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MEMORANDUM

Date: May 22, 2020
To: Summer Flounder, Scup, and Black Sea Bass Monitoring Committee
From: Karson Coutre, staff
Subject: Scup Commercial Discard Analysis

Background

Each year, the Council reviews a report on commercial scup discards. The 2019 scup discard report to the Council (attached) concluded that commercial discards were still well above average and should continue to be evaluated. Discard information in future years may provide insight into the effects of recent regulatory changes such as increases in the incidental possession limit (2016, 2019) and changes to the southern GRA boundary (2017; See the attached 2019 discard report for more details on these changes). Discards have also closely followed trends in recruitment and may continue to decline due to the low recruitment from 2016-2018. The discard report is being updated for 2020 and the purpose of this May Monitoring Committee discussion is to seek preliminary feedback on ways to more explicitly address the questions listed below. The Monitoring Committee will review the full report at their July meeting.

The following questions have arisen through Council, Advisory Panel and Monitoring Committee discussions during the development and presentation of previous discard reports:

1. Are the scup Gear Restricted Areas (GRAs) effective at minimizing scup discards?
 - a. Is the Northern GRA geographic range and timing of restriction effective?
 - b. Is the Southern GRA geographic range and timing of restriction effective?
2. When and where are most discards occurring and how has this changed over time?
 - a. During periods of time and in locations with high discards: which mesh sizes are accounting for these discards?
3. What is the size/age distribution of commercial discards?
4. How has the spatial distribution of scup (age 0-2 and >2) changed over time based on survey information?

Data Available

Discards have been estimated using the “MESH240” methodology that was peer-reviewed and approved in the 2015 benchmark stock assessment.¹ Scup trawl discards are estimated by calendar quarter, statistical area, and three mesh size categories, providing 240 strata annually. Estimated discards are calculated using observer, VTR, and dealer data. The MESH240 estimates are the most robust and accurate dataset available and were used as the basis for the 2019 discard report, however these data may not be able to address all the questions surrounding scup discards due to spatial and temporal precision. Directly analyzing the observer or VTR data could allow for a comparison of more refined geographic locations inside and outside of the GRA boundaries between specific dates, however these estimates have drawbacks. For example, VTR location information is self-reported and may not be precise. Observer coverage is limited and the raw data are not likely to be representative of the full fisheries. Spatial distribution through time can be compared using various survey data.

Discussion questions for the Monitoring Committee:

- What specific questions might be most appropriate to analyze through the 2020 scup commercial discard report?
- What is the appropriateness of using the VTR and observer data to evaluate discard trends before and after GRA implementation and for considering recent changes in the incidental possession limits?
- Are there other datasets that should be considered to address these questions?

¹ <https://www.fisheries.noaa.gov/new-england-mid-atlantic/northeast-stock-assessment-documents>



Commercial Fishery Scup Discard Report

2019

Background

This document focuses on scup discards in the commercial fishery estimated using the methodology that was peer-reviewed and approved in the 2015 benchmark stock assessment. Scup trawl discards are estimated by calendar quarter, statistical area, and three mesh categories: large (i.e. 5" or greater), small (i.e. smaller than 5" but larger than 2.125"), and squid (i.e. 2.125" or less). Estimated discards are calculated using observer, VTR, and dealer data (NEFSC 2015). Commercial discards for other gear types are not estimated in this manner and are not incorporated into the stock assessment since other gear types account for comparatively small amounts of scup catch.

The scup Gear Restricted Areas (GRAs) became effective November 2000 and have been modified several times. They were designed to reduce bycatch of juvenile scup in small mesh fisheries. Currently, the Southern GRA is in effect from January 1 - March 15. The Northern GRA is in effect from November 1 - December 31. The most recent change in boundary of southern scup GRA became effective January 1, 2017 (Figure 1). Vessels fishing in the GRAs during the affected times of year may not fish for, possess, or land longfin squid, black sea bass, or silver hake/whiting unless they use diamond mesh of at least 5 inches in diameter.

Effective January 1, 2016, the incidental scup possession limit for trawl vessels using mesh smaller than 5 inches in diameter during November-April increased from 500 pounds to 1,000 pounds. This change was intended to reduce scup discards considering the large increase in scup biomass since this regulation was last changed. Effective January 1, 2019, the incidental scup possession limit from April 15-June 15 was further increased to 2,000 pounds to allow the spring small mesh inshore fisheries for longfin squid to retain, rather than discard, more of the scup they catch incidentally.

The 2015 year class was estimated to be 326 million fish, the largest year class in the assessment time series since 1984 (NEFSC 2019). In 2017, these fish were mostly too small (< 8 inches/ <20 cm) to be landed in the commercial fishery (Mark Terceiro, NEFSC, personal communication). However, by 2018, they should have been fully recruited to the fishery (i.e. at least 9 inches in length). Recruitment decreased during 2016-2018. Based on the 2019 operational assessment, spawning stock biomass (SSB) is projected to further decrease toward the target unless more above average year classes recruit to the stock in the short term (Figure 2).

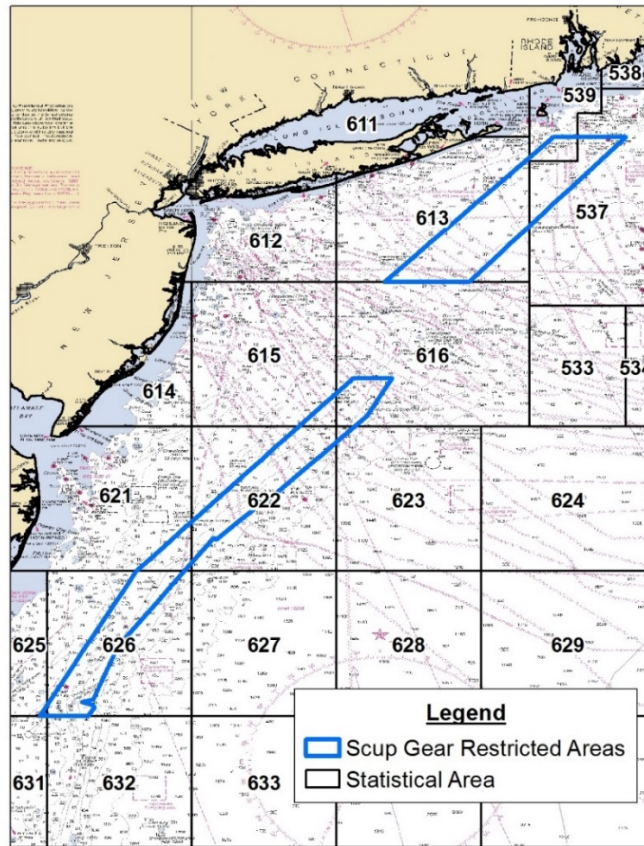


Figure 1: Scup GRAs and NMFS statistical areas.

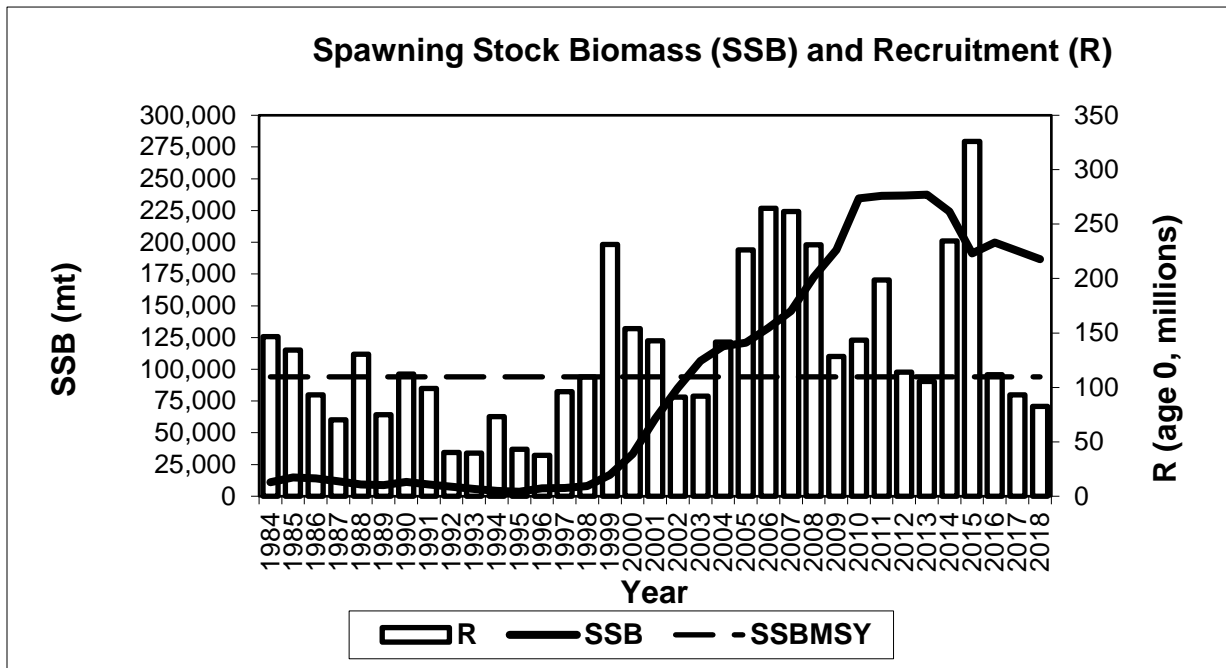


Figure 2: Scup spawning stock biomass and recruitment at age 0, 1984-2018 from the 2019 operational stock assessment (NEFSC 2019).

Discard Evaluation

Scup discards are still high but dropped in 2018 compared with 2017.

Total estimated scup discards from all mesh sizes and statistical areas were 3,293 mt (7.3 million pounds) in 2018, 30% lower than 2017 discards which were the highest since 1981 (Figure 3). Discards in 2018 were 81% higher than average discards from 2001-2018.

Discards are variable by mesh size, quarter, and statistical area.

In 2018, squid mesh accounted for 49% of total estimated scup discards, small mesh accounted for 20%, and large mesh accounted for 31% (Figure 3). Scup discards from all mesh sizes decreased in 2018 compared with 2017, small mesh decreased by 40%, squid mesh by 32%, and large mesh by 19% (Figure 3). The 2018 proportions of discards by mesh size were close to the 2001-2018 averages of 46% for squid mesh, 28% for small mesh, and 26% for large mesh.

In 2018, 48% of the discards occurred in quarter 2 (April through June) with the majority of the quarter 2 discards occurring in the squid mesh category (72%, Figure 4). Seasonal patterns in scup discards varied by year. However, over the past 10 years, the average of annual discards by quarter were 23% in quarter 1, 40% in quarter 2, 17% in quarter 3, and 21% in quarter 4 (Figure 5).

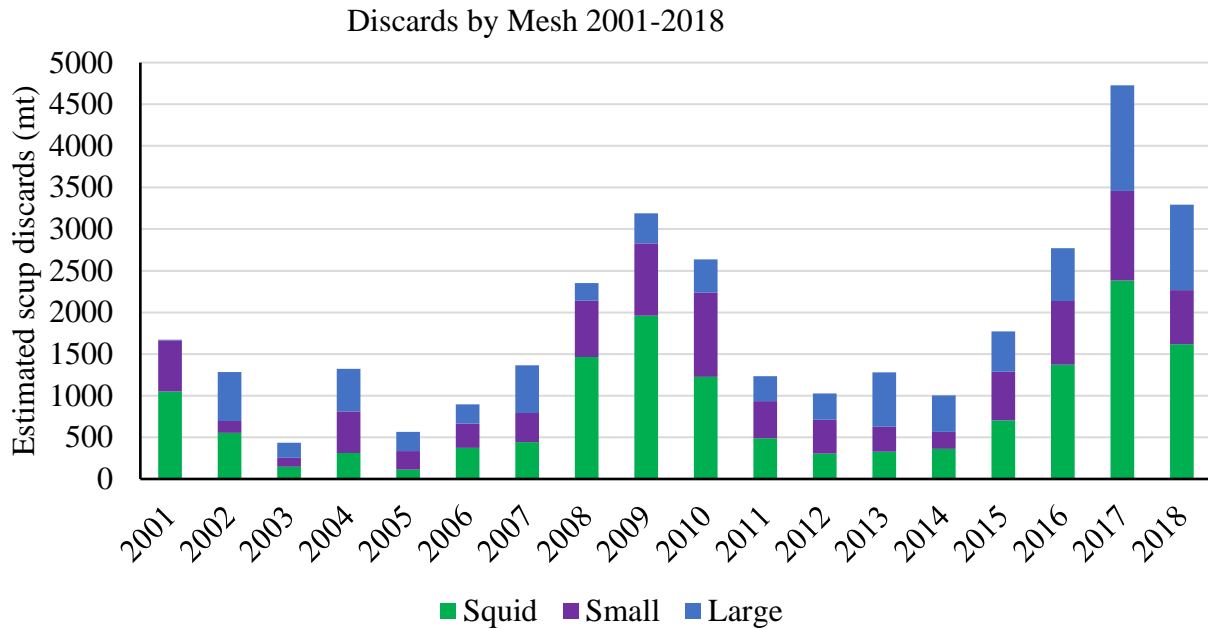


Figure 3: Estimated scup discards by year and mesh size from 2001-2018.

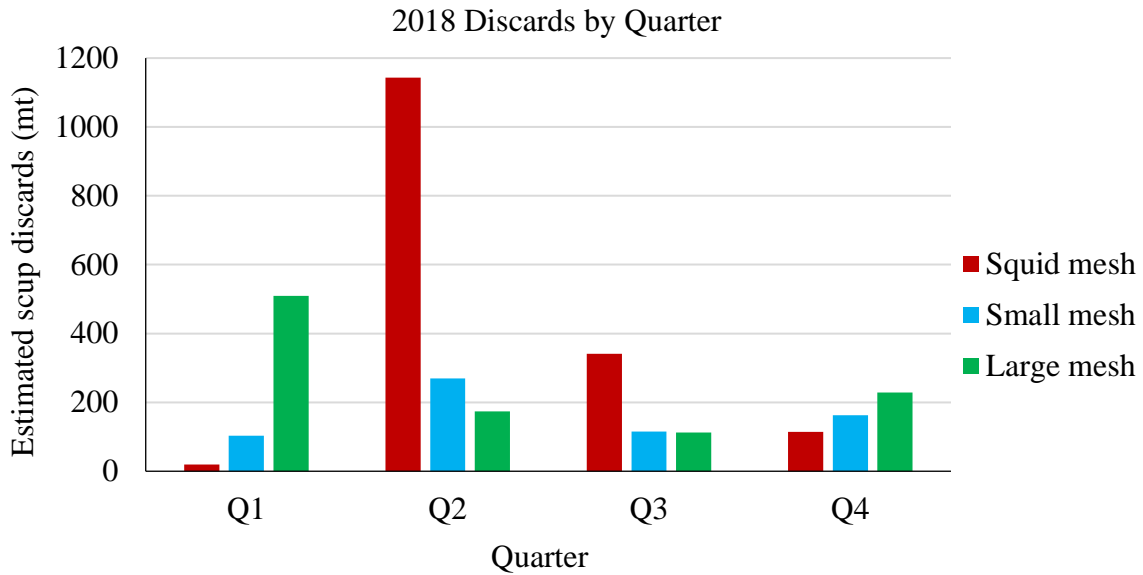


Figure 4: 2018 estimated discards by quarter and mesh size.

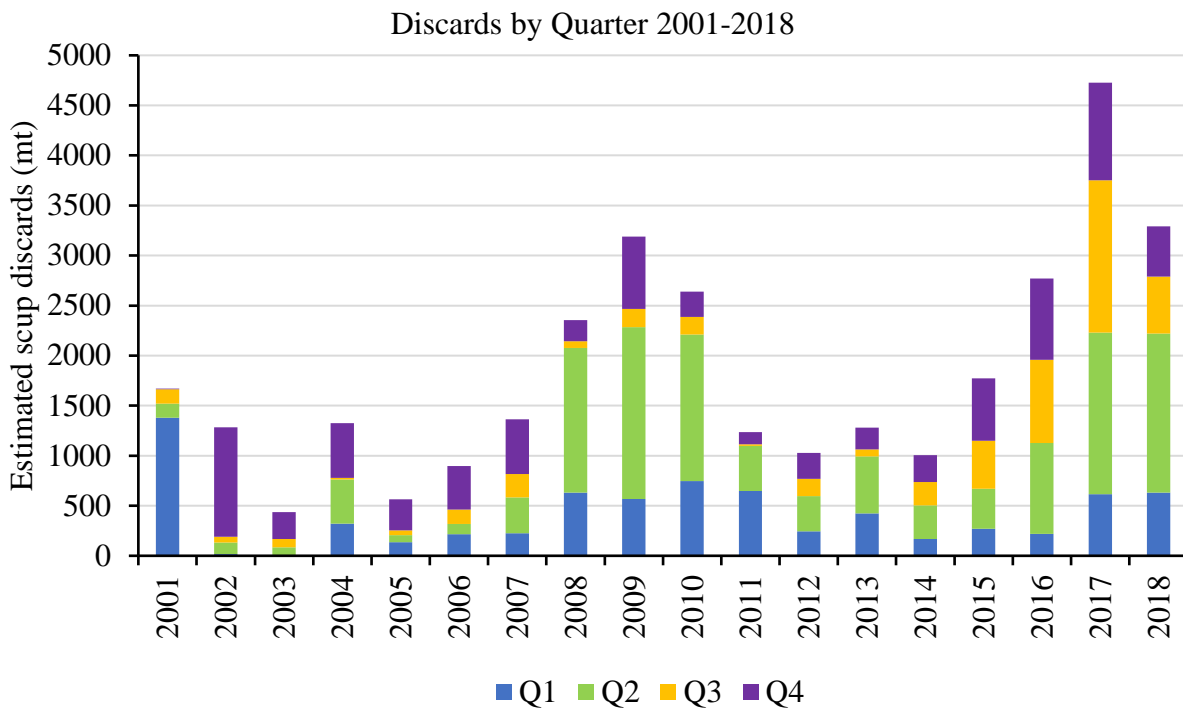


Figure 5: Estimated scup discards for all mesh categories by calendar quarter and year.

Although overall scup discards decreased between 2017 and 2018, discards in statistical areas which are partially included in the southern GRA increased by 44%. Within these statistical areas, squid mesh scup discards increased by 240%, small mesh discards increased by 10%, and large mesh discards increased by 59% (Figure 6).

In 2018, the statistical area with the highest discards was 616 with 33% of the total discards (14% higher than the 2001-2018 average for that area). Area 616 contains a part of the southern GRA and was the statistical area with the highest scup catch in 2018 based on VTR data.

Between 2017 and 2018, scup discards in statistical areas which are partially included in the northern GRA decreased by 56%. Within these statistical areas, squid mesh scup discards decreased by 55%, small mesh discards decreased by 56%, and large mesh discards decreased by 58% (Figure 6).

Total scup discards with all mesh sizes steadily increased from 2014 through 2017 and declined in 2018. This trend closely mirrors the trend in recruitment during 2012-2016 (Figure 7).

A summary of the discard reasons for scup in the 2019 SBRM discard report showed about 59% of discarded scup were due to size regulation, 30% were due to no market, 7% were due to quota regulation and 4% were discarded for other reasons. This analysis was for otter trawl gear and all mesh sizes from July 2017-June 2018 (Wigely and Tholke, 2019).

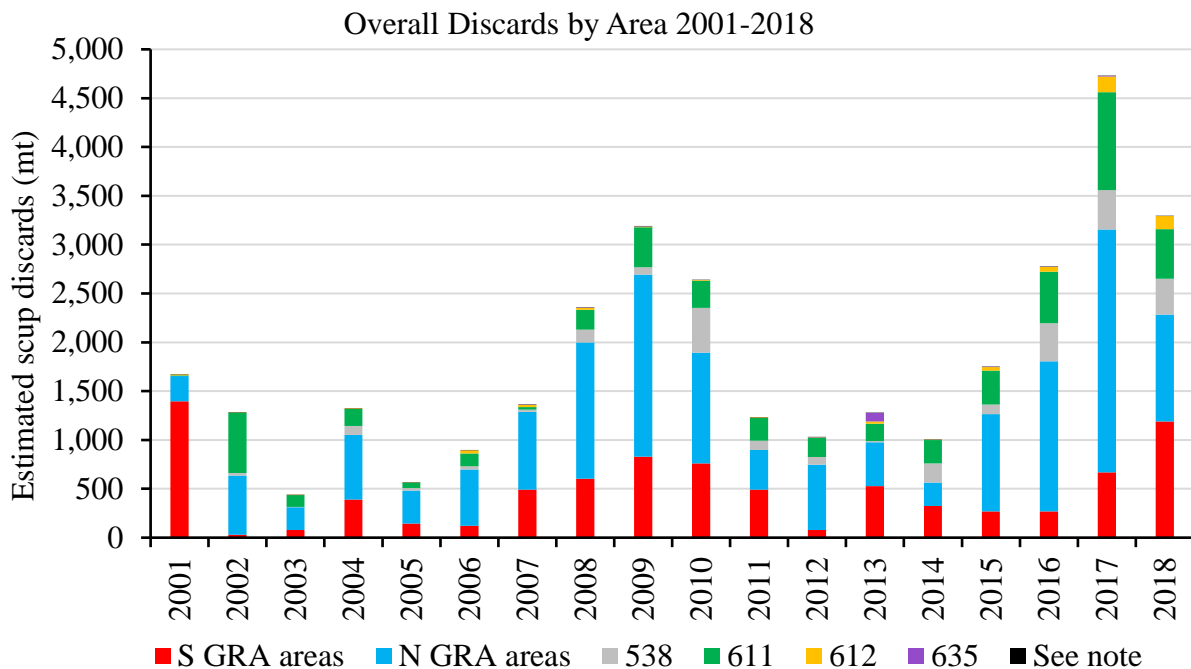


Figure 6: Estimated scup discards by year and statistical area for all mesh sizes. *Note:* statistical areas which are not part of the GRAs and which had less than 100 mt of estimated scup discards during 2001-2018 are grouped together (i.e. areas 513, 514, 515, 521, 522, 525, 526, 561, 562, 614, 627, and 636).

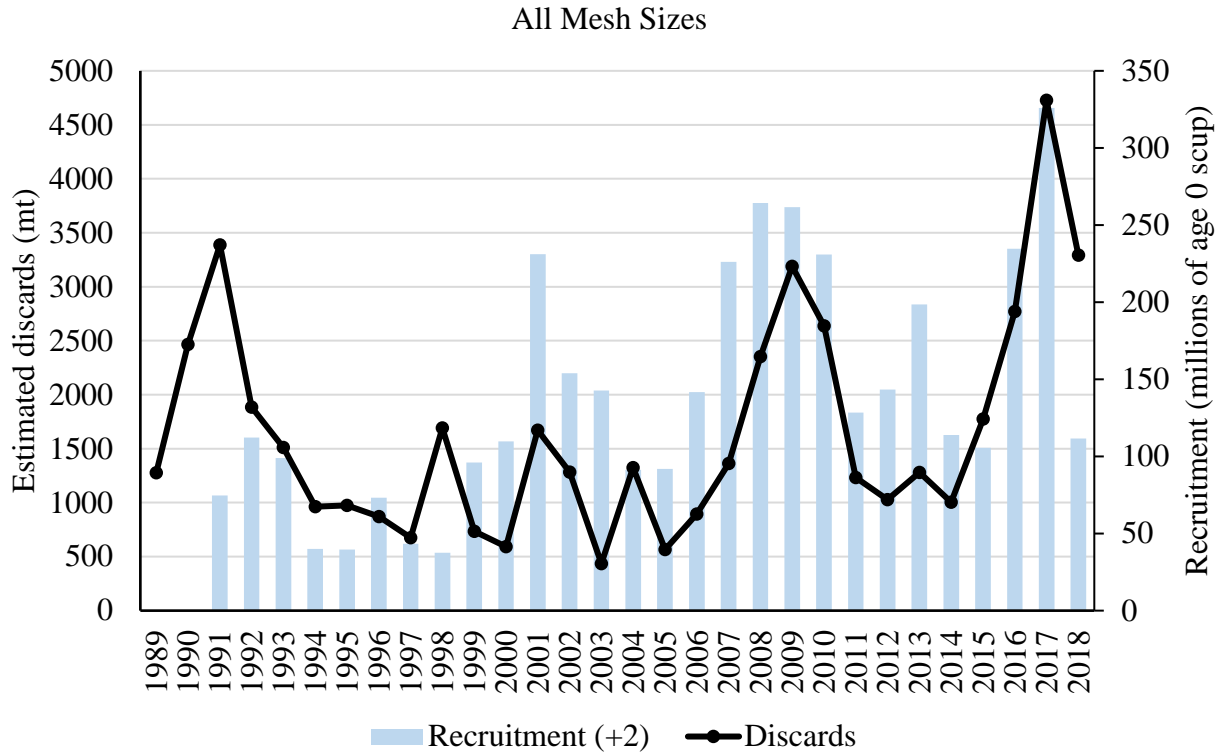


Figure 7: Estimated annual scup discards and recruitment from two years prior (e.g. 2015 recruitment is shown in 2017). Discards are shown for all mesh sizes combined in all statistical areas.

Average scup discards were lower after GRA implementation, while the effects of recent GRA modification are unknown.

Discards from statistical areas that are partially included in the southern GRA during quarter 1 were compared before and after the GRA implementation in 2000. The pre-GRA discard average was 344 mt and the post-GRA average was 234 mt, a 32% decrease in discards (Figure 8). Note that the southern GRA is not in effect for the entirety of quarter 1.

Discards from statistical areas that are partially included in the northern GRA during quarter 4 were compared before and after the GRA implementation. The pre-GRA discard average was 426 mt and the post-GRA average was 171 mt, a 60% decrease in discards (Figure 8). Note that the northern GRA is not in effect for the entirety of quarter 4.

Annual discard estimates (all quarters, mesh sizes, and areas) as a proportion of SSB averaged 20% from 1989-1999 and 1% from 2001-2018 (Figure 9).

The most recent boundary change to the southern GRA became effective in 2017 which coincided with the record-high 2015 year class reaching 2 years of age. This influx of juvenile scup too small to be landed likely contributed to the high discards in 2017 (Figure 7).

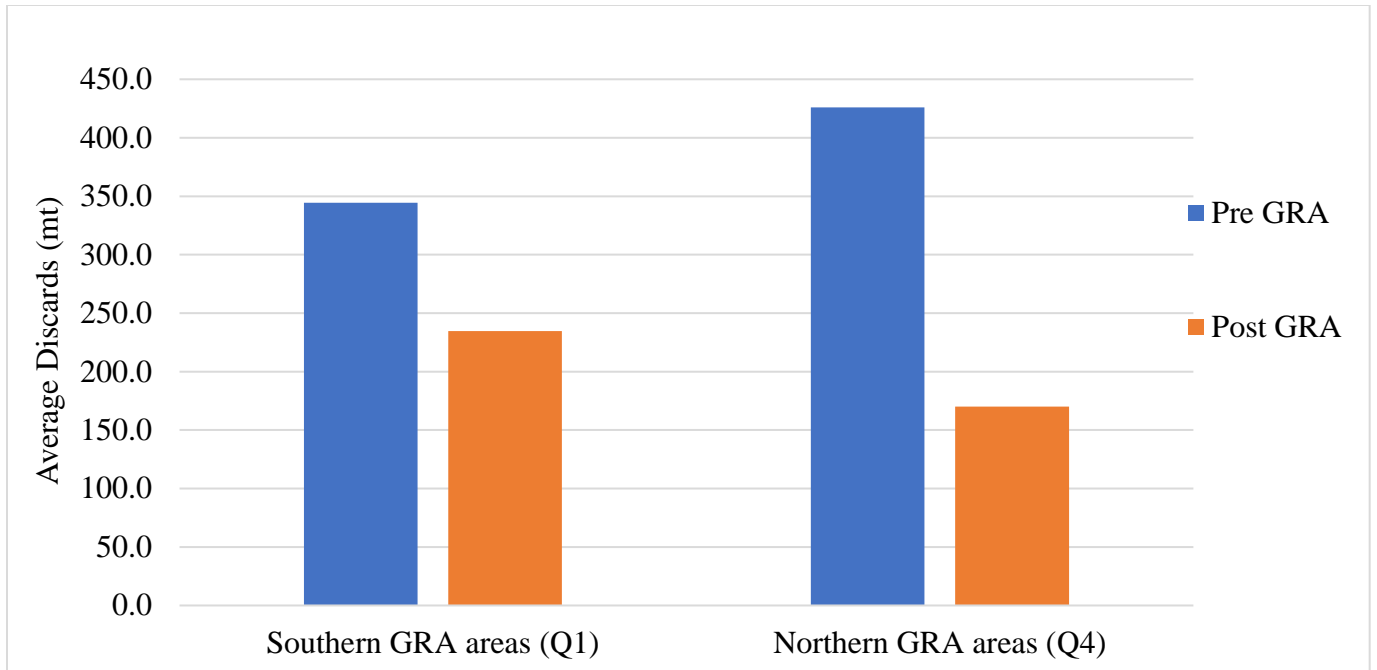


Figure 8: Average estimated scup discards from statistical areas that are partially included in the GRAs during the quarter they are in effect. Discard estimates were averaged across the years before and after the GRAs were in effect.

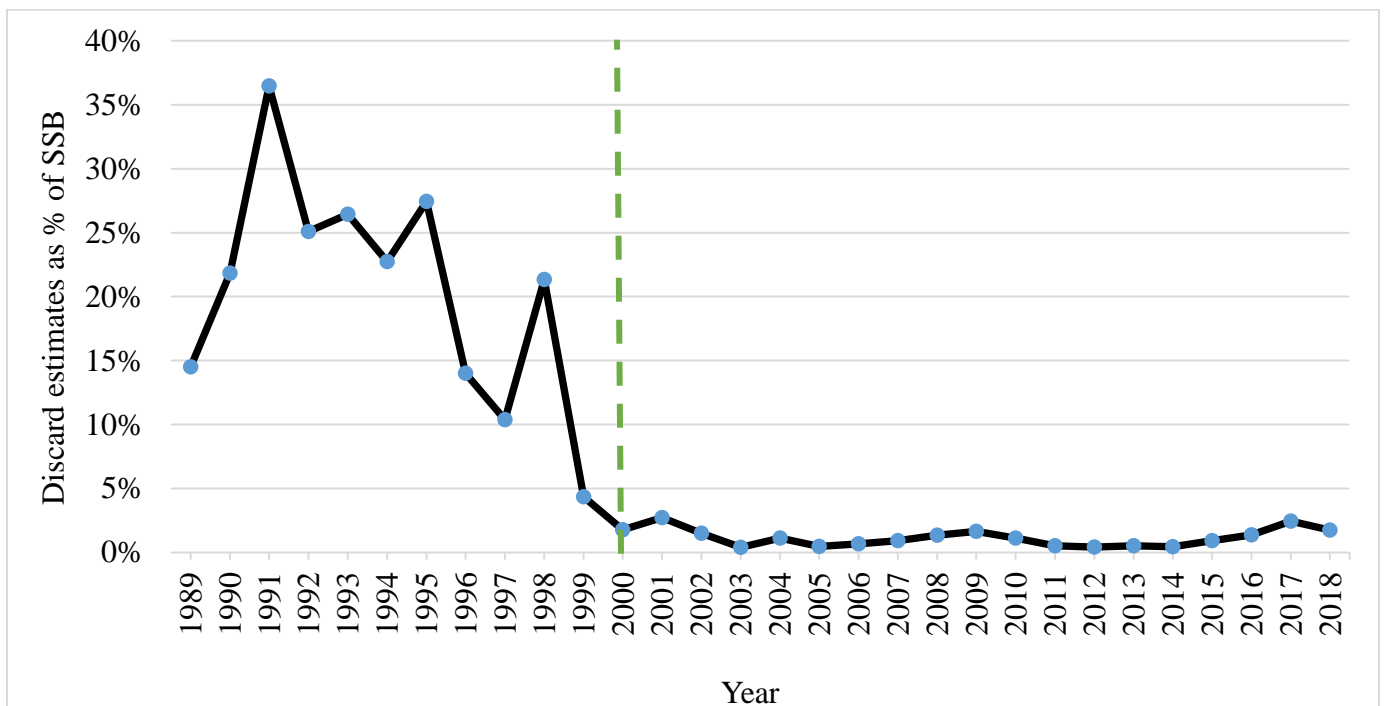


Figure 9: Annual discard estimates as a proportion of spawning stock biomass from 1989-2018 from the 2019 operational stock assessment (NEFSC 2019). The green dashed line represents the implementation of the GRAs.

Conclusion

Discards are still well above average and should continue to be evaluated. Discard information in future years may provide insight into the effects of recent regulatory changes such as increases in the incidental possession limit (2016, 2019) and changes to the southern GRA boundary (2017). Discards may continue to decline due to the low recruitment from 2016-2018 (Figure 2).

References

NEFSC (Northeast Fisheries Science Center). 2015. SARC 60 Scup Working Paper - TOR 1: Estimates of Commercial Fishery Scup Discards: 1989-2013.

NEFSC. 2019. Pre-publication copy of the August 2019 operational stock assessment report prepared for the Council and the SSC. Available at: <http://www.mafmc.org/ssc-meetings/2019/september-9-11>.

Wigely SE, Tholke C. 2019. 2019 Discard Estimation, Precision, and Sample Size Analyses for 14 Federally Managed Species Groups in the waters off the northeastern United States. NOAA Tech Memo NMFS-NE 254; 179 p. Available at: <https://www.nefsc.noaa.gov/publications/tm/tm254/>.