



Mid-Atlantic Fishery Management Council
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MEMORANDUM

Date: July 17, 2023
To: Chris Moore, Executive Director
From: Hannah Hart, Staff
Subject: Scup Specifications for 2024-2025

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 2024-2025 catch and landings limits for scup, as well as scup commercial management measures for 2024. Additional information on fishery performance and past management measures can be found in the 2023 Scup Fishery Information Document and the 2023 Summer Flounder, Scup, and Black Sea Bass Fishery Performance Report developed by advisors.¹

In June 2023, the Northeast Fisheries Science Center (NEFSC) provided a management track assessment update for scup, which updated the current assessment model with data through 2022.² The assessment indicated that the scup stock was not overfished, and overfishing was not occurring in 2022 relative to the updated biological reference points calculated through the assessment. Retrospective adjustments were made to the model results. Adjusted spawning stock biomass (SSB) was estimated to be about 425 million pounds (193,087 mt) in 2022, about 2.5 times the SSB_{MSY} proxy reference point of 173.27 million pounds (78,593 mt). Adjusted fishing mortality on fully selected age 4 scup was 0.098 in 2022, about 52% of the F_{MSY} proxy reference point of 0.190. The 2017-2022 year classes are estimated to be below average.

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 scup beyond the 2023 fishing year. The SSC should recommend ABCs for 2024-2025 for the Council and Atlantic States Marine

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

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

Fisheries Commission's (Commission's) Summer Flounder, Scup, and Black Sea Bass Board (Board) to consider at their joint August 2023 meeting. Two-year specifications are recommended to align with the current stock assessment schedule for scup, under which the next update is expected in 2025 to inform 2026-2027 specifications.

ABC projections for 2024-2025 were provided by NEFSC staff using the updated FMSY proxy = $F40\% = 0.190$. The projections sample from the estimated recruitment for 1984-2022 and assume that the OFL CV = 60% per MAFMC SSC precedent. Projections were provided for both varying ABCs from 2024-2025, as well as an averaging approach where the 2024-2025 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 1. Staff recommend that the Council and Board adopt the varying ABC approach for 2024-2025. This would result in a 2024 ABC of 44.13 million pounds (20,015 mt) and a 2025 ABC of 39.99 million pounds (18,139 mt), which would represent a 48.7% increase in 2024 and 34.8% increase in 2025 from the 2023 ABC of 29.67 million pounds (13,458 mt).

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, possession limits, etc.) for 2022. Recreational measures for 2022 will be considered later in 2021.

Table 1: The current (2023) catch and landings limits for scup as well as staff recommended limits for 2024-2025. The final 2024-2025 values may differ based on the recommendations of the SSC, Monitoring Committee, Council, and Board.

Mgmt. measure	2023		Basis	2024		2025		Basis
	mil lbs.	mt		mil lbs.	mt	mil lbs.	mt	
OFL	30.09	13,649	Assessment projections	44.74	20,295	40.55	18,393	Assessment projections
ABC	29.67	13,458	Assessment projections & risk policy	44.13	20,015	39.99	18,139	Assessment projections & risk policy
ABC discards	6.39	2,900	Assessment projections	9.55	4,334	9.16	4,154	Assessment projections
Com. ACL	19.29	8,750	65% of ABC <i>(new com. allocation)</i>	28.68	13,010	25.99	11,790	65% of ABC
Com. ACT	19.29	8,749	No deduction from ACL for management uncertainty	28.68	13,010	25.99	11,790	No deduction from ACL for management uncertainty
Projected com. discards	5.28	2,394	82.6% of ABC discards (avg. % of dead discards from commercial fishery, 2017-2019)	7.39	3,350	7.08	3,211	77.3% of ABC discards (avg. % of dead discards from commercial fishery, 2020-2022)
Com. quota	14.01	6,355	Com. ACT minus projected com. discards	21.30	9,660	18.91	8,579	Com. ACT minus projected com. discards
Rec. ACL	10.39	4,713	35% of ABC <i>(new rec. allocation)</i>	15.44	7,005	14.00	6,349	35% of ABC
Rec. ACT	10.39	4,713	No deduction from ACL for management uncertainty	15.44	7,005	14.00	6,349	No deduction from ACL for management uncertainty
Projected rec. discards	1.12	506	17.4% of the ABC discards (avg. % of dead discards from rec. fishery, 2017-2019)	2.17	984	2.08	943	22.7% of the ABC discards (avg. % of dead discards from rec. fishery, 2020-2022)
RHL	9.27	4,205	Rec. ACT minus projected rec. discards	13.27	6,021	11.92	5,406	Rec. ACT minus projected rec. discards

Stock Status and Biological Reference Points

In June 2023, the NEFSC provided the 2023 management track assessment for scup. This assessment retained the model structure of the previous benchmark stock assessment, completed in 2015,³ and incorporated fishery catch and fishery-independent survey data through 2022.

The updated fishing mortality (F) reference point is $F_{MSY} \text{ proxy} = F_{40\%} = 0.190$ and the updated spawning stock biomass (SSB) reference point is $SSB_{MSY} \text{ proxy} = SSB_{40\%} = 173.27$ million pounds (78,593 mt). The minimum biomass threshold of $\frac{1}{2} SSB_{MSY} \text{ proxy} = \frac{1}{2} SSB_{40\%} = 86.64$ million pounds (39,297 mt, Table 2).

Table 2: Scup biological reference points from the 2023 management track stock assessment.

	Spawning stock biomass	Fishing mortality rate (F)
Terminal year estimate (2022)	425 mil lbs. (193,087 mt)	0.098
Target	173.27 mil lbs. (78,593 mt)	N/A
Threshold	86.64 mil lbs. (39,297 mt)	0.190
Status	Not overfished	Not overfishing

According to the 2023 assessment, the scup stock from Cape Hatteras, North Carolina extending north to the US-Canada border was not overfished and overfishing was not occurring in 2022.⁴ Retrospective adjustments were made to the model results. The retrospective adjustments increased the SSB estimate and decreased the F estimate. Adjusted values are used in the projections and management. Adjustments have not been required in previous scup assessment given retrospective patterns were not strong in previous assessment. From the 2023 management track assessment, adjusted SSB was estimated to be about 425 million pounds (193,087 mt) in 2022, about 2.5 times the $SSB_{MSY} \text{ proxy}$ reference point of 173.27 million pounds (78,593 mt, Figure 1), meaning that the stock was not overfished in 2022. There was a notable increasing trend in SSB since the early 2000s; however, in recent years SSB has declined from a peak in 2017 (Figure 1).

Adjusted fishing mortality on fully selected age 4 scup was 0.098 in 2022, about 52% of the $F_{MSY} \text{ proxy}$ reference point of 0.190 (Figure 2), meaning that overfishing was not occurring in 2022. The 2015 year class is estimated to be the largest in the time series at 569 million fish, while the 2017-2022 year classes are estimated to be below average (Figure 2).

The Northeast Regional Coordinating Council (NRCC)'s stock assessment process now has scup receiving management track updates every two years. The next management track assessment update is expected in 2025 to inform 2026-2027 catch and landings limits.

³ 60th Northeast Stock Assessment Workshop (2015) assessment report and peer review summaries are available at: <https://repository.library.noaa.gov/view/noaa/4975>

⁴ Available at: <https://apps-nefsc.fisheries.noaa.gov/saw/sasi.php>

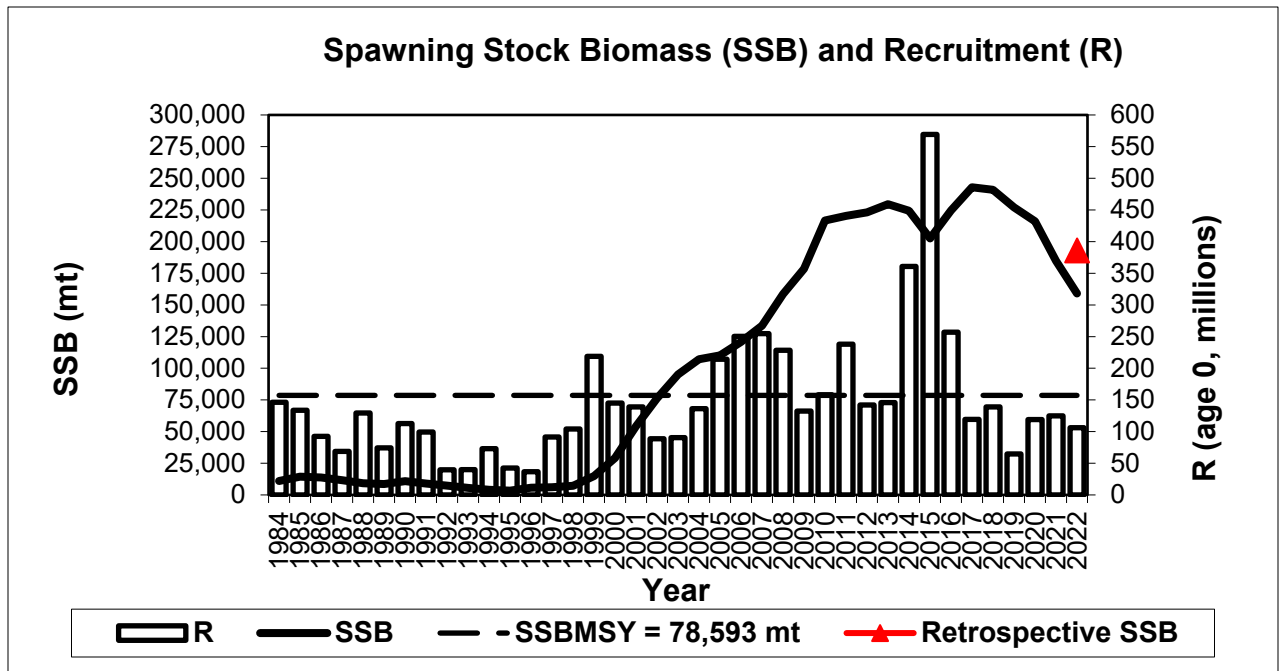


Figure 1: Scup spawning stock biomass and recruitment, 1984-2019. The horizontal dashed line represents the biomass target from the 2023 management track stock assessment. Adjusted SSB in 2022 for comparison against the SSB_{MSY} proxy reference point is 193,087 mt.

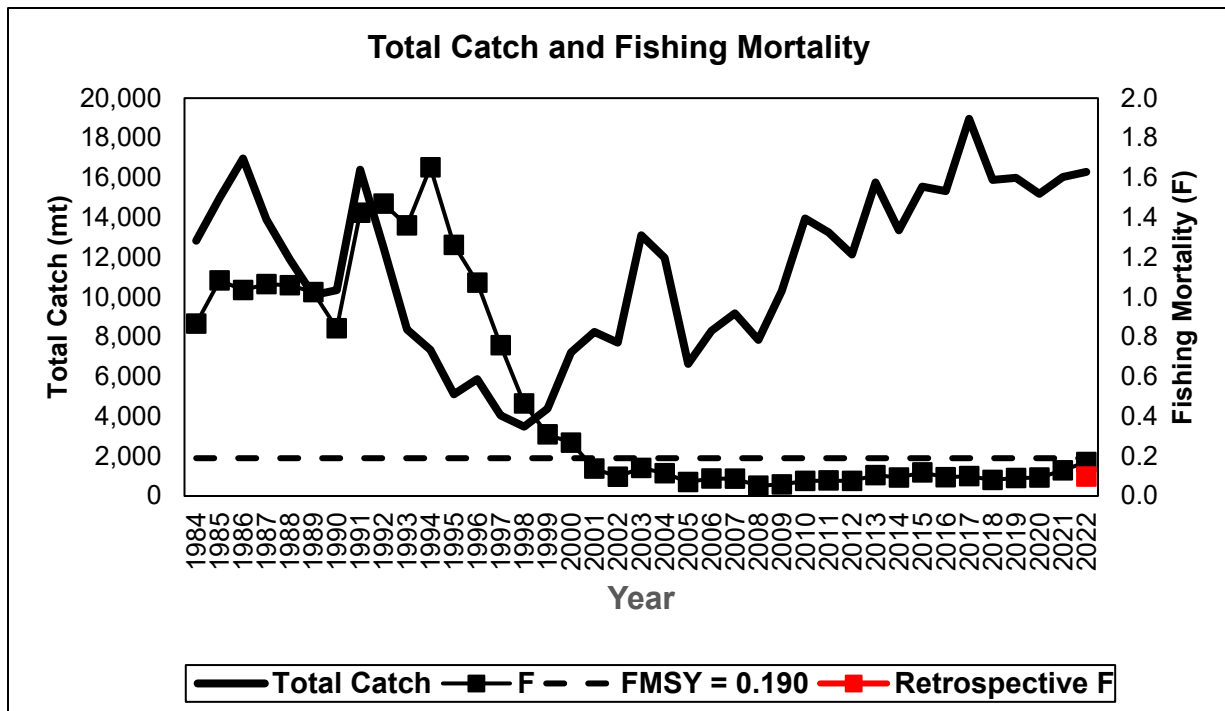


Figure 2: Total fishery catch and fishing mortality rate (F) for fully selected age 4 scup, 1984-2019. The horizontal dashed line is the fishing mortality reference point from the 2023 management track stock assessment. The red square is the retrospectively adjusted fishing mortality value for 2022. The adjusted value is used in management.

Recent Catch and Fishery Performance

Total Catch

Table 3 shows scup total catch and catch limits from 2019 through 2023, as well as the overfishing limit (OFL) from which the ABC is derived. The ABC is set less than or equal to the OFL to account for scientific uncertainty. The OFL for scup was likely exceeded in 2022. The scup ABC was exceeded in 2021, and likely again in 2022.

Table 3: Total scup catch (i.e., commercial and recreational landings and dead discards) compared to the OFL and ABC. All values are in millions of pounds. Total catch calculations use “old” MRIP data in 2019, and “new” MRIP data for 2020-2022. Catch data from 2023 management track assessment.^a

Year	Total catch^a	OFL	OFL overage/underage	ABC	ABC overage/underage
2019	26.55	41.03	-35%	36.43	-27%
2020	33.50	41.17	-19%	35.77	-6%
2021	35.35	35.3	0%	34.81	2%
2022	35.92	32.56	10%	32.11	12%
2023	--	30.09	--	29.67	--

^a Numbers here may vary slightly from those in the 2023 Fishery Information Document due to the Catch Accounting and Monitoring System (CAMS) commercial fishery estimates now being used for 2020-2022 as reflected in the 2023 MTA.

Commercial Fishery

The commercial scup fishery has consistently underharvested their quota since 2014, ranging from 16% to 44% below the annual quotas. In 2022, commercial landings were about 12.14 million pounds (5,507 mt), about 40% below the commercial quota of 20.38 million pounds (9,244 mt; Table 4).

Since 2019, commercial dead discards compared to projected levels have been variable. Some years, like 2020 and 2022, projected discards resembled a good estimate for commercial discards while other years like 2022, were less accurate. However, since 2014 there was a single ACL overage in 2017, this overage was attributed to the higher-than-expected dead discards, as commercial fishery landings for scup are typically well controlled to the commercial quota (Table 4).

Preliminary 2023 commercial landings during the Winter I Quota Period indicate that 57.9% of the quota was landed and as of July 7, 2023, about 35.86% of the 2023 Summer Quota Period quota has been landed. Preliminary 2023 Winter I landings were slightly above 2022 landings; however, summer 2023 landings to date are slightly below last year’s trajectory.^{5,6}

⁵ Based on data available at https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/h/scup/FYALL_REPORTS//2021-04-29_scup_coast_qm.html.

⁶ Based on data available at https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/h/scup/scup_coast_qm.html.

Table 4: Scup commercial landings, dead discards, and catch compared to the commercial quota and commercial ACL, 2014-2023. All values are in millions of pounds. Landings and discard data from 2023 management track assessment.^a

Year	Com. landings ^a	Com. quota	Quota over/under	Com. dead discards ^a	Proj. Com. dead discard	Proj. dead disc. over/under	Com. catch ^a	ACL	ACL over/under
2014	15.96	21.95	-27%	2.16	6.12	183%	18.12	28.07	-35%
2015	17.03	21.23	-20%	3.79	5.11	35%	20.82	26.35	-21%
2016	15.76	20.47	-23%	6.12	3.79	-38%	21.88	24.26	-10%
2017	15.45	18.38	-16%	10.43	3.77	-64%	25.88	22.15	17%
2018	13.37	23.98	-44%	7.26	4.43	-39%	20.63	30.53	-32%
2019	13.78	23.98	-43%	6.13	4.43	-28%	19.91	28.42	-30%
2020	13.62	22.23	-39%	5.76	5.80	1%	19.37	27.90	-31%
2021	13.10	20.50	-36%	4.18	6.65	59%	17.28	27.15	-36%
2022	12.14	20.38	-40%	4.79	4.67	-2%	16.93	25.05	-32%
2023	--	14.01	--	--	5.28	--	--	19.29	--

^a Numbers here may vary slightly from those in the 2023 Fishery Information Document due to the Catch Accounting and Monitoring System (CAMS) commercial fishery estimates now being used for 2020-2022 as reflected in the 2023 MTA.

Recreational Fishery

Recreational fishery performance relative to RHLs through 2019 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 2014-2022 using old or new MRIP data, depending on the year, is provided in Table 5. Recreational performance has been more variable relative to the limits compared to the commercial fishery but recreational landings and catch were above the limits in 2020 through 2022. Recreational harvest was estimated at approximately 17.36 million pounds (7,875 mt) in 2022, about 186% of the 2022 RHL.

As of this memo, recreational harvest estimates for 2023 are only available through April, which does not provide meaningful information about 2023 recreational harvest trends for scup given that in recent years wave 2 (March/April) has accounted for 0% to 10% of annual scup harvest depending on the year.

Table 5: Scup recreational landings, dead discards, and catch compared to the RHL, projected recreational dead discards, and recreational ACL, 2014-2023. Information is provided in the “old” MRIP units for 2014-2019, and in the “new” MRIP units from the 2023 management track assessment for 2020-2022. For scup, ACLs and RHLs did not account for the revised MRIP data until 2020. Therefore, overage/underage evaluations must be based in the old MRIP units through 2019 and the new MRIP units starting in 2020. All values are in millions of pounds.

Year	Version of MRIP data used	Rec. land.	RHL	RHL over/under	Rec. dead disc.	Proj. rec. dead disc.	Proj. dead disc. over/under	Rec. catch	ACL	ACL over/under
2014	Old MRIP (pre-revision)	4.43	7.03	-37%	0.50	0.89	76%	5.49	7.92	-31%
2015		4.41	6.8	-35%	0.50	0.63	27%	5.69	7.43	-23%
2016		4.26	6.09	-30%	0.78	0.75	-3%	6.16	6.84	-10%
2017		5.42	5.5	-1%	0.90	0.75	-17%	7.80	6.25	+25%
2018		5.61	7.37	-24%	0.60	0.65	8%	7.03	8.61	-18%
2019	Old MRIP (provided by NEFSC)	5.41	7.37	-27%	1.23	0.65	-48%	6.64	8.01	-17%
2020	New MRIP (post-revision)	12.91 ^a	6.51	+98%	1.19 ^a	1.36	14%	14.10 ^a	7.87	+79%
2021		16.62 ^a	6.07	+174%	1.44 ^a	1.59	11%	18.06 ^a	7.66	+136%
2022		17.36 ^a	6.08	+186%	1.63 ^a	0.99	-39%	18.99 ^a	7.06	+169%
2023		--	9.27	--	--	1.12	--	--	10.39	--

^a Data from 2023 management track assessment. Values here may vary slightly from those in the 2023 Fishery Information Document.

Review of Prior SSC Recommendations

In July 2022, the SSC recommended 2022 and 2023 ABCs for scup based on new stock status information and projections from the 2021 management track stock assessment.

The SSC recommended that a 60% coefficient of variation (CV) be applied to the OFL estimate to derive the ABC for scup. This decision came from the high data quality, as well as consistency of signals from surveys, catch at age, and model results. There was also a relatively low effect of revised MRIP estimates in the stock assessment; only minor retrospective patterns in the statistical catch-at-age model; and the unlikelihood that additional adjustments (e.g., for ecological factors or below-average recruitment in the past two years) would increase uncertainty. Several surveys show declines or low abundance in early years to record lows in the mid-1990s and increases in abundance thereafter. Age structure in surveys shows a decline or low abundance of older ages in survey catches in early years and increases in abundance of older ages in recent years. Age structure in commercial landings-at-age and recreational landings-at-age show similar trends of increasing abundance of older ages in the stock. Several large recruitment events have been indicated by survey indices. In combination, these trends are consistent with lower fishing mortality rates in recent years, and increasing stock abundance as indicated by model results. Although up to 44% of the catch weight is attributable to the recreational fishery, the increase in recreational catch

related to new MRIP estimates is relatively low in comparison to other stocks. There has been no obvious or clear trend in recent recruitment over the past decade, although a declining trend in recruitment is beginning to emerge, so adjustment of projected recruitment currently appears unwarranted. There is no discernable impact of thermal habitat on interannual variation in availability, so adjustment of survey indices to account for thermal habitat effects also appears unwarranted.

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

- While older age scup (age 3+) are represented in the catch used in the assessment model, most indices used in the model do not include ages 3+. As a result, the dynamics of the older ages of scup are driven principally by catches and inferences regarding year class strength.
- A sizeable portion of the stock biomass is in older age classes which are assumed to have low F_s as a result of the selectivity pattern imposed in the model.
- Uncertainty exists with respect to the estimate of natural mortality (M) used in the assessment.
- Uncertainty exists as to whether the MSY proxies ($SSB_{40\%}$, $F_{40\%}$) selected and their calculated precisions are appropriate for this stock.
- The SSC assumed that OFL has a lognormal distribution with a $CV = 60\%$, based on a meta-analysis of survey and statistical catch at age (SCAA) model accuracies.
- Survey indices are particularly sensitive to Scup availability, which results in high inter-annual and regional variability – efforts were made to address this question by weighting surveys in the SAW/SARC that should be continued.
- The projection on which the ABC was determined is based on an assumption that the 2020 and 2021 ABCs will be caught.

Table 6 shows the SSC recommended 2022-2023 OFLs, ABCs, and P^* values. ABCs are based on projections that assume the ABC will be fully caught in each year; recruitment is sampled from 1984-2018. OFL total catches are catches in each year fishing at $F_{MSY} = 0.200$, prior to calculation of the associated annual ABC. The ABC projections were based on application of the Council’s risk policy for a stock with a typical life history, resulting in an ABC P^* of 49% in each year. Due to the Council’s risk policy adopted in 2019, only ABCs associated with the traditional (variable) approach could be offered for 2022 and 2023.

In July 2022, the SSC reviewed the previously adopted ABC along with a data update for scup, and recommended no changes to the previously recommended 2023 ABC adopted by the Council.

Table 6: Previously recommended 2022 and 2023 OFLs, ABCs, and ABC P^* value (Source: personal communication, Mark Terceiro, Northeast Fisheries Science Center).

Year	OFL total catch		ABC total catch		ABC P^*
	mil lbs.	mt	mil lbs.	mt	
2022	32.56	14,770	32.11	14,566	0.49
2023	30.09	13,648	29.67	13,458	0.49

2024-2025 ABCs

The ABC projections sample from the estimated recruitment for 1984-2022 and assume the 2022-2023 ABCs were caught (Table 7 and Table 8). The ABC projections are based on application of the Council’s risk policy, resulting in an annual ABC P* of 49% for the varying ABC approach and an average P* of 49% (2024-2025) for the averaged ABC approach. A CV of 60% was applied to the OFL, consistent with past SSC recommendations.

The SSC has been asked to recommend two sets of ABCs for 2024-2025, one based on assuming varying ABCs each year (Table 7) and one where ABCs are constant based on averaging the ABCs across 2024 and 2025 (Table 8). 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.

The projected spawning stock biomass trajectory is similar in either scenario (Table 7 and Table 8) and there are tradeoffs to both ABC approaches. The average ABC approach would allow for stability in catch and landings limits across two years and would allow for a higher 2025 ABC than the varying approach; however, it would require a lower 2024 ABC than under the varying approach due to the declining biomass trajectory. The higher 2024 ABC using the varying approach will require less restriction on the recreational fishery in 2024 compared to the averaged approach. However, it will require a greater restriction of total catch in 2025 compared to the averaged approach and thus more restriction of the recreational fishery if sector allocations remain status quo. Additionally, under the averaging approach presented in Table 8 the p* in 2025 exceeds 0.5 and therefore is not a viable option under the provisions of the MSA. In 2021, the Council and Board recommended the varying ABC approach for 2022-2023 measures under similar decreasing biomass conditions. For these reasons, staff recommend that the Council and Board adopt ABCs for 2024-2025 based on the varying ABC approach.

Updated estimates of SSB, F, and recruitment are expected to be available in 2025 to inform 2026-2027 specifications. Unless an interim data update (i.e., updated fishery and survey data without updated estimates of SSB, F, and recruitment) shows strong signals of unexpected changes in the stock, it is unlikely that the 2025 catch and landings limits will be updated in 2024 based on biological, fishery, or survey data.

Table 7: Scup 2023 management track assessment projections for varying 2024-2025 ABCs, including OFL and ABC total catch, ABC projected F, projected SSB, and SSB/SSB_{MSY}. These projections assume application of the current Council risk policy with a 60% OFL CV.

Year	OFL Total Catch		ABC Total Catch		ABC F	ABC P*	SSB		SSB/SSB _{MSY}
	mil lb	mt	mil lb	mt			mil lb	mt	
2023	30.09	13,649	29.67	13,458	0.115	0.495	461.66	209,407	266%
2024	44.74	20,295	44.13	20,015	0.187	0.490	409.24	185,626	236%
2025	40.55	18,393	39.99	18,139	0.187	0.490	359.66	163,140	208%

Table 8: Scup 2023 management track assessment projections for averaged 2024-2025 ABCs, including OFL and ABC total catch, ABC projected F, projected SSB, and SSB/SSB_{MSY}. These projections assume application of the current Council risk policy with a 60% OFL CV.

Year	OFL Total Catch		ABC Total Catch		ABC F	ABC P*	SSB		SSB/SSB _{MSY}
	mil lb	mt	mil lb	mt			mil lb	mt	
2023	30.09	13,649	29.67	13,458	0.115	0.495	461.66	209,407	266%
2024	44.74	20,295	42.06	19,077	0.178	0.456	410.02	185,986	237%
2025	40.77	18,495	42.06	19,077	0.196	0.522	360.78	163,645	208%

Sector-Specific Catch and Landings Limits

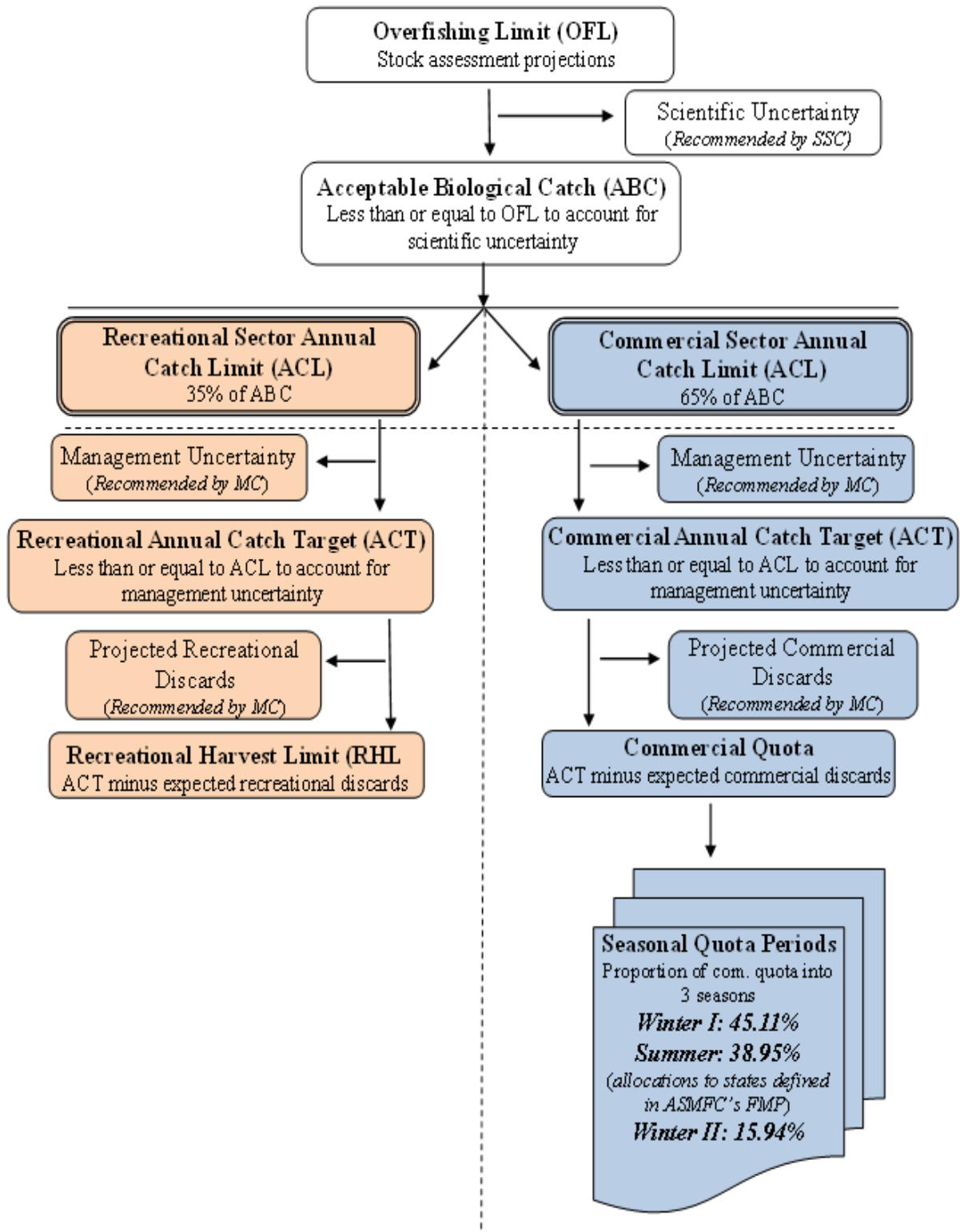
Commercial and Recreational Annual Catch Limits

The scup commercial/recreational allocation was recently revised via Amendment 22 to the Fishery Management Plan (FMP), effective in 2023, such that 65% of the ABC is allocated to the commercial fishery as a commercial ACL, and 35% is allocated to the recreational fishery as a recreational ACL.⁷ Figure 3 illustrates the current flowchart for deriving commercial and recreational catch and landing limit from the OFL and ABC.

Under the staff recommended varying ABCs, these allocation percentages would result in a commercial ACL of 28.68 million pounds (13,010 mt) and a recreational ACL of 15.44 million pounds (7,005 mt) in 2024, and a commercial ACL of 25.99 million pounds (11,790 mt) and a recreational ACL of 14.00 million pounds (6,349 mt) in 2025.

⁷ <http://www.mafmc.org/actions/sfsbsb-allocation-amendment>

Figure 3: Current catch and landing limit flowchart for scup, updated to reflect commercial/recreational allocation revisions that became effective in 2023.



Annual Catch Targets

The Monitoring Committee recommends ACTs for the Council and Board's consideration. ACTs may be set less than or equal to sector-specific ACLs to account for management uncertainty. 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 discards) or because of a lack of management precision (i.e., the ability to constrain catch to desired levels). The Monitoring Committee should consider all relevant sources of management uncertainty in the scup fishery when recommending ACTs.

Recreational harvest is estimated through a statistical survey design (the Marine Recreational Information Program), while commercial harvest is more census based due to mandatory vessel and dealer reporting requirements. Given these differences, the commercial fishery can be closed in-season when landings approach the quota but there is no in-season closure authority for the recreational fishery due to the timing of recreational data availability. For these reasons, recreational landings can be more difficult to constrain and predict than commercial landings.

The commercial quota monitoring system has largely been successful in preventing quota overages for scup, and as shown in Table 4, commercial landings have not exceeded the quota over the past 10 years. Although in the past 10 years there has not been a quota overage, in 2017 there was a commercial ACL overage. This overage, however, was attributed to the higher-than-expected dead discards, as commercial fishery landings for scup are typically well controlled to the commercial quota (Table 4).

From 2014-2019, recreational landings were consistently below the RHL but from 2020-2022 recreational landings were consistently above the RHL. The Percent Change Approach and the use of a new recreational harvest estimation model (the Recreational Demand Model) were both applied to the development recreational scup measures in 2023 for the first time. Application of this approach for scup in 2023 resulted in recreational measures that met the required coastwide 10% reduction in harvest. As previously stated, it is not possible to predict 2023 recreational harvest based on currently available data.

The Percent Change Approach considers the RHL in the upcoming year(s) as well as biomass compared to the target level when setting measures. In some cases, RHL and ACL overages are permitted under this approach. In other cases, this approach requires more restrictive measures than would be needed to prevent RHL and ACL overages. The Percent Change Approach will sunset after the 2025 fishing year with the goal of using an improved process for setting 2026 recreational measures. A management action to consider the appropriate replacement for the Percent Change Approach is currently in development.

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

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

Projected Dead Discards

Projected discards are removed from the sector-specific ACTs to derive landings limits, which include annual commercial quotas and RHLs (Figure 3). The methodology to calculate projected dead discards is not prescribed in the FMP and can be modified on an annual basis. The methodology can also vary by sector. Typically, the Monitoring Committee has apportioned dead discards based on a 3-year moving average of the proportion of discards from each sector, applied to the total projected discards for the upcoming fishing year(s).

In 2022, when the Monitoring Committee first considered discard projections under the revised allocations, the group discussed a few different methods for generating projected dead discards by sector. One option considered by the Monitoring Committee, but not applied, was a linear regression approach examining sector dead discards as a function of sector catch, ACLs, or landings (not selected due to a lack of strong correlations for scup). Another option that was not adopted was a simple moving average (e.g., 3 years) of discards in pounds for each sector (not applied due to how much discard levels can vary based on availability of different size classes as well as regulations).

Staff recommend that for 2024-2025, sector discards continue to be calculated by applying the 3-year moving average proportion of discards by sector to total projected dead discards. These projected sector discards are then removed from the sector-specific ACTs. This approach relies on projections of total discards from the NEFSC which account for age structure of the population (Table 9). The NEFSC projected total discards assume total dead catch will be equal to the ABC and also account for the recent age structure of the population and selectivity of the fisheries. The NEFSC projections can account for higher or lower than average year classes when estimating discards in future years. For example, high discards in 2017 were likely driven by the peak in recruitment seen in 2015 as shown in Figure 1. This year class would not be expected to contribute to high discards in 2024 and 2025 given fisheries selectivity and the likely greatly diminished size of the year class.

Table 9: ABC projections split into projected total projected landings and discards, for both annual and averaged 2024-2025 ABCs.

Varying (staff recommendation)						
Year	ABC Total Catch		ABC Landings		ABC Discards	
	mil lb	mt	mil lb	mt	mil lb	mt
2023	29.67	13,458	23.59	10,701	6.08	2,757
2024	44.13	20,015	34.57	15,681	9.55	4,334
2025	39.99	18,139	30.83	13,985	9.16	4,154
Averaged						
Year	ABC Total Catch		ABC Landings		ABC Discards	
	mil lb	mt	mil lb	mt	mil lb	mt
2023	29.67	13,458	23.59	10,701	6.08	2,757
2024	42.06	19,077	32.95	14,944	9.11	4,133
2025	42.06	19,077	32.43	14,711	9.63	4,366

Evaluating the proportion of discards by sector from 2020-2022, 77.3% of dead discards came from the commercial fishery and 22.7% from the recreational fishery. Applying these proportions to the annual total projected dead discards in each year under the varying ABC approach, the resulting projected commercial and recreational dead discards are shown in Table 1.

Commercial Management Measures

The commercial measures that can be modified during specifications are discussed below, including the commercial Winter I and Winter II quota period possession limits, minimum size limit, minimum mesh sizes, and commercial pot and trap regulations. Given there is no new information to suggest changes to commercial management measure are needed, staff recommend no changes to commercial measures for 2024.

Commercial Winter I and Winter II Quota Period Possession Limits

Commercial possession limits are designed to help constrain landings to the seasonal period quotas. The Winter I possession limit is 50,000 pounds. After 80% of the Winter I quota is landed, the possession limit drops to 1,000 pounds. The Winter II possession limit is initially set at 12,000 pounds. If the Winter I quota is not fully harvested, as has been the case in recent years, the Winter II possession limit increases by 1,500 pounds for every 500,000 pounds of scup not landed during the Winter I period. There are no federal possession limits during the Summer quota period; however, there are state possession limits⁸. These quota period possession limits have not been modified since 2012.

Commercial Minimum Fish Size

The commercial minimum size limit for scup is 9 inches total length and has been in place since 1996. The minimum size limit applies to all commercial landings of scup, including landings of incidental catch. Over the years, advisors have expressed differing opinions on the commercial minimum size limit, but no changes have been adopted.

Commercial Trawl Mesh Size

Trawl vessels which possess more than 1,000 pounds of scup from October 1 through April 14, more than 2,000 pounds of scup from April 15 through June 15, and more than 200 pounds of scup from June 16 through September 30 must use a minimum mesh size of 5.0 inches.

⁸ Prior to 2018, October was included in the summer quota period. The allocation percentages were the same as shown above.

Hasbrouck et al. (2018) confirmed that the current minimum mesh sizes are effective at releasing most fish smaller than the commercial minimum size. This study also considered the potential for a common minimum mesh size for summer flounder, scup, and black sea bass. The results were not able to identify an effective common mesh size for all three species at the current size limits; however, the authors concluded that a common mesh size of 4.5 or 5 inches diamond for scup and black sea bass would be effective at releasing undersized fish.⁹ Further consideration of a shared minimum mesh size has not been prioritized by the Council and Board.

Commercial Pot and Trap Regulations

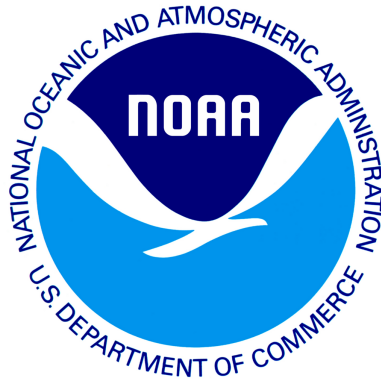
NMFS dealer data show that pots/traps accounted for about 3% of total commercial scup landings in 2021. Pots and traps used to commercially harvest scup must have either a circular escape vent measuring at least 3.1 inches in diameter, square escape vents with each side being at least 2.25 inches in length, or rectangle escape vents of equal or greater size.

Recreational Management Measures

Recreational management measures for 2024-2025 will be developed later this fall, using the Percent Change Approach. The Monitoring Committee will meet in the fall of 2023 to review available recreational data and Recreational Demand Model estimates of recreational harvest under current measures, and to make recommendations for any adjustments that may be needed to recreational bag, size, and season limits. This will be the first year that multi-year recreational measures (2024-2025) will be considered as specified under the Percent Change Approach.

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

draft working paper for peer review only



Scup

2023 Management Track Assessment Report

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

Compiled 06-05-2023

This assessment of the Scup (*Stenotomus chrysops*) stock is an update of the existing 2021 Management Track Assessment (NEFSC 2022). Based on the previous assessment the stock was not overfished and overfishing was not occurring. This 2023 Management Track Assessment updates fishery catch data, research survey indices of abundance, the ASAP assessment model, and biological reference points through 2022. Additionally, stock projections have been updated through 2025.

State of Stock: Based on this updated assessment, the Scup (*Stenotomus chrysops*) stock is not overfished and overfishing is not occurring (Figures 1-2). Retrospective adjustments were made to the model results. Adjusted Spawning Stock Biomass (SSB) in 2022 was estimated to be 193,087 mt which is 246% of the biomass target for this stock ($SSB_{MSY} proxy = 78,593$; Figure 1). The adjusted 2022 fully selected fishing mortality was estimated to be 0.098 which is 52% of the overfishing threshold proxy ($F_{MSY} proxy = 0.19$; Figure 2).

Table 1: Catch and model results for Scup. All weights are in (mt), recruitment is in (000s), and F_{Full} is the fishing mortality on fully selected age 4. Model results are unadjusted values from the current updated ASAP assessment.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	<i>Data</i>									
Commercial landings	8,105	7,239	7,725	7,147	7,007	6,064	6,252	6,177	5,944	5,507
Commercial discards	1,350	981	1,718	2,778	4,733	3,293	2,779	2,611	1,895	2,171
Recreational landings	5,739	4,659	5,527	4,536	6,143	5,887	6,403	5,863	7,540	7,875
Recreational discards	568	480	581	862	1,079	644	560	541	653	738
Catch for Assessment	15,762	13,359	15,550	15,322	18,961	15,888	15,994	15,192	16,032	16,291
	<i>Model Results</i>									
Spawning Stock Biomass	229,544	224,345	202,517	224,568	242,893	240,870	226,966	216,046	184,801	159,050
F_{Full}	0.105	0.093	0.118	0.094	0.1	0.08	0.09	0.092	0.129	0.171
Recruits (age 0)	145,750	360,860	569,175	256,961	119,279	138,889	64,735	118,918	124,873	106,037

Table 2: Comparison of biological reference points estimated in the previous assessment and from the current assessment update. An $F_{40\%}$ proxy was used for the overfishing threshold and SSB and MSY proxies were based on long-term stochastic projections.

	2021	2023
$F_{MSY} proxy$	0.200	0.190
SSB_{MSY} (mt)	90,019	78,593 (55,125 - 113,507)
MSY (mt)	12,671	11,959 (8,447 - 17,427)
Median recruits (age 1) (000s)	123,492	129,293
<i>Overfishing</i>	No	No
<i>Overfished</i>	No	No

Projections: Short term projections of catch (OFL) and Spawning Stock Biomass (SSB) were derived by sampling from an empirical cumulative distribution function of the time series of recruitment estimates from the ASAP model results for 1984-2022. The annual fishery selectivity, maturity ogive, and mean weights at age used in projections are the most recent 5 year averages; retrospective adjustments were applied in the projections.

Table 3: Short term projections of total fishery catch (OFL) and Spawning Stock Biomass (SSB) for Scup based on a harvest scenario of fishing at F_{MSY} proxy between 2024 and 2025. Catch in 2023 was assumed to be 13,458 (mt).

Year	Catch (mt)	SSB (mt)	F_{Full}
2023	13,458	209,407 (155,000 - 286,000)	0.115
2024	20,295	185,475 (138,000 - 252,000)	0.190
2025	18,363	162,716 (121,000 - 221,000)	0.190

Special Comments:

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

Declining trends in growth rates and maturity at age may change the productivity of the stock and in turn affect estimates of the biological reference points. Changes in growth, maturity, and recruitment may be environmentally mediated but mechanisms are unknown.

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

The 7-year Mohn's ρ , relative to SSB, was -0.14 in the 2021 assessment and was -0.21 in 2022. The 7-year Mohn's ρ , relative to F, was 0.20 in the 2021 assessment and was 0.42 in 2022. There was a major retrospective pattern for this assessment because the ρ adjusted estimates of 2022 SSB ($SSB_{\rho}=193,087$) and 2022 F ($F_{\rho}=0.098$) were outside the approximate 90% confidence regions around SSB (131,720 - 192,050) and F (0.14 - 0.208). A retrospective adjustment was made for both the determination of stock status and for projections of catch and biomass in 2024 and 2025. The retrospective adjustment changed the 2022 SSB from 159,050 to 193,087 and the 2022 F_{Full} from 0.171 to 0.098.

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

Population projections for Scup are reasonably well determined.

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

No major changes, other than the addition of three years of data, were made to the Scup assessment for this update. Minor changes to the survey input CVs and fishery and survey input Effective Sample Sizes improved model diagnostics but had limited affects on the model results.

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

As in recent assessments for Scup the stock status remains as not overfished and overfishing not occurring.

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

The current fishing mortality rate is relatively low, but recent below average recruitment has resulted in a decrease in SSB. SSB is projected to continue to decrease in the short term.

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

The Scup assessment could likely be improved with more intensive sampling of the fishery catch.

- Are there other important issues?

Sufficient length and age sampling of the fishery catch needs to be maintained.

References:

NEFSC. 2022. Northeast Fisheries Science Center. Management Track Assessment June 2021. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 22-10; 79 p. <http://www.nefsc.noaa.gov/publications/crd/crd2210/>.

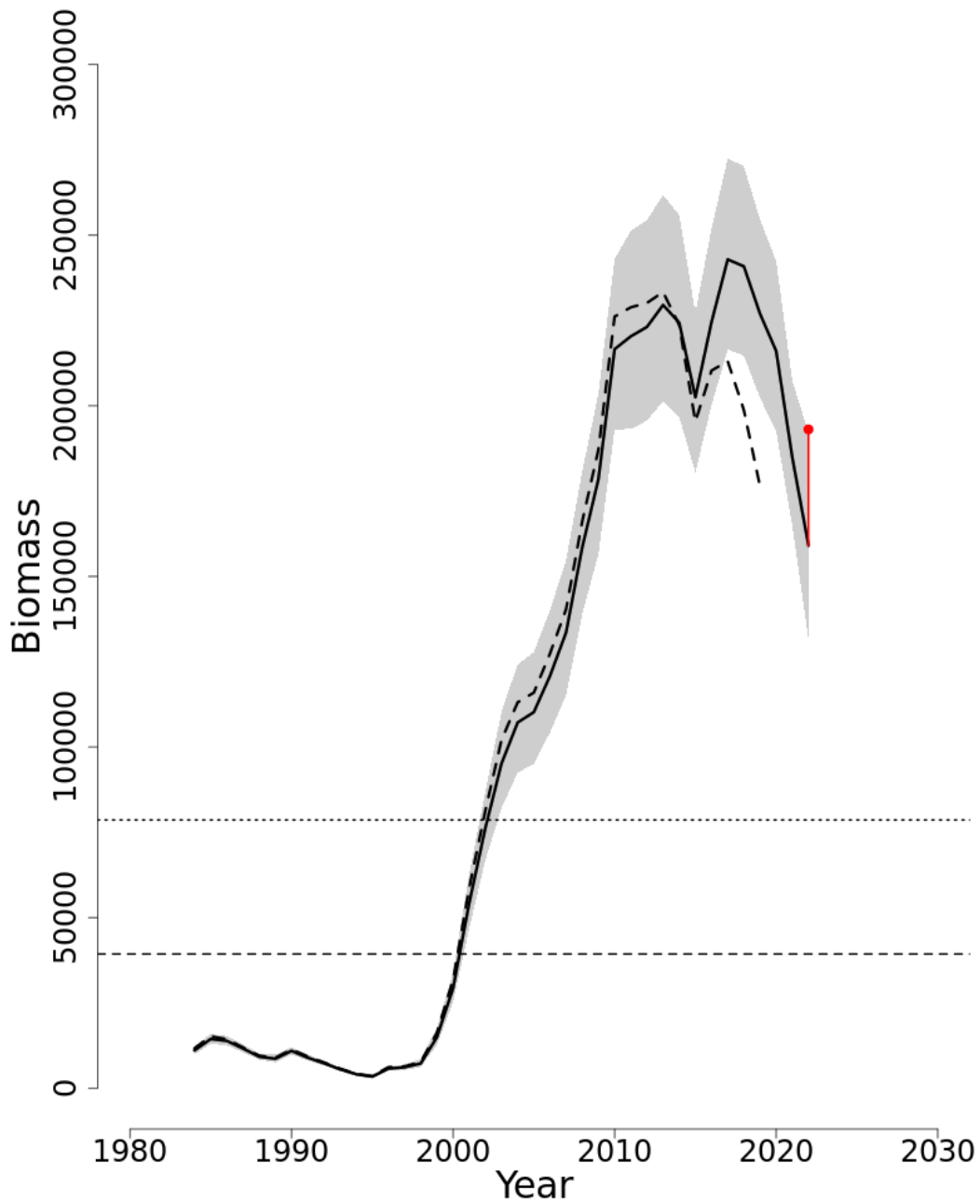


Figure 1: Trends in SSB of Scup between 1984 and 2022 from the current (solid line) and previous (dashed line) assessment and the corresponding $SSB_{Threshold}$ ($\frac{1}{2} SSB_{MSY}$ proxy; horizontal dashed line) as well as SSB_{Target} (SSB_{MSY} proxy; horizontal dotted line) based on the 2023 assessment. SSB was adjusted for a retrospective pattern and the adjustment is shown in red. The approximate 90% lognormal confidence intervals are shown.

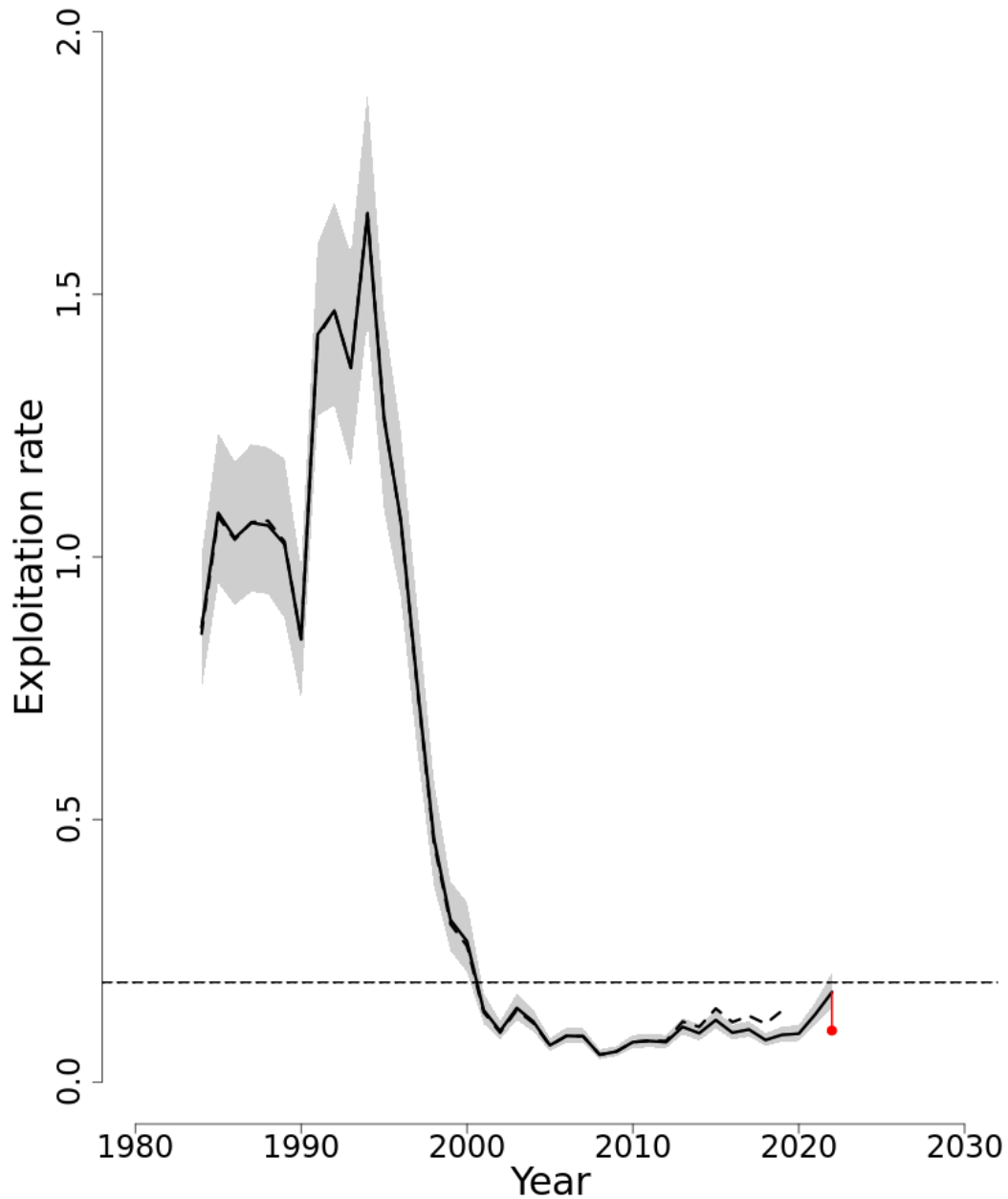


Figure 2: Trends in the fully selected fishing mortality (F_{Full}) of Scup between 1984 and 2022 from the current (solid line) and previous (dashed line) assessment and the corresponding $F_{Threshold}$ (F_{MSY} proxy=0.19; horizontal dashed line) based on the 2023 assessment. F_{Full} was adjusted for a retrospective pattern and the adjustment is shown in red. The approximate 90% lognormal confidence intervals are shown.

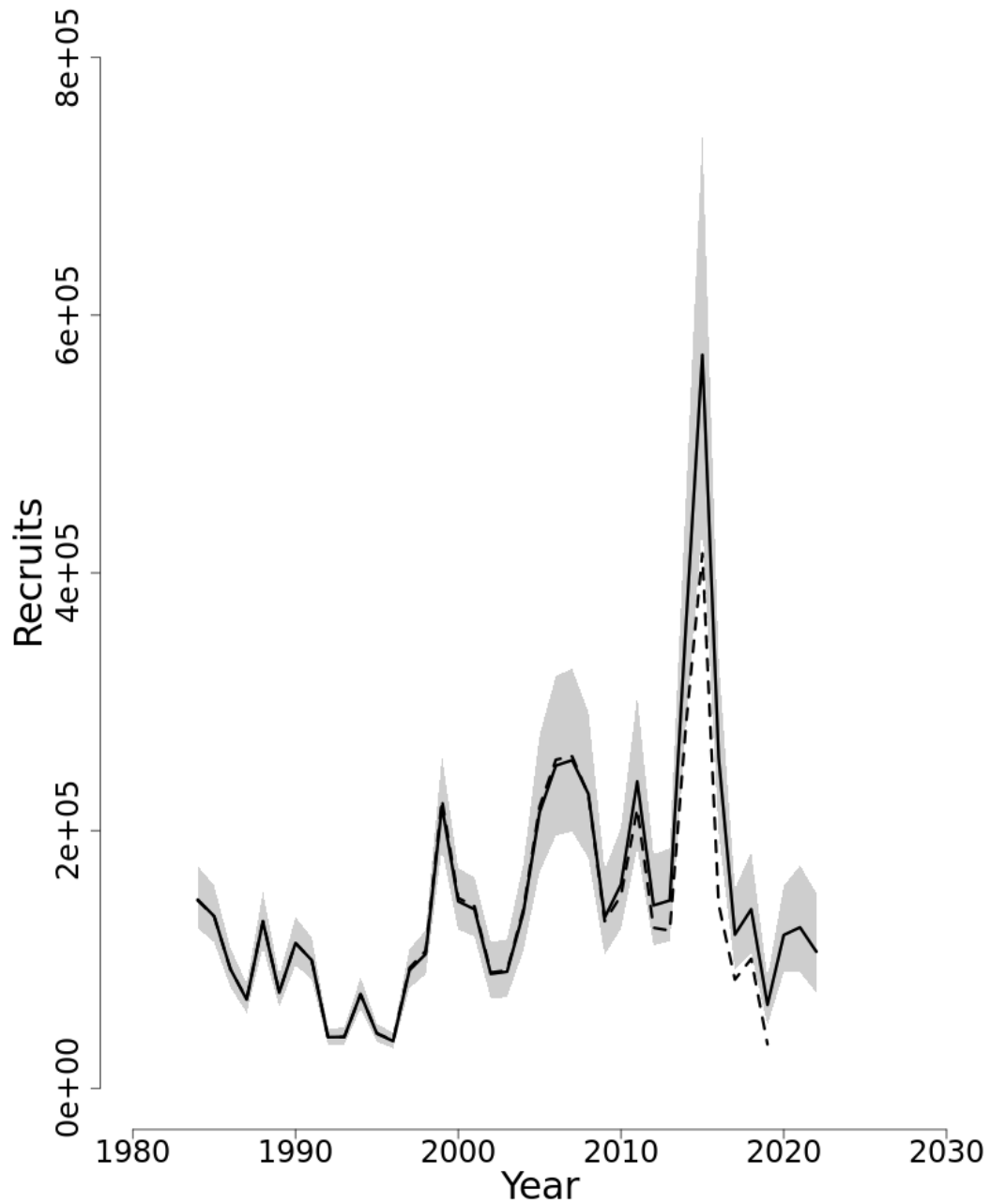


Figure 3: Trends in Recruits (age 0) (000s) of Scup between 1984 and 2022 from the current (solid line) and previous (dashed line) assessment.

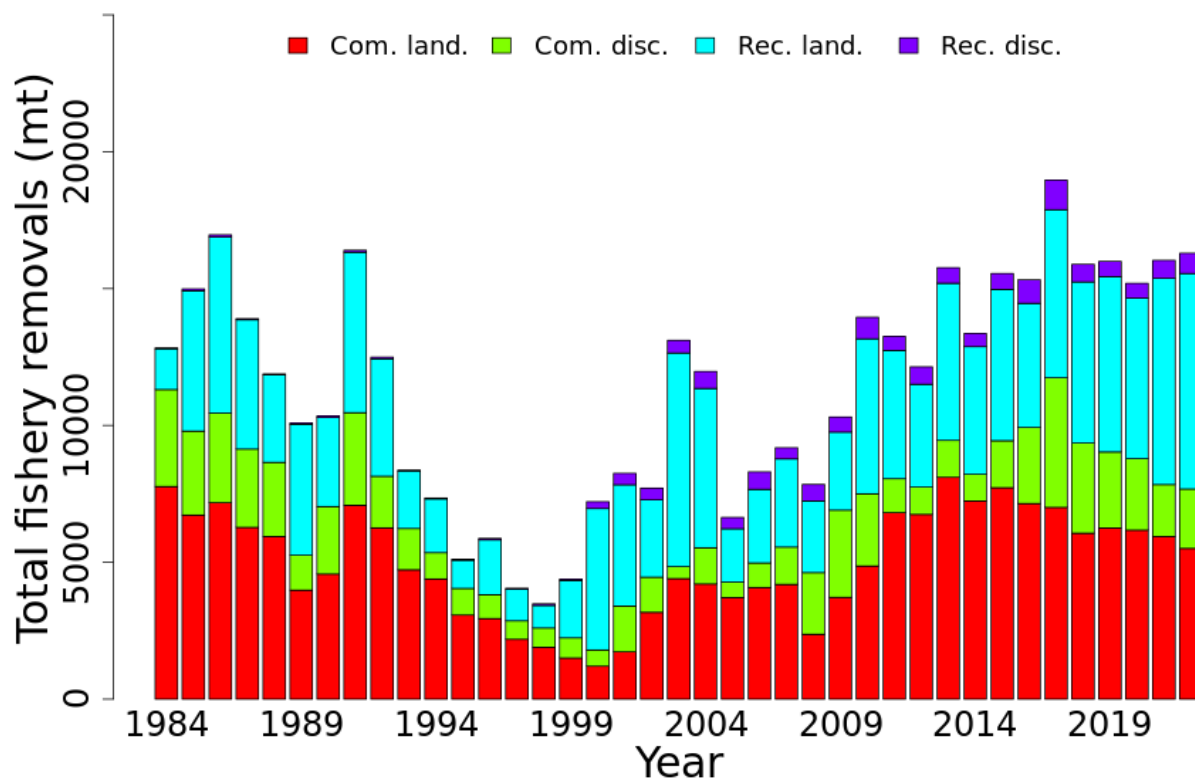


Figure 4: Total catch of Scup between 1984 and 2022 by fishery (commercial and recreational) and disposition (landings and discards).

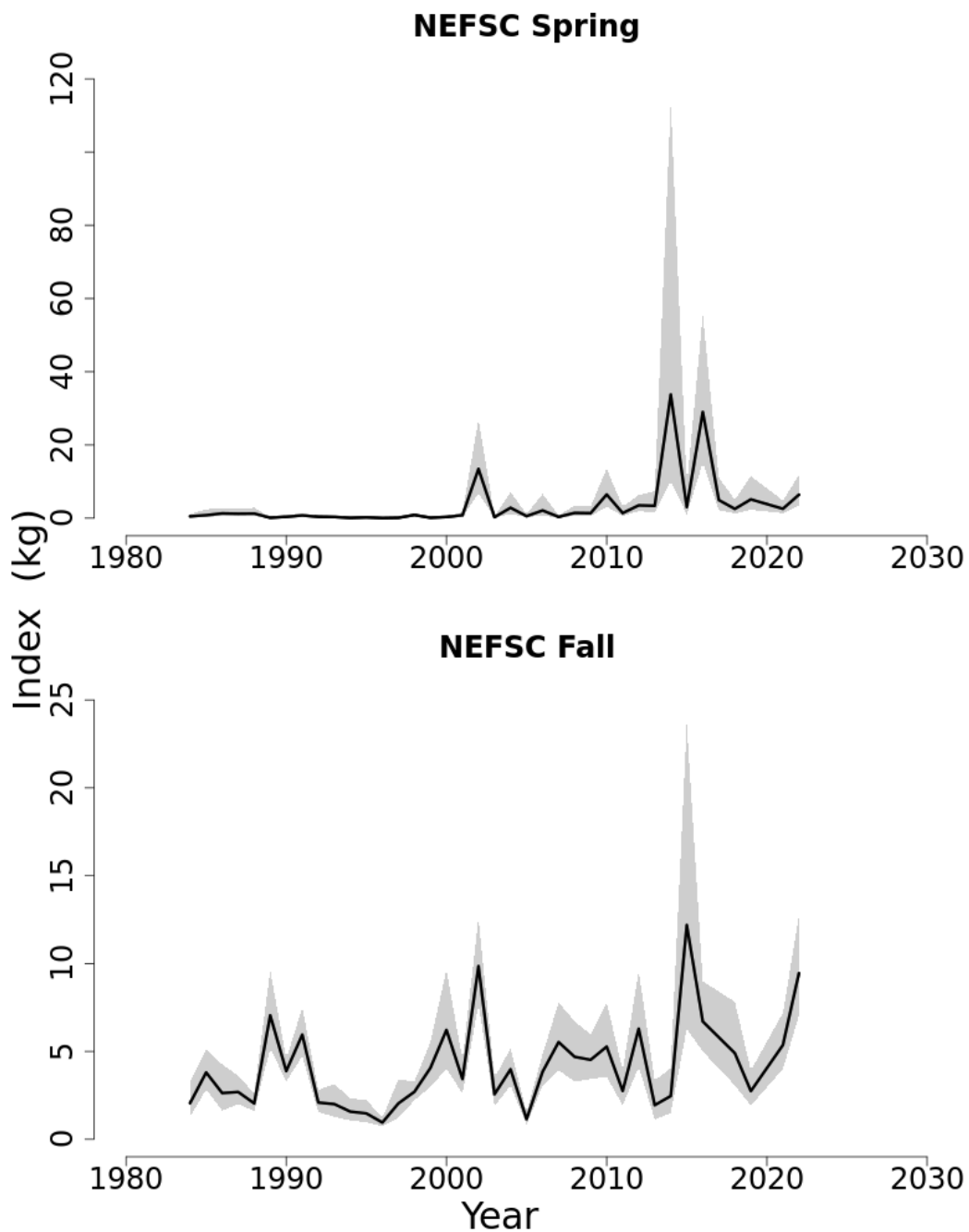


Figure 5: Indices of biomass for Scup between 1984 and 2022 for the Northeast Fisheries Science Center (NEFSC) spring and fall research bottom trawl survey series calibrated to FSV Albatross IV equivalents. The approximate 90% log-normal confidence intervals are shown.



Scup Fishery Information Document

June 2023

This Fishery Information Document provides a brief overview of the biology, stock condition, management system, and fishery performance for scup (*Stenotomus chrysops*) with an emphasis on 2022. Data Sources for Fishery Information Documents are generally from unpublished National Marine Fisheries Service (NMFS) dealer, vessel trip report (VTR), permit, catch accounting and monitoring system (CAMS), Northeast Fisheries Observer Program (NEFOP) data, and Marine Recreational Information Program (MRIP) databases and should be considered preliminary. For more resources on scup management, including previous Fishery Information Documents, please visit <http://www.mafmc.org/sf-s-bsb/>.

Key Facts:

- A 2021 management track assessment using data through 2019 indicated that the scup stock was not overfished, and overfishing was not occurring in 2019. An updated management track assessment will undergo peer review in late June 2023.
- Commercial landings decreased from 12.93 mil lbs. in 2021 to 12.12 mil lbs. in 2022.
- Price per pound and total ex-vessel value remained similar to 2021 and were about \$0.80 and \$9.68 million in 2022, respectively.
- Recreational landings increased from 16.62 mil lbs. in 2021 to 17.36 mil lbs. in 2022.
- The majority of scup harvested recreationally in 2022 was caught by private vessels (66%), followed by anglers fishing from shore (24%), and anglers fishing from for-hire vessels (9%).

Basic Biology

Scup are a schooling, demersal (i.e., bottom-dwelling) species. They are found in a variety of habitats in the Mid-Atlantic. Scup essential fish habitat includes demersal waters, areas with sandy or muddy bottoms, mussel beds, and sea grass beds from the Gulf of Maine through Cape Hatteras, North Carolina. Scup undertake extensive seasonal migrations between coastal and offshore waters. They are found in estuaries and coastal waters during the spring and summer. In the fall and winter, they move offshore and to the south, to outer continental shelf waters south off New Jersey. Scup spawn once annually over weedy or sandy areas, mostly off southern New England. Spawning takes place from May through August and usually peaks in June and July (Steimle et al., 1999).

About 50% of scup are sexually mature at two years of age and about 17 cm (about 7 inches) total length. Nearly all scup older than three years of age are sexually mature. Scup reach a maximum

age of at least 14 years. They may live as long as 20 years; however, few scup older than 7 years are caught in the Mid-Atlantic (NEFSC 2015).

Adult scup are benthic feeders. They consume a variety of prey, including small crustaceans (including zooplankton), polychaetes, mollusks, small squid, vegetable detritus, insect larvae, hydroids, sand dollars, and small fish. The Northeast Fisheries Science Center’s (NEFSC) food habits database lists several predators of scup, including several shark species, skates, silver hake, bluefish, summer flounder, black sea bass, weakfish, lizardfish, king mackerel, and monkfish (Steimle et al., 1999).

Status of the Stock

In June 2021, the NEFSC provided a management track assessment for scup which used commercial and recreational fishery data and fishery-independent survey 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.

The 2021 management track assessment indicates that the scup stock was not overfished and overfishing was not occurring in 2019 (Figures 1 and 2). Spawning stock biomass (SSB) was about 2 times the target level in 2019, and there was a notable increasing trend since the early 2000s; however, in recent years stock has declined (Table 1; Figure 1; NEFSC 2021)

Overfishing was not occurring in 2019. Fishing mortality in 2019 was 32% below the threshold level that defines overfishing (Figure 1). The 2015 year class (i.e., the scup spawned in 2015) is estimated to be the largest in the time series at 415 million fish, while the 2017-2019 year classes are estimated to be below average, with the 2019 year class representing the smallest in the time series (Figure 2; NEFSC 2021).

In 2022, the NEFSC provided a data update which included 2020 and 2021 landings information as well as NEFSC trawl survey data from 2021 through spring 2022 (2020-2021 dead discard estimates were not available at the time and no NEFSC trawl surveys were conducted in 2020 due to COVID). The NEFSC seasonal survey indices of scup had generally decreased since the 2015-2016 record highs. The spring survey index of scup stock biomass increased by 34% from 2019 to 2022; the fall index increased by 132% from 2019 to 2021. The NEFSC fall survey indices also suggest that a very large year class recruited to the stock in 2015 with below average recruitment during 2016-2021 (NEFSC 2022).

Note that updated stock assessment information will be available in late June/July 2023.

Table 1: Biomass and fishing mortality rate reference points and terminal year estimates for scup from the 2021 management track assessment.

	Spawning stock biomass	Fishing mortality rate (F)
Terminal year estimate (2019)	388 mil lbs. (176,404 mt)	0.136
Target	198.46 mil lbs. (90,019 mt)	N/A
Threshold	99.230 mil lbs. (45,010 mt)	0.200
Status	Not overfished	Not overfishing

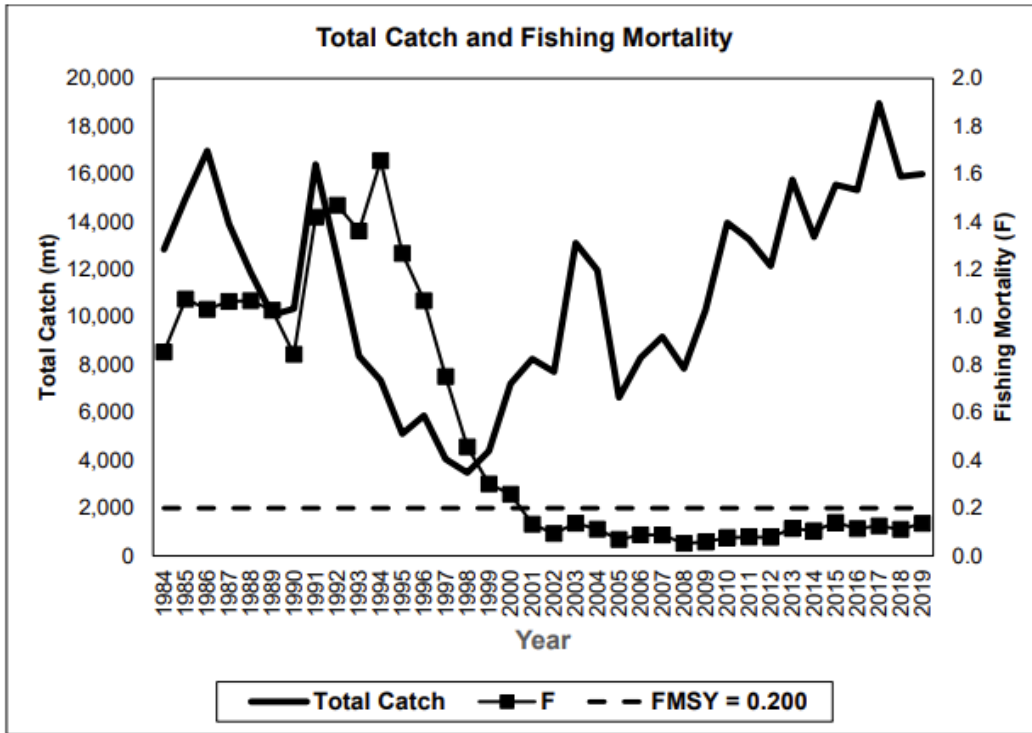


Figure 1:Total fishery catch and fishing mortality (F) for fully selected age 4 scup, 1984-2019. The horizontal dashed line is the fishing mortality reference point from the 2021 management track stock assessment. Overfishing is occurring when the fishing mortality rate exceeds this threshold. Source: NEFSC 2021.

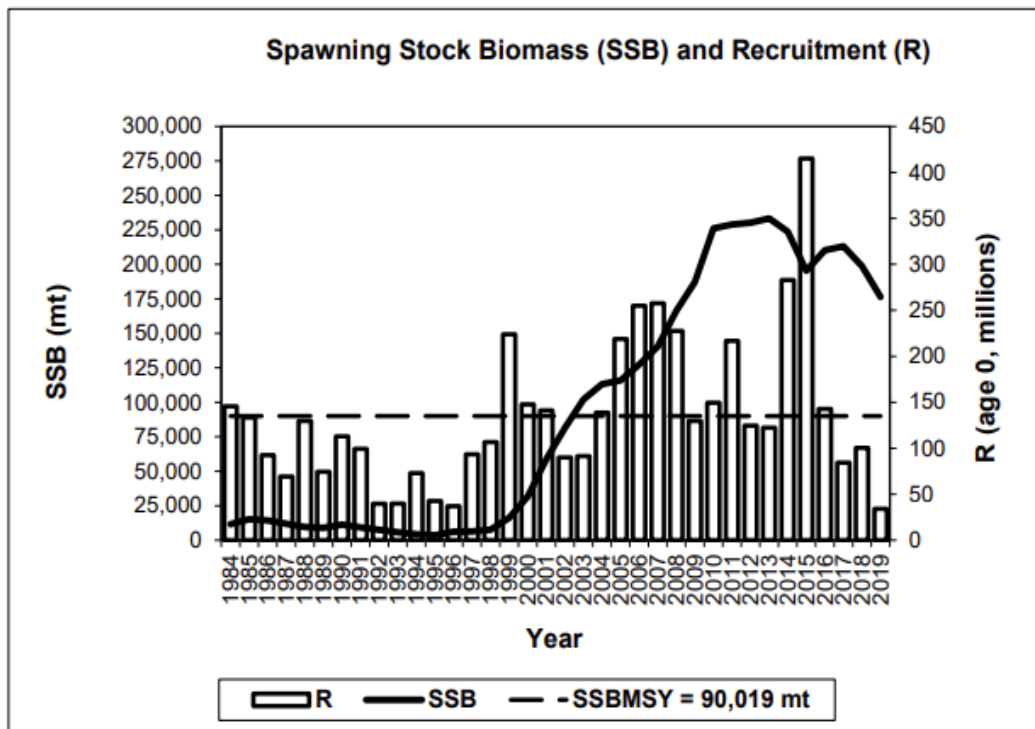


Figure 2: Scup spawning stock biomass and recruitment, 1984-2019. The horizontal dashed line is the biomass target. Source: NEFSC 2021.

Management System and Fishery Performance

Management

The Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission (Commission) cooperatively develop fishery regulations for scup off the east coast of the United States. The National Marine Fisheries Service (NMFS) 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 waters (0-3 miles offshore) and federal waters (3-200 miles offshore). The management unit for scup includes U.S. waters from Cape Hatteras, North Carolina to the U.S./Canadian border.

The federal Fishery Management Plan (FMP) for scup has been in place since 1996, when scup were incorporated into the Summer Flounder FMP through Amendment 8. Amendment 8 established gear restrictions, reporting requirements, commercial quotas, a moratorium on new commercial scup permits, recreational possession limits, and minimum size restrictions for scup fisheries. The Council has made several adjustments to the FMP since 1996. The FMP and subsequent amendments and framework adjustments can be found at: www.mafmc.org/sf-s-bsb/.

The Council's Scientific and Statistical Committee (SSC) recommends annual Acceptable Biological Catch (ABC) levels for scup. The annual ABC is divided into commercial and recreational Annual Catch Limits (ACLs), based on the allocation percentages prescribed in the FMP. Through 2022 the allocation was 78% commercial, 22% recreational. Starting in 2023, the ABC is now allocated 65% to the commercial fishery and 35% to the recreational fishery. Both ABCs and ACLs are catch-based limits, meaning they account for both landings and discards. Projected discards are subtracted to determine the commercial quota and recreational harvest limit (RHL), which are landings-based limits.¹

Fishery Catch Summary

Table 2 shows scup total catch and catch limits from 2014 through 2023, as well as the overfishing limit (OFL) from which the ABC is derived. The ABC is set less than or equal to the OFL to account for scientific uncertainty. The OFL for scup was likely exceeded in 2022 (based on preliminary 2022 total catch estimates). The scup ABC was exceeded in 2017 and 2021, and likely again in 2022 (based on preliminary 2022 data; Table 2).

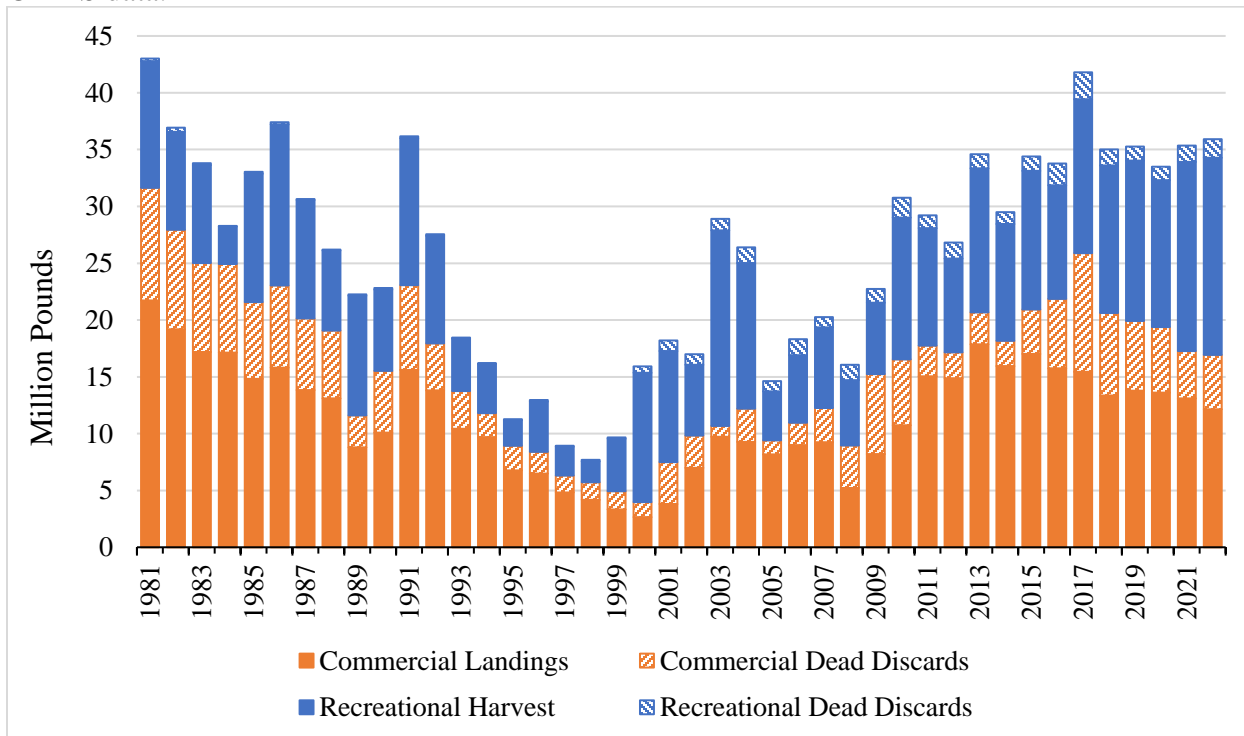
¹ For more information on these allocation revisions, see the fact sheet at: <https://www.mafmc.org/s/SFSBSB-Allocation-FAQs.pdf>.

Table 2: Total scup catch (i.e., commercial and recreational landings and dead discards) compared to the OFL and ABC. All values are in millions of pounds. Total catch calculations use “old” MRIP data through 2019, and “new” MRIP data for 2020-2022.

Year	Total catch ^a	OFL	OFL overage/underage	ABC	ABC overage/underage
2014	23.10	47.8	-52%	35.99	-36%
2015	25.85	47.8	-46%	33.77	-23%
2016	26.91	35.8	-25%	31.11	-14%
2017	32.20	32.09	0%	28.4	13%
2018	26.84	45.05	-40%	39.14	-31%
2019	26.55	41.03	-35%	36.43	-27%
2020	33.50	41.17	-19%	35.77	-6%
2021	35.35	35.3	0%	34.81	2%
2022	35.92	32.56	10%	32.11	12%
2023	--	30.09	--	29.67	--

^a See Table 3 and Table 13 for the commercial and recreational data contributing to the total catch estimates.

Figure 3: Shows commercial and recreational landings and dead discards from 1993 through 2022. Total (commercial and recreational combined) scup catch during this time period peaked in 1981 and 2017, and in recent years has remained relatively constant. Source: unpublished CAMS data.



Commercial Fishery

Commercial scup landings peaked in 1981 at 21.73 million pounds and reached a low of 2.66 million pounds in 2000 (Figure 3). In 2022, commercial fishermen landed 12.12 million pounds of scup, about 59% of the commercial quota. Commercial catch has not exceeded the commercial ACL since 2017. Where commercial ACL overages have occurred, they are generally caused by higher-than-expected dead discards, as commercial fishery landings for scup are typically well controlled to the commercial quota (Table 3).

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

Year	Com. landings ^a	Com. quota	Quota overage/ underage	Com. dead discards ^a	Com. catch ^a	ACL	ACL overage/ underage
2014	15.96	21.95 ^b	-27%	2.16	18.12	28.07	-35%
2015	17.03	21.23	-20%	3.79	20.82	26.35	-21%
2016	15.76	20.47	-23%	6.12	21.88	24.26	-10%
2017	15.45	18.38	-16%	10.43	25.88	22.15	+17%
2018	13.37	23.98	-44%	7.26	20.63	30.53	-32%
2019	13.78	23.98	-43%	6.13	19.91	28.42	-30%
2020	13.58	22.23	-39%	5.76	19.34	27.9	-31%
2021	12.93	20.5	-37%	4.18	17.11	27.15	-37%
2022	12.12	20.38	-41%	4.79	16.91	25.05	-33%
2023	--	14.01	--	--	--	19.29	--

^a Commercial landings based on NMFS dealer data; commercial dead discards from NEFSC 2021 and M. Terceiro, personal communication, June 2023.

^b The 2014 commercial quota was adjusted for Research Set Aside (RSA). Quotas for 2015-2023 do not reflect an adjustment for RSA due to the suspension of the program in 2014. Commercial quotas also reflect deductions from prior year landings overages and discard-based Accountability Measures.

In 2022, about 4.79 million pounds of scup were discarded in commercial fisheries, representing a 12% increase from 2021. Commercial discards increased from 2014-2017, peaking at about 10.42 million pounds in 2017. This was the highest number of discards since 1981 and was likely attributed to the large 2015-year class, which was the largest year class since 1984. In 2017, these scup were very abundant, but mostly too small to be landed in the commercial fishery due to the commercial minimum fish size of 9 inches total length. Since 2017, commercial discards have decreased but have remained higher than years prior to 2015 (Figure 3; Table 3).

The commercial scup fishery operates year-round, taking place mostly in federal waters during the winter and mostly in state waters during the summer. A coast-wide commercial quota is allocated between three quota periods, known as the winter I, summer, and winter II quota periods. These seasonal quota periods were established to ensure that both smaller day boats, which typically operate near shore in the summer months, and larger vessels operating offshore in the winter months can land scup before the annual quota is reached. The dates of the summer and winter II periods were modified in 2018 (Table 4). Both winter periods are managed under a coastwide quota while the summer period quota is divided among states according to the allocation percentages outlined in the Commission's FMP (Table 5).

Table 4: Dates, allocations, and possession limits for the commercial scup quota periods. Winter period possession limits apply in both state and federal waters.

Quota Period	Dates	Commercial quota allocated (%)	Possession limit
Winter I	January 1 – April 30	45.11%	50,000 pounds, until 80% of winter I allocation is reached, then reduced to 1,000 pounds.
Summer	May 1 – September 30 ^a	38.95%	State-specific
Winter II	October 1 – December 31 ^a	15.94%	12,000 pounds. If winter I quota is not reached, the winter II possession limit increases by 1,500 pounds for every 500,000 pounds of scup not landed during winter I.

^a Prior to 2018, the summer period was May 1 - October 31 and the winter II period was November 1 - December 31, with the same allocations as shown above.

Table 5: State-by-state quotas for the commercial scup fishery during the summer quota period (May-September).

State	Share of summer quota
Maine	0.1210%
Massachusetts	21.5853%
Rhode Island	56.1894%
Connecticut	3.1537%
New York	15.8232%
New Jersey	2.9164%
Maryland	0.0119%
Virginia	0.1650%
North Carolina	0.0249%
Total	99.9908%

Once the quota for a given period is reached, the commercial fishery is closed for the remainder of that period. If the full winter I quota is not harvested, unused quota is added to the winter II period. Any quota overages during the winter I and II periods are subtracted from the quota allocated to those periods in the following year. Quota overages during the summer period are subtracted from the following year's quota only in the states where the overages occurred.

A possession limit of 50,000 pounds is in effect during the winter I quota period. A possession limit of 12,000 pounds is in effect during the winter II period. If the winter I quota is not reached, the winter II possession limit increases by 1,500 pounds for every 500,000 pounds of quota not caught during winter I. During the summer period, various state-specific possession limits are in effect.

The commercial scup fishery in federal waters is predominantly a bottom otter trawl fishery. In 2022, 96% of the commercial scup landings (by weight) reported by federal VTR data were caught with bottom otter trawls. Pots/traps accounted for about 3% of landings, while all other gear types accounted for less than 1% of the 2022 commercial scup landings.

Prior to 2019, trawl vessels could not possess 1,000 pounds or more of scup during October - April, or 200 pounds or more during May - September, unless they use a minimum mesh size of 5-inch diamond mesh, applied throughout the codend for at least 75 continuous meshes forward of the terminus of the net. In 2019, another threshold period was added from April 15-June 15 with a 2,000-pound possession limit to allow for higher retention in the small-mesh squid fishery. Pots and traps for scup are required to have degradable hinges and escape vents that are either circular with a 3.1-inch minimum diameter or square with a minimum length of 2.25 inches on the side.

VTR data suggests that NMFS statistical areas 613, 537, 616, 539 and 611 were responsible for the largest percentage of commercial scup catch in 2022. Statistical area 539, off Rhode Island, had the highest number of trips which caught scup; however, statistical area 613 off of Long Island, NY accounted for the greatest amount of scup caught (Table 6, Figure 4).

Table 6: Statistical areas which accounted for greater than 5% of the total commercial scup catch (by weight based on VTR data) in 2022, with associated number of trips. Federal VTR data do not capture landings by vessels only permitted to fish in state waters.

Statistical area	Percentage of 2022 commercial scup catch	Number of trips
613	24%	1,377
537	20%	1,066
616	16%	346
539	10%	2,108
611	6%	1,139

2022 Commercial Scup Catch - VTRs

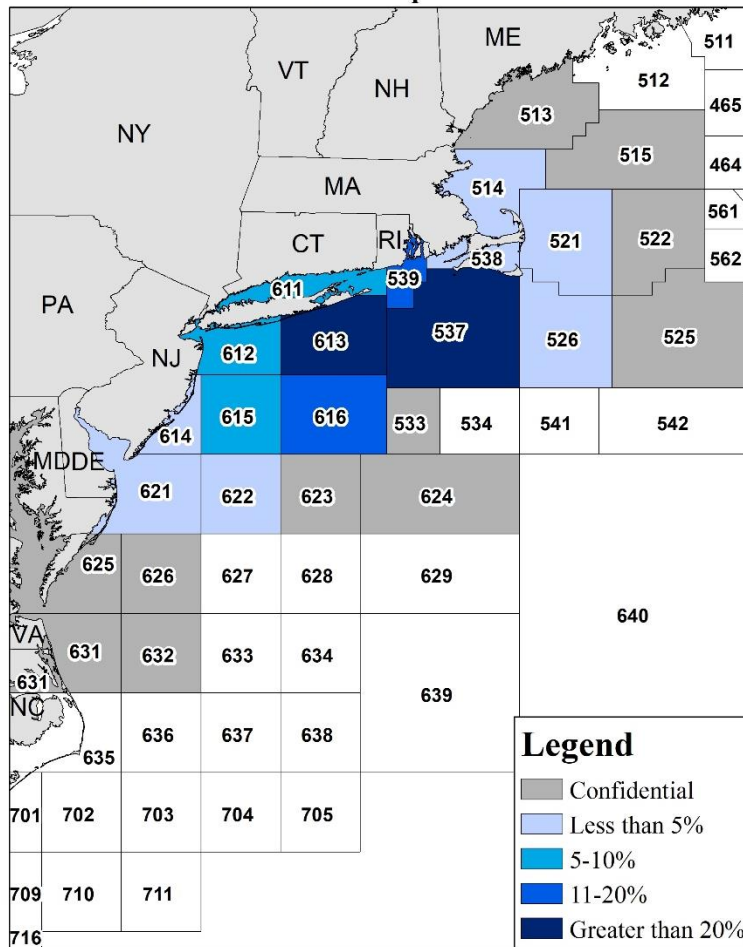


Figure 4: Proportion of scup catch by statistical area in 2022 based on federal VTR data. Statistical areas marked “confidential” are associated with fewer than three vessels and/or dealers. The amount of catch (landings and discards) that was not reported on federal VTRs (e.g., catch from vessels permitted to fish only in state waters) is unknown.

Over the past two decades, total scup ex-vessel revenue ranged from a low of \$5.39 million in 2001 to a high of \$13.77 million in 2015. In 2022, 12.12 million pounds of scup were landed by commercial fishermen from Maine through North Carolina. Total ex-vessel value in 2022 was \$9.68 million, resulting in an average price per pound of \$0.80 (Figure 5). All revenue and price values were adjusted to 2022 dollars to account for inflation.

In general, the price of scup tends to be lower when landings are higher, and vice versa (Figure 5). This relationship is not linear and many other factors besides landings likely influence price. The highest average price per pound over the past two plus decades was \$2.47 and occurred in 1998. The lowest average price per pound was \$0.69 and occurred in 2013.

Over 122 federally permitted dealers from Maine through North Carolina purchased scup in 2022. More dealers in New York purchased scup than in any other state (Table 7).

At least 100,000 pounds of scup were landed by commercial fishermen in 15 ports in 6 states in 2022. These ports accounted for approximately 92% of all 2022 commercial scup landings. Point

Judith, Rhode Island was the leading port, both in terms of landings and number of vessels landing scup (Table 8). Detailed community profiles developed by the Northeast Fisheries Science Center’s Social Science Branch can be found at www.mafmc.org/communities/.

Since 1996, a moratorium permit has been required to fish commercially for scup. In 2022, 603 vessels held commercial moratorium permits for scup.

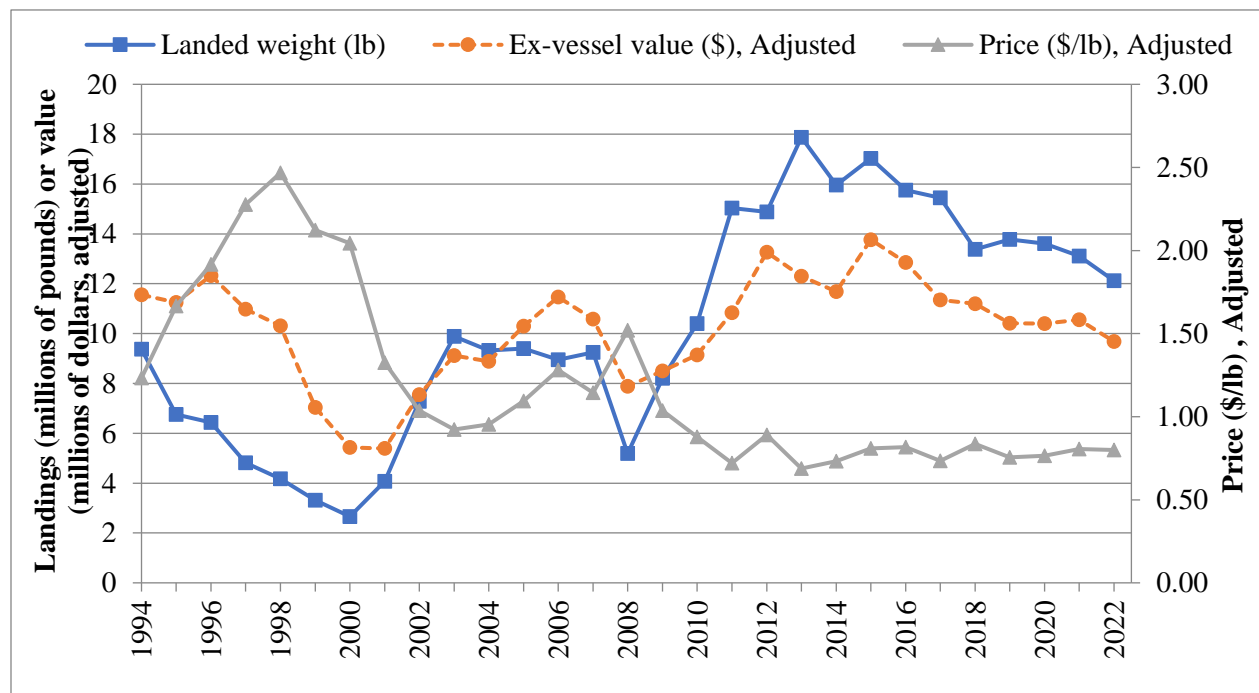


Figure 5: Landings, ex-vessel value, and price for scup from Maine through North Carolina, 1994-2022. Ex-vessel value and price are inflation-adjusted by the Gross Domestic Product Price Deflator indexed for 2022 (<https://fred.stlouisfed.org>). Source: NMFS unpublished dealer data.

Table 7: Number of dealers per state which reported purchases of scup in 2022.

State	MA	RI	CT	NY	NJ	DE	MD	VA	NC
Number of Dealers	31	30	13	45	15	3	5	5	8

Table 8: Ports reporting at least 100,000 pounds of scup landings in 2020, based on NMFS dealer data. C = Confidential. Source: NMFS Unpublished dealer data.

Port	Scup landings (lbs.)	% of total landings	Number of vessels
POINT JUDITH, RI	3,203,618	26%	125
MONTAUK, NY	2,802,648	23%	79
PT. PLEASANT, NJ	1,397,265	12%	30
CAPE MAY, NJ	964,646	8%	24
NEW BEDFORD, MA	712,476	6%	48
MATTITUCK, NY	C	C	C
NEW LONDON, CT	263,461	2%	4
STONINGTON, CT	229,225	2%	18
HAMPTON BAY, NY	224,861	2%	22
LITTLE COMPTON, RI	198,676	2%	9
EAST HAVEN, CT	134,752	1%	4
SHINNECOCK, NY	129,546	1%	16
GREENPORT, NY	124,745	1%	3
AMAGANSETT, NY	C	C	C
NEWPORT NEWS, VA	102,276	1%	14

The top non-target species in the commercial scup fishery were identified based on raw data from Northeast Fisheries Observer Program (NEFOP) observed trips from 2017-2022 where scup made up at least 75% of the landings by weight. Using this definition of a directed trip, the most common non-target species in the scup fishery include spiny dogfish, northern sea robin, little skate, summer flounder, and black sea bass (Table 9).

Table 9: Percent of non-target species caught in observed trawls where summer flounder made up at least 75% of the observed landings, 2017-2022. Only those non-target species comprising at least 1% of the aggregate non-target catch are listed.

Species	% of total catch on scup observed directed trips, 2017-2022 ^a
DOGFISH, SPINY	8.3%
SEA ROBIN, NORTHERN	3.6%
SKATE, LITTLE	3.1%
FLOUNDER, SUMMER (FLUKE)	2.6%
SEA BASS, BLACK	2.5%
HAKE, SILVER (WHITING)	1.2%
SKATE, WINTER (BIG)	1.0%
DOGFISH, SMOOTH	1.0%

^a Percentages shown are aggregate totals over 2017-2022 and do not reflect the percentages of non-target species caught on individual trips. This analysis describes only observed trips and has not been expanded to the fishery as a whole.

Scup Gear Restricted Areas

Two scup gear restricted areas (GRAs) were first implemented in 2000 with the goal of reducing scup discards in small-mesh fisheries. The GRA boundaries have been modified multiple times since their initial implementation. The current boundaries are shown in Figure 6: The Scup Gear Restricted Areas. Trawl vessels may not fish for or possess longfin squid, black sea bass, or silver hake in the Northern GRA from November 1 – December 31 and in the Southern GRA from January 1 – March 15 unless they use mesh which is at least 5 inches in diameter. The GRAs are thought to have contributed to the recovery of the scup population in the mid- to late-2000s (Terceiro and Miller, 2014). As previously stated, commercial scup discards increased by 71% between 2016 and 2017, likely due to the large 2015-year class (NEFSC 2021). Although discards decreased by about 43% in 2022 compared with the record high discards in 2017, they remain above the total average annual discards from 2003-2022.

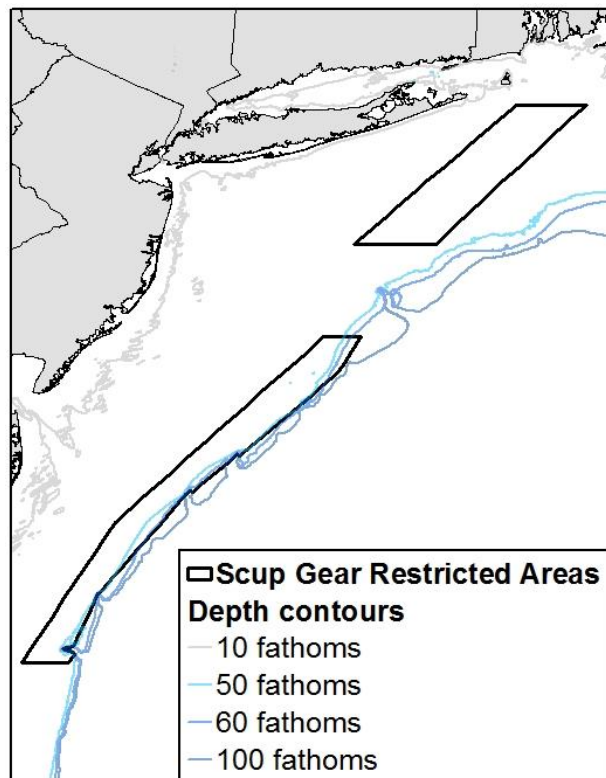


Figure 6: The Scup Gear Restricted Areas.

Recreational Fishery

The recreational scup fishery is managed on a coastwide basis in federal waters. Federal waters measures remained unchanged from 2015-2021, then in 2022 a 1-inch increase to the scup recreational minimum size was implemented (Table 10). A new approach for setting recreational management measures, referred to as the Percent Change Approach, was used to set scup measures in 2023.² This approach required a 10% reduction in expected harvest in 2023. The Council and Commission proposed decreasing the recreation possession limit from 50 to 40 fish per person and modifying the season from open year-round to May 1 – December 31. Given these changes were not expected to achieve the full reduction in harvest required, the Council and Commission also agreed states would further modify state measures through the commission process to achieve the full coastwide harvest reduction required.

The Commission applies a regional management approach to recreational scup fisheries in state waters, where New York, Rhode Island, Connecticut, and Massachusetts develop regulations intended to achieve 97% of the RHL. The minimum fish size, possession limit, and open season for recreational scup fisheries in state waters vary by state. State waters measures remained unchanged from 2015 through 2017. Massachusetts through New Jersey liberalized their minimum size limits and/or seasons in 2018 compared to 2017, there were very minor changes in the state regulations from 2018 to 2019, and no changes to state measures from 2019 to 2021. In 2022, the scup recreational minimum size limit was increased by 1-inch in state waters of all states (Table 11). State measures were changed again in 2023, and measured changed varies by state (Table 12).

Table 10: Federal recreational measures for scup, 2005-2023.

Regulation	2005-2007	2008-2009	2010-2011	2012	2013	2014	2015-2021	2022	2023^a
Minimum size (total length)	10 in.	10.5 in.	10.5 in.	10.5 in.	10 in.	9 in.	9 in.	10 in.	10 in.
Possession limit	50	15	10	20	30	30	50	50	40
Open season	Jan 1 – Feb 28 & Sept 18 – Nov 30	Jan 1 – Feb 28 & Oct 1 – Oct 31	Jun 6 – Sept 26	Jan 1 – Dec 31	Jan 1 – Dec 31	Jan 1 – Dec 31	Jan 1 – Dec 31	Jan 1 – Dec 31	May 1 – Dec 31

^a Implementation pending final rule (*as of 6/13/2023*).

² More information on the Percent Change Approach is available at <https://www.mafmc.org/newsfeed/2022/mafmc-amp-asmfc-take-first-step-toward-recreational-management-reform-for-bluefish-summer-flounder-scup-and-black-sea-bass>

Table 11: State recreational fishing measures for scup in 2022.

State	Minimum Size (inches)	Possession Limit	Open Season
MA (private & shore)	10	30 fish; 150 fish/vessel with 5+ anglers on board	April 13-December 31
MA (party/charter)	10	30 fish	April 13-April 30; July 1- December 31
		50 fish	May 1-June 30
RI (private & shore)	10	30 fish	January 1-December 31
RI shore program (7 designated shore sites)	9		
RI (party/charter)	10	30 fish	January 1-August 31; November 1-December 31
		50 fish	September 1-October 31
CT (private & shore)	10	30 fish	January 1-December 31
CT shore program (45 designed shore sites)	9		
CT (party/charter)	10	30 fish	January 1-August 31; November 1-December 31
		50 fish	September 1-October 31
NY (private & shore)	9	30 fish	January 1-December 31
NY (party/charter)	9	30 fish	January 1-August 31; November 1-December 31
		50 fish	September 1- October 31
NJ	10	50 fish	January 1- December 31
DE	9	50 fish	January 1-December 31
MD		30 fish	
VA		50 fish	
NC, North of Cape Hatteras (N of 35° 15'N)		50 fish	

Table 12: State recreational fishing measures for scup in 2023.

State	Minimum Size (inches)	Possession Limit	Open Season
MA (private vessel)	10.5	30 fish	May 1 – December 31
MA (shore)	9.5		
MA (party/charter)	10.5	40 fish	May 1 – June 30
		30 fish	July 1 – December 31
RI (private vessel)	10.5	30 fish	May 1 – December 31
RI (shore)	9.5		
RI (party/charter)	10.5“	30 fish	May 1 – August 31; November 1 – December 31
		40 fish	September 1 – October 31
CT (private vessel)	10.5	30 fish	May 1 – December 31
CT (shore)	9.5		
CT (Authorized For-Hire Monitoring Program Vessels)	10.5	30 fish	May 1 – August 31; November 1 – December 31
		40 fish	September 1 – October 31
NY (private vessel)	10.5	30 fish	May 1 – December 31
NY (shore)	9.5		
NY (party/charter)	10.5	30 fish	May 1 – August 31; November 1 – December 31
		40 fish	September 1 – October 31
NJ	10	30 fish	August 1 – December 31
DE	9	40 fish	January 1 – December 31
MD		30 fish	
VA		30 fish	
NC, North of Cape Hatteras (N of 35° 15’N)		40 fish	

From 1981-2022, MRIP estimates indicate that recreational catch of scup (in number of fish) peaked in 2017 at 41.20 million scup and landings peaked in 1986 with an estimated 30.43 million scup landed by recreational fishermen from Maine through North Carolina. Recreational catch was lowest in 1998 when an estimated 6.86 million scup were caught and 2.74 million scup were landed. In 2022, recreational anglers from Maine through North Carolina caught an estimated 36.47 million scup and landed 18.04 million scup (about 17.36 million pounds; Figure 7; Table 13).

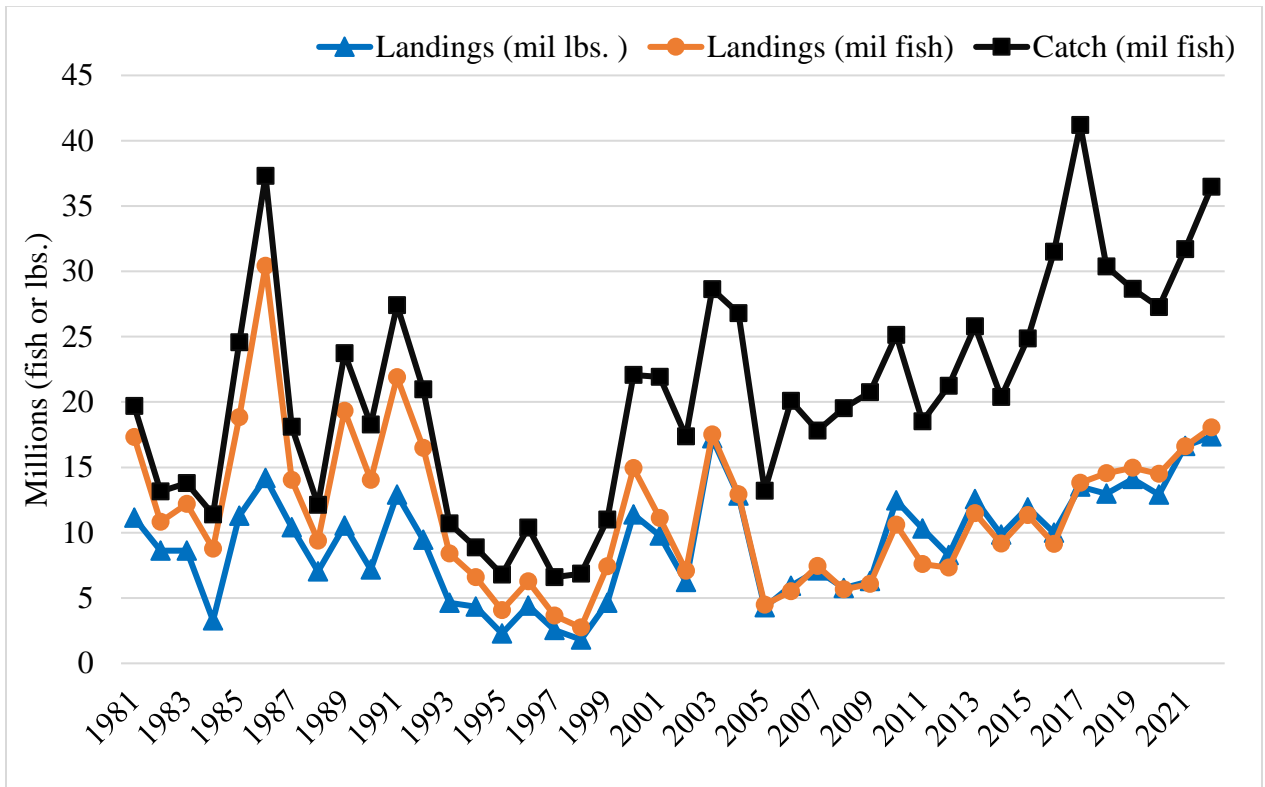


Figure 7: MRIP estimates of recreational scup landings in numbers of fish and pounds and catch in numbers of fish, ME - NC, 1981-2022.

Table 13: Scup recreational landings, dead discards, and catch compared to the RHL, projected recreational dead discards, and recreational ACL, 2014-2023. Information is provided in the “old” MRIP units for 2014-2019, and in the “new” MRIP units for 2020-2022. For scup, ACLs and RHLs did not account for the revised MRIP data until 2020. Therefore, overage/underage evaluations must be based in the old MRIP units through 2019 and the new MRIP units starting in 2020. All values are in millions of pounds.

Year	Version of MRIP data used	Rec. landings ^a	RH L	RHL over/under	Rec. dead disc. ^a	Rec. catch	ACL	ACL over/under
2014	Old MRIP (pre-revision)	4.43	7.03	-37%	1.06	5.49	7.92	-31%
2015		4.41	6.8	-35%	1.28	5.69	7.43	-23%
2016		4.26	6.09	-30%	1.90	6.16	6.84	-10%
2017		5.42	5.5	-1%	2.38	7.80	6.25	+25%
2018		5.61	7.37	-24%	1.42	7.03	8.61	-18%
2019	Old MRIP (provided by NEFSC)	5.41	7.37	-27%	1.23	6.64	8.01	-17%
2020 ^c	New MRIP (post-revision)	12.91	6.51	+98%	1.19	14.10	7.87	+79%
2021		16.62	6.07	+174%	1.44	18.06	7.66	+136%
2022		17.36	6.08	+186%	1.63	18.99	7.06	+169%
2023		--	9.27	--	--	--	10.39	--

^a Recreational harvest data from MRIP; recreational dead discards from NEFSC 2021 and M. Terceiro, personal communication, June 2023.

^b For 2014, the RHL was adjusted for Research Set Aside (RSA). RHLs for 2015-2023 do not reflect an adjustment for RSA due to the suspension of the program in 2014.

^c Recreational harvest estimates for 2020 were impacted by temporary suspension of shoreside intercept surveys due to COVID-19. NMFS used imputation methods to fill gaps in 2020 catch data with data collected in 2018 and 2019. For scup, the 2020 harvest estimate relied on approximately 25% imputed data. For more information on imputation methods see: <https://www.mafmc.org/s/1-2020-Marine-Recreational-Catch-Estimates-QA-52121.pdf>.]

Vessels carrying passengers for hire in federal waters must obtain a federal party/charter permit. In 2022, 828 vessels held scup federal party/charter permits. Many of these vessels also held party/charter permits for summer flounder and black sea bass.

Most recreational scup catch occurs in state waters during the warmer months when the fish migrate inshore. Between 2020 and 2022, on average 94% of recreational scup catch (in numbers of fish) occurred in state waters and about 6% occurred in federal waters (Table 14). New York, Connecticut, Rhode Island, Massachusetts, and New Jersey accounted for over 99% of recreational scup harvest in 2022 (Table 15).

About 66% of recreational scup landings (in numbers of fish) in 2022 were from anglers who fished on private or rental boats and about 24% were from anglers fishing from shore. Additionally, about 9% were from anglers fishing on party or charter boats (Table 16).

Table 14: Estimated percent of scup landed by recreational fishermen in state and federal waters, Maine – North Carolina, 2013 – 2022. Percentages calculated based on numbers of fish.

Source: NMFS unpublished MRIP data.

Year	State waters	Federal waters
2013	95%	5%
2014	97%	3%
2015	99%	1%
2016	95%	5%
2017	97%	3%
2018	96%	4%
2019	97%	3%
2020	90%	10%
2021	96%	4%
2022	97%	3%
2013-2022 average	96%	4%
2020-2022 average	94%	6%

Table 15: Estimated percent of scup harvested by state, 2019 – 2022. Percentages calculated based on numbers of fish. Source: NMFS unpublished MRIP data.

State	2020	2021	2022	2020-2022 average
Maine	0%	0%	0%	0%
New Hampshire	0%	0%	0%	0%
Massachusetts	9%	22%	12%	15%
Rhode Island	11%	17%	16%	15%
Connecticut	25%	17%	10%	18%
New York	49%	42%	59%	50%
New Jersey	6%	1%	1%	3%
Delaware	0%	0.01%	0.01%	0.01%
Maryland	0%	0%	0.01%	0.01%
Virginia	0%	0.8%	0%	0.3%
North Carolina	0.01%	0.02%	0.02%	0.01%

Table 16: Proportion of scup harvest (calculated based on numbers of fish) by recreational fishing mode, Maine - North Carolina, 2013 – 2022. Note: percentages may not sum to 100% due to rounding. Source: NMFS unpublished MRIP data.

Year	Private/rental	Shore	Party/charter	Total number (number of fish)
2013	52%	34%	15%	11,487,157
2014	67%	20%	12%	9,164,521
2015	77%	17%	6%	11,330,115
2016	56%	34%	10%	9,143,577
2017	65%	24%	11%	13,820,251
2018	48%	43%	9%	14,545,138
2019	56%	29%	15%	14,952,142
2020	62%	28%	10%	14,491,967
2021	73%	18%	9%	16,592,493
2022	66%	24%	9%	18,038,052
2013-2022 average	62%	27%	11%	13,356,541
2020-2022 average	67%	23%	10%	16,374,171

The top non-target species in the recreational fishery were identified by a species guild approach that identifies species with the strongest associations on recreational trips from 2017-2021 (2021 MRIP data used here were preliminary and excluded wave 6). Black sea bass, sea robins, summer flounder, bluefish, and tautog were highly correlated with recreational scup catch. (J. Brust, personal communication March 2022).

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