSC's ABC recommendations for the varying approach (Table 2). The SSC was unable to recommend a constant ABC approach given the 2023 p^* exceeding 0.50. Because of this, the MC would need to recommend ACTs resulting in a total catch limit lower than what the SSC recommended in order to keep limits constant across the two years. They agreed that they could not justify recommending constant limits if it meant recommending lower ACTs and foregoing quota. The MC also agreed with using the 3-year average proportion of discards by sector which was the approach adopted by the Council and Board in 2019.

The MC also discussed a request received by the Council from Lund's Fisheries¹ to analyze increasing the scup commercial Winter I possession limit to 100,000 pounds (from the current 50,000 pounds) or eliminating it entirely for 2022-2023. According to the request, this change would help Lund's continue to build their frozen markets for scup. The request further proposes that the MC analyze decreasing the commercial minimum fish size from 9 inches to 8 inches total length (TL) to further support developing these frozen markets.

The MC discussed that the proposed decrease in minimum size to 8 in TL would allow for the harvest of scup at a size where about 57% are mature. At the current minimum size of 9 inches TL, about 84% are mature. Overall, the MC did not feel it was acceptable to increase fishing pressure on immature fish, particularly at a time when recruitment is the lowest of the time series. **The MC recommended that the commercial scup minimum size remain 9 inches TL.** They did note that according to the Standardized Bycatch Reporting Methodology report from 2018-2019 about 53% of discards were due to size regulation so they were interested in whether a large portion of those were 8 inch TL fish. Some MC members felt that finding ways to allow for discarding less fish during years of high recruitment should be investigated, for example by allowing the retention of buffer amounts of undersized scup. One MC member said this is being explored in New England groundfish through Electronic Monitoring. MC members noted that this could be difficult to implement and one MC member felt that this was a slippery slope and was concerned about potential harm to the stock.

The MC also addressed the possession limit increase requested by Lund's Fisheries and discussed the staff memo including Winter I trip landings from 2018-2020.² They noted that it does not appear that vessels are currently landing the current 50,000 pound trip limit. One MC member and a few industry members in attendance said single trips can be landed on different days and/or with landings split across different dealers so some high poundage trips may not be accurately reflected in this analysis. Council staff accounted for trips across different dealers, however, they may not have captured trips across days. Council staff will work with GARFO staff to identify those trips before the August Council and Board meeting. One MC member noted that they were not comfortable with doubling or eliminating the current Winter I quota period possession limit and another voiced concerns with the impacts to state limits and the Winter II quota period. Some MC members felt that analyzing more incremental change in the future would be more appropriate. Another MC member wanted more information on what bycatch might look like at a 100,000 pound trip limit and what unintentional shifts in access by different user groups might occur. One

¹ Available at https://www.mafmc.org/s/Lunds_scup_request2021.pdf

² Available at https://www.mafmc.org/s/Scup_MC_commercial_measures_memo2021.pdf

member noted that on one hand this is a healthy stock and it would be beneficial to better utilize it; however, there are concerns about potential impact of increasing possession limits on smaller vessels in the fresh market. **Overall, the MC recommended no changes to the Winter I quota period possession limit and no changes to other commercial measures in 2022.** The MC discussed the need to evaluate the underharvesting of scup throughout the year and felt a more holistic and in depth evaluation across the quota periods is warranted.

One MC member pointed out the continued disparity between the scup RHL and recreational harvest under the revised MRIP estimates and emphasized the need for resolution on the ongoing Commercial/Recreational Allocation Amendment for all three species.

Public comments

A member of the public speaking for Lund's Fisheries felt that due to the high biomass, the MC was being too conservative with the scup regulations. The high biomass provides an opportunity to be more risky and changes can be evaluated at the next assessment. They also stated that they do not intend to target 8-inch fish so they would be converting discards into landings. They also noted that the comments about crashing the fresh market from advisors have not been analyzed economically so they should be discounted. From their perspective, last year was their best year and the company has invested potential for bringing frozen product to market. They are currently seeking Marine Stewardship Council certification and see opportunities for retail and wholesale markets.

An AP member asked about the biomass impacts of a 2017 MC recommendation to add an uncertainty buffer to the commercial ACL resulting in a lower ACT and quota for the purposes of market stability. They also commented on the amount of investment in infrastructure, certification, and employees they have taken on.

Another AP member did not support a decrease in size or increase in possession limit due to the lowest recruitment in 20 years and the negative impacts to the fresh fish market and the New York scup fishery. They also noted that this fishery does not have limited access in New York or a control date. Other ways of increasing quota utilization should be explored.

One AP member supported decreasing the minimum scup size in order to replace tilapia in the market and decrease U.S. imports.

Table 2: Monitoring Committee recommended 2022-2023 scup catch and landings limits under the varying ABC approach compared with currently implemented 2021 limits.

Measure	Current		2022		2023		Basis for 2022-2023 Measures
	mil lb	mt	mil lb	mt	mil lb	mt	
OFL	35.30	16,012	32.56	14,770	30.09	13,648	Assessment projections
ABC	34.81	15,791	32.11	14,566	29.67	13,460	Assessment projections & risk policy
ABC discards	8.24	3,740	5.65	2,564	6.39	2,900	Assessment projections
Commercial ACL	27.15	12,317	25.05	11,361	23.15	10,499	78% of ABC (per FMP)
Commercial ACT	27.15	12,317	25.05	11,361	23.15	10,499	Set equal to commercial ACL (MC recommendation)
Projected commercial discards	6.65	3,018	4.67	2,117	5.28	2,394	82.6% of ABC discards (avg. % of dead discards from commercial fishery, 2017-2019)
Commercial quota	20.50	9,299	20.38	9,245	17.87	8,105	Commercial ACT minus discards
Recreational ACL	7.66	3,474	7.06	3,205	6.53	2,961	22% of ABC (per FMP)
Recreational ACT	7.66	3,474	7.06	3,205	6.53	2,961	Set equal to recreational ACL (MC recommendation)
Projected recreational discards	1.59	722	0.99	447	1.12	506	17.4% of the ABC discards (avg. % of dead discards from rec. fishery, 2017-2019)
RHL	6.07	2,752	6.08	2,757	5.41	2,455	Recreational ACT minus discards

Black Sea Bass 2022-2023 Specifications

The MC agreed with all staff recommendations for 2022-2023 specifications, including the catch and landings limits shown in Table 3 and no changes to the commercial management measures or February recreational opening for 2022.

One MC member noted that it is beneficial to have stability in catch and landings limits and asked if the SSC could have recommended a slightly lower constant ABC to keep the p^* below 0.5 in all years. He said this would be preferable to achieving constant catch and landings limits through a management uncertainty buffer to set both years equal to the lower of the two. Staff noted that the SSC chose not to recommend revised projections to achieve constant ABCs because a number of decisions would need to be made about how to perform those projections and the SSC felt that those decisions would be arbitrary without agreed upon guidance. Ultimately the MC did not recommend any approaches to set constant catch and landings limits across 2022 and 2023 and instead recommended the values shown in Table 3 based on the SSC's varying ABC recommendations.

The MC noted the 2020 RHL overage and agreed that this will be considered when setting 2022 recreational management measures later this year. They acknowledged that the current commercial/recreational allocation poses challenges for constraining the recreational fishery to the ACL and RHL without major restrictions.

The MC recommended no changes to the February recreational black sea bass opening. States must opt into this opening and adjust their measures later in the year as needed to prevent their participation from increasing their annual harvest. One MC member noted that this program provides flexibility for states, as participation is optional and there have not been major problems with the current process of states adjusting measures later in the year to account for February harvest. Virginia is the only state that has participated every year since 2021. The MC member from Virginia noted that the state is in favor of maintaining this program.

Public Comments

One AP member asked about recreational discard estimates in 2019 and 2020 and asked if the Monitoring Committee really believes that the RHL was exceeded by 56% in 2020. He asked how the Monitoring Committee plans to address management uncertainty for the recreational fishery moving forward.

Another AP member noted that the commercial fishery must payback quota overages, pound for pound. She said the recreational fishery is held to a "suggestion" because they are not required to payback overages. She noted that this is a fairness issue.

Table 3: Monitoring Committee recommended 2022-2023 black sea bass catch and landings limits under the varying ABC approach compared with currently implemented 2021 limits.

Measure	Current		2022		2023		Basis
	mil lb	mt	mil lb	mt	mil lb	mt	
OFL	17.68	8,021	19.26	8,735	17.01	7,716	Stock assessment projections
ABC	17.45	7,916	18.86	8,555	16.66	7,557	Stock assessment projections and Council risk policy
Expected com. dead discards	3.43	1,556	3.63	1,649	3.21	1,456	Calculated based on assumption that com. dead disc. would be 36% of com. catch in all 3 years (2016-2018 and 2017-2019 avg.)
Expected rec. dead discards	1.58	719	2.02	917	1.79	810	Calculated based on assumption that rec dead disc would be 20% of rec catch in 2021 (2016-2018 avg) and 23% of rec catch in 2022 & 2023 (2017-2019 avg)
ABC landings	12.44	5,641	13.20	5,990	11.66	5,291	ABC - expected com. and rec. dead discards
Com. ACL	9.52	4,320	10.10	4,583	8.93	4,048	49% of ABC landings portion + expected com. disc.
Com. ACT	9.52	4,320	10.10	4,583	8.93	4,048	Equal to the ACL; no deduction for management uncertainty
Com. quota	6.09	2,764	6.47	2,934	5.71	2,592	Com. ACT minus expected com. dead discards
Rec. ACL	7.93	3,596	8.76	3,972	7.74	3,509	51% of ABC landings portion + expected rec. disc.
Rec. ACT	7.93	3,596	8.76	3,972	7.74	3,509	Equal to the ACL; no deduction for management uncertainty
RHL	6.34	2,877	6.74	3,055	5.95	2,699	Rec. ACT minus expected rec. dead discards



Summer Flounder, Scup, and Black Sea Bass Advisory Panel Meeting Summary

July 29, 2021

The Mid-Atlantic Fishery Management Council's (Council's) Summer Flounder, Scup, and Black Sea Bass Advisory Panel (AP) met jointly with the Atlantic States Marine Fisheries Commission's (Commission's) Summer Flounder, Scup, and Black Sea Bass AP on July 29, 2021. The purpose of the meeting was to provide an update on the 2021 Management Track Assessment results for each species, review the Scientific and Statistical Committee (SSC) and Monitoring Committee recommendations for 2022-2023 specifications, and for the AP to provide recommendations to the Council and Board on these issues.

Please note: Advisor comments described below are not consensus or majority statements.

Council Advisory Panel members present: Katie Almeida (MA), Carl Benson (NJ), Frank Blount (RI)*, Joan Berko (NJ), Bonnie Brady (NY), Jeff Deem (VA), Joseph DeVito (NY), Greg DiDomenico (NJ)*, James Fletcher (NC), Jeremy Hancher (PA), Mike Plaia (CT)*, Mike Waive (NC)

Commission Advisory Panel members present: Frank Blount (RI)*, Greg DiDomenico (NJ)*, Mike Plaia (RI)*

*Serves on both Council and Commission Advisory Panels.

Others present: Chris Batsavage (Council and Board member), Julia Beaty (MAFMC Staff), Ellen Bolen (Council member), Dustin Colson Leaning (ASMFC Staff), Karson Coutré (MAFMC Staff), Kiley Dancy (MAFMC Staff), Tony DiLernia (Council member), Dan Farnham (Council member), Dewey Hemilright (Council member), Raymond Kane (Board member), Emily Keiley (NMFS GARFO), Savannah Lewis (ASMFC Staff), Shanna Madsen (VMRC), David Stormer (Council member)

2022-2023 Summer Flounder Specifications

One advisor asked why a constant ABC approach was recommended by the Monitoring Committee and asked for clarification on the purpose of these two sets of ABCs. He also voiced concern over the Monitoring Committee recommending constant catch and landings limits for the purposes of market stability as this may not be achieved and would result in forgone yield in one year, compared to the varying approach. He wondered whether adding a buffer in 2017 to the scup commercial ACL was beneficial and if that had been analyzed. He also voiced concern over the 31% RHL overage but said he was skeptical of the 2020 MRIP estimates. He noted that the Monitoring Committee identifies areas of management uncertainty in the recreational sector but then does not apply a buffer to the recreational ACL.

One advisor said he's seen fewer summer flounder over the past three years. Another advisor said he'd heard that summer flounder fishing had been slow this year.

One advisor said that in 1976 the commercial fishing industry requested a 5 inch mesh and an 11 or 12 inch minimum size for summer flounder. He recommended these regulations be adopted for the upcoming fishing year. He also recommended looking into a recreational hook size requirement to reduce bycatch.

One advisor noted that there were recreational overages for summer flounder, scup and black sea bass in 2020 and asked what impacts those overages could have on spawning stock biomass (SSB). She also asked whether there were trends with fishery performance and SSB over time and whether overages or underages affect stock status.

Four advisors supported the varied ABC approach while one recommended the constant ABC approach. One advisor asked whether the constant or varying decision would be revisited next year or only when a new assessment is available. Staff clarified that this would set constant or varying ABCs for the next two years; however, catch and landings limits could change with the pending final action of the commercial/recreational allocation amendment. The advisor recommending the constant approach believed that stability would be beneficial for the price of summer flounder since the market is fragile and recovering from COVID-related impacts.

One advisor asked how projected discards are calculated and whether recreational discards in the stock assessment are based on MRIP estimates. Staff clarified how discards are calculated and reiterated that the 2020 MRIP data were not incorporated into the 2021 assessments for these species.

One advisor said that for commercial measures he recommended keeping a 5 and a half inch minimum mesh size and agreed with advisor comments from the June AP meeting to revisit the exemption line and added that he did not think anyone uses a 2 seam flynet.

2022-2023 Scup Specifications

One advisor said management has given imports a larger market share than they deserve and added that he would like to see a report on the quantity and size of tilapia imports. He said that all three species should have a 4 ¾ or 5 inch net and the minimum fish size should be reduced to the size of the net. He said he would support moving to an 8 inch minimum fish size or lower.

Another advisor representing Lund's Fisheries supported their proposed changes but understood why the Monitoring Committee would require more analysis. He stated that they would participate and assist as needed through this process. He added that the Winter I fishery has not come close to reaching their quota and has room to grow, and Lund's has no intention of fishing on smaller fish. The minimum size decrease would allow for keeping a portion of their current catch that is discarded.

Four advisors did not support a decrease in the scup minimum size and increase in the Winter I possession limit in the commercial fishery for various reasons. Two advisors were specifically concerned that an increased possession limit would encourage greater harvest from much larger boats that are capable of hauling several hundred thousands of pounds of fish per trip. They felt that this would harm the current fleet of smaller fishing vessels and their businesses. The winter price per pound for scup can go over a dollar or more and the fishery can be very important to the current fishermen during that time.

One advisor said 8 inch scup are a bony fish with no meat and could not see the advantage of decreasing the size limit, noting that even 9-10 inch scup can ruin the market when they are landed. Another advisor said that his concerns with decreasing the minimum size related to the poor scup recruitment in recent years, especially in 2019, and did not feel that harvesting more immature fish was a good idea for stock health.

2022-2023 Black Sea Bass Specifications

One commercial fishing advisor from New Jersey said the black sea bass population has exploded over the last decade. He said he hasn't seen any signs of the population decreasing, despite the stock assessment showing a declining trend in biomass in recent years. He added that the abundant black sea bass population is increasing competitive pressure on other stocks.

This same advisor said the estimated 36% of commercial dead catch coming from discards in 2017-2019 seems high. He added that he probably hasn't discarded more than 5-10% of his catch in a year under New Jersey's 3,000 pound trip limit. He said he would like this discard assumption to be revisited when specifications are reviewed in the future.

Another commercial fishery advisor agreed that 36% of commercial dead catch coming from discards seemed too high given the minimum mesh size requirements for trawls and escape vent requirements for pots/traps, both of which allow most black sea bass to escape alive. He added that many trawl vessels use a larger minimum mesh size than the 4.5 inches required for black sea bass so they can also comply with the groundfish mesh size requirements (5.5 or 6 inches).

One advisor said changes in the state allocations, which may be implemented for 2022, may result in fewer commercial discards than during 2017-2019, the years used to estimate discards when calculating the catch and landings limits. Another advisor wondered whether the changes to the commercial accountability measures, which became effective in 2019, would impact trends in discards.

One recreational fishing advisor said he's seen a lot of small black sea bass off New Jersey and Maryland. He asked if the Council and Board would consider recreational hook size requirements to minimize discard mortality.

One advisor expressed concerns about the ability of fisheries independent trawl surveys to adequately sample structured habitat and said this creates uncertainty in the stock assessment.

This same advisor said there is market demand for smaller fish, especially in some minority communities where cooking a whole fish is more common. He added that allowing harvest of smaller fish would benefit low income communities. He reiterated his request that management allow for harvest of smaller fish and the minimum trawl mesh sizes should match the allowable fish size.

The SSC Report is
behind Tab 14.



Mid-Atlantic Fishery Management Council

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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman

Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

DATE: July 8, 2021

TO: Chris Moore, Executive Director

FROM: Kiley Dancy, Staff

SUBJECT: Summer Flounder Specifications for 2022-2023

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 2022-2023 catch and landings limits for summer flounder, as well as summer flounder commercial management measures for 2022. Additional information on fishery performance and past management measures can be found in the 2021 Summer Flounder Fishery Information Document and the 2021 Summer Flounder, Scup, and Black Sea Bass Fishery Performance Report developed by advisors.¹

In 2021, the Northeast Fisheries Science Center (NEFSC) provided a management track assessment update for summer flounder, which updated the current assessment model with data through 2019.² This is an update to the most recent benchmark stock assessment for summer flounder which was developed and peer reviewed in 2018 through the 66th Stock Assessment Workshop/Stock Assessment Review Committee (SAW/SARC 66; NEFSC 2019).³

The 2021 stock assessment update indicates that the summer flounder stock was not overfished and overfishing was not occurring in 2019. Spawning stock biomass (SSB) was estimated to be 104.49 million lb (47,397 mt) in 2019, 86% of the updated biomass target reference point ($SSB_{MSY} = 121.73$ million lb or 55,217 mt). The fishing mortality rate (F) in 2019 was 0.340, 81% of the updated fishing mortality threshold reference point ($F_{MSY\ proxy} = F_{35\%} = 0.422$).

¹ Available at: <https://www.mafmc.org/fishery-performance-reports>.

² To be posted at: <https://www.mafmc.org/council-events/2021/ssc-july-21-23>.

³ Northeast Fisheries Science Center (NEFSC). 2019. 66th Northeast Regional Stock Assessment Workshop (66th SAW) Assessment Summary Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 19-01; 40 p. Available from: <https://www.nefsc.noaa.gov/publications/crd/crd1908/>.

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

There are currently no catch and landings limits in place for summer flounder beyond the 2021 fishing year. The SSC should recommend ABCs for 2022-2023 for the Council and Atlantic States Marine Fisheries Commission's (Commission's) Summer Flounder, Scup, and Black Sea Bass Board (Board) to consider at their joint August 2021 meeting. Two year specifications are recommended to align with the current stock assessment schedule for summer flounder, under which the next update is expected in 2023 to inform 2024-2025 specifications.

Based on the SSC's recommendations for ABCs, the Monitoring Committee recommends sector specific catch and landings limits and management measures to constrain catch and landings to these limits. Specifically, the Monitoring Committee should review recent fishery performance and make a recommendation to the Council and Board regarding 2022-2023 commercial and recreational Annual Catch Limits (ACLs) and Annual Catch Targets (ACTs), commercial quotas, and recreational harvest limits. The Monitoring Committee will also consider whether any revisions are needed to the commercial management measures (minimum fish size, minimum mesh size, and mesh exemption programs) for 2022. Recreational measures for 2022 will be considered later in 2021.

The currently implemented 2021 catch and landings limits are shown in Table 1.

Table 1: Currently implemented catch and landings limits for summer flounder for 2021.

Measure	2021		Basis
	mil lb	mt	
OFL	31.67	14,367	Stock projections
ABC	27.11	12,297	SSC recommendation (July 2020)
ABC Landings Portion	20.81	9,439	ABC discards to landings ratio from previous 2021 ABC projections (from NEFSC; Feb. 2019)
ABC Discards Portion	6.30	2,858	ABC discards to landings ratio from previous 2021 ABC projections (from NEFSC; Feb. 2019)
Expected Commercial Discards	2.14	972	34% of ABC discards portion, based on 2015-2017 average % discards by sector (using new MRIP data)
Expected Recreational Discards	4.16	1,886	66% of ABC discards portion, based on 2015-2017 average % discards by sector (using new MRIP data)
Commercial ACL	14.63	6,635	60% of ABC landings portion (FMP allocation) + expected commercial discards
Commercial ACT	14.63	6,635	No deduction from ACL for management uncertainty
Commercial Quota	12.49	5,663	Commercial ACT, minus expected commercial discards
Recreational ACL	12.48	5,662	40% of ABC landings portion (FMP allocation) + expected recreational discards
Recreational ACT	12.48	5,662	No deduction from ACL for management uncertainty
RHL	8.32	3,776	Recreational ACT, minus expected recreational discards

ABC projections for 2022-2023 were provided by NEFSC staff assuming the continued application of an overfishing limit (OFL) CV of 60%, as has been applied by the SSC in recent years for summer flounder. In addition, these projections apply the previous SSC recommendation that recruitment should be sampled from a recent time series of generally below-average recruitment. In this case, recruitment is sampled from 2011-2019. The projections also assume that the total fishery catch in 2020 and 2021 is equal to the ABCs in those respective years. Alternative projections may be needed if the SSC determines that different assumptions are warranted.

Projections were provided for both varying ABCs from 2022-2023, as well as an averaging approach where the 2022-2023 ABCs are identical. The Council and Board have requested the ability to determine which approach is more appropriate from a policy standpoint; therefore, the SSC is requested to provide recommendations for both varying and averaged ABCs. The resulting ABCs and associated staff-recommended commercial and recreational limits are provided in Table 2. Staff recommend that the Council and Board adopt the averaged ABC approach for 2022-2023 such that the catch and landings limits are held constant over the two years. This would result in a 2022-2023 ABC equal to 33.12 million pounds (15,021 metric tons), which would represent a 22% increase from the 2021 ABC of 27.11 million pounds (12,297 metric tons).

As discussed later in this memo, the recommendations for commercial and recreational catch and landings limits (ACLs, ACTs, RHLs, and commercial quotas) shown in Table 2 are subject to discussion by the Monitoring Committee, which will provide recommendations on these limits for the Council and Board's consideration. The Monitoring Committee should also provide recommendations for varying and constant ACLs, ACTs, RHLs, and commercial quotas based on the two sets of ABCs recommended by the SSC.

Table 2: Potential 2022-2023 catch and landings limits for summer flounder, under both annually varying and averaged ABC approaches, based on ABC projections provided by the NEFSC. The sector-specific catch and landings limits are initial limits prior to any deductions for past overages.

Measure	Varying ABCs				Averaged ABCs (Staff recommended)				Basis
	2022		2023		2022		2023		
	mil lb	mt	mil lb	mt	mil lb	mt	mil lb	mt	
OFL	36.28	16,458	34.74	15,759	36.28	16,458	34.98	15,865	Management track stock assessment projections
ABC	33.96	15,403	32.27	14,639	33.12	15,021	33.12	15,021	ABC projections provided by the NEFSC for varying and averaged 2022-2023 ABC approaches; 60% CV; sampling from 2011-2019 recruitment time series
ABC Landings Portion	26.48	12,009	25.29	11,470	25.89	11,743	25.89	11,743	ABC projections provided by the NEFSC for varying and averaged 2022-2023 ABC approaches; average approach includes averaged 2022-2023 expected landings
ABC Dead Discards Portion	7.48	3,394	6.99	3,169	7.23	3,279	7.23	3,279	ABC projections provided by the NEFSC for varying and averaged 2022-2023 ABC approaches; average approach includes averaged 2022-2023 expected dead discards
Expected Commercial Dead Discards	3.05	1,383	2.85	1,292	2.95	1,336	2.95	1,336	41% of ABC dead discards portion, based on 2017-2019 average % dead discards by sector
Expected Recreational Dead Discards	4.43	2,011	4.14	1,877	4.28	1,942	4.28	1,942	59% of ABC dead discards portion, based on 2017-2019 average % dead discards by sector
Commercial ACL	18.94	8,589	18.02	8,174	18.48	8,382	18.48	8,382	60% of ABC landings portion (FMP allocation) + expected commercial dead discards
Commercial ACT	18.94	8,589	18.02	8,174	18.48	8,382	18.48	8,382	Staff recommendation: Maintain no deduction from ACL for management uncertainty
Commercial Quota	15.89	7,205	15.17	6,882	15.53	7,046	15.53	7,046	Commercial ACT, minus expected commercial dead discards
Recreational ACL	15.02	6,814	14.25	6,465	14.64	6,639	14.64	6,639	40% of ABC landings portion (FMP allocation) + expected recreational dead discards
Recreational ACT	15.02	6,814	14.25	6,465	14.64	6,639	14.64	6,639	Staff recommendation: Maintain no deduction from ACL for management uncertainty
RHL	10.59	4,804	10.12	4,588	10.36	4,697	10.36	4,697	Recreational ACT, minus expected recreational dead discards

Staff recommend no changes to the commercial minimum size or mesh exemption requirements for 2022. As described below in the "Commercial Management Measures" section, staff recommend further evaluation of potential changes to the commercial minimum mesh size in 2022, possibly by an external contractor, for potential application in 2023. In particular, staff recommends continued consideration of phasing out the 6" square minimum mesh size regulation, (leaving the 5.5" diamond minimum mesh size in place), further evaluation of potential changes to the small mesh exemption program, and further evaluation of the regulatory criteria for the summer flounder flynet mesh exemption.

Recent Fishery Catch

Commercial landings in 2020 were approximately 9.11 million pounds (4,132 mt), about 79% of the commercial quota of 11.53 million pounds (5,229 mt). This underage is likely due in large part to market related impacts of COVID-19. Commercial dead discard estimates are not available for 2020 due to data gaps resulting from the suspension of the observer program from mid-March through mid-August 2020. As such, it is not currently possible to evaluate commercial catch against the 2020 commercial ACL. At this time, it is not clear whether alternative methodologies will be developed to generate 2020 commercial discard estimates for summer flounder and other species.

The 2021 commercial landings as of June 30, 2021, indicate that 41% of the 2021 coastwide commercial quota has been landed (Table 3).

Table 3: The 2021 state-by-state commercial quotas and the amount of summer flounder landed by commercial fishermen, in each state as of June 30, 2021.

State	Cumulative Landings (lb)	Quota (lb)^a	Percent of Quota (%)
ME	0	14,332	0%
NH	0	9,834	0%
MA	305,308	1,015,179	30%
RI	1,114,319	1,861,550	60%
CT	322,547	579,376	56%
NY	483,552	1,094,113	44%
NJ	957,239	1,961,062	49%
DE ^b	0	0	0%
MD	66,698	558,559	12%
VA	834,951	2,399,576	35%
NC	1,028,875	2,984,903	35%
Total	5,113,489	12,478,484	41%

^a Quotas adjusted for overages. Source: NMFS Weekly Quota Report with data reported through June 30, 2021.

^b There is no quota available for 2021 in Delaware because the amount of over-harvest from previous years is greater than the amount of quota allocated to Delaware for 2021.

The mail and telephone surveys that collect effort data on recreational fishing continued largely uninterrupted in 2020; however, the COVID-19 pandemic disrupted the Access Point Angler Intercept Survey (APAIS). All New England and Mid-Atlantic states suspended APAIS sampling starting in late March or April 2020. States resumed sampling between May and August 2020, depending on the state. NMFS used imputation methods to fill gaps in 2020 catch data with data collected in 2018 and 2019. These proxy data match the time, place, and fishing mode combinations that would have been sampled had the APAIS continued uninterrupted. Proxy data were combined with observed data to produce 2020 catch estimates using the standard estimation methodology. For summer flounder, these estimates using

imputed data show that approximately 10.06 million pounds (4,565 mt) of summer flounder were harvested in 2020, which is about 131% of the 2021 RHL of 8.32 million pounds. Recreational dead discard estimates in weight are not available for 2020 as the method for estimating the weight of discards relies on age and length information that is not complete at this time.

NMFS has indicated that when complete 2021 recreational data become available in 2022, they will evaluate the effects of including 2021 data (for example, alongside 2019 data and instead of 2018 data) in the imputation. Because these effects are unknown, the agency cannot predict whether it will seek to revise its 2020 catch estimates.

As of this memo, recreational estimates for 2021 are only available through wave 2 (March/April), which does not provide meaningful information about 2021 recreational harvest trends for summer flounder given that in recent years wave 2 has accounted for less than 1% of annual summer flounder harvest.

Stock Status and Biological Reference Points

In June 2021, the NEFSC provided a management track assessment update for summer flounder with data through 2019. The update adds two additional years of data to the model developed for the most recent benchmark stock assessment, which was developed through the 66th SAW/SARC in 2018 using data through 2017. The 2018 assessment incorporated the revised time series of recreational catch from MRIP, which is 30% higher on average compared to the previous summer flounder estimates for 1981-2017. While fishing mortality rates were not strongly affected by incorporating these revisions, increased recreational catch resulted in increased estimates of stock size compared to past assessments.

The 2021 management track assessment update made minor revisions to the biological reference points for spawning stock biomass and fishing mortality. The 2021 assessment update results indicate that the summer flounder stock was not overfished and overfishing was not occurring in 2019. SSB has generally decreased since 2003 and was estimated to be 104.49 million lb (47,397 mt) in 2019, about 86% of the updated biomass target reference point $SSB_{MSY\ proxy} = 121.73$ million lb (55,217 mt). This estimate is 72% above the overfished threshold of $\frac{1}{2} SSB_{MSY\ proxy} = \frac{1}{2} SSB_{35\%} = 60.87$ million lb (27,609 mt; Figure 1). There is a 90% chance that SSB in 2019 was between 42,000 and 54,000 mt.

Fishing mortality on the fully selected age 4 fish ranged between 0.744 and 1.622 during 1982-1996 and then decreased to 0.245 in 2007. Since 2007 the fishing mortality rate (F) has increased, and in 2019 was estimated at 0.340, 81% of the updated fishing mortality threshold reference point ($F_{MSY\ proxy} = F_{35\%} = 0.422$; Figure 2). There is a 90% probability that the fishing mortality rate in 2019 was between 0.280 and 0.396.

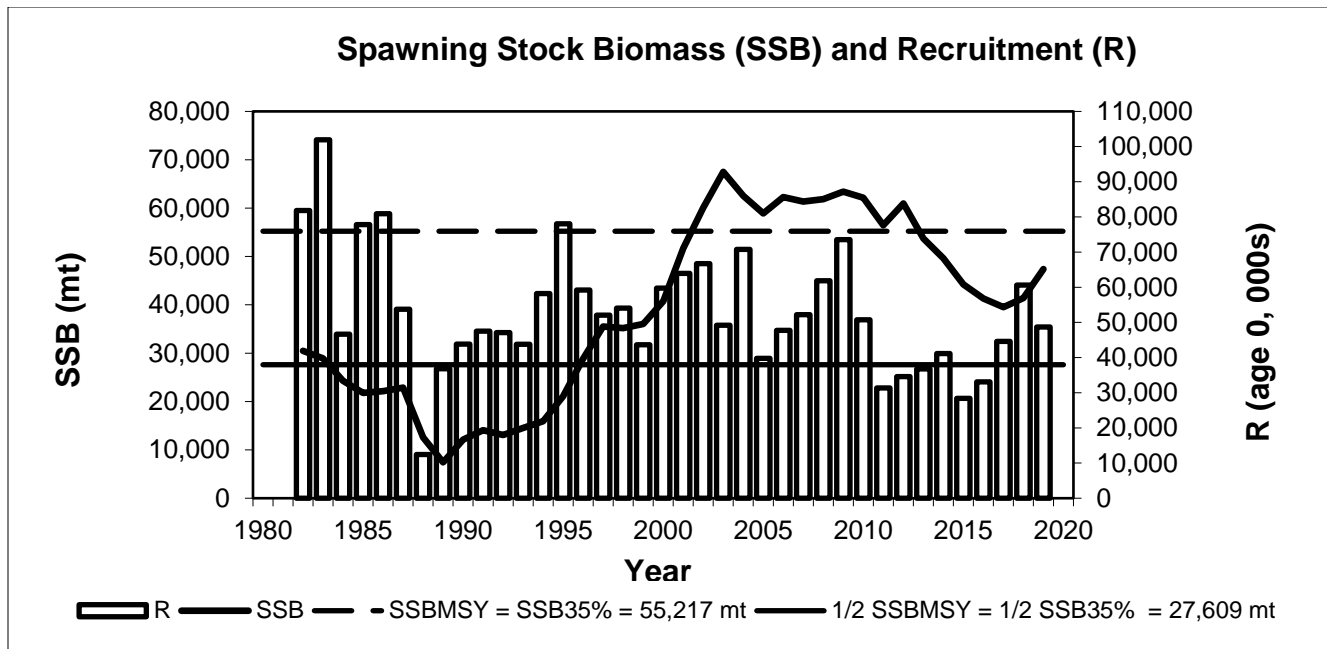


Figure 1: Summer flounder spawning stock biomass (SSB; solid line) and recruitment at age 0 (R; vertical bars), 1982-2019. The horizontal dashed line is the updated target biomass reference point. The horizontal solid line is the updated threshold biomass reference point.

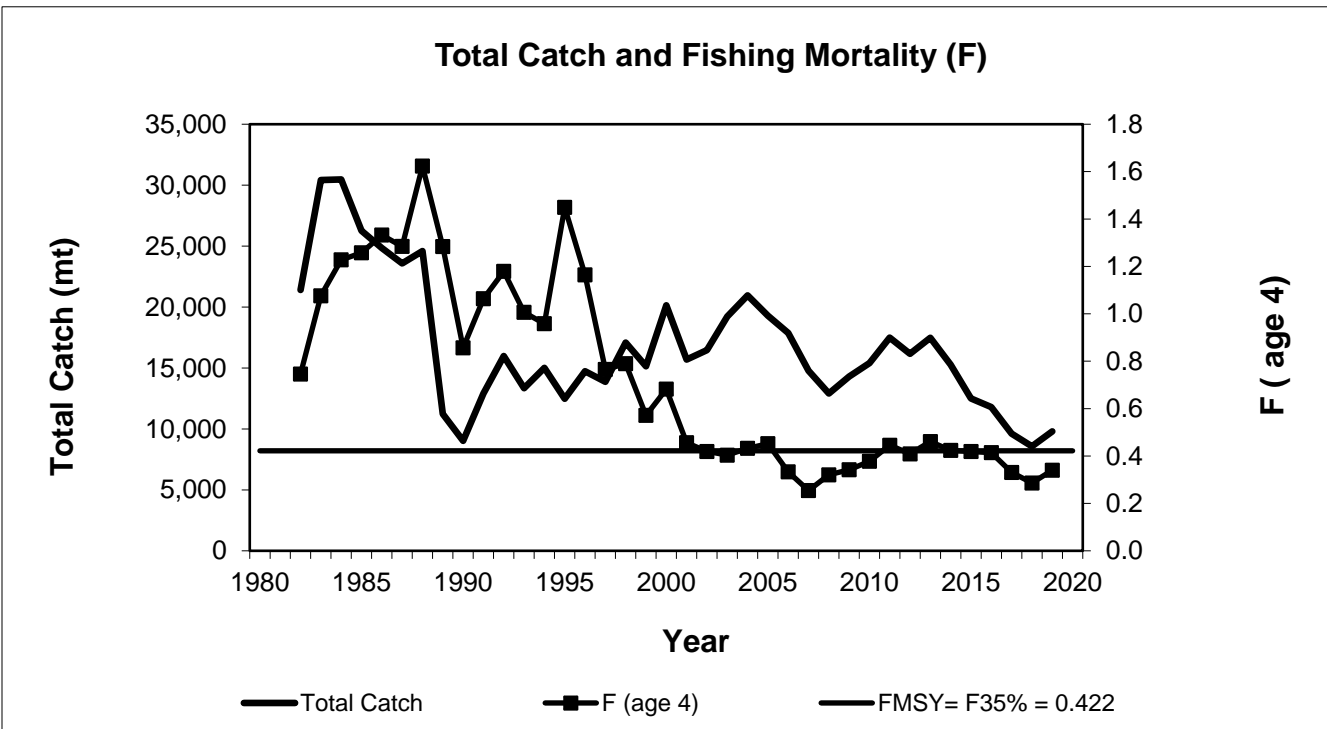


Figure 2: Total fishery catch (metric tons; mt; solid line) and fully-recruited fishing mortality (F, peak at age 4; squares) of summer flounder, 1982-2019. The horizontal solid line is the updated fishing mortality reference point.

The average recruitment from 1982 to 2019 is 53 million fish at age 0. Recruitment of juvenile summer flounder was below-average from 2011-2017, ranging from 31 to 45 million fish and averaging 36 million fish. The driving factors behind this period of below average recruitment have not been identified. The 2018 year class is above average at an estimated 61 million fish, which is largest recruitment estimate since 2009, while the 2019 year class is below average at 49 million fish.

Review of Prior SSC Recommendations

In February 2019, the SSC recommended, and the Council and Board adopted, summer flounder ABCs for 2019-2021 based on new stock status information and projections from the 2018 assessment. An ABC of 25.03 million pounds (11,354 mt) was implemented for each year 2019-2021; however, in 2020, the 2021 ABC was revised to account for changes to the Council's risk policy, as described in more detail below.

In February 2019, as requested by the Council, the SSC recommended two alternative sets of three-year ABCs based on the SAW66 assessment: one with varying ABCs each year, and one with a constant ABC for all three fishing years derived by averaging the three ABCs resulting from the varying approach. The Council and Board ultimately adopted the SSC-recommended ABCs based on the three-year averaged approach, implementing a constant ABC of 25.03 million pounds (113,54 mt) in each year 2019-2021.

The SSC indicated that the approach to estimating uncertainty in the OFL had not changed since the previous 2013 benchmark (SAW/SARC 57). Accordingly, the SSC maintained its determination that the assessment should be assigned an "SSC-modified OFL probability distribution." In this type of assessment, the SSC provides its own estimate of uncertainty in the distribution of the OFL. The SSC continued the application of a 60% OFL CV, because: (1) the latest benchmark assessment did not result in major changes to the quality of the data and model that the SSC has previously determined to meet the criteria for a 60% CV; (2) the summer flounder assessment continues to be a data rich assessment with many fishery independent surveys incorporated and with relatively good precision of the fishery dependent data; (3) several different models and model configurations were considered and evaluated by SAW-66, most of which showed similar stock trends and stock status; and (4) no major persistent retrospective patterns were identified in the most recent model. The SSC noted that significant improvements in quality of data and exhaustive investigations of alternate model structures affirm the specification of the 60% OFL CV by the SSC.

The SSC accepted the OFL proxy ($F_{35\%} = 0.448$) used in the 2018 assessment. Given recent trends in recruitment for summer flounder, the SSC recommended the use of the most recent 7-year recruitment series for OFL projections (2011-2017) because near-term future conditions were more likely to reflect recent recruitment patterns than those in the entire 36-year time series.

The SSC considered the following to be the most significant sources of uncertainty associated with the determination of the OFL and/or ABC:

- Changes in life history are apparent in the population; for example, declining growth rates.
- Potential changes in productivity of the stock, which may affect estimates of biological reference points. Changes in size-at-age, growth, and recruitment may be environmentally mediated, but mechanisms are unknown.
- Potential changes in availability of fish to some surveys and to the fishery as a result of changes in the distribution of the population.

In December 2019, the Council adopted revisions to its risk policy. These revisions modified the ABC control rule to allow for a greater acceptable risk of overfishing at most biomass levels, while maintaining a risk of overfishing below 50% for all stocks. In light of these changes, in July 2020, the SSC considered whether the 2021 ABC should be modified in accordance with the revised risk policy.

In their July 2020 report, the SSC noted that the 2020 data update suggested an above average year class in 2018. These fish would not be fully recruited to the landings in the fishery until 2022, which the SSC noted may cause an increase in fishery discards in 2021 from this year class, as information about this year class was not incorporated into the previous projections for 2019-2021. The SSC believed this implied some uncertainty in the reliability of the projections from the assessment given the assumptions associated with those projections, but determined this was not a rationale for not applying the new Council risk policy. The SSC recommended that the ABC for the 2021 fishing year be revised to 27.11 million pounds (12,297 mt) to be consistent with the revised Council risk policy. This represented an 8% increase in the previously adopted 2021 ABC recommendation. The revised 2021 ABC recommendation was calculated based on the previously adopted 2021 OFL of 31.67 million pounds (14,365 mt), a projected 2021 B/Bmsy of 0.88, a P* value of 0.39 under the revised risk policy, and the previously applied OFL CV of 60%.

Table 4 shows the previously adopted 2019-2021 ABCs and the revised 2021 ABC, along with the associated OFLs and P* values.

Table 4: SSC-recommended 2019-2021 OFLs, ABCs, and P* values for the 3-year averaged ABC approach adopted by the Council and Board, and revisions to the 2021 ABC in response to changes in the Council’s risk policy.

Timing of Recommendation	Year	OFL	ABC	P*
February 2019	2019	30.00 mil lb (13,609 mt)	25.03 mil lb (11,354 mt)	0.37
	2020	30.94 mil lb (14,034 mt)		0.35
	2021 (initial)	31.67 mil lb (14,367 mt)		0.34
July 2020	2021 (revised)	31.67 mil lb (14,367 mt)	27.11 mil lb (12,297 mt)	0.39

Staff Recommendation for 2022-2023 ABCs

ABC projections for 2022-2023 were developed using several assumptions based on staff recommendations and past recommendations of the SSC. Staff recommend continued use of projections that sample from a shorter, more recent time series of recruitment since 2011, in this case, the 9-year time series of 2011-2019. Recruitment was generally below average in these years, although as described above, recruitment in 2018 was above average. The causes of below-average recruitment have not been identified, and the SSC previously recommended the use of a shorter recruitment series believing that near-term future conditions are more likely to reflect recent recruitment patterns than those in the entire assessment time series (now 38 years).

Staff recommend continued use of the 60% OFL CV, which has been adopted by the SSC for summer flounder each year since 2014. The latest benchmark assessment did not result in major changes to the quality of the data and model that the SSC has previously determined to meet the criteria for a 60% CV. The summer flounder assessment continues to be a data rich assessment with many fishery independent surveys incorporated and with relatively good precision of the fishery dependent data. Several different models and model configurations were considered and evaluated by the most recent SAW, most of which showed similar stock trends and stock status. No major persistent retrospective patterns were identified in the most recent model.

Projections were provided for both varying 2022-2023 ABCs, as well as an averaging approach where the 2022-2023 ABCs are held constant. In each case, an iterated approach was used where the projected biomass for the subsequent year was updated assuming that the ABC was caught in the preceding year. This results in differing 2023 OFLs between various projection approaches. All 2022-2023 projections provided below assume that catch in 2020 and 2021 was equal to the implemented ABCs in those respective years.⁴

Using the assumptions described above, Table 5 provides projections under the varying 2022-2023 ABC approach while Table 6 provides projections using the constant ABC approach. Biologically, the outcome of an averaged vs. non-averaged approach is very similar and the projected spawning stock biomass trajectory is approximately the same in either scenario. Under these options, consistent with the Council’s revised risk policy, the probability of overfishing (P*) in 2022-2023 could range from 0.435-0.461.

Table 5: Projections for varying 2022-2023 ABCs, including OFL and ABC total catch, ABC projected landings and discards, ABC projected F, and projected SSB. These projections sample from a recent time series of recruitment (2011-2019) and assume application of the current Council risk policy with a 60% OFL CV.

Year	OFL Total Catch		ABC Total Catch		ABC Landings		ABC Discards		ABC F	ABC P*	SSB	
	mil lb	mt	mil lb	mt	mil lb	mt	mil lb	mt			mil lb	mt
2020	31.27	14,183	25.03	11,354	18.97	8,604	6.06	2,750	0.328	0.344	119.83	54,352
2021	32.81	14,884	27.11	12,297	20.87	9,468	6.24	2,829	0.32	0.365	125.49	56,920
2022	36.28	16,458	33.96	15,403	26.48	12,009	7.48	3,394	0.391	0.452	121.04	54,901
2023	34.74	15,759	32.27	14,639	25.29	11,470	6.99	3,169	0.387	0.447	113.69	51,570

⁴ While official catch estimates for 2020 are not currently available due to COVID-19 related data issues, the management track assessment estimates that 2020 total catch was approximately 99% of the 2020 ABC.

Table 6: Projections for averaged 2022-2023 ABCs, including OFL and ABC total catch, ABC projected landings and discards, ABC projected F, and projected SSB. These projections sample from a recent time series of recruitment (2011-2019) and assume application of the current Council risk policy with a 60% OFL CV.

Year	OFL Total Catch		ABC Total Catch		ABC Landings		ABC Discards		ABC F	ABC P*	SSB	
	mil lb	mt	mil lb	mt	mil lb	mt	mil lb	mt			mil lb	mt
2020	31.27	14,183	25.03	11,354	18.97	8,604	6.06	2,750	0.328	0.344	119.83	54,352
2021	32.81	14,884	27.11	12,297	20.87	9,468	6.24	2,829	0.32	0.365	125.49	56,920
2022	36.28	16,458	33.12	15,021	25.82	11,713	7.29	3,308	0.38	0.435	121.72	55,211
2023	34.98	15,865	33.12	15,021	25.95	11,772	7.16	3,249	0.396	0.461	113.77	51,605

Whether or not to average the ABCs is a policy decision for the Council and Board. Because the Council is unable to recommend ABCs higher than what the SSC recommends for any given year, the SSC is asked to provide ABC recommendations for both approaches to allow the Council and Board to select their preferred approach.

Staff recommend that the Council and Board adopt ABCs for 2022-2023 based on the averaged ABC approach. This is consistent with the previous approach for summer flounder, and would provide stability and simplicity between limits in these two years.

The Northeast Regional Coordinating Council (NRCC)’s stock assessment process⁵ now has summer flounder receiving management track updates every two years. The next management track assessment update is expected in 2023 to inform 2024-2025 catch and landings limits. Data updates (updated fishery catch and survey data only) would be requested in the interim years. 2022-2023 ABCs adopted this year are not expected to be revised unless there are unusual signals in interim data updates that prompt the SSC to determine that changes may be warranted.

Sector-Specific Catch and Landings Limits

The Council and Board are currently developing an amendment to reconsider the allocation of catch or landings between the commercial and recreational sectors for summer flounder, scup, and black sea bass.⁶ Final action on this amendment is scheduled for December 2021 and any changes are expected to be implemented starting in 2023. Thus, while the below discussion of sector specific limits for 2023 assumes the current allocations will apply in 2023, this may not necessarily be the case, and 2023 limits may need revisions based on any allocation changes made by the Council and Board. Allocation changes would not impact the ABCs discussed above.

Recreational and Commercial Annual Catch Limits

The ABC projections provided in Table 5 and Table 6 above include an amount of catch expected to be landed and an amount expected to be discarded (dead discards) in 2022-2023 based on projections provided by the NEFSC. For the averaged ABC approach, staff recommends averaging the expected discards and landings across the two years given minor differences in these projections, to ensure that all limits would be held constant over the two years (see Table 2). Based on the allocation percentages in

⁵ <http://www.mafmc.org/s/Stock-assessment-process-FINAL.pdf>.

⁶ <http://www.mafmc.org/actions/sfsbsb-allocation-amendment>

the Fishery Management Plan (FMP), 60% of the amount of the ABC expected to be landed is allocated to the commercial fishery, and 40% to the recreational fishery. Dead discards are typically apportioned based on the dead discards contribution from each fishing sector using a 3-year moving average percentage.

Due to data issues related to COVID-19, dead discard data are not currently available for 2020 for the commercial or recreational fisheries. As such, recommendations for the split of projected dead discards between the commercial and recreational fisheries were developed using 2017-2019 data from the management track assessment. On average over these years, 41% of dead discards were attributable to the commercial fishery and 59% to the recreational fishery.

The allocated landings for each sector are added to the expected sector-specific dead discards to arrive at the commercial and recreational ACLs. Any deductions for management uncertainty (see below) would be deducted from the sector-specific ACLs to arrive at the sector-specific ACTs. Expected dead discards are subtracted from the sector ACTs to derive the commercial quota and RHL in each year (Figure 3).

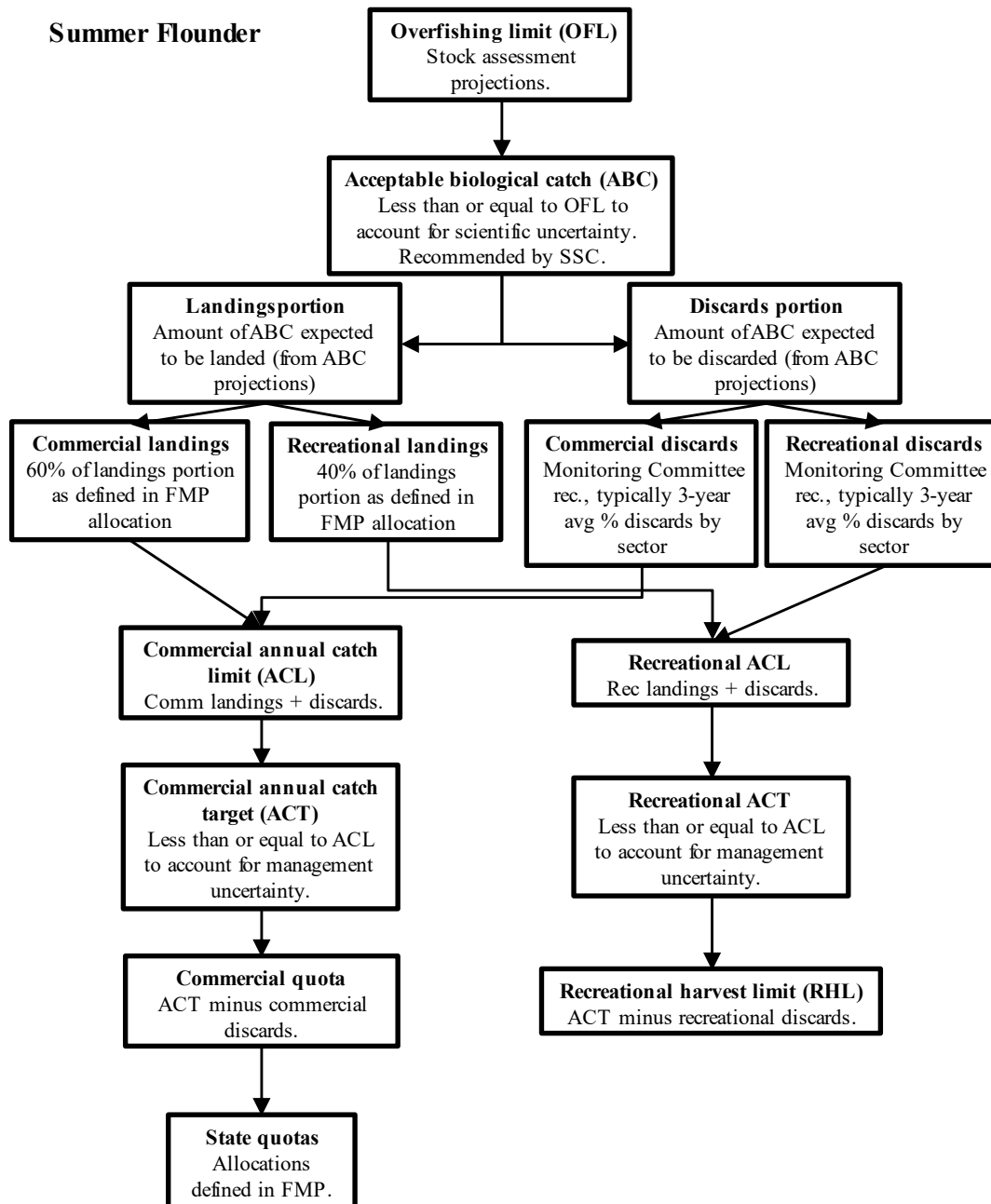


Figure 3: Flowchart for summer flounder catch and landings limits.

Annual Catch Targets and Accountability Measures

The Monitoring Committee is responsible for recommending ACTs, which are intended to account for management uncertainty. The Monitoring Committee should consider all relevant sources of management uncertainty in the summer flounder fishery and provide the technical basis, including any formulaic control rules, for any reduction in catch when recommending an ACT. ACTs may be reduced upon implementation in some cases if an Accountability Measure (AM) is triggered for a given fishery, as described below.

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 because of a lack of sufficient information about the catch (e.g., due to late reporting, underreporting, and/or misreporting of landings or bycatch) or because of a lack of management precision (i.e., the ability to constrain catch to desired levels).

Commercial landings were near the commercial quotas in recent years prior to the substantial commercial quota increase in 2019. In 2019 and 2020, more notable underages were observed (Table 7). In 2019 this was due to the mid-year increase in quota that did not allow the fishery the opportunity to fully harvest the quota, and in 2020, the underage was likely due to market impacts of COVID-19.

The NMFS Regional Administrator has in-season closure authority for the commercial summer flounder fishery, and commercial quota monitoring systems in place are typically effective in allowing timely reactions to landings levels that approach quotas. As such, any landings-based overages tend to be small in magnitude and are deducted from state quotas in the following years. Commercial ACL overages caused by higher than projected discards result in a payback amount scaled based on estimates of stock biomass relative to the biomass target. At this time, 2020 dead discards estimates are not available for the commercial fishery, however, NMFS may consider any available 2020 data later in the year during the rulemaking process for 2022-2023 specifications to determine whether adjustments to the commercial limits are needed.

The Monitoring Committee had previously recommended closely monitoring commercial discards trends due to discards-driven overages of the commercial ACL in 2017 and 2018; however, in these years, a large proportion of discards were likely the result of below-average quotas. Observer data for observed trawl hauls from 2015-2019 support this conclusion (Table 8). Commercial discards decreased in 2019, possibly due in part to increased quotas although this is difficult to determine given the mid-year quota change. Note that observer data show an increased proportion of observed discards attributed to "too small," possibly driven by an above average 2018 year class as indicated by fishery independent surveys. The commercial sector was under their commercial ACL by approximately 20% in 2019. As previously stated, commercial discard information is not available for 2020 at this time.

Staff recommend maintaining commercial ACTs set equal to the ACLs for 2022-2023, such that no reduction in catch is taken for management uncertainty.

For the recreational fishery, performance relative to RHLs through 2018 cannot be evaluated using the revised MRIP data, since past RHLs were set based on assessments that used the old data. A performance evaluation for 2016-2020 using a combination of old and new MRIP data is provided in Table 7 (2016-2018 uses pre-calibration MRIP data). Data for 2019-2020 are from the revised MRIP methodology and can be compared to the 2019-2020 limits given that they were set using the new assessment which incorporated revised MRIP information.

Compared to the commercial fishery, recreational performance has been more variable relative to the RHLs given the difficulty forecasting recreational effort and catch rates in any given year, as well as the lack of timely in-season data and in-season closure authority for the recreational fishery. Between 2016-2020, recreational harvest was below the RHLs in two of the five years (2017 and 2018). A moderate (14%) overage of the RHL was observed in 2016, and a more substantial (31%) overage in 2020. However, as discussed above, the 2020 MRIP data are based on imputation methods incorporating some 2018 and 2019 data to address 2020 gaps in intercept sampling coverage. The 2020 estimates should be reviewed by the Monitoring Committee, which may wish to provide recommendations on whether or how to use these estimates in evaluation of fishery performance to the RHL and ACL, as well as

whether or how to use estimates broken down by state, wave, area, or mode when considering recreational measures later this year.

Recreational AMs are evaluated based on a three-year moving average of recreational catch compared to the average recreational ACL over the same time period. A recreational AM was not triggered for application in 2021 based on an evaluation of 2017-2019 catch data. At this time 2020 recreational dead discard estimates are not available; however, they may be available for an ACL evaluation later this fall during the process of setting recreational measures for 2022.

The Council and Board are considering a number of potential changes to recreational fisheries management through the Recreational Reform Initiative, with the goal of providing more stability in the recreational bag, size, and season limits from year to year, greater flexibility in the management process, and recreational accessibility aligned with availability. This is an ongoing effort. Specific changes could include greater consideration of stock status when setting recreational management measures, better addressing uncertainty in the MRIP data, and other changes.

Staff recommend maintaining recreational ACTs set equal to the ACLs for 2022-2023, such that no reduction in catch is taken for management uncertainty.

Table 7: Summer flounder commercial and recreational fishery performance relative to quotas and RHLs, 2016-2020. Recreational data show pre-revision MRIP estimates for 2016-2018 to allow comparison to past RHLs, and 2019-2020 are evaluated with the new MRIP estimates given that RHLs in these years were set with the new assessment which incorporated the revised MRIP data.

Year	Comm. Landings (mil lb) ^a	Comm. Quota (mil lb) ^b	Comm. Percent Overage(+)/ Underage(-)	Rec. Harvest - OLD MRIP (mil lb) ^c	Rec. Harvest - REVISED MRIP (mil lb) ^c	RHL(mil lb) ^d	Rec. Percent Overage(+)/ Underage(-)
2016	7.80	8.12	-4%	6.18	13.24	5.42	+14%
2017	5.87	5.66	+4%	3.19	10.08	3.77	-15%
2018	6.17	6.44	-4%	3.35	7.60	4.42	-24%
2019	9.06	10.98	-17%	N/A	7.80	7.69	+1%
2020	9.11	11.53	-21%	N/A	10.06 ^e	7.69	+31%
5-yr Avg.	-	-	-9%	-	-	-	+1%

^a Source: NMFS dealer data, as of June 2021.

^b Commercial quotas are post-deduction for past landings and discard overages.

^c Source: 2016-2017 pre-calibration MRIP data from NMFS MRIP calibration comparison query accessed June 27, 2019. 2018 back-calibrated data is from personal communication with NMFS. 2019-2020 recreational landings are from a NMFS recreational fisheries statistics query May 12, 2021. Recreational landings are from Massachusetts through North Carolina.

^d RHLs for 2016-2018 were set using a prior assessment that did not incorporate revised MRIP values. The 2019-2020 RHLs were set using the 2018 assessment which incorporated revised MRIP values.

^e 2020 recreational estimates were developed using imputation methods (incorporating 2018 and 2019 data) to account for missing 2020 APAIS data.

Table 8: Percent of observed bottom otter trawl hauls with discarded summer flounder by discard reason, 2015-2019.

Recorded Discard Reason	2015	2016	2017	2018	2019	Average
Too small	56.7%	50.9%	37.4%	45.6%	62.8%	50.7%
No Quota	31.9%	37.3%	49.9%	42.3%	27.1%	37.7%
High graded	4.4%	7.4%	7.2%	7.1%	6.4%	6.5%
Market reasons (unknown, will spoil, poor quality, too large)	7.0%	4.3%	5.3%	4.8%	3.7%	5.0%

Commercial Quotas and Recreational Harvest Limits

Projected discards are removed from the sector-specific ACTs to derive landings limits, which include annual commercial quotas and RHLs (Figure 3). For 2022-2023, the staff recommendation for an averaged ABC approach in combination with the ACT and discard assumptions outlined above would result in a commercial quota of 15.53 million pounds and an RHL of 10.36 million pounds. Under the varying ABC approach, the commercial quota would be 15.89 million pounds in 2022 and 15.17 million pounds in 2023, while the RHL would be 10.59 million pounds in 2022 and 10.12 million pounds in 2023 (Table 2). These calculations are dependent on the ABC recommendations of the SSC and may vary if the SSC adopts different recommendations than outlined in this memo.

The commercial quota is divided among the states based on the allocation percentages specified in the FMP, and each state sets measures to achieve their state-specific commercial quotas. The commercial allocations to the states were modified via Amendment 21, which became effective on January 1, 2021. The revised allocation system modifies the state-by-state commercial quota allocations in years when the annual coastwide commercial quota exceeds the specified trigger of 9.55 million pounds. Annual coastwide commercial quota of up to 9.55 million pounds is distributed according to the previous state allocations. In years when the coastwide quota exceeds 9.55 million pounds, the *additional* quota amount beyond this trigger is distributed in equal shares to all states except Maine, Delaware, and New Hampshire, which split 1% of the additional quota (Table 9). The total percentage allocated annually to each state is dependent on how much additional quota beyond 9.55 million pounds, if any, is available in any given year. This allocation system is designed to provide for more equitable distribution of quota when biomass is relatively higher, while also considering the historic importance of the fishery to each state.

Table 9: Previous (through 2020) and revised (effective January 2021) allocation of summer flounder commercial quota to the states.

State	Previous allocation of commercial quota	Revised allocation of commercial quota (total state allocation = baseline quota allocation + additional quota allocation)	
		Allocation of baseline quota ≤9.55 mil lb	Allocation of additional quota beyond 9.55 mil lb
ME	0.04756%	0.04756%	0.333%
NH	0.00046%	0.00046%	0.333%
MA	6.82046%	6.82046%	12.375%
RI	15.68298%	15.68298%	12.375%
CT	2.25708%	2.25708%	12.375%
NY	7.64699%	7.64699%	12.375%
NJ	16.72499%	16.72499%	12.375%
DE	0.01779%	0.01779%	0.333%
MD	2.03910%	2.03910%	12.375%
VA	21.31676%	21.31676%	12.375%
NC	27.44584%	27.44584%	12.375%
Total	100%	100%	100%

Specific management measures that will be used to achieve the RHL for the recreational fishery in 2022 will not be determined until later in 2021. Typically, the Council and Board review data through Wave 4 (July-August) in the current year to set recreational bag, size, and season limits for the upcoming year. The Monitoring Committee typically meets in November to review these data and make recommendations regarding any necessary changes in the recreational management measures (i.e., bag limit, minimum size, and season).

Commercial Management Measures

Commercial Gear Regulations and Minimum Fish Size

Management measures in the commercial fishery other than quotas (i.e., minimum fish size, gear requirements, etc.) have remained generally constant since 1999. The current commercial minimum fish size is 14 inches total length (TL) and has been in place since 1997.

Current trawl gear regulations require a 5.5-inch diamond or 6.0-inch square minimum mesh in the entire net for vessels possessing more than the threshold amount of summer flounder, i.e., 200 lb in the winter (November 1-April 30) and 100 lb in the summer (May 1-October 31). The minimum fish size and mesh requirements may be changed through specifications based on the recommendations of the Monitoring Committee.

In September 2019, the Monitoring Committee discussed various mesh size issues for summer flounder, scup, and black sea bass, and revisited the 2018 mesh selectivity study for summer flounder, scup, and black sea bass by Hasbrouck et al. (2018)⁷. Hasbrouck et al. study suggests that, in general, the current minimum mesh sizes are effective at releasing catch of most undersized and immature fish, but modifications could be considered to allow for consistent mesh sizes for black sea bass and scup, and to potentially reduce discards of undersized summer flounder. As described in the meeting summary, the

⁷ Hasbrouck et al. 2018 is available at: http://www.mafmc.org/s/Tab08_SFSBSB-Mesh-Selectivity-Study-Apr2018.pdf. The Monitoring Committee discussion document from September 2019 is available at <https://www.mafmc.org/s/FSB-Mesh-Size-Issues-Overview-Sept-2019.pdf>, and the MC report from that discussion can be found at: https://www.mafmc.org/s/SFSBSB_MC_Summary_Sept_2019_FINAL.pdf. T

MC identified additional analyses and input needed from industry before recommending changes to the mesh size regulations.

For summer flounder, the MC had noted that the selectivity curve described in the study for 6.0" square mesh does not appear to be equivalent to that of the 5.5" diamond. Instead, the 6.0" square is much more similar to a 5.0" diamond mesh. The 6.0" square mesh releases less than 50% of minimum size fish. The MC had some concerns with the amount of undersized summer flounder caught with the 6.0" square mesh and recommended further exploring the impacts of this mesh size. Phasing out the use of 6.0" square mesh for summer flounder could reduce discards of undersized fish. The MC noted that further analysis should be done on how many vessels are currently using 6.0" square vs. 5.5" diamond mesh.

In recent discussions on this topic, the MC has been supportive of continuing to analyze this issue, but has also recognized that it should be a lower priority issue in the near term given other pressing management concerns for this FMP. The Council and Board have also agreed that while this issue should still be pursued, it was not a near-term priority given other management activities. Given staff resources required on other issues for these species and other Council and Board priorities, to date there has not been additional staff time available to further evaluate these issues. Staff recommend consideration of hiring an external contractor in late 2021/early 2022 to pursue further evaluation of this mesh size issue as well as re-evaluation of the mesh size exemptions as discussed below. Given this timing, staff recommend no changes to the current 14-inch minimum fish size, or seasonal possession thresholds triggering the minimum mesh size for 2022.

Minimum Mesh Size Exemption Programs

Small Mesh Exemption Area

Vessels landing more than 200 lb of summer flounder east of longitude 72° 30.0'W, from November 1 through April 30, and using mesh smaller than 5.5-inch diamond or 6.0-inch square are required to obtain a small mesh exemption program (SMEP) permit from NMFS. The exemption is designed to allow vessels to retain some bycatch of summer flounder while operating in other small-mesh fisheries.

The FMP requires that observer data be reviewed annually to determine whether vessels fishing seaward of the SMEP line with smaller than the required minimum mesh size and landing more than 200 lb of summer flounder are discarding more than 10% (by weight) of their summer flounder catch per trip. Typically, staff evaluate the Northeast Fisheries Observer Program (NEFOP) data for the period from November 1 in the previous year to April 30 in the current year. However, when this analysis is conducted each summer, complete observer data is not yet available through the end of April in the current year. As such, a year-long lag in the analysis is used.

Under normal circumstances, staff would evaluate observer data from November 1, 2019 through April 30, 2020 in the development of this memo. However, given the suspension of the observer requirements in mid-March 2020 due to COVID-19, complete observer data for this time period are not available. NEFOP data were evaluated for observed trips from November 1, 2019 through approximately March 19, 2020.⁸ For this time period, a total of 397 trips with at least one tow were observed east of 72° 30.0'W and 204 of these trips used small mesh (Table 10). Of those 204 trips, 97 trips (47%) reported landing more than 200 lb of summer flounder. Of those 97 trips, 24 trips (25%) discarded more than 10% of their summer flounder catch. The percentage of trips that met all these criteria relative to the

⁸ The observer requirement was first waived on March 20, 2020, although there are a few relevant observer records after this date, presumably from vessels which were already at sea.

total number of observed trips east of 72° 30.0'W is 6.0% (24/397 trips).

The number of vessels issued a letter of authorization (LOA) for the small mesh exemption program has remained relatively stable since 2013, fluctuating around an average of 66 vessels (Figure 4).

The MC had previously identified concerns with an increased percentage in the number of observed trips in the small mesh exemption area landing over 200 pounds of summer flounder but discarding more than 10% of their summer flounder catch (Table 10). While the amount of observed discards from these trips is low relative to the commercial catch limit, because these observed trips are a subset of the fishery operating under this exemption, the actual extent of discards under the exemption program is not known. The MC has also noted that these increases in discards were possibly related to decreased commercial quotas, especially from 2017 through the first half of 2019. Last year, the MC noted that the substantial increase in the commercial quota for 2019-2021 should reduce the rates of discarding in general, including under this exemption. General analysis of recorded discard reasons in the observer data (not specific to this exemption program) indicate that discards in recent years prior to 2019 have been more heavily driven by quota-related reasons, but in 2019 quota-related reasons accounted for a much smaller percentage of observed discards. The MC indicated that an analysis of the recorded discard reasons specifically for vessels operating under this exemption program would be useful but recognized that COVID-19 observer coverage disruptions would hinder the ability to evaluate the most recent relevant time period. As indicated above, for the recent data that are available, the percent of observed trips discarding more than 10% of their summer flounder catch declined in the November 2019-March 2020 period. However, because 2020 observer data are incomplete, it is difficult to evaluate whether this change represents a meaningful difference in discarding patterns.

Following the June 2021 Advisory Panel meeting, one advisor requested evaluation of changes to the small mesh exemption program.⁹ Specifically, this advisor requested that the small mesh exemption line be completely removed and that vessels be allowed to possess up to 1,000 pounds of summer flounder with small mesh no matter where they are fishing. Additionally, for directed summer flounder trips with possession limits over 1,000 pounds, a 5" minimum mesh size should be used. The advisor did not specify whether this modification should be seasonal or year-round. Staff note that this modification would essentially remove the small mesh exemption program as well as modify the seasonal possession limits triggering the minimum mesh size requirement (as discussed above, these limits are currently 200 pounds from November through April and 100 pounds May through October).

The MC should consider whether changes may be needed to this exemption program. As described above, there has not been sufficient staff time to dedicate to a more in depth evaluation of this exemption program in 2021. Staff recommend that the MC identify additional analysis or industry input needed to inform potential changes to the small mesh exemption program, and recommend that this be considered for evaluation by an external contractor in late 2021/early 2022 for potential application in 2023 and beyond.

⁹ See email comment from Hank Lackner included in the Fishery Performance Report at: https://www.mafmc.org/s/SFSBSB_FPR_June-2021.pdf.

Table 10: Numbers of observed trips that meet specific criteria based on NEFOP data from November 1-April 30 for 2014 through 2020; observer data for 2020 is only available through mid-March due to the COVID-19 related suspension of the observer program.

Criteria		Nov. 1, 2014 – April 30, 2015	Nov. 1, 2015 – April 30, 2016	Nov. 1, 2016 – April 30, 2017	Nov. 1, 2017 – April 30, 2018	Nov. 1, 2018 – April 30, 2019	Nov. 1, 2019 ~March 19, 2020
A	Observed trips with at least one catch record east of 72° 30' W Longitude	401	391	555	724	646	397
B	That met the criteria in row A <u>and</u> used small mesh at some point during their trip	172	252	376	364	354	204
C	That met the criteria in rows A-B <u>and</u> landed more than 200 pounds summer flounder on whole trip	72	92	150	135	164	97
D	That met the criteria in rows A-C <u>and</u> discarded >10% of summer flounder catch east of 72° 30' W Longitude	21	18	36	47	53	24
E	% of observed trips with catch east of 72° 30' W Longitude that also used small mesh, landed >200 pounds of summer flounder, and discarded >10% of summer flounder catch (row D/row A)	5.20%	4.60%	6.50%	6.50%	8.20%	6.05%
F	Total summer flounder discards (pounds) from trips meeting criteria in A-D	14,579	16,470	14,640	33,868	18,186	11,672
G	Total summer flounder landings (pounds) from trips meeting criteria in A-D	15,224	23,295	25,472	76,780	59,960	29,540
H	Total catch (pounds) from trips meeting criteria in A-D	29,804	39,763	40,113	110,648	69,145	41,212

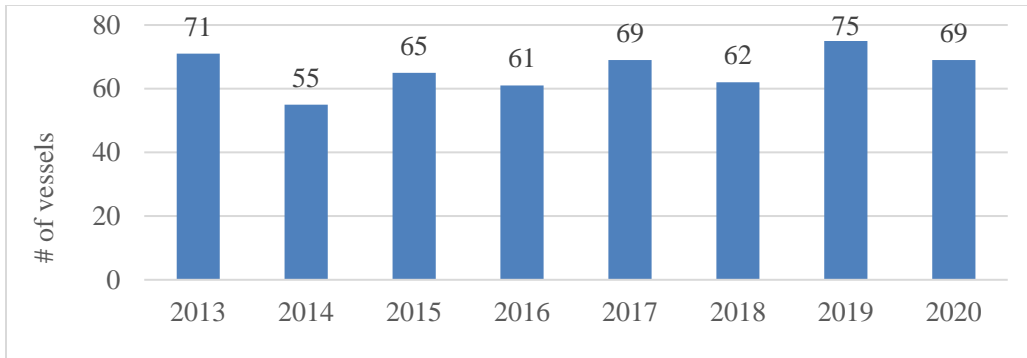


Figure 4: Number of vessels issued the small mesh LOA for the SMEP from fishing year 2013-2020. Source: Pers. Comm., GARFO Analysis & Program Support Division, June 17, 2021.

Flynet Exemption Program

Vessels fishing with a two-seam otter trawl flynet are also exempt from the minimum mesh size requirements. Exempt flynets have large mesh in the wings that measure 8 to 64 inches, the belly of the net has 35 or more meshes that are at least 8 inches, and the mesh decreases in size throughout the body of the net, sometimes to 2 inches or smaller. This exemption was created through Amendment 2 in 1993, as suggested by the South Atlantic Fishery Management Council and the State of North Carolina to accommodate flynet fisheries targeting other species and catching limited amounts of summer flounder. The NMFS Regional Administrator may withdraw the exemption if the annual average summer flounder catch in the flynet fishery exceeds 1% of the total flynet catch.

Typically, the MC reviews data from the North Carolina flynet fishery as the bulk of flynet landings in the Greater Atlantic region originate from North Carolina, though the flynet fishery in North Carolina is small. The supplemental memo from Lorena de la Garza dated July 1, 2021 (see Attachment) indicates that no summer flounder were landed in the North Carolina flynet fishery from 2015-2020. Flynet landings in North Carolina have declined in recent years due to shoaling issues at Oregon Inlet.

The flynet exemption was explored in more depth through the Monitoring Committee's 2015 comprehensive review of commercial management measures.¹⁰ The MC determined at the time that other states, including Virginia, New Jersey, and Maryland may have small amounts of flynet landings; however, data were limited or unavailable for most other states and flynet landings of summer flounder in these states were believed to be insignificant.

A January 2020 public comment from a New Jersey fisherman¹¹ asserted that this exemption is being used more frequently than indicated by the Monitoring Committee analyses, and that many New Jersey vessels have been using this exemption to increase their flexibility to retain summer flounder on multispecies trips. He states that these vessels are using "high rise" nets that fall under the flynet definition, and as a result they are able to retain more than 200 pounds of summer flounder during the November 1-April 30 period without switching to summer flounder mesh sizes. He also requests a change in the definition of exempt flynet gear to include four-seam nets (in addition to two-seam nets) as well as some clarifying modifications to the regulatory language.

In response to this request, at their 2020 meeting, the MC noted that there is a need to better understand the use and configuration of flynet and high rise trawl nets as they relate to this exemption. Additional

¹⁰ See the report at: http://www.mafmc.org/s/Tab11_SF-S-BSB-Commercial-Measures.pdf.

¹¹ See attachment at: <https://www.mafmc.org/s/Fluke-mesh-exemption-memo-MC-May-2020.pdf>.

information provided by Board member Emerson Hasbrouck indicates that the use of two-seam nets is rare in the Mid-Atlantic and Southern New England winter offshore trawl fishery. This may indicate a possible compliance and enforcement issue if vessels that don't meet the regulatory definition (which specifies a two-seam net) believe they are fishing under the flynet exemption. However, the MC stated that additional evaluation is needed to verify this. The MC also indicated a need to better understand the differences between a two-seam and four-seam net before commenting on whether an expansion of the flynet exemption definition is warranted. The MC also agreed that a change in this definition could lead to an increase in the number of vessels using this exemption and the consequences of this should be thoroughly understood before changes are adopted. The MC recommended exploration of the extent to which existing datasets allow for evaluation of specific trawl gear configurations, and noted the need for input from gear experts, industry, and enforcement on this issue.

As described above, there has not been sufficient staff time to dedicate to a more in depth evaluation of this exemption in 2021. Staff recommend no changes to this exemption for 2022, and that the MC identify additional analysis or industry input needed to inform potential changes to the small mesh exemption program, and recommend that this be considered for evaluation by an external contractor in late 2021/early 2022 for potential application in 2023 and beyond.



ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

KATHY B. RAWLS
Director

Memorandum

To: Kiley Dancy, MAFMC

From: Lorena de la Garza, NCDMF

Date: July 1, 2021

Subject: Species composition and landings from the 2020 North Carolina flynet fishery

The 2020 North Carolina flynet fishery landed 34,484 pounds of finfish consisting of four species including black sea bass, scup, bluefish, and monkfish. All 2020 North Carolina flynet fishery landings are not reported within a table because the data are confidential and cannot be distributed to sources outside the North Carolina Division of Marine Fisheries (North Carolina General Statute 113-170.3 (c)). Confidential data can only be released in a summarized format that does not allow the user to track landings or purchases to an individual. Summer flounder were not landed in the 2013, 2015, 2016, 2017, 2018, 2019, and 2020 flynet fisheries. Total flynet landings in 2020 are the second lowest since the trip ticket program began in 1994 (2013 being the lowest). Reduced fishing effort on targeted fish species and increased shoaling at Oregon Inlet continue to result in a low number of flynet boats landing at North Carolina ports.

Summer Flounder Management Track Assessment for 2021

(Lead: Mark Terceiro)

State of Stock: This 2021 Management Track Assessment (MTA) of summer flounder (*Paralichthys dentatus*) is an update through 2019 of the commercial and recreational fishery catch data and research survey indices of abundance. Assessment model estimates of stock size and fishing mortality are updated through 2019.

The stock was not overfished and overfishing was not occurring in 2019 relative to the updated biological reference points (Figures 1-3). Spawning stock biomass (SSB) was estimated to be 47,397 mt in 2019, 86% of the updated biomass target reference point SSB_{MSY} proxy = $SSB_{35\%}$ = 55,217 mt (Table 1, Figures 1, 3). There is a 90% chance that SSB in 2019 was between 42,000 and 54,000 mt. Fishing mortality on the fully selected age 4 fish was 0.340 in 2019, 81% of the updated fishing mortality threshold reference point F_{MSY} proxy = $F_{35\%}$ = 0.422 (Table 1, Figure 2). There is a 90% probability that the fishing mortality rate in 2019 was between 0.280 and 0.396. The 1983 year class is the largest in the assessment time series at 102 million fish, while the 1988 year class is the smallest at 12 million fish. The average recruitment from 1982 to 2019 is 53 million fish at age 0. Recruitment was below average during 2011-2017, ranging from 31 to 45 million and averaging 36 million fish. The 2018 year class estimated at 61 million fish is above average and the largest since 2009, while the 2019 year class is below average at 49 million fish (Table 1, Figures 3-4). The model estimates of F and SSB in 2019 adjusted for internal retrospective error are within the model estimate 90% confidence intervals and so no adjustment of these terminal year estimates has been made for stock status determination or projections (Figure 1). The recruitment production per unit of spawning stock biomass (R/SSB; a metric of the relative survival of year classes) was higher in the 1980s and early 1990s than in the years since 1996, as the stock has varied near SSB_{MSY} (Figure 5).

OFL Projections: Projections using the results of the 2021 MTA model (data through 2019) were made to estimate the OFL catches for 2022-2023. The projections assume that the 2020 and 2021 ABCs of 11,354 mt and 12,297 mt were caught. **The preliminary estimate of 2020 catch is 11,203 mt, 99% of the 2020 ABC.** The projections sample from the estimated recruitment for the most recent 9 years (2011-2019; average recruitment = 40 million fish). The OFL projections use $F_{2022-F2023}$ = updated F_{MSY} proxy = $F_{35\%}$ = 0.422. The OFL catches are 16,458 mt in 2022 (CV = 14%) and 15,464 mt in 2023 (CV = 12%).

Year	Catch	OFL for 2022-2023		F	SSB
		Catches and SSB in metric tons			
		Landing	Discards		
2020	11,354	8,604	2,750	0.328	54,352
2021	12,297	9,468	2,829	0.320	56,920
2022	16,458	12,798	3,620	0.422	54,053
2023	15,464	12,072	3,392	0.422	49,933

Catch: Reported 2019 landings in the commercial fishery were 4,109 mt = 9.059 million lb. Estimated 2019 landings in the recreational fishery were 3,537 mt = 7.798 million lb. Total commercial and recreational landings in 2019 were 7,646 mt = 16.857 million lb. Commercial discards in 2019 were estimated at 783 mt = 1.726 million lb. Recreational discards in 2019 were estimated at 1,379 mt = 3.040 million lb. Total commercial and recreational discards in 2019 were 2,162 mt = 4.770 million lb. The estimated total catch in 2019 was 9,808 mt = 21.623 million lb.

Catch and Status Table: Summer flounder

Catch weights and spawning stock biomass are in metric tons (mt); recruitment is in millions of age 0 fish; min, max and arithmetic mean values are for 1982-2019. Commercial catches are latest reported landings and estimated discards. Recreational catches in the table are ‘New’ MRIP calibrated landings and discard estimates.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Commercial landings	6,078	7,517	5,918	5,696	4,989	4,858	3,537	2,644	2,787	4,109
Commercial discards	1,478	1,143	754	863	830	703	772	906	979	783
Recreational landings	5,142	6,116	7,318	8,806	7,364	5,366	6,005	4,565	3,447	3,537
Recreational discards	2,710	2,711	2,172	2,119	2,092	1,572	1,482	1,496	1,003	1,379
Catch used in assessment	15,408	17,487	16,163	17,483	15,275	12,498	11,796	9,611	8,216	9,808
Spawning stock biomass	62,137	56,467	60,957	53,700	49,600	44,212	41,313	39,516	41,403	47,397
Recruitment (age 0)	51	31	35	37	41	28	33	45	61	49
Fully selected F (age 4)	0.378	0.446	0.409	0.461	0.424	0.419	0.414	0.331	0.286	0.340

Year	Min	Max	Mean
Commercial landings	2,644	17,130	7,018
Commercial discards	219	2,151	1,101
Recreational landings	2,566	16,655	7,644
Recreational discards	84	2,711	1,223
Catch used in assessment	8,216	30,470	16,784
Spawning stock biomass	7,425	67,498	39,053
Recruitment (age 0)	12	102	53
Fully selected F (age 4)	0.254	1.624	0.727

Stock Distribution and Identification: The joint Mid-Atlantic Fishery Management Council (MAFMC) and Atlantic States Marine Fisheries Commission (ASMFC) Fishery Management Plan for summer flounder defines the management unit as all summer flounder from the southern border of North Carolina and to the northeast to the US-Canada border. The current management unit is consistent with a summer flounder genetics study which revealed no population subdivision at Cape Hatteras (Jones and Quattro 1999). For assessment purposes, the definition of Wilk et al. (1980) of a unit stock extending from Cape Hatteras north to New England has been accepted in this and previous assessments. A consideration of summer flounder stock structure incorporating tagging data supported the existence of stocks north and south of Cape Hatteras, with the stock north of Cape Hatteras possibly composed of two distinct spawning aggregations, off New Jersey and Virginia-North Carolina (Kraus and Musick 2003). The stock unit used in this assessment is consistent with the conclusions of Wilk et al. (1980) and Kraus and Musick (2003).

Assessment Model: The assessment approach implemented for summer flounder is a complex statistical catch-at-age model incorporating a broad array of fishery and survey data (ASAP SCAA; Legault and Restrepo 1998, NFT 2013a; NEFSC 2013, 2018). The catch in the model includes both commercial and recreational fishery landings and discards at age. The commercial and recreational fishery landings and discards are treated as four separate fleets in the model. The model assumes an averaged-over-ages instantaneous natural mortality rate (M) = 0.25.

Indices of stock abundance, including age compositions from the NEFSC winter, spring, and fall, Massachusetts spring and fall, Rhode Island fall and monthly, Connecticut spring and fall, Delaware, New York, New Jersey, VIMS ChesMMap, and VIMS NEAMAP spring and fall trawl surveys, were used in the ASAP model calibration. Aggregate indices of stock abundance from the URI GSO trawl survey and NEFSC MARMAP and ECOMON larval surveys, and recruitment indices (age 0; Young-Of-the-Year, YOY) from surveys conducted by the states of Massachusetts, Delaware, Maryland, Virginia and North Carolina were also used in the model calibration. For the NEFSC indices, the years sampled by the FSV HB Bigelow (2009-2019) were treated as a separate series from the earlier years (1982-2008) that were sampled by the FSV Albatross IV. The Bigelow indices take into account trawl efficiency at length and wing spread by tow. All indices were updated for this assessment.

The summer flounder stock assessment historically exhibited a retrospective pattern of underestimation of F and overestimation of SSB . However, there is not a major retrospective pattern evident in the current summer flounder assessment model. The minor internal model retrospective error tends to overestimate F by +1% and overestimate SSB by +3% over the last 7 terminal years. The model estimates of F and SSB adjusted for internal retrospective error are within the model estimate 90% confidence intervals and so no adjustment of these terminal year estimates has been made for stock status determination or projections. The ‘historical’ retrospective analysis (comparison between assessments) indicates that the general trends in spawning stock biomass, recruitment, and fishing mortality have been consistent over the history of the assessment (Figure 6).

Biological Reference Points

The 2013 SAW 57 (NEFSC 2013) biological reference points for summer flounder were based on stochastic yield and SSB per recruit and stochastic projection models in the NSAA NFT framework (NEFSC 2013; NFT 2013b, c; Thompson and Bell 1934) using values from the 2013 assessment. The associated threshold fishing mortality reference point was $F_{35\%} = 0.309$ ($CV = 15\%$) as a proxy for F_{MSY} . The biomass reference point proxy was estimated as the projection of stock sizes at $F_{35\%} = 0.309$ and mean recruitment of 43 million fish per year (1982-2012). The SAW-57 target biomass SSB_{MSY} proxy was estimated to be 62,394 mt (137.6 million lb; $CV = 13\%$) and the threshold biomass of one-half SSB_{MSY} was estimated to be 31,197 mt (68.8 million lb; $CV = 13\%$). The MSY proxy was estimated to be 12,945 mt (28.539 million lb; $CV = 13\%$).

The 2018 SAW 66 (NEFSC 2018) biological reference points for summer flounder were similarly based on stochastic yield and SSB per recruit and stochastic projection models. The threshold fishing mortality reference

point estimate was $F_{35\%} = 0.448$ (CV = 15%) as a proxy for FMSY. The biomass reference point proxy was estimated as the projection of stock sizes at $F_{35\%} = 0.448$ and mean recruitment of 53 million fish per year (1982-2017). The target biomass SSB_{FMSY} proxy was estimated to be 57,159 mt (126.0 million lb; CV = 15%) and the threshold biomass of one-half SSB_{FMSY} was estimated to be 28,580 mt (63.0 million lb; CV = 15%). The MSY proxy was estimated to be 15,973 mt (35.214 million lb; CV = 15%). The increase in the F reference point (and MSY) but decrease in the biomass reference point compared to the 2013 SAW 57 values were a result of changes in mean weights at age and selectivity.

The $F_{35\%}$ and corresponding SSB_{35%} proxy biological reference points for summer flounder were updated for this 2021 MTA. The updated fishing mortality threshold $F_{35\%}$ proxy for FMSY = 0.422 (CV = 15%). The updated biomass target proxy estimate for SSB_{FMSY} = SSB_{35%} = 55,217 mt (122 million lb; CV = 15%) and the updated biomass threshold proxy estimate for one-half SSB_{FMSY} = one-half SSB_{35%} = 27,609 mt (61 million lb; CV = 15%). The updated MSY proxy = 15,872 mt (35 million lb; CV = 15%).

Qualitative status description:

The age structure in current fishery and survey catches is greatly expanded compared to the truncated distribution observed in the late 1980s to early 1990s. Although survey indices and model estimates of recruitment have generally been below average in recent years, the driver of this pattern has not been identified and it is not clear if this pattern will persist in the future (NEFSC 2018). The recent 2018 year class is above average and the largest to recruit to the stock since 2009, while the 2019 year class is below average.

Research and Data Issues:

2018 SAW 66

Continue to explore changes in the distribution of recruitment. Develop studies, sampling programs, or analyses to better understand how and why these changes are occurring, and the implications to stock productivity: *no new research progress, note that recruitment improved in 2018-2019*

The reference points are internally consistent with the current assessment. It may be useful to carry uncertainty estimates through all the components of the assessment, BRPs, and projections: *no new research progress, models of S-R data continue to indicate that steepness is very close to 1*

Explore the potential mechanisms for recent slower growth that is observed in both sexes: *no new research progress, ongoing monitoring in assessment*

MAFMC SSC 2019-2020

Evaluate the causes of decreased recruitment and changes in the recruit per spawner relationship in recent years: *no new research progress, however, note that R/SSB ratio has stabilized as the stock has varied near BMSY*

Evaluate uncertainties in biomass to determine potential modifications to the OFL
CV employed: *SSC has developed new procedures for establishing the OFL CV*

Evaluate fully the sex and size distributions of landed and discarded fish in the Summer Flounder fisheries: *no progress in implementing by-sex fishery sampling*

Evaluate the effects of past and possible future changes to size regulations on retention and selectivity in stock assessments and projections: *ongoing monitoring in assessment*

Incorporate sex-specific differences in size-at-age into the stock assessment through model structures as well as data streams: *no new data streams; however ASAP by-sex model updated through 2018 and NEFSC WHAM state-space by-sex model in development*

Validate the otolith-based age determination: *no explicit validation, however, going aging method exchanges have insured consistency among the major aging labs (NEFSC, NCDMF, VIMS, ODU, CTDEEP, and NYDEC)*

Further develop understanding of effects of ecosystem changes (e.g., temperature, trophic structure changes) on population dynamics: *new publication in the primary literature (O'Leary et al. 2019, a,b; Gulf Stream Index and exploitation influences on growth and natural mortality).*

The MAMFC SSC expressed some concern in 2020 that the rebuilding of the stock does appear to be rapid. It was noted that rebuilding was predicted to be slow under the harvest policy adopted: *updated projections through 2023 in the 2021 MTA*

The above average 2018 year class will not fully recruit to the fishery for 3 or 4 years (2021-2022). There are concerns about increasing discards during this transition. Quantify the size, magnitude, and uncertainty of the discards: *updated estimates of discards through 2019 in the 2021 MTA*

Verifying the strength of the 2018 year class based on a synthesis of the various surveys included in the assessment. (3 years of data on this year class will be available): *only 1 complete year of surveys available (2019) due to survey cancellations and limited fishery sample data in 2020*

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Tables

Table 1. Summary assessment results for summer flounder; Spawning Stock Biomass (SSB) in metric tons (mt); Recruitment (R) at age 0 in thousands; Fishing mortality (F) for age of peak fishery selection age (S = 1 at age 4).

Year	SSB	R	F
1982	30,495	81,800	0.746
1983	28,928	101,925	1.076
1984	24,283	46,637	1.228
1985	21,792	77,833	1.257
1986	22,152	80,928	1.332
1987	22,859	53,742	1.285
1988	12,567	12,412	1.624
1989	7,425	36,821	1.284
1990	12,112	43,817	0.857
1991	14,058	47,513	1.064
1992	13,077	47,093	1.179
1993	14,550	43,789	1.006
1994	15,921	58,204	0.958
1995	21,072	78,066	1.449
1996	28,850	59,204	1.164
1997	35,527	52,048	0.765
1998	35,172	54,069	0.790
1999	36,039	43,641	0.572
2000	40,731	59,752	0.682
2001	51,708	63,956	0.456
2002	60,095	66,736	0.419
2003	67,498	49,184	0.404
2004	62,534	70,761	0.433
2005	58,923	39,791	0.452
2006	62,295	47,732	0.333
2007	61,370	52,195	0.254
2008	61,847	61,846	0.321
2009	63,421	73,524	0.342
2010	62,137	50,724	0.378
2011	56,467	31,381	0.446
2012	60,957	34,576	0.409
2013	53,700	36,792	0.461
2014	49,600	41,146	0.424
2015	44,212	28,416	0.419
2016	41,313	33,088	0.414
2017	39,516	44,582	0.331
2018	41,403	60,598	0.286
2019	47,397	48,689	0.340

Table 2. Total catch (metric tons) of summer flounder from Maine through North Carolina. Includes the 'New' MRIP calibrated estimates of recreational catch.

Year	Comm Landings	Comm Discards	Comm Catch	Recr Landings	Recr Discards	Recr Catch	Total Landings	Total Discards	Total Catch
1982	10,400	n/a	10,400	10,758	250	11,008	21,158	250	21,408
1983	13,403	n/a	13,403	16,665	356	17,022	30,068	356	30,425
1984	17,130	n/a	17,130	12,803	537	13,340	29,933	537	30,470
1985	14,675	n/a	14,675	11,405	184	11,589	26,080	184	26,264
1986	12,186	n/a	12,186	12,005	646	12,651	24,191	646	24,837
1987	12,271	n/a	12,271	10,638	668	11,306	22,909	668	23,577
1988	14,686	n/a	14,686	9,429	483	9,912	24,115	483	24,598
1989	8,125	456	8,581	2,566	84	2,650	10,691	540	11,231
1990	4,199	898	5,097	3,517	414	3,931	7,716	1,312	9,028
1991	6,224	219	6,443	5,854	617	6,470	12,078	836	12,914
1992	7,529	2,151	9,680	5,746	559	6,305	13,275	2,710	15,985
1993	5,715	701	6,416	6,228	703	6,931	11,943	1,404	13,347
1994	6,588	1,539	8,127	6,481	409	6,889	13,069	1,947	15,016
1995	6,977	827	7,804	4,090	589	4,679	11,067	1,415	12,482
1996	5,861	1,436	7,297	6,813	624	7,437	12,674	2,060	14,734
1997	3,994	807	4,801	8,403	663	9,066	12,397	1,470	13,867
1998	5,076	638	5,714	10,368	997	11,365	15,444	1,635	17,079
1999	4,820	1,666	6,486	7,573	1,078	8,651	12,393	2,744	15,138
2000	5,085	1,620	6,705	12,259	1,182	13,441	17,344	2,802	20,146
2001	4,970	411	5,381	8,417	1,897	10,314	13,387	2,308	15,695
2002	6,573	948	7,521	7,388	1,564	8,952	13,961	2,512	16,473
2003	6,450	1,160	7,610	9,746	1,867	11,614	16,196	3,028	19,224
2004	7,880	1,628	9,508	9,616	1,833	11,449	17,496	3,461	20,958
2005	7,671	1,499	9,170	8,412	1,711	10,123	16,083	3,210	19,293
2006	6,316	1,518	7,834	8,452	1,583	10,034	14,768	3,100	17,868
2007	4,544	2,128	6,672	6,300	1,801	8,101	10,844	3,929	14,773
2008	4,179	1,162	5,341	5,597	1,970	7,567	9,776	3,132	12,909
2009	5,013	1,522	6,535	5,288	2,484	7,771	10,301	4,006	14,307
2010	6,078	1,478	7,556	5,142	2,710	7,852	11,220	4,188	15,408
2011	7,517	1,143	8,660	6,116	2,711	8,827	13,633	3,854	17,487
2012	5,918	754	6,672	7,318	2,172	9,490	13,236	2,927	16,163
2013	5,696	863	6,559	8,806	2,119	10,925	14,502	2,981	17,483
2014	4,989	830	5,819	7,364	2,092	9,456	12,353	2,922	15,275
2015	4,858	703	5,561	5,366	1,572	6,938	10,224	2,274	12,498
2016	3,537	772	4,309	6,005	1,482	7,487	9,542	2,254	11,796
2017	2,644	906	3,550	4,565	1,496	6,061	7,209	2,402	9,611
2018	2,787	997	3,784	3,447	1,003	4,450	6,234	1,982	8,216
2019	4,103	783	4,892	3,537	1,379	4,916	7,646	2,162	9,808

Figures

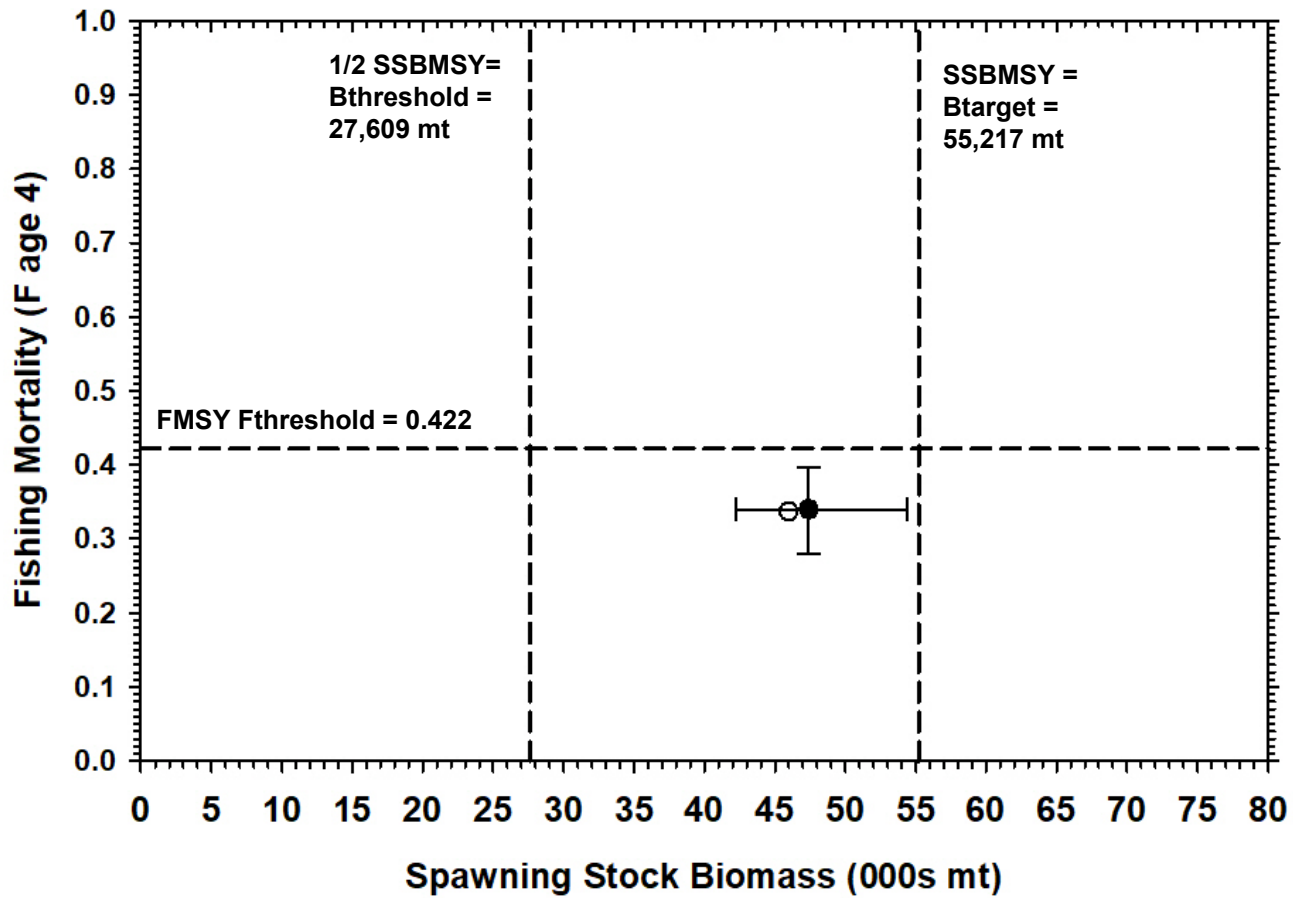


Figure 1. Estimates of summer flounder spawning stock biomass (SSB) and fully-recruited fishing mortality (F, peak at age 4) relative to the updated 2021 MTA biological reference points. The filled circle with 90% confidence intervals shows the assessment point estimates. The open circle shows the retrospectively adjusted estimates.

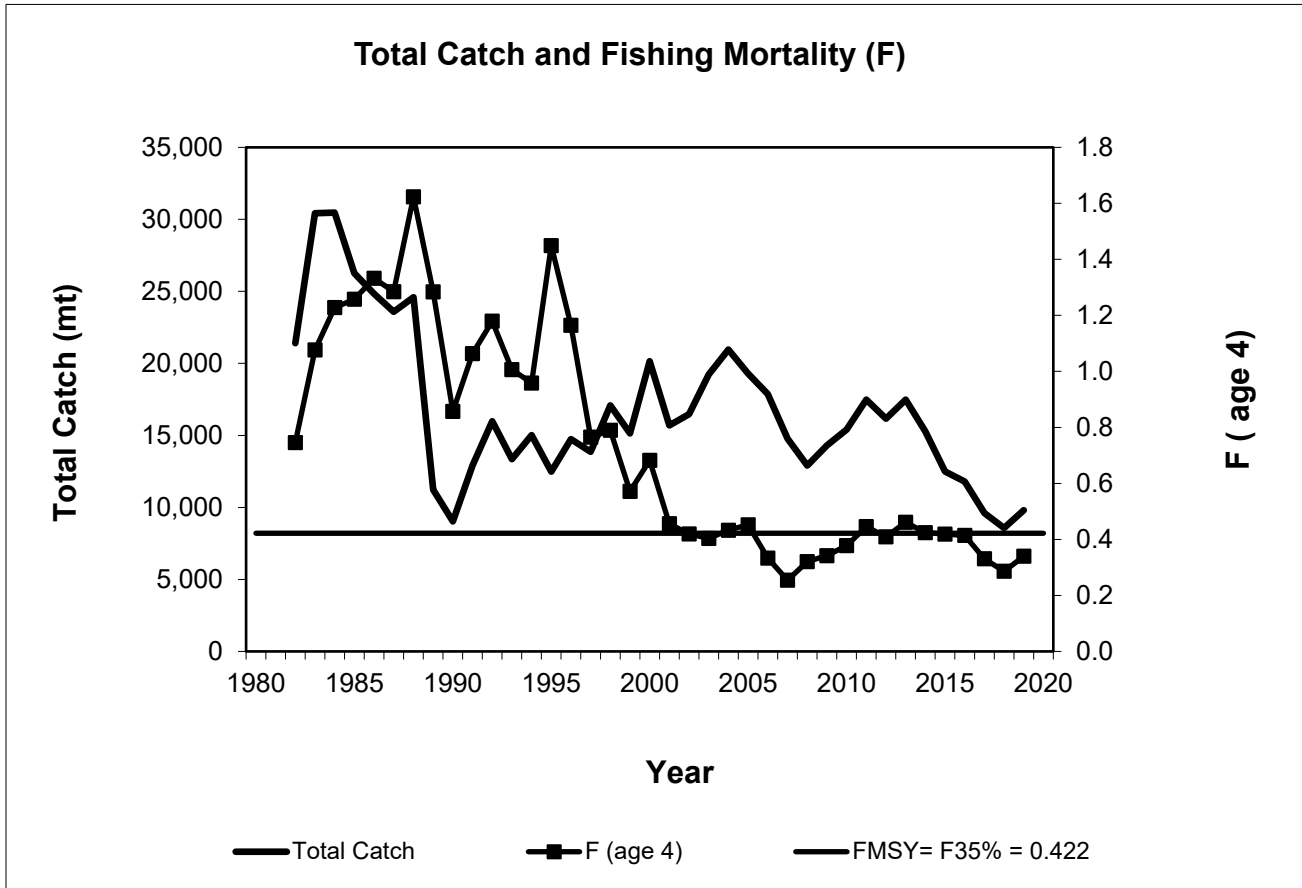


Figure 2. Total fishery catch (metric tons; mt; solid line) and fully-recruited fishing mortality (F, peak at age 4; squares) of summer flounder through 2019. The horizontal solid line is the updated 2021 MTA threshold fishing mortality reference point proxy.

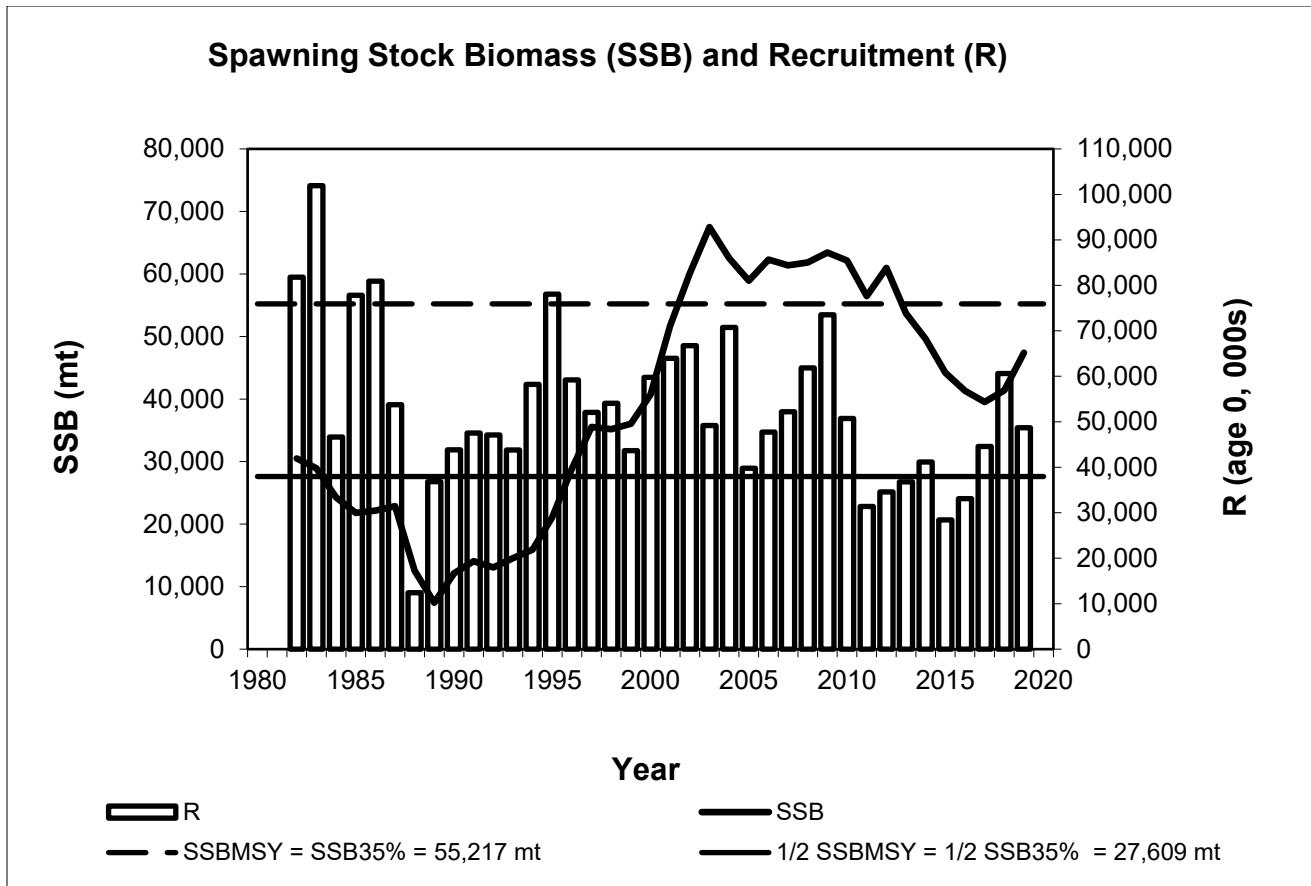


Figure 3. Summer flounder spawning stock biomass (SSB; solid line) and recruitment at age 0 (R; vertical bars) by calendar year through 2019. The horizontal dashed line is the updated 2021 MTA target biomass reference point proxy. The horizontal solid line is the updated 2021 MTA threshold biomass reference point proxy.

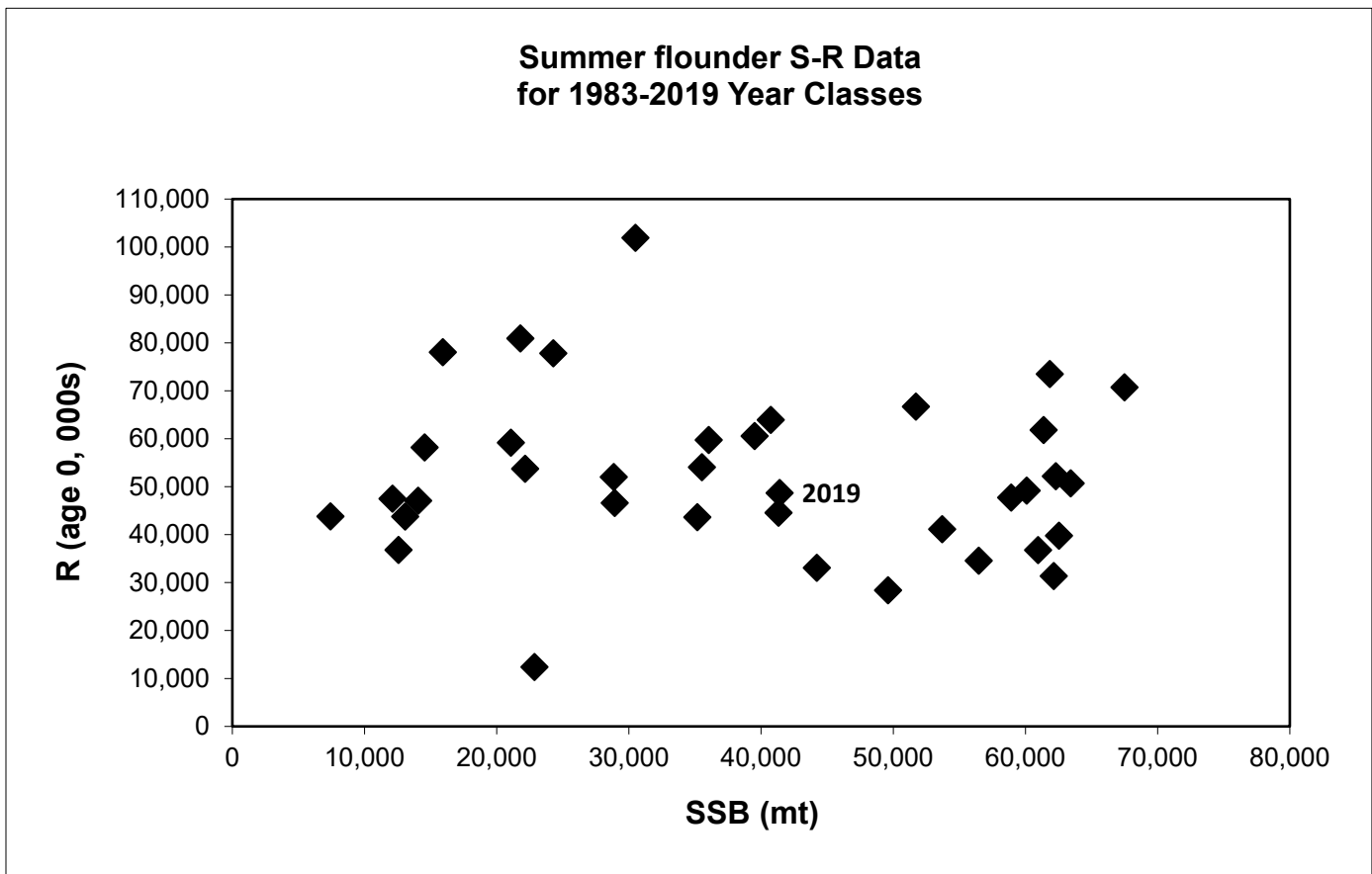


Figure 4. Stock-recruitment (SSB-R) scatter plot for the summer flounder 1983-2019 year classes. The largest recruitment (R) point is for the 1983 year class (R = 102 million, SSB = 30,495 mt). The lowest recruitment point is for the 1988 year class (R = 12 million, SSB = 22,859 mt). The 2018 year class is at R = 61 million, SSB = 39,516 mt; the 2019 year class is at R = 48 million, SSB = 41,403 mt.

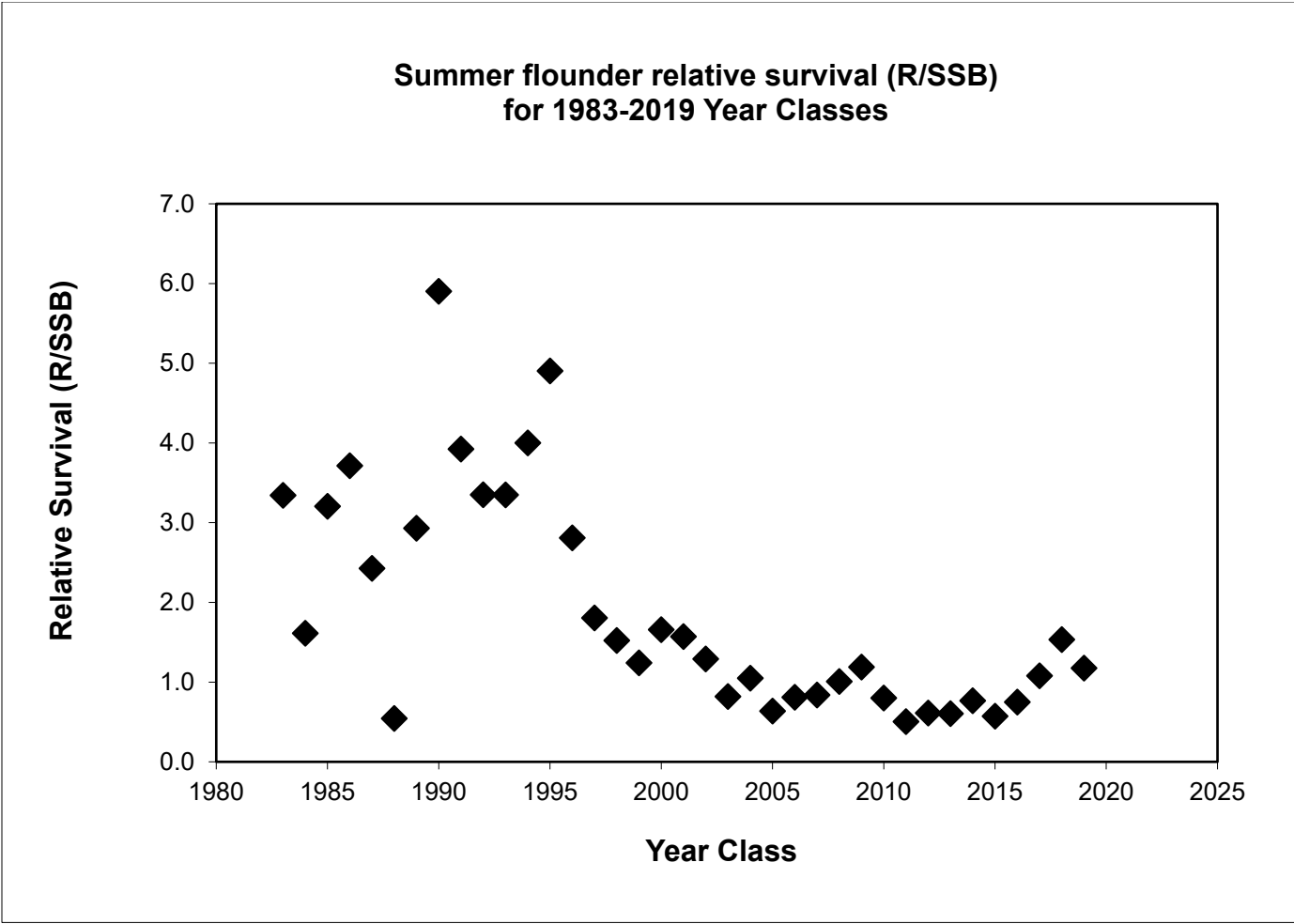


Figure 5. Recruits per Spawning Stock Biomass plot (R/SSB) indicative of the relative survival of the summer flounder 1983-2019 year classes.

Summer Flounder Historical Retrospective 1990-2021 Stock Assessments

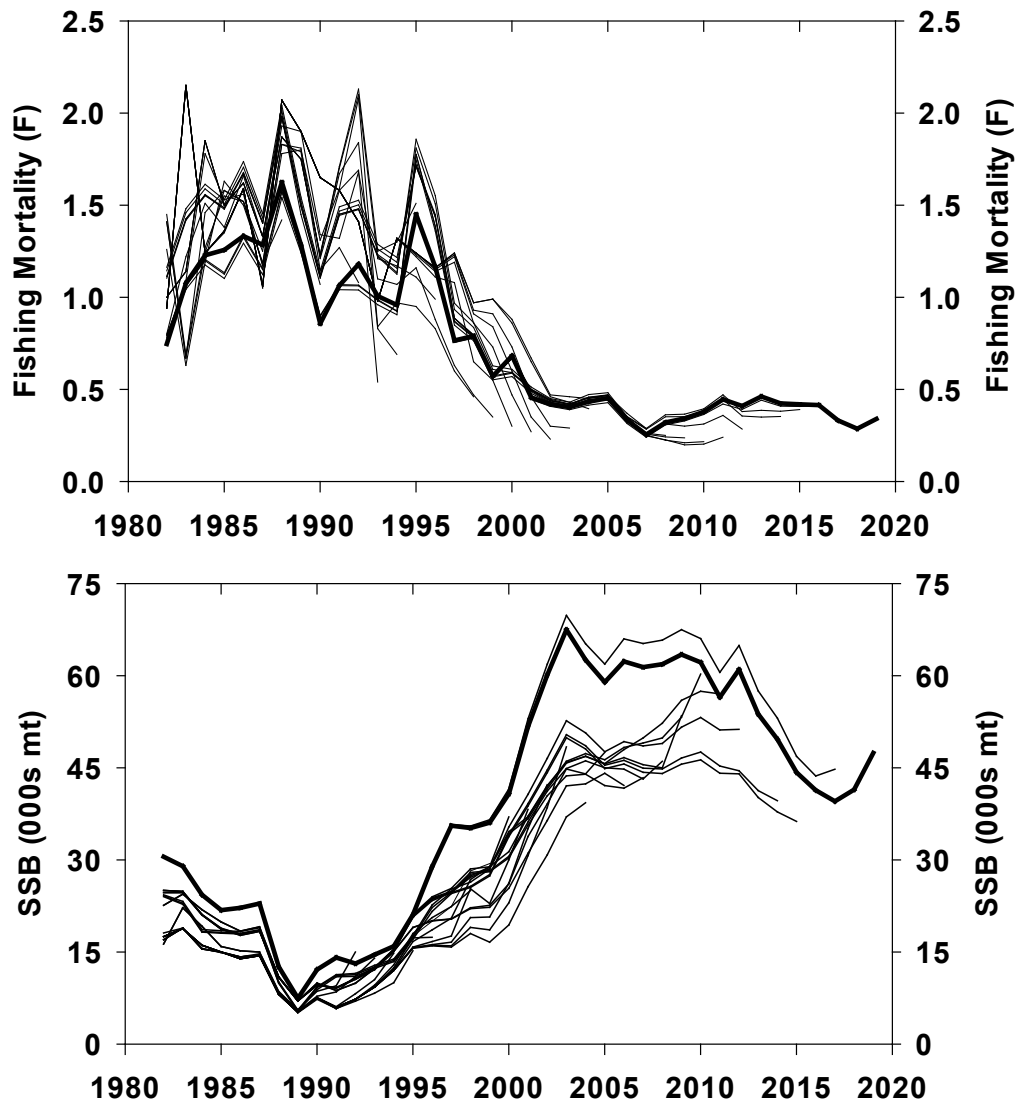


Figure 6. Historical retrospective of the 1990-2021 stock assessments of summer flounder. The heavy solid lines are the 2021 MTA model estimates.



Summer Flounder, Scup, and Black Sea Bass Fishery Performance Report June 2021

The Mid-Atlantic Fishery Management Council's (Council's) Summer Flounder, Scup, and Black Sea Bass Advisory Panel (AP) met jointly with the Atlantic States Marine Fisheries Commission's (Commission's) Summer Flounder, Scup, and Black Sea Bass AP on June 21, 2021 to review the Fishery Information Documents and develop the following Fishery Performance Report for the three species. The primary purpose of this report is to contextualize catch histories for the Scientific and Statistical Committee (SSC) by providing information about fishing effort, market trends, environmental changes, and other factors.

Please note: Advisor comments described below are not necessarily consensus or majority statements.

Additional comments provided by advisors via email are attached to this document.

Council Advisory Panel members present: Carl Benson (NJ), Joan Berko (NJ), Bonnie Brady (NY), Jeff Deem (VA), Skip Feller (VA), James Fletcher (NC), Hank Lackner (NY), Mike Plaia (CT), Bob Pride (VA), Doug Zemeckis (NJ)

Commission Advisory Panel members present: Marc Hoffman (NY), Mike Plaia (RI)

Others present: Chris Batsavage (Council/Board member, NC DMF), Julia Beaty (MAFMC Staff), John Boreman (SSC), Dustin Colson Leaning (ASMFC Staff), Karson Coutré (MAFMC Staff), Kiley Dancy (MAFMC Staff), Savannah Lewis (ASMFC Staff), Tony DiLernia (Council member), Steve Doctor (MD DNR), Emily Keiley (NMFS GARFO), Paul Rago (SSC Chair), Angel Willey (MD DNR)

Discussion questions

1. What factors influenced recent catch (markets/economy, environment, regulations, other factors)?
2. Are the current fishery regulations appropriate? How could they be improved?
3. What would you recommend as research priorities?
4. What else is important for the Council to know?

General Comments

Recreational Data Concerns

A few advisors expressed concern with the Marine Recreational Information Program (MRIP) data, which they see as inaccurate and fundamentally flawed. One advisor said the entire program needs an overhaul. Another advisor said he has been following the development of National Marine Fisheries Service (NMFS) recreational data collection programs for over 30 years and has not seen any notable improvement in the estimates over that time. He believes the problem with MRIP lies in sample sizes that are too small, as well as extrapolation of interviews that tend to be biased toward people who catch more fish. He suggested that more creative management approaches that do not rely so heavily on flawed data are needed for the recreational fishery.

Another advisor added that an accurate count of all saltwater recreational anglers is needed to comply with the Magnuson Stevens Act and to better manage recreational fisheries for all species.

Several advisors expressed concerns with the 2020 recreational catch estimates that were developed by MRIP using imputation methods to account for COVID-19 related data gaps in 2020. Several advisors asked about the percent standard errors (PSEs) for these estimates and said they would expect the uncertainty associated with these estimates to be much higher than normal. Others noted concerns with using recreational data from 2018 and 2019 in the imputation methods. For example, one advisor said recreational fishing trends were tremendously different in these years which may create biases in the 2020 estimates. Generally, advisors expressed concern about using these estimates in fishery performance evaluation and development of management measures without additional scrutiny.

COVID-19 Impacts

As described in more detail in the species-specific sections below, multiple advisors agreed that the COVID-19 pandemic had major impacts on commercial and recreational fishing effort in 2020. Advisors generally agreed that the pandemic had negative impacts on commercial markets and prices. However, they described a range of different impacts on recreational fisheries, as described below.

Environmental Conditions

One advisor said that since additional restrictions have been put on the menhaden fishery, there are more sharks inshore due to an overabundance of menhaden. He believes the increased abundance of sharks may be impacting other species, for example by chasing bluefish and striped bass offshore. He questioned what additional impacts sharks are having on managed species such as black sea bass and summer flounder. He also noted that while the Council is attempting to focus more on ecosystem based management approaches, predator/prey dynamics are not properly factored into current catch estimate data.

One advisor said the Council and Board need to address chemicals in the water, such as surfactants, that may negatively impact fish populations.

Management Issues

One advisor recommended further research into a common commercial minimum mesh size for summer flounder, scup, and black sea bass.

Summer Flounder

Market/Economic Conditions and COVID-19 Impacts on Commercial Fishing Effort

Many advisors agreed that COVID-19 had major impacts on commercial and recreational summer flounder fisheries in 2020. A few advisors said commercial effort was notably down for many summer flounder vessels in 2020 as lower market prices did not justify fuel and other trip costs. Restaurant closures had a big impact on markets and prices for summer flounder. Some vessels did not fish for most or all of the year, including one advisor who said that although he holds a commercial permit, he did not fish commercially due to low prices. One advisor said some vessels were having difficulty getting crews to work. Another advisor agreed and said he's heard that reliable crew is difficult to find in some circumstances given stimulus payments and increased unemployment benefits.

One advisor noted that the commercial size limit and other regulations have increased the size of landed fish to the point where the market for smaller fish has been lost to imports. There is not as much of a market for larger fish, as the filets are too big for single servings. This advisor supported lowering the commercial minimum size below 14 inches to allow targeting of smaller fish, and also supported evaluating a change in the minimum mesh size requirement to 5 inches.

Recreational Fishery

Advisors provided mixed comments on recreational effort and catch in 2020. One advisor said all marinas he talked to had seen reduced participation in the recreational fisheries, yet the MRIP data showed an increase in catch. He felt that these data did not match up with reality. Another advisor said the charter industry in Virginia was shut down for a good part of the season, and while he has heard managers say private boat fishery effort was up in 2020, he did not see that in his observations. People were more worried about taking care of their families and had economic concerns that limited private boat effort. He agreed that some of the MRIP data do not seem to match with reality. However, another advisor noted that overall recreational effort (for all species) seemed to be much higher than normal in 2020.

Environmental Conditions and General Fishing Trends

One advisor said summer flounder fishing was "off" last year and a lot of commercial and recreational fishermen were not targeting them or were catching very few. He said summer flounder came in late in the season, showing up in August instead of April or May, which is more typical. He noted that this could be due to the increased presence of sharks keeping fish offshore, as discussed in the "General Comments" section above.

Management Issues

For summer flounder in particular, one advisor noted concerns with the 2020 MRIP estimates using imputed 2018-2019 data given that 2018 and 2019 were "boom years" and 2020 was a "bust year" for summer flounder. He expressed frustration that MRIP does not seem to recognize mistakes in their calculations and that, in his view, the resulting estimates appear to be impossible.

One advisor asked whether commercial dead discards were primarily caused by regulatory discards and if so, if those discards were counted against the catch limits despite being unavoidable for the fishing vessel. Staff clarified that many, but not all, discards are regulatory and that all estimated summer flounder dead discards are counted against the annual catch limit. This same advisor also expressed frustration that managers have not seriously considered his proposal for a

recreational total length limit for summer flounder (i.e., a cumulative length limit where anglers can keep up to a specified total number of inches of fish) with mandatory retention of all fish caught until the length limit is reached.

Scup

Management Issues

Before the AP meeting, an industry representative from Lund's Fisheries requested that AP discuss the idea of increasing or removing the scup winter I quota period possession limit (currently 50,000 pounds) and decreasing the commercial minimum size from 9 inches to 8 inches.

Two advisors did not support moving to an 8 inch minimum size based on maturity concerns. One advisor added that having the minimum size closer to where the fish are 100% mature has contributed to scup's current high biomass and healthy stock status. One advisor supported decreasing the minimum size, stating that a smaller minimum size will not hurt anything and would bring smaller fish, preferred by some consumers, to the market. He added that tilapia imports have replaced market share for domestic fish due to its smaller size and requested a report on tilapia imports.

Two advisors said they did not support an increase in the winter I possession limit. One advisor said increasing the winter I possession limit would devastate New York's scup fishery because it would tank the price for the fresh fish market which many local fishermen depend on. One advisor expressed concern that an increase in the possession limit could result in vessels based in other states landing more scup in New York, especially vessels looking to shift their fishing effort from other species. This could decrease the price and negatively impact fisherman based in New York. Another advisor was also concerned that increasing the possession limit to 100,000 pounds would crash the market and added that fishermen generally do not land the full current possession limit anyway.

COVID-19 Impacts on Markets and Fishing Effort

One advisor said COVID-19 had major impacts on the scup market and prices, and therefore commercial scup landings. Another advisor said there was less recreational fishing effort due to COVID, especially on for-hire vessels as people avoided crowds. For this reason, he said the MRIP estimates of harvest do not make sense.

Recreational Fishery

One advisor reiterated comments made during the summer flounder discussion that the 2020 MRIP estimates using imputed 2018 and 2019 values are not realistic or believable. Another advisor added that after the incorporation of the new MRIP data in the assessments, 198% of the RHL was caught which is not believable because fewer people were fishing because of COVID. One advisor recommended that the same cumulative length limit approach described above for summer flounder be used in the recreational scup fishery. He suggested that this approach could first be tested for the shore-based recreational scup fishery before applying it to the entire recreational fishery.

Black Sea Bass

COVID-19 Impacts on Markets and Fishing Effort

One advisor said COVID-19 impacts on restaurants caused black sea bass prices to drop significantly and prices remain low. She added that the restaurant market for fresh fish is important in her area and prices may not rebound until restaurants recover from the pandemic impacts.

One advisor said charter boats operating in nearshore waters off Virginia Beach and Oregon Inlet had one of their best summers in 2020. He said these vessels mostly catch Spanish mackerel and bluefish, while the recreational black sea bass fishery in his area is almost entirely in federal waters. He said many trips reached full capacity and he attributed this to the COVID-19 stimulus payments. He noted that virtually all COVID-19 restrictions have been lifted in Virginia and there are minimal remaining impacts. For example, he said the for-hire industry in his area has not had a problem hiring and retaining crew members. Head boat sampling is still suspended, but captains have continued to submit vessel trip reports throughout the pandemic.

An advisor from New York said that in his area, charter boats barely fished during the spring and summer of 2020 due to COVID-19 restrictions and concerns about being around crowds. However, some charter boats began taking trips again in the fall.

Recreational Fishery

A few advisors repeated comments made earlier about their lack of faith in the MRIP data.

Although there was a recreational ACL overage in 2020, a payback will not be required due to the positive stock status of black sea bass. One advisor said this is unfair to the commercial industry as they are always required to payback quota overages, regardless of stock status.

One advisor said anglers fishing from private docks do not adhere to the black sea bass possession limit. He also said some recreational fishermen illegally sell their catch. He called for better information on the number of recreational anglers to improve the MRIP data.

One advisor said the February recreational black sea bass opening in Virginia was impacted by bad weather in 2021, but when vessels could go out, they caught a lot of black sea bass. He said December is also a good month for catching black sea bass and expressed a desire for a longer winter recreational opening.

One advisor asked how the outlier wave 1 2020 MRIP harvest estimate for black sea bass in North Carolina will be handled in the management process.

Biological Issues

One advisor claimed that most trawl surveys don't sample more than five miles from shore, yet black sea bass have been caught 100 miles from shore and farther in lobster pots. This could result in the stock assessment under-estimating biomass. He added that black sea bass are so abundant that they are wiping out shellfish populations and requested an emergency opening, including a year-round recreational possession limit of ten fish per day.

Research Recommendations

Three advisors recommended additional research on the impacts of electromagnetic fields on black sea bass. This is a concern due to the potential for thousands of miles of cables to be installed for offshore wind energy projects planned for the greater Atlantic region.

One advisor said more research is also needed on the potential impacts of pile driving (e.g., for installing wind turbine foundations) and seismic testing (used for oil and gas survey work) on fishery species. Another advisor added that impacts of sub-bottom profilers (used for site characterization for offshore wind energy projects) are also a concern.

Impacts of Offshore Wind Energy Development

One advisor said offshore wind energy development will destroy commercial fisheries and it would be preferable if wind energy projects could be placed closer inshore.

As described in the previous section, three advisors expressed concerns about electromagnetic fields on species such as black sea bass. One advisor noted that commercial fishermen purposefully fished near telecommunications cables when targeting scallops in the 1970s. They developed cable jumper gear specifically for this purpose.

One recreational fishery advisor said he has experienced great fishing for black sea bass near the two wind turbines that were installed off Virginia Beach. He's caught lots of keeper black sea bass as well as cobia and spadefish. He also observed sea turtles and lots of bait fish near the turbines. He hasn't experienced a negative impact from the cables. He said the boulders placed at the turbine foundations for scour protection have created a lot of new structured habitat in the area. However, he acknowledged that the impacts may be different for projects with more turbines compared to the two turbines where he has fished.

Additional Email Comments

Sent: Monday, June 21, 2021 7:02 PM
To: Beaty, Julia <jbeaty@mafmc.org>
Subject: AP Meeting Comments

Hi Julia:

The possibility of having to carry an observer was a big factor on the commercial BSB fishery due to COVID. Especially for potters, where if your gear is in the ocean and you are told you can't go out until you take an observer. Restaurants being closed was another factor. While there is some demand for head on fish, it isn't as much as pre-11 inch minimum size fish. They are primarily white tablecloth.

I agree with Jim Fletcher about needing research about chemicals in the water. Too much fertilizer and pesticides being applied with no controls near the bay and ocean. Also the effects of windmills and the construction of windmills. And the seismic blasting that Rutgers did in previous years to study "rock formations" scared all the fish away.

If I am still an AP advisor, meetings are always better in the afternoon, since I am usually fishing in the morning.

Joan Berko

From: PAUL CARUSO
Sent: Friday, June 25, 2021 11:03 AM
To: Dustin C. Leaning <DLeaning@asmfc.org>
Subject: [External] Re: Draft Fishery Performance Report from Monday's AP mtg for your review; reminder of next mtg

Him Dustin, Sorry I could not make the call. Too many things going on here. For what its worth we had a decent BSB season last year and this spring was decent. We have virtually no rec summer flounder fishery anymore nearshore and scup seem very abundant both last season and this.

To: [Beaty, Julia](#)
Subject: Re: Draft Fishery Performance Report from Monday's AP mtg for your review; reminder of next mtg
Date: Friday, June 25, 2021 8:21:12 PM

Julia

I had trouble getting on and called in from my phone, 732 278.... I agree that summer flounder minimum size should be lowered back to 13 inches. Feeding scavengers instead of harvesting this valuable resource makes no sense. I know the argument that these fish are not mature enough to spawn, but discards don't spawn. The harvest is constrained and trading fish that are mature for immature fish seems like a smart tradeoff.

Covid 2020 should just be eliminate from all evaluation methods. I did not exist.

Carl

From: HANK LACKNER

To: Beaty, Julia; Moore, Christopher; Luisi, Michael; Kiley Dancy

Subject: Re: AP Meeting for Fishery Performance Reports 6/21

Date: Tuesday, June 29, 2021 12:47:19 PM

Hello All,

I am sorry i couldnt stay on the AP call, but the illex squid derby is running wild.

Here a few thoughts I and others have moving forward..

These are my thoughts about raising the scup limit to 100,000 pounds in winter1.

1. This big trip limit opens this fishery to a whole new class of boats..That is boats with fish pumps and way larger vessels than currently participate. With that being said:

A. We must establish a control date immediately!!

B. We must then proceed to limited entry process!!

C.The winter1 fishery has historically been driven by supply and demand.. which was the determining factor on price..The market is currently a fresh market targeting large mature fish..

A 100,000 pound trip limit will destroy the fresh market.

The quota is going to be reduced this year and the larger trip limits will only lead to even more discards.

2. An 8 in size limit is a very poor management move. It will not reduce discards..In fact it may even increase them.. Boats will specifically target smaller scup and the end result will be way more discarding..

A. The fresh market will not be able to sell a scup that small..I have been told this by several Fulton dealers..

3. The small mesh exemption line..

This line should be completely removed.. Vessel should be allowed to possess up to 1000 pounds of summer flounder with small mesh no matter where they are fishing.. When on a directed summer flounder trip with a possession limit over 1000 pounds 5(FIVE) inch twine should be required.

It is important to remember the 72 30(small mesh line) was originated along time ago... As science now shows us, the vast majority of the summer flounder population lives east of that line..So everyone could have the exemption anyway.. Remember there were no scup GRAs back then either.

The way the fishery is now carried out, premium quality fluke get the best price..The only way to achieve that is by using big twine and catching the fluke “clean”. (no other species mixed in) ..And it is done now with mesh bigger than 5.5 inch..most do that to avoid dogfish and sea.robblins...Summer Flounder fisherman already regulate themselves.

4. Lastly, the council should adopt one mesh size for scup seabass and fluke..5 inch will work fine..The less gear fisherman drag around the ocean the better..It will be a money saver for boat owners.. Also remember 5 in is the size of the cover bag for loligo squid..A consistent twine size will be appreciated by all fisherman..

Thank You,

Hank Lackner

Kiley Dancy

From: James Fletcher <bamboosavefish@gmail.com>
Sent: Monday, July 26, 2021 1:36 PM
To: Didden, Jason; Hare, Jon; Kiley Dancy
Subject: UV EGGS not hatching

FMAT PDT for advisors ANY SCIENCE When are / will the managers address if eggs are maturing or are man made chemicals killing eggs at surface?

WHEN EGGS DO NOT HATCH CAN ANY MANAGEMENT BE SUCCESSFUL? COUNCIL STAFF, FMAT, PDT SCIENCE CENTER NMFS ANSWER THE QUESTION PLEASE.

A summer flounder report earlier in year showed flounder eggs DID NOT MATURE IN OCEAN AS CONTROLLED HATCHING IN LAB.

PERHAPS A DISCUSSION SHOULD BEGIN: JET FUEL IS DUMPED BY MILITARY. COMMERCIAL AIR LINERS DEPOSIT HOW MANY POUNDS OF SOOT PARTICLES PER TON OF JET FUEL.

ALL MATERIAL IS ON SURFACE OF OCEAN, Should the management look at things other than fishing?

BASIC SCIENCE QUESTION: nmfs STATES "OVER FISHED & OVER FISHING! YET NOTHING IS STATED WHERE IN CYCLE OF ABUNDANCE THE STOCK IS IN A GIVEN CYCLE.

WITHOUT ACKNOWLEDGING THE CYCLE ** HOW IS OVER FISHING ESTABLISHED? ******

Will bring up 7-27-2021

James Fletcher
United National Fisherman's Association
123 Apple Rd.
Manns Harbor, NC 27953
252-473-3287



Summer Flounder Fishery Information Document

June 2021

This document provides a brief overview of the biology, stock condition, management system, and fishery performance for summer flounder (*Paralichthys dentatus*) with an emphasis on 2020 (note that there are caveats associated with 2020 data due to COVID-19 related data gaps). Data sources include unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, as well as Marine Recreational Information Program (MRIP) data and stock assessment information. All 2020 data should be considered preliminary. For more resources on summer flounder management, including previous Fishery Information Documents, please visit <http://www.mafmc.org/sf-s-bsb>.

Key Facts:

- The 2018 benchmark stock assessment found that in 2017, summer flounder was not overfished and overfishing was not occurring. A management track update to this assessment is expected in July 2021.
- The 2019 and 2020 data updates showed signs of an above-average 2018 year class.
- Recreational data collection was limited in 2020 by COVID-19. MRIP released 2020 estimates derived using imputation methods incorporating data from 2018 and 2019. According to these estimates, 2020 recreational summer flounder harvest was 10.06 million pounds, about 131% of the harvest limit of 7.69 million pounds.
- Commercial landings in 2020 (9.11 million pounds; 79% of commercial quota) were similar to 2019 landings (9.06 million pounds; 83% of commercial quota). 2019 commercial fishery performance was impacted by a mid-year quota increase that the fishery was not able to fully take advantage of, while 2020 performance was impacted by the COVID-19 pandemic.
- Average commercial ex-vessel price continued to decline from its peak in 2017. The 2020 average price per pound of \$2.58 was the lowest average price since 2011.

Basic Biology

Summer flounder spawn during the fall and winter over the open ocean areas of the continental shelf. From October to May, larvae and postlarvae migrate inshore, entering coastal and estuarine nursery areas. Juveniles are distributed inshore and in many estuaries throughout the range of the species during spring, summer, and fall. Adult summer flounder exhibit strong seasonal inshore-offshore movements, normally inhabiting shallow coastal and estuarine waters during the warmer months of the year and remaining offshore during the colder months.

Summer flounder habitat includes pelagic waters, demersal waters, saltmarsh creeks, seagrass beds, mudflats, and open bay areas from the Gulf of Maine through North Carolina. Summer flounder are opportunistic feeders; their prey includes a variety of fish and crustaceans. While the

natural predators of adult summer flounder are not fully documented, larger predators (e.g., large sharks, rays, and monkfish) probably include summer flounder in their diets.¹

Spawning occurs during autumn and early winter, and the larvae are transported toward coastal areas by prevailing water currents. Development of post larvae and juveniles occurs primarily within bays and estuarine areas. Most fish are sexually mature by age 2. The largest fish are females, which can attain lengths over 90 cm (36 in) and weights up to 11.8 kg (26 lb). The Northeast Fisheries Science Center (NEFSC) commercial fishery sampling in 2018 observed the oldest summer flounder collected to date, a 57 cm fish (likely a male) estimated to be age 20. Also sampled were two age 17 fish, at 52 cm (likely a male) and at 72 cm (likely a female). Two large (likely female) fish at 80 and 82 cm were both estimated to be age 9, from the 2009 year class (the 6th largest of the 36 year modeled time series). These samples indicate that increased survival of summer flounder over the last two decades has allowed fish of both sexes to grow to the oldest ages estimated to date.²

Status of the Stock

The information below is based on the most recent stock assessment information available when this document was written. Updated stock assessment information will be available in July 2021.

The most recent benchmark summer flounder stock assessment was completed and reviewed during the 66th Stock Assessment Workshop and Stock Assessment Review Committee (SAW/SARC 66) in November 2018.³ This assessment uses a statistical catch at age model (the age-structured assessment program, or “ASAP” model). Stock assessment and peer review reports are available online at the NEFSC website: <http://www.nefsc.noaa.gov/saw/reports.html>.

The assessment incorporated the revised time series of recreational catch from MRIP, which is 30% higher on average compared to the previous summer flounder estimates for 1981-2017. The MRIP estimate revisions account for changes in both the angler intercept survey and recreational effort survey methodologies. While fishing mortality rates were not strongly affected by incorporating these revisions, increased recreational catch resulted in increased estimates of stock size compared to past assessments.

The biological reference points for summer flounder as revised through the recent benchmark assessment are described in Table 1.

Table 1: Summary of biological reference points and terminal year SSB and F estimates from the 2018 benchmark stock assessment.

	2018 stock assessment Biological Reference Points and stock status results (data through 2017)
SSB_{MSY} (biomass target)	126.01 mil lb (57,159 mt)
½ SSB_{MSY} (minimum stock size, or overfished, threshold)	63.01 mil lb (28,580 mt)
Terminal year SSB (2017)	98.22 mil lb (44,552 mt) 78% of SSB _{MSY} (not overfished)
F_{MSY PROXY} = F_{35%} (overfishing threshold)	0.448
Terminal year F (2017)	0.334 25% below F _{MSY} (not overfishing)

Assessment results indicate that the summer flounder stock was not overfished and overfishing was not occurring in 2017. Fishing mortality on the fully selected age 4 fish ranged between 0.744 and 1.622 during 1982-1996 and then decreased to 0.245 in 2007. Since 2007 the fishing mortality rate has increased, and in 2017 was estimated at 0.334, below fishing mortality threshold of 0.448 (Figure 1). The 90% confidence interval for F in 2017 was 0.276 to 0.380.

SSB decreased from 67.13 million lb (30,451 mt) in 1982 to 16.33 million lb (7,408) mt in 1989, and then increased to 152.46 million lb (69,153) mt in 2003. SSB has decreased since 2003 and was estimated to be 98.22 million lb (44,552 mt) in 2017, about 78% of $SSB_{MSY} = 126.01$ million lb (57,159 mt), and 56% above the $\frac{1}{2} SSB_{MSY}$ proxy = $\frac{1}{2} SSB_{35\%} = 63.01$ million lb (28,580 mt; Figure 2).³

Recruitment of juvenile summer flounder to the fishery has been below average since about 2011 (Figure 2). The driving factors behind this trend have not been identified. Bottom trawl survey data also indicate a recent trend of decreasing length and weight at age, which implies slower growth and delayed maturity. These factors affected the change in biological reference points used to determine stock status.

Data updates were received in 2019 and 2020 with updated catch and landings information as well as federal trawl survey indices (for both 2019 and 2020) and state indices (2019 only). The 2020 data update indicates that the NEFSC spring survey index of summer flounder stock biomass decreased by 4% from 2018 to 2019 and the fall index decreased by 36% from 2018 to 2019.⁴ Both data updates suggest that an above average year class recruited to the stock in 2018.^{2,4}

A management track assessment update to this assessment is expected in July 2021. This update will consist of rerunning the existing model with data through 2019. Given data gaps for 2020 related to COVID-19 and the time required to address those gaps where possible, 2020 data could not be incorporated into this update.

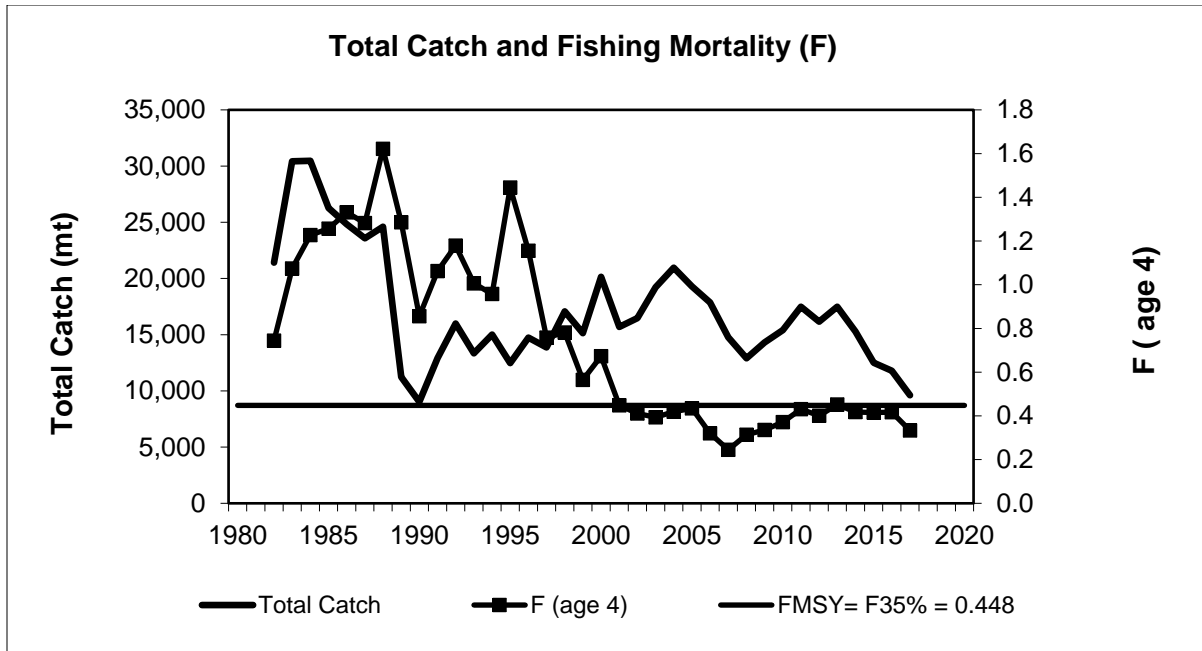


Figure 1: Total fishery catch (mt; solid line) and fully-recruited fishing mortality (F, peak at age 4; solid line with squares) of summer flounder. The horizontal solid line is the fishing mortality reference point proxy.³

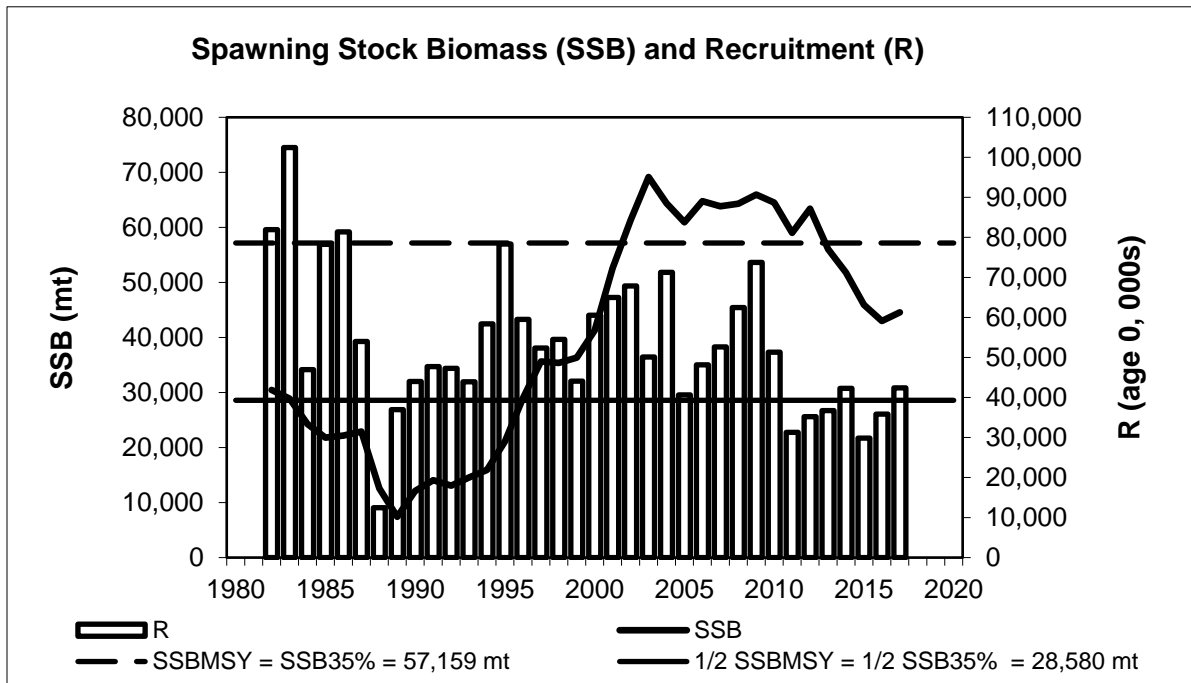


Figure 2: Summer flounder spawning stock biomass (SSB; solid line) and recruitment at age 0 (R; vertical bars) 1980-2017. The horizontal dashed line is the target biomass reference point. The horizontal solid line is the threshold biomass reference point.³

Management System and Fishery Performance

Management

The Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission (Commission or ASMFC) work cooperatively to develop fishery regulations for summer flounder off the east coast of the United States. The Council and Commission work in conjunction with NMFS, which serves as the federal implementation and enforcement entity. This cooperative management endeavor was developed because a significant portion of the catch is taken from both state (0-3 miles offshore) and federal waters (3-200 miles offshore, also known as the Exclusive Economic Zone, or EEZ).

The joint Fishery Management Plan (FMP) for summer flounder became effective in 1988 and established the management unit for summer flounder as U.S. waters from the southern border of North Carolina northward to the U.S.-Canadian border. The FMP also established measures to ensure effective management of summer flounder fisheries, which currently include catch and landings limits, commercial quotas, recreational harvest limits (RHLs), minimum fish sizes, gear regulations, permit requirements, and other provisions as prescribed by the FMP.

There are large commercial and recreational fisheries for summer flounder. These fisheries are managed primarily using output controls (catch and landings limits), with 60 percent of the total allowable landings allocated to the commercial fishery as a commercial quota and 40 percent allocated to the recreational fishery as a recreational harvest limit. The Council and Commission are considering an ongoing FMP amendment to determine if these allocation percentages should be revised to reflect more recent data. Other management measures include minimum fish sizes, gear regulations, permit requirements, and other provisions as prescribed by the FMP. The Summer Flounder FMP, including subsequent Amendments and Frameworks, are available on the Council website at: <http://www.mafmc.org/fisheries/fmp/sf-s-bsb>.

The Council's Scientific and Statistical Committee (SSC) recommends annual Acceptable Biological Catch (ABC) levels for summer flounder, which are then approved by the Council and Commission and submitted to NMFS for final approval and implementation. The ABC is divided into commercial and recreational Annual Catch Limits (ACLs), based on the landings allocation prescribed in the FMP and the recent distribution of discards between the commercial and recreational fisheries. The Council first implemented recreational and commercial ACLs, with a system of overage accountability, in 2012. Both the ABC and the ACLs are catch limits (i.e., include both projected landings and discards), while the commercial quota and the recreational harvest limit are landing limits.

COVID-19 Data Issues in 2020

The COVID-19 pandemic impacted data collection in both the recreational and commercial fisheries. While commercial effort and markets were impacted to various degrees, data collection for commercial landings from seafood dealers continued uninterrupted. However, 2020 commercial discard estimates will be affected by missing observer data. Commercial discard estimates are developed using Standardized Bycatch Reporting Methodology (SBRM) approaches that rely heavily on observer data. On March 20, 2020, NMFS temporarily waived the requirement for vessels with Greater Atlantic fishing permits to carry a fishery observer or at-sea monitor. This waiver was extended several times before observers were redeployed on August 14, 2020. At this

time it is not clear whether alternative methodologies will be developed to generate 2020 commercial discard estimates for summer flounder and other species.

For the recreational fishery, the mail and telephone surveys that collect effort data continued largely uninterrupted; however, the pandemic disrupted the Access Point Angler Intercept Survey (APAIS). All New England and Mid-Atlantic states suspended APAIS sampling starting in late March or April 2020. States resumed sampling between May and August 2020, depending on the state. NMFS used imputation methods to fill gaps in 2020 catch data with data collected in 2018 and 2019. These proxy data match the time, place, and fishing mode combinations that would have been sampled had the APAIS continued uninterrupted. Proxy data were combined with observed data to produce 2020 catch estimates using the standard estimation methodology. NMFS has indicated that when complete 2021 recreational data become available in 2022, they will evaluate the effects of including 2021 data (for example, alongside 2019 data and instead of 2018 data) in the imputation. Because these effects are unknown, the agency cannot predict whether it will seek to revise its 2020 catch estimates.

Fishery Landings Summary

Table 2 shows summer flounder catch and landings limits from 2008 through 2021, as well as commercial and recreational landings through 2020. Total (commercial and recreational combined) summer flounder landings generally declined throughout the early 1980s, and increased again in the mid-2000s before dropping to a time series low of 13.74 million lb in 2018 (Figure 3).^{5,6}

Table 2: Summary of catch limits, landings limits, and landings for commercial and recreational summer flounder fisheries from 2010 through 2021. Values are in millions of pounds.

Management measures	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 ^e
ABC	25.50	33.95	25.58	22.34	21.94	22.57	16.26	11.30	13.23	25.03	25.03	27.11
Commercial ACL	--	--	14.00	12.11	12.87	13.34	9.43	6.57	7.70	13.53	13.53	14.63
Commercial quota ^{a,b}	12.79	17.38	12.73	11.44	10.51	11.07	8.12	5.66	6.63	10.98	11.53	12.49
Commercial landings	13.40	16.57	13.05	12.56	11.00	10.71	7.80	5.87	6.17	9.06	9.11	--
% of commercial quota landed	105%	95%	102%	110%	105%	97%	96%	104%	93%	83%	79%	--
Recreational ACL	--	--	11.58	10.23	9.07	9.44	6.84	4.72	5.53	11.51	11.51	12.48
Recreational harvest limit ^a	8.59	11.58	8.49	7.63	7.01	7.38	5.42	3.77	4.42	7.69	7.69	8.32
Harvest - OLD MRIP	5.11	5.96	6.49	7.36	7.39	4.72	6.18	3.19	3.35	--	--	--
% of RHL landed (Old MRIP 2010-2018; New MRIP 2019-2020) ^c	59%	51%	76%	96%	105%	64%	114%	85%	76%	101%	131% ^d	--
Harvest - NEW MRIP	11.34	13.48	16.13	19.41	16.23	11.83	13.24	10.09	7.60	7.80	10.06 ^d	--

^a For 2010-2014, commercial quotas and RHLs are adjusted for Research Set Aside (RSA). Quotas and harvest limits for 2015-2021 do not reflect an adjustment for RSA due to the suspension of the program in 2014.

^b Commercial quotas also reflect deductions from prior year landings overages and discard-based Accountability Measures.

^c The revised MRIP data cannot be compared to RHLs prior to 2019, given that these limits were set based on an assessment that used previous MRIP data.

^d 2020 recreational estimates were developed using imputation methods (incorporating 2018 and 2019 data) to account for missing 2020 APAIS data.

^e The 2021 measures were revised in 2020 by the SSC, the Council, and the Commission in accordance with the Council's changes to their risk policy.

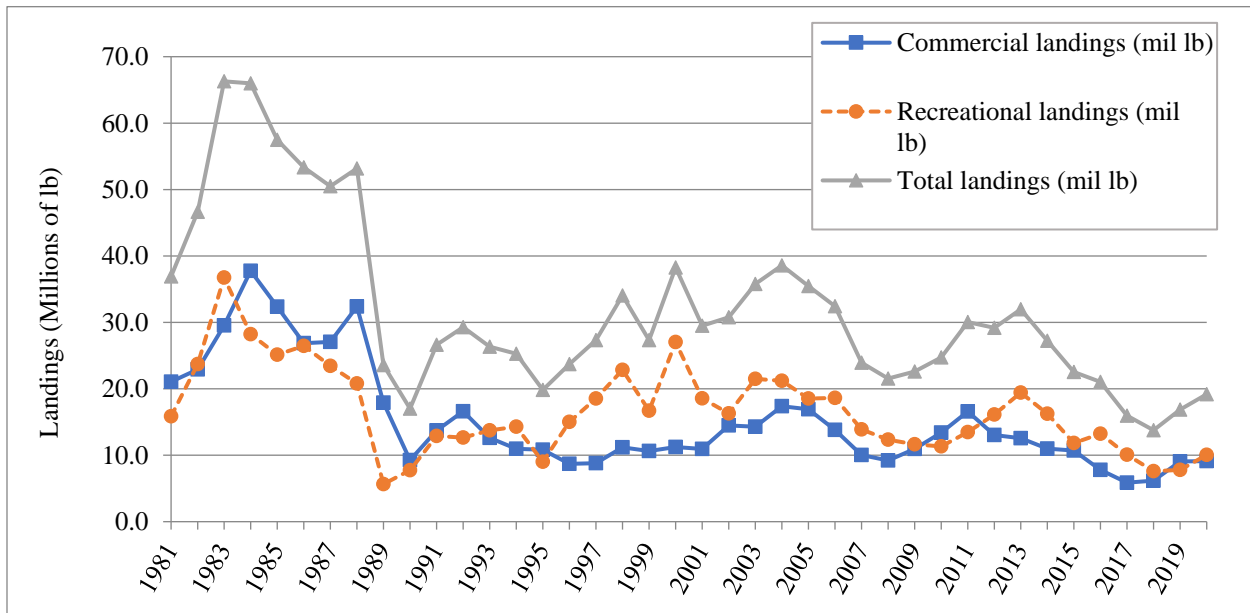


Figure 3: Commercial and recreational summer flounder landings in millions of pounds, Maine-North Carolina, 1981-2020. Recreational landings are based on revised MRIP data. 2020 recreational estimates were developed using imputation methods (incorporating 2018 and 2019 data) to account for missing 2020 APAIS data.^{5,6}

Commercial Fishery

Commercial landings of summer flounder peaked in 1984 at 37.77 million pounds and reached a low of 5.83 million pounds in 2017. In 2020, commercial fishermen from Maine through North Carolina landed 9.11 million pounds of summer flounder, about 79% of the commercial quota (11.53 million pounds; Table 2). Total ex-vessel value in 2020 was \$23.46 million, resulting in an average price per pound of \$2.58 (Figure 4).

A moratorium permit is required to fish commercially for summer flounder in federal waters. In 2020, 727 vessels held such permits.⁷

The commercial quota is divided among the states based on the allocation percentages specified in the FMP, and each state sets measures to achieve their state-specific commercial quotas. The commercial allocations to the states were modified via Amendment 21, which became effective on January 1, 2021. The revised allocation system modifies the state-by-state commercial quota allocations in years when the annual coastwide commercial quota exceeds the specified trigger of 9.55 million pounds. Annual coastwide commercial quota of up to 9.55 million pounds is distributed according to the previous state allocations (Table 3). In years when the coastwide quota exceeds 9.55 million pounds, the *additional* quota amount beyond this trigger will be distributed by equal shares to all states except Maine, Delaware, and New Hampshire, which would split 1% of the additional quota (Table 3). The total percentage allocated annually to each state is dependent on how much additional quota beyond 9.55 million pounds, if any, is available in any given year. This allocation system is designed to provide for more equitable distribution of quota when stock biomass is relatively higher, while also considering the historic importance of the fishery to each state.

Table 3: Previous (through 2020) and revised (effective January 2021) allocation of summer flounder commercial quota to the states.

State	Previous allocation of commercial quota	Revised allocation of commercial quota (total state allocation = baseline quota allocation + additional quota allocation)	
		Allocation of baseline quota ≤9.55 mil lb	Allocation of additional quota beyond 9.55 mil lb
ME	0.04756%	0.04756%	0.333%
NH	0.00046%	0.00046%	0.333%
MA	6.82046%	6.82046%	12.375%
RI	15.68298%	15.68298%	12.375%
CT	2.25708%	2.25708%	12.375%
NY	7.64699%	7.64699%	12.375%
NJ	16.72499%	16.72499%	12.375%
DE	0.01779%	0.01779%	0.333%
MD	2.03910%	2.03910%	12.375%
VA	21.31676%	21.31676%	12.375%
NC	27.44584%	27.44584%	12.375%
Total	100%	100%	100%

For 1994 through 2020, NMFS dealer data indicate that summer flounder total ex-vessel revenue from Maine to North Carolina ranged from a low of \$22.18 million in 1996 to a high of \$35.93 million in 2005 (values adjusted to 2020 dollars to account for inflation). The mean price per pound ranged from a low of \$1.88 in 2002 to a high of \$4.45 in 2017 (both values in 2020 dollars). In 2020, 9.11 million pounds of summer flounder were landed generating \$23.46 million in total ex-vessel revenue (an average of \$2.58 per pound; Figure 4).⁵

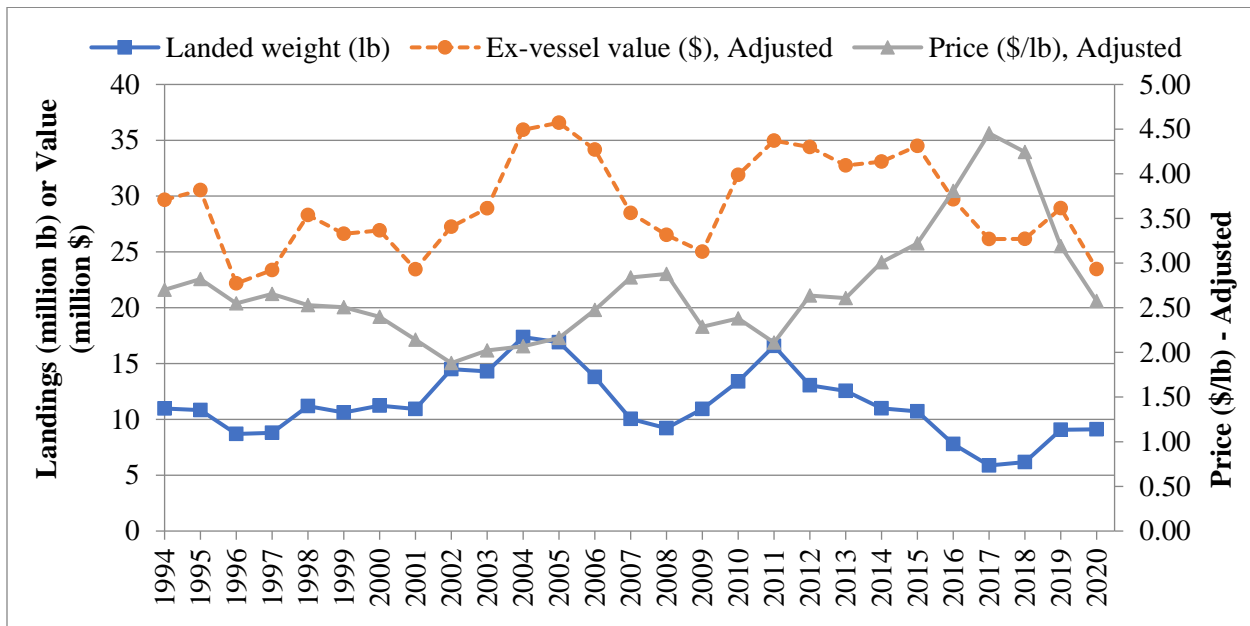


Figure 4: Landings, ex-vessel value, and price per pound for summer flounder, Maine through North Carolina, 1994-2020. Ex-vessel value and price are adjusted to real 2020 dollars using the Gross Domestic Product Price Deflator (GDPDEF).⁵

VTR data indicate that 99% of summer flounder landings in 2020 were taken by bottom otter trawls.⁸ Current regulations require a 14-inch total length minimum fish size in the commercial fishery. Trawl nets are required to have 5.5-inch diamond or 6-inch square minimum mesh in the entire net for vessels possessing more than the threshold amount of summer flounder (i.e., 200 lb from November 1-April 30 and 100 lb from May 1-October 31).

According to federal VTR data, statistical areas 537 and 616 were responsible for the highest percentage of commercial summer flounder catch in 2020 (28% and 22% respectively; Table 4). While statistical area 539 accounted for only 5% of 2020 summer flounder catch, this area had the highest number of trips that caught summer flounder (2,212 trips; Table 4; Figure 5).⁸

At least 100,000 pounds of summer flounder were landed by commercial fishermen in 16 ports in 8 states in 2020. These ports accounted for 89% of all 2020 commercial summer flounder landings. Point Judith, RI and Beaufort, NC were the leading ports in 2020 in pounds of summer flounder landed, while Point Judith, RI was the leading port in number of vessels landing summer flounder (Table 5).⁵ Detailed community profiles developed by the Northeast Fisheries Science Center’s Social Science Branch can be found at www.mafmc.org/communities/.

Over 181 federally permitted dealers from Maine through North Carolina bought summer flounder in 2020. More dealers from New York bought summer flounder than any other state (Table 6). All dealers combined bought approximately \$23.46 million worth of summer flounder in 2020.⁵

Table 4: Statistical areas that accounted for at least 5 percent of the total summer flounder catch in 2020, with associated number of trips.⁸ Federal VTR data do not capture landings by vessels only permitted to fish in state waters.

Statistical Area	Percent of 2020 Commercial Summer Flounder Catch	Number of Trips
537	28%	1,282
616	22%	789
613	17%	1,611
612	7%	1,069
539	5%	2,212

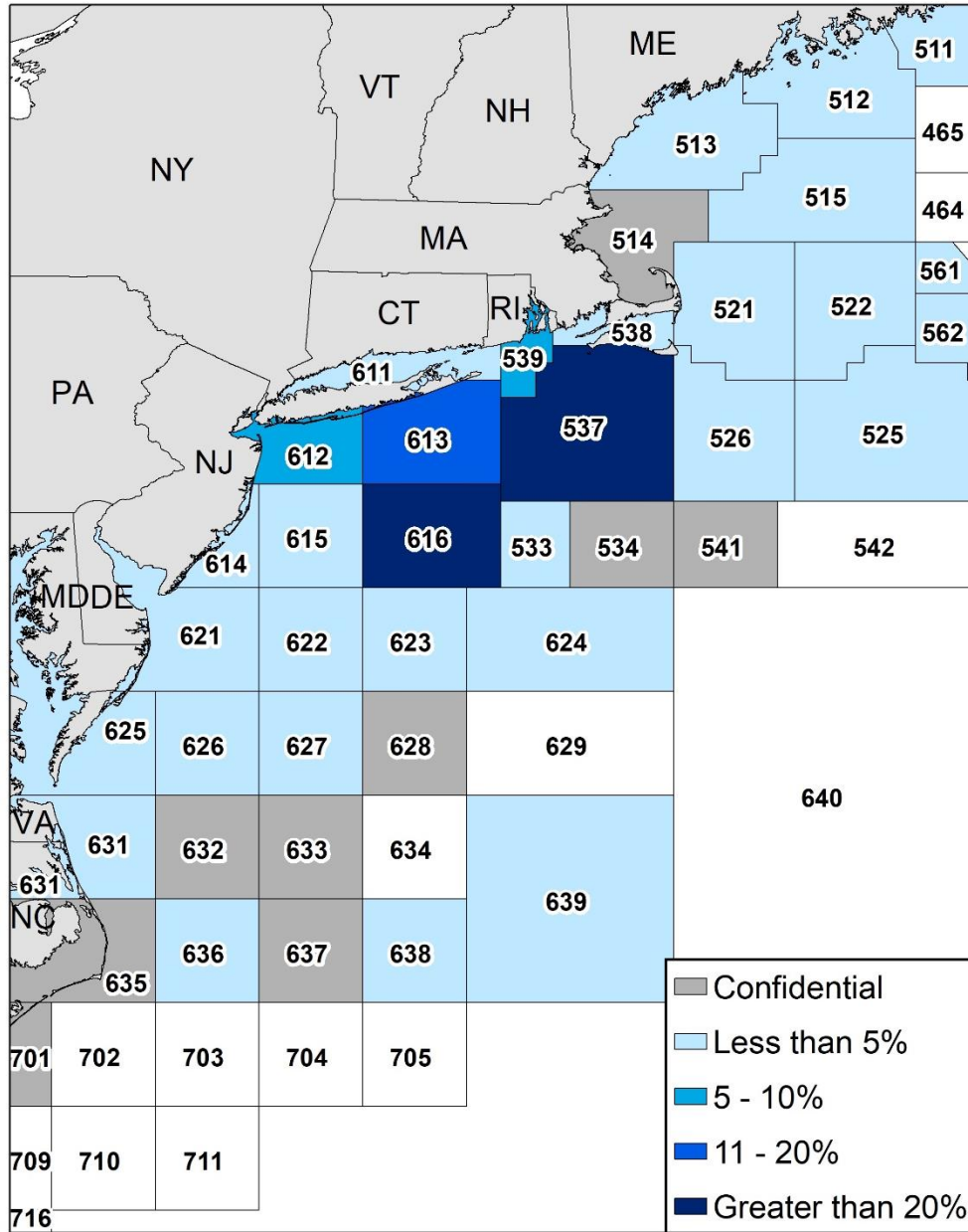


Figure 5: Proportion of summer flounder catch by NMFS statistical area in 2020 based on federal VTR data. Statistical areas marked “confidential” are associated with fewer than three vessels and/or dealers. Statistical areas with confidential data collectively accounted for less than 1% of commercial catch reported on VTRs in 2020. The amount of catch (landings and discards) that was not reported on federal VTRs (e.g., catch from vessels permitted to fish only in state waters) is unknown. For 2019, Northeast Fisheries Science Center Data (“AA tables”) suggested that 8% of total commercial landings (state and federal) were not associated with a statistical area reported in federal VTRs; AA data for 2020 are not available.⁸

Table 5: Ports reporting at least 100,000 pounds of commercial summer flounder landings in 2020, based on dealer data.⁵

Port	Commercial summer flounder landings (lb)	% of total	Number of vessels
POINT JUDITH, RI	1,542,676	17%	129
BEAUFORT, NC	1,318,762	14%	49
PT. PLEASANT, NJ	1,172,984	13%	43
HAMPTON, VA	771,905	8%	50
NEWPORT NEWS, VA	655,960	7%	37
MONTAUK, NY	498,696	5%	63
NEW BEDFORD, MA	435,794	5%	61
BELFORD, NJ	273,612	3%	15
CAPE MAY, NJ	261,116	3%	42
OCEAN CITY, MD	190,923	2%	14
ENGELHARD, NC	181,561	2%	8
HAMPTON BAYS, NY	179,540	2%	29
STONINGTON, CT	178,621	2%	16
WANCHESE, NC	159,709	2%	6
LONG BEACH/ BARNEGAT LIGHT, NJ	159,331	2%	16
CHINCOTEAGUE, VA	130,220	1%	16

Table 6: Number of dealers per state which reported purchases of summer flounder in 2020. C = Confidential.⁵

State	MA	RI	CT	NY	NJ	DE	MD	VA	NC
# of Dealers	27	29	12	46	30	C	5	13	19

Recreational Fishery

There is a significant recreational fishery for summer flounder, primarily in state waters when the fish migrate inshore during the warm summer months. The Council and Commission determine annually whether to manage the recreational fishery under coastwide measures or conservation equivalency. Under conservation equivalency, state- or region- specific measures are developed through the ASMFC’s management process and submitted to NMFS. The combined state or regional measures must achieve the same level of harvest as would a set of coastwide measures developed to adhere to the overall recreational harvest limit. If NMFS considers the combination of the state- or region- specific measures to be "equivalent" to the coastwide measures, they may then waive the coastwide regulation in federal waters. Anglers fishing in federal waters are then subject to the measures of the state in which they land summer flounder.

The recreational fishery has been managed using federal conservation equivalency each year since 2001. Since 2014, a regional approach has been used, under which the states within each region must have identical size limits, possession limits, and season length. The 2019-2021 regional conservation equivalency measures are given in Table 7. Minor seasonal adjustments were made between 2019 and 2020 in New Jersey and North Carolina. No changes to regional measures were made between 2020 and 2021.

Table 7: Summer flounder recreational fishing measures 2019-2021, by state, under regional conservation equivalency. Conservation equivalency regions in these years include: 1) Massachusetts, 2) Rhode Island, 3) Connecticut and New York, 4) New Jersey, 5) Delaware, Maryland, The Potomac River Fisheries Commission, and Virginia, and 6) North Carolina.

	2019-2021		
State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	17	5 fish	May 23-October 9
Rhode Island (Private, For-Hire, and all other shore-based fishing sites)	19	6 fish	May 3-December 31
RI 7 designated shore sites	19	4 fish ^a	
	17	2 fish ^a	
Connecticut	19	4 fish	May 4- September 30
CT Shore Program (45 designed shore sites)	17		
New York	19		
New Jersey	18	3 fish	2019: May 24- September 21 2020 and 2021: May 22-September 19
NJ Shore program site (ISBSP)	16	2 fish	
New Jersey/Delaware Bay COLREGS	17	3 fish	
Delaware	16.5	4 fish	January 1- December 31
Maryland			
PRFC			
Virginia			
North Carolina	15	4 fish	2019: January 1-September 3 2020 and 2021: August 16-September 30 ^b

^a Rhode Island's shore program includes a combined possession limit of 6 fish, no more than 2 fish at 17-inch minimum size limit.

^b North Carolina restricted the recreational season at the end of 2019 and for 2020 for all flounders in North Carolina (southern, gulf, and summer flounder) due to the need to end overfishing on southern flounder. North Carolina manages all flounder in the recreational fishery under the same regulations.

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 several times higher than the previous estimates for shore and private boat modes, substantially raising the overall summer flounder catch and harvest estimates. On average, the new landings estimates for summer flounder (in pounds) are 1.8 times higher over the time series 1981-2017, and 2.3 times higher over the past 10 years (2008-2017). In 2017, new estimates of landings in pounds were 3.16 times higher than the previous estimates.

Revised MRIP estimates indicate that recreational catch (harvest plus live and dead discards) for summer flounder peaked in 2010 with 58.89 million fish caught. Recreational harvest peaked in 1983, with 25.78 million fish landed, totaling 36.74 million pounds. Recreational catch reached a low in 1989 with 5.06 million fish caught. Recreational harvest in numbers of fish reached a low in 2019 with 2.38 million fish landed (7.80 million pounds), while recreational harvest in pounds was lowest in 1989 at 5.66 million pounds (3.10 million fish; Figure 6).⁶

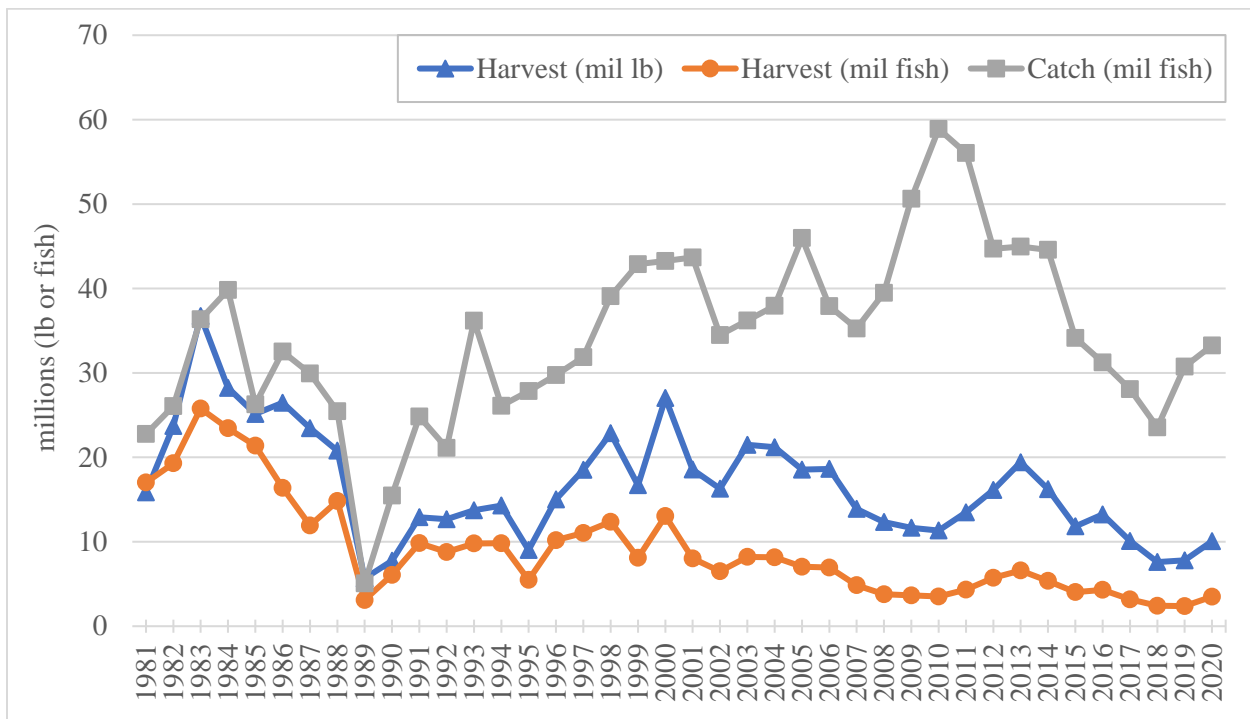


Figure 6: MRIP estimates of recreational summer flounder harvest in numbers of fish and pounds and catch in numbers of fish, ME - NC, 1981 - 2020, based on the revised MRIP data. 2020 recreational estimates were developed using imputation methods (incorporating 2018 and 2019 data) to account for missing 2020 APAIS data.⁶

For-hire vessels carrying passengers in federal waters must obtain a federal party/charter permit. In 2020, 831 vessels held summer flounder federal party/charter permits.⁷ Many of these vessels also hold recreational permits for scup and black sea bass.

On average, an estimated 83 percent of the recreational landings (in numbers of fish) occurred in state waters over the past ten years (Table 8). The majority of summer flounder are typically landed in New York and New Jersey (Table 9).⁶

About 84% of recreational summer flounder harvest from 2018-2020 was from anglers who fished on private or rental boats. About 4% was from party or charter boats, and about 13% was from anglers fishing from shore. The revised MRIP methodology resulted in an increase in the amount of harvest estimated to occur from private and shore modes while making only minor changes to the estimates for party/charter modes, modifying the percentages attributable to each mode (Table 10).⁶

Table 8: Estimated percentage of summer flounder recreational landings (in numbers of fish) from state vs. federal waters, Maine through North Carolina, 2011-2020 (revised MRIP data).⁶

Year	State <= 3 mi	EEZ > 3 mi
2011	94%	6%
2012	86%	14%
2013	77%	23%
2014	78%	22%
2015	82%	18%
2016	79%	21%
2017	79%	21%
2018	83%	17%
2019	77%	23%
2020	61%	39%
Avg. 2011 - 2020	83%	17%
Avg. 2018 - 2020	74%	26%

Table 9: State contribution (as a percentage) to total recreational landings of summer flounder (in numbers of fish), from Maine through North Carolina, 2018-2020 (revised MRIP data).⁶

State	2018	2019	2020	2018-2020 average ^a
Maine	0%	0%	0%	0%
New Hampshire	0%	0%	0%	0%
Massachusetts	3%	2%	2%	2%
Rhode Island	7%	9%	3%	6%
Connecticut	6%	4%	4%	4%
New York	27%	24%	21%	23%
New Jersey	43%	46%	57%	50%
Delaware	4%	4%	6%	5%
Maryland	2%	3%	2%	3%
Virginia	6%	6%	4%	5%
North Carolina	2%	1%	1%	1%
Total	100%	100%	100%	100%

^a Errors in previous version of this table corrected 7/12/21.

Table 10: The percent of summer flounder landings (in number of fish) by recreational fishing mode, Maine through North Carolina, 2011-2020 (revised MRIP data).⁶

Year	Shore	Party/Charter	Private/Rental	Total number of fish landed (millions)
2011	4%	3%	93%	4.33
2012	9%	3%	88%	5.74
2013	11%	4%	85%	6.60
2014	7%	8%	84%	5.36
2015	7%	7%	86%	4.03
2016	8%	4%	89%	4.30
2017	13%	4%	83%	3.17
2018	11%	6%	84%	2.41
2019	10%	3%	87%	2.38
2020	18%	2%	80%	3.49
% of Total, 2011-2020	10%	4%	86%	--
% of Total, 2018-2020	13%	4%	84%	--

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⁵ Unpublished NMFS dealer data as of April 29, 2021.

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⁷ Unpublished NMFS permit data as of January 25, 2021.

⁸ Unpublished NMFS Vessel Trip Report (VTR) data as of April 29, 2021.