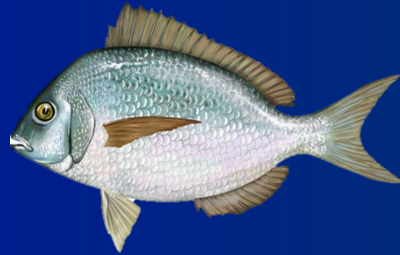




Commercial Scup Discards Report and GRA Analysis

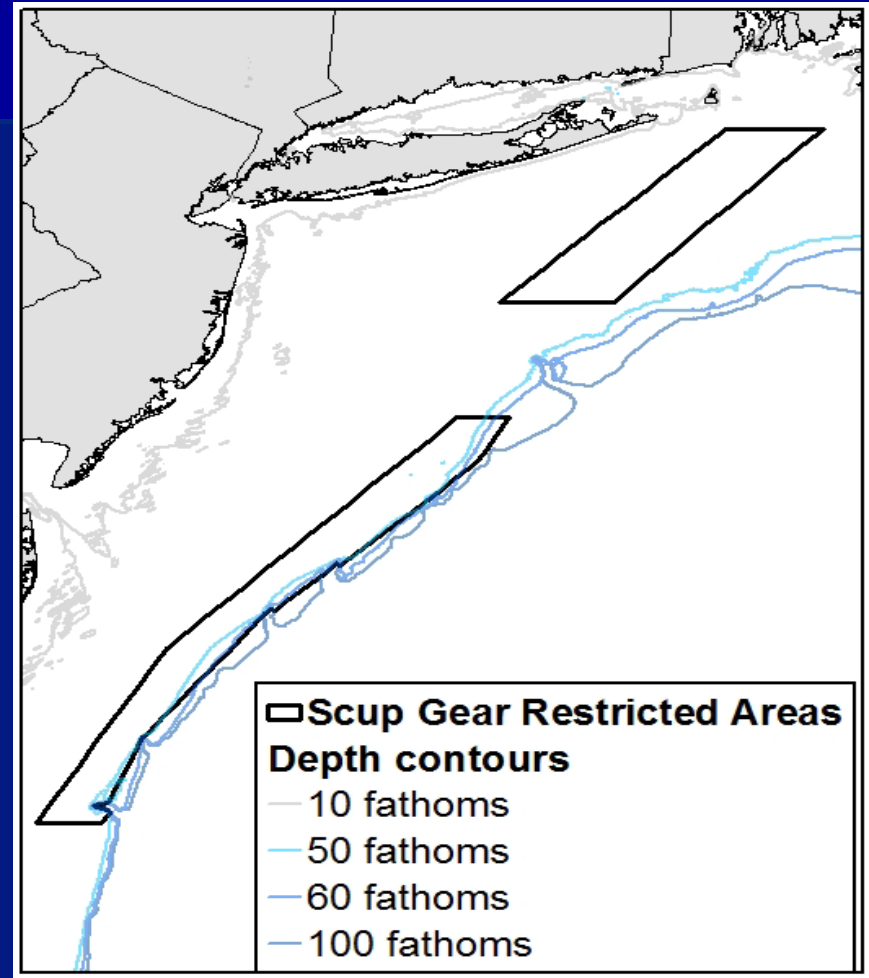


Council and Board

August 8, 2023

Gear Restricted Areas

- Initially implemented in Nov. 2000
- Have been modified several times since
- Current boundaries in place since end of 2016
- Closure timing:
 - Northern GRA Nov 1 – Dec 31
 - Southern GRA Jan 1 – Mar 15



Recent Regulatory Changes



2016: Incidental possession limit from Nov.-Apr. 14 increased from 500 to 1,000 lbs.

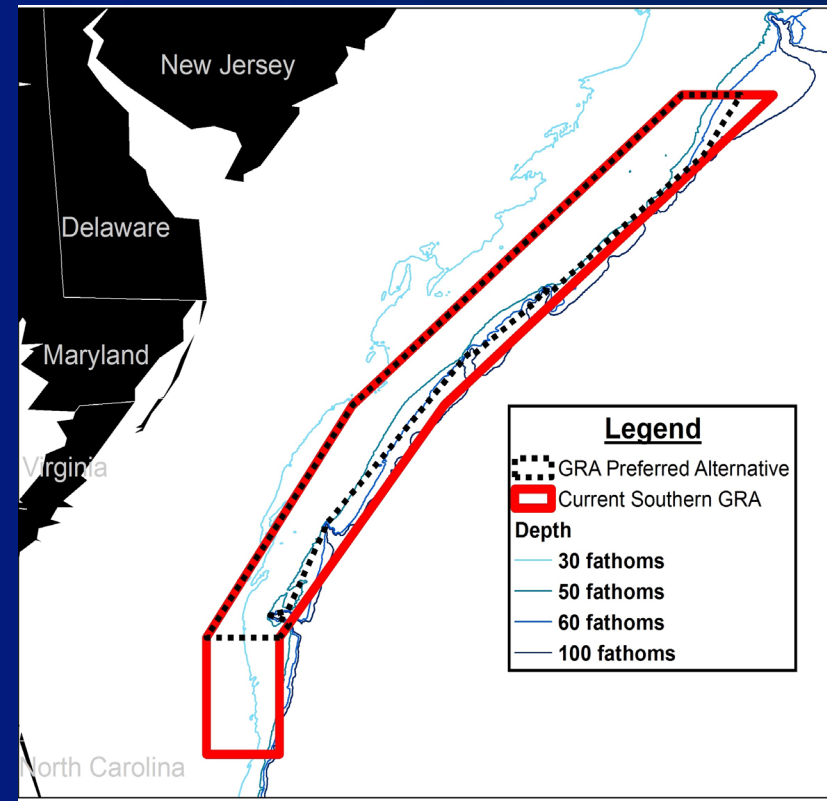
2018: October moved from Summer Quota Period to Winter II

2016/2017: Change in the southern scup GRA

2019: Incidental possession limit from Apr. 15-Jun. 15 increased to 2,000 lbs.

Southern GRA Boundary Change

- Effective: 12/09/2016
- 33% decrease in the size of the Southern GRA
- Regain access to important longfin squid fishing areas



Past Discard Reviews/Discussion

- Scup commercial discards have been reviewed in the past
 - Most recent review in 2019
 - Council/Board recommended no immediate management action but agreed discards should continue to be monitored
- 2023 report updated past analysis as well as explored spatial and temporal trends



Discard Data Used in Report



- Discard data provided through the stock assessments
 - 1989-2019: scup trawl discards estimated with strata of calendar quarter, statistical area, and mesh categories
 - Large (5 inches or greater)
 - Small (smaller than 5 inches but larger than 2.125)
 - Squid (2.125 inches or less)
 - 2020-2022: scup trawl discards estimated with strata of gear, statistical area, and year in CAMS
 - CAMS mesh categories: Large (4 inches or greater), Small (smaller than 4 inches), and Unknown
- Spatial analysis
 - NMFS Observer Program data and NEFSC survey data

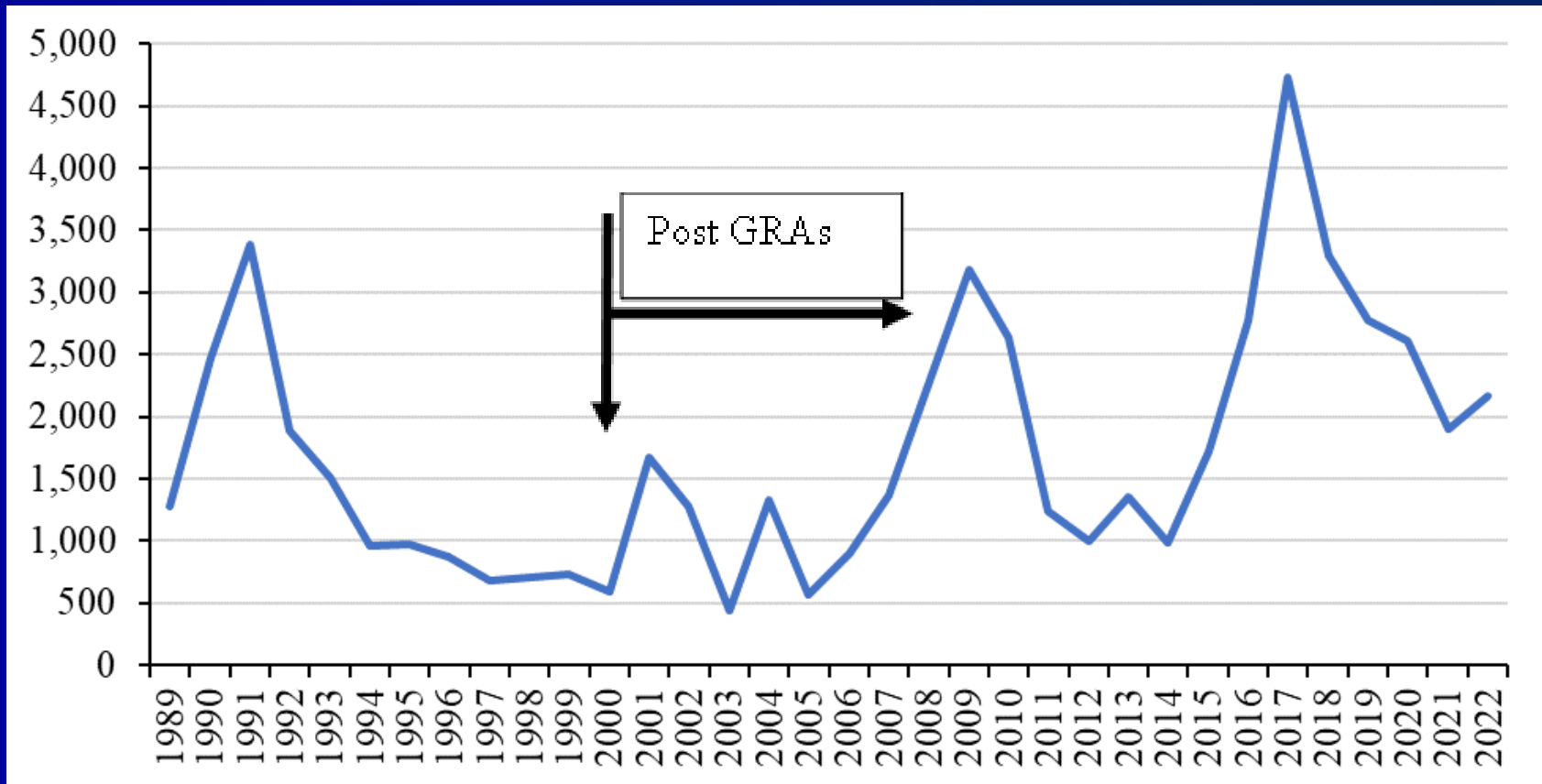


Discard evaluation using the aggregated management track assessment discard data

Discard Evaluation using Aggregated Management Track Assessment Discard Data



- Commercial scup discards have decreased since 2017 but are relatively high compared to other years since GRA implementation in 2000/2001

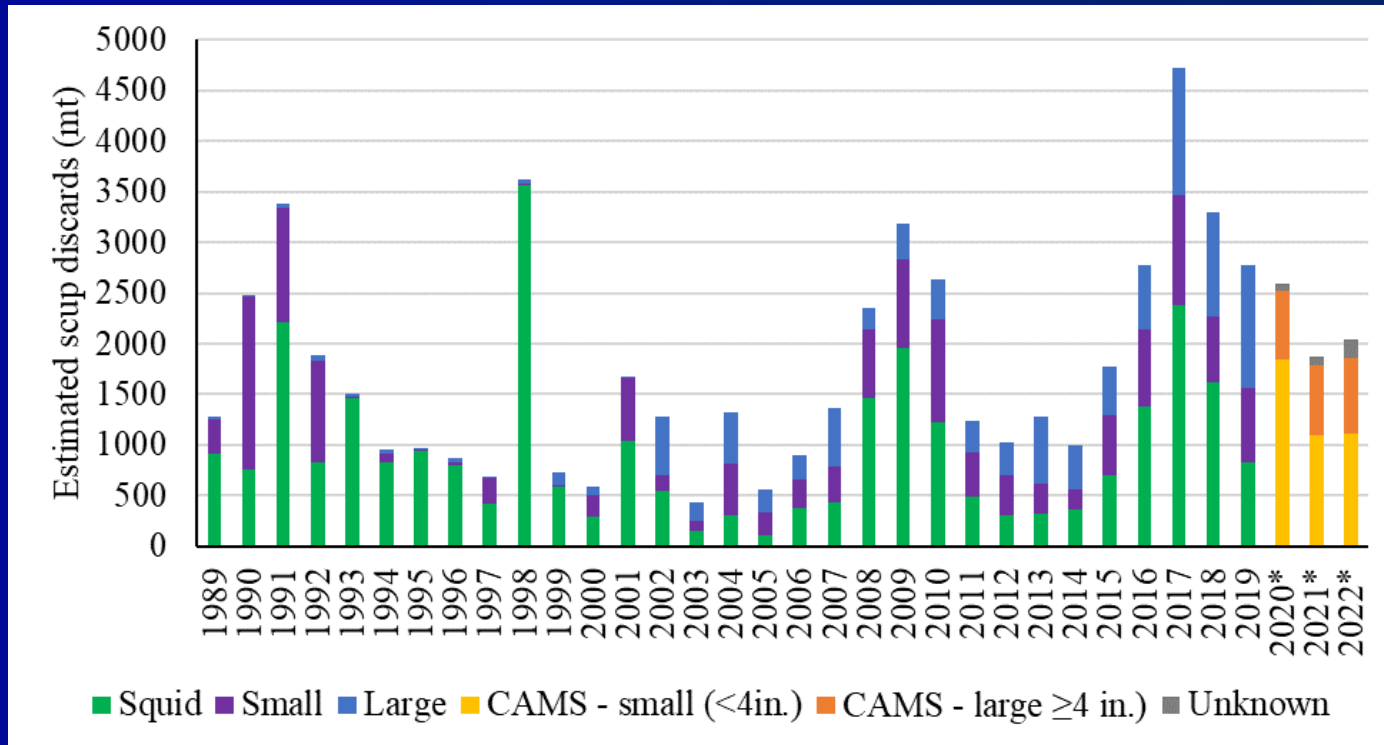


Estimated discards from all gear types from the 2023 management track assessment since 1989. Starting in 2020, commercial discards are estimated using CAMS.

Discards by Mesh Size



- In 2022 discards from mesh < 4 inches accounted for 55% of total, mesh \geq 4 inches accounted for 45%, unknown accounted for 9%
- 2022-2020 discards cannot be directly compared to previous years, but on average 1989-2019 small mesh discards accounted for 81% of total

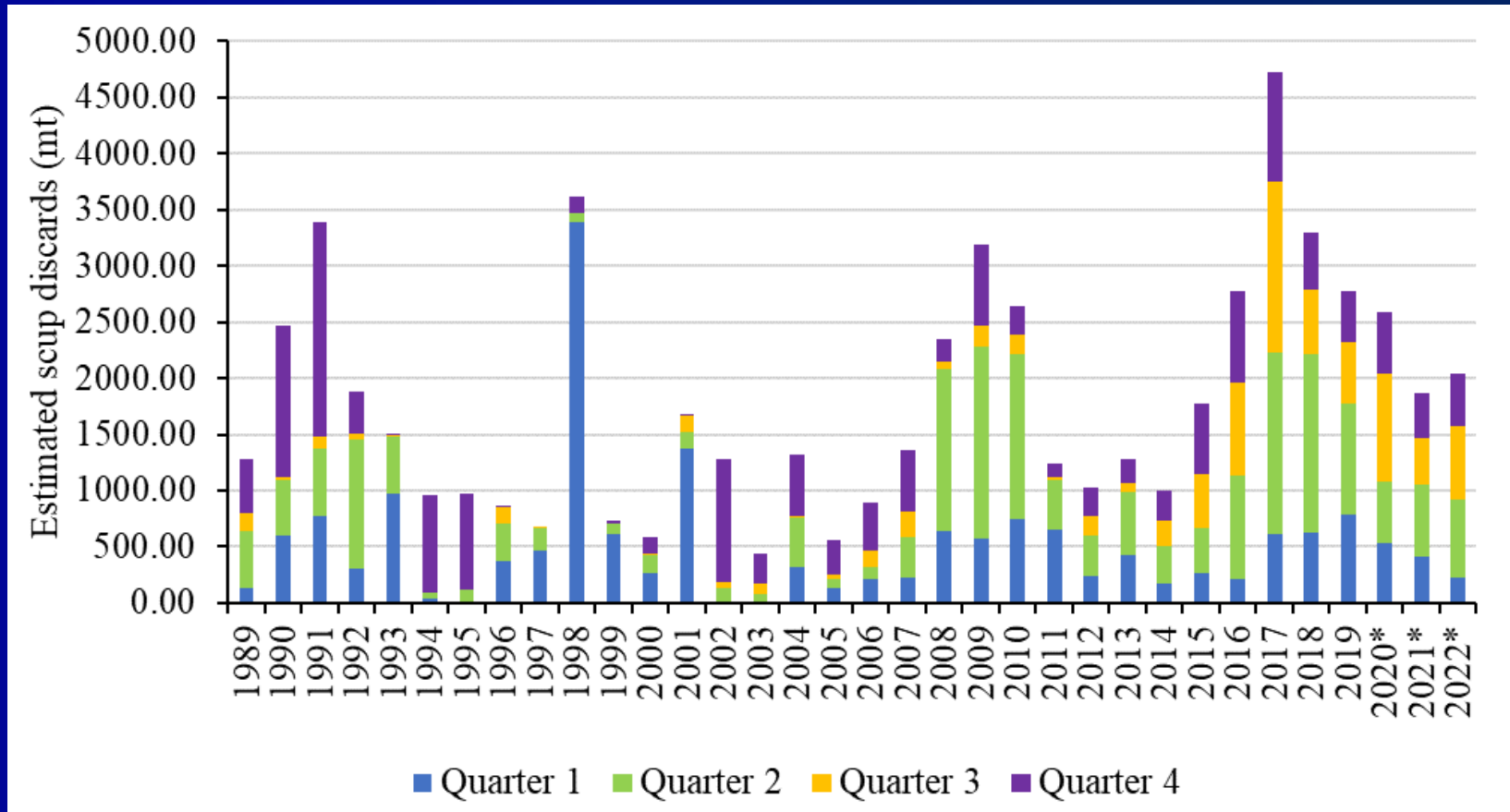


Estimated scup discards in trawls by year and mesh size from 1989-2022. From 1989-2019 mesh categories include: large (5" or greater), small (smaller than 5" but larger than 2.125"), and squid (2.125" or less). From 2020-2022 mesh categories changed to CAM-large (4" or greater), CAMS-small (less than 4"), and Unknown.

Discards by Quarter

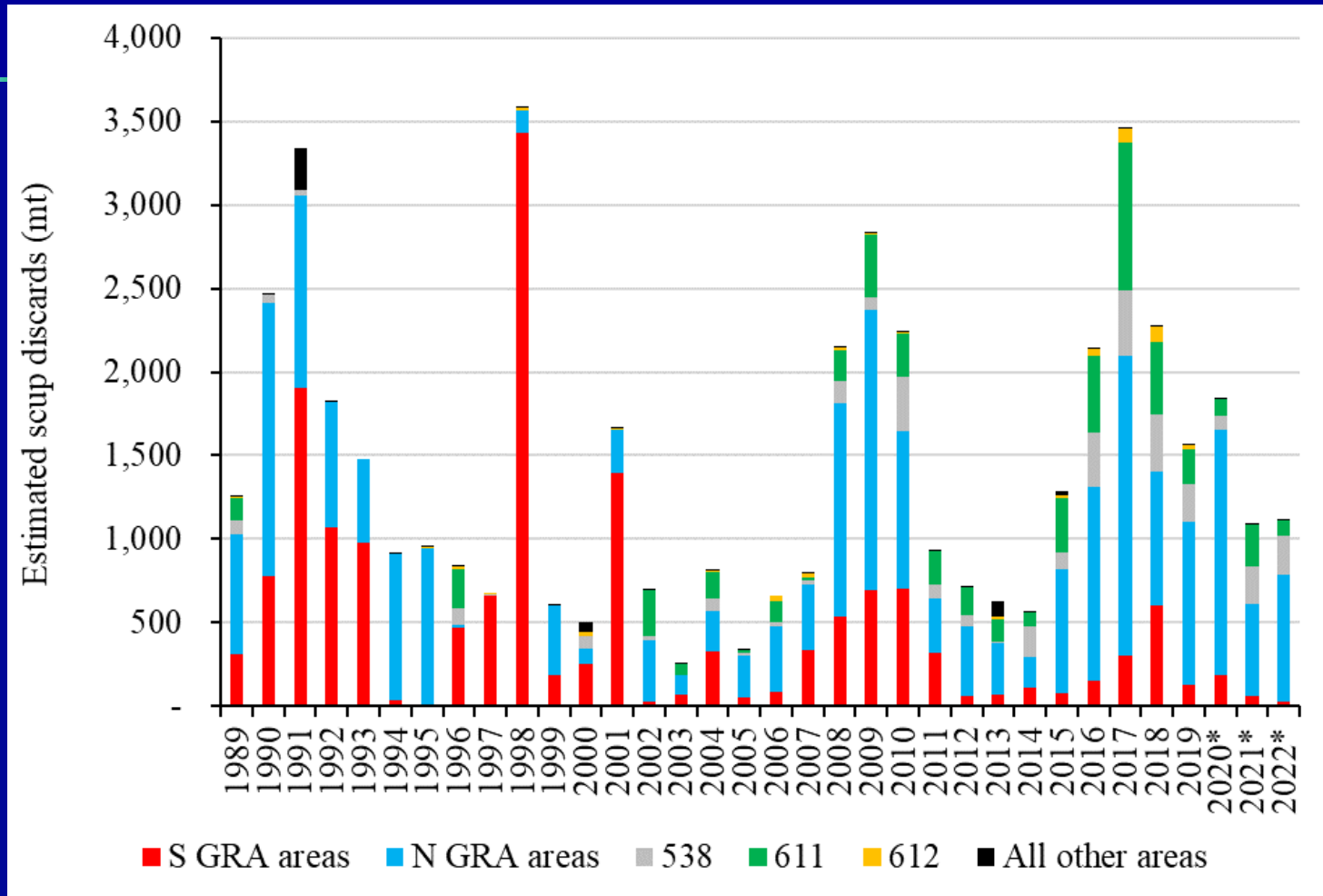


- Substantial seasonal variability among years
- Since 2016, Quarter 2 and 3 accounted for majority of discards



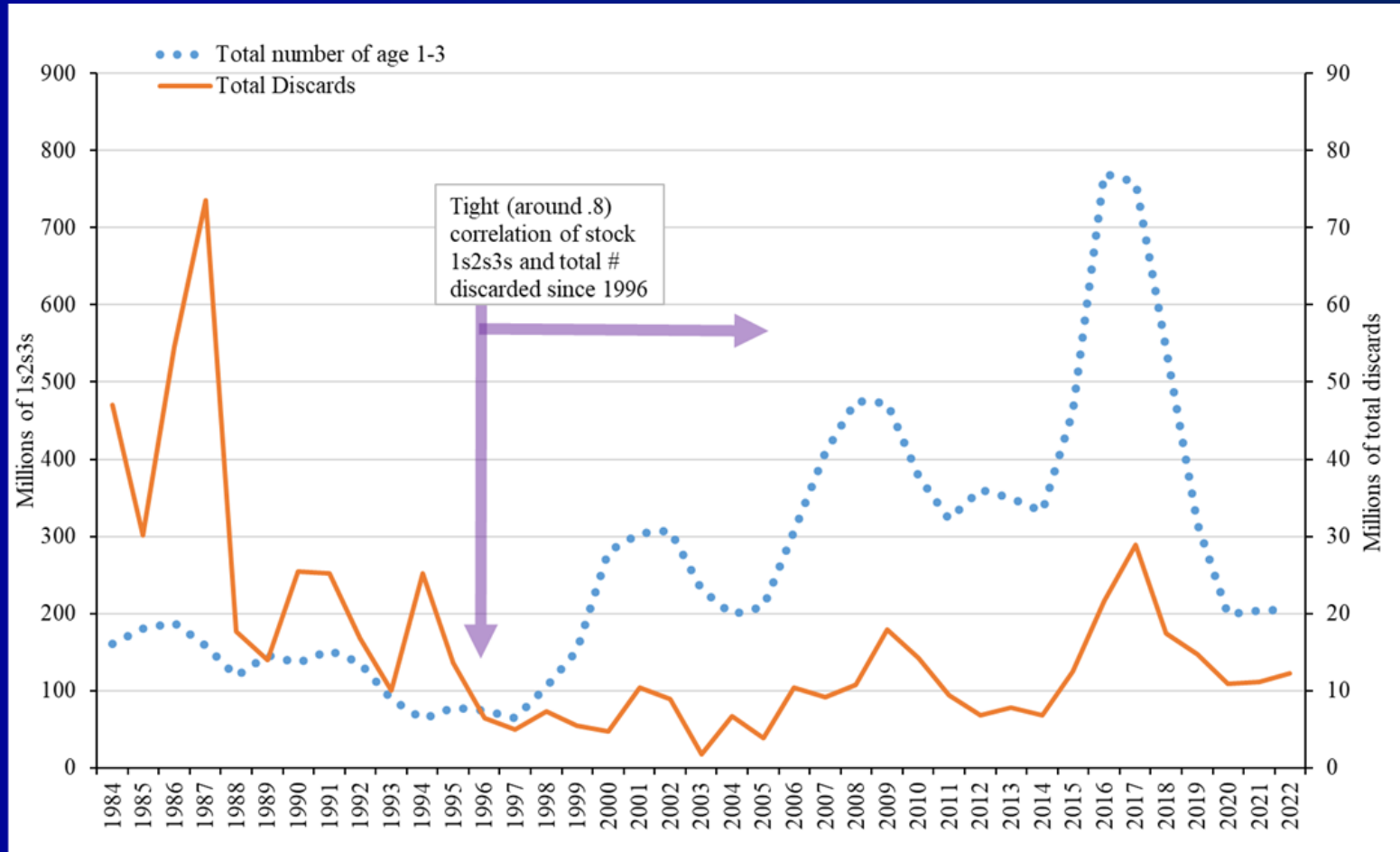
Estimated scup discards from trawls for all mesh categories by calendar quarter and year from 2001-2022.

Discards by Statistical Area



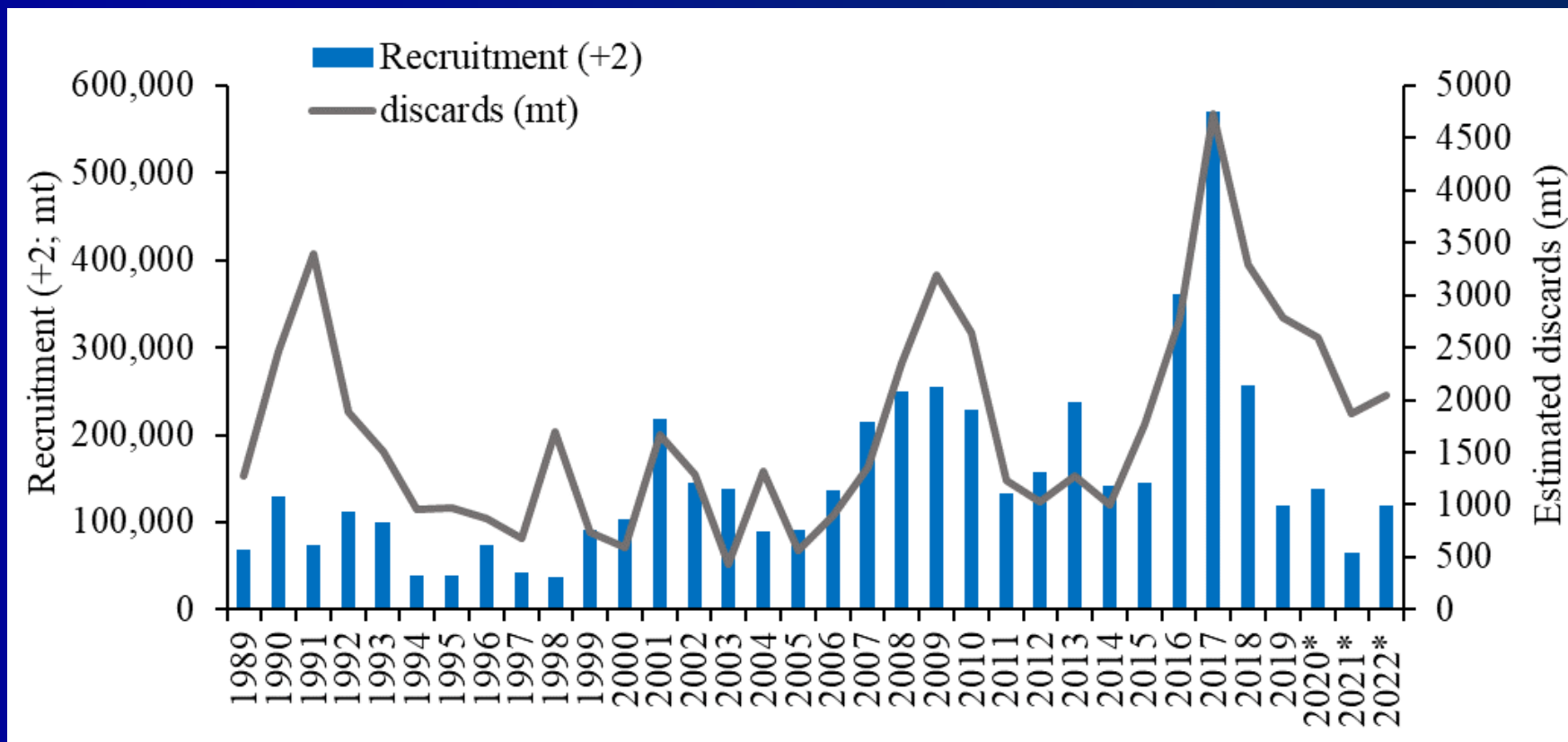
Estimated scup discards from trawls by year and statistical area for squid and small (less than 5") mesh sizes from 1989-2019 and CAMS-small mesh (less than 4") in 2020-2022. All other areas are statistical areas which are not part of the GRAs and which had less than 100 mt of estimated scup discards during 1989-2022 are grouped

Discard Correlation with Juvenile Fish Numbers



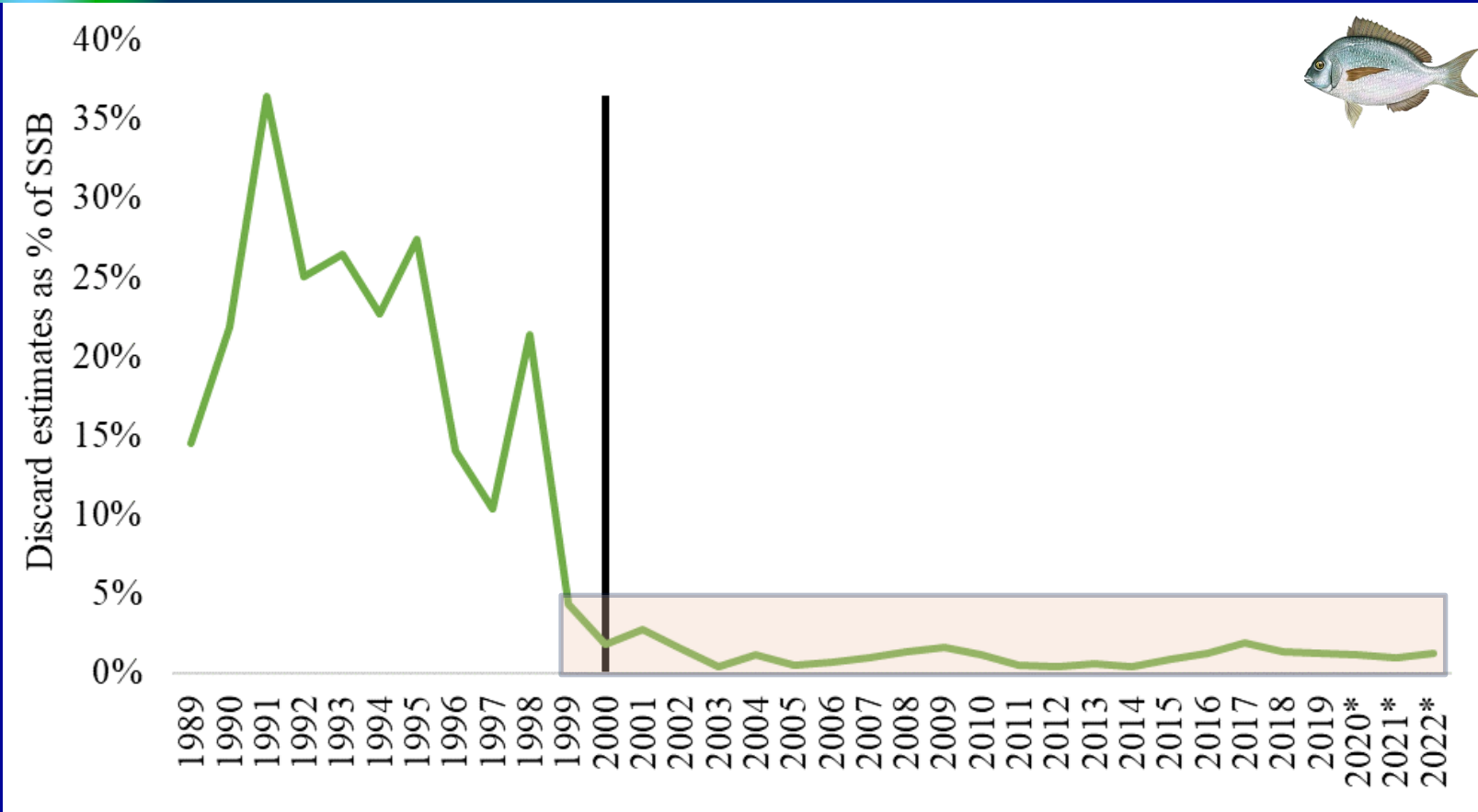
Total number of age 1-3 fish in the stock compared to total commercial discards from the 2023 management track assessment

Discard Correlation with Juvenile Fish Numbers



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 from 1989-2022.

Discard Estimates as a Percent of SSB



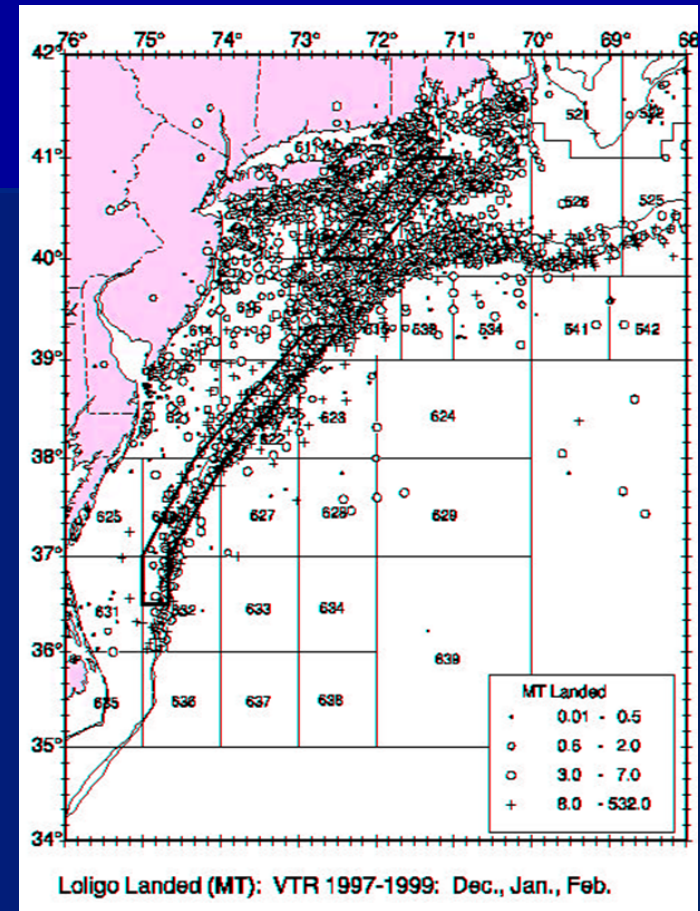
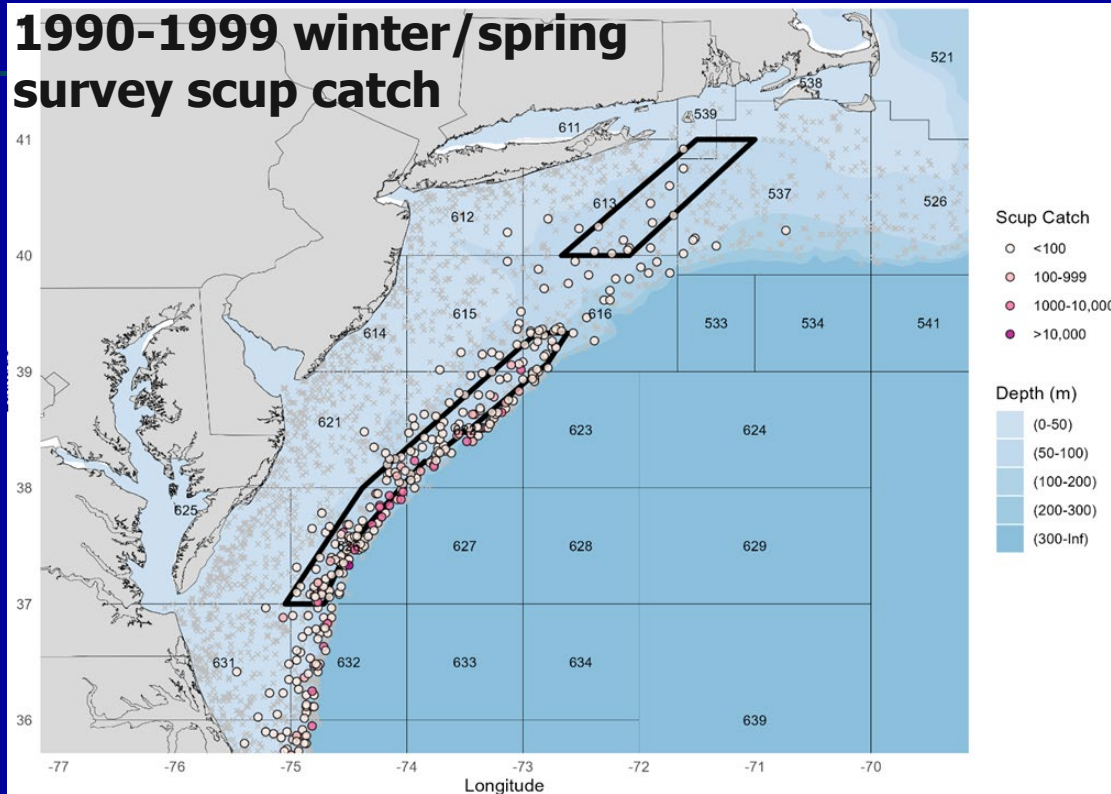
Annual discard estimates as a proportion of spawning stock biomass from 1989-2022 from the 2023 management track assessment (NEFSC 2019). The black solid line represents the implementation of the GRAs in November 2000. *Starting in 2020 discard estimates calculated through CAMS.



**Initial spatial and temporal
analysis with
NEFSC trawl survey data
and
NMFS Observer Program data**

Southern GRA

1990-1999 winter/spring survey scup catch



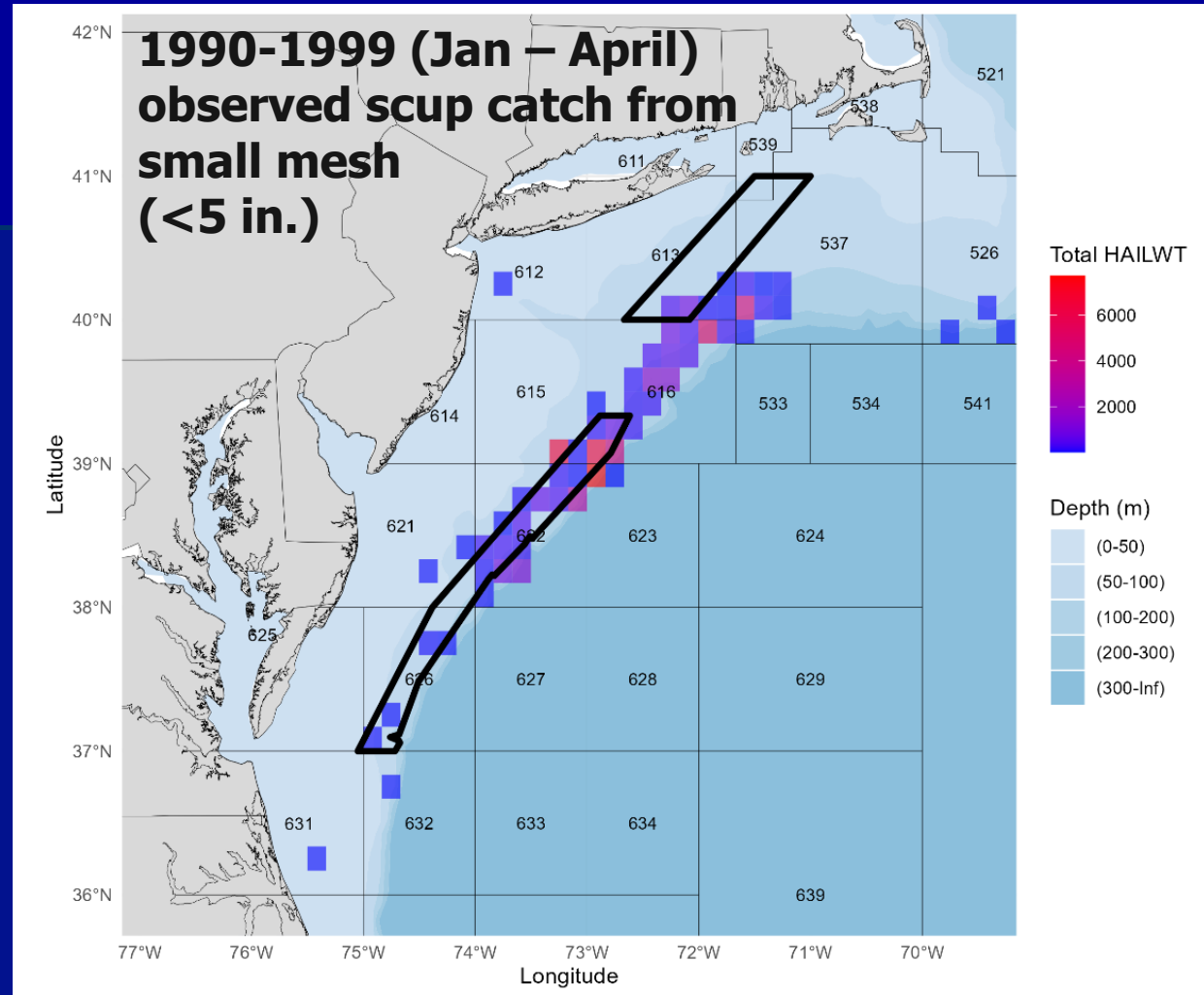
- Original boundary and timing (Jan – March 15) based on:
 - Scup catch during the winter and spring NEFSC bottom trawl survey (Jan – March)
 - Longfin squid effort; Substantial landings in winter
 - Observed scup discards from 1990-1999



Southern GRA

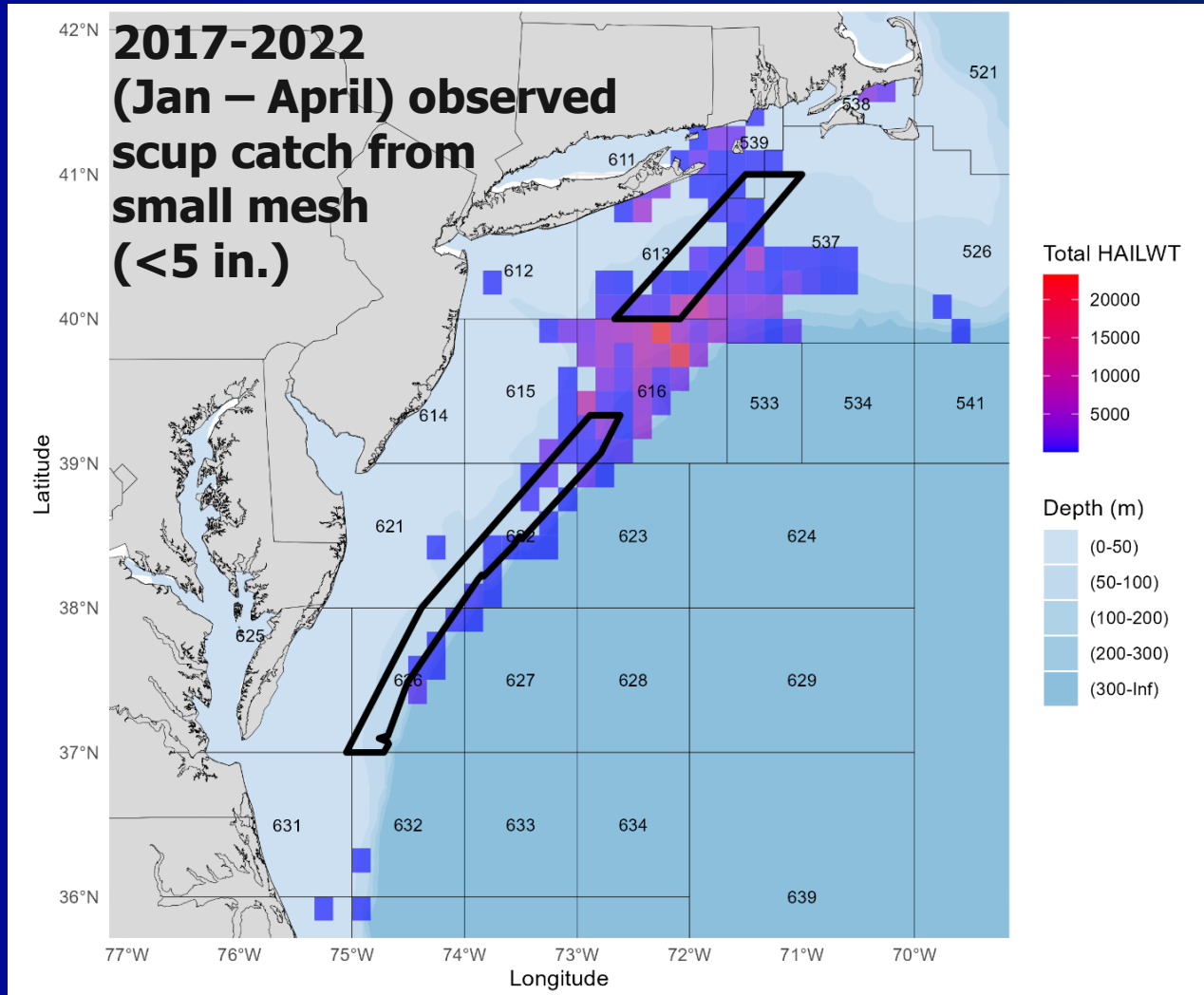
- Original boundary and timing (Jan – March 15) based on:

- Scup catch during the winter and spring NEFSC bottom trawl survey (Jan – March)
- Longfin squid effort; Substantial landings in winter
- Observed scup discards from 1990-1999



Southern GRA

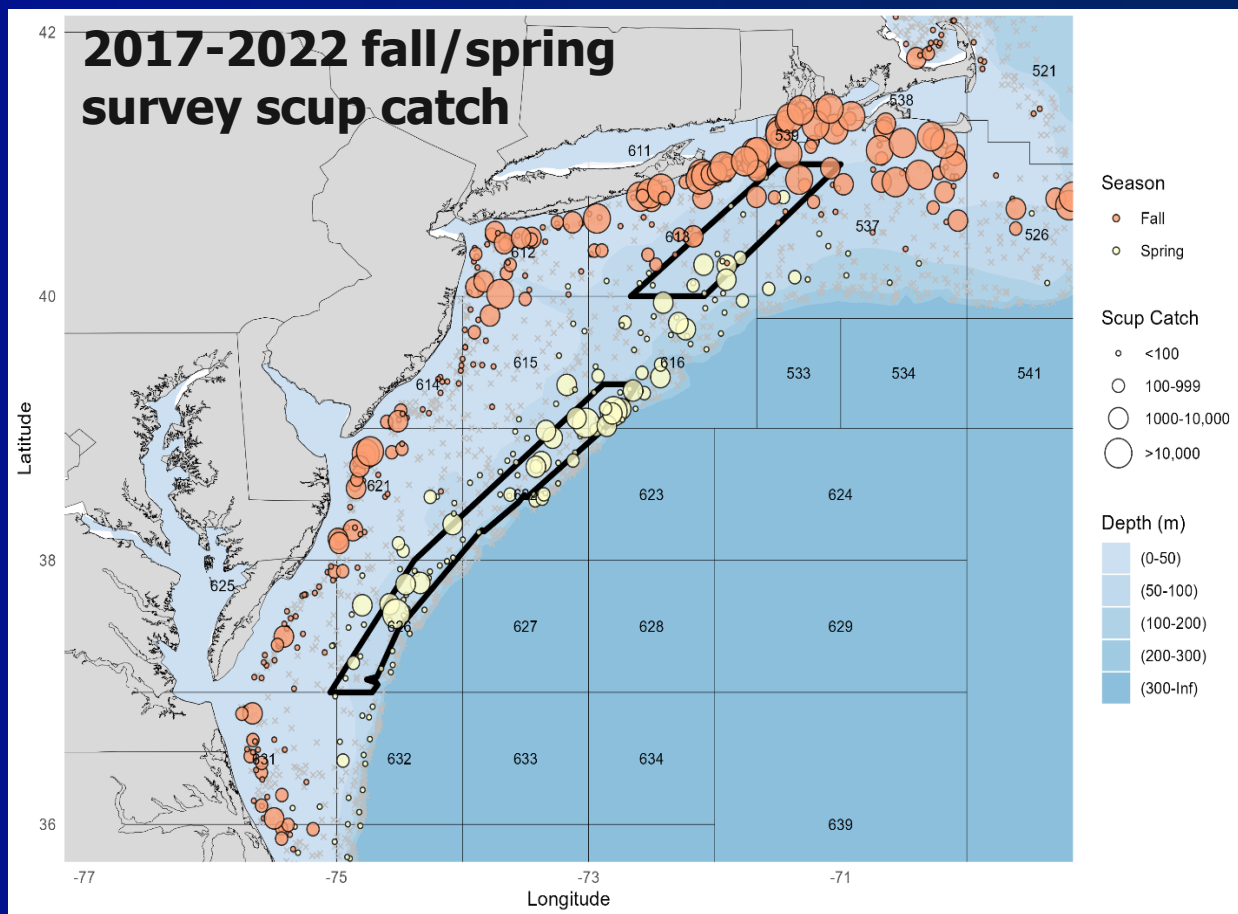
- Recently been substantial discards, despite Southern GRA closure
 - Majority occur outside of GRA boundary



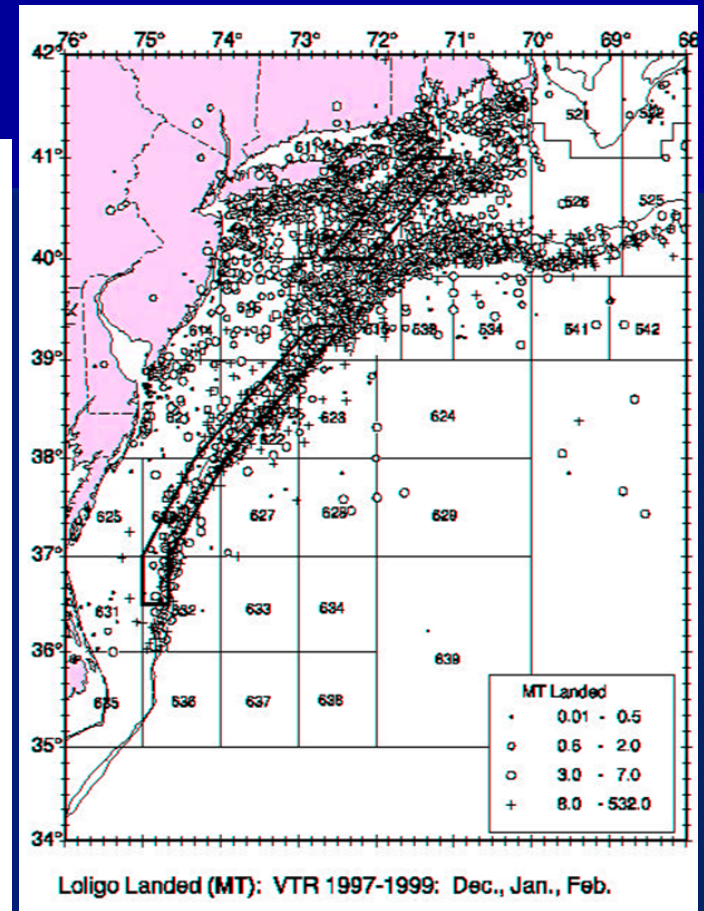
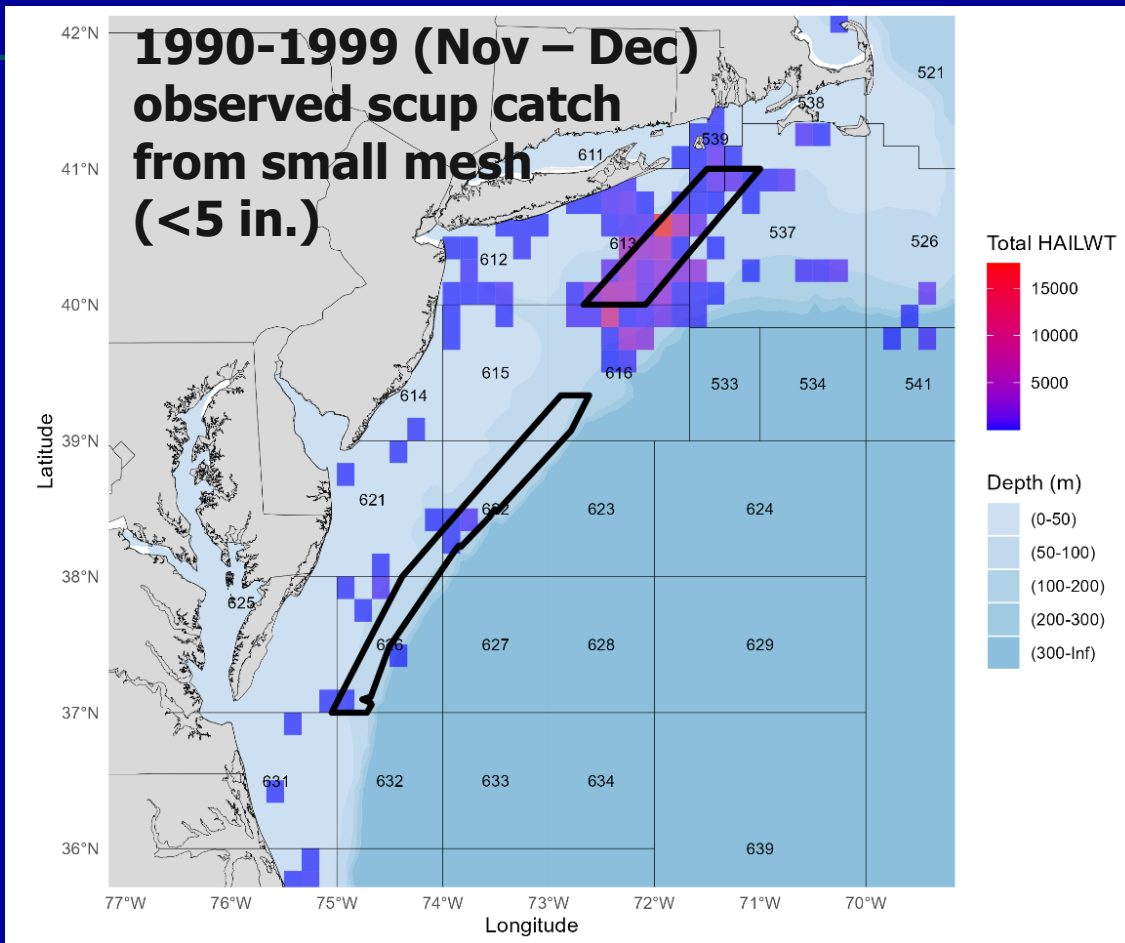
Southern GRA



- Scup catch from recent spring NEFSC survey data indicates large amounts of scup are still caught within the Southern GRA boundary



Northern GRA

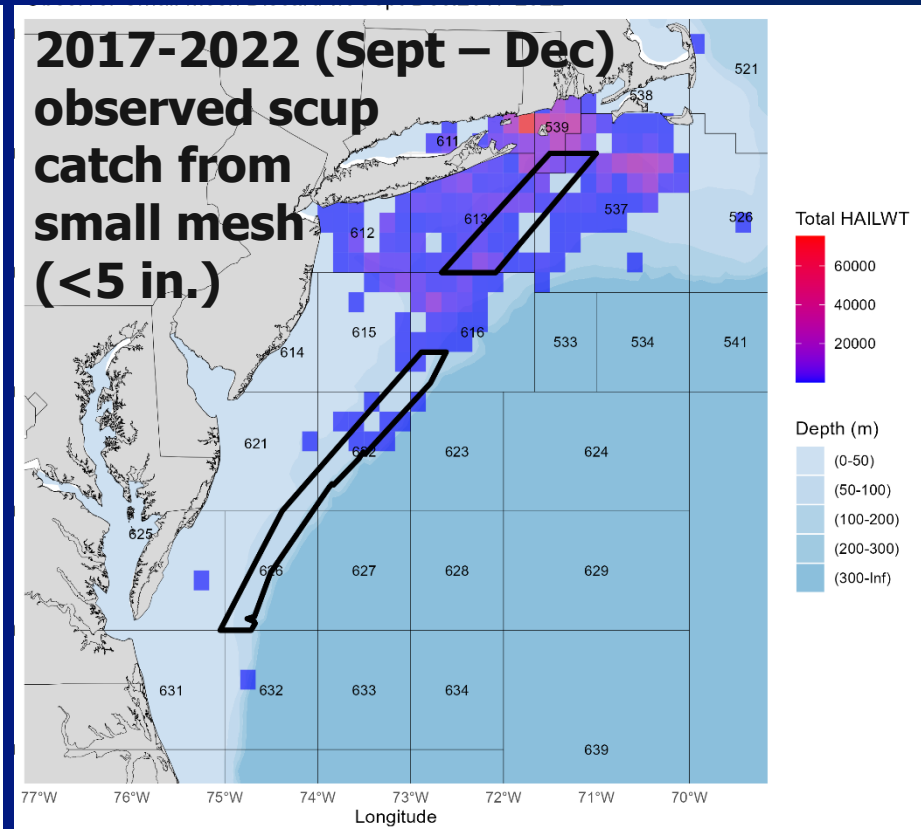
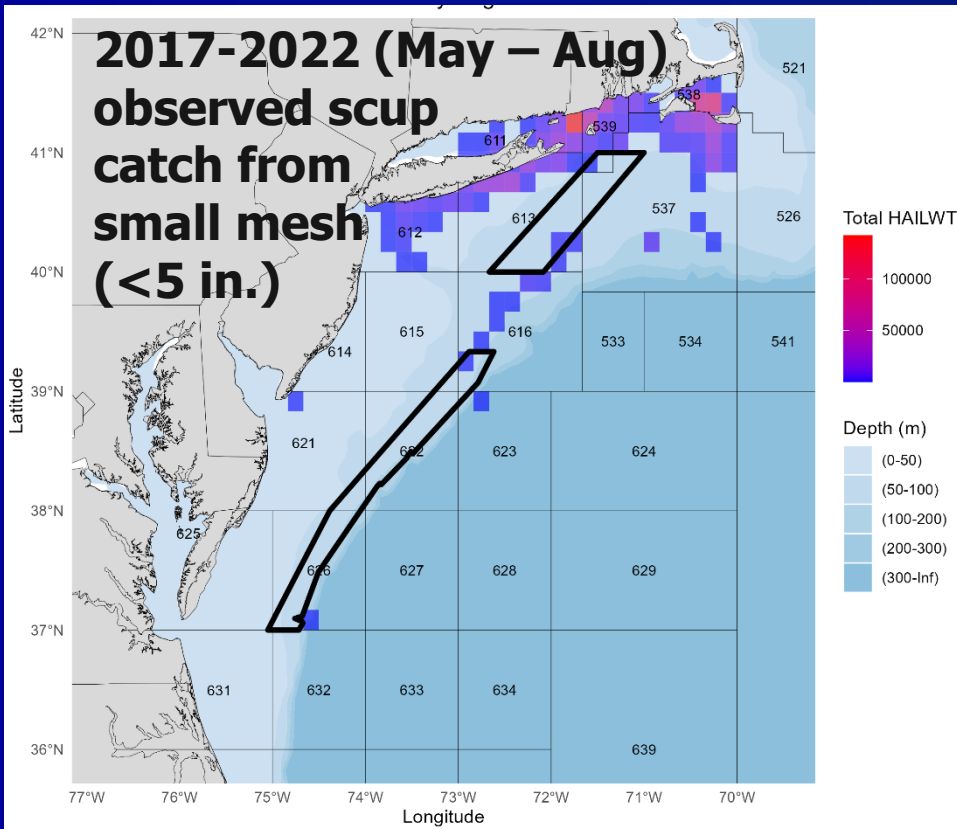


- Original boundary and timing (Nov – Dec) based on:
 - Longfin squid effort; substantial landings in winter
 - Observed scup discards from 1990-1999



Northern GRA

- In recent years, substantial discards when no GRA active and in third squid trimester (Sept – Dec) despite Northern GRA closure



Key Discard Report Staff Findings



1) Evaluation of aggregated MTA discard data

- Discards have decreased since 2017 and represent a small percentage of annual scup biomass, but remain high compared to other years following GRAs
 - Most discards from small mesh gear but spatial and temporal patterns vary by year
- There's a strong correlation between scup discards and juvenile fish stock numbers
 - GRAs have had a positive impact on reducing juvenile discards in the GRAs, but there are now substantial discards around GRAs

Key Discard Report Staff Findings



2) Initial spatial and temporal analysis

- Appears GRAs contributed to rebuilding in early 2000s; however, given the spatial patterns, consideration of alternative measures may be warranted
 - Continued use of GRAs should consider changes that should have high probability in reducing where discards *will be* rather than reacting to where they *have been*

Staff Recommendation in Discard Report

- The SSC review report and provide feedback and recommendations on research to examine the predictability of scup bycatch using environmental data or other ways to reduce scup bycatch
- For the 2024 Implementation Plan, staff recommend:
 - Identifying research to examine if scup bycatch/discards can be predicted using environmental data
 - Recent research has demonstrated promise for such work in river herring and shad bycatch (Roberts et. al., 2023)
 - Such information could help ensure that any GRA modifications do not simply re-direct effort and create alternative scup bycatch hotspots
 - Council include a Framework Action to consider GRA modifications or other measures to further reduce scup discards (working in tandem with the identified research)



Monitoring Committee Feedback and Recommendations

- Supported staff recommendation
- Expressed particular interest in examining if scup bycatch/discards can be predicted using environmental data
 - Recommended combining this research with age data to offer a more comprehensive approach



Questions



fin

This point forward are back-up slides

MAFMC 2020-2024 Research Priorities

SCUP	Corresponding Theme(s)
SHORT-TERM/SMALLER SCALE	
85. Explore the relationship between scup market trends, regulatory changes, and commercial landings and discards.	B, C, F
86. Evaluate the spatial and temporal overlap of scup and squid to better understand and characterize scup discard patterns.	A, B, F
87. Characterize the pattern of selectivity for older ages of scup in both surveys and fisheries.	A
LONG-TERM/LARGER SCALE	
88. Continue to evaluate the role and relative importance of implemented management strategies (i.e., gear restricted areas, increased minimum mesh size, and minimizing scup and squid fishery interactions) and expand analysis to consider the long-term climate variability to the increases in stock abundance and high recruitment events since 2000.	A, B, D, F, G
89. Characterize the current scup market and explore the development of new markets.	C

MAFMC will be developing new 5-year research priorities next year



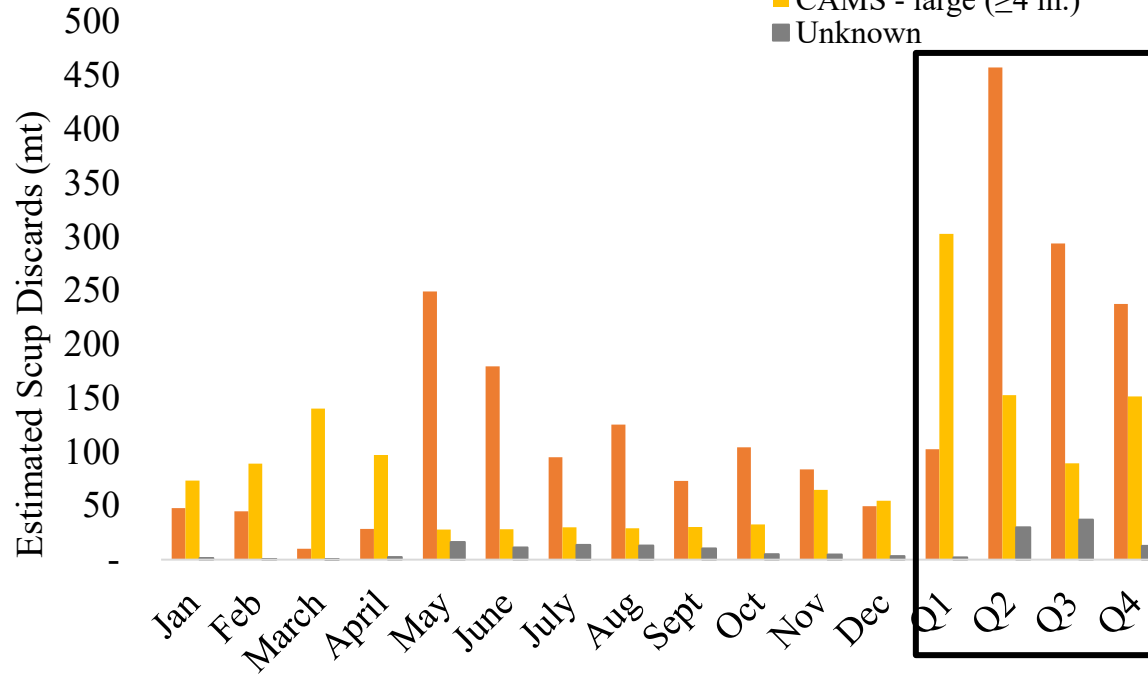
Other Commercial Measures



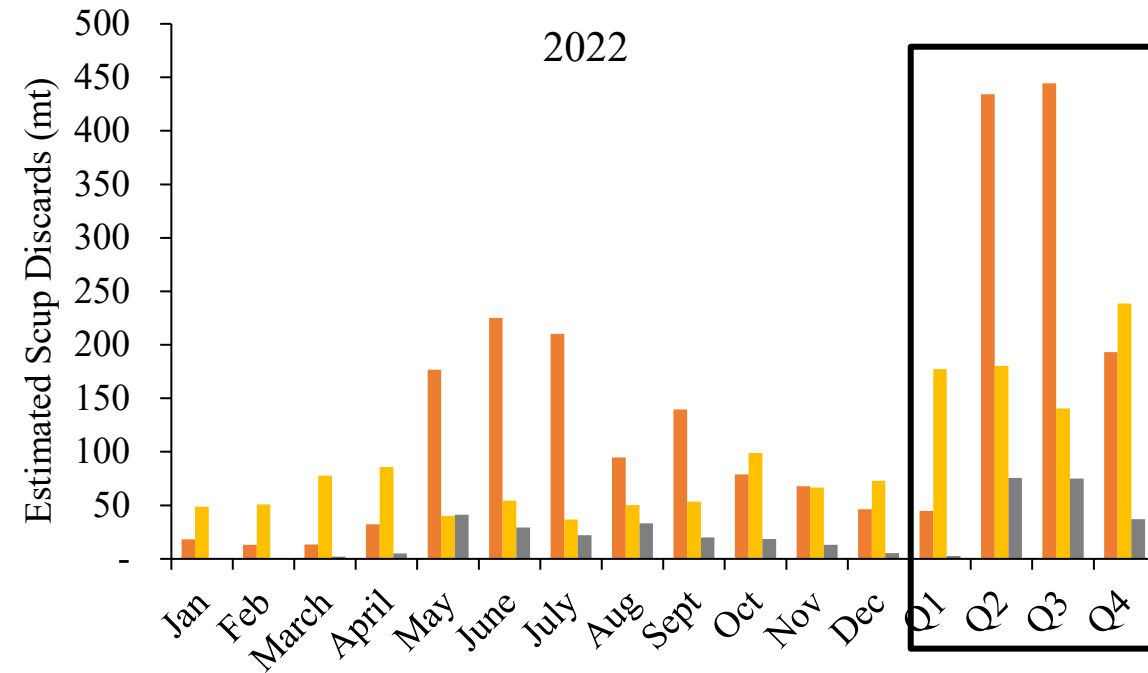
- Min. size: 9" total length
- Min. trawl mesh size of 5.0" diamond if retaining more than
 - 1,000 lbs. from Oct. 1 – April 14
 - 2,000 lbs. from April 15 – June 15
 - 200 lbs. from June 16 – Sept. 30
- Pots/traps
 - Escape vent and degradable hinges
 - 3.1" in diameter (circular), 2.25" x 2.25" (square), or equivalent rectangular vent

2021

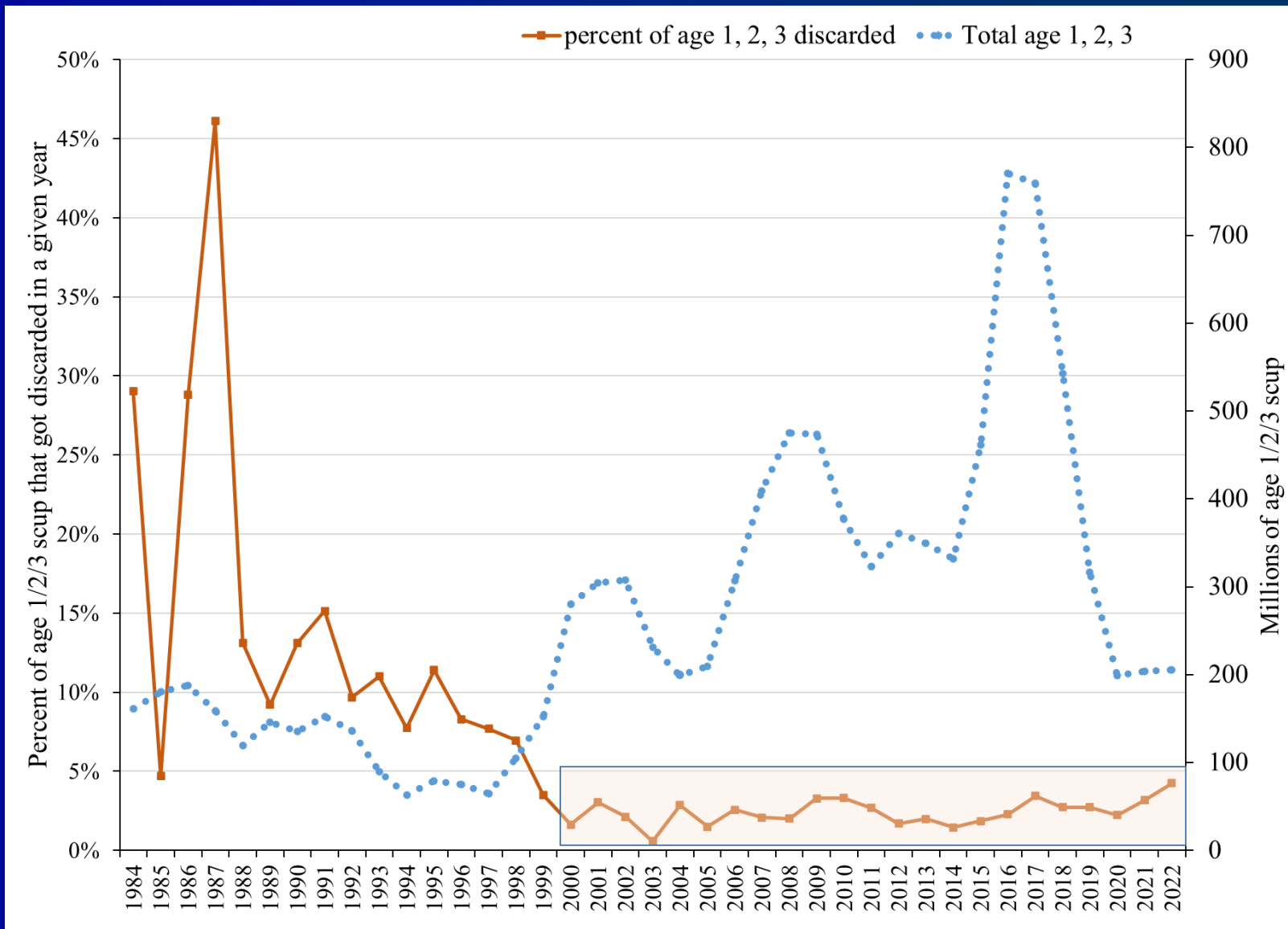
■ CAMS - small (<4in.)
■ CAMS - large (≥4 in.)
■ Unknown



2022

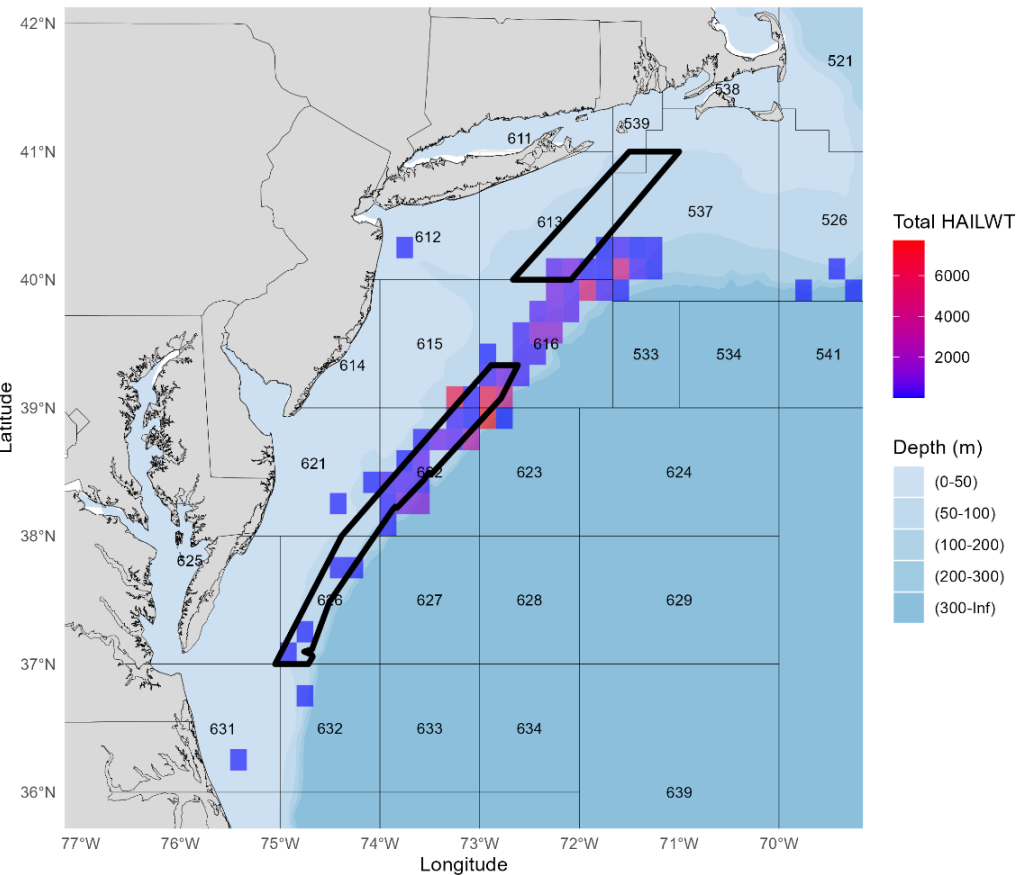


2021 and 2022 estimated scup discards from trawls by month and mesh size. Estimated discards by quarter and mesh size are also shown within the black box within each graph.

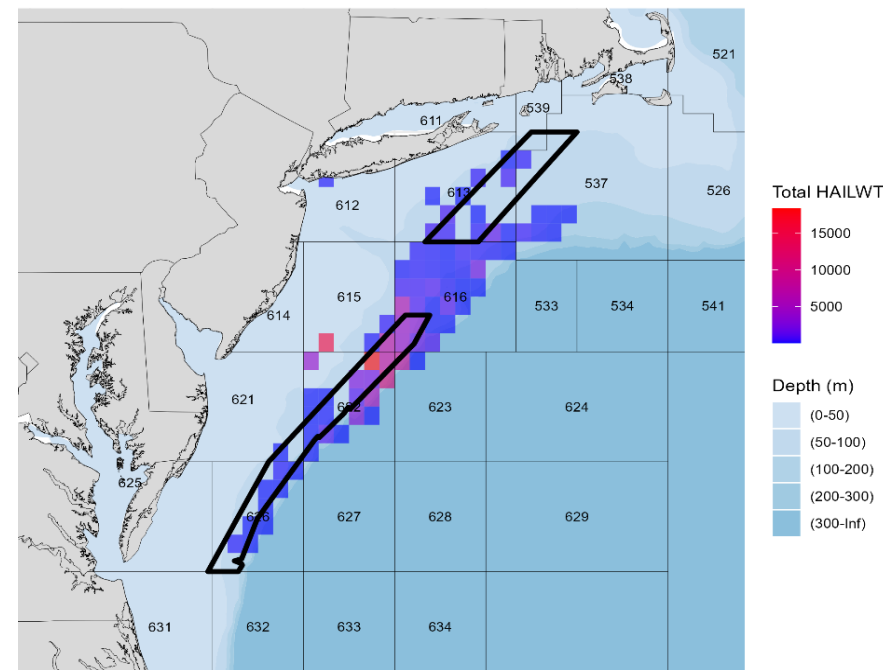


Percentage of age 1-3 fish discarded compared to the total number of age 1-3 fish in the stock from the 2023 management track assessment. *Starting in 2020 discard estimates calculated through CAMS.

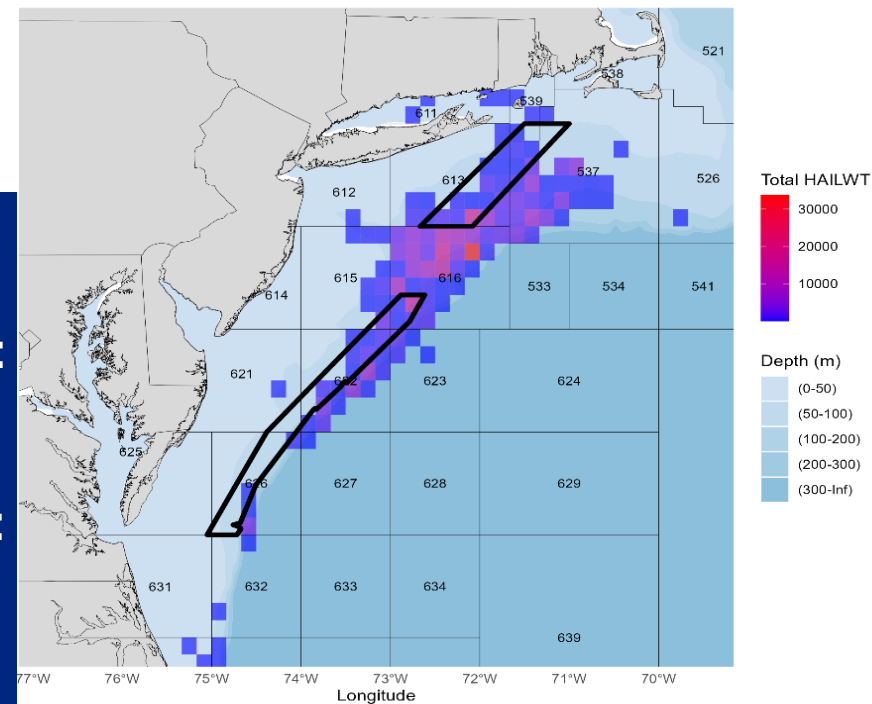
Observer Small Mesh Discard wt Southern Closure (Jan 1-Mar 15).1990-1999



Observer Small Mesh Discard wt Southern Closure (Jan 1-Mar 15).2000-2009

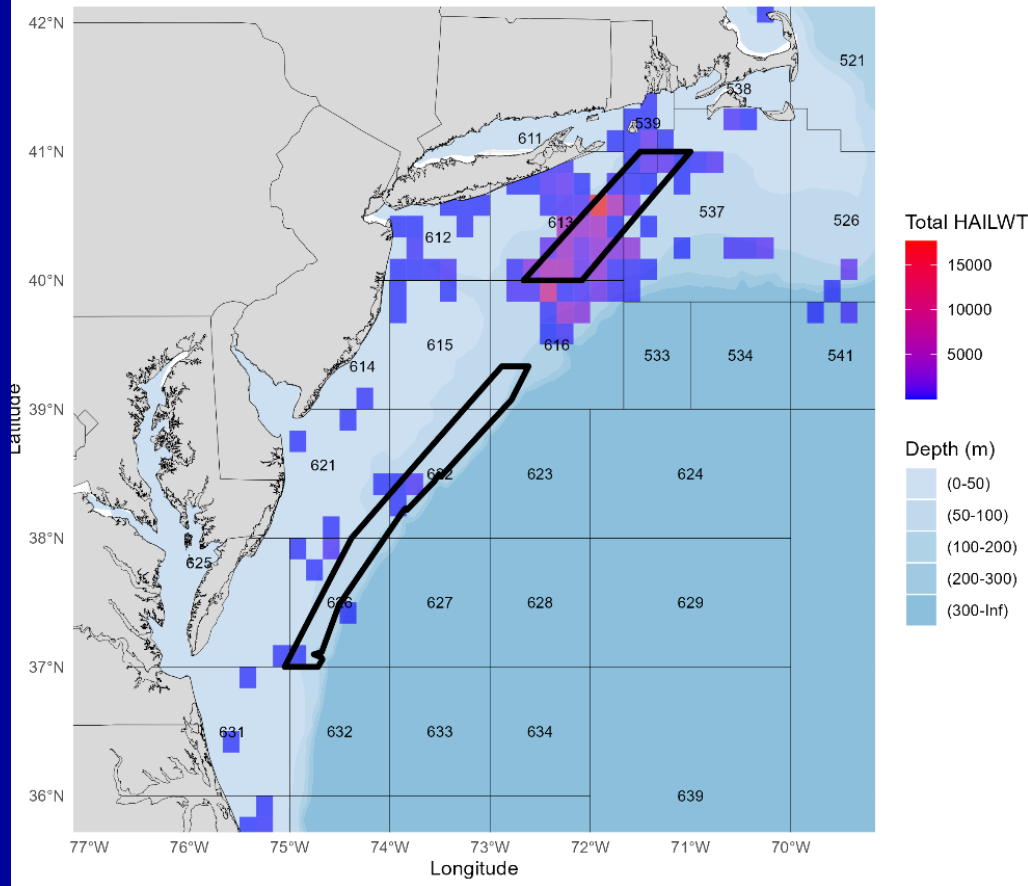


Observer Small Mesh Discard wt Southern Closure (Jan 1-Mar 15).2010-2022

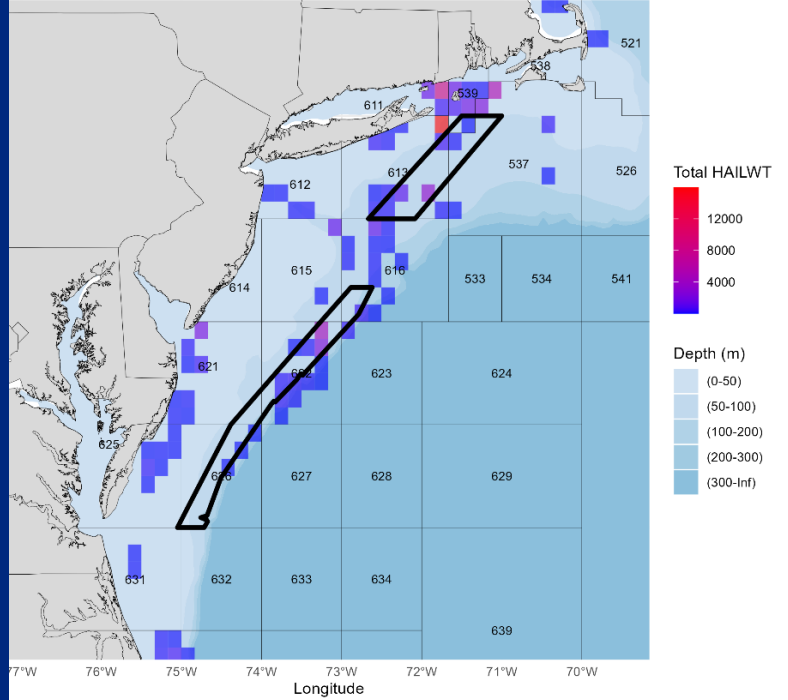


Commercial small mesh (less than 5") scup discards (mt) during the Southern GRI closure: prior to the implementation of the GRAs (left); shortly after implementation (top right); and in more recent years (bottom right). Data Source: Unpublished NMFS Observer Program data.

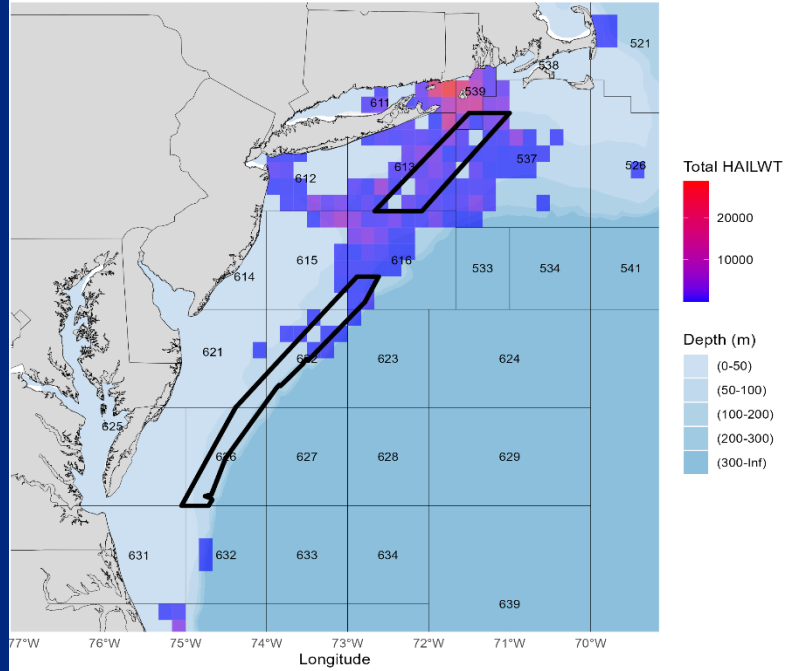
Observer Small Mesh Discard wt Northern Closure (Nov 1-Dec 31).1990-1999



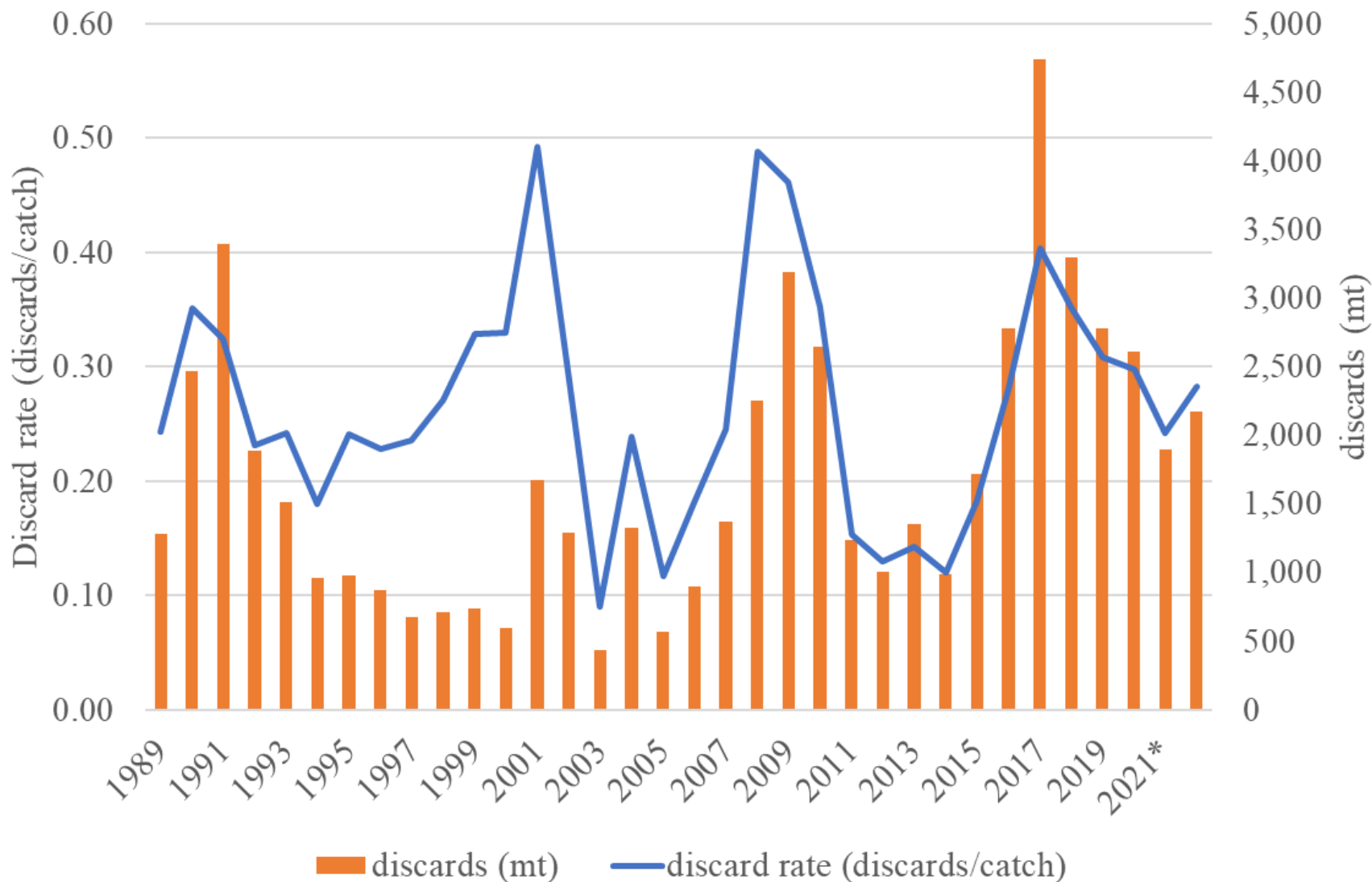
Observer Small Mesh Discard wt Northern Closure (Nov 1-Dec 31).2000-2009



Observer Small Mesh Discard wt Northern Closure (Nov 1-Dec 31).2010-2022

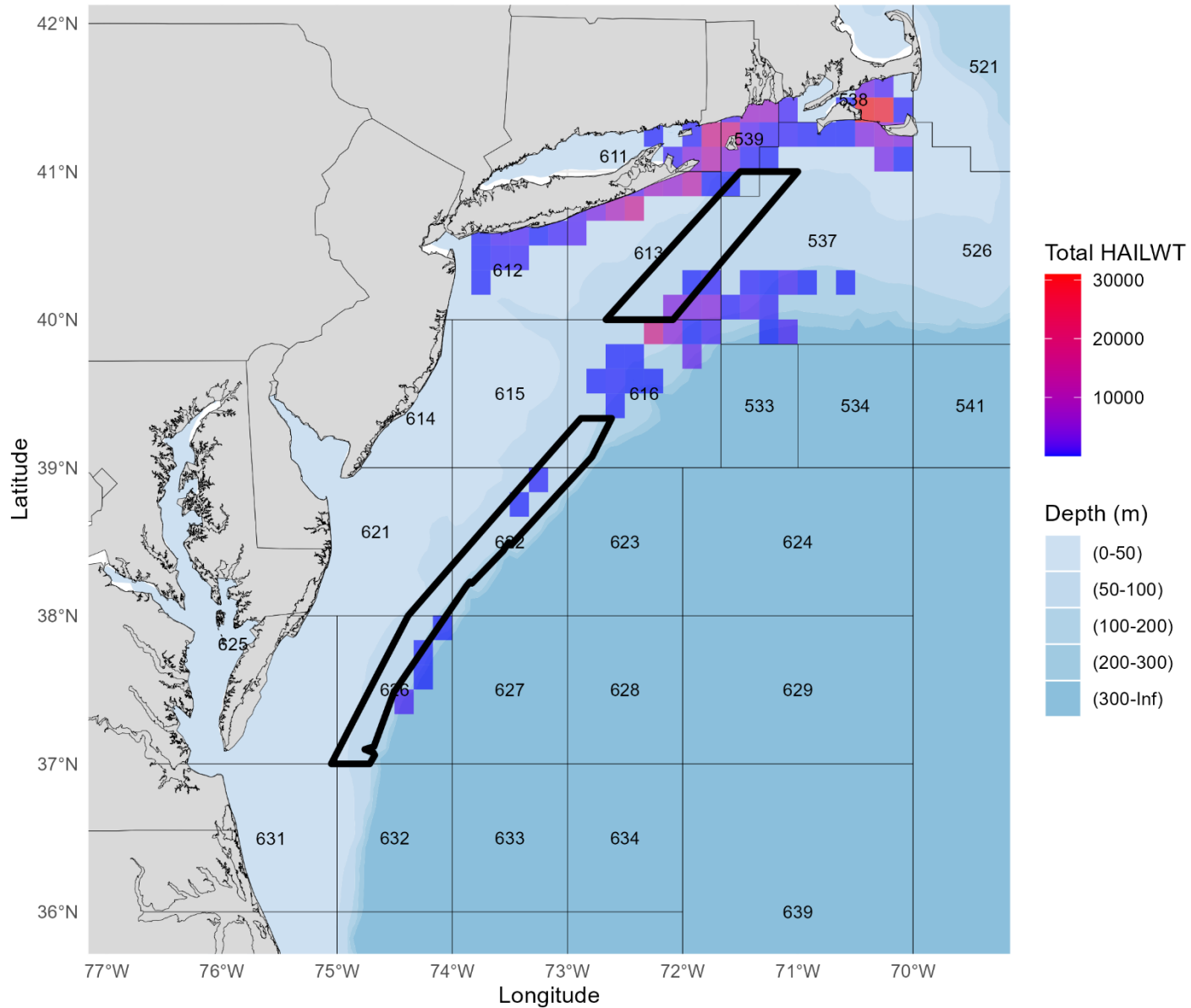


Commercial small mesh (less than 5") scup discards (mt) during November through December (when the Northern GRA closure occurs): prior to the implementation of the GRAs (left); shortly after implementation (top right); and in more recent years (bottom right). Data Source: Unpublished NMFS Observer Program data.



Commercial discards and commercial discard rate (discards/ total catch) since 1989. Discard and catch from the 2023 management track assessment

Observer Small Mesh Discard wt April-June.2019-2022



Observed commercial discards from small mesh trawls from Aprile- June (2019-2022).