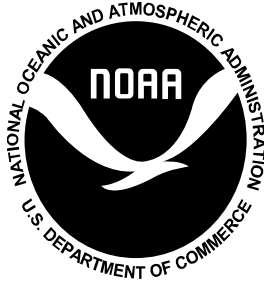




NOAA Technical Memorandum NMFS-NE-283

**2022 Standardized Bycatch
Reporting Methodology
Annual Discard Report with
Observer Sea Day Allocation**

**US DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Science Center
Woods Hole, Massachusetts
April 2022**



NOAA Technical Memorandum NMFS-NE-283

This series represents a secondary level of scientific publishing. All issues employ thorough internal scientific review; some issues employ external scientific review. Reviews are transparent collegial reviews, not anonymous peer reviews. All issues may be cited in formal scientific communications.

2022 Standardized Bycatch Reporting Methodology Annual Discard Report with Observer Sea Day Allocation

by Northeast Fisheries Science Center¹ and
Greater Atlantic Regional Fisheries Office²

¹ NOAA Fisheries, Northeast Fisheries Science Center, 166 Water Street, Woods Hole, MA 02543

² NOAA Fisheries, Greater Atlantic Regional Fisheries Office, 55 Great Republic Drive, Gloucester, MA 01930

**US DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Science Center
Woods Hole, Massachusetts
April 2022**

TABLE OF CONTENTS

List of Tables	ii
List of Acronyms and Abbreviations.....	iv
Executive Summary	v
Introduction.....	1
Summary of Observer Coverage.....	2
Summary of Discard Estimates.....	3
Summary of Sea Days Needed	4
Summary of Funding available for April 2022 through March 2023	4
Prioritization Trigger and Details of the Allocation of Sea Days to Fleets	7
Discussion	14
References Cited.....	19

LIST OF TABLES

Table 1. A list of the 14 fish and invertebrate species groups and 1 species of sea turtle (in bold), with species group abbreviations in parentheses and scientific names in italics, and the species that compose these groups, corresponding to the 13 federal fishery management plans implemented in the waters off the northeastern United States. ..	21
Table 2. Number of observed and Vessel Trip Report trips by fleet and calendar quarter based on July 2020 through June 2021 data.....	22
Table 3. Number of observed and Vessel Trip Report sea days by fleet and calendar quarter based on July 2020 through June 2021 data.....	24
Table 4. Vessel Trip Report kept weight of all species, percentage of kept weight of all species across all fleets, kept weight of all species with observer coverage from statistical areas and quarters with at least 1 observed trip and at least 3 observed trips in the fleet and quarter, and percentage of kept weight of all species with observer coverage by fleet based on July 2020 through June 2021 data.	26
Table 5. The 2020 number of sea days needed to monitor fish/invertebrates, loggerhead turtles, combined species groups by fleet (taken from NEFSC and GARFO 2020), and the 6 fleets present in the 2022 data set; the number of funded sea days for April 2022 through March 2023; and the differences between needed and funded days using the 2022 budget information.	28
Table 6. The 2020 number of sea days needed (COMBINED; taken from NEFSC and GARFO 2020) and the 6 fleets present in the 2022 data set; the number of funded days for April 2022 through March 2023; the difference between needed and funded days determined by using the 2022 budget information and the information used in the penultimate approach to prioritize sea days to fleets for agency-funded days that are applicable to the prioritization process for 2022	31

Table 7. The 2020 sea days needed (COMBINED; taken from NEFSC and GARFO 2020) and the 6 fleets present in the 2022 data set, the 2022 prioritized days, the 2022 nonprioritized days, 2022 industry-funded scallop days, and the 2022 observer sea days allocated for April 2022 through March 2023 by fleet. 33

Appendix Table 1. Stratification abbreviations used for 2020, 2021, and 2022 fleets. 36

Appendix Table 2. The 2020 number of sea days needed to achieve a 30% coefficient of variation of the discard estimate for each of the 14 fish and invertebrate species groups, the number of pilot sea days, the number of minimum pilot sea days, and the maximum number of sea days needed for each fleet for fish and invertebrate species groups based on July 2018 through June 2019 data. 37

LIST OF ACRONYMS AND ABBREVIATIONS

AA = access area
ASM = At-Sea Monitoring Program
CV = coefficient of variation
EPU = Ecological Protection Unit
ESA = Endangered Species Act
FMP = fishery management plan
FMRD = Fishery Monitoring and Research Division
FY = fiscal year
GEN = general category
IFS = Industry Funded Scallop Program
IFQ = individual fishing quota
LAGC = limited access general category
lg = large mesh
LIM = limited access category
MA = Mid-Atlantic
MAFMC = Mid-Atlantic Fishery Management Council
MMPA = Marine Mammal Protection Act
MPC = minimum pilot coverage
MREM = maximized retention electronic monitoring
NE = New England
NEFMC = New England Fishery Management Council
NEFOP = Northeast Fisheries Observer Program
NEFSC = Northeast Fisheries Science Center
NGOM = Northern Gulf of Maine Scallop Management Area
NMFS = National Marine Fisheries Service
NOAA = National Oceanic and Atmospheric Administration
OPEN = nonaccess area
PTNS = Pre-Trip Notification System
RSA = research set-aside
SBRM = Standardized Bycatch Reporting Methodology
SE = standard error of the estimate
sm = small mesh
US = United States
VTR = Vessel Trip Report
xlg = extra large mesh

EXECUTIVE SUMMARY

This document contains a compilation of the information to meet the 2022 Standardized Bycatch Reporting Methodology (SBRM) annual discard report requirements. A summary of observer and industry activity from July 2020 through June 2021 is given. Because of the COVID-19 pandemic, there are gaps in the observer data for 2020 and 2021. Additionally, there was high attrition and turnover of debriefer staff who edit and process the observer data which resulted in delivery delays of the master observer data. A decision was made not to update the SBRM statistical analysis with incomplete data, but to use the results of the 2020 SBRM statistical analysis and incorporate the 2022 budget information and the 2022 scallop compensation rate analysis for the observer sea day allocation for April 2022 through March 2023. Hence, for fish and invertebrate species groups, several of the required annual discard report elements (discards and precision by fleet) can be found in Wigley and Tholke 2020, along with a description of the data sources, methods, results, and discussion. Similarly, for sea turtles, further information can be found in Murray 2012, 2018, 2020.

The sea days needed to monitor the 15 SBRM species groups (14 fish/invertebrates species groups and 1 sea turtle species) for April 2022 through March 2023 are based on July 2018 through June 2019 data and the new fleets that appeared from July 2020 through June 2021. Of the 7,803 sea days, 6,481 sea days are needed for agency-funded fleets, and 1,322 sea days are needed for industry-funded scallop fleets.

The funds available to the Northeast Fisheries Science Center's (NEFSC) Fisheries Monitoring and Operations Branch in fiscal year (FY) 2022 are estimated to provide support for 2,017 days, and 1,827 days are carried over (i.e., bought ahead) from FY2021 funds for a total of 3,844 days (3,382 prioritized days + 462 nonprioritized days) for April 2022 through March 2023. Based upon the 2022 observer set-aside compensation rate analysis for the Industry Funded Scallop Program, there is industry funding for 2,063 days. Hence, 5,907 days are available for observer coverage for April 2022 through March 2023.

Within the agency-funded fleets and prioritization-applicable funding, a shortfall of 3,099 (6,481 – 3,382) days is expected. The 2022 funding shortfall triggers the SBRM prioritization process; the penultimate approach is utilized with a portion of the agency funds. Practical limitations prevent the observer program from covering the 140 sea days associated with 6 fleets. These 140 sea days have been reallocated to the last 2 fleets impacted by the prioritization process.

The numbers of sea days allocated by fleet (where a fleet represents gear type, access area, trip category, region, and mesh group combinations) are given for April 2022 through March 2023.

There is a pending SBRM framework action to expand the sampling frame for the Mid-Atlantic and New England lobster pot fleets. When the framework action is implemented, then beginning in the calendar quarter following the implementation date, all active federal lobster vessels may be eligible for selection to take an observer, regardless of whether they are required to submit Vessel Trip Reports (VTR). Additionally, Greater Atlantic Regional Fisheries Office plans to publish a proposed rule to implement a requirement for electronic VTR submissions for all vessels in the lobster industry. Either scenario would expand the sampling frame for lobster pot fleets once they go into effect.

INTRODUCTION

The Standardized Bycatch Reporting Methodology (SBRM) Omnibus Amendment was implemented in February 2008 (NEFMC, MAFMC, NMFS 2007; NMFS 2008) to address the requirements of the Magnuson-Stevens Fishery Conservation and Management Act to include standardized bycatch reporting methodology in all of the New England Fishery Management Council (NEFMC) and Mid-Atlantic Fishery Management Council (MAFMC) federal fishery management plans (FMPs). A revised SBRM Omnibus Amendment was approved in March 2015, and a final rule was implemented in July 2015 (NEFMC, MAFMC, NMFS 2015).

The SBRM amendment requires an annual discard report utilizing information obtained from the Northeast Fisheries Science Center's (NEFSC) Fisheries Monitoring and Operations Branch's (formerly known as the Fisheries Sampling Branch) observer programs (Northeast Fisheries Observer Program [NEFOP] and Industry Funded Scallop [IFS] Program) for 14 federally managed species groups and sea turtles (Table 1) in the waters of the northeastern United States (US). Specifically, the SBRM annual discard report requirements include:

... summaries of the trips observed, fishing modes in the relevant time period, funding issues and other related issues and developments, and projections of coverage across fisheries for [the] upcoming time period. More detailed information would be provided in tables and figures that addressed: The number of observer trips and sea days scheduled that were accomplished for each fishing mode and quarter, as well as the number of trips and sea days of industry activity; the kept weight from unobserved quarters and statistical areas summarized by fishing mode; the amount kept and estimated discards of each species by fishing mode; and the relationship between sample size and precision for relevant fishing modes. (NEFMC, MAFMC, NMFS 2015, pages 237-238).

Each year, discard estimates and variability are derived by using observer data from the prior year to inform observer coverage needs for the upcoming year. If 2021 were a typical year in terms of observer data, discard estimates and variability for the SBRM 2022 statistical analysis would be derived by using data from July 2020 through June 2021, and those results would be used to calculate observer coverage needs for April 2022 through March 2023. Those observer coverage needs would then be considered in light of available funding based on the fiscal year 2022 budget and industry funding available for scallop observer coverage, which is determined through a scallop compensation rate analysis. However, there are gaps in the observer data for 2020 and 2021 because of the COVID-19 pandemic. The NEFSC did not deploy observers from March 20, 2020 to August 13, 2020; as a result, there were no observed trips during this time (for more information, see the bulletin on [Temporary Waivers on Northeast Observers¹](#)). Additionally, high attrition and turnover of debriefer staff who edit and process the observer data delayed the delivery of the master observer data by 3 months. A decision was made not to update the statistical analysis with incomplete 2021 data but to use the results of the 2020 SBRM statistical analysis (see Discussion for rationale). The 2022 SBRM observer coverage will be based on the 2020 SBRM statistical analysis (Wigley and Tholke 2020), which used the complete, uninterrupted observer data from July 2018 through June 2019. Those observer coverage needs still will be considered in light of available 2022 funding.

For fish and invertebrate species groups, several of the required annual discard report elements (discards and precision by fleet) can be found in Wigley and Tholke 2020, along with a

¹ <https://www.fisheries.noaa.gov/bulletin/temporary-waivers-northeast-observers-monitors-through-august-13-resuming-coverage>

description of the data sources, methods, results, and discussion. Similarly, for sea turtles, further information can be found in Murray 2012, 2018, 2020. The sea days needed to monitor the 15 SBRM species groups (14 fish/invertebrates species groups² and 1 sea turtle species; Table 1) for April 2022 through March 2023 are based on the 2020 SBRM statistical analyses (Wigley and Tholke 2020; Murray 2018, 2020; NEFSC and GARFO 2020).

This report describes the 2022 funding available for observer coverage, and the numbers of sea days allocated by fleet³ (where a fleet represents gear type, access area, trip category, region, and mesh group combinations) for April 2022 through March 2023. Thus, this document, together with Wigley and Tholke 2020 and Murray 2018 and 2020, compose the information to meet the 2022 SBRM annual discard report requirements.

SUMMARY OF OBSERVER COVERAGE

By using methods described in Wigley and Tholke 2020, the Vessel Trip Report (VTR) data and incomplete observer (OB) data from July 2020 through June 2021 were summarized in terms of the number of trips (Table 2) and the number of sea days (Table 3) by fleet, calendar quarter, and data source. Fleet stratification abbreviations used in this report are described in Appendix Table 1. There were 60 uniquely identified fleets⁴. Based on industry activity, there were 6 fleets present in the most recent data set that were not present in the 2020 analysis (hereinafter referred to as “the 6 fleets present in the 2022 data set”). Of these, 2 fleets are new fleets (New England [NE] small mesh large mesh belly panel otter trawl fleet [2022 Row 9] and NE mussel dredge fleet [2022 Row 58]). The remaining 4 fleets were not present in 2020 analysis but had been included in one or more previous SBRM analyses: (NE small mesh haddock separator otter trawl fleet [2022 Row 18], Mid-Atlantic [MA] large mesh other otter trawl fleet [2022 Row 22], MA other pots and traps fleet [2022 Row 44], and NE hagfish pots and traps fleet [2022 Row 50]; Tables 2 and 3). There were 8 fleets that were not present this year that were present in the 2020 analysis: MA general category (GEN) small mesh access area (AA) scallop trawl fleet, NE GEN large mesh OPEN scallop trawl fleet, NE large mesh Ruhle trawl fleet, NE small mesh shrimp trawl, MA floating trap fleet, MA Danish seine fleet, NE large mesh beam trawl fleet, and NE urchin dredge fleet. Of the 60 fleets, 45 fleets had little or no observer data, and these fleets would have been designated as pilot fleets (no discard estimation for sample size analyses). Of these 45 fleets, 23 fleets were missing observer data in all quarterly cells. The remaining 15 fleets would have been designated as nonpilot fleets; 9 of the 15 fleets would have required imputation in 1 calendar quarter.

From July 2020 through June 2021, 751 trips (3,028 days) were observed. When these trips were stratified, some trips were partitioned between strata, resulting in 785 trips (3,149 days; Tables 2 and 3) in the OB data set. In terms of trips, the percentages of observed trips varied by

² On August 4, 2020 Atlantic chub mackerel (*Scomber colias*) was integrated into the MAFMC Mackerel, Squid, Butterfish fishery management plan via Amendment 21. The 2022 SBRM species group for squid, butterfish and mackerel was expanded to include Atlantic chub mackerel (Table 1). The 2020 SBRM analysis was conducted prior to the implementation of Amendment 21 and does not include Atlantic chub mackerel; however, the next SBRM analyses will include Atlantic chub mackerel.

³ Fleets are synonymous with “fishing modes.”

⁴ The “Paired & Single midwater trawl” fleets have been relabeled to “Midwater Trawl” fleets in this report; no change has occurred to the criteria used to stratify trips to these fleets.

fleet and calendar quarter. Of the 37 fleets with some observer coverage, the annual percentage of observer trips by fleet ranged from 0.06% (NE lobster pot, Row 52, Table 2) to 9.6% (NE crab pot, Row 54, Table 2). Over all fleets, the percentage of observed trips was 1.1% (Table 2), substantially lower than in past years. The percentage of observer days (Table 3) was generally similar to the percentage of observed trips.

The spatial and temporal patterns of observer coverage within a fleet were evaluated by using the incomplete July 2020 through June 2021 data. Rather than the number of trips (a trip-based metric), the kept weight of all species reported in the VTR was used. The “kept weight with observer coverage” was derived as the kept weight of all species reported in the VTR summed by fleet, statistical area, and quarter, where at least 1 observed trip occurred in the fleet-quarter-statistical area cell and at least 3 observed trips⁵ occurred in the fleet-quarter stratum. The “kept weight” was derived as the kept weight of all species reported in the VTR summed over all statistical areas and quarters within a fleet. The percentages of “kept weight with observer coverage” were calculated by dividing the “kept weight with observer coverage” by the “kept weight.” These percentages were derived for the individual fleets, confidential fleets combined into “Confidential fleets⁶,” “Other minor fleets⁷,” and all fleets combined. Additionally, as a relative measure of fleet activity among all fleets, the percentage of “kept weight” was derived by dividing the “kept weight” by the sum of the “kept weight” across all fleets. The percentages of kept weight with observer coverage by fleet for the incomplete July 2020 through June 2021 data are given in Table 4. In terms of kept weight of all species, the percentage of observer coverage over all fleets was 50% (Table 4), roughly 34% lower than the 2020 analyses (Table 4 in Wigley and Tholke 2020). For the 28 nonconfidential, nonpilot fleets, the percentage of observer coverage ranged from 3% to 98% with an average of 44% (Table 4). Thirteen of the 28 fleets had a percentage greater than or equal to 51% with an average of 73%. Additionally, these 13 fleets composed 54% of the total kept weight across all fleets. The kept weight of all species was considered a surrogate for fishing effort; hence, observer coverage occurred spatially and temporally where the majority of fishing effort occurred at the statistical area and quarter year scales. This finding indicates that the majority of kept weight within the fleet was associated with statistical areas and quarters with observer coverage. However, it is not known how the roughly 34% lower overall coverage would have impacted the variance of the discard estimates.

The landings associated with the combined fleet “Other minor fleets” contributed <0.1% of the total landings across all fleets (Table 4); thus, the 60 uniquely identified fleets account for almost all of the total VTR landings.

SUMMARY OF DISCARD ESTIMATES

Discard estimates and precision were not updated with the incomplete July 2020 through June 2021 data. For the most recent discard estimates and their associated precision for

⁵ The 3 trips for fleet-quarter correspond with a minimum threshold for allocating observer coverage.

⁶ Because of confidentiality rules, the landings and discards associated with 14 unique fleets (Rows 9, 13, 14, 15, 16, 17, 18, 21, 22, 43, 44, 45, 50, and 58; Table 2) were combined into a single aggregated fleet labeled “Confidential fleets” for reporting purposes in Table 4. Hence, the fleet rows within Tables 2 and 3 are sequential while the fleet rows in Table 4 are ordered but there are gaps in row numbers.

⁷ Fleets with fewer than 3 trips per quarter in all quarters were not uniquely identified. Trips from these fleets were aggregated into a single “Other minor” fleets and reported in Table 4 to allow tracking of all industry activity.

fish/invertebrates and sea turtles interactions, see Wigley and Tholke 2020; Murray 2018, 2020; NEFSC and GARFO 2020.

SUMMARY OF SEA DAYS NEEDED

Sample size analyses were not updated with the incomplete July 2020 through June 2021 data. Based on the 2020 SBRM statistical analysis (Wigley and Tholke 2020; Murray 2018, 2020; NEFSC and GARFO 2020) and the 6 fleets present in the 2022 data set, a total of 7,803 sea days is needed for fish/invertebrates and loggerhead turtles (COMBINED; Table 5, Step 5) for April 2022 through March 2023. Of the 7,803 sea days, 6,481 sea days are needed for agency-funded fleets, and 1,322 sea days are needed for industry-funded scallop fleets (Table 5, Step 6).

As noted above, the summary of trips and sea days revealed differences in the number of fleets between the incomplete July 2020 through June 2021 data and the July 2018 through June 2019 data. The 6 fleets present in the 2022 data set contribute an additional 137 sea days to the sea days needed from the 2020 analysis (Table 5, Step 5, 2022 Rows 9, 18, 22, 44, 50, and 58). The “Prioritization trigger and sea day allocation details” section contains additional information on these 6 fleets, as well as the 8 fleets that are not present in the 2022 data set but were present in the 2020 data set.

SUMMARY OF FUNDING AVAILABLE FOR APRIL 2022 THROUGH MARCH 2023

The funds available to the NEFSC’s Fisheries Monitoring and Operations Branch in fiscal year (FY) 2022 are estimated to provide support for 2,017 days. There are also 790 days carried over (i.e., bought ahead) from FY2021 funds⁸ and 1,037 prioritized days from obligated but not spent FY2021 funds after all carryover days were purchased. A total of 3,844 (2,017 + 790 + 1,037) of agency-funded days are available for April 2022 through March 2023. Based upon an observer set-aside compensation rate analysis for the Industry Funded Scallop Program, there is industry funding for 2,063 days for scallop fleets. Hence, 5,907 (3,844 + 2,063) days are available for observer coverage for April 2022 through March 2023.

Below is a summary of the 2 funding source categories: agency-funded and industry-funded. Within the agency-funded category, there are 5 subcategories: Atlantic Coast Observers, National Observer Program, Northeast Fisheries Observers, Marine Mammal Protection Act, and Reducing Bycatch.

- **Agency-funded:** The funding sources for the 3,844 agency-funded sea days include: Atlantic Coast Observers (0 days), Northeast Fisheries Observers (238 days), National Observer Program (1,331 days), Reducing Bycatch (55 days), National Catch Share Program (0 days), and 1,758 (1,037 FY2021 obligated prioritized days + 721 FY2021 unachieved prioritized days) carryover/bought ahead days collectively fund the sea days

⁸ The best estimate of the FY2021 carryover days is 790 days (721 prioritized carryover days and 69 Marine Mammal Protection Act [MMPA] carryover days).

for prioritization (3,382 days; Table 5, Step 7). The Marine Mammal Protection Act (MMPA; 393 days) and the 69 FY2021 carryover/bought ahead days collectively fund the sea days to monitor protected species (462 days; Table 5, Step 7).

- 462 agency-funded days are applicable to protected species⁹ only.
 - 350 MMPA days are associated with trips having sampling protocols that are specific to protected species (marine mammals, sea turtles, Endangered Species Act [ESA] listed fish species) and are not applicable for non-ESA listed fish and invertebrates. Owing to the extra demands of monitoring protected species, information on finfish and shellfish discards is not collected on these trips. However, these days will provide observer coverage for sea turtles and ESA-listed fish species above that which is allocated for all species.
 - Funding equivalent to 112 days will be in support of observer data analysis.
- 3,382 (3,844 – 462) agency-funded days are applicable for all species.
 - 3,382 days are subject to the prioritization process across all fleets. The prioritization approach is described in the next section and given in Table 6.
 - No sea days have been set aside to support discovery days to address emerging questions of scientific and management interest as the year progresses.
- There is a single provider for NEFOP sea days, and consequently, the projected costs (i.e., at-sea costs based on realized costs in FY22) are confidential. An estimated rate for shoreside infrastructure that includes fixed and variable costs for operations, training, and data processing is \$512.
- **Industry-funded:** The number of industry-funded sea days available for scallop fleets is determined by taking 1% of the total acceptable biological catch/annual catch limit set for the year. The IFS provides vessels with additional landings to help defray the costs of carrying an observer (i.e., the compensation rate). The sale of the additional scallops allocated to each boat supplies the funding for the at-sea costs of observer coverage. Based upon projected landings and expected prices, the IFS generates funds in support of discard monitoring of the scallop fleets. A compensation rate analysis was undertaken to support observer coverage of the 11 industry-funded scallop fleets (Rows 10-12, and 36-43; Table 5).

A recent proposed change to the Atlantic Sea Scallop FMP includes regulations to better manage the total scallop removals from the Northern Gulf of Maine Scallop Management Area (NGOM) by all components for the fishery. Beginning this year, the regulations include the NGOM in the Atlantic Sea Scallop overfishing limit and acceptable biological catch calculations. The regulations also expand the Industry-

⁹ In this document, protected species refers to marine mammals, sea turtles, and ESA-listed fish.

Funded Scallop Observer Program to include monitoring of the NGOM. The scallop pounds from the NGOM allocation will contribute to the fishery-wide observer set-aside and will be used as compensation pounds to help support observer coverage.

For the 2022 scallop fishing year (April 2022 through March 2023), the NE open area limited access trips will be observed at 11.5% and MA open area limited access trips will be observed at 5%. The observer compensation rate in the access areas will be 200 lb/day because of higher scallop prices observed during the 2021 fishing year that are anticipated to remain high in 2022. Observer coverage rates for limited access vessels in the proposed Framework 34 Georges Bank access areas would require at least 12% coverage for Closed Area II and 8% coverage for Nantucket Lightship South Deep. There are 2 trips proposed in Closed Area II (30,000 lb/full time vessel) and 1 trip proposed in Nantucket Lightship South Deep (15,000 lb/full time vessel) with a maximum possession limit per trip of 15,000 lb. Only limited access general category (LAGC) Individual Fishing Quota (IFQ) vessels (715 trips) and vessels fishing for research set-aside (RSA) compensation would have access to Closed Area I. The MA access area will revert to open area on May 31, 2022, however the coverage rate for 2021 carryover trips where there are fewer bycatch concerns would be 5% and the maximum possession would remain at 18,000 lb/trip. The overall NGOM total allowable catch for 2022 is proposed at 621,307 lb with a trip possession limit of 200 lb/day. The observer compensation rate for the NGOM will be 125 lb/day at a proposed coverage rate of 4% and would only be open to LAGC IFQ and LAGC NGOM permitted vessels in 2022 along with limited RSA compensation fishing.

- Based upon the compensation rate analysis and proposed Framework 34 allocations, a total of 2,063 sea days can be funded: 861 days for Open Areas, 257 days for MA Access Areas, and 945 days in the NE Access Areas which includes 124 days for the Northern Gulf of Maine Scallop Management Area (Table 7).
 - The industry-funded schedule runs April through March
 - [Bulletins¹⁰](#) describing the [2022 set-aside compensation rate calculations](#) and scallop management measures ([Framework 34](#) and [Amendment 21](#)) are available online.
- Of the 861 days for the Open Areas, there are 82 days for Limited Access General Category fleets (Rows 11, 12, 40, and 41; Table 7) and 779 days for Limited Access fleets (Rows 42 and 43; Table 7).
- Coverage of the 11 fleets depends on industry activity among these fleets for April 2022 through March 2023; the sea days represent the maximum coverage (i.e., caps).
- Projected costs: the average cost to industry for the at-sea portion is \$698/day for industry-funded scallop fleets. Additional agency funds are needed for training and certification of observers and data processing.

¹⁰ <https://www.fisheries.noaa.gov/species/atlantic-sea-scallop#observer-program>

Below is a summary of sea days based on the agency budget and the compensation rate analysis by funding source for April 2022 through March 2023.

Funding Source	Sea Days
Agency-funded total	3,844
Agency-funded applicable to all species (prioritized days)	3,382
Agency-funded applicable to protected species only (nonprioritized days)	462
Industry-funded scallop total applicable to all species	2,063
Total	5,907

PRIORITIZATION TRIGGER AND DETAILS OF THE ALLOCATION OF SEA DAYS TO FLEETS

Within the agency-funded fleets and prioritization-applicable funding, a funding shortfall of 3,099 (6,481 – 3,382) days is expected (Table 5). The 2022 funding shortfall triggers the SBRM prioritization approach; the prioritization approach is utilized with a portion of the agency funds.

The following describes the steps taken to allocate the 5,907 funded sea days (Tables 5-7).

Step 1. Derive the number of sea days needed for the 14 fish/invertebrate species groups (Table 5; the importance filter has been applied, see Wigley and Tholke 2020 for the methods used in the sample size analyses). ***A change from NEFSC and GARFO 2020 was made: the sea days for the 6 fleets present in the 2022 data set were included. Sea days for these 6 fleets were based on pilot coverage¹¹.***

Step 2. Apply the sea day adjustments to 14 “erroneous” fleets (Rows 9, 16, 18, 21-25, 44, 47, 56-59) in the 2020 analysis and 2 “erroneous” fleets in the 2022 data set (2022 Rows 22 and 44; Table 5). Additionally, 2022 Row 18 has been removed because this fleet is allowed under an Exempted Fishing Permit (fishing outside standard fishing behavior), and this exemption will not be part of the operationalized Maximized Retention Electronic Monitoring (MREM) under the proposed Amendment 23 to the Northeast Multispecies FMP in the upcoming year (Table 5). A total of 6,208 days is needed for fish/invertebrate species group across 51 fleets (40 agency-funded fleets and 11 industry-funded scallop fleets; Table 5). ***A change from NEFSC and GARFO 2020 was made: the sea days for 3 of the 6 fleets present in the 2022 data set were adjusted.***

¹¹Pilot coverage is defined as a minimum level of observer coverage necessary to acquire bycatch information with which to calculate variance estimates that can then be used to further define the level of sampling needed (NMFS 2004). For the 6 fleets present in 2022 that were not present in 2020, the sample sizes (number of trips) were determined by using a pilot coverage level set to 2% of the quarterly VTR trips that occurred in a fleet, with a minimum of 3 trips per quarter (12 trips per year) and a maximum of 100 trips per quarter (400 trips per year). To avoid assigning more coverage than could be attained, if fewer than 3 VTR trips occurred in a fleet and quarter, then pilot coverage was set to zero. A weighted mean trip length from the 2020 analysis was used to convert trips into sea days.

In the Wigley and Tholke 2020 analysis, there were 14 “erroneous” fleets identified which resulted from either VTR misreporting the gear type used (e.g., scallop trawl, beam trawl), fishing outside the regulations (by using smaller mesh size than allowed), or inconsistent gear codes between data collection systems (e.g., otter trawl, other; pots and trap, other; dredge, other; and shrimp trawl). The 333 sea days associated with the 14 “erroneous” fleets were set to zero in the 2020 sea day allocation. Additionally, the 92 sea days associated with the 3 of the 6 fleets present in the 2022 data set were also set to zero.

Step 3. Derive the number of sea days needed for sea turtles (Table 5; see Murray 2012, 2018, 2020 for the methods used in sample size analyses). ***No change from NEFSC and GARFO 2020.***

A total of 2,668 sea days are needed annually to monitor loggerhead turtle (*Caretta caretta*; TURS) interactions with 30% precision across bottom trawl fleets operating in the MA Ecological Production Unit (EPU; Murray 2020).

In the 2020 sea day allocation, the 2,668 sea days were adjusted to account for the overlap of spatial strata when fish and sea turtle sea days were merged. The proportion of NE fishing effort in the MA EPU was estimated by using the VTR data from 2014-2018. Approximately 67% of NE small mesh otter trawl effort and 10% of NE large mesh otter trawl effort (in terms of days fished) occurred in the MA EPU. These proportions were applied to the number of days needed to monitor fish in each of the NE otter trawl fleets (988 and 840 days in the NE small mesh [Row 5] and large mesh [Row 7] otter fleets, respectively (Table 5), a total of 746 $([0.67 * 988] + [0.10 * 840])$ days.

After adjusting, the total number of days needed to monitor loggerhead turtles in the MA trawl fleets is 1,922 days (2,668 – 746). The 1,922 days will be integrated with sea days needed for fish in the SBRM MA trawl fleets.

Step 4. To integrate the monitoring needs of fish/invertebrates and sea turtles and to support the penultimate prioritization approach, derive the number of sea days needed for loggerhead turtles for each of the fish/invertebrate fleets associated with the turtle gear types (Table 5). ***No change from NEFSC and GARFO 2020.***

- a. Summarize the number of VTR sea days corresponding to each fish/invertebrate fleet (see Table 3 in Wigley and Tholke 2020). The VTR sea days associated with the 14 “erroneous” fleets are given but not used (Table 5, Step 4a, gray shaded cells).
- b. Derive the percentage of VTR sea days for each fish/invertebrate fleet within the turtle gear type. For each fish/invertebrate fleet associated with the turtle gear type, divide the VTR sea days by the sum of the VTR sea days for the gear type.
- c. Derive the percentage of sea days needed for fish/invertebrate for each fish/invertebrate fleet within the turtle gear type. For each fish/invertebrate fleet associated with a turtle gear type, divide the adjusted sea days (Step 2) by the sum of the sea days for the gear type.

- d. Derive the number of additional sea days needed for loggerhead turtles.

If the number of sea days needed for loggerhead turtles is less than or equal to the sum of the sea days needed for the fish/invertebrate fleets associated with the turtle gear type, then no additional sea days are needed to monitor turtles. The additional sea days for turtles are set to zero for fish/invertebrate fleets.

If the number of sea days needed for loggerhead turtles is greater than the sum of the sea days needed for the fish/invertebrate fleets associated with the turtle gear type, then derive the difference between the sea days needed for loggerhead turtles and the sum of the sea days needed for fish/invertebrates. For each turtle gear type, multiply the difference between the number of sea days needed by the percentage of VTR sea days for each fish/invertebrate fleet within the turtle gear type. These days represent the number of additional days needed to monitor turtles in the fish/invertebrate fleets.

- e. Derive the number of sea days needed for loggerhead turtles by fish/invertebrate fleets.

If the number of sea days needed for loggerhead turtles is less than or equal to the sum of the sea days needed for the fish/invertebrate fleets associated with the turtle gear type, then multiply the sea days needed for turtles by the percentage of sea days needed for fish for each fish/invertebrate fleet within the turtle gear type (Step 4c).

If the number of sea days needed for loggerhead turtles is greater than the sum of the sea days needed for the fish/invertebrate fleets associated with the turtle gear type, then add the sea days needed for fish/invertebrates (Step 2) and the additional days needed for turtles (Step 4d) for each fish/invertebrate fleet.

Step 5. Derive the number of sea days needed for fish/invertebrates and turtles COMBINED; select the largest of the 2 numbers of sea days (i.e., adjusted sea days needed for the 14 fish/invertebrate species groups [Step 2] and sea days needed for loggerhead turtles [Step 4e]) within the fleet. ***A change from NEFSC and GARFO 2020 was made: the adjusted sea days for the 6 fleets present in the 2022 data set were included.***

A total of 7,803 days is needed to achieve a 30% coefficient of variation (CV) on the discards of the 15 species groups in 2022 (Table 5).

Step 6. Partition fleets into funding source categories and sum the number of sea days needed by funding source. ***A change from NEFSC and GARFO 2020 was made: the sea days needed for the 6 fleets present in the 2022 data set were included.***

There were 6,481 days and 1,322 days needed to achieve a 30% CV for the 15 species groups for agency-funded and industry-funded scallop fleets, respectively (Table 5).

Step 7. Obtain funded sea days by funding source category. For agency-funded sea days, calculate the number of sea days applicable to the prioritization process (prioritized versus nonprioritized days).

There are 3,382 agency-funded days applicable to the prioritization process (Table 5).

Step 8. Evaluate needed sea days versus funded sea days for each funding category, and calculate shortfall or surplus sea days associated with the prioritization process.

A funding shortfall of 3,099 days is expected for agency-funded fleets (Table 5).

Step 9. Apply the penultimate approach algorithm to allocate sea days to fleets for agency-funded days that are applicable to the prioritization process.

As described in the SBRM Amendment, the number of agency-funded sea days applicable to the prioritization process is assigned to each fleet (fishing mode) after sequentially removing the sea days needed for the species group/fleet with the highest sea day difference between adjacent species groups within a fleet until the sea day shortfall is removed.

The following describes the steps taken to assign the agency-funded sea days applicable to the prioritization process by using the penultimate approach (Table 6).

Step 9.1. For each agency-funded fleet where sea days are needed, list the sea days needed for the 15 species groups (fish/invertebrates and loggerhead turtles) in descending order within a fleet (Table 6). The minimum pilot days (Appendix Table 2) serve as the minimum sea days needed for fleets.

Step 9.2. Calculate the differences in sea days between adjacent species groups within each agency-funded fleet (Table 6).

Step 9.3. Within the resulting matrix of sea day differences (Step 9.2), identify the largest difference and remove the sea days associated with the species group accounting for this difference (Table 6).

Repeat this process for the next largest difference, with the constraint that the differences are taken in penultimate order (from left to right in the matrix) within a fleet, until the cumulative reduction of sea days equals the sea day shortfall (Step 8). If the reduction in sea days by using the next largest (penultimate) value is greater than the shortfall, reduce the number of sea days only enough to remove the shortfall. If there is a tie in sea day differences between adjacent species groups (e.g., 2 fleets with the same sea day difference), then select the fleet with the largest penultimate sea days first to break the tie¹².

¹² The SBRM Amendment does not describe how to handle ties and this is the first year that ties have been encountered in the ordered list of sea day differences. This approach was selected because it has the potential to impact the fewest number of species groups compared to other approaches of dealing with ties.

The 2022 sea day shortfall is 3,099 days.

- The 1,122 days (TURS in Row 5; Tables 5 and 6) associated with the largest sea day difference (479 days) between adjacent species groups is removed first (Table 6). The penultimate value in Row 5 is associated with small mesh groundfish (GFS, 643 days; Appendix Table 2; Table 6).
- The 753 days (TURS in Row 6; Tables 5 and 6) associated with the second largest sea day difference (389 days) between adjacent species groups is removed next (Table 6). The penultimate value in Row 6 is associated with spiny dogfish (*Squalus acanthias*, DOG, 364 days; Appendix Table 2; Table 6).
- The 428 days (DOG in Row 62; Appendix Table 2; Table 6) associated with the third largest sea day difference (386 days) between adjacent species groups is removed next (Table 6). The penultimate value in Row 62 is associated with both monkfish (*Lophius americanus*) and spiny dogfish (MONK and DOG, respectively, 42 days; Appendix Table 2; Table 6).
- The 840 days (skate complex [Rajidae] in Row 8; Appendix Table 2; Table 6) associated with the fourth largest sea day difference (366 days) between adjacent species groups is removed next (Table 6). The penultimate value in Row 8 is associated with Fluke-Scup-Black sea bass (FSB, *Paralichthys dentatus*, *Stenotomus chrysops*, *Centropristis striata*, 474 days; Appendix Table 2; Table 6).
- The 288 days (TURS in Row 28; Tables 5 and 6) associated with the fifth largest sea day difference (275 days) between adjacent species groups is removed next (Table 6). The penultimate value in Row 28 is associated with minimum pilot coverage (MPC, 13 days; Appendix Table 2; Table 6).
- The 387 days (TURS in Row 29; Tables 5 and 6) associated with the sixth largest sea day difference (238 days) between adjacent species groups is removed next (Table 6). The penultimate value in Row 29 is associated with spiny dogfish (DOG, 149 days, Appendix Table 2; Table 6). Rows 29 and 53 each have a 238 sea day difference between adjacent species groups (i.e., a tie). To break the tie, the row with the largest penultimate sea days was selected first. In this case, Row 29 (387 days) was removed before Row 53 (255 days).
- The 255 days (FSB in Row 53; Table 6) associated with the seventh largest sea day difference (238 days) between adjacent species groups is removed next (Table 6). The penultimate value in Row 53 is associated with MPC (17 days, Appendix Table 2; Table 6).
- The 988 days (Squid-Butterfish-Mackerel, SBM, *Doryteuthis [Amerigo] pealeii*, *Illex illecebrosus*, *Peprilus triacanthus*, *Scomber scombrus*, in Row 7; Table 6) associated with the eighth largest sea day difference (233 days) between adjacent species groups is removed next (Table 6). The penultimate value in Row 7 is associated with spiny dogfish (DOG, 557 days, Appendix Table 2; Table 6).

- The 225 days (DOG in Row 32; Table 6) associated with the ninth largest sea day difference (206 days) between adjacent species groups is removed next (Table 6). The penultimate value in Row 32 is associated with MPC (19 days, Appendix Table 2; Table 6).
- The 755 days (DOG in Row 7, a fleet that has already been prioritized, Table 6) associated with the tenth largest sea day difference (198 days) between adjacent species groups is removed next (Table 6). Rows 7 and 30 each have a 198 sea day difference between adjacent species groups. As described above, to break the tie, the row with the largest penultimate sea days is selected first. In this case, Row 7 (755 days) was removed before Row 30 (225 days). The penultimate value in Row 30 is associated with MPC (14 days, Appendix Table 2; Table 6).
- Removing the 212 days (TURS in Row 30, Tables 5 and 6) associated with the eleventh largest sea day difference (198 days) between adjacent species groups would remove more sea days than needed to reach the shortfall amount of 3,099 days (Table 6). Thus, only 91 of the 198 sea day difference between adjacent species groups (212 days for the TURS and 19 days for MPC are needed (Table 6). The penultimate value for Row 30 becomes 121 (212- 91) days for TURS.

Step 9.4. After the removal of sea days within a fleet (Step 9.3), the remaining highest sea days (i.e., the penultimate or the value farthest to the left in Step 9.1) becomes the “PRIORITIZED” sea days required for that fleet.

The 3,382 prioritized sea days provide observer coverage to all 40 agency-funded fleets. There are 30 fleets for which no reduction in sea days occurred, and there are 10 fleets (Rows 5, 6, 7, 8, 28, 29, 30, 32, 53, and 62) for which the numbers of sea days allocated are fewer than the days needed to achieve a 30% CV. The prioritized sea days for Rows 5, 6, 7, 8, 28, 29, 30, 32, 53, and 62 become 643, 364, 557, 474, 13, 149, 121, 19, 17, and 42 days, respectively (Table 6). For the MA small and large mesh otter trawl fleets (Rows 5 and 6, respectively), all fish/invertebrate species groups with estimated sample sizes have an expected CV of 30% or less; however, the CV for TURS in the MA otter trawl gear type group is expected to exceed 30%. For the NE small mesh otter trawl fleet (Row 7), the CVs for SBM and DOG are expected to exceed 30% while the remaining 4 species groups with estimated sample sizes have an expected CV of 30% or less. For the NE large mesh otter trawl fleet (Row 8), the CV for SKATE is expected to exceed 30% while the remaining 5 species groups with estimated sample sizes have an expected CV of 30% or less. For MA small, large, and extra large mesh gillnet fleets (Rows 28, 29, and 30 respectively), the CVs for TURS are expected to exceed 30% in the MA gillnet gear type group while the remaining species group with an estimated sample size has an expected CV of 30% or less. For the NE large mesh gillnet (Row 32) and NE lobster pot fleets (Row 53), the CVs for DOG and FSB, respectively, are expected to exceed 30%; all other species groups in these rows have had their associated sea days removed via the importance filter. For the NE ocean

quahog/surflam dredge fleet (Row 62), the CV for DOG is expected to exceed 30%, while the remaining 2 species groups with estimated sample sizes have an expected CV of 30% or less.

Step 9.5. Identify fleets that cannot be covered by the observer program this year.

In 2022, there are practical limitations that prevent the observer program from covering 6 fleets (MA and NE floating trap [Rows 26 and 27, respectively], MA purse seine [Row 34], and NE urchin dredge [Row 60] as well as 2 of the 6 fleets present in the 2022 data set: NE hagfish pots and traps [2022 Row 50] and NE mussel dredge [2022 Row 58]; Table 7, rose shaded cells). The observer program currently has no sampling protocols in place for these fleets and will need time to create new trainings, logs, and/or databases to support sampling in these fleets. It is unlikely that the observer program will be able to make significant changes to the observer databases or observer manuals this year. There are 36 sea days associated with the four 2020 fleets and 104 sea days associated with the 2 of the 6 fleets present in the 2022 data set. The 140 (36 + 104) prioritized sea days associated with the 6 fleets have been reallocated to the MA extra large mesh gillnet fleet (Row 30) and the NE small mesh otter trawl (Row 7), the last 2 fleets impacted by the prioritization process. Of the 140 prioritized sea days, 91 sea days have been reallocated back to the MA extra large mesh gillnet fleet (Row 30) to fully restore the sea days needed for this fleet; this fleet now has 212 (121 + 91) days. The remaining 49 (140 – 91) prioritized sea days have been reallocated back to the NE small otter trawl fleet (Row 7), the second to last fleet impacted by the prioritization process. The NE small mesh otter trawl fleet now has 606 (557 + 49) days; however, the CVs for SBM and DOG are expected to exceed 30%. The 6 fleets with practical limitations have zero days (Table 7).

The observer program has a current contract with a third-party provider for a 5-year period that began in 2018.

Step 10. Allocate agency-funded nonprioritized sea days.

There are 462 agency-funded days that are not applicable to the prioritization process (nonprioritized MMPA days; Table 7).

Of the 462 MMPA sea days, 350 MMPA days, all assumed to have limited sampling protocols, are allocated to a row designated as “MMPA coverage” and will be associated with the MA and NE gillnet fleets (Rows 28-33; Table 7). The funding equivalent of 112 MMPA sea days are assigned to a row designated as “MMPA analysis.”

Step 11. Allocate industry-funded scallop days. The sea days for the industry-funded scallop fleets are assigned to trips via the [call-in system](#)¹³. The sea day coverage for industry-funded scallop fleets will depend on industry activity from April 2022 through March 2023 and

¹³ <https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/industry-funded-scallop-observer-program-call-requirements>

will be capped as described above. Because of differences in stratification between the SBRM and scallop compensation rate analyses, the 2,063 industry-funded scallop sea days have not been allocated to individual fish/invertebrate fleets but rather to groups of fish/invertebrate fleets that correspond to the stratification used in the compensation rate analysis: MA Access Area fleets (Rows 10, 36, and 38; Table 7); Open Areas fleets (Rows 11, 12, 40, and 41 for Limited Access General Category fleets and Rows 42 and 43 for Limited Access; Table 7); and NE Access Area fleets (Rows 37 and 39; Table 7). The allocated sea days represent the maximum coverage (i.e., caps). The NGOM fleet has been grouped with the NE Access Area fleets.

Industry-funded scallop sea days are expected to meet or exceed the SBRM required sea days for each fleet group corresponding to the stratification used in the compensation rate analysis (Table 7).

Step 12. The sea days allocated for April 2022 - March 2023 (TOTAL) is the sum of the prioritized days (Step 9.5), nonprioritized days (Step 10), and industry-funded scallop days (Step 11). A total of 5,907 days is allocated across 38 fleets (Table 7).

The agency-funded fleets with an * or ** (Table 7) indicate that all or some of the observer coverage will be assigned via the Pre-Trip Notification System (PTNS; Palmer et al. 2013) or call-in programs for scallops and herring. This designation means all or some of the observer coverage within each of these fleets will depend upon industry activity for April 2022 through March 2023. The PTNS sea days for agency-funded fleets will be proportionally allocated based initially on previous year's industry activity and then adjusted to correspond to current year's activity.

All other fleets will have sea days assigned to fishing trips via the NEFOP sea day schedule. The prioritized sea days on the NEFOP sea day schedule are provided by fleet. A matrix of VTR trip percentages by quarter and state within a fleet based on July 2018 through June 2019 data is provided as information on previous industry activity patterns. This information does not replace third-party provider's local knowledge of current industry activity.

DISCUSSION

From April 2021 through March 2022 the NEFSC Observer Training Center was able to complete several observer trainings in the form of on-site, remote, or hybrid (partial remote and partial on-site) training styles. The style of each training was dependent on NEFSC COVID-19 mitigation protocols and phase of reopening. The on-site class sizes were capped between 8 and 12 trainees to allow for social distancing and to ensure that the building capacity limits imposed as a consequence of the pandemic were not exceeded. This limitation resulted in: (1) the elongation of some of the trainings to more than double the previous pre-pandemic length in order to accommodate consecutive smaller groups for on-site portions of the hybrid model, or (2) caused smaller than average class size overall resulting in fewer observers produced per training.

Trainings during the SBRM 2021 year included 6 initial trainings (2 NEFOP, 2 IFS, and 2 At-Sea Monitoring Program [ASM]), 3 cross trainings (1 NEFOP to IFS, 1 NEFOP/IFS to ASM, and 1 High Volume Fisheries to Industry-funded Monitoring Program), 7 specialized gear trainings (2 Longline, 2 Pot and Trap, 3 Clam Dredge), 1 Portside Sampling training, 1 Electronic Monitoring training, and 1 Safety II training. In June 2021 the NEFSC partnered with the Atlantic States Marine Fisheries Commission to outsource the Center's ASM training which allows for Fisheries Monitoring and Research Division (FMRD) staff to focus on other programmatic training demands. The selected ASM training contractor Coonamessett Farm Foundation also conducted 2 initial ASM trainings for the Center from April 2021- March 2022.

Achieving sea days in 2021 continued to be a challenge because of high attrition rates and low observer availability, small training class sizes, and COVID-19 coverage waivers. In August 2020 NOAA Fisheries was authorized by an Emergency Rule to grant waivers to vessels selected for observer or at-sea monitor coverage if 1 of 2 criteria were met: Observers or at-sea monitors were not available for deployment or the observer providers could not meet the safety protocols imposed by a state on commercial fishing crew or by the vessel or vessel company. In June 2021 the Acting Assistant Administrator for NOAA Fisheries issued a statement that vessels were no longer eligible for release from observer or monitor coverage under the Emergency Rule or the regional waiver criteria if a fully vaccinated or quarantined/shelter in place observer was available. One hundred percent of the NEFSC observer cadre became fully vaccinated by mid-January 2022, drastically reducing the number of COVID-19 waivers issued, leaving only vessels with positive COVID-19 cases eligible for a waiver from coverage because of safety concerns.

While COVID-19 waivers decreased, some SBRM fleets remained difficult to select for coverage if they did not have a pre-trip notification requirement. Attempts to assign observers to these fleets can be challenging and inefficient. The trip selection for fleets with low activity or ports with low activity requires in-person selection at the dock, and the likelihood of encountering vessel captains is low. It has also proven difficult to select trips by contacting the vessels via phone call since many industry members will not answer their phones for FMRD staff or NEFOP provider staff. Programmatic outreach, Office of Law Enforcement support, and vessel selection letters are tools that can help with selection and sea day accomplishments. In 2021 FMRD continued to operate in a maximum telework capacity with only mission essential travel approval. Once the NEFSC moves into the next operational phase of the pandemic it will be easier for NEFOP Operations Specialists to travel to the docks to provide necessary outreach to fleets. The sample size analysis conducted by Wigley and Tholke (2020) derived the expected CV of the discard estimates for various species groups over a range of sample sizes for each of the species groups that were not filtered out by the importance filter (see Table 7 and Figure 3 in Wigley and Tholke 2020). Deriving the expected CV assumes the variance of the discard estimate is constant over a range of sample sizes (number of trips).

The estimated 721 prioritized carryover days are the result of unaccomplished sea days from April 2021 through March 2022, and the 1,037 prioritized days are from obligated but not spent funds. Together, the 1,758 (721 + 1,037) days have increased the number of prioritized sea days to monitor the 15 SBRM species groups from April 2022 through March 2023. Because of the unaccomplished and unused sea days from April 2021 through March 2022, it is possible that the lower observer coverage could lead to discard estimates with CVs that are higher than the SBRM precision standard for some fleets.

At-Sea Monitoring coverage, associated with Northeast Multispecies (groundfish) FMP, is used for compliance monitoring and is not used to meet SBRM sea day requirements. Information

relating to industry-funded ASM coverage can be found on the [Greater Atlantic Regional Fisheries Office monitoring webpage¹⁴](#).

To reduce potential bias within SBRM, data associated with ASM, Atlantic States Marine Fisheries Commission, and New York State Department of Environmental Conservation were not used in the 2020 fish/invertebrate analyses (Wigley and Tholke 2020) because these trips may have different goals/objectives and/or different stratification/sea day allocations than the other NEFOP trips and IFS trips. This approach follows the 2018 SBRM Fishery Management Action Team recommendation to exclude individual FMP compliance monitoring trips from future annual discard estimation, precision, and sample size analyses for fish/invertebrate species groups (Hogan et al. 2019).

The SBRM analyses use master data and are predicated upon accurately reported and audited data. To reduce or prevent “erroneous” fleets, the VTR master data would benefit from enhanced data auditing (including data leverage between data collection systems) coupled with targeted outreach and education to industry members on the importance of accurate reporting. Additionally, gear code consistency is needed between the fishery dependent data collection systems (Observer, Vessel Trip Report, and Commercial Fisheries databases).

Rationale Not to Conduct Statistical Analysis for 2022

In response to the COVID-19 pandemic, the FMRD Fisheries Monitoring and Operations Branch deployed observers on a limited basis to commercial fishing vessels who would otherwise be required to carry observers. These vessels qualified for COVID-19 related waivers from the onset of the pandemic through June 2021, resulting in less observer coverage across the region. The inability to have observers collect data at “normal” levels from July 2020 through June 2021 because of COVID-19 reduces the representativeness of the data used for the 2022 SBRM calculations compared to normal years. The impact of observers not being able to collect data for the SBRM period because of COVID-19 is less information than normal to estimate uncertainty (coefficients of variation). In many cases, this reduced sampling will result in less robust CV estimates than would have occurred if full sampling had been available. This change means more extreme CVs, both high and low, are expected because of low sample sizes.

There was more confidence in using the last complete data set than in using a sparse data set that was missing data for some fleets, missing data for some quarters, and lower than normal sampled trips. SBRM 3-year reviews have shown strong consistency (correlation) from year to year in discard variance for fleet-species groups. This consistency gives confidence in using 2018-2019 data for 2022 SBRM observer coverage guidance. Using imputed data for all fleet-species groups for numerous fleets and quarters would require the assumption that the imputed values represent the variability in discards likely to occur during 2022 SBRM year better than what was estimated by using 2018-2019 data. It is not known how well imputed values would represent future variability, but it is known that the estimates from complete data are well correlated with future variability. Further, if estimates from 2020-2021 data with imputed values incorporated resulted in substantial changes from the estimates by using 2018-2019 data, it would not be clear whether the estimate reflected actual changes in the fishery and discards or simply the influence of the imputed data.

¹⁴<https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/h/nemultispecies.html>

With the January delivery date of observer data, the usual analytical SBRM work and deliverables would be shifted by 3 months, which would lead to a 3-month gap in information for the 2 trip selection systems (Sea Day Schedule and PTNS) from April 2022 through March 2023. It would be very challenging to estimate the allocated and funded days to fill the time gap for both selection systems. However, the delivery delay of observer data would have a relatively smaller impact on the data summaries of observed trips and days by fleet that would be needed for the SBRM 2022 Annual Discard Report (not the entire analytical discard estimation and sample size analyses needed for an updated analysis) and could be conducted within the time frame needed to meet the April 2022 through March 2023 Sea Day Schedule.

Trip Selection Systems

The observer program uses 3 systems to select fishing trips for observer coverage: the PTNS; the IFS interactive voice response/call-in program; and the NEFOP Sea Day Schedule selection protocols that include selection by phone, email, letter, Vessel Monitoring System message, or in person at the docks (dock intercept). The methods used to apportion observer sea days among the trip selection systems are described in the 2022 Observer Sea Days by Trip Selection System (NEFSC 2022).

Expanded Sampling Frame for MA and NE Lobster Pot Fleets

In April 2016, the agency found that expanding the sampling frame for the MA and NE lobster pot fleets to include all vessels with a federal permit requires a regulatory change to the SBRM Amendment. The agency has pursued the required language change through a pending framework action. The pending SBRM framework action seeks to clarify the NEFMC and MAFMC's intent for the SBRM process to monitor bycatch of federally managed or protected species from the entire active lobster pot fleet. This pending action would expand the lobster pot sampling frame used in this analysis by allowing the NEFSC to include fishing activity and catch data (e.g., trip length, date, pounds kept, port of landing) for all active lobster pot vessels in the annual SBRM analyses and to assign NEFOP coverage to any federal lobster pot vessel, regardless of whether the vessel is required to submit VTRs. In the calendar quarter following the implementation of this pending SBRM framework action, all active federal lobster vessels may be eligible for selection. Implementing the pending action would not change the number of sea days needed for April 2022 through March 2023.

A separate action is under development to implement a requirement for electronic VTR submissions for all vessels in the lobster industry. A proposed rule has not yet been published.

The rest of the SBRM fleets did not need to have the sampling frame expanded because these vessels have VTR reporting requirements associated with their federal fishing permits and their fishing trips are already included in the SBRM sampling frame.

Specific FMP Changes and SBRM

As mentioned above, the Atlantic chub mackerel was integrated into the MAFMC's Mackerel, Squid, and Butterfish FMP in August 2020. This species has been added to the SBRM squid, butterfish, and mackerel species group. The next SBRM analysis will include Atlantic chub mackerel.

As also mentioned above, the proposed changes to the Atlantic Sea Scallop FMP have expanded monitoring to include the NGOM beginning April 1, 2022. This area has been incorporated into the scallop compensation rate analysis this year, providing funded sea days for

this area in the 2022 Sea Day Schedule. The SBRM analysis stratifies scallop trips by open/access area and aggregates individual access areas by region. The SBRM fish/invertebrate fleets are then grouped to correspond to the stratification used in the compensation rate analysis. The 2022 sea days for the NGOM trips have been grouped into the New England access area GEN scallop dredge fleet.

Changes to the Northeast Multispecies FMP are planned for the fishing year beginning May 1, 2022. Pending National Marine Fisheries Service (NMFS) approval of Amendment 23 to the Northeast Multispecies FMP, an ASM coverage target of 100% of eligible trips would be established. In the absence of approval of Amendment 23, an at-sea monitoring coverage target of 99% has been approved by the Regional Administrator of the Greater Atlantic Regional Fisheries Office. Annually, vessels could choose either Audit Model Electronic Monitoring, MREM, or human at-sea monitoring. Vessels have a one-time option to opt in or out of electronic monitoring during the year. This flexibility is problematic to the SBRM analyses which rely on stable fleets from year to year for sample size calculations. For the upcoming year, it is unknown how many vessels will choose MREM monitoring and in which fleets, and what the temporal pattern of trips would be during the year. SBRM is a data-driven process and would need such information to derive pilot coverage for sea days in the upcoming year for each potential fleet with MREM trips. The 2022 data set was examined, but it did not include trip data for all of the potential fleets expected in the upcoming fishing year. These limitations posed a challenge to adding new fleets to SBRM. An alternative approach was selected that uses existing SBRM fleets and accounts for the regulatory differences between MREM and non-MREM trips when deriving discards of unallocated groundfish species and non-groundfish species. The discard estimation would be calculated within the regional Catch Accounting and Monitoring System, the data source for the next SBRM analysis.

REFERENCES CITED

- Hogan F, Didden J, Gustafson, K, Keane E, Legault C, Linden D, Murray K, Palmer D, Potts D, Tholke C, Weeks S, Wigley S. 2019. Standardized bycatch reporting methodology 3-year review report – 2018. [NOAA Technical Memorandum NMFS-NE-257](#). 196 p.
- Murray KT. 2012. Estimating observer sea day requirements in the Mid-Atlantic region to monitor loggerhead sea turtle (*Caretta caretta*) interactions. US Dept Commer, Northeast [Fish Sci Cent Ref Doc 12-26](#); 10 p.
- Murray KT. 2018. Estimated bycatch of sea turtles in sink gillnet gear, 2012-2016. [NOAA Tech Memo NMFS NE 242](#), 20 p.
- Murray KT. 2020. Estimated magnitude of sea turtle interactions and mortality in U.S. bottom trawl gear, 2014-2018. US Dept Commer, [NOAA Tech Memo NMFS NE 260](#), 19 p.
- National Marine Fisheries Service (NMFS). 2004. Evaluating bycatch: a national approach to standardized bycatch monitoring programs. US Dept Commer, [NOAA Tech Memo. NMFS-F/SPO-66](#); 108 p.
- National Marine Fisheries Service (NMFS). 2008. Magnuson-Stevens Fishery Conservation and Management Act Provisions; Fisheries of the Northeastern United States; Northeast Region Standardized Bycatch Reporting Methodology Omnibus Amendment. [Federal Register, Vol. 73, No. 18, Monday, January 28, 2008. p. 4736-4758](#).
- New England Fishery Management Council (NEFMC), Mid-Atlantic Fishery Management Council (MAFMC), National Marine Fisheries Service (NMFS). 2007. [Northeast Region Standardized Bycatch Reporting Methodology: An Omnibus Amendment](#) to the Fishery Management Plans of the New England and Mid-Atlantic Fishery Management Councils. June 2007. 642 p.
- New England Fishery Management Council (NEFMC), Mid-Atlantic Fishery Management Council (MAFMC), National Marine Fisheries Service (NMFS). 2015. [Standardized Bycatch Reporting Methodology: An Omnibus Amendment](#) to the Fishery Management Plans of the Mid-Atlantic and New England Regional Fishery Management Councils. March 2015. 361 p.
- Northeast Fisheries Science Center (NEFSC). 2022. 2022 Observer sea days by trip selection system. Northeast Fisheries Science Center. US Dept Commer, NOAA Tech Memo NMFS-NE-284. 33 p.
- Northeast Fisheries Science Center (NEFSC), Greater Atlantic Regional Fisheries Office (GARFO) 2020. 2020 Standardized bycatch reporting methodology annual discard report with observer sea day allocation. [NOAA Technical Memorandum NMFS-NE-262](#). 30 p.

Palmer MC, Hersey P, Marotta H, Shield G, Cierpich SB. 2013. The design, implementation and performance of an observer pre-trip notification system (PTNS) for the northeast United States groundfish fishery. US Dept Commer, [Northeast Fish Sci Cent Ref Doc 13-21](#). 82 p.

Wigley SE, Tholke C. 2020. 2020 discard estimation, precision, and sample size analyses for 14 federally managed species in the waters off the northeastern United States. US Dept Commer, [NOAA Tech Memo NMFS NE 261](#), 175 p.

Table 1. A list of the 14 fish and invertebrate species groups and 1 species of sea turtle (in bold), with species group abbreviations in parentheses and scientific names in italics, and the species that compose these groups, corresponding to the 13 federal fishery management plans implemented in the waters off the northeastern United States.

Species/Group	Scientific Name
ATLANTIC SALMON (SAL)	<i>Salmo salar</i>
BLUEFISH (BLUE)	<i>Pomatomus saltatrix</i>
FLUKE - SCUP - BLACK SEA BASS (FSB)	
Black sea bass	<i>Centropristis striata</i>
Fluke	<i>Paralichthys dentatus</i>
Scup	<i>Stenotomus chrysops</i>
HERRING, ATLANTIC (HERR)	<i>Clupea harengus</i>
LARGE MESH GROUND FISH (GFL)	
American plaice	<i>Hippoglossoides platessoides</i>
Atlantic cod	<i>Gadus morhua</i>
Atlantic halibut	<i>Hippoglossus hippoglossus</i>
Atlantic wolffish	<i>Anarhichas lupus</i>
Haddock	<i>Melanogrammus aeglefinus</i>
Ocean pout	<i>Zoarces americanus</i>
Pollock	<i>Pollachius virens</i>
Acadian redfish	<i>Sebastes fasciatus</i>
White hake	<i>Urophycis tenuis</i>
Windowpane flounder	<i>Scophthalmus aquosus</i>
Winter flounder	<i>Pseudopleuronectes americanus</i>
Witch flounder	<i>Glyptocephalus cynoglossus</i>
Yellowtail flounder	<i>Limanda ferruginea</i>
MONKFISH (MONK)	<i>Lophius americanus</i>
RED DEEPSEA CRAB (RCRAB)	<i>Chaceon quinquegens</i>
SEA SCALLOP (SCAL)	<i>Placopecten magellanicus</i>
SKATE COMPLEX (SKATE)¹⁵	Rajidae
Barndoor skate	<i>Dipturus laevis</i>
Clearnose skate	<i>Raja eglanteria</i>
Little skate	<i>Leucoraja erinacea</i>
Rosette skate	<i>Leucoraja garmani</i>
Smooth skate	<i>Malacoraja senta</i>
Thorny skate	<i>Amblyraja radiata</i>
Winter skate	<i>Leucoraja ocellata</i>
SMALL MESH GROUND FISH (GFS)	
Offshore hake	<i>Merluccius albidus</i>
Red hake	<i>Urophycis chuss</i>
Silver hake	<i>Merluccius bilinearis</i>
SPINY DOGFISH (DOG)	<i>Squalus acanthias</i>
SQUID¹⁶ - BUTTERFISH - MACKEREL (SBM)	
Atlantic chub mackerel ¹⁷	<i>Scomber colias</i>
Atlantic mackerel	<i>Scomber scombrus</i>
Butterfish	<i>Peprilus triacanthus</i>
Longfin inshore squid	<i>Doryteuthis (Amerigo) pealeii</i>
Northern shortfin squid	<i>Illex illecebrosus</i>
SURFLAM - OCEAN QUAHOG (SCOQ)	
Surflam	<i>Spisula solidissima</i>
Ocean quahog	<i>Arctica islandica</i>
TILEFISH (TILE)¹⁸	
Blueline tilefish	<i>Caulolatilus microps</i>
Golden tilefish	<i>Lopholatilus chamaeleonticeps</i>
LOGGERHEAD TURTLE (TURS)	<i>Caretta caretta</i>

¹⁵ Skate complex comprises 7 species as well as skate, unknown.

¹⁶ Squid (unclassified) is included in this species group. Longfin inshore squid and northern shortfin squid are also known as Loligo squid and Illex squid, respectively.

¹⁷ Atlantic chub mackerel was integrated in the Squid Butterfish Mackerel fishery management plan in August 2020.

¹⁸ Tilefish (unclassified) is included in this species group.

Table 2. Number of observed (OB) and Vessel Trip Report (VTR) trips by fleet and calendar quarter (Q) based on July 2020 through June 2021 data. "P" indicates fleets with "pilot" designation; "+" indicates new fleets in 2022. See Appendix Table 1 for fleet stratification abbreviations.

FLEET					OB					VTR							
Row	Gear	Type	Access Area	Trip Category	Region	Mesh Group	Q3	Q4	Q1	Q2	TOTAL	Q3	Q4	Q1	Q2	TOTAL	Pilot
1	Longline,	Bottom	OPEN	all	MA	all	.	.	1	3	4	35	30	20	47	132	P
2	Longline,	Bottom	OPEN	all	NE	all	.	.	1	1	2	482	112	34	108	736	P
3	Hand Line		OPEN	all	MA	all	3	.	.	3	6	1,051	633	46	739	2,469	P
4	Hand Line		OPEN	all	NE	all	.	.	.	3	3	977	334	4	352	1,667	P
5	Otter Trawl		OPEN	all	MA	sm	9	21	15	13	58	589	759	319	863	2,530	
6	Otter Trawl		OPEN	all	MA	lg	5	14	12	15	46	1,482	787	571	747	3,587	
7	Otter Trawl		OPEN	all	NE	sm	9	14	11	49	83	980	796	357	976	3,109	
8	Otter Trawl		OPEN	all	NE	lg	17	39	36	38	130	1,585	1,135	1,031	1,331	5,082	
9+	Otter Trawl, LgMesh Belly Panel		OPEN	all	NE	sm	.	.	.	.	.	.	.	22	19	41	P
10	Otter Trawl, Scallop		AA	GEN	MA	lg	.	.	.	.	.	17	.	.	12	29	P
11	Otter Trawl, Scallop		OPEN	GEN	MA	lg	.	.	.	.	.	18	7	.	8	33	P
12	Otter Trawl, Twin		OPEN	all	MA	sm	.	.	.	3	3	2	9	8	39	58	P
13	Otter Trawl, Twin		OPEN	all	MA	lg	1	1	1	.	3	26	20	9	1	56	P
14	Otter Trawl, Twin		OPEN	all	NE	sm	.	1	.	.	1	1	7	3	.	11	P
15	Otter Trawl, Ruhle		OPEN	all	MA	sm	.	.	.	.	.	1	5	8	3	17	P
16	Otter Trawl, Ruhle		OPEN	all	MA	lg	.	.	.	.	.	.	.	5	4	9	P
17	Otter Trawl, Ruhle		OPEN	all	NE	sm	.	1	.	.	1	20	8	.	5	33	P
18	Otter Trawl, Haddock Separator		OPEN	all	NE	sm	.	.	.	.	.	1	4	8	6	19	P
19	Otter Trawl, Haddock Separator		OPEN	all	NE	lg	.	2	.	1	3	38	17	13	24	92	P
20	Otter Trawl, Shrimp		OPEN	all	MA	sm	.	.	.	.	.	13	33	19	.	65	P
21	Otter Trawl, Other		OPEN	all	MA	sm	.	.	.	.	.	7	.	.	11	18	P
22	Otter Trawl, Other		OPEN	all	MA	lg	.	.	.	.	.	1	.	.	14	15	P
23	Otter Trawl, Other		OPEN	all	NE	sm	.	.	.	.	.	2	8	14	7	31	P
24	Otter Trawl, Other		OPEN	all	NE	lg	.	.	.	.	.	4	8	3	1	16	P
25	Floating Trap		OPEN	all	NE	all	.	.	.	.	.	57	69	30	17	173	P
26	Gillnet, Sink, Anchor, Drift		OPEN	all	MA	sm	4	6	7	2	19	215	190	282	177	864	
27	Gillnet, Sink, Anchor, Drift		OPEN	all	MA	lg	.	12	7	5	24	95	677	277	353	1,402	
28	Gillnet, Sink, Anchor, Drift		OPEN	all	MA	xlg	.	.	.	4	4	23	180	132	301	636	P
29	Gillnet, Sink, Anchor, Drift		OPEN	all	NE	sm	.	.	.	.	.	11	.	.	1	12	P
30	Gillnet, Sink, Anchor, Drift		OPEN	all	NE	lg	2	22	7	9	40	939	280	64	306	1,589	
31	Gillnet, Sink, Anchor, Drift		OPEN	all	NE	xlg	5	16	5	45	71	1,284	427	155	501	2,367	

Table 2, continued. Number of observed (OB) and Vessel Trip Report (VTR) trips by fleet and calendar quarter (Q) based on July 2020 through June 2021 data. "P" indicates fleets with "pilot" designation; "+" indicates new fleets in 2022. See Appendix Table 1 for fleet stratification abbreviations.

FLEET						OB					VTR						
Row	Gear	Type	Access Area	Trip Category	Region	Mesh Group	Q3	Q4	Q1	Q2	TOTAL	Q3	Q4	Q1	Q2	TOTAL	Pilot
32	Purse Seine		OPEN	all	MA	all	.	.	.	.	.	114	27	1	11	153	P
33	Purse Seine		OPEN	all	NE	all	.	1	.	1	2	614	24	.	100	738	P
34	Dredge, Scallop		AA	GEN	MA	all	.	.	.	3	3	217	9	1	313	540	P
35	Dredge, Scallop		AA	GEN	NE	all	6	.	.	2	8	594	142	465	957	2,158	P
36	Dredge, Scallop		AA	LIM	MA	all	4	10	2	4	20	196	249	52	176	673	
37	Dredge, Scallop		AA	LIM	NE	all	10	27	11	28	76	501	327	124	512	1,464	
38	Dredge, Scallop		OPEN	GEN	MA	all	1	10	9	7	27	521	325	459	451	1,756	
39	Dredge, Scallop		OPEN	GEN	NE	all	.	10	7	10	27	203	473	875	660	2,211	
40	Dredge, Scallop		OPEN	LIM	MA	all	.	4	4	1	9	118	44	48	69	279	P
41	Dredge, Scallop		OPEN	LIM	NE	all	2	3	27	14	46	298	71	301	333	1,003	
42	Trawl, Midwater		all	all	NE	sm	.	1	2	.	3	1	24	46	.	71	P
43	Trawl, Midwater		OPEN	all	MA	sm	.	.	.	.	.	12	.	3	5	20	P
44	Pots and Traps, Other		OPEN	all	MA	all	.	.	.	.	.	.	33	3	1	37	P
45	Pots and Traps, Other		OPEN	all	NE	all	.	.	.	.	.	18	.	.	8	26	P
46	Pots and Traps, Fish		OPEN	all	MA	all	.	1	1	3	5	272	136	50	361	819	P
47	Pots and Traps, Fish		OPEN	all	NE	all	.	4	.	3	7	614	225	2	137	978	P
48	Pots and Traps, Conch		OPEN	all	MA	all	.	2	.	2	4	125	396	34	205	760	P
49	Pots and Traps, Conch		OPEN	all	NE	all	.	3	.	3	6	274	457	2	228	961	P
50	Pots and Traps, Hagfish		OPEN	all	NE	all	.	.	.	.	.	3	4	.	.	7	P
51	Pots and Traps, Lobster		OPEN	all	MA	all	.	1	.	1	2	455	196	61	220	932	P
52	Pots and Traps, Lobster		OPEN	all	NE	all	.	3	8	3	14	10,611	7,975	2,418	3,726	24,730	
53	Pots and Traps, Crab		OPEN	all	MA	all	.	.	.	.	.	13	3	.	8	24	P
54	Pots and Traps, Crab		OPEN	all	NE	all	2	2	.	3	7	25	17	15	16	73	P
55	Beam Trawl		OPEN	all	MA	sm	.	.	.	.	.	3	167	38	.	208	P
56	Dredge, Other		OPEN	all	MA	all	.	.	.	.	.	.	48	78	25	151	P
57	Dredge, Other		OPEN	all	NE	all	.	.	.	.	.	70	30	12	38	150	P
58+	Dredge, Mussel		OPEN	all	NE	all	.	.	.	.	.	.	12	33	55	100	P
59	Dredge, Ocean Quahog/Surfclam		OPEN	all	MA	all	1	2	2	3	8	435	357	310	442	1,544	P
60	Dredge, Ocean Quahog/Surfclam		OPEN	all	NE	all	1	3	3	3	10	425	286	294	379	1,384	
						Total	82	236	179	288	785	26,688	18,592	9,159	16,409	70,848	

Table 3. Number of observed (OB) and Vessel Trip Report (VTR) sea days by fleet and calendar quarter (Q) based on July 2020 through June 2021 data. "P" indicates fleets with "pilot" designation; "+" indicates new fleets in 2022. See Appendix Table 1 for fleet stratification abbreviations.

FLEET					OB					VTR							
Row	Gear	Type	Access Area	Trip Category	Region	Mesh Group	Q3	Q4	Q1	Q2	TOTAL	Q3	Q4	Q1	Q2	TOTAL	Pilot
1	Longline,	Bottom	OPEN	all	MA	all	.	.	13	27	40	245	187	155	303	890	P
2	Longline,	Bottom	OPEN	all	NE	all	.	.	1	1	2	485	123	53	124	785	P
3	Hand Line		OPEN	all	MA	all	3	.	.	3	6	1,222	670	50	753	2,695	P
4	Hand Line		OPEN	all	NE	all	.	.	.	3	3	1,069	367	5	377	1,818	P
5	Otter Trawl		OPEN	all	MA	sm	13	57	85	51	206	1,026	1,283	1,340	1,390	5,039	
6	Otter Trawl		OPEN	all	MA	lg	14	49	75	36	174	2,407	1,890	2,267	1,680	8,244	
7	Otter Trawl		OPEN	all	NE	sm	30	56	54	152	292	2,474	1,821	1,371	2,343	8,009	
8	Otter Trawl		OPEN	all	NE	lg	56	157	147	143	503	3,646	3,437	3,524	3,247	13,854	
9+	Otter Trawl, LgMesh Belly Panel		OPEN	all	NE	sm	.	.	.	.	.	.	.	122	103	225	P
10	Otter Trawl, Scallop		AA	GEN	MA	lg	.	.	.	.	.	38	.	.	34	72	P
11	Otter Trawl, Scallop		OPEN	GEN	MA	lg	.	.	.	.	.	39	21	.	23	83	P
12	Otter Trawl, Twin		OPEN	all	MA	sm	.	.	.	3	3	9	49	46	41	145	P
13	Otter Trawl, Twin		OPEN	all	MA	lg	1	1	2	.	4	46	22	16	1	85	P
14	Otter Trawl, Twin		OPEN	all	NE	sm	.	5	.	.	5	5	53	28	.	86	P
15	Otter Trawl, Ruhle		OPEN	all	MA	sm	.	.	.	.	.	5	24	42	12	83	P
16	Otter Trawl, Ruhle		OPEN	all	MA	lg	.	.	.	.	.	.	.	8	8	16	P
17	Otter Trawl, Ruhle		OPEN	all	NE	sm	.	4	.	.	4	69	56	.	21	146	P
18	Otter Trawl, Haddock Separator		OPEN	all	NE	sm	.	.	.	.	.	10	30	67	58	165	P
19	Otter Trawl, Haddock Separator		OPEN	all	NE	lg	.	18	.	7	25	278	149	94	195	716	P
20	Otter Trawl, Shrimp		OPEN	all	MA	sm	.	.	.	.	.	56	197	199	.	452	P
21	Otter Trawl, Other		OPEN	all	MA	sm	.	.	.	.	.	29	.	.	25	54	P
22	Otter Trawl, Other		OPEN	all	MA	lg	.	.	.	.	.	2	.	.	19	21	P
23	Otter Trawl, Other		OPEN	all	NE	sm	.	.	.	.	.	8	56	112	46	222	P
24	Otter Trawl, Other		OPEN	all	NE	lg	.	.	.	.	.	12	48	19	2	81	P
25	Floating Trap		OPEN	all	NE	all	.	.	.	.	.	57	69	30	17	173	P
26	Gillnet, Sink, Anchor, Drift		OPEN	all	MA	sm	4	6	7	2	19	234	190	282	204	910	
27	Gillnet, Sink, Anchor, Drift		OPEN	all	MA	lg	.	12	7	5	24	116	693	284	357	1,450	
28	Gillnet, Sink, Anchor, Drift		OPEN	all	MA	xlg	.	.	.	4	4	25	190	159	313	687	P
29	Gillnet, Sink, Anchor, Drift		OPEN	all	NE	sm	.	.	.	.	.	11	.	.	2	13	P
30	Gillnet, Sink, Anchor, Drift		OPEN	all	NE	lg	2	33	25	10	70	1,065	450	174	369	2,058	
31	Gillnet, Sink, Anchor, Drift		OPEN	all	NE	xlg	5	19	14	61	99	1,381	515	334	739	2,969	

Table 3, continued. Number of observed (OB) and Vessel Trip Report (VTR) sea days by fleet and calendar quarter (Q) based on July 2020 through June 2021 data. "P" indicates fleets with "pilot" designation; "+" indicates new fleets in 2022. See Appendix Table 1 for fleet stratification abbreviations.

FLEET						OB					VTR						
Row	Gear	Type	Access Area	Trip Category	Region	Mesh Group	Q3	Q4	Q1	Q2	TOTAL	Q3	Q4	Q1	Q2	TOTAL	Pilot
32	Purse Seine		OPEN	all	MA	all	.	.	.	.	.	114	27	1	11	153	P
33	Purse Seine		OPEN	all	NE	all	.	2	.	5	7	724	48	.	115	887	P
34	Dredge, Scallop		AA	GEN	MA	all	.	.	.	7	7	367	20	4	639	1,030	P
35	Dredge, Scallop		AA	GEN	NE	all	17	.	.	3	20	1,247	166	477	1,317	3,207	P
36	Dredge, Scallop		AA	LIM	MA	all	29	61	16	38	144	1,432	1,624	393	1,524	4,973	
37	Dredge, Scallop		AA	LIM	NE	all	79	244	96	263	682	4,201	2,771	1,146	4,684	12,802	
38	Dredge, Scallop		OPEN	GEN	MA	all	1	21	17	15	54	980	700	865	874	3,419	
39	Dredge, Scallop		OPEN	GEN	NE	all	.	19	14	20	53	298	720	1,281	1,067	3,366	
40	Dredge, Scallop		OPEN	LIM	MA	all	.	39	32	12	83	1,068	374	334	665	2,441	P
41	Dredge, Scallop		OPEN	LIM	NE	all	9	33	219	160	421	2,971	600	2,146	3,616	9,333	
42	Trawl, Midwater		all	all	NE	sm	.	4	8	.	12	5	91	181	.	277	P
43	Trawl, Midwater		OPEN	all	MA	sm	.	.	.	.	.	46	.	10	17	73	P
44	Pots and Traps, Other		OPEN	all	MA	all	.	.	.	.	.	.	33	3	1	37	P
45	Pots and Traps, Other		OPEN	all	NE	all	.	.	.	.	.	18	.	.	8	26	P
46	Pots and Traps, Fish		OPEN	all	MA	all	.	1	1	3	5	294	137	51	381	863	P
47	Pots and Traps, Fish		OPEN	all	NE	all	.	4	.	3	7	642	263	2	146	1,053	P
48	Pots and Traps, Conch		OPEN	all	MA	all	.	2	.	2	4	125	401	36	205	767	P
49	Pots and Traps, Conch		OPEN	all	NE	all	.	3	.	3	6	275	459	2	228	964	P
50	Pots and Traps, Hagfish		OPEN	all	NE	all	.	.	.	.	.	48	63	.	.	111	P
51	Pots and Traps, Lobster		OPEN	all	MA	all	.	3	.	6	9	679	328	133	351	1,491	P
52	Pots and Traps, Lobster		OPEN	all	NE	all	.	3	18	3	24	12,928	10,386	4,324	5,538	33,176	
53	Pots and Traps, Crab		OPEN	all	MA	all	.	.	.	.	.	60	20	.	14	94	P
54	Pots and Traps, Crab		OPEN	all	NE	all	17	14	.	30	61	215	121	88	110	534	P
55	Beam Trawl		OPEN	all	MA	sm	.	.	.	.	.	10	174	47	.	231	P
56	Dredge, Other		OPEN	all	MA	all	.	.	.	.	.	.	48	78	50	176	P
57	Dredge, Other		OPEN	all	NE	all	.	.	.	.	.	70	30	12	38	150	P
58+	Dredge, Mussel		OPEN	all	NE	all	.	.	.	.	.	.	12	33	55	100	P
59	Dredge, Ocean Quahog/Surfclam		OPEN	all	MA	all	3	7	8	9	27	931	774	731	993	3,430	P
60	Dredge, Ocean Quahog/Surfclam		OPEN	all	NE	all	3	10	13	14	40	619	503	496	710	2,328	
Total							286	887	872	1,104	3,149	46,436	33,484	23,655	36,163	139,738	

Table 4. Vessel Trip Report kept weight of all species (live mt), percentage of kept weight of all species across all fleets, kept weight of all species (live mt) with observer (OB) coverage from statistical areas and quarters with at least 1 observed trip and at least 3 observed trips in the fleet and quarter, and percentage of kept weight of all species with observer coverage by fleet based on July 2020 through June 2021 data. See Appendix Table 1 for fleet stratification abbreviations.

Fleet Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Kept Weight (mt)	Percentage of Kept Weight	Kept Weight with OB coverage (mt)	Percentage of Kept Weight with OB coverage
1	Longline, Bottom	OPEN	all	MA	all	711	0.2	195	27.4
2	Longline, Bottom	OPEN	all	NE	all	1,348	0.3	0	0.0
3	Hand Line	OPEN	all	MA	all	178	<0.1	11	6.0
4	Hand Line	OPEN	all	NE	all	776	0.2	88	11.4
5	Otter Trawl	OPEN	all	MA	sm	18,563	4.0	10,474	56.4
6	Otter Trawl	OPEN	all	MA	lg	6,820	1.5	4,765	69.9
7	Otter Trawl	OPEN	all	NE	sm	31,070	6.6	21,545	69.3
8	Otter Trawl	OPEN	all	NE	lg	25,103	5.3	24,649	98.2
10	Otter Trawl, Scallop	AA	GEN	MA	lg	58	<0.1	0	0.0
11	Otter Trawl, Scallop	OPEN	GEN	MA	lg	42	<0.1	0	0.0
12	Otter Trawl, Twin	OPEN	all	MA	sm	384	0.1	50	13.1
19	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	1,577	0.3	0	0.0
20	Otter Trawl, Shrimp	OPEN	all	MA	sm	213	<0.1	0	0.0
23	Otter Trawl, Other	OPEN	all	NE	sm	392	0.1	0	0.0
24	Otter Trawl, Other	OPEN	all	NE	lg	60	<0.1	0	0.0
25	Floating Trap	OPEN	all	NE	all	62	<0.1	0	0.0
26	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	sm	717	0.2	487	67.8
27	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	lg	2,098	0.4	1,817	86.6
28	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	xl	996	0.2	163	16.4
29	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	sm	16	<0.1	0	0.0
30	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	lg	2,581	0.5	831	32.2
31	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	xl	7,938	1.7	7,172	90.3
32	Purse Seine	OPEN	all	MA	all	13,177	2.8	0	0.0
33	Purse Seine	OPEN	all	NE	all	4,803	1.0	0	0.0
34	Dredge, Scallop	AA	GEN	MA	all	1,161	0.2	593	51.1
35	Dredge, Scallop	AA	GEN	NE	all	2,929	0.6	1,262	43.1
36	Dredge, Scallop	AA	LIM	MA	all	26,821	5.7	19,804	73.8
37	Dredge, Scallop	AA	LIM	NE	all	67,322	14.3	55,765	82.8
38	Dredge, Scallop	OPEN	GEN	MA	all	3,555	0.8	2,276	64.0
39	Dredge, Scallop	OPEN	GEN	NE	all	3,155	0.7	2,404	76.2
40	Dredge, Scallop	OPEN	LIM	MA	all	10,760	2.3	2,179	20.3
41	Dredge, Scallop	OPEN	LIM	NE	all	57,067	12.2	35,918	62.9
42	Trawl, Midwater	all	all	NE	sm	9,165	2.0	0	0.0
46	Pots and Traps, Fish	OPEN	all	MA	all	286	0.1	70	24.7
47	Pots and Traps, Fish	OPEN	all	NE	all	264	0.1	16	5.9
48	Pots and Traps, Conch	OPEN	all	MA	all	381	0.1	0	0.0
49	Pots and Traps, Conch	OPEN	all	NE	all	586	0.1	16	2.8
51	Pots and Traps, Lobster	OPEN	all	MA	all	782	0.2	0	0.0

Table 4, continued. Vessel Trip Report kept weight of all species (live mt), percentage of kept weight of all species across all fleets, kept weight of all species (live mt) with observer (OB) coverage from statistical areas and quarters with at least 1 observed trip and at least 3 observed trips in the fleet and quarter, and percentage of kept weight of all species with observer coverage by fleet based on July 2020 through June 2021 data. See Appendix Table 1 for fleet stratification abbreviations.

Fleet Row	Gear Type	Access Area	Trip Category	Region	Mesh Group	Kept Weight (mt)	Percentage of Kept Weight	Kept Weight with OB coverage (mt)	Percentage of Kept Weight with OB coverage
52	Pots and Traps, Lobster	OPEN	all	NE	all	11,938	2.5	2,371	19.9
53	Pots and Traps, Crab	OPEN	all	MA	all	69	<0.1	0	0.0
54	Pots and Traps, Crab	OPEN	all	NE	all	1,596	0.3	239	14.9
55	Beam Trawl	OPEN	all	MA	sm	91	<0.1	0	0.0
56	Dredge, Other	OPEN	all	MA	all	58	<0.1	0	0.0
57	Dredge, Other	OPEN	all	NE	all	154	<0.1	0	0.0
59	Dredge, Ocean Quahog/Surfclam	OPEN	all	MA	all	81,504	17.4	18,358	22.5
60	Dredge, Ocean Quahog/Surfclam	OPEN	all	NE	all	64,281	13.7	19,114	29.7
Confidential fleets						5,675	1.2	0	0.0
Other minor fleets						208	<0.1	0	0.0
Total						469,492	100.0	232,633	49.5

Table 5. The 2020 number of sea days needed to monitor fish/invertebrates (FISH), loggerhead turtles (TURS), combined species groups (COMBINED) by fleet (Steps 1 through 5; taken from NEFSC and GARFO 2020), and the 6 fleets present in the 2022 data set; the number of funded sea days for April 2022 through March 2023 (Steps 6 and 7); and the differences between needed and funded days (Step 8) using the 2022 budget information. See Appendix Table 1 for fleet stratification abbreviations.

Fleet						Step 1	Step 2	Step 3	Step 4a	Step 4b	Step 4c	Step 4d	Step 4e	Step 5
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2020 Sea Days Needed for FISH	2020 Sea Days Needed for FISH ADJUSTED	2020 Sea Days Needed for TURS	Vessel Trip Report Sea Days	% Vessel Trip Report Sea Days	% Sea Days Needed for FISH	Additional Sea Days needed for TURS	TURS Sea Days by FISH fleet	2020 Sea Days Needed COMBINED
1	Longline, Bottom	OPEN	all	MA	all	84	84		889					84
2	Longline, Bottom	OPEN	all	NE	all	17	17		942					17
3	Hand Line	OPEN	all	MA	all	14	14		3,231					14
4	Hand Line	OPEN	all	NE	all	13	13		2,351					13
5	Otter Trawl	OPEN	all	MA	sm	643	643			0.542	0.619	479	1,122	1,122
6	Otter Trawl	OPEN	all	MA	lg	364	364	1,922	6,777	0.440	0.351	389	753	753
7	Otter Trawl	OPEN	all	NE	sm	988	988		10,008					988
8	Otter Trawl	OPEN	all	NE	lg	840	840		13,045					840
9	Otter Trawl, Scallop	AA	GEN	MA	sm	6	0		18	0.000	0.000	0	0	0
10	Otter Trawl, Scallop	AA	GEN	MA	lg	13	13		209	0.014	0.013	12	25	25
11	Otter Trawl, Scallop	OPEN	GEN	MA	lg	5	5		28	0.002	0.005	2	7	7
12	Otter Trawl, Scallop	OPEN	GEN	NE	lg	8	8		12					8
13	Otter Trawl, Twin	OPEN	all	MA	sm	51	51		223					51
14	Otter Trawl, Twin	OPEN	all	MA	lg	6	6		49					6
15	Otter Trawl, Twin	OPEN	all	NE	sm	22	22		75					22
16	Otter Trawl, Ruhle	OPEN	all	MA	sm	23	0		36	0.000	0.000	0	0	0
17	Otter Trawl, Ruhle	OPEN	all	MA	lg	13	13		41	0.003	0.013	2	15	15
18	Otter Trawl, Ruhle	OPEN	all	NE	sm	12	0		42					0
19	Otter Trawl, Ruhle	OPEN	all	NE	lg	9	9		30					9
20	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	102	102		473					102
21	Otter Trawl, Shrimp	OPEN	all	MA	sm	64	0		2,328					0
22	Otter Trawl, Shrimp	OPEN	all	NE	sm	7	0		44					0
23	Otter Trawl, Other	OPEN	all	MA	sm	29	0		38	0.000	0.000	0	0	0
24	Otter Trawl, Other	OPEN	all	NE	sm	64	0		360					0
25	Otter Trawl, Other	OPEN	all	NE	lg	62	0		123					0
26	Floating Trap	OPEN	all	MA	all	6	6		14					6
27	Floating Trap	OPEN	all	NE	all	21	21		113					21
28	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	sm	13	13		2,002	0.387	0.074	275	288	288
29	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	lg	149	149	887	1,731	0.335	0.847	238	387	387
30	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	xlg	14	14		1,439	0.278	0.080	198	212	212
31	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	sm	3	3		31					3
32	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	lg	225	225		2,558					225
33	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	xlg	209	209		4,529					209
34	Purse Seine	OPEN	all	MA	all	6	6		305					6
35	Purse Seine	OPEN	all	NE	all	14	14		813					14

Table 5, continued. The 2020 number of sea days needed to monitor fish/invertebrates (FISH), loggerhead turtles (TURS), combined species groups (COMBINED) by fleet (Steps 1 through 5; taken from NEFSC and GARFO 2020), and the 6 fleets present in the 2022 data set; the number of funded sea days for April 2022 through March 2023 (Steps 6 and 7); and the differences between needed and funded days (Step 8) using the 2022 budget information. See Appendix Table 1 for fleet stratification abbreviations.

Fleet						Step 1	Step 2	Step 3	Step 4a	Step 4b	Step 4c	Step 4d	Step 4e	Step 5
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2020 Sea Days Needed for FISH	2020 Sea Days Needed for FISH ADJUSTED	2020 Sea Days Needed for TURS	Vessel Trip Report Sea Days	% Vessel Trip Report Sea Days	% Sea Days Needed for FISH	Additional Sea Days needed for TURS	TURS Sea Days by FISH fleet	2020 Sea Days Needed COMBINED
36	Dredge, Scallop	AA	GEN	MA	all	15	15		2,182					15
37	Dredge, Scallop	AA	GEN	NE	all	26	26		2,537					26
38	Dredge, Scallop	AA	LIM	MA	all	91	91		4,646					91
39	Dredge, Scallop	AA	LIM	NE	all	520	520		16,150					520
40	Dredge, Scallop	OPEN	GEN	MA	all	20	20		1,908					20
41	Dredge, Scallop	OPEN	GEN	NE	all	16	16		4,097					16
42	Dredge, Scallop	OPEN	LIM	MA	all	140	140		2,085					140
43	Dredge, Scallop	OPEN	LIM	NE	all	454	454		6,019					454
44	Danish Seine	OPEN	all	MA	all	3	0		26					0
45	Trawl, Midwater	all	all	NE	sm	31	31		505					31
46	Trawl, Midwater	OPEN	all	MA	sm	13	13		76					13
47	Pots and Traps, Other	OPEN	all	NE	all	12	0		365					0
48	Pots and Traps, Fish	OPEN	all	MA	all	13	13		735					13
49	Pots and Traps, Fish	OPEN	all	NE	all	15	15		928					15
50	Pots and Traps, Conch	OPEN	all	MA	all	13	13		1,069					13
51	Pots and Traps, Conch	OPEN	all	NE	all	12	12		1,180					12
52	Pots and Traps, Lobster	OPEN	all	MA	all	20	20		1,661					20
53	Pots and Traps, Lobster	OPEN	all	NE	all	255	255		34,614					255
54	Pots and Traps, Crab	OPEN	all	MA	all	22	22		51					22
55	Pots and Traps, Crab	OPEN	all	NE	all	79	79		666					79
56	Beam Trawl	OPEN	all	MA	sm	18	0		49					0
57	Beam Trawl	OPEN	all	NE	lg	18	0		30					0
58	Dredge, Other	OPEN	all	MA	all	12	0		310					0
59	Dredge, Other	OPEN	all	NE	all	3	0		7					0
60	Dredge, Urchin	OPEN	all	NE	all	3	3		10					3
61	Dredge, Ocean Quahog/Surfclam	OPEN	all	MA	all	33	33		3,668					33
62	Dredge, Ocean Quahog/Surfclam	OPEN	all	NE	all	428	428		2,573					428
2022														
9	Otter Trawl, LgMesh Belly Panel	OPEN	all	NE	sm	33	33		225					33
18	Otter Trawl, Haddock Separator	OPEN	all	NE	sm	81	0		165					0
22	Otter Trawl, Other	OPEN	all	MA	lg	5	0		21					0
44	Pots and Traps, Other	OPEN	all	MA	all	6	0		37					0
50	Pots and Traps, Hagfish	OPEN	all	NE	all	95	95		111					95
58	Dredge, Mussel	OPEN	all	NE	all	9	9		100					9

Table 5, continued. The 2020 number of sea days needed to monitor fish/invertebrates (FISH), loggerhead turtles (TURS), combined species groups (COMBINED) by fleet (Steps 1 through 5; taken from NEFSC and GARFO 2020), and the 6 fleets present in the 2022 data set; the number of funded sea days for April 2022 through March 2023 (Steps 6 and 7); and the differences between needed and funded days (Step 8) using the 2022 budget information. See Appendix Table 1 for fleet stratification abbreviations.

Fleet						Step 1	Step 2	Step 3	Step 4a	Step 4b	Step 4c	Step 4d	Step 4e	Step 5
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2020 Sea Days Needed for FISH	2020 Sea Days Needed for FISH ADJUSTED	2020 Sea Days Needed for TURS	Vessel Trip Report Sea Days	% Vessel Trip Report Sea Days	% Sea Days Needed for FISH	Additional Sea Days needed for TURS	TURS Sea Days by FISH fleet	2020 Sea Days Needed COMBINED
	Total					6,633	6,208	2,809	152,048					7,803
	Step 6	Agency Fleets (Sea Days Needed)				5,319	4,900							6,481
		Industry Fleets (Sea Days Needed)				1,314	1,308							1,322
	Step 7	Agency Fleets (Sea Days Funded)											Prioritized	3,382
		Agency Fleets (Sea Days Funded)											Nonprioritized	462
		Industry Fleets (Sea Days Funded)												2,063
	Step 8	Agency Fleet Difference											SHORTFALL	-3,099
		Industry Fleet Difference											SURPLUS	741
	Turtle Gear Types													
					MA Trawl	1,096	1,038	1,922	15,390	884		884	1,922	1,922
					MA Gillnet	176	176	887	5,172	711		711	887	887
	KEY: Agency-funded fleets		Industry-funded fleets									Difference between taxa		
	Fleets identified as "erroneous"													
	Steps used in sea day allocation													
	Fleets identified as "not applicable"													

Table 6. The 2020 number of sea days needed (COMBINED; Step 5; taken from NEFSC and GARFO 2020) and the 6 fleets present in the 2022 data set; the number of funded days for April 2022 through March 2023 (Steps 6 and 7); the difference between needed and funded days determined by using the 2022 budget information (Step 8) and the information used in the penultimate approach to prioritize sea days to fleets for agency-funded days that are applicable to the prioritization process for 2022 (Steps 9.1 through 9.5). See Appendix Table 1 for fleet stratification abbreviations.

Fleet						Step 5	Step 9.1						Step 9.2						Step 9.3		Step 9.4	Step 9.5
2020 Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2020 Sea Days Needed COMBINED	Penultimate sea days needed for the 15 species groups, in descending order with minimum pilot coverage as minimum for fleet						Sea day differences between adjacent species groups within a row (red font indicated values used in Step 9.3)						Sea day differences, in descending order with fleet constraint	Cumulative reduction of sea days	2022 Sea Days PRIORITIZED (Penultimate)	2022 Sea Days PRIORITIZED (Penultimate)
1	Longline, Bottom	OPEN	all	MA	all	84	84												479	479	84	84
2	Longline, Bottom	OPEN	all	NE	all	17	15												389	868	17	17
3	Hand Line	OPEN	all	MA	all	14	14												386	1,254	14	14
4	Hand Line	OPEN	all	NE	all	13	13												366	1,620	13	13
5	Otter Trawl	OPEN	all	MA	sm	1,122	643	633	577	457	443	440	479	10	56	120	14	3	275	1,895	643	643
6	Otter Trawl	OPEN	all	MA	lg	753	364	275	161	137	31		389	89	114	24	106	31	238	2,133	364	364
7	Otter Trawl	OPEN	all	NE	sm	988	755	557	494	319	288	35	233	198	63	175	31	253	238	2,371	557	606
8	Otter Trawl	OPEN	all	NE	lg	840	474	433	161	157	147	33	366	41	272	4	10	114	233	2,604	474	474
9	Otter Trawl, Scallop	AA	GEN	MA	sm	0													206	2,810		
10	Otter Trawl, Scallop	AA	GEN	MA	lg	25													198	3,008		
11	Otter Trawl, Scallop	OPEN	GEN	MA	lg	7													91 of 198	3,099		
12	Otter Trawl, Scallop	OPEN	GEN	NE	lg	8																
13	Otter Trawl, Twin	OPEN	all	MA	sm	51	51														51	51
14	Otter Trawl, Twin	OPEN	all	MA	lg	6	6														6	6
15	Otter Trawl, Twin	OPEN	all	NE	sm	22	22														22	22
16	Otter Trawl, Ruhle	OPEN	all	MA	sm	0	0														0	0
17	Otter Trawl, Ruhle	OPEN	all	MA	lg	15	13														15	15
18	Otter Trawl, Ruhle	OPEN	all	NE	sm	0	0														0	0
19	Otter Trawl, Ruhle	OPEN	all	NE	lg	9	9														9	9
20	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	102	102														102	102
21	Otter Trawl, Shrimp	OPEN	all	MA	sm	0	0														0	0
22	Otter Trawl, Shrimp	OPEN	all	NE	sm	0	0														0	0
23	Otter Trawl, Other	OPEN	all	MA	sm	0	0														0	0
24	Otter Trawl, Other	OPEN	all	NE	sm	0	0														0	0
25	Otter Trawl, Other	OPEN	all	NE	lg	0	0														0	0
26	Floating Trap	OPEN	all	MA	all	6	6														6	0
27	Floating Trap	OPEN	all	NE	all	21	21														21	0
28	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	sm	288	13														13	13
29	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	lg	387	149	13													149	149
30	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	xlg	212	14														121	212
31	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	sm	3	3														3	3
32	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	lg	225	19														19	19
33	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	xlg	209	142	68	20												209	209
34	Purse Seine	OPEN	all	MA	all	6	6														6	0
35	Purse Seine	OPEN	all	NE	all	14	14														14	14
36	Dredge, Scallop	AA	GEN	MA	all	15																
37	Dredge, Scallop	AA	GEN	NE	all	26																
38	Dredge, Scallop	AA	LIM	MA	all	91																
39	Dredge, Scallop	AA	LIM	NE	all	520																
40	Dredge, Scallop	OPEN	GEN	MA	all	20																
41	Dredge, Scallop	OPEN	GEN	NE	all	16																
42	Dredge, Scallop	OPEN	LIM	MA	all	140																
43	Dredge, Scallop	OPEN	LIM	NE	all	454																
44	Danish Seine	OPEN	all	MA	all	0	0														0	0
45	Trawl, Midwater	all	all	NE	sm	31	31														31	31
46	Trawl, Midwater	OPEN	all	MA	sm	13	13														13	13
47	Pots and Traps, Other	OPEN	all	NE	all	0	0														0	0
48	Pots and Traps, Fish	OPEN	all	MA	all	13	13														13	13
49	Pots and Traps, Fish	OPEN	all	NE	all	15	15														15	15
50	Pots and Traps, Conch	OPEN	all	MA	all	13	13														13	13

Table 7. The 2020 sea days needed (COMBINED; Steps 5 and 6; taken from NEFSC and GARFO 2020) and the 6 fleets present in the 2022 data set, the 2022 prioritized days (Step 9.5), the 2022 nonprioritized days (Step 10), 2022 industry-funded scallop days (Step 11), and the 2022 observer sea days allocated for April 2022 through March 2023 (Step 12) by fleet. Note: * indicates all coverage is dependent on industry activity (assigned via the Pre-Trip Notification System); ** indicates some coverage is dependent on industry activity (assigned via the Pre-Trip Notification System); * indicates coverage for protected species bycatch. See Appendix Table 1 for fleet stratification abbreviations. NEFOP = Northeast Fisheries Observer Program.**

Fleet						Step 5	Step 9.5	Step 10	Step 11	Step 12	
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2020 Sea Days Needed COMBINED	2022 Sea Days PRIORITIZED (Penultimate)	2022 Sea Days non-prioritized (MMPA)	2022 Sea Days Industry-funded Scallop	Sea Days Allocated for April 2022 - March 2023 (TOTAL)	Comments
1	Longline, Bottom	OPEN	all	MA	all	84	84			84	Fish stock assessment support
2	Longline, Bottom	OPEN	all	NE	all	17	17			17	Fish stock assessment support **
3	Hand Line	OPEN	all	MA	all	14	14			14	Fish stock assessment support
4	Hand Line	OPEN	all	NE	all	13	13			13	Fish stock assessment support **
5	Otter Trawl	OPEN	all	MA	sm	1,122	643			643	Fish stock assessment and turtle bycatch support
6	Otter Trawl	OPEN	all	MA	lg	753	364			364	Fish stock assessment and turtle bycatch support **
7	Otter Trawl	OPEN	all	NE	sm	988	606			606	Fish stock assessment support **
8	Otter Trawl	OPEN	all	NE	lg	840	474			474	Fish stock assessment support **
9	Otter Trawl, Scallop	AA	GEN	MA	sm	0					Fleet removed (erroneous fleet)
10	Otter Trawl, Scallop	AA	GEN	MA	lg	25					Industry-funded scallop * (see Row 36)
11	Otter Trawl, Scallop	OPEN	GEN	MA	lg	7					Industry-funded scallop * (see Row 40)
12	Otter Trawl, Scallop	OPEN	GEN	NE	lg	8					Industry-funded scallop * (see Row 40)
13	Otter Trawl, Twin	OPEN	all	MA	sm	51	51			51	Fish stock assessment support *
14	Otter Trawl, Twin	OPEN	all	MA	lg	6	6			6	Fish stock assessment support
15	Otter Trawl, Twin	OPEN	all	NE	sm	22	22			22	Fish stock assessment support
16	Otter Trawl, Ruhle	OPEN	all	MA	sm	0	0			0	Fleet removed (erroneous fleet)
17	Otter Trawl, Ruhle	OPEN	all	MA	lg	15	15			15	Fish stock assessment and turtle bycatch support *
18	Otter Trawl, Ruhle	OPEN	all	NE	sm	0	0			0	Fleet removed (erroneous fleet)
19	Otter Trawl, Ruhle	OPEN	all	NE	lg	9	9			9	Fish stock assessment support *
20	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	102	102			102	Fish stock assessment support *
21	Otter Trawl, Shrimp	OPEN	all	MA	sm	0	0			0	Fleet removed (erroneous fleet)
22	Otter Trawl, Shrimp	OPEN	all	NE	sm	0	0			0	Fleet removed (erroneous fleet)
23	Otter Trawl, Other	OPEN	all	MA	sm	0	0			0	Fleet removed (erroneous fleet)
24	Otter Trawl, Other	OPEN	all	NE	sm	0	0			0	Fleet removed (erroneous fleet)
25	Otter Trawl, Other	OPEN	all	NE	lg	0	0			0	Fleet removed (erroneous fleet)
26	Floating Trap	OPEN	all	MA	all	6	0			0	Fleet removed (NEFOP limitation)
27	Floating Trap	OPEN	all	NE	all	21	0			0	Fleet removed (NEFOP limitation)
28	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	sm	288	13			13	Fish stock assessment and turtle bycatch support
29	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	lg	387	149			149	Fish stock assessment and turtle bycatch support
30	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	xl	212	212			212	Fish stock assessment and turtle bycatch support **
31	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	sm	3	3			3	Fish stock assessment support
32	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	lg	225	19			19	Fish stock assessment support **
33	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	xl	209	209			209	Fish stock assessment support **

Table 7, continued. The 2020 sea days needed (COMBINED; Steps 5 and 6; taken from NEFSC and GARFO 2020) and the 6 fleets present in the 2022 data set, the 2022 prioritized days (Step 9.5), 2022 nonprioritized days (Step 10), the 2022 industry-funded scallop days (Step 11), and the 2022 observer sea days allocated for April 2022 through March 2023 (Step 12) by fleet. Note: * indicates all coverage is dependent on industry activity (assigned via the Pre-Trip Notification System); ** indicates some coverage is dependent on industry activity (assigned via the Pre-Trip Notification System); * indicates coverage for protected species bycatch. See Appendix Table 1 for fleet stratification abbreviations. NEFOP = Northeast Fisheries Observer Program.**

Fleet						Step 5	Step 9.5	Step 10	Step 11	Step 12	
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2020 Sea Days Needed COMBINED	2022 Sea Days PRIORITIZED (Penultimate)	2022 Sea Days non-prioritized (MMPA)	2022 Sea Days Industry-funded Scallop	Sea Days Allocated for April 2022 - March 2023 (TOTAL)	Comments
34	Purse Seine	OPEN	all	MA	all	6	0			0	Fleet removed (NEFOP limitation)
35	Purse Seine	OPEN	all	NE	all	14	14			14	Fish stock assessment support **
36	Dredge, Scallop	AA	GEN	MA	all	15			257	257	Industry-funded scallop * (Rows 9, 10, 36, & 38)
37	Dredge, Scallop	AA	GEN	NE	all	26			945	945	Industry-funded scallop * (Rows 37 & 39)
38	Dredge, Scallop	AA	LIM	MA	all	91					Industry-funded scallop * (see Row 36)
39	Dredge, Scallop	AA	LIM	NE	all	520					Industry-funded scallop * (see Row 37)
40	Dredge, Scallop	OPEN	GEN	MA	all	20					Industry-funded scallop * (Rows 11, 12, 40, & 41)
41	Dredge, Scallop	OPEN	GEN	NE	all	16			82	82	Industry-funded scallop * (Rows 11, 12, 40, & 41)
42	Dredge, Scallop	OPEN	LIM	MA	all	140					Industry-funded scallop * (see Row 40)
43	Dredge, Scallop	OPEN	LIM	NE	all	454			779	779	Industry-funded scallop * (Rows 42 & 43)
44	Danish Seine	OPEN	all	MA	all	0	0			0	Fleet removed (erroneous fleet)
45	Trawl, Midwater	all	all	NE	sm	31	31			31	Fish stock assessment support **
46	Trawl, Midwater	OPEN	all	MA	sm	13	13			13	Fish stock assessment support *
47	Pots and Traps, Other	OPEN	all	NE	all	0	0			0	Fleet removed (erroneous fleet)
48	Pots and Traps, Fish	OPEN	all	MA	all	13	13			13	Fish stock assessment support
49	Pots and Traps, Fish	OPEN	all	NE	all	15	15			15	Fish stock assessment support
50	Pots and Traps, Conch	OPEN	all	MA	all	13	13			13	Fish stock assessment support
51	Pots and Traps, Conch	OPEN	all	NE	all	12	12			12	Fish stock assessment support
52	Pots and Traps, Lobster	OPEN	all	MA	all	20	20			20	Fish stock assessment support
53	Pots and Traps, Lobster	OPEN	all	NE	all	255	17			17	Fish stock assessment support
54	Pots and Traps, Crab	OPEN	all	MA	all	22	22			22	Fish stock assessment support
55	Pots and Traps, Crab	OPEN	all	NE	all	79	79			79	Fish stock assessment support
56	Beam Trawl	OPEN	all	MA	sm	0	0			0	Fleet removed (erroneous fleet)
57	Beam Trawl	OPEN	all	NE	lg	0	0			0	Fleet removed (erroneous fleet)
58	Dredge, Other	OPEN	all	MA	all	0	0			0	Fleet removed (erroneous fleet)
59	Dredge, Other	OPEN	all	NE	all	0	0			0	Fleet removed (erroneous fleet)
60	Dredge, Urchin	OPEN	all	NE	all	3	0			0	Fleet removed (NEFOP limitation)
61	Dredge, Ocean Quahog/Surfclam	OPEN	all	MA	all	33	33			33	Fish stock assessment support
62	Dredge, Ocean Quahog/Surfclam	OPEN	all	NE	all	428	42			42	Fish stock assessment support
2022											
9	Otter Trawl, LgMesh Belly Panel	OPEN	all	NE	sm	33	33			33	Fish stock assessment support **
18	Otter Trawl, Haddock Separator	OPEN	all	NE	sm	0	0			0	Fleet removed (not applicable)
22	Otter Trawl, Other	OPEN	all	MA	lg	0	0			0	Fleet removed (erroneous fleet)
44	Pots and Traps, Other	OPEN	all	MA	all	0	0			0	Fleet removed (erroneous fleet)
50	Pots and Traps, Hagfish	OPEN	all	NE	all	95	0			0	Fleet removed (NEFOP limitation)
58	Dredge, Mussel	OPEN	all	NE	all	9	0			0	Fleet removed (NEFOP limitation)
	MMPA coverage							350		350	Coverage associated with Rows 28-33***
	MMPA analysis							112		112	Observer data analysis support

Table 7, continued. The 2020 sea days needed (COMBINED; Steps 5 and 6; taken from NEFSC and GARFO 2020) and the 6 fleets present in the 2022 data set, the 2022 prioritized days (Step 9.5), 2022 nonprioritized days (Step 10), the 2022 industry-funded scallop days (Step 11), and the 2022 observer sea days allocated for April 2022 through March 2023 (Step 12) by fleet. Note: * indicates all coverage is dependent on industry activity (assigned via the Pre-Trip Notification System); ** indicates some coverage is dependent on industry activity (assigned via the Pre-Trip Notification System); *** indicates coverage for protected species bycatch. See Appendix Table 1 for fleet stratification abbreviations. NEFOP = Northeast Fisheries Observer Program.

Fleet						Step 5	Step 9.5	Step 10	Step 11	Step 12	Comments
Row	Gear Type	Access Area	Trip Cat.	Region	Mesh	2020 Sea Days Needed COMBINED	2022 Sea Days PRIORITIZED (Penultimate)	2022 Sea Days non-prioritized (MMPA)	2022 Sea Days Industry-funded Scallop	Sea Days Allocated for April 2022 - March 2023 (TOTAL)	
Total						7,803	3,382	462	2,063	5,907	
Step 6						Agency Fleets (Sea Days Needed) 6,481					
						Industry Fleets (Sea Days Needed) 1,322					
Step 7						Agency Fleets (Sea Days Funded) 3,382	Prioritized days			3,382	
						Agency Fleets (Sea Days Funded) 462	Nonprioritized days			462	
						Industry Fleets (Sea Days Funded) 2,065	Industry-funded scallop days			2,063	
Step 8						Agency Fleet Difference -3,099					
						Industry Fleet Difference 741					
Turtle Gear Types						MA Trawl 1,922					
						MA Gillnet 887					

KEY: Agency-funded fleets	Industry-funded fleets
Fleets identified as "erroneous"	Fleets with Northeast Fisheries Observer Program (NEFOP) Limitation
Steps used in sea day allocation	Fleets with reduction in sea days
Fleets identified as "not applicable"	

Appendix Table 1. Stratification abbreviations used for 2020, 2021, and 2022 fleets.

Abbreviation	Definition
NE	New England ports (RI and northward)
MA	Mid-Atlantic ports (CT and southward)
Sm	Small mesh (less than 5.50 in)
Lg	Large mesh (from 5.50 to 7.99 in for gillnet; 5.50 in and greater for trawl)
Xlg	Extra large mesh (8.00 in and greater for gillnet)
AA	Access area (and includes the allocated sea days for the Northern Gulf of Maine Scallop Management Area beginning in April 2022)
OPEN	Nonaccess area
GEN	General category
LIM	Limited access category

Appendix Table 2. The 2020 number of sea days needed to achieve a 30% coefficient of variation of the discard estimate for each of the 14 fish and invertebrate species groups, the number of pilot sea days, the number of minimum pilot sea days, and the maximum number of sea days needed for each fleet (2020 Sea Days Needed) for fish and invertebrate species groups based on July 2018 through June 2019 data. Bold red font indicates basis for fleet sea days. "P" indicates fleets with "pilot" designation. Species group abbreviations are given in Table 1. See Appendix Table 1 for fleet stratification abbreviations. Table taken from Table 6B in Wigley and Tholke 2020; the 6 fleets present in the 2022 data set have been added.

Row	Fleet Gear Type	Access Area	Trip	Region	Mesh Size	BLUE	HERR	SAL	RCRAB	SCAL	SBM	MONK	GFL	GFS	SKATE	DOG	FSB	SCOQ	TILE	Pilot Days	Min Pilot Days	2020 Sea Days Needed	Pilot	
1	Longline, Bottom	OPEN	all	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	84	84	
2	Longline, Bottom	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	23	15	17	
3	Hand Line	OPEN	all	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67	14	14	
4	Hand Line	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	13	13	
5	Otter Trawl	OPEN	all	MA	sm	0	0	0	0	0	633	577	443	643	440	457	396	0	0	0	167	29	643	
6	Otter Trawl	OPEN	all	MA	lg	0	0	0	0	0	0	275	0	0	137	364	161	0	0	0	136	31	364	
7	Otter Trawl	OPEN	all	NE	sm	0	0	0	0	0	988	0	288	319	494	755	557	0	0	0	200	35	988	
8	Otter Trawl	OPEN	all	NE	lg	0	0	0	0	0	0	157	147	161	840	433	474	0	0	0	261	33	840	
9	Otter Trawl, Scallop	AA	GEN	MA	sm	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	P
10	Otter Trawl, Scallop	AA	GEN	MA	lg	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	P
11	Otter Trawl, Scallop	OPEN	GEN	MA	lg	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	P
12	Otter Trawl, Scallop	OPEN	GEN	NE	lg	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	P
13	Otter Trawl, Twin	OPEN	all	MA	sm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51	51	51	
14	Otter Trawl, Twin	OPEN	all	MA	lg	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	P
15	Otter Trawl, Twin	OPEN	all	NE	sm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	22	22	
16	Otter Trawl, Ruhle	OPEN	all	MA	sm	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	P
17	Otter Trawl, Ruhle	OPEN	all	MA	lg	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	P
18	Otter Trawl, Ruhle	OPEN	all	NE	sm	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	P
19	Otter Trawl, Ruhle	OPEN	all	NE	lg	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	P
20	Otter Trawl, Haddock Separator	OPEN	all	NE	lg	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	102	102	102	
21	Otter Trawl, Shrimp	OPEN	all	MA	sm	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	51	64	P
22	Otter Trawl, Shrimp	OPEN	all	NE	sm	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	P
23	Otter Trawl, Other	OPEN	all	MA	sm	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	P
24	Otter Trawl, Other	OPEN	all	NE	sm	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	P
25	Otter Trawl, Other	OPEN	all	NE	lg	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	P
26	Floating Trap	OPEN	all	MA	all	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	P
27	Floating Trap	OPEN	all	NE	all	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	P
28	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	sm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	13	13	
29	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	lg	0	0	0	0	0	0	0	0	0	0	149	0	0	0	0	35	13	149	
30	Gillnet, Sink, Anchor, Drift	OPEN	all	MA	xl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	14	14	
31	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	sm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	
32	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	lg	0	0	0	0	0	0	0	0	0	0	225	0	0	0	0	55	19	225	
33	Gillnet, Sink, Anchor, Drift	OPEN	all	NE	xl	0	0	0	0	0	0	68	0	0	142	209	0	0	0	0	91	20	209	
34	Purse Seine	OPEN	all	MA	all	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	P
35	Purse Seine	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	14	14	

Appendix Table 2, continued. The number of sea days needed to achieve a 30% coefficient of variation of the discard estimate for each of the 14 fish and invertebrate species groups, the number of pilot sea days, the number of minimum pilot sea days, and the maximum number of sea days needed for each fleet (2020 Sea Days Needed) for fish and invertebrate species groups based on July 2018 through June 2019 data. Bold red font indicates basis for fleet sea days. "P" indicates fleets with "pilot" designation. Species group abbreviations are given in Table 1. See Appendix Table 1 for fleet stratification abbreviations. Taken from Table 6B in Wigley and Tholke 2020; the 6 fleets present in the 2022 data set have been added.

Row	Fleet Gear Type	Access Area	Trip	Region	Mesh Size	BLUE	HERR	SAL	RCRAB	SCAL	SBM	MONK	GFL	GFS	SKATE	DOG	FSB	SCOQ	TILE	Pilot Days	Min Pilot Days	2020 Sea Days Needed	Pilot	
36	Dredge, Scallop	AA	GEN	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	15	15	
37	Dredge, Scallop	AA	GEN	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	26	26	
38	Dredge, Scallop	AA	LIM	MA	all	0	0	0	0	0	0	91	0	0	76	0	0	0	0	0	102	76	91	
39	Dredge, Scallop	AA	LIM	NE	all	0	0	0	0	227	0	238	389	299	168	520	0	0	0	0	323	87	520	
40	Dredge, Scallop	OPEN	GEN	MA	all	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	38	20	20	
41	Dredge, Scallop	OPEN	GEN	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82	16	16	
42	Dredge, Scallop	OPEN	LIM	MA	all	0	0	0	0	0	0	140	0	0	48	0	0	0	0	0	93	93	140	
43	Dredge, Scallop	OPEN	LIM	NE	all	0	0	0	0	0	0	454	0	0	218	0	0	0	0	0	137	107	454	
44	Danish Seine	OPEN	all	MA	all	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	P
45	Trawl, Midwater	all	all	NE	sm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	31	31	
46	Trawl, Midwater	OPEN	all	MA	sm	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	P
47	Pots and Traps, Other	OPEN	all	NE	all	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	P
48	Pots and Traps, Fish	OPEN	all	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	13	13	
49	Pots and Traps, Fish	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	15	15	
50	Pots and Traps, Conch	OPEN	all	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	13	13	
51	Pots and Traps, Conch	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	12	12	
52	Pots and Traps, Lobster	OPEN	all	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	20	20	
53	Pots and Traps, Lobster	OPEN	all	NE	all	0	0	0	0	0	0	0	0	0	0	0	255	0	0	0	437	17	255	
54	Pots and Traps, Crab	OPEN	all	MA	all	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	22	22	
55	Pots and Traps, Crab	OPEN	all	NE	all	0	0	0	46	0	0	0	0	0	0	0	0	0	0	0	79	79	79	
56	Beam Trawl	OPEN	all	MA	sm	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	P
57	Beam Trawl	OPEN	all	NE	lg	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	P
58	Dredge, Other	OPEN	all	MA	all	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	P
59	Dredge, Other	OPEN	all	NE	all	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	P
60	Dredge, Urchin	OPEN	all	NE	all	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	P
61	Dredge, Ocean Quahog/Surfclam	OPEN	all	MA	all	0	0	0	0	0	0	33	0	0	0	0	0	0	0	0	73	23	33	
62	Dredge, Ocean Quahog/Surfclam	OPEN	all	NE	all	0	0	0	0	0	0	42	0	0	42	428	0	0	0	0	51	18	428	
2022																								
9	Otter Trawl, LgMesh Belly Panel	OPEN	all	NE	sm																33	33	33	P
18	Otter Trawl, Haddock Separator	OPEN	all	NE	sm																81	81	81	P
22	Otter Trawl, Other	OPEN	all	MA	lg																5	5	5	P
44	Pots and Traps, Other	OPEN	all	MA	all																6	6	6	P
50	Pots and Traps, Hagfish	OPEN	all	NE	all																95	95	95	P
58	Dredge, Mussel	OPEN	all	NE	all																9	9	9	P
					Totals	436	436	436	482	663	2,057	2,511	1,718	1,858	3,053	3,993	2,279	436	436	3,804	1,880	6,633		

Procedures for Issuing Manuscripts in the Northeast Fisheries Science Center Reference Document (CRD) and the Technical Memorandum (TM) Series

The mission of NOAA's National Marine Fisheries Service (NMFS) is "stewardship of the nation's ocean resources and their habitat." As the research arm of the NMFS's Greater Atlantic Region, the Northeast Fisheries Science Center (NEFSC) supports the NMFS's mission by "conducting ecosystem-based research and assessments of living marine resources, with a focus on the Northeast Shelf, to promote the recovery and long-term sustainability of these resources and to generate social and economic opportunities and benefits from their use." Results of NEFSC research are largely reported in primary scientific media (e.g., anonymously peer-reviewed scientific journals). However, to assist itself in providing data, information, and advice to its constituents, the NEFSC occasionally releases its results in its own series.

NOAA Technical Memorandum NMFS-NE – This series is issued irregularly. The series typically includes: data reports of long-term field or lab studies of important species or habitats; synthesis reports for important species or habitats; annual reports of overall assessment or monitoring programs; manuals describing program-wide surveying or experimental techniques; literature surveys of important species or habitat topics; proceedings and collected papers of scientific meetings; and indexed and/or annotated bibliographies. All issues receive internal scientific review, and most issues receive technical and copy editing.

Northeast Fisheries Science Center Reference Document – This series is issued irregularly. The series typically includes: data reports on field and lab studies; progress reports on experiments, monitoring, and assessments; background papers for, collected abstracts of, and/or summary reports of scientific meetings; and simple bibliographies. Issues receive internal scientific review, and most issues receive copy editing.

CLEARANCE

All manuscripts submitted for issuance as CRDs must have cleared the NEFSC's manuscript/abstract/webpage review process. If your manuscript includes material from another work which has been copyrighted, you will need to work with the NEFSC's Editorial Office to arrange for permission to use that material by securing release signatures on the "NEFSC Use-of-Copyrighted-Work Permission Form."

For more information, NEFSC authors should see the NEFSC's online publication policy manual, "Manuscript/Abstract/Webpage Preparation, Review, & Dissemination: NEFSC Author's Guide to Policy, Process, and Procedure."

STYLE

The CRD series is obligated to conform with the style contained in the current edition of the United States Government Printing Office Style Manual; however, that style manual is silent on many

aspects of scientific manuscripts. The CRD series relies more on the CSE Style Manual. Manuscripts should be prepared to conform with both of these style manuals.

The CRD series uses the Integrated Taxonomic Information System, the American Fisheries Society's guides, and the Society for Marine Mammalogy's guide for verifying scientific species names.

For in-text citations, use the name-date system. A special effort should be made to ensure all necessary bibliographic information is included in the list of references cited. Personal communications must include the date, full name, and full mailing address of the contact.

PREPARATION

Once your document has cleared the review process, the Editorial Office will contact you with publication needs—for example, revised text (if necessary) and separate digital figures and tables if they are embedded in the document. Materials may be submitted to the Editorial Office as email attachments or intranet downloads. Text files should be in Microsoft Word, tables may be in Word or Excel, and graphics files may be in a variety of formats (JPG, GIF, Excel, PowerPoint, etc.).

PRODUCTION AND DISTRIBUTION

The Editorial Office will perform a copy edit of the document and may request further revisions. The Editorial Office will develop the inside and outside front covers, the inside and outside back covers, and the title and bibliographic control pages of the document.

Once the CRD is ready, the Editorial Office will contact you to review it and submit corrections or changes before the document is posted online. A number of organizations and individuals in the Northeast Region will be notified by e-mail of the availability of the document online.